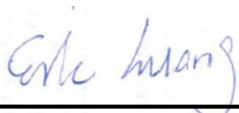


# FCC SAR Test Report

APPLICANT : Motorola Mobility, LLC  
EQUIPMENT : Mobile Cellular Phone  
BRAND NAME : Motorola  
MODEL NAME : 9653  
FCC ID : IHDT56WA1  
STANDARD : FCC 47 CFR Part 2 (2.1093)  
ANSI/IEEE C95.1-1992  
IEEE 1528-2013

We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and had been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.



Reviewed by: Eric Huang / Manager



Approved by: Jones Tsai / Manager



## **SPORTON INTERNATIONAL INC.**

No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.)



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## Revision History

| REPORT NO. | VERSION | DESCRIPTION             | ISSUED DATE   |
|------------|---------|-------------------------|---------------|
| FA720310   | Rev. 01 | Initial issue of report | Mar. 20, 2017 |
|            |         |                         |               |
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|            |         |                         |               |



## 1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for Motorola Mobility, LLC, Mobile Cellular Phone, 9653 are as follows.

| Equipment Class  | Frequency Band | Highest SAR Summary      |                                |                              |                                      | Highest Simultaneous Transmission<br>1g SAR (W/kg) |
|------------------|----------------|--------------------------|--------------------------------|------------------------------|--------------------------------------|----------------------------------------------------|
|                  |                | Head<br>(Separation 0mm) | Body-worn<br>(Separation 10mm) | Hotspot<br>(Separation 10mm) | Product Specific<br>(Separation 0mm) |                                                    |
|                  |                | 1g SAR (W/kg)            |                                |                              | 10g SAR (W/kg)                       |                                                    |
| Licensed         | GSM850         | 0.36                     | 1.15                           | 1.15                         |                                      | 1.59                                               |
|                  | GSM1900        | 0.27                     | 0.72                           | 0.73                         |                                      |                                                    |
|                  | WCDMA II       | 0.56                     | 1.20                           | 1.20                         | 3.68                                 |                                                    |
|                  | WCDMA IV       | 0.63                     | 0.90                           | 0.99                         |                                      |                                                    |
|                  | WCDMA V        | 0.41                     | 0.98                           | 0.98                         | 2.16                                 |                                                    |
|                  | CDMA BC0       | 0.42                     | 1.16                           | 1.17                         |                                      |                                                    |
|                  | CDMA BC1       | 0.48                     | 1.16                           | 1.19                         | 3.28                                 |                                                    |
|                  | CDMA BC10      | 0.50                     | 0.82                           | 0.81                         | 1.51                                 |                                                    |
|                  | LTE Band 2     | 0.49                     | 0.99                           | 1.06                         | 3.43                                 |                                                    |
|                  | LTE Band 4     | 0.62                     | 1.08                           | 1.08                         | 2.59                                 |                                                    |
|                  | LTE Band 5     | 0.47                     | 0.89                           | 0.89                         |                                      |                                                    |
|                  | LTE Band 7     | 0.56                     | 1.03                           | 1.03                         |                                      |                                                    |
|                  | LTE Band 12    | 0.29                     | 0.99                           | 0.99                         | 1.77                                 |                                                    |
|                  | LTE Band 13    | 0.43                     | 1.19                           | 1.19                         | 2.30                                 |                                                    |
|                  | LTE Band 17    | 0.36                     | 0.95                           | 1.10                         | 1.96                                 |                                                    |
|                  | LTE Band 25    | 0.71                     | 1.04                           | 1.12                         | 2.96                                 |                                                    |
|                  | LTE Band 26    | 0.41                     | 1.05                           | 1.05                         |                                      |                                                    |
|                  | LTE Band 30    | 0.32                     | 1.19                           | 1.19                         | 2.46                                 |                                                    |
|                  | LTE Band 38    | 0.29                     | 0.58                           | 0.68                         |                                      |                                                    |
|                  | LTE Band 41    | 0.32                     | 0.79                           | 0.91                         |                                      |                                                    |
|                  | LTE Band 66    | 0.53                     | 0.97                           | 0.99                         | 3.12                                 |                                                    |
| DTS              | 2.4GHz WLAN    | 1.29                     | 0.40                           | 0.40                         |                                      | 1.59                                               |
| NII              | 5GHz WLAN      | 1.30                     | 0.54                           | 0.47                         | 2.76                                 | 1.59                                               |
| DSS              | Bluetooth      |                          | 0.07                           |                              |                                      | 1.59                                               |
| Date of Testing: |                | 2017/2/18 ~ 2017/3/16    |                                |                              |                                      |                                                    |

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body, 4.0 W/kg for Product Specific) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications

## **2. Administration Data**

| Testing Laboratory |                                                                                                                                                  |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Site          | SPORTON INTERNATIONAL INC.                                                                                                                       |
| Test Site Location | No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.)<br>TEL: +886-3-327-3456<br>FAX: +886-3-328-4978 |

| Applicant    |                                                                            |
|--------------|----------------------------------------------------------------------------|
| Company Name | Motorola Mobility, LLC                                                     |
| Address      | 222 W Merchandise Mart Plaza, Suite 1800, Chicago, IL 60654, United States |

| Manufacturer |                                                                            |
|--------------|----------------------------------------------------------------------------|
| Company Name | Motorola Mobility, LLC                                                     |
| Address      | 222 W Merchandise Mart Plaza, Suite 1800, Chicago, IL 60654, United States |

## **3. Guidance Applied**

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards:

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r03
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r02
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01

## **4. Equipment Under Test (EUT) Information**

### **4.1 General Information**

| Product Feature & Specification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Equipment Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Mobile Cellular Phone                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Brand Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Motorola                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Model Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 9653                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| FCC ID                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | IHDT56WA1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| IMEI Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 351884080020987                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Wireless Technology and Frequency Range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | GSM850: 824.2 MHz ~ 848.8 MHz<br>GSM1900: 1850.2 MHz ~ 1909.8 MHz<br>WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz<br>WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz<br>WCDMA Band V: 826.4 MHz ~ 846.6 MHz<br>CDMA2000 BC0: 824.7 MHz ~ 848.31 MHz<br>CDMA 2000 BC1: 1851.25 MHz ~ 1908.75 MHz<br>CDMA 2000 BC10: 817.9 MHz ~ 823.1 MHz<br>LTE Band 2: 1850.7 MHz ~ 1909.3 MHz<br>LTE Band 4: 1710.7 MHz ~ 1754.3 MHz<br>LTE Band 5: 824.7 MHz ~ 848.3 MHz<br>LTE Band 7: 2502.5 MHz ~ 2567.5 MHz<br>LTE Band 12: 699.7 MHz ~ 715.3 MHz<br>LTE Band 13: 779.5 MHz ~ 784.5 MHz<br>LTE Band 17: 706.5 MHz ~ 713.5 MHz<br>LTE Band 25: 1850.7 MHz ~ 1914.3 MHz<br>LTE Band 26: 814.7 MHz ~ 848.3 MHz<br>LTE Band 30: 2307.5 MHz ~ 2312.5 MHz<br>LTE Band 38: 2572.5 MHz ~ 2617.5 MHz<br>LTE Band 41: 2498.5 MHz ~ 2687.5 MHz<br>LTE Band 66: 1710.7 MHz ~ 1779.3 MHz<br>WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz<br>WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz<br>WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz<br>WLAN 5.5GHz Band: 5500 MHz ~ 5720 MHz<br>WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz<br>Bluetooth: 2402 MHz ~ 2480 MHz<br>NFC : 13.56 MHz |
| Mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | GSM/GPRS/EGPRS<br>RMC/AMR 12.2Kbps<br>HSDPA<br>HSUPA<br>DC-HSDPA<br>CDMA2000 : 1xRTT/1xEv-Do(Rev.0)/1xEv-Do(Rev.A)<br>LTE: QPSK, 16QAM<br>802.11a/b/g/n HT20/HT40<br>Bluetooth BR/EDR/LE<br>NFC:ASK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| GSM / (E)GPRS Transfer mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| EUT Stage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Identical Prototype                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Remark:</b> <ol style="list-style-type: none"> <li>1. This device 2.4GHz / 5.2GHz / 5.8GHz WLAN supports Hotspot operation.</li> <li>2. When the device operating under different conditions of At-Head, body-worn, near-body, hotspot and free space will limit different maximum output powers in several cellular transmitters and the detail mechanisms description of the different output power levels are included in the operation description.</li> <li>3. The device used different output power mechanisms for SAR compliance for WLAN transmitter for held-to-are exposure conditions and detail descriptions of the output power mechanism are included in the operational description.</li> <li>4. This device implements antenna tuning techniques for several WWAN (cellular) operating modes for the purpose of improving antenna efficiency over a broad range of frequencies. Specifically, these techniques are employed in several frequency bands. In this report SAR was measured according to the normally required SAR configurations with the tuner active and worst tune state (auto tune) was used for SAR testing. The detail descriptions of the antenna tuner are included in the operational description and supplemental data for additional information on section16.</li> </ol> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## 4.2 General LTE SAR Test and Reporting Considerations

| Summarized necessary items addressed in KDB 941225 D05 v02r05  |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |       |        |                                                                |        |          |      |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
|----------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------|----------------------------------------------------------------|--------|----------|------|--|--|--|--|------------|-------------------------------------------------|--|--|--|--|--|----------|---------|---------|-------|--------|--------|--------|------|-----|-----|-----|------|------|------|--------|-----|-----|-----|------|------|------|-----|--------|-----|-----|-----|------|------|------|-----|
| FCC ID                                                         |                                                 | IHDT56WA1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |       |        |                                                                |        |          |      |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| Equipment Name                                                 |                                                 | Mobile Cellular Phone                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |        |                                                                |        |          |      |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| Operating Frequency Range of each LTE transmission band        |                                                 | LTE Band 2: 1850.7 MHz ~ 1909.3 MHz<br>LTE Band 4: 1710.7 MHz ~ 1754.3 MHz<br>LTE Band 5: 824.7 MHz ~ 848.3 MHz<br>LTE Band 7: 2502.5 MHz ~ 2567.5 MHz<br>LTE Band 12: 699.7 MHz ~ 715.3 MHz<br>LTE Band 13: 779.5 MHz ~ 784.5 MHz<br>LTE Band 17: 706.5 MHz ~ 713.5 MHz<br>LTE Band 25: 1850.7 MHz ~ 1914.3 MHz<br>LTE Band 26: 814.7 MHz ~ 848.3 MHz<br>LTE Band 30: 2307.5 MHz ~ 2312.5 MHz<br>LTE Band 38: 2572.5 MHz ~ 2617.5 MHz<br>LTE Band 41: 2498.5 MHz ~ 2687.5 MHz<br>LTE Band 66: 1710.7 MHz ~ 1779.3 MHz                                                                                                                                                                                                      |       |        |                                                                |        |          |      |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| Channel Bandwidth                                              |                                                 | LTE Band 02:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz<br>LTE Band 04:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz<br>LTE Band 05:1.4MHz, 3MHz, 5MHz, 10MHz<br>LTE Band 07: 5MHz, 10MHz, 15MHz, 20MHz<br>LTE Band 12:1.4MHz, 3MHz, 5MHz, 10MHz<br>LTE Band 13: 5MHz, 10MHz<br>LTE Band 17: 5MHz, 10MHz<br>LTE Band 25:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz<br>LTE Band 26:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz<br>LTE Band 30: 5MHz, 10MHz<br>LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz<br>LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz<br>LTE Band 66:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz                                                                                                                                                |       |        |                                                                |        |          |      |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| uplink modulations used                                        |                                                 | QPSK, and 16QAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |       |        |                                                                |        |          |      |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| LTE Voice / Data requirements                                  |                                                 | 1. Voice and data.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |        |                                                                |        |          |      |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| LTE MPR permanently built-in by design                         |                                                 | <table><tr><th colspan="8">Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3</th></tr><tr><th rowspan="3">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (RB)</th><th rowspan="3">MPR (dB)</th></tr><tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr><tr><td>QPSK</td><td>&gt; 5</td><td>&gt; 4</td><td>&gt; 8</td><td>&gt; 12</td><td>&gt; 16</td><td>&gt; 18</td></tr><tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr><tr><td>16 QAM</td><td>&gt; 5</td><td>&gt; 4</td><td>&gt; 8</td><td>&gt; 12</td><td>&gt; 16</td><td>&gt; 18</td><td>≤ 2</td></tr></table> |       |        | Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3 |        |          |      |  |  |  |  | Modulation | Channel bandwidth / Transmission bandwidth (RB) |  |  |  |  |  | MPR (dB) | 1.4 MHz | 3.0 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz | QPSK | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | 16 QAM | ≤ 5 | ≤ 4 | ≤ 8 | ≤ 12 | ≤ 16 | ≤ 18 | ≤ 1 | 16 QAM | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 2 |
| Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3 |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |       |        |                                                                |        |          |      |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| Modulation                                                     | Channel bandwidth / Transmission bandwidth (RB) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |       |        |                                                                |        | MPR (dB) |      |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
|                                                                | 1.4 MHz                                         | 3.0 MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 5 MHz | 10 MHz | 15 MHz                                                         | 20 MHz |          |      |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
|                                                                | QPSK                                            | > 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | > 4   | > 8    | > 12                                                           | > 16   |          | > 18 |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| 16 QAM                                                         | ≤ 5                                             | ≤ 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ≤ 8   | ≤ 12   | ≤ 16                                                           | ≤ 18   | ≤ 1      |      |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| 16 QAM                                                         | > 5                                             | > 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | > 8   | > 12   | > 16                                                           | > 18   | ≤ 2      |      |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| LTE A-MPR                                                      |                                                 | In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |       |        |                                                                |        |          |      |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| Spectrum plots for RB configuration                            |                                                 | A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |       |        |                                                                |        |          |      |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| Power reduction applied to satisfy SAR compliance              |                                                 | Yes, When the device operating under different conditions of At-Head, body-worn, near-body, hotspot and free space will limit different maximum output powers in several cellular transmitters and the detail mechanisms description of the different output power levels are included in the operation description.                                                                                                                                                                                                                                                                                                                                                                                                        |       |        |                                                                |        |          |      |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| LTE Carrier Aggregation Combinations                           |                                                 | Inter-Band and Intra-Band possible combinations as below page and the detail power verification please referred to section 12.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |       |        |                                                                |        |          |      |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| LTE Carrier Aggregation Additional Information                 |                                                 | This device does not support full CA features on 3GPP Release 10. It supports a maximum of 2 carriers in the downlink only. All uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC. Due to carrier capability, only the combinations listed above are supported. The following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.                                                                                                                                                                                                                             |       |        |                                                                |        |          |      |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |

| Transmission (H, M, L) channel numbers and frequencies in each LTE band |                   |             |                  |             |                  |             |                  |             |                  |             |                  |             |
|-------------------------------------------------------------------------|-------------------|-------------|------------------|-------------|------------------|-------------|------------------|-------------|------------------|-------------|------------------|-------------|
| LTE Band 2                                                              |                   |             |                  |             |                  |             |                  |             |                  |             |                  |             |
|                                                                         | Bandwidth 1.4 MHz |             | Bandwidth 3 MHz  |             | Bandwidth 5 MHz  |             | Bandwidth 10 MHz |             | Bandwidth 15 MHz |             | Bandwidth 20 MHz |             |
|                                                                         | Ch. #             | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) |
| L                                                                       | 18607             | 1850.7      | 18615            | 1851.5      | 18625            | 1852.5      | 18650            | 1855        | 18675            | 1857.5      | 18700            | 1860        |
| M                                                                       | 18900             | 1880        | 18900            | 1880        | 18900            | 1880        | 18900            | 1880        | 18900            | 1880        | 18900            | 1880        |
| H                                                                       | 19193             | 1909.3      | 19185            | 1908.5      | 19175            | 1907.5      | 19150            | 1905        | 19125            | 1902.5      | 19100            | 1900        |
| LTE Band 4                                                              |                   |             |                  |             |                  |             |                  |             |                  |             |                  |             |
|                                                                         | Bandwidth 1.4 MHz |             | Bandwidth 3 MHz  |             | Bandwidth 5 MHz  |             | Bandwidth 10 MHz |             | Bandwidth 15 MHz |             | Bandwidth 20 MHz |             |
|                                                                         | Ch. #             | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) |
| L                                                                       | 19957             | 1710.7      | 19965            | 1711.5      | 19975            | 1712.5      | 20000            | 1715        | 20025            | 1717.5      | 20050            | 1720        |
| M                                                                       | 20175             | 1732.5      | 20175            | 1732.5      | 20175            | 1732.5      | 20175            | 1732.5      | 20175            | 1732.5      | 20175            | 1732.5      |
| H                                                                       | 20393             | 1754.3      | 20385            | 1753.5      | 20375            | 1752.5      | 20350            | 1750        | 20325            | 1747.5      | 20300            | 1745        |
| LTE Band 5                                                              |                   |             |                  |             |                  |             |                  |             |                  |             |                  |             |
|                                                                         | Bandwidth 1.4 MHz |             | Bandwidth 3 MHz  |             | Bandwidth 5 MHz  |             | Bandwidth 10 MHz |             |                  |             |                  |             |
|                                                                         | Ch. #             | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) |
| L                                                                       | 20407             | 824.7       | 20415            | 825.5       | 20425            | 826.5       | 20450            | 829         |                  |             |                  |             |
| M                                                                       | 20525             | 836.5       | 20525            | 836.5       | 20525            | 836.5       | 20525            | 836.5       |                  |             |                  |             |
| H                                                                       | 20643             | 848.3       | 20635            | 847.5       | 20625            | 846.5       | 20600            | 844         |                  |             |                  |             |
| LTE Band 7                                                              |                   |             |                  |             |                  |             |                  |             |                  |             |                  |             |
|                                                                         | Bandwidth 5 MHz   |             | Bandwidth 10 MHz |             | Bandwidth 15 MHz |             | Bandwidth 20 MHz |             |                  |             |                  |             |
|                                                                         | Ch. #             | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) |
| L                                                                       | 20775             | 2502.5      | 20800            | 2505        | 20825            | 2507.5      | 20850            | 2510        |                  |             |                  |             |
| M                                                                       | 21100             | 2535        | 21100            | 2535        | 21100            | 2535        | 21100            | 2535        |                  |             |                  |             |
| H                                                                       | 21425             | 2567.5      | 21400            | 2565        | 21375            | 2562.5      | 21350            | 2560        |                  |             |                  |             |
| LTE Band 12                                                             |                   |             |                  |             |                  |             |                  |             |                  |             |                  |             |
|                                                                         | Bandwidth 1.4 MHz |             | Bandwidth 3 MHz  |             | Bandwidth 5 MHz  |             | Bandwidth 10 MHz |             |                  |             |                  |             |
|                                                                         | Ch. #             | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) |
| L                                                                       | 23017             | 699.7       | 23025            | 700.5       | 23035            | 701.5       | 23060            | 704         |                  |             |                  |             |
| M                                                                       | 23095             | 707.5       | 23095            | 707.5       | 23095            | 707.5       | 23095            | 707.5       |                  |             |                  |             |
| H                                                                       | 23173             | 715.3       | 23165            | 714.5       | 23155            | 713.5       | 23130            | 711         |                  |             |                  |             |
| LTE Band 13                                                             |                   |             |                  |             |                  |             |                  |             |                  |             |                  |             |
|                                                                         | Bandwidth 5 MHz   |             |                  |             | Bandwidth 10 MHz |             |                  |             |                  |             |                  |             |
|                                                                         | Channel #         |             | Freq.(MHz)       |             | Channel #        |             | Freq.(MHz)       |             |                  |             |                  |             |
| L                                                                       | 23205             |             | 779.5            |             | 23230            |             | 782              |             |                  |             |                  |             |
| M                                                                       | 23230             |             | 782              |             |                  |             |                  |             |                  |             |                  |             |
| H                                                                       | 23255             |             | 784.5            |             |                  |             |                  |             |                  |             |                  |             |
| LTE Band 17                                                             |                   |             |                  |             |                  |             |                  |             |                  |             |                  |             |
|                                                                         | Bandwidth 5 MHz   |             |                  |             | Bandwidth 10 MHz |             |                  |             |                  |             |                  |             |
|                                                                         | Channel #         |             | Freq.(MHz)       |             | Channel #        |             | Freq. (MHz)      |             |                  |             |                  |             |
| L                                                                       | 23755             |             | 706.5            |             | 23780            |             | 709              |             |                  |             |                  |             |
| M                                                                       | 23790             |             | 710              |             | 23790            |             | 710              |             |                  |             |                  |             |
| H                                                                       | 23825             |             | 713.5            |             | 23800            |             | 711              |             |                  |             |                  |             |
| LTE Band 25                                                             |                   |             |                  |             |                  |             |                  |             |                  |             |                  |             |
|                                                                         | Bandwidth 1.4 MHz |             | Bandwidth 3 MHz  |             | Bandwidth 5 MHz  |             | Bandwidth 10 MHz |             | Bandwidth 15 MHz |             | Bandwidth 20 MHz |             |
|                                                                         | Ch. #             | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) |
| L                                                                       | 26047             | 1850.7      | 26055            | 1851.5      | 26065            | 1852.5      | 26090            | 1855        | 26115            | 1857.5      | 26140            | 1860        |
| M                                                                       | 26340             | 1880        | 26340            | 1880        | 26340            | 1880        | 26340            | 1880        | 26340            | 1880        | 26340            | 1880        |
| H                                                                       | 26683             | 1914.3      | 26675            | 1913.5      | 26665            | 1912.5      | 26640            | 1910        | 26615            | 1907.5      | 26590            | 1905        |



| LTE Band 26 |                   |             |                  |             |                  |                  |                  |             |                  |             |                  |             |
|-------------|-------------------|-------------|------------------|-------------|------------------|------------------|------------------|-------------|------------------|-------------|------------------|-------------|
|             | Bandwidth 1.4 MHz |             | Bandwidth 3 MHz  |             | Bandwidth 5 MHz  |                  | Bandwidth 10 MHz |             | Bandwidth 15 MHz |             |                  |             |
|             | Ch. #             | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz)      | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) |                  |             |
| L           | 26697             | 814.7       | 26705            | 815.5       | 26715            | 816.5            | 26740            | 819         | 26765            | 821.5       |                  |             |
| M           | 26865             | 831.5       | 26865            | 831.5       | 26865            | 831.5            | 26865            | 831.5       | 26865            | 831.5       |                  |             |
| H           | 27033             | 848.3       | 27025            | 847.5       | 27015            | 846.5            | 26990            | 844         | 26965            | 841.5       |                  |             |
| LTE Band 30 |                   |             |                  |             |                  |                  |                  |             |                  |             |                  |             |
|             | Bandwidth 5 MHz   |             |                  |             |                  | Bandwidth 10 MHz |                  |             |                  |             |                  |             |
|             | Channel #         |             | Freq.(MHz)       |             |                  | Channel #        |                  |             | Freq.(MHz)       |             |                  |             |
| L           | 27685             |             | 2307.5           |             |                  | 27710            |                  |             | 2310             |             |                  |             |
| M           | 27710             |             | 2310             |             |                  |                  |                  |             |                  |             |                  |             |
| H           | 27735             |             | 2312.5           |             |                  |                  |                  |             |                  |             |                  |             |
| LTE Band 38 |                   |             |                  |             |                  |                  |                  |             |                  |             |                  |             |
|             | Bandwidth 5 MHz   |             | Bandwidth 10 MHz |             | Bandwidth 15 MHz |                  | Bandwidth 20 MHz |             |                  |             |                  |             |
|             | Ch. #             | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz)      | Ch. #            | Freq. (MHz) |                  |             |                  |             |
| L           | 37775             | 2572.5      | 37800            | 2575        | 37825            | 2577.5           | 37850            | 2580        |                  |             |                  |             |
| M           | 38000             | 2595        | 38000            | 2595        | 38000            | 2595             | 38000            | 2595        |                  |             |                  |             |
| H           | 38225             | 2617.5      | 38200            | 2615        | 38175            | 2612.5           | 38150            | 2610        |                  |             |                  |             |
| LTE Band 41 |                   |             |                  |             |                  |                  |                  |             |                  |             |                  |             |
|             | Bandwidth 5 MHz   |             | Bandwidth 10 MHz |             | Bandwidth 15 MHz |                  | Bandwidth 20 MHz |             |                  |             |                  |             |
|             | Ch. #             | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz)      | Ch. #            | Freq. (MHz) |                  |             |                  |             |
| L           | 39675             | 2498.5      | 39700            | 2501        | 39725            | 2503.5           | 39750            | 2506        |                  |             |                  |             |
| L           | 40148             | 2545.8      | 40160            | 2547        | 40173            | 2548.3           | 40185            | 2549.5      |                  |             |                  |             |
| M           | 40620             | 2593        | 40620            | 2593        | 40620            | 2593             | 40620            | 2593        |                  |             |                  |             |
| H           | 41093             | 2640.3      | 41080            | 2639        | 41068            | 2637.8           | 41055            | 2636.5      |                  |             |                  |             |
| H           | 41565             | 2687.5      | 41540            | 2685        | 41515            | 2682.5           | 41490            | 2680        |                  |             |                  |             |
| LTE Band 66 |                   |             |                  |             |                  |                  |                  |             |                  |             |                  |             |
|             | Bandwidth 1.4 MHz |             | Bandwidth 3 MHz  |             | Bandwidth 5 MHz  |                  | Bandwidth 10 MHz |             | Bandwidth 15 MHz |             | Bandwidth 20 MHz |             |
|             | Ch. #             | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz)      | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) |
| L           | 131979            | 1710.7      | 131987           | 1711.5      | 131997           | 1712.5           | 132022           | 1715        | 132047           | 1717.5      | 132072           | 1720        |
| M           | 132322            | 1745        | 132322           | 1745        | 132322           | 1745             | 132322           | 1745        | 132322           | 1745        | 132322           | 1745        |
| H           | 132665            | 1779.3      | 132657           | 1778.5      | 132647           | 1777.5           | 132622           | 1775        | 132597           | 1772.5      | 132572           | 1770        |

## 5. RF Exposure Limits

### 5.1 Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

### 5.2 Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. The exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

**Limits for Occupational/Controlled Exposure (W/kg)**

| Whole-Body | Partial-Body | Hands, Wrists, Feet and Ankles |
|------------|--------------|--------------------------------|
| 0.4        | 8.0          | 20.0                           |

**Limits for General Population/Uncontrolled Exposure (W/kg)**

| Whole-Body | Partial-Body | Hands, Wrists, Feet and Ankles |
|------------|--------------|--------------------------------|
| 0.08       | 1.6          | 4.0                            |

1. Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

## **6. Specific Absorption Rate (SAR)**

### **6.1 Introduction**

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

### **6.2 SAR Definition**

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density ( $\rho$ ). The equation description is as below:

$$SAR = \frac{d}{dt} \left( \frac{dW}{dm} \right) = \frac{d}{dt} \left( \frac{dW}{\rho dv} \right)$$

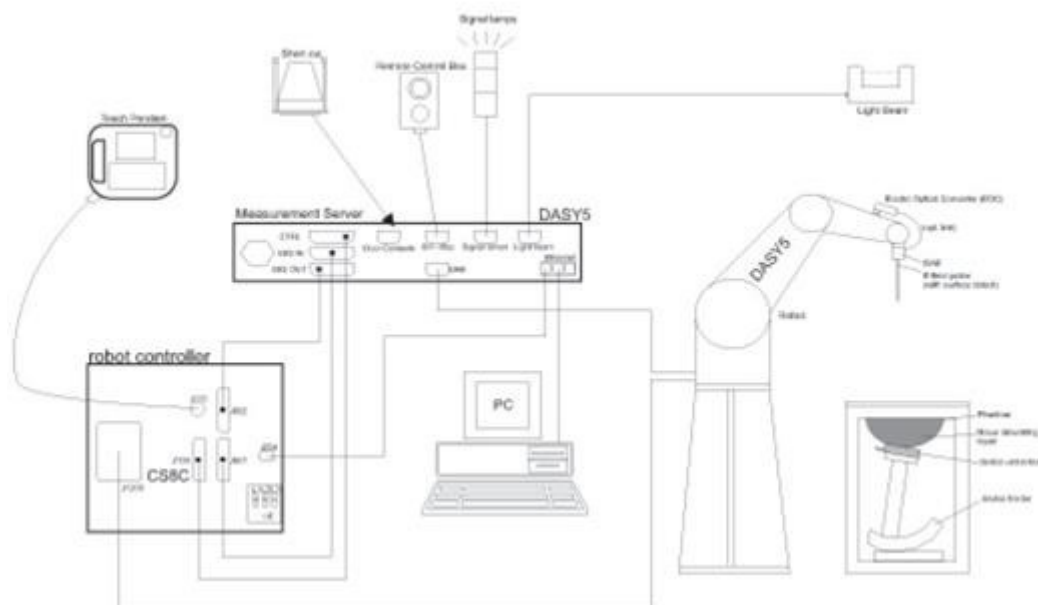
SAR is expressed in units of Watts per kilogram (W/kg)

$$SAR = \frac{\sigma |E|^2}{\rho}$$

Where:  $\sigma$  is the conductivity of the tissue,  $\rho$  is the mass density of the tissue and E is the RMS electrical field strength.

## 7. System Description and Setup

The DASY system used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP or Win7 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

## 7.1 E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG). The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

### <ES3DV3 Probe>

|                      |                                                                                                                                                                                  |                                                                                    |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| <b>Construction</b>  | Symmetric design with triangular core<br>Interleaved sensors<br>Built-in shielding against static charges<br>PEEK enclosure material (resistant to organic solvents, e.g., DGBE) |  |
| <b>Frequency</b>     | 10 MHz – 4 GHz;<br>Linearity: $\pm 0.2$ dB (30 MHz – 4 GHz)                                                                                                                      |                                                                                    |
| <b>Directivity</b>   | $\pm 0.2$ dB in TSL (rotation around probe axis)<br>$\pm 0.3$ dB in TSL (rotation normal to probe axis)                                                                          |                                                                                    |
| <b>Dynamic Range</b> | 5 $\mu$ W/g – >100 mW/g;<br>Linearity: $\pm 0.2$ dB                                                                                                                              |                                                                                    |
| <b>Dimensions</b>    | Overall length: 337 mm (tip: 20 mm)<br>Tip diameter: 3.9 mm (body: 12 mm)<br>Distance from probe tip to dipole centers: 3.0 mm                                                   |                                                                                    |

### <EX3DV4 Probe>

|                      |                                                                                                                                                           |                                                                                     |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Construction</b>  | Symmetric design with triangular core<br>Built-in shielding against static charges<br>PEEK enclosure material (resistant to organic solvents, e.g., DGBE) |  |
| <b>Frequency</b>     | 10 MHz – >6 GHz<br>Linearity: $\pm 0.2$ dB (30 MHz – 6 GHz)                                                                                               |                                                                                     |
| <b>Directivity</b>   | $\pm 0.3$ dB in TSL (rotation around probe axis)<br>$\pm 0.5$ dB in TSL (rotation normal to probe axis)                                                   |                                                                                     |
| <b>Dynamic Range</b> | 10 $\mu$ W/g – >100 mW/g<br>Linearity: $\pm 0.2$ dB (noise: typically <1 $\mu$ W/g)                                                                       |                                                                                     |
| <b>Dimensions</b>    | Overall length: 337 mm (tip: 20 mm)<br>Tip diameter: 2.5 mm (body: 12 mm)<br>Typical distance from probe tip to dipole centers: 1 mm                      |                                                                                     |

## 7.2 Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.

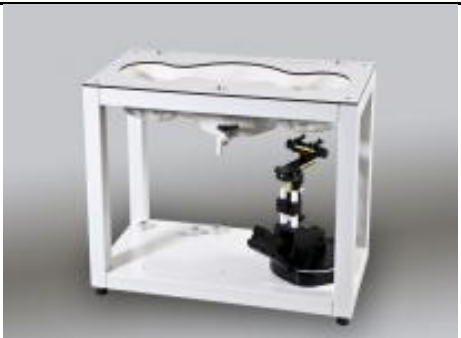
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.



**Fig 5.1 Photo of DAE**

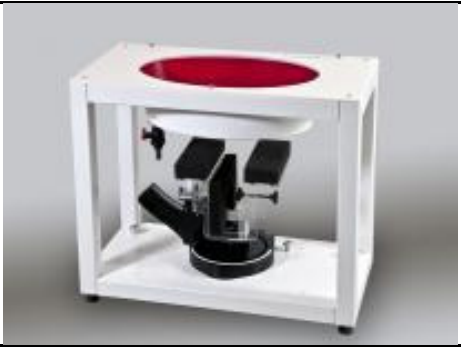
### 7.3 Phantom

#### <SAM Twin Phantom>

|                          |                                                         |                                                                                    |
|--------------------------|---------------------------------------------------------|------------------------------------------------------------------------------------|
| <b>Shell Thickness</b>   | 2 ± 0.2 mm;<br>Center ear point: 6 ± 0.2 mm             |  |
| <b>Filling Volume</b>    | Approx. 25 liters                                       |                                                                                    |
| <b>Dimensions</b>        | Length: 1000 mm; Width: 500 mm; Height: adjustable feet |                                                                                    |
| <b>Measurement Areas</b> | Left Hand, Right Hand, Flat Phantom                     |                                                                                    |

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

#### <ELI Phantom>

|                        |                                                  |                                                                                     |
|------------------------|--------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Shell Thickness</b> | 2 ± 0.2 mm (sagging: <1%)                        |  |
| <b>Filling Volume</b>  | Approx. 30 liters                                |                                                                                     |
| <b>Dimensions</b>      | Major ellipse axis: 600 mm<br>Minor axis: 400 mm |                                                                                     |

The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

## **7.4 Device Holder**

### **<Mounting Device for Hand-Held Transmitter>**

In combination with the Twin SAM V5.0/V5.0c or ELI phantoms, the Mounting Device for Hand-Held Transmitters enables rotation of the mounted transmitter device to specified spherical coordinates. At the heads, the rotation axis is at the ear opening. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC, or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat). And upgrade kit to Mounting Device to enable easy mounting of wider devices like big smart-phones, e-books, small tablets, etc. It holds devices with width up to 140 mm.



Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

### **<Mounting Device for Laptops and other Body-Worn Transmitters>**

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.



Mounting Device for Laptops

## **8. Measurement Procedures**

The measurement procedures are as follows:

### <Conducted power measurement>

- (a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
- (b) Read the WWAN RF power level from the base station simulator.
- (c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
- (d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

### <SAR measurement>

- (a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
- (b) Place the EUT in the positions as Exhibit 7C demonstrates.
- (c) Set scan area, grid size and other setting on the DASY software.
- (d) Measure SAR results for the highest power channel on each testing position.
- (e) Find out the largest SAR result on these testing positions of each band
- (f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

- (a) Power reference measurement
- (b) Area scan
- (c) Zoom scan
- (d) Power drift measurement

### **8.1 Spatial Peak SAR Evaluation**

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

- (a) Extraction of the measured data (grid and values) from the Zoom Scan
- (b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
- (c) Generation of a high-resolution mesh within the measured volume
- (d) Interpolation of all measured values from the measurement grid to the high-resolution grid
- (e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
- (f) Calculation of the averaged SAR within masses of 1g and 10g

## **8.2 Power Reference Measurement**

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

## **8.3 Area Scan**

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB0) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

Area scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

|                                                                                                        | $\leq 3$ GHz                                                                                                                                                                                                                                                           | $> 3$ GHz                                              |
|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface | $5 \pm 1$ mm                                                                                                                                                                                                                                                           | $\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm     |
| Maximum probe angle from probe axis to phantom surface normal at the measurement location              | $30^\circ \pm 1^\circ$                                                                                                                                                                                                                                                 | $20^\circ \pm 1^\circ$                                 |
| Maximum area scan spatial resolution: $\Delta x_{Area}$ , $\Delta y_{Area}$                            | $\leq 2$ GHz: $\leq 15$ mm<br>$2 - 3$ GHz: $\leq 12$ mm                                                                                                                                                                                                                | $3 - 4$ GHz: $\leq 12$ mm<br>$4 - 6$ GHz: $\leq 10$ mm |
|                                                                                                        | When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device. |                                                        |

### 8.4 Zoom Scan

Zoom scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

|                                                                                                                                                                                                                                                                                                             |                                           |                                                                                             | $\leq 3$ GHz                                         | $> 3$ GHz                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------------------|
| Maximum zoom scan spatial resolution: $\Delta x_{\text{Zoom}}, \Delta y_{\text{Zoom}}$                                                                                                                                                                                                                      |                                           |                                                                                             | $\leq 2$ GHz: $\leq 8$ mm<br>2 – 3 GHz: $\leq 5$ mm* | 3 – 4 GHz: $\leq 5$ mm*<br>4 – 6 GHz: $\leq 4$ mm*                            |
| Maximum zoom scan spatial resolution, normal to phantom surface                                                                                                                                                                                                                                             | uniform grid: $\Delta z_{\text{Zoom}}(n)$ |                                                                                             | $\leq 5$ mm                                          | 3 – 4 GHz: $\leq 4$ mm<br>4 – 5 GHz: $\leq 3$ mm<br>5 – 6 GHz: $\leq 2$ mm    |
|                                                                                                                                                                                                                                                                                                             | graded grid                               | $\Delta z_{\text{Zoom}}(1)$ : between 1 <sup>st</sup> two points closest to phantom surface | $\leq 4$ mm                                          | 3 – 4 GHz: $\leq 3$ mm<br>4 – 5 GHz: $\leq 2.5$ mm<br>5 – 6 GHz: $\leq 2$ mm  |
|                                                                                                                                                                                                                                                                                                             |                                           | $\Delta z_{\text{Zoom}}(n>1)$ : between subsequent points                                   | $\leq 1.5 \cdot \Delta z_{\text{Zoom}}(n-1)$         |                                                                               |
| Minimum zoom scan volume                                                                                                                                                                                                                                                                                    | x, y, z                                   |                                                                                             | $\geq 30$ mm                                         | 3 – 4 GHz: $\geq 28$ mm<br>4 – 5 GHz: $\geq 25$ mm<br>5 – 6 GHz: $\geq 22$ mm |
| Note: $\delta$ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.                                                                                                                                                           |                                           |                                                                                             |                                                      |                                                                               |
| * When zoom scan is required and the <i>reported</i> SAR from the <i>area scan based 1-g SAR estimation</i> procedures of KDB 447498 is $\leq 1.4$ W/kg, $\leq 8$ mm, $\leq 7$ mm and $\leq 5$ mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz. |                                           |                                                                                             |                                                      |                                                                               |

### 8.5 Volume Scan Procedures

The volume scan is used to assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

### 8.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.



## 9. Test Equipment List

| Manufacturer  | Name of Equipment               | Type/Model    | Serial Number  | Calibration   |               |
|---------------|---------------------------------|---------------|----------------|---------------|---------------|
|               |                                 |               |                | Last Cal.     | Due Date      |
| SPEAG         | 750MHz System Validation Kit    | D750V3        | 1012           | May. 18, 2016 | May. 17, 2017 |
| SPEAG         | 835MHz System Validation Kit    | D835V2        | 499            | Mar. 21, 2016 | Mar. 20, 2017 |
| SPEAG         | 1750MHz System Validation Kit   | D1750V2       | 1068           | Nov. 16, 2016 | Nov. 15, 2017 |
| SPEAG         | 1900MHz System Validation Kit   | D1900V2       | 5d041          | Sep. 30, 2016 | Sep. 29, 2017 |
| SPEAG         | 2300MHz System Validation Kit   | D2300V2       | 1006           | Jan. 25, 2017 | Jan. 24, 2018 |
| SPEAG         | 2450MHz System Validation Kit   | D2450V2       | 926            | Jul. 25, 2016 | Jul. 24, 2017 |
| SPEAG         | 2600MHz System Validation Kit   | D2600V2       | 1008           | Aug. 30, 2016 | Aug. 29, 2017 |
| SPEAG         | 5GHz System Validation Kit      | D5GHzV2       | 1006           | Sep. 27, 2016 | Sep. 26, 2017 |
| SPEAG         | Data Acquisition Electronics    | DAE4          | 778            | May. 12, 2016 | May. 11, 2017 |
| SPEAG         | Data Acquisition Electronics    | DAE3          | 495            | May. 27, 2016 | May. 26, 2017 |
| SPEAG         | Data Acquisition Electronics    | DAE4          | 1399           | Nov. 17, 2016 | Nov. 16, 2017 |
| SPEAG         | Data Acquisition Electronics    | DAE4          | 914            | Jan. 06, 2017 | Jan. 05, 2018 |
| SPEAG         | Data Acquisition Electronics    | DAE3          | 577            | Sep. 28, 2016 | Sep. 27, 2017 |
| SPEAG         | Dosimetric E-Field Probe        | ES3DV3        | 3270           | Aug. 26, 2016 | Aug. 25, 2017 |
| SPEAG         | Dosimetric E-Field Probe        | EX3DV4        | 3925           | May. 26, 2016 | May. 25, 2017 |
| SPEAG         | Dosimetric E-Field Probe        | EX3DV4        | 3955           | Nov. 24, 2016 | Nov. 23, 2017 |
| SPEAG         | Dosimetric E-Field Probe        | EX3DV4        | 3578           | May. 11, 2016 | May. 10, 2017 |
| SPEAG         | Dosimetric E-Field Probe        | EX3DV4        | 3931           | Oct. 03, 2016 | Oct. 02, 2017 |
| WonDer        | Thermometer                     | WD-5015       | TM642          | Oct. 12, 2016 | Oct. 11, 2017 |
| WonDer        | Thermometer                     | WD-5015       | TM281          | Oct. 12, 2016 | Oct. 11, 2017 |
| Wisewind      | Thermometer                     | HTC-1         | TM560          | Oct. 12, 2016 | Oct. 11, 2017 |
| Wisewind      | Thermometer                     | HTC-1         | TM225          | Oct. 12, 2016 | Oct. 11, 2017 |
| Anritsu       | Radio Communication Analyzer    | MT8820C       | 6200930978     | May. 03, 2016 | May. 02, 2017 |
| Anritsu       | Radio Communication Analyzer    | MT8820C       | 6201381760     | May. 10, 2016 | May. 09, 2017 |
| Agilent       | Wireless Communication Test Set | E5515C        | MY50266977     | May. 17, 2016 | May. 16, 2017 |
| R&S           | BT Base Station                 | CBT32         | 100519         | Jun. 03, 2016 | Jun. 02, 2017 |
| SPEAG         | Device Holder                   | N/A           | N/A            | N/A           | N/A           |
| Anritsu       | Signal Generator                | MG3710A       | 6201502524     | Dec. 09, 2016 | Dec. 08, 2017 |
| Agilent       | ENA Network Analyzer            | E5071C        | MY46316648     | Jan. 04, 2017 | Jan. 03, 2018 |
| SPEAG         | Dielectric Probe Kit            | DAK-3.5       | 1126           | Jul. 19, 2016 | Jul. 18, 2017 |
| LINE SEIKI    | Digital Thermometer             | LKMelectronic | DTM3000SPEZIAL | Sep. 05, 2016 | Sep. 04, 2017 |
| Anritsu       | Power Meter                     | ML2495A       | 1419002        | May. 10, 2016 | May. 09, 2017 |
| Anritsu       | Power Sensor                    | MA2411B       | 1339124        | May. 10, 2016 | May. 09, 2017 |
| Agilent       | Spectrum Analyzer               | E4408B        | MY44211028     | Aug. 22, 2016 | Aug. 21, 2017 |
| Mini-Circuits | Power Amplifier                 | ZVE-8G+       | D120604        | Mar. 20, 2016 | Mar. 19, 2017 |
| Mini-Circuits | Power Amplifier                 | ZHL-42W+      | QA1344002      | Mar. 20, 2016 | Mar. 19, 2017 |
| ATM           | Dual Directional Coupler        | C122H-10      | P610410z-02    | Note 1        |               |
| Woken         | Attenuator 1                    | WK0602-XX     | N/A            | Note 1        |               |
| PE            | Attenuator 2                    | PE7005-10     | N/A            | Note 1        |               |
| PE            | Attenuator 3                    | PE7005- 3     | N/A            | Note 1        |               |

### General Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.

## **10. System Verification**

### **10.1 Tissue Simulating Liquids**

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 10.1. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 10.2.

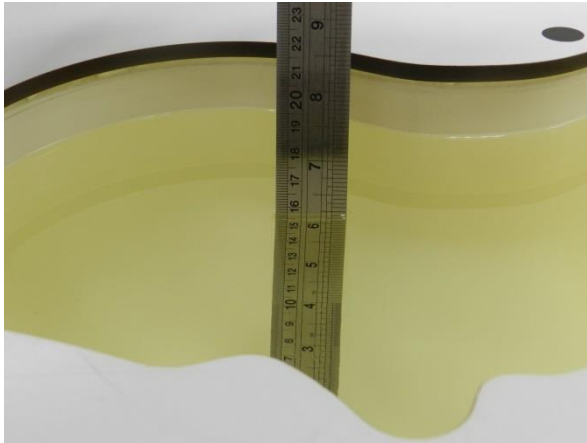


**Fig 10.1 Photo of Liquid Height for Head SAR**

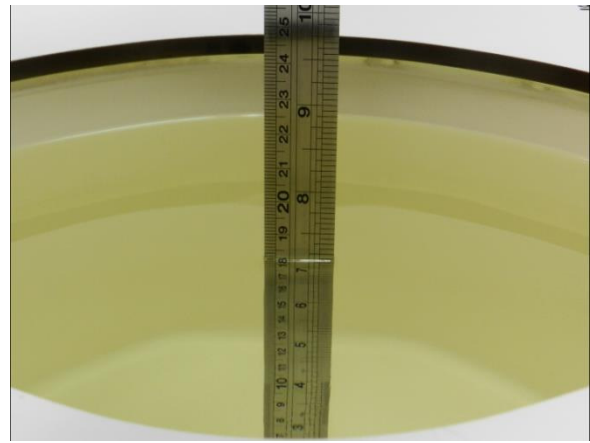


**Fig 10.2 Photo of Liquid Height for Body SAR**

## **10.2 Tissue Verification**

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

| Frequency (MHz)  | Water (%) | Sugar (%) | Cellulose (%) | Salt (%) | Preventol (%) | DGBE (%) | Conductivity ( $\sigma$ ) | Permittivity ( $\epsilon_r$ ) |
|------------------|-----------|-----------|---------------|----------|---------------|----------|---------------------------|-------------------------------|
| <b>For Head</b>  |           |           |               |          |               |          |                           |                               |
| 750              | 41.1      | 57.0      | 0.2           | 1.4      | 0.2           | 0        | 0.89                      | 41.9                          |
| 835              | 40.3      | 57.9      | 0.2           | 1.4      | 0.2           | 0        | 0.90                      | 41.5                          |
| 900              | 40.3      | 57.9      | 0.2           | 1.4      | 0.2           | 0        | 0.97                      | 41.5                          |
| 1800, 1900, 2000 | 55.2      | 0         | 0             | 0.3      | 0             | 44.5     | 1.40                      | 40.0                          |
| 2450             | 55.0      | 0         | 0             | 0        | 0             | 45.0     | 1.80                      | 39.2                          |
| 2600             | 54.8      | 0         | 0             | 0.1      | 0             | 45.1     | 1.96                      | 39.0                          |
| <b>For Body</b>  |           |           |               |          |               |          |                           |                               |
| 750              | 51.7      | 47.2      | 0             | 0.9      | 0.1           | 0        | 0.96                      | 55.5                          |
| 835              | 50.8      | 48.2      | 0             | 0.9      | 0.1           | 0        | 0.97                      | 55.2                          |
| 900              | 50.8      | 48.2      | 0             | 0.9      | 0.1           | 0        | 1.05                      | 55.0                          |
| 1800, 1900, 2000 | 70.2      | 0         | 0             | 0.4      | 0             | 29.4     | 1.52                      | 53.3                          |
| 2450             | 68.6      | 0         | 0             | 0        | 0             | 31.4     | 1.95                      | 52.7                          |
| 2600             | 68.1      | 0         | 0             | 0.1      | 0             | 31.8     | 2.16                      | 52.5                          |

### **Simulating Liquid for 5GHz, Manufactured by SPEAG**

| Ingredients        | (% by weight) |
|--------------------|---------------|
| Water              | 64~78%        |
| Mineral oil        | 11~18%        |
| Emulsifiers        | 9~15%         |
| Additives and Salt | 2~3%          |

**<Tissue Dielectric Parameter Check Results>**

| Frequency (MHz) | Tissue Type | Liquid Temp. (°C) | Conductivity ( $\sigma$ ) | Permittivity ( $\epsilon_r$ ) | Conductivity Target ( $\sigma$ ) | Permittivity Target ( $\epsilon_r$ ) | Delta ( $\sigma$ ) (%) | Delta ( $\epsilon_r$ ) (%) | Limit (%) | Date      |
|-----------------|-------------|-------------------|---------------------------|-------------------------------|----------------------------------|--------------------------------------|------------------------|----------------------------|-----------|-----------|
| 750             | HSL         | 22.6              | 0.884                     | 43.451                        | 0.89                             | 41.90                                | -0.67                  | 3.70                       | ±5        | 2017/2/22 |
| 750             | MSL         | 22.7              | 0.969                     | 53.070                        | 0.96                             | 55.50                                | 0.94                   | -4.38                      | ±5        | 2017/3/4  |
| 835             | HSL         | 22.4              | 0.886                     | 43.265                        | 0.90                             | 41.50                                | -1.56                  | 4.25                       | ±5        | 2017/2/19 |
| 835             | HSL         | 22.5              | 0.900                     | 42.550                        | 0.90                             | 41.50                                | 0.00                   | 2.53                       | ±5        | 2017/3/16 |
| 835             | MSL         | 22.2              | 0.983                     | 53.989                        | 0.97                             | 55.20                                | 1.34                   | -2.19                      | ±5        | 2017/3/2  |
| 835             | MSL         | 22.2              | 0.983                     | 53.989                        | 0.97                             | 55.20                                | 1.34                   | -2.19                      | ±5        | 2017/3/2  |
| 835             | MSL         | 22.4              | 0.976                     | 54.101                        | 0.97                             | 55.20                                | 0.62                   | -1.99                      | ±5        | 2017/3/3  |
| 835             | MSL         | 22.5              | 1.015                     | 53.537                        | 0.97                             | 55.20                                | 4.64                   | -3.01                      | ±5        | 2017/3/9  |
| 835             | MSL         | 22.5              | 0.947                     | 54.756                        | 0.97                             | 55.20                                | -2.37                  | -0.80                      | ±5        | 2017/3/16 |
| 1750            | HSL         | 22.4              | 1.370                     | 38.672                        | 1.37                             | 40.10                                | 0.00                   | -3.56                      | ±5        | 2017/3/3  |
| 1750            | HSL         | 22.3              | 1.364                     | 38.512                        | 1.37                             | 40.10                                | -0.44                  | -3.96                      | ±5        | 2017/3/8  |
| 1750            | MSL         | 22.6              | 1.452                     | 53.550                        | 1.49                             | 53.40                                | -2.55                  | 0.28                       | ±5        | 2017/2/28 |
| 1750            | MSL         | 22.7              | 1.503                     | 55.178                        | 1.49                             | 53.40                                | 0.87                   | 3.33                       | ±5        | 2017/3/6  |
| 1900            | HSL         | 22.3              | 1.418                     | 40.270                        | 1.40                             | 40.00                                | 1.29                   | 0.68                       | ±5        | 2017/2/24 |
| 1900            | HSL         | 22.6              | 1.388                     | 39.981                        | 1.40                             | 40.00                                | -0.86                  | -0.05                      | ±5        | 2017/3/9  |
| 1900            | MSL         | 22.4              | 1.572                     | 55.371                        | 1.52                             | 53.30                                | 3.42                   | 3.89                       | ±5        | 2017/2/26 |
| 1900            | MSL         | 22.6              | 1.532                     | 51.624                        | 1.52                             | 53.30                                | 0.79                   | -3.14                      | ±5        | 2017/2/27 |
| 1900            | MSL         | 22.7              | 1.519                     | 52.969                        | 1.52                             | 53.30                                | -0.07                  | -0.62                      | ±5        | 2017/3/5  |
| 2300            | HSL         | 22.1              | 1.646                     | 41.078                        | 1.67                             | 39.50                                | -1.44                  | 3.99                       | ±5        | 2017/3/8  |
| 2300            | MSL         | 22.1              | 1.820                     | 52.941                        | 1.81                             | 52.90                                | 0.55                   | 0.08                       | ±5        | 2017/3/8  |
| 2450            | HSL         | 22.3              | 1.820                     | 40.500                        | 1.80                             | 39.20                                | 1.11                   | 3.32                       | ±5        | 2017/3/8  |
| 2450            | MSL         | 22.2              | 1.980                     | 54.100                        | 1.95                             | 52.70                                | 1.54                   | 2.66                       | ±5        | 2017/3/9  |
| 2600            | HSL         | 22.8              | 1.945                     | 38.628                        | 1.96                             | 39.00                                | -0.77                  | -0.95                      | ±5        | 2017/2/18 |
| 2600            | HSL         | 22.5              | 2.044                     | 37.752                        | 1.96                             | 39.00                                | 4.29                   | -3.20                      | ±5        | 2017/3/4  |
| 2600            | HSL         | 22.1              | 1.994                     | 39.923                        | 1.96                             | 39.00                                | 1.73                   | 2.37                       | ±5        | 2017/3/8  |
| 2600            | MSL         | 22.1              | 2.233                     | 51.922                        | 2.16                             | 52.50                                | 3.38                   | -1.10                      | ±5        | 2017/3/7  |
| 2600            | MSL         | 22.1              | 2.232                     | 52.761                        | 2.16                             | 52.50                                | 3.33                   | 0.50                       | ±5        | 2017/3/8  |
| 5250            | HSL         | 22.7              | 4.680                     | 37.300                        | 4.71                             | 35.95                                | -0.64                  | 3.76                       | ±5        | 2017/3/6  |
| 5250            | MSL         | 22.7              | 5.530                     | 47.600                        | 5.36                             | 48.95                                | 3.17                   | -2.76                      | ±5        | 2017/3/4  |
| 5250            | MSL         | 22.1              | 5.500                     | 46.800                        | 5.36                             | 48.95                                | 2.61                   | -4.39                      | ±5        | 2017/3/8  |
| 5600            | HSL         | 22.7              | 5.030                     | 36.800                        | 5.07                             | 35.50                                | -0.79                  | 3.66                       | ±5        | 2017/3/6  |
| 5600            | MSL         | 22.7              | 6.000                     | 47.000                        | 5.77                             | 48.50                                | 3.99                   | -3.09                      | ±5        | 2017/3/4  |
| 5600            | MSL         | 22.1              | 5.960                     | 46.200                        | 5.77                             | 48.50                                | 3.29                   | -4.74                      | ±5        | 2017/3/8  |
| 5750            | HSL         | 22.7              | 5.190                     | 36.600                        | 5.22                             | 35.35                                | -0.57                  | 3.54                       | ±5        | 2017/3/6  |
| 5750            | MSL         | 22.2              | 6.170                     | 45.900                        | 5.94                             | 48.28                                | 3.87                   | -4.93                      | ±5        | 2017/3/10 |



**<Tissue Dielectric Parameter Check for Low / Middle / High Frequencies>**

**General Note:**

The tissue measure results for low / middle / high frequencies list below, the results were used in the Dasy SAR system to perform interpolation to determine the dielectric parameters on the SAR test device. The SAR test plots may slightly difference between the tables below due to the digit rounding in the software calculated.

| CH    | Frequency (MHz) | Liquid Type | Conductivity ( $\sigma$ ) | Permittivity ( $\epsilon_r$ ) | Conductivity Target ( $\sigma$ ) | Permittivity Target ( $\epsilon_r$ ) | Delta ( $\sigma$ ) (%) | Delta ( $\epsilon_r$ ) (%) | Limit (%) | Date          |
|-------|-----------------|-------------|---------------------------|-------------------------------|----------------------------------|--------------------------------------|------------------------|----------------------------|-----------|---------------|
| 20850 | 2510            | Head        | 1.844                     | 38.942                        | 1.864                            | 39.120                               | -0.86                  | -0.41                      | ±5        | Feb. 18, 2017 |
| 21100 | 2535            | Head        | 1.879                     | 38.867                        | 1.891                            | 39.087                               | -0.57                  | -0.60                      | ±5        | Feb. 18, 2017 |
| 21350 | 2560            | Head        | 1.901                     | 38.814                        | 1.917                            | 39.053                               | -0.97                  | -0.73                      | ±5        | Feb. 18, 2017 |
| 20450 | 829             | Head        | 0.881                     | 43.333                        | 0.899                            | 41.528                               | -2.10                  | 4.42                       | ±5        | Feb. 19, 2017 |
| 20525 | 836.5           | Head        | 0.888                     | 43.245                        | 0.902                            | 41.500                               | -1.38                  | 4.20                       | ±5        | Feb. 19, 2017 |
| 20600 | 844             | Head        | 0.895                     | 43.162                        | 0.910                            | 41.500                               | -1.69                  | 4.00                       | ±5        | Feb. 19, 2017 |
| 26765 | 821.5           | Head        | 0.875                     | 43.422                        | 0.898                            | 41.564                               | -2.83                  | 4.38                       | ±5        | Feb. 19, 2017 |
| 26865 | 831.5           | Head        | 0.883                     | 43.304                        | 0.900                            | 41.516                               | -1.86                  | 4.35                       | ±5        | Feb. 19, 2017 |
| 26965 | 841.5           | Head        | 0.892                     | 43.190                        | 0.907                            | 41.500                               | -1.94                  | 4.07                       | ±5        | Feb. 19, 2017 |
| 128   | 824.2           | Head        | 0.891                     | 42.688                        | 0.899                            | 41.551                               | -1.05                  | 2.62                       | ±5        | Mar. 16, 2017 |
| 189   | 836.4           | Head        | 0.902                     | 42.531                        | 0.902                            | 41.500                               | 0.19                   | 2.48                       | ±5        | Mar. 16, 2017 |
| 251   | 848.8           | Head        | 0.914                     | 42.368                        | 0.915                            | 41.500                               | 0.40                   | 2.09                       | ±5        | Mar. 16, 2017 |
| 4132  | 826.4           | Head        | 0.879                     | 43.365                        | 0.899                            | 41.540                               | -2.36                  | 4.49                       | ±5        | Feb. 19, 2017 |
| 4182  | 836.4           | Head        | 0.887                     | 43.246                        | 0.902                            | 41.500                               | -1.40                  | 4.21                       | ±5        | Feb. 19, 2017 |
| 4233  | 846.6           | Head        | 0.897                     | 43.134                        | 0.912                            | 41.500                               | -1.42                  | 3.94                       | ±5        | Feb. 19, 2017 |
| 476   | 817.9           | Head        | 0.871                     | 43.467                        | 0.898                            | 41.580                               | -3.20                  | 4.49                       | ±5        | Feb. 19, 2017 |
| 580   | 820.5           | Head        | 0.874                     | 43.432                        | 0.898                            | 41.568                               | -2.92                  | 4.40                       | ±5        | Feb. 19, 2017 |
| 670   | 822.75          | Head        | 0.876                     | 43.401                        | 0.899                            | 41.556                               | -2.67                  | 4.33                       | ±5        | Feb. 19, 2017 |
| 1013  | 824.7           | Head        | 0.877                     | 43.384                        | 0.899                            | 41.548                               | -2.51                  | 4.54                       | ±5        | Feb. 19, 2017 |
| 384   | 836.52          | Head        | 0.888                     | 43.245                        | 0.902                            | 41.500                               | -1.38                  | 4.20                       | ±5        | Feb. 19, 2017 |
| 777   | 848.31          | Head        | 0.899                     | 43.117                        | 0.914                            | 41.500                               | -1.25                  | 3.90                       | ±5        | Feb. 19, 2017 |
| 23060 | 704             | Head        | 0.850                     | 44.066                        | 0.887                            | 42.145                               | -4.50                  | 4.67                       | ±5        | Feb. 22, 2017 |
| 23095 | 707.5           | Head        | 0.853                     | 44.020                        | 0.887                            | 42.127                               | -4.14                  | 4.56                       | ±5        | Feb. 22, 2017 |
| 23130 | 711             | Head        | 0.852                     | 43.976                        | 0.887                            | 42.108                               | -4.22                  | 4.45                       | ±5        | Feb. 22, 2017 |
| 23230 | 782             | Head        | 0.916                     | 43.021                        | 0.894                            | 42.145                               | 2.91                   | 2.19                       | ±5        | Feb. 22, 2017 |
| 23780 | 709             | Head        | 0.855                     | 44.002                        | 0.887                            | 42.119                               | -3.99                  | 4.52                       | ±5        | Feb. 22, 2017 |
| 23790 | 710             | Head        | 0.855                     | 43.989                        | 0.887                            | 42.113                               | -3.90                  | 4.49                       | ±5        | Feb. 22, 2017 |
| 23800 | 711             | Head        | 0.852                     | 43.976                        | 0.887                            | 42.108                               | -4.22                  | 4.45                       | ±5        | Feb. 22, 2017 |
| 18700 | 1860            | Head        | 1.379                     | 40.443                        | 1.400                            | 40.000                               | -1.52                  | 1.11                       | ±5        | Feb. 24, 2017 |
| 18900 | 1880            | Head        | 1.398                     | 40.365                        | 1.400                            | 40.000                               | -0.17                  | 0.91                       | ±5        | Feb. 24, 2017 |
| 19100 | 1900            | Head        | 1.418                     | 40.270                        | 1.400                            | 40.000                               | 1.30                   | 0.67                       | ±5        | Feb. 24, 2017 |
| 26140 | 1860            | Head        | 1.379                     | 40.443                        | 1.400                            | 40.000                               | -1.52                  | 1.11                       | ±5        | Feb. 24, 2017 |
| 26340 | 1880            | Head        | 1.398                     | 40.365                        | 1.400                            | 40.000                               | -0.17                  | 0.91                       | ±5        | Feb. 24, 2017 |
| 26590 | 1905            | Head        | 1.423                     | 40.251                        | 1.400                            | 40.000                               | 1.66                   | 0.63                       | ±5        | Feb. 24, 2017 |
| 9262  | 1852.4          | Head        | 1.371                     | 40.460                        | 1.400                            | 40.000                               | -2.07                  | 1.15                       | ±5        | Feb. 24, 2017 |
| 9400  | 1880            | Head        | 1.398                     | 40.360                        | 1.400                            | 40.000                               | -0.14                  | 0.90                       | ±5        | Feb. 24, 2017 |
| 9538  | 1907.6          | Head        | 1.426                     | 40.240                        | 1.400                            | 40.000                               | 1.86                   | 0.60                       | ±5        | Feb. 24, 2017 |
| 18700 | 1860            | Body        | 1.524                     | 55.544                        | 1.520                            | 53.300                               | 0.28                   | 4.21                       | ±5        | Feb. 26, 2017 |
| 18900 | 1880            | Body        | 1.547                     | 55.462                        | 1.520                            | 53.300                               | 1.79                   | 4.06                       | ±5        | Feb. 26, 2017 |
| 19100 | 1900            | Body        | 1.572                     | 55.371                        | 1.520                            | 53.300                               | 3.40                   | 3.89                       | ±5        | Feb. 26, 2017 |
| 26140 | 1860            | Body        | 1.524                     | 55.544                        | 1.520                            | 53.300                               | 0.28                   | 4.21                       | ±5        | Feb. 26, 2017 |
| 26340 | 1880            | Body        | 1.547                     | 55.462                        | 1.520                            | 53.300                               | 1.79                   | 4.06                       | ±5        | Feb. 26, 2017 |
| 26590 | 1905            | Body        | 1.577                     | 55.351                        | 1.520                            | 53.300                               | 3.78                   | 3.85                       | ±5        | Feb. 26, 2017 |

**Table of Low/Middle/High Channel for Liquid Validation**



| CH     | Frequency (MHz) | Liquid Type | Conductivity ( $\sigma$ ) | Permittivity ( $\epsilon_r$ ) | Conductivity Target ( $\sigma$ ) | Permittivity Target ( $\epsilon_r$ ) | Delta ( $\sigma$ ) (%) | Delta ( $\epsilon_r$ ) (%) | Limit (%) | Date          |
|--------|-----------------|-------------|---------------------------|-------------------------------|----------------------------------|--------------------------------------|------------------------|----------------------------|-----------|---------------|
| 25     | 1851.25         | Body        | 1.482                     | 51.814                        | 1.520                            | 53.300                               | -2.52                  | -2.79                      | $\pm 5$   | Feb. 27, 2017 |
| 600    | 1880            | Body        | 1.510                     | 51.705                        | 1.520                            | 53.300                               | -0.67                  | -2.99                      | $\pm 5$   | Feb. 27, 2017 |
| 1175   | 1908.75         | Body        | 1.540                     | 51.585                        | 1.520                            | 53.300                               | 1.34                   | -3.22                      | $\pm 5$   | Feb. 27, 2017 |
| 9262   | 1852.4          | Body        | 1.483                     | 51.809                        | 1.520                            | 53.300                               | -2.43                  | -2.80                      | $\pm 5$   | Feb. 27, 2017 |
| 9400   | 1880            | Body        | 1.510                     | 51.705                        | 1.520                            | 53.300                               | -0.67                  | -2.99                      | $\pm 5$   | Feb. 27, 2017 |
| 9538   | 1907.6          | Body        | 1.539                     | 51.589                        | 1.520                            | 53.300                               | 1.26                   | -3.21                      | $\pm 5$   | Feb. 27, 2017 |
| 18700  | 1860            | Body        | 1.490                     | 51.787                        | 1.520                            | 53.300                               | -1.96                  | -2.84                      | $\pm 5$   | Feb. 27, 2017 |
| 18900  | 1880            | Body        | 1.510                     | 51.705                        | 1.520                            | 53.300                               | -0.67                  | -2.99                      | $\pm 5$   | Feb. 27, 2017 |
| 19100  | 1900            | Body        | 1.532                     | 51.624                        | 1.520                            | 53.300                               | 0.76                   | -3.14                      | $\pm 5$   | Feb. 27, 2017 |
| 26140  | 1860            | Body        | 1.490                     | 51.787                        | 1.520                            | 53.300                               | -1.96                  | -2.84                      | $\pm 5$   | Feb. 27, 2017 |
| 26340  | 1880            | Body        | 1.510                     | 51.705                        | 1.520                            | 53.300                               | -0.67                  | -2.99                      | $\pm 5$   | Feb. 27, 2017 |
| 26590  | 1905            | Body        | 1.536                     | 51.599                        | 1.520                            | 53.300                               | 1.08                   | -3.19                      | $\pm 5$   | Feb. 27, 2017 |
| 132072 | 1720            | Body        | 1.422                     | 53.634                        | 1.470                            | 53.496                               | -3.28                  | 0.25                       | $\pm 5$   | Feb. 28, 2017 |
| 132322 | 1745            | Body        | 1.447                     | 53.566                        | 1.485                            | 53.420                               | -2.87                  | 0.31                       | $\pm 5$   | Feb. 28, 2017 |
| 132572 | 1770            | Body        | 1.471                     | 53.481                        | 1.501                            | 53.355                               | -1.96                  | 0.15                       | $\pm 5$   | Feb. 28, 2017 |
| 1312   | 1712.4          | Body        | 1.414                     | 53.658                        | 1.471                            | 53.471                               | -3.84                  | 0.29                       | $\pm 5$   | Feb. 28, 2017 |
| 1413   | 1732.6          | Body        | 1.435                     | 53.599                        | 1.481                            | 53.433                               | -3.04                  | 0.37                       | $\pm 5$   | Feb. 28, 2017 |
| 1513   | 1752.6          | Body        | 1.455                     | 53.544                        | 1.492                            | 53.395                               | -2.37                  | 0.27                       | $\pm 5$   | Feb. 28, 2017 |
| 20450  | 829             | Body        | 0.977                     | 54.067                        | 0.969                            | 55.221                               | 0.77                   | -2.05                      | $\pm 5$   | Mar. 02, 2017 |
| 20525  | 836.5           | Body        | 0.985                     | 53.971                        | 0.972                            | 55.195                               | 1.54                   | -2.23                      | $\pm 5$   | Mar. 02, 2017 |
| 20600  | 844             | Body        | 0.993                     | 53.880                        | 0.981                            | 55.172                               | 1.29                   | -2.39                      | $\pm 5$   | Mar. 02, 2017 |
| 128    | 824.2           | Body        | 0.936                     | 54.870                        | 0.969                            | 55.238                               | -3.49                  | -0.60                      | $\pm 5$   | Mar. 16, 2017 |
| 189    | 836.4           | Body        | 0.948                     | 54.740                        | 0.972                            | 55.196                               | -2.27                  | -0.83                      | $\pm 5$   | Mar. 16, 2017 |
| 251    | 848.8           | Body        | 0.961                     | 54.604                        | 0.987                            | 55.158                               | -2.96                  | -1.08                      | $\pm 5$   | Mar. 16, 2017 |
| 1013   | 824.7           | Body        | 0.974                     | 54.111                        | 0.969                            | 55.236                               | 0.37                   | -1.97                      | $\pm 5$   | Mar. 02, 2017 |
| 384    | 836.52          | Body        | 0.985                     | 53.971                        | 0.972                            | 55.195                               | 1.54                   | -2.23                      | $\pm 5$   | Mar. 02, 2017 |
| 777    | 848.31          | Body        | 0.997                     | 53.833                        | 0.986                            | 55.159                               | 0.74                   | -2.48                      | $\pm 5$   | Mar. 02, 2017 |
| 26765  | 821.5           | Body        | 0.970                     | 54.149                        | 0.968                            | 55.248                               | 0.04                   | -1.90                      | $\pm 5$   | Mar. 02, 2017 |
| 26865  | 831.5           | Body        | 0.980                     | 54.033                        | 0.970                            | 55.212                               | 1.03                   | -2.11                      | $\pm 5$   | Mar. 02, 2017 |
| 26965  | 841.5           | Body        | 0.990                     | 53.906                        | 0.978                            | 55.180                               | 1.01                   | -2.34                      | $\pm 5$   | Mar. 02, 2017 |
| 26865  | 831.5           | Body        | 0.980                     | 54.033                        | 0.968                            | 55.248                               | 1.03                   | -2.11                      | $\pm 5$   | Mar. 02, 2017 |
| 26915  | 836.5           | Body        | 0.985                     | 53.971                        | 0.970                            | 55.212                               | 1.54                   | -2.23                      | $\pm 5$   | Mar. 02, 2017 |
| 26965  | 841.5           | Body        | 0.990                     | 53.906                        | 0.978                            | 55.180                               | 1.01                   | -2.34                      | $\pm 5$   | Mar. 02, 2017 |
| 1312   | 1712.4          | Head        | 1.335                     | 38.832                        | 1.352                            | 40.162                               | -1.12                  | -3.40                      | $\pm 5$   | Mar. 03, 2017 |
| 1413   | 1732.6          | Head        | 1.353                     | 38.743                        | 1.362                            | 40.129                               | -0.49                  | -3.38                      | $\pm 5$   | Mar. 03, 2017 |
| 1513   | 1752.6          | Head        | 1.372                     | 38.664                        | 1.372                            | 40.095                               | 0.14                   | -3.58                      | $\pm 5$   | Mar. 03, 2017 |
| 4132   | 826.4           | Body        | 0.968                     | 54.194                        | 0.969                            | 55.230                               | -0.22                  | -1.82                      | $\pm 5$   | Mar. 03, 2017 |
| 4182   | 836.4           | Body        | 0.978                     | 54.086                        | 0.972                            | 55.196                               | 0.80                   | -2.02                      | $\pm 5$   | Mar. 03, 2017 |
| 4233   | 846.6           | Body        | 0.988                     | 53.984                        | 0.984                            | 55.164                               | 0.77                   | -2.20                      | $\pm 5$   | Mar. 03, 2017 |
| 476    | 817.9           | Body        | 0.959                     | 54.269                        | 0.968                            | 55.260                               | -1.17                  | -1.86                      | $\pm 5$   | Mar. 03, 2017 |
| 580    | 820.5           | Body        | 0.961                     | 54.247                        | 0.968                            | 55.251                               | -0.91                  | -1.90                      | $\pm 5$   | Mar. 03, 2017 |
| 670    | 822.75          | Body        | 0.964                     | 54.226                        | 0.969                            | 55.242                               | -0.60                  | -1.76                      | $\pm 5$   | Mar. 03, 2017 |
| 23780  | 709             | Body        | 0.929                     | 53.583                        | 0.957                            | 55.664                               | -3.22                  | -3.80                      | $\pm 5$   | Mar. 04, 2017 |
| 23790  | 710             | Body        | 0.930                     | 53.572                        | 0.957                            | 55.660                               | -3.12                  | -3.82                      | $\pm 5$   | Mar. 04, 2017 |
| 23800  | 711             | Body        | 0.931                     | 53.555                        | 0.957                            | 55.656                               | -3.02                  | -3.85                      | $\pm 5$   | Mar. 04, 2017 |
| 23230  | 782             | Body        | 1.002                     | 52.678                        | 0.964                            | 55.390                               | 4.33                   | -4.91                      | $\pm 5$   | Mar. 04, 2017 |
| 23060  | 704             | Body        | 0.924                     | 53.637                        | 0.957                            | 55.684                               | -3.71                  | -3.70                      | $\pm 5$   | Mar. 04, 2017 |
| 23095  | 707.5           | Body        | 0.928                     | 53.599                        | 0.957                            | 55.670                               | -3.37                  | -3.77                      | $\pm 5$   | Mar. 04, 2017 |

**Table of Low/Middle/High Channel for Liquid Validation**



| CH    | Frequency (MHz) | Liquid Type | Conductivity ( $\sigma$ ) | Permittivity ( $\epsilon_r$ ) | Conductivity Target ( $\sigma$ ) | Permittivity Target ( $\epsilon_r$ ) | Delta ( $\sigma$ ) (%) | Delta ( $\epsilon_r$ ) (%) | Limit (%) | Date          |
|-------|-----------------|-------------|---------------------------|-------------------------------|----------------------------------|--------------------------------------|------------------------|----------------------------|-----------|---------------|
| 23130 | 711             | Body        | 0.931                     | 53.555                        | 0.957                            | 55.656                               | -3.02                  | -3.85                      | $\pm 5$   | Mar. 04, 2017 |
| 20850 | 2510            | Head        | 1.934                     | 38.092                        | 1.864                            | 39.120                               | 3.99                   | -2.58                      | $\pm 5$   | Mar. 04, 2017 |
| 21100 | 2535            | Head        | 1.964                     | 37.999                        | 1.891                            | 39.087                               | 3.93                   | -2.82                      | $\pm 5$   | Mar. 04, 2017 |
| 21350 | 2560            | Head        | 1.994                     | 37.901                        | 1.917                            | 39.053                               | 3.85                   | -3.07                      | $\pm 5$   | Mar. 04, 2017 |
| 37850 | 2580            | Head        | 2.019                     | 37.821                        | 1.938                            | 39.025                               | 4.08                   | -3.02                      | $\pm 5$   | Mar. 04, 2017 |
| 38000 | 2595            | Head        | 2.037                     | 37.768                        | 1.955                            | 39.006                               | 4.47                   | -3.16                      | $\pm 5$   | Mar. 04, 2017 |
| 38150 | 2610            | Head        | 2.055                     | 37.714                        | 1.971                            | 38.987                               | 4.31                   | -3.30                      | $\pm 5$   | Mar. 04, 2017 |
| 39790 | 2510            | Head        | 1.934                     | 38.092                        | 1.861                            | 39.117                               | 3.99                   | -2.58                      | $\pm 5$   | Mar. 04, 2017 |
| 39750 | 2506            | Head        | 1.929                     | 38.109                        | 1.857                            | 39.123                               | 3.74                   | -2.53                      | $\pm 5$   | Mar. 04, 2017 |
| 40185 | 2549.5          | Head        | 1.981                     | 37.947                        | 1.904                            | 39.065                               | 4.29                   | -2.95                      | $\pm 5$   | Mar. 04, 2017 |
| 40620 | 2593            | Head        | 2.035                     | 37.775                        | 1.952                            | 39.009                               | 4.35                   | -3.14                      | $\pm 5$   | Mar. 04, 2017 |
| 41055 | 2636.5          | Head        | 2.088                     | 37.599                        | 2.000                            | 38.954                               | 4.38                   | -3.59                      | $\pm 5$   | Mar. 04, 2017 |
| 41490 | 2680            | Head        | 2.138                     | 37.431                        | 2.048                            | 38.899                               | 4.28                   | -3.78                      | $\pm 5$   | Mar. 04, 2017 |
| 36    | 5180            | Body        | 5.445                     | 47.717                        | 5.276                            | 49.027                               | 3.13                   | -2.62                      | $\pm 5$   | Mar. 04, 2017 |
| 38    | 5190            | Body        | 5.457                     | 47.703                        | 5.288                            | 49.013                               | 3.15                   | -2.65                      | $\pm 5$   | Mar. 04, 2017 |
| 40    | 5200            | Body        | 5.467                     | 47.683                        | 5.300                            | 49.000                               | 3.16                   | -2.69                      | $\pm 5$   | Mar. 04, 2017 |
| 42    | 5210            | Body        | 5.482                     | 47.662                        | 5.312                            | 48.990                               | 3.24                   | -2.73                      | $\pm 5$   | Mar. 04, 2017 |
| 44    | 5220            | Body        | 5.496                     | 47.642                        | 5.323                            | 48.980                               | 3.32                   | -2.77                      | $\pm 5$   | Mar. 04, 2017 |
| 46    | 5230            | Body        | 5.513                     | 47.625                        | 5.335                            | 48.970                               | 3.43                   | -2.81                      | $\pm 5$   | Mar. 04, 2017 |
| 48    | 5240            | Body        | 5.525                     | 47.621                        | 5.346                            | 48.960                               | 3.28                   | -2.82                      | $\pm 5$   | Mar. 04, 2017 |
| 52    | 5260            | Body        | 5.545                     | 47.579                        | 5.370                            | 48.940                               | 3.27                   | -2.70                      | $\pm 5$   | Mar. 04, 2017 |
| 54    | 5270            | Body        | 5.562                     | 47.552                        | 5.381                            | 48.930                               | 3.38                   | -2.76                      | $\pm 5$   | Mar. 04, 2017 |
| 56    | 5280            | Body        | 5.578                     | 47.537                        | 5.393                            | 48.920                               | 3.48                   | -2.79                      | $\pm 5$   | Mar. 04, 2017 |
| 58    | 5290            | Body        | 5.591                     | 47.528                        | 5.404                            | 48.910                               | 3.54                   | -2.81                      | $\pm 5$   | Mar. 04, 2017 |
| 60    | 5300            | Body        | 5.601                     | 47.511                        | 5.416                            | 48.900                               | 3.33                   | -2.84                      | $\pm 5$   | Mar. 04, 2017 |
| 62    | 5310            | Body        | 5.613                     | 47.490                        | 5.428                            | 48.787                               | 3.38                   | -2.68                      | $\pm 5$   | Mar. 04, 2017 |
| 64    | 5320            | Body        | 5.627                     | 47.471                        | 5.439                            | 48.673                               | 3.44                   | -2.52                      | $\pm 5$   | Mar. 04, 2017 |
| 100   | 5500            | Body        | 5.865                     | 47.173                        | 5.650                            | 48.600                               | 3.80                   | -2.94                      | $\pm 5$   | Mar. 04, 2017 |
| 102   | 5510            | Body        | 5.878                     | 47.161                        | 5.661                            | 48.590                               | 3.85                   | -2.96                      | $\pm 5$   | Mar. 04, 2017 |
| 104   | 5520            | Body        | 5.889                     | 47.142                        | 5.673                            | 48.580                               | 3.86                   | -3.00                      | $\pm 5$   | Mar. 04, 2017 |
| 106   | 5530            | Body        | 5.904                     | 47.122                        | 5.685                            | 48.570                               | 3.94                   | -3.04                      | $\pm 5$   | Mar. 04, 2017 |
| 108   | 5540            | Body        | 5.918                     | 47.103                        | 5.696                            | 48.560                               | 3.83                   | -3.08                      | $\pm 5$   | Mar. 04, 2017 |
| 110   | 5550            | Body        | 5.935                     | 47.086                        | 5.708                            | 48.550                               | 3.94                   | -3.12                      | $\pm 5$   | Mar. 04, 2017 |
| 112   | 5560            | Body        | 5.948                     | 47.077                        | 5.720                            | 48.540                               | 3.99                   | -2.93                      | $\pm 5$   | Mar. 04, 2017 |
| 116   | 5580            | Body        | 5.972                     | 47.037                        | 5.743                            | 48.520                               | 4.04                   | -3.02                      | $\pm 5$   | Mar. 04, 2017 |
| 120   | 5600            | Body        | 6.004                     | 47.004                        | 5.770                            | 48.500                               | 4.05                   | -3.08                      | $\pm 5$   | Mar. 04, 2017 |
| 122   | 5610            | Body        | 6.018                     | 46.992                        | 5.778                            | 48.485                               | 4.11                   | -3.11                      | $\pm 5$   | Mar. 04, 2017 |
| 124   | 5620            | Body        | 6.029                     | 46.979                        | 5.790                            | 48.470                               | 4.14                   | -3.14                      | $\pm 5$   | Mar. 04, 2017 |
| 126   | 5630            | Body        | 6.043                     | 46.959                        | 5.801                            | 48.455                               | 4.19                   | -3.18                      | $\pm 5$   | Mar. 04, 2017 |
| 128   | 5640            | Body        | 6.057                     | 46.942                        | 5.813                            | 48.440                               | 4.26                   | -3.01                      | $\pm 5$   | Mar. 04, 2017 |
| 132   | 5660            | Body        | 6.088                     | 46.911                        | 5.837                            | 48.410                               | 4.24                   | -3.08                      | $\pm 5$   | Mar. 04, 2017 |
| 134   | 5670            | Body        | 6.099                     | 46.906                        | 5.848                            | 48.395                               | 4.26                   | -3.09                      | $\pm 5$   | Mar. 04, 2017 |
| 136   | 5680            | Body        | 6.110                     | 46.886                        | 5.860                            | 48.380                               | 4.27                   | -3.13                      | $\pm 5$   | Mar. 04, 2017 |
| 138   | 5690            | Body        | 6.125                     | 46.858                        | 5.872                            | 48.365                               | 4.35                   | -3.19                      | $\pm 5$   | Mar. 04, 2017 |
| 140   | 5700            | Body        | 6.142                     | 46.842                        | 5.883                            | 48.350                               | 4.45                   | -3.22                      | $\pm 5$   | Mar. 04, 2017 |
| 142   | 5710            | Body        | 6.157                     | 46.831                        | 5.895                            | 48.335                               | 4.52                   | -3.04                      | $\pm 5$   | Mar. 04, 2017 |
| 144   | 5720            | Body        | 6.170                     | 46.818                        | 5.907                            | 48.320                               | 4.39                   | -3.07                      | $\pm 5$   | Mar. 04, 2017 |
| 149   | 5745            | Body        | 6.204                     | 46.776                        | 5.936                            | 48.283                               | 4.44                   | -3.16                      | $\pm 5$   | Mar. 04, 2017 |

**Table of Low/Middle/High Channel for Liquid Validation**



| CH     | Frequency (MHz) | Liquid Type | Conductivity ( $\sigma$ ) | Permittivity ( $\epsilon_r$ ) | Conductivity Target ( $\sigma$ ) | Permittivity Target ( $\epsilon_r$ ) | Delta ( $\sigma$ ) (%) | Delta ( $\epsilon_r$ ) (%) | Limit (%) | Date          |
|--------|-----------------|-------------|---------------------------|-------------------------------|----------------------------------|--------------------------------------|------------------------|----------------------------|-----------|---------------|
| 151    | 5755            | Body        | 6.218                     | 46.753                        | 5.947                            | 48.268                               | 4.51                   | -3.20                      | ±5        | Mar. 04, 2017 |
| 153    | 5765            | Body        | 6.235                     | 46.741                        | 5.959                            | 48.253                               | 4.61                   | -3.23                      | ±5        | Mar. 04, 2017 |
| 155    | 5775            | Body        | 6.246                     | 46.732                        | 5.971                            | 48.238                               | 4.62                   | -3.05                      | ±5        | Mar. 04, 2017 |
| 157    | 5785            | Body        | 6.258                     | 46.713                        | 5.982                            | 48.223                               | 4.64                   | -3.08                      | ±5        | Mar. 04, 2017 |
| 159    | 5795            | Body        | 6.272                     | 46.687                        | 5.994                            | 48.208                               | 4.70                   | -3.14                      | ±5        | Mar. 04, 2017 |
| 161    | 5805            | Body        | 6.289                     | 46.670                        | 6.000                            | 48.200                               | 4.82                   | -3.17                      | ±5        | Mar. 04, 2017 |
| 165    | 5825            | Body        | 6.316                     | 46.651                        | 6.030                            | 48.200                               | 4.75                   | -3.21                      | ±5        | Mar. 04, 2017 |
| 25     | 1851.25         | Body        | 1.471                     | 53.155                        | 1.520                            | 53.300                               | -3.22                  | -0.27                      | ±5        | Mar. 05, 2017 |
| 600    | 1880            | Body        | 1.498                     | 53.055                        | 1.520                            | 53.300                               | -1.44                  | -0.46                      | ±5        | Mar. 05, 2017 |
| 1175   | 1908.75         | Body        | 1.528                     | 52.945                        | 1.520                            | 53.300                               | 0.51                   | -0.67                      | ±5        | Mar. 05, 2017 |
| 512    | 1850.2          | Body        | 1.470                     | 53.159                        | 1.520                            | 53.300                               | -3.28                  | -0.26                      | ±5        | Mar. 05, 2017 |
| 661    | 1880            | Body        | 1.498                     | 53.055                        | 1.520                            | 53.300                               | -1.44                  | -0.46                      | ±5        | Mar. 05, 2017 |
| 810    | 1909.8          | Body        | 1.529                     | 52.941                        | 1.520                            | 53.300                               | 0.58                   | -0.67                      | ±5        | Mar. 05, 2017 |
| 18700  | 1860            | Body        | 1.479                     | 53.135                        | 1.520                            | 53.300                               | -2.68                  | -0.31                      | ±5        | Mar. 05, 2017 |
| 18900  | 1880            | Body        | 1.498                     | 53.055                        | 1.520                            | 53.300                               | -1.44                  | -0.46                      | ±5        | Mar. 05, 2017 |
| 19100  | 1900            | Body        | 1.519                     | 52.969                        | 1.520                            | 53.300                               | -0.04                  | -0.62                      | ±5        | Mar. 05, 2017 |
| 26140  | 1860            | Body        | 1.479                     | 53.135                        | 1.520                            | 53.300                               | -2.68                  | -0.31                      | ±5        | Mar. 05, 2017 |
| 26340  | 1880            | Body        | 1.498                     | 53.055                        | 1.520                            | 53.300                               | -1.44                  | -0.46                      | ±5        | Mar. 05, 2017 |
| 26590  | 1905            | Body        | 1.524                     | 52.955                        | 1.520                            | 53.300                               | 0.28                   | -0.65                      | ±5        | Mar. 05, 2017 |
| 20050  | 1720            | Body        | 1.469                     | 55.271                        | 1.474                            | 53.456                               | -0.08                  | 3.31                       | ±5        | Mar. 06, 2017 |
| 20175  | 1732.5          | Body        | 1.483                     | 55.233                        | 1.481                            | 53.433                               | 0.18                   | 3.43                       | ±5        | Mar. 06, 2017 |
| 20300  | 1745            | Body        | 1.497                     | 55.192                        | 1.487                            | 53.409                               | 0.48                   | 3.36                       | ±5        | Mar. 06, 2017 |
| 1312   | 1712.4          | Body        | 1.460                     | 55.294                        | 1.471                            | 53.471                               | -0.65                  | 3.35                       | ±5        | Mar. 06, 2017 |
| 1413   | 1732.6          | Body        | 1.483                     | 55.233                        | 1.481                            | 53.433                               | 0.18                   | 3.43                       | ±5        | Mar. 06, 2017 |
| 1513   | 1752.6          | Body        | 1.505                     | 55.173                        | 1.492                            | 53.395                               | 1.03                   | 3.32                       | ±5        | Mar. 06, 2017 |
| 132072 | 1720            | Body        | 1.469                     | 55.271                        | 1.470                            | 53.496                               | -0.08                  | 3.31                       | ±5        | Mar. 06, 2017 |
| 132322 | 1745            | Body        | 1.497                     | 55.192                        | 1.485                            | 53.420                               | 0.48                   | 3.36                       | ±5        | Mar. 06, 2017 |
| 132572 | 1770            | Body        | 1.524                     | 55.112                        | 1.501                            | 53.355                               | 1.59                   | 3.21                       | ±5        | Mar. 06, 2017 |
| 36     | 5180            | Head        | 4.609                     | 37.400                        | 4.639                            | 36.020                               | -0.67                  | 3.89                       | ±5        | Mar. 06, 2017 |
| 38     | 5190            | Head        | 4.619                     | 37.390                        | 4.650                            | 36.010                               | -0.67                  | 3.86                       | ±5        | Mar. 06, 2017 |
| 40     | 5200            | Head        | 4.627                     | 37.370                        | 4.660                            | 36.000                               | -0.71                  | 3.81                       | ±5        | Mar. 06, 2017 |
| 42     | 5210            | Head        | 4.638                     | 37.350                        | 4.670                            | 35.990                               | -0.69                  | 3.75                       | ±5        | Mar. 06, 2017 |
| 44     | 5220            | Head        | 4.651                     | 37.340                        | 4.680                            | 35.980                               | -0.62                  | 3.72                       | ±5        | Mar. 06, 2017 |
| 46     | 5230            | Head        | 4.664                     | 37.320                        | 4.690                            | 35.970                               | -0.55                  | 3.67                       | ±5        | Mar. 06, 2017 |
| 48     | 5240            | Head        | 4.675                     | 37.320                        | 4.700                            | 35.960                               | -0.53                  | 3.67                       | ±5        | Mar. 06, 2017 |
| 52     | 5260            | Head        | 4.686                     | 37.290                        | 4.720                            | 35.940                               | -0.72                  | 3.87                       | ±5        | Mar. 06, 2017 |
| 54     | 5270            | Head        | 4.698                     | 37.270                        | 4.730                            | 35.930                               | -0.68                  | 3.82                       | ±5        | Mar. 06, 2017 |
| 56     | 5280            | Head        | 4.710                     | 37.260                        | 4.740                            | 35.920                               | -0.63                  | 3.79                       | ±5        | Mar. 06, 2017 |
| 58     | 5290            | Head        | 4.720                     | 37.240                        | 4.750                            | 35.910                               | -0.63                  | 3.73                       | ±5        | Mar. 06, 2017 |
| 60     | 5300            | Head        | 4.728                     | 37.230                        | 4.760                            | 35.900                               | -0.67                  | 3.70                       | ±5        | Mar. 06, 2017 |
| 62     | 5310            | Head        | 4.737                     | 37.210                        | 4.770                            | 35.890                               | -0.69                  | 3.65                       | ±5        | Mar. 06, 2017 |
| 64     | 5320            | Head        | 4.750                     | 37.190                        | 4.781                            | 35.870                               | -0.63                  | 3.59                       | ±5        | Mar. 06, 2017 |
| 100    | 5500            | Head        | 4.926                     | 36.960                        | 4.967                            | 35.630                               | -0.89                  | 3.82                       | ±5        | Mar. 06, 2017 |
| 102    | 5510            | Head        | 4.936                     | 36.950                        | 4.977                            | 35.620                               | -0.88                  | 3.79                       | ±5        | Mar. 06, 2017 |
| 104    | 5520            | Head        | 4.945                     | 36.930                        | 4.987                            | 35.610                               | -0.90                  | 3.74                       | ±5        | Mar. 06, 2017 |
| 106    | 5530            | Head        | 4.958                     | 36.910                        | 4.998                            | 35.590                               | -0.84                  | 3.68                       | ±5        | Mar. 06, 2017 |
| 108    | 5540            | Head        | 4.972                     | 36.900                        | 5.008                            | 35.580                               | -0.76                  | 3.65                       | ±5        | Mar. 06, 2017 |
| 110    | 5550            | Head        | 4.985                     | 36.890                        | 5.018                            | 35.570                               | -0.70                  | 3.62                       | ±5        | Mar. 06, 2017 |
| 112    | 5560            | Head        | 4.995                     | 36.890                        | 5.029                            | 35.550                               | -0.70                  | 3.62                       | ±5        | Mar. 06, 2017 |

**Table of Low/Middle/High Channel for Liquid Validation**

| CH    | Frequency (MHz) | Liquid Type | Conductivity ( $\sigma$ ) | Permittivity ( $\epsilon_r$ ) | Conductivity Target ( $\sigma$ ) | Permittivity Target ( $\epsilon_r$ ) | Delta ( $\sigma$ ) (%) | Delta ( $\epsilon_r$ ) (%) | Limit (%) | Date          |
|-------|-----------------|-------------|---------------------------|-------------------------------|----------------------------------|--------------------------------------|------------------------|----------------------------|-----------|---------------|
| 116   | 5580            | Head        | 5.009                     | 36.850                        | 5.049                            | 35.530                               | -0.81                  | 3.80                       | ±5        | Mar. 06, 2017 |
| 120   | 5600            | Head        | 5.034                     | 36.820                        | 5.070                            | 35.500                               | -0.71                  | 3.72                       | ±5        | Mar. 06, 2017 |
| 122   | 5610            | Head        | 5.044                     | 36.810                        | 5.080                            | 35.490                               | -0.71                  | 3.69                       | ±5        | Mar. 06, 2017 |
| 124   | 5620            | Head        | 5.053                     | 36.800                        | 5.090                            | 35.480                               | -0.73                  | 3.66                       | ±5        | Mar. 06, 2017 |
| 126   | 5630            | Head        | 5.063                     | 36.780                        | 5.100                            | 35.470                               | -0.73                  | 3.61                       | ±5        | Mar. 06, 2017 |
| 128   | 5640            | Head        | 5.077                     | 36.760                        | 5.110                            | 35.460                               | -0.65                  | 3.55                       | ±5        | Mar. 06, 2017 |
| 132   | 5660            | Head        | 5.103                     | 36.740                        | 5.130                            | 35.440                               | -0.53                  | 3.79                       | ±5        | Mar. 06, 2017 |
| 134   | 5670            | Head        | 5.109                     | 36.740                        | 5.140                            | 35.430                               | -0.60                  | 3.79                       | ±5        | Mar. 06, 2017 |
| 136   | 5680            | Head        | 5.114                     | 36.730                        | 5.150                            | 35.420                               | -0.70                  | 3.76                       | ±5        | Mar. 06, 2017 |
| 138   | 5690            | Head        | 5.125                     | 36.700                        | 5.160                            | 35.410                               | -0.68                  | 3.67                       | ±5        | Mar. 06, 2017 |
| 140   | 5700            | Head        | 5.139                     | 36.680                        | 5.170                            | 35.400                               | -0.60                  | 3.62                       | ±5        | Mar. 06, 2017 |
| 142   | 5710            | Head        | 5.151                     | 36.670                        | 5.180                            | 35.390                               | -0.56                  | 3.59                       | ±5        | Mar. 06, 2017 |
| 144   | 5720            | Head        | 5.159                     | 36.660                        | 5.190                            | 35.380                               | -0.60                  | 3.56                       | ±5        | Mar. 06, 2017 |
| 149   | 5745            | Head        | 5.187                     | 36.620                        | 5.215                            | 35.360                               | -0.63                  | 3.45                       | ±5        | Mar. 06, 2017 |
| 151   | 5755            | Head        | 5.201                     | 36.610                        | 5.225                            | 35.350                               | -0.55                  | 3.42                       | ±5        | Mar. 06, 2017 |
| 153   | 5765            | Head        | 5.213                     | 36.600                        | 5.235                            | 35.340                               | -0.52                  | 3.68                       | ±5        | Mar. 06, 2017 |
| 155   | 5775            | Head        | 5.220                     | 36.600                        | 5.245                            | 35.330                               | -0.57                  | 3.68                       | ±5        | Mar. 06, 2017 |
| 157   | 5785            | Head        | 5.225                     | 36.590                        | 5.255                            | 35.320                               | -0.67                  | 3.65                       | ±5        | Mar. 06, 2017 |
| 159   | 5795            | Head        | 5.235                     | 36.560                        | 5.265                            | 35.310                               | -0.66                  | 3.57                       | ±5        | Mar. 06, 2017 |
| 161   | 5805            | Head        | 5.249                     | 36.540                        | 5.275                            | 35.300                               | -0.59                  | 3.51                       | ±5        | Mar. 06, 2017 |
| 165   | 5825            | Head        | 5.269                     | 36.520                        | 5.296                            | 35.280                               | -0.58                  | 3.46                       | ±5        | Mar. 06, 2017 |
| 20850 | 2510            | Body        | 2.103                     | 52.279                        | 2.034                            | 52.620                               | 3.61                   | -0.61                      | ±5        | Mar. 07, 2017 |
| 21100 | 2535            | Body        | 2.139                     | 52.179                        | 2.069                            | 52.587                               | 3.33                   | -0.80                      | ±5        | Mar. 07, 2017 |
| 21350 | 2560            | Body        | 2.174                     | 52.079                        | 2.104                            | 52.553                               | 3.53                   | -0.99                      | ±5        | Mar. 07, 2017 |
| 39790 | 2510            | Body        | 2.103                     | 52.280                        | 2.030                            | 52.620                               | 3.60                   | -0.61                      | ±5        | Mar. 07, 2017 |
| 39750 | 2506            | Body        | 2.098                     | 52.300                        | 2.030                            | 52.630                               | 3.35                   | -0.57                      | ±5        | Mar. 07, 2017 |
| 40185 | 2549.5          | Body        | 2.160                     | 52.120                        | 2.090                            | 52.570                               | 3.35                   | -0.91                      | ±5        | Mar. 07, 2017 |
| 40620 | 2593            | Body        | 2.222                     | 51.950                        | 2.150                            | 52.520                               | 3.35                   | -1.05                      | ±5        | Mar. 07, 2017 |
| 41055 | 2636.5          | Body        | 2.283                     | 51.770                        | 2.210                            | 52.460                               | 3.30                   | -1.39                      | ±5        | Mar. 07, 2017 |
| 41490 | 2680            | Body        | 2.343                     | 51.590                        | 2.280                            | 52.410                               | 2.76                   | -1.55                      | ±5        | Mar. 07, 2017 |
| 37850 | 2580            | Body        | 2.203                     | 52.823                        | 2.131                            | 52.535                               | 3.44                   | 0.62                       | ±5        | Mar. 07, 2017 |
| 38000 | 2595            | Body        | 2.224                     | 52.778                        | 2.153                            | 52.516                               | 3.43                   | 0.53                       | ±5        | Mar. 07, 2017 |
| 38150 | 2610            | Body        | 2.244                     | 52.728                        | 2.175                            | 52.497                               | 3.42                   | 0.43                       | ±5        | Mar. 07, 2017 |
| 27710 | 2310            | Body        | 1.832                     | 52.898                        | 1.780                            | 52.884                               | 2.94                   | 0.00                       | ±5        | Mar. 08, 2017 |
| 37850 | 2580            | Body        | 2.203                     | 52.823                        | 2.131                            | 52.535                               | 3.44                   | 0.62                       | ±5        | Mar. 08, 2017 |
| 38000 | 2595            | Body        | 2.224                     | 52.778                        | 2.153                            | 52.516                               | 3.43                   | 0.53                       | ±5        | Mar. 08, 2017 |
| 38150 | 2610            | Body        | 2.244                     | 52.728                        | 2.175                            | 52.497                               | 3.42                   | 0.43                       | ±5        | Mar. 08, 2017 |
| 39790 | 2510            | Head        | 1.885                     | 40.250                        | 1.861                            | 39.117                               | 1.37                   | 2.94                       | ±5        | Mar. 08, 2017 |
| 39750 | 2506            | Head        | 1.881                     | 40.265                        | 1.857                            | 39.123                               | 1.14                   | 2.98                       | ±5        | Mar. 08, 2017 |
| 40185 | 2549.5          | Head        | 1.932                     | 40.110                        | 1.904                            | 39.065                               | 1.67                   | 2.58                       | ±5        | Mar. 08, 2017 |
| 40620 | 2593            | Head        | 1.985                     | 39.945                        | 1.952                            | 39.009                               | 1.79                   | 2.42                       | ±5        | Mar. 08, 2017 |
| 41055 | 2636.5          | Head        | 2.038                     | 39.772                        | 2.000                            | 38.954                               | 1.89                   | 1.98                       | ±5        | Mar. 08, 2017 |
| 41490 | 2680            | Head        | 2.089                     | 39.602                        | 2.048                            | 38.899                               | 1.90                   | 1.80                       | ±5        | Mar. 08, 2017 |
| 27710 | 2310            | Head        | 1.658                     | 41.030                        | 1.673                            | 39.424                               | -0.73                  | 4.14                       | ±5        | Mar. 08, 2017 |

**Table of Low/Middle/High Channel for Liquid Validation**



| CH   | Frequency (MHz) | Liquid Type | Conductivity ( $\sigma$ ) | Permittivity ( $\epsilon_r$ ) | Conductivity Target ( $\sigma$ ) | Permittivity Target ( $\epsilon_r$ ) | Delta ( $\sigma$ ) (%) | Delta ( $\epsilon_r$ ) (%) | Limit (%) | Date          |
|------|-----------------|-------------|---------------------------|-------------------------------|----------------------------------|--------------------------------------|------------------------|----------------------------|-----------|---------------|
| 1    | 2412            | head        | 1.777                     | 40.617                        | 1.766                            | 39.268                               | 0.40                   | 3.35                       | ±5        | Mar. 08, 2017 |
| 3    | 2422            | head        | 1.789                     | 40.572                        | 1.775                            | 39.250                               | 0.53                   | 3.50                       | ±5        | Mar. 08, 2017 |
| 6    | 2437            | head        | 1.805                     | 40.517                        | 1.788                            | 39.223                               | 0.85                   | 3.36                       | ±5        | Mar. 08, 2017 |
| 9    | 2452            | head        | 1.821                     | 40.448                        | 1.802                            | 39.197                               | 1.18                   | 3.18                       | ±5        | Mar. 08, 2017 |
| 11   | 2462            | head        | 1.833                     | 40.407                        | 1.813                            | 39.184                               | 1.25                   | 3.08                       | ±5        | Mar. 08, 2017 |
| 100  | 5500            | Body        | 5.824                     | 46.383                        | 5.650                            | 48.600                               | 3.07                   | -4.56                      | ±5        | Mar. 08, 2017 |
| 102  | 5510            | Body        | 5.837                     | 46.369                        | 5.661                            | 48.590                               | 3.12                   | -4.59                      | ±5        | Mar. 08, 2017 |
| 104  | 5520            | Body        | 5.850                     | 46.348                        | 5.673                            | 48.580                               | 3.17                   | -4.63                      | ±5        | Mar. 08, 2017 |
| 106  | 5530            | Body        | 5.866                     | 46.329                        | 5.685                            | 48.570                               | 3.27                   | -4.67                      | ±5        | Mar. 08, 2017 |
| 108  | 5540            | Body        | 5.881                     | 46.313                        | 5.696                            | 48.560                               | 3.17                   | -4.71                      | ±5        | Mar. 08, 2017 |
| 110  | 5550            | Body        | 5.897                     | 46.295                        | 5.708                            | 48.550                               | 3.28                   | -4.74                      | ±5        | Mar. 08, 2017 |
| 112  | 5560            | Body        | 5.910                     | 46.296                        | 5.720                            | 48.540                               | 3.32                   | -4.54                      | ±5        | Mar. 08, 2017 |
| 116  | 5580            | Body        | 5.930                     | 46.253                        | 5.743                            | 48.520                               | 3.31                   | -4.63                      | ±5        | Mar. 08, 2017 |
| 120  | 5600            | Body        | 5.962                     | 46.212                        | 5.770                            | 48.500                               | 3.34                   | -4.72                      | ±5        | Mar. 08, 2017 |
| 122  | 5610            | Body        | 5.976                     | 46.197                        | 5.778                            | 48.485                               | 3.38                   | -4.75                      | ±5        | Mar. 08, 2017 |
| 124  | 5620            | Body        | 5.989                     | 46.181                        | 5.790                            | 48.470                               | 3.43                   | -4.78                      | ±5        | Mar. 08, 2017 |
| 126  | 5630            | Body        | 6.002                     | 46.158                        | 5.801                            | 48.455                               | 3.49                   | -4.83                      | ±5        | Mar. 08, 2017 |
| 128  | 5640            | Body        | 6.019                     | 46.144                        | 5.813                            | 48.440                               | 3.59                   | -4.66                      | ±5        | Mar. 08, 2017 |
| 132  | 5660            | Body        | 6.050                     | 46.120                        | 5.837                            | 48.410                               | 3.60                   | -4.71                      | ±5        | Mar. 08, 2017 |
| 134  | 5670            | Body        | 6.059                     | 46.113                        | 5.848                            | 48.395                               | 3.57                   | -4.72                      | ±5        | Mar. 08, 2017 |
| 136  | 5680            | Body        | 6.068                     | 46.091                        | 5.860                            | 48.380                               | 3.56                   | -4.77                      | ±5        | Mar. 08, 2017 |
| 138  | 5690            | Body        | 6.084                     | 46.060                        | 5.872                            | 48.365                               | 3.65                   | -4.83                      | ±5        | Mar. 08, 2017 |
| 140  | 5700            | Body        | 6.101                     | 46.041                        | 5.883                            | 48.350                               | 3.76                   | -4.87                      | ±5        | Mar. 08, 2017 |
| 142  | 5710            | Body        | 6.115                     | 46.030                        | 5.895                            | 48.335                               | 3.82                   | -4.70                      | ±5        | Mar. 08, 2017 |
| 144  | 5720            | Body        | 6.129                     | 46.018                        | 5.907                            | 48.320                               | 3.71                   | -4.72                      | ±5        | Mar. 08, 2017 |
| 36   | 5180            | Body        | 5.408                     | 46.940                        | 5.276                            | 49.030                               | 2.42                   | -4.20                      | ±5        | Mar. 08, 2017 |
| 38   | 5190            | Body        | 5.421                     | 46.930                        | 5.288                            | 49.010                               | 2.48                   | -4.22                      | ±5        | Mar. 08, 2017 |
| 40   | 5200            | Body        | 5.433                     | 46.910                        | 5.300                            | 49.000                               | 2.51                   | -4.27                      | ±5        | Mar. 08, 2017 |
| 42   | 5210            | Body        | 5.447                     | 46.890                        | 5.312                            | 48.990                               | 2.58                   | -4.31                      | ±5        | Mar. 08, 2017 |
| 44   | 5220            | Body        | 5.461                     | 46.870                        | 5.323                            | 48.980                               | 2.65                   | -4.35                      | ±5        | Mar. 08, 2017 |
| 46   | 5230            | Body        | 5.476                     | 46.850                        | 5.335                            | 48.970                               | 2.55                   | -4.39                      | ±5        | Mar. 08, 2017 |
| 48   | 5240            | Body        | 5.490                     | 46.840                        | 5.346                            | 48.960                               | 2.62                   | -4.41                      | ±5        | Mar. 08, 2017 |
| 512  | 1850.2          | Head        | 1.340                     | 40.178                        | 1.400                            | 40.000                               | -4.27                  | 0.44                       | ±5        | Mar. 09, 2017 |
| 661  | 1880            | Head        | 1.368                     | 40.076                        | 1.400                            | 40.000                               | -2.30                  | 0.19                       | ±5        | Mar. 09, 2017 |
| 810  | 1909.8          | Head        | 1.398                     | 39.940                        | 1.400                            | 40.000                               | -0.15                  | -0.15                      | ±5        | Mar. 09, 2017 |
| 25   | 1851.25         | Head        | 1.341                     | 40.175                        | 1.400                            | 40.000                               | -4.20                  | 0.44                       | ±5        | Mar. 09, 2017 |
| 600  | 1880            | Head        | 1.368                     | 40.076                        | 1.400                            | 40.000                               | -2.30                  | 0.19                       | ±5        | Mar. 09, 2017 |
| 1175 | 1908.75         | Head        | 1.397                     | 39.946                        | 1.400                            | 40.000                               | -0.22                  | -0.14                      | ±5        | Mar. 09, 2017 |
| 1013 | 824.7           | Body        | 1.005                     | 53.640                        | 0.970                            | 55.240                               | 3.61                   | -2.83                      | ±5        | Mar. 09, 2017 |
| 384  | 836.52          | Body        | 1.016                     | 53.520                        | 0.970                            | 55.200                               | 4.74                   | -3.04                      | ±5        | Mar. 09, 2017 |
| 777  | 848.31          | Body        | 1.028                     | 53.390                        | 0.990                            | 55.160                               | 3.84                   | -3.28                      | ±5        | Mar. 09, 2017 |
| 476  | 817.9           | Body        | 0.998                     | 53.710                        | 0.970                            | 55.260                               | 2.89                   | -2.88                      | ±5        | Mar. 09, 2017 |
| 580  | 820.5           | Body        | 1.001                     | 53.680                        | 0.970                            | 55.250                               | 3.20                   | -2.93                      | ±5        | Mar. 09, 2017 |
| 670  | 822.75          | Body        | 1.003                     | 53.659                        | 0.970                            | 55.240                               | 3.40                   | -2.79                      | ±5        | Mar. 09, 2017 |
| 1    | 2412            | Body        | 1.932                     | 54.220                        | 1.914                            | 52.751                               | 1.14                   | 2.69                       | ±5        | Mar. 09, 2017 |
| 3    | 2422            | Body        | 1.945                     | 54.176                        | 1.923                            | 52.737                               | 1.32                   | 2.80                       | ±5        | Mar. 09, 2017 |
| 6    | 2437            | Body        | 1.964                     | 54.124                        | 1.938                            | 52.717                               | 1.22                   | 2.70                       | ±5        | Mar. 09, 2017 |
| 9    | 2452            | Body        | 1.983                     | 54.059                        | 1.953                            | 52.697                               | 1.69                   | 2.58                       | ±5        | Mar. 09, 2017 |
| 11   | 2462            | Body        | 1.996                     | 54.019                        | 1.967                            | 52.684                               | 1.31                   | 2.50                       | ±5        | Mar. 09, 2017 |

**Table of Low/Middle/High Channel for Liquid Validation**

| CH  | Frequency (MHz) | Liquid Type | Conductivity ( $\sigma$ ) | Permittivity ( $\epsilon_r$ ) | Conductivity Target ( $\sigma$ ) | Permittivity Target ( $\epsilon_r$ ) | Delta ( $\sigma$ ) (%) | Delta ( $\epsilon_r$ ) (%) | Limit (%) | Date          |
|-----|-----------------|-------------|---------------------------|-------------------------------|----------------------------------|--------------------------------------|------------------------|----------------------------|-----------|---------------|
| 149 | 5745            | Body        | 6.158                     | 45.940                        | 5.936                            | 48.280                               | 3.67                   | -4.89                      | $\pm 5$   | Mar. 10, 2017 |
| 151 | 5755            | Body        | 6.173                     | 45.930                        | 5.947                            | 48.270                               | 3.75                   | -4.91                      | $\pm 5$   | Mar. 10, 2017 |
| 153 | 5765            | Body        | 6.190                     | 45.920                        | 5.959                            | 48.250                               | 3.86                   | -4.93                      | $\pm 5$   | Mar. 10, 2017 |
| 155 | 5775            | Body        | 6.200                     | 45.910                        | 5.971                            | 48.240                               | 3.85                   | -4.75                      | $\pm 5$   | Mar. 10, 2017 |
| 157 | 5785            | Body        | 6.208                     | 45.890                        | 5.982                            | 48.220                               | 3.81                   | -4.79                      | $\pm 5$   | Mar. 10, 2017 |
| 159 | 5795            | Body        | 6.223                     | 45.860                        | 5.994                            | 48.210                               | 3.89                   | -4.85                      | $\pm 5$   | Mar. 10, 2017 |
| 161 | 5805            | Body        | 6.240                     | 45.840                        | 6.000                            | 48.200                               | 4.00                   | -4.90                      | $\pm 5$   | Mar. 10, 2017 |
| 165 | 5825            | Body        | 6.267                     | 45.820                        | 6.030                            | 48.200                               | 3.93                   | -4.94                      | $\pm 5$   | Mar. 10, 2017 |

**Table of Low/Middle/High Channel for Liquid Validation**

### 10.3 System Performance Check Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

| Date      | Frequency (MHz) | Tissue Type | Input Power (mW) | Dipole S/N    | Probe S/N       | DAE S/N     | Measured 1g SAR (W/kg) | Targeted 1g SAR (W/kg) | Normalized 1g SAR (W/kg) | Deviation (%) |
|-----------|-----------------|-------------|------------------|---------------|-----------------|-------------|------------------------|------------------------|--------------------------|---------------|
| 2017/2/22 | 750             | HSL         | 250              | D750V3-1012   | EX3DV4 - SN3955 | DAE4 Sn1399 | 2.15                   | 8.21                   | 8.60                     | 4.75          |
| 2017/3/4  | 750             | MSL         | 250              | D750V3-1012   | EX3DV4 - SN3955 | DAE4 Sn1399 | 2.33                   | 8.72                   | 9.32                     | 6.88          |
| 2017/2/19 | 835             | HSL         | 250              | D835V2-499    | EX3DV4 - SN3955 | DAE4 Sn1399 | 2.30                   | 9.14                   | 9.20                     | 0.66          |
| 2017/3/16 | 835             | HSL         | 250              | D835V2-499    | ES3DV3 - SN3270 | DAE4 Sn778  | 2.44                   | 9.14                   | 9.76                     | 6.78          |
| 2017/3/2  | 835             | MSL         | 250              | D835V2-499    | EX3DV4 - SN3578 | DAE4 Sn914  | 2.50                   | 9.52                   | 10.00                    | 5.04          |
| 2017/3/2  | 835             | MSL         | 250              | D835V2-499    | EX3DV4 - SN3955 | DAE4 Sn1399 | 2.52                   | 9.52                   | 10.08                    | 5.88          |
| 2017/3/3  | 835             | MSL         | 250              | D835V2-499    | EX3DV4 - SN3955 | DAE4 Sn1399 | 2.52                   | 9.52                   | 10.08                    | 5.88          |
| 2017/3/9  | 835             | MSL         | 250              | D835V2-499    | EX3DV4 - SN3931 | DAE3 Sn577  | 2.55                   | 9.52                   | 10.20                    | 7.14          |
| 2017/3/16 | 835             | MSL         | 250              | D835V2-499    | ES3DV3 - SN3270 | DAE4 Sn778  | 2.53                   | 9.52                   | 10.12                    | 6.30          |
| 2017/3/3  | 1750            | HSL         | 250              | D1750V2-1068  | EX3DV4 - SN3925 | DAE3 Sn495  | 9.30                   | 36.60                  | 37.20                    | 1.64          |
| 2017/3/8  | 1750            | HSL         | 250              | D1750V2-1068  | EX3DV4 - SN3931 | DAE3 Sn577  | 9.34                   | 36.60                  | 37.36                    | 2.08          |
| 2017/2/28 | 1750            | MSL         | 250              | D1750V2-1068  | EX3DV4 - SN3955 | DAE4 Sn1399 | 8.85                   | 36.20                  | 35.40                    | -2.21         |
| 2017/3/6  | 1750            | MSL         | 250              | D1750V2-1068  | EX3DV4 - SN3955 | DAE4 Sn1399 | 9.16                   | 36.20                  | 36.64                    | 1.22          |
| 2017/2/24 | 1900            | HSL         | 250              | D1900V2-5d041 | EX3DV4 - SN3955 | DAE4 Sn1399 | 10.00                  | 40.50                  | 40.00                    | -1.23         |
| 2017/3/9  | 1900            | HSL         | 250              | D1900V2-5d041 | EX3DV4 - SN3578 | DAE4 Sn914  | 9.69                   | 40.50                  | 38.76                    | -4.30         |
| 2017/2/26 | 1900            | MSL         | 250              | D1900V2-5d041 | EX3DV4 - SN3925 | DAE3 Sn495  | 10.30                  | 38.80                  | 41.20                    | 6.19          |
| 2017/2/27 | 1900            | MSL         | 250              | D1900V2-5d041 | EX3DV4 - SN3955 | DAE4 Sn1399 | 10.30                  | 38.80                  | 41.20                    | 6.19          |
| 2017/3/5  | 1900            | MSL         | 250              | D1900V2-5d041 | EX3DV4 - SN3955 | DAE4 Sn1399 | 9.53                   | 38.80                  | 38.12                    | -1.75         |
| 2017/3/8  | 2300            | HSL         | 250              | D2300V2-1006  | EX3DV4 - SN3578 | DAE4 Sn914  | 11.50                  | 49.00                  | 46.00                    | -6.12         |
| 2017/3/8  | 2300            | MSL         | 250              | D2300V2-1006  | EX3DV4 - SN3931 | DAE3 Sn577  | 12.50                  | 47.90                  | 50.00                    | 4.38          |
| 2017/3/8  | 2450            | HSL         | 250              | D2450V2-926   | EX3DV4 - SN3955 | DAE4 Sn1399 | 13.30                  | 52.80                  | 53.20                    | 0.76          |
| 2017/3/9  | 2450            | MSL         | 250              | D2450V2-926   | EX3DV4 - SN3955 | DAE4 Sn1399 | 12.80                  | 51.20                  | 51.20                    | 0.00          |
| 2017/2/18 | 2600            | HSL         | 250              | D2600V2-1008  | EX3DV4 - SN3955 | DAE4 Sn1399 | 14.70                  | 56.80                  | 58.80                    | 3.52          |
| 2017/3/4  | 2600            | HSL         | 250              | D2600V2-1008  | EX3DV4 - SN3925 | DAE3 Sn495  | 14.00                  | 56.80                  | 56.00                    | -1.41         |
| 2017/3/8  | 2600            | HSL         | 250              | D2600V2-1008  | EX3DV4 - SN3578 | DAE4 Sn914  | 14.00                  | 56.80                  | 56.00                    | -1.41         |
| 2017/3/7  | 2600            | MSL         | 250              | D2600V2-1008  | EX3DV4 - SN3955 | DAE4 Sn1399 | 14.60                  | 55.20                  | 58.40                    | 5.80          |
| 2017/3/8  | 2600            | MSL         | 250              | D2600V2-1008  | EX3DV4 - SN3931 | DAE3 Sn577  | 14.90                  | 55.20                  | 59.60                    | 7.97          |
| 2017/3/6  | 5250            | HSL         | 100              | D5GHzV2-1006  | EX3DV4 - SN3931 | DAE3 Sn577  | 7.98                   | 83.80                  | 79.80                    | -4.77         |
| 2017/3/4  | 5250            | MSL         | 100              | D5GHzV2-1006  | EX3DV4 - SN3931 | DAE3 Sn577  | 7.75                   | 78.60                  | 77.50                    | -1.40         |
| 2017/3/8  | 5250            | MSL         | 100              | D5GHzV2-1006  | EX3DV4 - SN3955 | DAE4 Sn1399 | 7.57                   | 78.60                  | 75.70                    | -3.69         |
| 2017/3/6  | 5600            | HSL         | 100              | D5GHzV2-1006  | EX3DV4 - SN3931 | DAE3 Sn577  | 8.41                   | 83.80                  | 84.10                    | 0.36          |
| 2017/3/4  | 5600            | MSL         | 100              | D5GHzV2-1006  | EX3DV4 - SN3931 | DAE3 Sn577  | 8.41                   | 78.60                  | 84.10                    | 7.00          |
| 2017/3/8  | 5600            | MSL         | 100              | D5GHzV2-1006  | EX3DV4 - SN3955 | DAE4 Sn1399 | 7.78                   | 78.60                  | 77.80                    | -1.02         |
| 2017/3/6  | 5750            | HSL         | 100              | D5GHzV2-1006  | EX3DV4 - SN3931 | DAE3 Sn577  | 7.99                   | 83.80                  | 79.90                    | -4.65         |
| 2017/3/10 | 5750            | MSL         | 100              | D5GHzV2-1006  | EX3DV4 - SN3931 | DAE3 Sn577  | 7.52                   | 78.60                  | 75.20                    | -4.33         |

| Date      | Frequency (MHz) | Tissue Type | Input Power (mW) | Dipole S/N    | Probe S/N       | DAE S/N     | Measured 10g SAR (W/kg) | Targeted 10g SAR (W/kg) | Normalized 10g SAR (W/kg) | Deviation (%) |
|-----------|-----------------|-------------|------------------|---------------|-----------------|-------------|-------------------------|-------------------------|---------------------------|---------------|
| 2017/3/4  | 750             | MSL         | 250              | D750V3-1012   | EX3DV4 - SN3955 | DAE4 Sn1399 | 1.56                    | 5.73                    | 6.24                      | 8.90          |
| 2017/3/3  | 835             | MSL         | 250              | D835V2-499    | EX3DV4 - SN3955 | DAE4 Sn1399 | 1.67                    | 6.28                    | 6.68                      | 6.37          |
| 2017/3/9  | 835             | MSL         | 250              | D835V2-499    | EX3DV4 - SN3931 | DAE3 Sn577  | 1.66                    | 6.28                    | 6.64                      | 5.73          |
| 2017/2/28 | 1750            | MSL         | 250              | D1750V2-1068  | EX3DV4 - SN3955 | DAE4 Sn1399 | 4.90                    | 19.40                   | 19.60                     | 1.03          |
| 2017/3/6  | 1750            | MSL         | 250              | D1750V2-1068  | EX3DV4 - SN3955 | DAE4 Sn1399 | 5.07                    | 19.40                   | 20.28                     | 4.54          |
| 2017/2/27 | 1900            | MSL         | 250              | D1900V2-5d041 | EX3DV4 - SN3955 | DAE4 Sn1399 | 5.38                    | 20.60                   | 21.52                     | 4.47          |
| 2017/3/5  | 1900            | MSL         | 250              | D1900V2-5d041 | EX3DV4 - SN3955 | DAE4 Sn1399 | 4.95                    | 20.60                   | 19.80                     | -3.88         |
| 2017/3/8  | 2300            | MSL         | 250              | D2300V2-1006  | EX3DV4 - SN3931 | DAE3 Sn577  | 6.06                    | 23.10                   | 24.24                     | 4.94          |
| 2017/3/4  | 5250            | MSL         | 100              | D5GHzV2-1006  | EX3DV4 - SN3931 | DAE3 Sn577  | 2.16                    | 22.00                   | 21.60                     | -1.82         |
| 2017/3/4  | 5600            | MSL         | 100              | D5GHzV2-1006  | EX3DV4 - SN3931 | DAE3 Sn577  | 2.24                    | 22.00                   | 22.40                     | 1.82          |

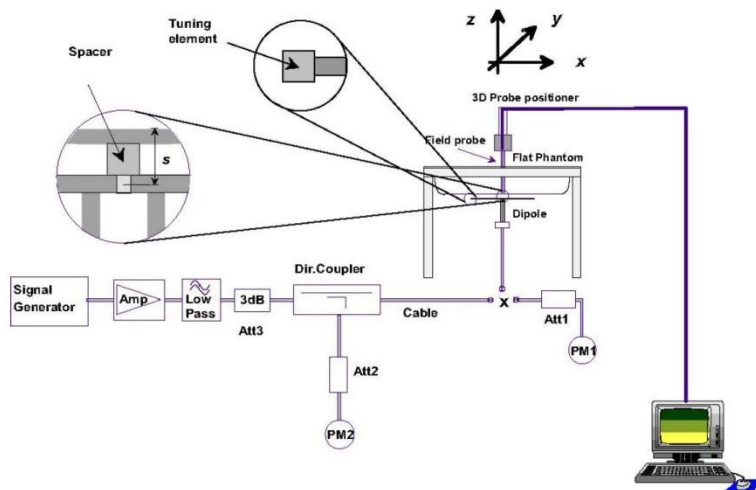

**Fig 8.3.1 System Performance Check Setup**

**Fig 8.3.2 Setup Photo**

## 11. RF Exposure Positions

### 11.1 Ear and handset reference point

Figure 9.1.1 shows the front, back, and side views of the SAM phantom. The center-of-mouth reference point is labeled "M," the left ear reference point (ERP) is marked "LE," and the right ERP is marked "RE." Each ERP is 15 mm along the B-M (back-mouth) line behind the entrance-to-ear-canal (EEC) point, as shown in Figure 9.1.2. The Reference Plane is defined as passing through the two ear reference points and point M. The line N-F (neck-front), also called the reference pivoting line, is normal to the Reference Plane and perpendicular to both a line passing through RE and LE and the B-M line (see Figure 9.1.3). Both N-F and B-M lines should be marked on the exterior of the phantom shell to facilitate handset positioning. Posterior to the N-F line the ear shape is a flat surface with 6 mm thickness at each ERP, and forward of the N-F line the ear is truncated, as illustrated in Figure 9.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

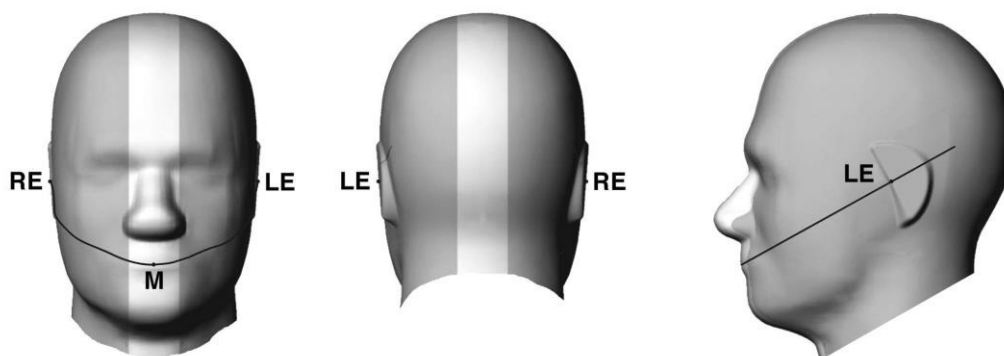


Fig 9.1.1 Front, back, and side views of SAM twin phantom

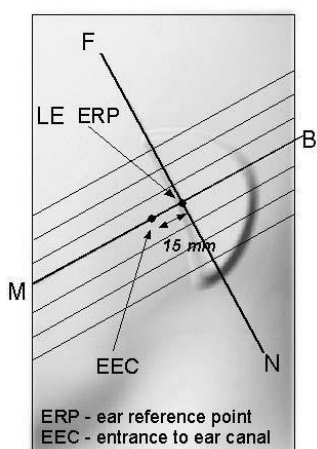


Fig 9.1.2 Close-up side view of phantom showing the ear region.

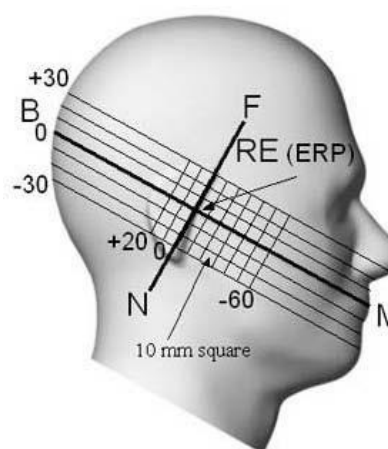


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

## 11.2 Definition of the cheek position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset—the midpoint of the width  $w_t$  of the handset at the level of the acoustic output (point A in Figure 9.2.1 and Figure 9.2.2), and the midpoint of the width  $w_b$  of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 9.2.1). The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset (see Figure 9.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
3. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 9.2.3), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
4. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
5. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
6. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
7. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 9.2.3. The actual rotation angles should be documented in the test report.

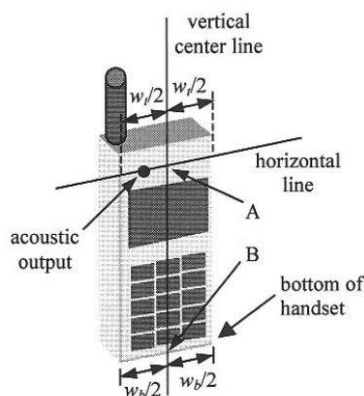


Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case"

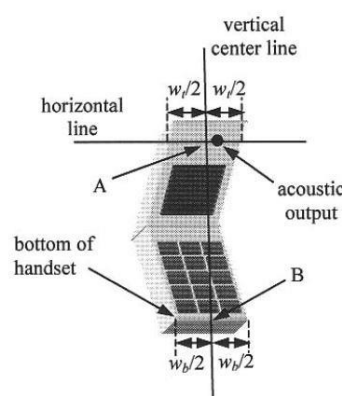


Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

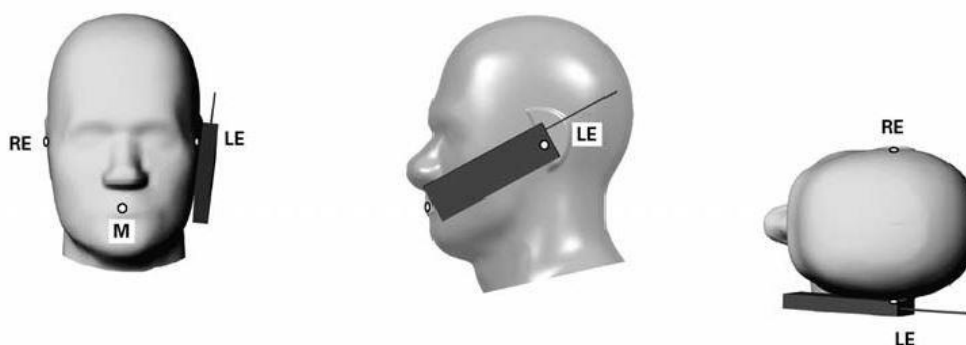


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

### **11.3 Definition of the tilt position**

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. While maintaining the orientation of the handset, move the handset away from the pinna along the line passing through RE and LE far enough to allow a rotation of the handset away from the cheek by 15°.
3. Rotate the handset around the horizontal line by 15°.
4. While maintaining the orientation of the handset, move the handset towards the phantom on the line passing through RE and LE until any part of the handset touches the ear. The tilt position is obtained when the contact point is on the pinna. See Figure 9.3.1. If contact occurs at any location other than the pinna, e.g., the antenna at the back of the phantom head, the angle of the handset should be reduced. In this case, the tilt position is obtained if any point on the handset is in contact with the pinna and a second point



**Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.**

### **11.4 Body Worn Accessory**

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 9.4). Per KDB648474 D04v01r03, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is  $> 1.2 \text{ W/kg}$ , the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a handset attached to the handset.

Accessories for body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are test with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-chip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

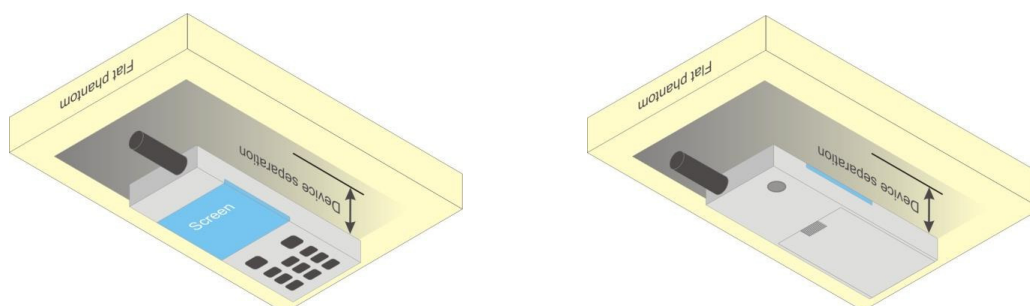


**Fig 9.4 Body Worn Position**

### **11.5 Product Specific**

For smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, According to KDB648474 D04v01r03, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.
2. The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at  $\leq 25$  mm from that surface or edge, in direct contact with a flat phantom, for 10-g Product Specific SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions.<sup>6</sup> The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g Product Specific SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.

### **11.6 Wireless Router**

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets ( $L \times W \geq 9 \text{ cm} \times 5 \text{ cm}$ ) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v06 publication procedures. The "Portable Hotspot" feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

## **12. Conducted RF Output Power (Unit: dBm)**

### **<GSM Conducted Power>**

1. Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS (4Tx slots) for GSM850/GSM1900 is considered as the primary mode.
3. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is  $\leq \frac{1}{4}$  dB higher than the primary mode, SAR measurement is not required for the secondary mode

### **<Default Power Mode>**

| GSM850<br>TX Channel | Burst Average Power (dBm) |       |       | Tune-up<br>Limit<br>(dBm) | Frame-Average Power (dBm) |       |       | Tune-up<br>Limit<br>(dBm) |
|----------------------|---------------------------|-------|-------|---------------------------|---------------------------|-------|-------|---------------------------|
|                      | 128                       | 189   | 251   |                           | 128                       | 189   | 251   |                           |
| Frequency (MHz)      | 824.2                     | 836.4 | 848.8 |                           | 824.2                     | 836.4 | 848.8 |                           |
| GSM 1 Tx slot        | 32.38                     | 32.37 | 32.36 | 33.50                     | 23.38                     | 23.37 | 23.36 | 24.50                     |
| GPRS 1 Tx slot       | 32.37                     | 32.36 | 32.33 | 33.50                     | 23.37                     | 23.36 | 23.33 | 24.50                     |
| GPRS 2 Tx slots      | 29.15                     | 29.19 | 29.19 | 30.50                     | 23.15                     | 23.19 | 23.19 | 24.50                     |
| GPRS 3 Tx slots      | 27.03                     | 27.11 | 27.03 | 28.75                     | 22.77                     | 22.85 | 22.77 | 24.49                     |
| GPRS 4 Tx slots      | 25.69                     | 25.72 | 25.71 | 27.50                     | 22.69                     | 22.72 | 22.71 | 24.50                     |
| EDGE 1 Tx slot       | 26.36                     | 26.29 | 26.33 | 28.50                     | 17.36                     | 17.29 | 17.33 | 19.50                     |
| EDGE 2 Tx slots      | 26.18                     | 26.17 | 26.17 | 28.50                     | 20.18                     | 20.17 | 20.17 | 22.50                     |
| EDGE 3 Tx slots      | 24.82                     | 24.79 | 24.78 | 26.75                     | 20.56                     | 20.53 | 20.52 | 22.49                     |
| EDGE 4 Tx slots      | 23.41                     | 23.39 | 23.31 | 25.50                     | 20.41                     | 20.39 | 20.31 | 22.50                     |

| GSM1900<br>TX Channel | Burst Average Power (dBm) |       |        | Tune-up<br>Limit<br>(dBm) | Frame-Average Power (dBm) |       |        | Tune-up<br>Limit<br>(dBm) |
|-----------------------|---------------------------|-------|--------|---------------------------|---------------------------|-------|--------|---------------------------|
|                       | 512                       | 661   | 810    |                           | 512                       | 661   | 810    |                           |
| Frequency (MHz)       | 1850.2                    | 1880  | 1909.8 |                           | 1850.2                    | 1880  | 1909.8 |                           |
| GSM 1 Tx slot         | 29.27                     | 29.35 | 29.26  | 30.50                     | 20.27                     | 20.35 | 20.26  | 21.50                     |
| GPRS 1 Tx slot        | 29.32                     | 29.35 | 29.29  | 30.50                     | 20.32                     | 20.35 | 20.29  | 21.50                     |
| GPRS 2 Tx slots       | 26.00                     | 26.01 | 25.90  | 27.50                     | 20.00                     | 20.01 | 19.90  | 21.50                     |
| GPRS 3 Tx slots       | 24.05                     | 24.00 | 23.89  | 25.75                     | 19.79                     | 19.74 | 19.63  | 21.49                     |
| GPRS 4 Tx slots       | 22.75                     | 22.63 | 22.61  | 24.50                     | 19.75                     | 19.63 | 19.61  | 21.50                     |
| EDGE 1 Tx slot        | 25.05                     | 25.11 | 25.05  | 27.50                     | 16.05                     | 16.11 | 16.05  | 18.50                     |
| EDGE 2 Tx slots       | 24.90                     | 24.96 | 24.87  | 27.50                     | 18.90                     | 18.96 | 18.87  | 21.50                     |
| EDGE 3 Tx slots       | 23.45                     | 23.45 | 23.35  | 25.75                     | 19.19                     | 19.19 | 19.09  | 21.49                     |
| EDGE 4 Tx slots       | 22.00                     | 22.03 | 21.95  | 24.50                     | 19.00                     | 19.03 | 18.95  | 21.50                     |

**<At-Head Power Mode>**

| GSM850          | Burst Average Power (dBm) |       |       | Tune-up<br>Limit<br>(dBm) | Frame-Average Power (dBm) |       |       | Tune-up<br>Limit<br>(dBm) |
|-----------------|---------------------------|-------|-------|---------------------------|---------------------------|-------|-------|---------------------------|
| TX Channel      | 128                       | 189   | 251   |                           | 128                       | 189   | 251   |                           |
| Frequency (MHz) | 824.2                     | 836.4 | 848.8 |                           | 824.2                     | 836.4 | 848.8 |                           |
| GSM 1 Tx slot   | 32.38                     | 32.37 | 32.36 | 33.50                     | 23.38                     | 23.37 | 23.36 | 24.50                     |
| GPRS 1 Tx slot  | 32.37                     | 32.36 | 32.33 | 33.50                     | 23.37                     | 23.36 | 23.33 | 24.50                     |
| GPRS 2 Tx slots | 29.15                     | 29.19 | 29.19 | 30.50                     | 23.15                     | 23.19 | 23.19 | 24.50                     |
| GPRS 3 Tx slots | 27.03                     | 27.11 | 27.03 | 28.75                     | 22.77                     | 22.85 | 22.77 | 24.49                     |
| GPRS 4 Tx slots | 25.69                     | 25.72 | 25.71 | 27.50                     | 22.69                     | 22.72 | 22.71 | 24.50                     |
| EDGE 1 Tx slot  | 26.36                     | 26.29 | 26.33 | 28.50                     | 17.36                     | 17.29 | 17.33 | 19.50                     |
| EDGE 2 Tx slots | 26.18                     | 26.17 | 26.17 | 28.50                     | 20.18                     | 20.17 | 20.17 | 22.50                     |
| EDGE 3 Tx slots | 24.82                     | 24.79 | 24.78 | 26.75                     | 20.56                     | 20.53 | 20.52 | 22.49                     |
| EDGE 4 Tx slots | 23.41                     | 23.39 | 23.31 | 25.50                     | 20.41                     | 20.39 | 20.31 | 22.50                     |

| GSM1900         | Burst Average Power (dBm) |       |        | Tune-up<br>Limit<br>(dBm) | Frame-Average Power (dBm) |       |        | Tune-up<br>Limit<br>(dBm) |
|-----------------|---------------------------|-------|--------|---------------------------|---------------------------|-------|--------|---------------------------|
| TX Channel      | 512                       | 661   | 810    |                           | 512                       | 661   | 810    |                           |
| Frequency (MHz) | 1850.2                    | 1880  | 1909.8 |                           | 1850.2                    | 1880  | 1909.8 |                           |
| GSM 1 Tx slot   | 29.27                     | 29.35 | 29.26  | 30.50                     | 20.27                     | 20.35 | 20.26  | 21.50                     |
| GPRS 1 Tx slot  | 29.32                     | 29.35 | 29.29  | 30.50                     | 20.32                     | 20.35 | 20.29  | 21.50                     |
| GPRS 2 Tx slots | 26.00                     | 26.01 | 25.90  | 27.50                     | 20.00                     | 20.01 | 19.90  | 21.50                     |
| GPRS 3 Tx slots | 24.05                     | 24.00 | 23.89  | 25.75                     | 19.79                     | 19.74 | 19.63  | 21.49                     |
| GPRS 4 Tx slots | 22.75                     | 22.63 | 22.61  | 24.50                     | 19.75                     | 19.63 | 19.61  | 21.50                     |
| EDGE 1 Tx slot  | 25.05                     | 25.11 | 25.05  | 27.50                     | 16.05                     | 16.11 | 16.05  | 18.50                     |
| EDGE 2 Tx slots | 24.90                     | 24.96 | 24.87  | 27.50                     | 18.90                     | 18.96 | 18.87  | 21.50                     |
| EDGE 3 Tx slots | 23.45                     | 23.45 | 23.35  | 25.75                     | 19.19                     | 19.19 | 19.09  | 21.49                     |
| EDGE 4 Tx slots | 22.00                     | 22.03 | 21.95  | 24.50                     | 19.00                     | 19.03 | 18.95  | 21.50                     |

**<Near-body and Hotspot Mode>**

| GSM850          | Burst Average Power (dBm) |       |       | Tune-up<br>Limit<br>(dBm) | Frame-Average Power (dBm) |       |       | Tune-up<br>Limit<br>(dBm) |
|-----------------|---------------------------|-------|-------|---------------------------|---------------------------|-------|-------|---------------------------|
| TX Channel      | 128                       | 189   | 251   |                           | 128                       | 189   | 251   |                           |
| Frequency (MHz) | 824.2                     | 836.4 | 848.8 |                           | 824.2                     | 836.4 | 848.8 |                           |
| GSM 1 Tx slot   | 32.38                     | 32.37 | 32.36 | 33.50                     | 23.38                     | 23.37 | 23.36 | 24.50                     |
| GPRS 1 Tx slot  | 32.37                     | 32.36 | 32.33 | 33.50                     | 23.37                     | 23.36 | 23.33 | 24.50                     |
| GPRS 2 Tx slots | 29.15                     | 29.19 | 29.19 | 30.50                     | 23.15                     | 23.19 | 23.19 | 24.50                     |
| GPRS 3 Tx slots | 27.03                     | 27.11 | 27.03 | 28.75                     | 22.77                     | 22.85 | 22.77 | 24.49                     |
| GPRS 4 Tx slots | 25.69                     | 25.72 | 25.71 | 27.50                     | 22.69                     | 22.72 | 22.71 | 24.50                     |
| EDGE 1 Tx slot  | 26.36                     | 26.29 | 26.33 | 28.50                     | 17.36                     | 17.29 | 17.33 | 19.50                     |
| EDGE 2 Tx slots | 26.18                     | 26.17 | 26.17 | 28.50                     | 20.18                     | 20.17 | 20.17 | 22.50                     |
| EDGE 3 Tx slots | 24.82                     | 24.79 | 24.78 | 26.75                     | 20.56                     | 20.53 | 20.52 | 22.49                     |
| EDGE 4 Tx slots | 23.41                     | 23.39 | 23.31 | 25.50                     | 20.41                     | 20.39 | 20.31 | 22.50                     |

| GSM1900         | Burst Average Power (dBm) |       |        | Tune-up<br>Limit<br>(dBm) | Frame-Average Power (dBm) |       |        | Tune-up<br>Limit<br>(dBm) |
|-----------------|---------------------------|-------|--------|---------------------------|---------------------------|-------|--------|---------------------------|
| TX Channel      | 512                       | 661   | 810    |                           | 512                       | 661   | 810    |                           |
| Frequency (MHz) | 1850.2                    | 1880  | 1909.8 |                           | 1850.2                    | 1880  | 1909.8 |                           |
| GSM 1 Tx slot   | 29.27                     | 29.35 | 29.26  | 30.50                     | 20.27                     | 20.35 | 20.26  | 21.50                     |
| GPRS 1 Tx slot  | 29.32                     | 29.35 | 29.29  | 30.50                     | 20.32                     | 20.35 | 20.29  | 21.50                     |
| GPRS 2 Tx slots | 26.00                     | 26.01 | 25.90  | 27.50                     | 20.00                     | 20.01 | 19.90  | 21.50                     |
| GPRS 3 Tx slots | 24.05                     | 24.00 | 23.89  | 25.75                     | 19.79                     | 19.74 | 19.63  | 21.49                     |
| GPRS 4 Tx slots | 22.75                     | 22.63 | 22.61  | 24.50                     | 19.75                     | 19.63 | 19.61  | 21.50                     |
| EDGE 1 Tx slot  | 25.05                     | 25.11 | 25.05  | 27.50                     | 16.05                     | 16.11 | 16.05  | 18.50                     |
| EDGE 2 Tx slots | 24.90                     | 24.96 | 24.87  | 27.50                     | 18.90                     | 18.96 | 18.87  | 21.50                     |
| EDGE 3 Tx slots | 23.45                     | 23.45 | 23.35  | 25.75                     | 19.19                     | 19.19 | 19.09  | 21.49                     |
| EDGE 4 Tx slots | 22.00                     | 22.03 | 21.95  | 24.50                     | 19.00                     | 19.03 | 18.95  | 21.50                     |

**<WCDMA Conducted Power>**

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 D01v03r01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.
3. For DC-HSDPA, the device was configured according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1, with the primary and the secondary serving HS-DSCH Cell enabled during the power measurement.

A summary of these settings are illustrated below:

**HSDPA Setup Configuration:**

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
  - i. Set Gain Factors ( $\beta_c$  and  $\beta_d$ ) and parameters were set according to each
  - ii. Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
  - iii. Set RMC 12.2Kbps + HSDPA mode.
  - iv. Set Cell Power = -86 dBm
  - v. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
  - vi. Select HSDPA Uplink Parameters
  - vii. Set Delta ACK, Delta NACK and Delta CQI = 8
  - viii. Set Ack-Nack Repetition Factor to 3
  - ix. Set CQI Feedback Cycle (k) to 4 ms
  - x. Set CQI Repetition Factor to 2
  - xi. Power Ctrl Mode = All Up bits
- d. The transmitted maximum output power was recorded.

**Table C.10.1.4:  $\beta$  values for transmitter characteristics tests with HS-DPCCH**

| Sub-test | $\beta_c$         | $\beta_d$         | $\beta_d$<br>(SF) | $\beta_c/\beta_d$ | $\beta_{hs}$<br>(Note 1,<br>Note 2) | CM (dB)<br>(Note 3) | MPR (dB)<br>(Note 3) |
|----------|-------------------|-------------------|-------------------|-------------------|-------------------------------------|---------------------|----------------------|
| 1        | 2/15              | 15/15             | 64                | 2/15              | 4/15                                | 0.0                 | 0.0                  |
| 2        | 12/15<br>(Note 4) | 15/15<br>(Note 4) | 64                | 12/15<br>(Note 4) | 24/15                               | 1.0                 | 0.0                  |
| 3        | 15/15             | 8/15              | 64                | 15/8              | 30/15                               | 1.5                 | 0.5                  |
| 4        | 15/15             | 4/15              | 64                | 15/4              | 30/15                               | 1.5                 | 0.5                  |

Note 1:  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  and  $\Delta_{CQI} = 30/15$  with  $\beta_{hs} = 30/15 * \beta_c$ .

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA,  $\Delta_{ACK}$  and  $\Delta_{NACK} = 30/15$  with  $\beta_{hs} = 30/15 * \beta_c$ , and  $\Delta_{CQI} = 24/15$  with  $\beta_{hs} = 24/15 * \beta_c$ .

Note 3: CM = 1 for  $\beta_c/\beta_d = 12/15$ ,  $\beta_{hs}/\beta_c = 24/15$ . For all other combinations of DPDCCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the  $\beta_c/\beta_d$  ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to  $\beta_c = 11/15$  and  $\beta_d = 15/15$ .

**Setup Configuration**

**HSUPA Setup Configuration:**

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting \* :
  - i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
  - ii. Set the Gain Factors ( $\beta_c$  and  $\beta_d$ ) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
  - iii. Set Cell Power = -86 dBm
  - iv. Set Channel Type = 12.2k + HSPA
  - v. Set UE Target Power
  - vi. Power Ctrl Mode= Alternating bits
  - vii. Set and observe the E-TFCI
  - viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
- d. The transmitted maximum output power was recorded.

**Table C.11.1.3:  $\beta$  values for transmitter characteristics tests with HS-DPCCH and E-DCH**

| Sub-test | $\beta_c$         | $\beta_d$         | $\beta_d$ (SF) | $\beta_c/\beta_d$ | $\beta_{hs}$ (Note 1) | $\beta_{ec}$ | $\beta_{ed}$ (Note 5)<br>(Note 6)              | $\beta_{ed}$ (SF) | $\beta_{ed}$ (Codes) | CM (dB)<br>(Note 2) | MPR (dB)<br>(Note 2) | AG Index<br>(Note 6) | E-TFCI |
|----------|-------------------|-------------------|----------------|-------------------|-----------------------|--------------|------------------------------------------------|-------------------|----------------------|---------------------|----------------------|----------------------|--------|
| 1        | 11/15<br>(Note 3) | 15/15<br>(Note 3) | 64             | 11/15<br>(Note 3) | 22/15                 | 209/25       | 1309/225                                       | 4                 | 1                    | 1.0                 | 0.0                  | 20                   | 75     |
| 2        | 6/15              | 15/15             | 64             | 6/15              | 12/15                 | 12/15        | 94/75                                          | 4                 | 1                    | 3.0                 | 2.0                  | 12                   | 67     |
| 3        | 15/15             | 9/15              | 64             | 15/9              | 30/15                 | 30/15        | $\beta_{ed1}$ : 47/15<br>$\beta_{ed2}$ : 47/15 | 4<br>4            | 2                    | 2.0                 | 1.0                  | 15                   | 92     |
| 4        | 2/15              | 15/15             | 64             | 2/15              | 4/15                  | 2/15         | 56/75                                          | 4                 | 1                    | 3.0                 | 2.0                  | 17                   | 71     |
| 5        | 15/15<br>(Note 4) | 15/15<br>(Note 4) | 64             | 15/15<br>(Note 4) | 30/15                 | 24/15        | 134/15                                         | 4                 | 1                    | 1.0                 | 0.0                  | 21                   | 81     |

Note 1:  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  and  $\Delta_{CQI} = 30/15$  with  $\beta_{hs} = 30/15 * \beta_c$ .

Note 2: CM = 1 for  $\beta_c/\beta_d = 12/15$ ,  $\beta_{hs}/\beta_c = 24/15$ . For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the  $\beta_c/\beta_d$  ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to  $\beta_c = 10/15$  and  $\beta_d = 15/15$ .

Note 4: For subtest 5 the  $\beta_c/\beta_d$  ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to  $\beta_c = 14/15$  and  $\beta_d = 15/15$ .

Note 5: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 6:  $\beta_{ed}$  can not be set directly, it is set by Absolute Grant Value.

**Setup Configuration**

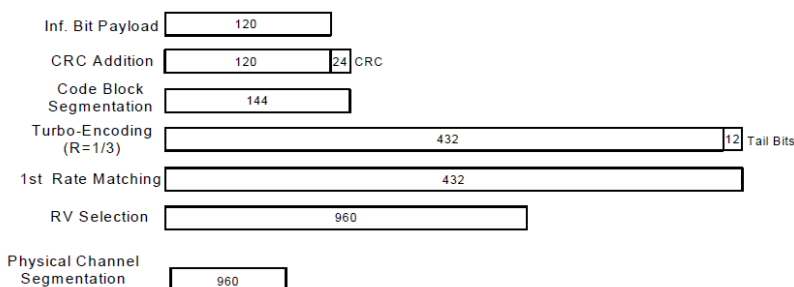
**DC-HSDPA 3GPP release 8 Setup Configuration:**

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration below
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
  - i. Set RMC 12.2Kbps + HSDPA mode.
  - ii. Set Cell Power = -25 dBm
  - iii. Set HS-DSCH Configuration Type to FRC (H-set 12, QPSK)
  - iv. Select HSDPA Uplink Parameters
  - v. Set Gain Factors ( $\beta_c$  and  $\beta_d$ ) and parameters were set according to each Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
    - a). Subtest 1:  $\beta_c/\beta_d=2/15$
    - b). Subtest 2:  $\beta_c/\beta_d=12/15$
    - c). Subtest 3:  $\beta_c/\beta_d=15/8$
    - d). Subtest 4:  $\beta_c/\beta_d=15/4$
  - vi. Set Delta ACK, Delta NACK and Delta CQI = 8
  - vii. Set Ack-Nack Repetition Factor to 3
  - viii. Set CQI Feedback Cycle (k) to 4 ms
  - ix. Set CQI Repetition Cycle to 2
  - x. Power Ctrl Mode = All Up bits
- d. The transmitted maximum output power was recorded.

The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification. A summary of these settings are illustrated below:

**C.8.1.12 Fixed Reference Channel Definition H-Set 12**
**Table C.8.1.12: Fixed Reference Channel H-Set 12**

| Parameter                                                                                                                                              | Unit      | Value |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------|
| Nominal Avg. Inf. Bit Rate                                                                                                                             | kbps      | 60    |
| Inter-TTI Distance                                                                                                                                     | TTI's     | 1     |
| Number of HARQ Processes                                                                                                                               | Processes | 6     |
| Information Bit Payload ( $N_{INF}$ )                                                                                                                  | Bits      | 120   |
| Number Code Blocks                                                                                                                                     | Blocks    | 1     |
| Binary Channel Bits Per TTI                                                                                                                            | Bits      | 960   |
| Total Available SML's in UE                                                                                                                            | SML's     | 19200 |
| Number of SML's per HARQ Proc.                                                                                                                         | SML's     | 3200  |
| Coding Rate                                                                                                                                            |           | 0.15  |
| Number of Physical Channel Codes                                                                                                                       | Codes     | 1     |
| Modulation                                                                                                                                             |           | QPSK  |
| Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.               |           |       |
| Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used. |           |       |


**Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)**
**Setup Configuration**

**<WCDMA Conducted Power>**
**General Note:**

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is  $\leq \frac{1}{4}$  dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is  $\leq 1.2$  W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

**<Default Power Mode>**

| Band            |                    | WCDMA II |       |        | Tune-up<br>Limit<br>(dBm) | WCDMA IV |        |        | Tune-up<br>Limit<br>(dBm) | WCDMA V |       |       | Tune-up<br>Limit<br>(dBm) |
|-----------------|--------------------|----------|-------|--------|---------------------------|----------|--------|--------|---------------------------|---------|-------|-------|---------------------------|
| TX Channel      |                    | 9262     | 9400  | 9538   |                           | 1312     | 1413   | 1513   |                           | 4132    | 4182  | 4233  |                           |
| Rx Channel      |                    | 9662     | 9800  | 9938   |                           | 1537     | 1638   | 1738   |                           | 4357    | 4407  | 4458  |                           |
| Frequency (MHz) |                    | 1852.4   | 1880  | 1907.6 |                           | 1712.4   | 1732.6 | 1752.6 |                           | 826.4   | 836.4 | 846.6 |                           |
| 3GPP Rel 99     | AMR 12.2Kbps       | 20.55    | 20.60 | 20.80  | 22.00                     | 20.95    | 21.03  | 21.10  | 22.00                     | 22.60   | 22.85 | 22.54 | 24.00                     |
| 3GPP Rel 99     | RMC 12.2Kbps       | 20.56    | 20.63 | 20.83  | 22.00                     | 20.98    | 21.05  | 21.13  | 22.00                     | 22.62   | 22.86 | 22.58 | 24.00                     |
| 3GPP Rel 6      | HSDPA Subtest-1    | 19.42    | 19.73 | 19.74  | 21.00                     | 19.82    | 19.95  | 19.98  | 21.00                     | 21.72   | 21.85 | 21.69 | 23.00                     |
| 3GPP Rel 6      | HSDPA Subtest-2    | 19.40    | 19.54 | 19.69  | 21.00                     | 19.82    | 19.88  | 19.97  | 21.00                     | 21.62   | 21.94 | 21.72 | 23.00                     |
| 3GPP Rel 6      | HSDPA Subtest-3    | 18.90    | 18.96 | 19.12  | 20.50                     | 19.31    | 19.36  | 19.34  | 20.50                     | 21.13   | 21.35 | 21.10 | 22.50                     |
| 3GPP Rel 6      | HSDPA Subtest-4    | 18.92    | 18.97 | 19.12  | 20.50                     | 19.33    | 19.31  | 19.39  | 20.50                     | 21.14   | 21.33 | 21.12 | 22.50                     |
| 3GPP Rel 8      | DC-HSDPA Subtest-1 | 19.45    | 19.48 | 19.71  | 21.00                     | 19.81    | 19.80  | 19.96  | 21.00                     | 20.37   | 20.56 | 20.35 | 23.00                     |
| 3GPP Rel 8      | DC-HSDPA Subtest-2 | 19.40    | 19.45 | 19.63  | 21.00                     | 19.82    | 19.81  | 19.95  | 21.00                     | 20.35   | 20.66 | 20.34 | 23.00                     |
| 3GPP Rel 8      | DC-HSDPA Subtest-3 | 18.94    | 18.95 | 19.10  | 20.50                     | 19.33    | 19.30  | 19.32  | 20.50                     | 20.43   | 20.66 | 20.34 | 22.50                     |
| 3GPP Rel 8      | DC-HSDPA Subtest-4 | 18.90    | 18.94 | 19.11  | 20.50                     | 19.31    | 19.32  | 19.30  | 20.50                     | 20.35   | 20.58 | 20.36 | 22.50                     |
| 3GPP Rel 6      | HSUPA Subtest-1    | 19.60    | 19.69 | 19.80  | 21.00                     | 20.01    | 20.03  | 20.16  | 21.00                     | 21.42   | 21.68 | 21.38 | 23.00                     |
| 3GPP Rel 6      | HSUPA Subtest-2    | 17.69    | 17.72 | 17.83  | 19.00                     | 18.08    | 18.04  | 17.95  | 19.00                     | 19.44   | 19.64 | 19.38 | 21.00                     |
| 3GPP Rel 6      | HSUPA Subtest-3    | 18.41    | 18.44 | 18.61  | 20.00                     | 18.80    | 18.88  | 18.87  | 20.00                     | 20.48   | 20.63 | 20.44 | 22.00                     |
| 3GPP Rel 6      | HSUPA Subtest-4    | 17.40    | 17.44 | 17.61  | 19.00                     | 17.82    | 17.89  | 17.87  | 19.00                     | 19.45   | 19.66 | 19.32 | 21.00                     |
| 3GPP Rel 6      | HSUPA Subtest-5    | 19.43    | 19.45 | 19.71  | 21.00                     | 19.84    | 19.87  | 19.97  | 21.00                     | 21.65   | 21.87 | 21.61 | 23.00                     |

**<At-Head Power Mode>**

| Band            |                    | WCDMA II |       |        | Tune-up<br>Limit<br>(dBm) | WCDMA IV |        |        | Tune-up<br>Limit<br>(dBm) | WCDMA V |       |       | Tune-up<br>Limit<br>(dBm) |
|-----------------|--------------------|----------|-------|--------|---------------------------|----------|--------|--------|---------------------------|---------|-------|-------|---------------------------|
| TX Channel      |                    | 9262     | 9400  | 9538   |                           | 1312     | 1413   | 1513   |                           | 4132    | 4182  | 4233  |                           |
| Rx Channel      |                    | 9662     | 9800  | 9938   |                           | 1537     | 1638   | 1738   |                           | 4357    | 4407  | 4458  |                           |
| Frequency (MHz) |                    | 1852.4   | 1880  | 1907.6 |                           | 1712.4   | 1732.6 | 1752.6 |                           | 826.4   | 836.4 | 846.6 |                           |
| 3GPP Rel 99     | AMR 12.2Kbps       | 22.43    | 22.55 | 22.67  | 24.00                     | 22.61    | 22.57  | 22.67  | 24.00                     | 22.60   | 22.85 | 22.54 | 24.00                     |
| 3GPP Rel 99     | RMC 12.2Kbps       | 22.70    | 22.73 | 22.89  | 24.00                     | 22.88    | 22.82  | 22.93  | 24.00                     | 22.62   | 22.86 | 22.58 | 24.00                     |
| 3GPP Rel 6      | HSDPA Subtest-1    | 21.42    | 21.73 | 21.74  | 23.00                     | 21.62    | 21.75  | 21.78  | 23.00                     | 21.72   | 21.85 | 21.69 | 23.00                     |
| 3GPP Rel 6      | HSDPA Subtest-2    | 21.40    | 21.54 | 21.69  | 23.00                     | 21.62    | 21.68  | 21.77  | 23.00                     | 21.62   | 21.94 | 21.72 | 23.00                     |
| 3GPP Rel 6      | HSDPA Subtest-3    | 20.90    | 20.96 | 21.12  | 22.50                     | 21.11    | 21.16  | 21.14  | 22.50                     | 21.13   | 21.35 | 21.10 | 22.50                     |
| 3GPP Rel 6      | HSDPA Subtest-4    | 20.92    | 20.97 | 21.12  | 22.50                     | 21.13    | 21.11  | 21.19  | 22.50                     | 21.14   | 21.33 | 21.12 | 22.50                     |
| 3GPP Rel 8      | DC-HSDPA Subtest-1 | 21.45    | 21.48 | 21.71  | 23.00                     | 21.61    | 21.57  | 21.76  | 23.00                     | 20.37   | 20.56 | 20.35 | 23.00                     |
| 3GPP Rel 8      | DC-HSDPA Subtest-2 | 21.40    | 21.45 | 21.63  | 23.00                     | 21.62    | 21.61  | 21.75  | 23.00                     | 20.35   | 20.66 | 20.34 | 23.00                     |
| 3GPP Rel 8      | DC-HSDPA Subtest-3 | 20.94    | 20.95 | 21.10  | 22.50                     | 21.13    | 21.10  | 21.12  | 22.50                     | 20.43   | 20.66 | 20.34 | 22.50                     |
| 3GPP Rel 8      | DC-HSDPA Subtest-4 | 20.90    | 20.94 | 21.11  | 22.50                     | 21.11    | 21.07  | 21.10  | 22.50                     | 20.35   | 20.58 | 20.36 | 22.50                     |
| 3GPP Rel 6      | HSUPA Subtest-1    | 21.60    | 21.69 | 21.80  | 23.00                     | 21.81    | 21.83  | 21.96  | 23.00                     | 21.42   | 21.68 | 21.38 | 23.00                     |
| 3GPP Rel 6      | HSUPA Subtest-2    | 19.69    | 19.72 | 19.83  | 21.00                     | 19.88    | 19.84  | 19.75  | 21.00                     | 19.44   | 19.64 | 19.38 | 21.00                     |
| 3GPP Rel 6      | HSUPA Subtest-3    | 20.41    | 20.44 | 20.61  | 22.00                     | 20.60    | 20.57  | 20.67  | 22.00                     | 20.48   | 20.63 | 20.44 | 22.00                     |
| 3GPP Rel 6      | HSUPA Subtest-4    | 19.40    | 19.44 | 19.61  | 21.00                     | 19.62    | 19.59  | 19.67  | 21.00                     | 19.45   | 19.66 | 19.32 | 21.00                     |
| 3GPP Rel 6      | HSUPA Subtest-5    | 21.43    | 21.45 | 21.71  | 23.00                     | 21.64    | 21.67  | 21.77  | 23.00                     | 21.65   | 21.87 | 21.61 | 23.00                     |

**<Near-body and Hotspot Mode>**

| Band            |                    | WCDMA II |       |        | Tune-up<br>Limit<br>(dBm) | WCDMA IV |        |        | Tune-up<br>Limit<br>(dBm) | WCDMA V |       |       | Tune-up<br>Limit<br>(dBm) |
|-----------------|--------------------|----------|-------|--------|---------------------------|----------|--------|--------|---------------------------|---------|-------|-------|---------------------------|
| TX Channel      |                    | 9262     | 9400  | 9538   |                           | 1312     | 1413   | 1513   |                           | 4132    | 4182  | 4233  |                           |
| Rx Channel      |                    | 9662     | 9800  | 9938   |                           | 1537     | 1638   | 1738   |                           | 4357    | 4407  | 4458  |                           |
| Frequency (MHz) |                    | 1852.4   | 1880  | 1907.6 |                           | 1712.4   | 1732.6 | 1752.6 |                           | 826.4   | 836.4 | 846.6 |                           |
| 3GPP Rel 99     | AMR 12.2Kbps       | 19.92    | 20.01 | 20.17  | 21.30                     | 20.67    | 20.83  | 20.86  | 21.20                     | 21.21   | 21.47 | 21.17 | 22.20                     |
| 3GPP Rel 99     | RMC 12.2Kbps       | 19.90    | 19.97 | 20.19  | 21.30                     | 20.68    | 20.76  | 20.88  | 21.20                     | 21.28   | 21.50 | 21.18 | 22.20                     |
| 3GPP Rel 6      | HSDPA Subtest-1    | 18.68    | 18.94 | 19.03  | 20.30                     | 19.52    | 19.65  | 19.78  | 20.20                     | 20.42   | 20.54 | 20.35 | 22.20                     |
| 3GPP Rel 6      | HSDPA Subtest-2    | 18.61    | 18.79 | 18.98  | 20.30                     | 19.60    | 19.64  | 19.73  | 20.20                     | 20.32   | 20.56 | 20.41 | 22.20                     |
| 3GPP Rel 6      | HSDPA Subtest-3    | 18.15    | 18.17 | 18.39  | 19.80                     | 19.06    | 19.07  | 19.04  | 19.70                     | 19.82   | 20.00 | 19.80 | 21.70                     |
| 3GPP Rel 6      | HSDPA Subtest-4    | 18.21    | 18.27 | 18.36  | 19.80                     | 19.04    | 19.07  | 19.13  | 19.70                     | 19.80   | 19.97 | 19.72 | 21.70                     |
| 3GPP Rel 8      | DC-HSDPA Subtest-1 | 18.75    | 18.69 | 19.00  | 20.30                     | 19.54    | 19.56  | 19.69  | 20.20                     | 19.05   | 19.26 | 18.99 | 21.20                     |
| 3GPP Rel 8      | DC-HSDPA Subtest-2 | 18.61    | 18.68 | 18.88  | 20.30                     | 19.56    | 19.55  | 19.69  | 20.20                     | 19.03   | 19.30 | 19.02 | 21.20                     |
| 3GPP Rel 8      | DC-HSDPA Subtest-3 | 18.18    | 18.25 | 18.37  | 19.80                     | 19.07    | 19.06  | 19.04  | 19.70                     | 19.09   | 19.30 | 18.99 | 20.70                     |
| 3GPP Rel 8      | DC-HSDPA Subtest-4 | 18.13    | 18.21 | 18.38  | 19.80                     | 19.10    | 18.98  | 19.04  | 19.70                     | 18.95   | 19.24 | 19.02 | 20.70                     |
| 3GPP Rel 6      | HSUPA Subtest-1    | 18.83    | 18.99 | 19.09  | 20.30                     | 19.72    | 19.73  | 19.95  | 20.20                     | 20.03   | 20.31 | 20.08 | 21.20                     |
| 3GPP Rel 6      | HSUPA Subtest-2    | 16.98    | 16.94 | 17.07  | 18.30                     | 17.88    | 17.82  | 17.69  | 18.20                     | 18.06   | 18.24 | 18.00 | 19.20                     |
| 3GPP Rel 6      | HSUPA Subtest-3    | 17.69    | 17.71 | 17.91  | 19.30                     | 18.50    | 18.57  | 18.63  | 19.20                     | 19.13   | 19.30 | 19.11 | 20.20                     |
| 3GPP Rel 6      | HSUPA Subtest-4    | 16.63    | 16.66 | 16.84  | 18.30                     | 17.53    | 17.51  | 17.64  | 18.20                     | 18.05   | 18.34 | 17.97 | 19.20                     |
| 3GPP Rel 6      | HSUPA Subtest-5    | 18.63    | 18.72 | 18.91  | 20.30                     | 19.61    | 19.60  | 19.72  | 20.20                     | 20.27   | 20.48 | 20.28 | 21.20                     |

**<CDMA2000 Conducted Power>**
**General Note:**

1. Per KDB 941225 D01v03r01, SAR for head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55.
2. Per KDB 941225 D01v03r01, in Hotspot mode EUT is treated as data device and SAR is tested with Ev-Do Rev 0 (RTAP 153.6kbps) as the primary mode.
3. Per KDB 941225 D01v03r01, for Body-worn accessory SAR is measured in RC3 with the handset configured in TDSO/SO32 to transmit at full rate on FCH only with all other code channels disabled. The body-worn accessory procedures in KDB Publication 447498 are applied. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCH), with FCH only as the primary mode.

**<Default Power Mode>**

| Band             | CDMA2000 BC0 |        |        | Tune-up<br>Limit<br>(dBm) | CDMA2000 BC1 |       |         | Tune-up<br>Limit<br>(dBm) | CDMA2000 BC10 |       |        | Tune-up<br>Limit<br>(dBm) |
|------------------|--------------|--------|--------|---------------------------|--------------|-------|---------|---------------------------|---------------|-------|--------|---------------------------|
| TX Channel       | 1013         | 384    | 777    |                           | 25           | 600   | 1175    |                           | 476           | 580   | 670    |                           |
| Frequency (MHz)  | 824.7        | 836.52 | 848.31 |                           | 1851.25      | 1880  | 1908.75 |                           | 817.9         | 820.5 | 822.75 |                           |
| RC1 SO55         | 23.82        | 23.96  | 23.95  | 25.00                     | 22.15        | 22.39 | 22.32   | 22.80                     | 23.92         | 24.00 | 24.01  | 25.00                     |
| RC3 SO55         | 23.97        | 23.98  | 23.90  | 25.00                     | 22.12        | 22.46 | 22.45   | 22.80                     | 24.02         | 24.09 | 24.02  | 25.00                     |
| RC3 SO32 (F+SCH) | 23.96        | 24.02  | 24.01  | 25.00                     | 22.38        | 22.60 | 22.56   | 22.80                     | 24.01         | 24.05 | 24.00  | 25.00                     |
| RC3 SO32 (+SCH)  | 23.97        | 24.01  | 23.91  | 25.00                     | 22.28        | 22.48 | 22.42   | 22.80                     | 23.97         | 24.04 | 23.99  | 25.00                     |
| RTAP 153.6Kbps   | 23.96        | 23.99  | 23.89  | 25.00                     | 22.27        | 22.52 | 22.45   | 22.80                     | 24.09         | 24.03 | 24.01  | 25.00                     |
| RETAP 4096Bits   | 23.75        | 23.77  | 23.71  | 25.00                     | 22.11        | 22.28 | 22.27   | 22.80                     | 23.62         | 23.57 | 23.99  | 25.00                     |

**<At-Head Power Mode>**

| Band             | CDMA2000 BC0 |        |        | Tune-up<br>Limit<br>(dBm) | CDMA2000 BC1 |       |         | Tune-up<br>Limit<br>(dBm) | CDMA2000 BC10 |       |        | Tune-up<br>Limit<br>(dBm) |
|------------------|--------------|--------|--------|---------------------------|--------------|-------|---------|---------------------------|---------------|-------|--------|---------------------------|
| TX Channel       | 1013         | 384    | 777    |                           | 25           | 600   | 1175    |                           | 476           | 580   | 670    |                           |
| Frequency (MHz)  | 824.7        | 836.52 | 848.31 |                           | 1851.25      | 1880  | 1908.75 |                           | 817.9         | 820.5 | 822.75 |                           |
| RC1 SO55         | 23.82        | 23.96  | 23.95  | 25.00                     | 23.55        | 23.79 | 23.72   | 25.00                     | 23.92         | 24.00 | 24.01  | 25.00                     |
| RC3 SO55         | 23.98        | 23.97  | 23.90  | 25.00                     | 23.70        | 23.90 | 23.84   | 25.00                     | 24.02         | 24.09 | 24.02  | 25.00                     |
| RC3 SO32 (F+SCH) | 23.96        | 24.02  | 24.01  | 25.00                     | 23.78        | 24.00 | 23.96   | 25.00                     | 24.01         | 24.05 | 24.00  | 25.00                     |
| RC3 SO32 (+SCH)  | 23.97        | 24.01  | 23.91  | 25.00                     | 23.68        | 23.88 | 23.82   | 25.00                     | 23.97         | 24.04 | 23.99  | 25.00                     |
| RTAP 153.6Kbps   | 23.96        | 23.99  | 23.89  | 25.00                     | 23.67        | 23.92 | 23.85   | 25.00                     | 24.09         | 24.03 | 24.01  | 25.00                     |
| RETAP 4096Bits   | 23.75        | 23.77  | 23.71  | 25.00                     | 23.51        | 23.68 | 23.67   | 25.00                     | 23.62         | 23.57 | 23.99  | 25.00                     |

**<Near-body and Hotspot Mode>**

| Band             | CDMA2000 BC0 |        |        | Tune-up<br>Limit<br>(dBm) | CDMA2000 BC1 |       |         | Tune-up<br>Limit<br>(dBm) | CDMA2000 BC10 |       |        | Tune-up<br>Limit<br>(dBm) |
|------------------|--------------|--------|--------|---------------------------|--------------|-------|---------|---------------------------|---------------|-------|--------|---------------------------|
| TX Channel       | 1013         | 384    | 777    |                           | 25           | 600   | 1175    |                           | 476           | 580   | 670    |                           |
| Frequency (MHz)  | 824.7        | 836.52 | 848.31 |                           | 1851.25      | 1880  | 1908.75 |                           | 817.9         | 820.5 | 822.75 |                           |
| RC1 SO55         | 21.64        | 21.72  | 21.68  | 22.90                     | 21.60        | 21.83 | 21.80   | 22.50                     | 20.08         | 20.03 | 19.97  | 21.00                     |
| RC3 SO55         | 21.75        | 21.75  | 21.66  | 22.90                     | 21.66        | 21.85 | 21.82   | 22.50                     | 20.00         | 20.13 | 19.97  | 21.00                     |
| RC3 SO32 (F+SCH) | 21.70        | 21.73  | 21.68  | 22.90                     | 21.64        | 21.86 | 21.84   | 22.50                     | 20.02         | 20.04 | 20.01  | 21.00                     |
| RC3 SO32 (+SCH)  | 21.70        | 21.72  | 21.66  | 22.90                     | 21.61        | 21.84 | 21.83   | 22.50                     | 20.05         | 20.05 | 20.06  | 21.00                     |
| RTAP 153.6Kbps   | 21.72        | 21.76  | 21.64  | 22.90                     | 21.60        | 21.88 | 21.87   | 22.50                     | 20.05         | 20.15 | 19.92  | 21.00                     |
| RETAP 4096Bits   | 21.50        | 21.57  | 21.45  | 22.90                     | 21.41        | 21.65 | 21.68   | 22.50                     | 19.78         | 19.93 | 19.78  | 21.00                     |

**<LTE Conducted Power>****General Note:**

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are  $\leq 0.8$  W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is  $> 1.45$  W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is  $>$  not  $\frac{1}{2}$  dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is  $>$  not  $\frac{1}{2}$  dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4 / B5 / B12 / B17 / B26/ B38 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

**<Default Power Mode>**
**<LTE Band 2>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|-------------|
| Channel         |            |         |           | 18700                    | 18900                       | 19100                     |                        |             |
| Frequency (MHz) |            |         |           | 1860                     | 1880                        | 1900                      |                        |             |
| 20              | QPSK       | 1       | 0         | 20.78                    | 20.91                       | 20.82                     | 22.3                   | 0           |
| 20              | QPSK       | 1       | 49        | 20.70                    | 20.82                       | 20.80                     |                        |             |
| 20              | QPSK       | 1       | 99        | 20.58                    | 20.69                       | 20.74                     |                        |             |
| 20              | QPSK       | 50      | 0         | 20.95                    | 21.04                       | 21.20                     | 22.3                   | 0           |
| 20              | QPSK       | 50      | 24        | 20.92                    | 21.03                       | 21.10                     |                        |             |
| 20              | QPSK       | 50      | 50        | 20.80                    | 20.85                       | 20.94                     |                        |             |
| 20              | QPSK       | 100     | 0         | 20.80                    | 21.01                       | 21.09                     | 22.3                   | 0           |
| 20              | 16QAM      | 1       | 0         | 21.12                    | 21.08                       | 21.16                     |                        |             |
| 20              | 16QAM      | 1       | 49        | 21.12                    | 20.98                       | 21.02                     |                        |             |
| 20              | 16QAM      | 1       | 99        | 20.72                    | 20.86                       | 20.95                     | 22                     | 0.3         |
| 20              | 16QAM      | 50      | 0         | 20.64                    | 20.77                       | 20.85                     |                        |             |
| 20              | 16QAM      | 50      | 24        | 20.60                    | 20.79                       | 20.83                     |                        |             |
| 20              | 16QAM      | 50      | 50        | 20.51                    | 20.53                       | 20.63                     | 22                     | 0.3         |
| 20              | 16QAM      | 100     | 0         | 20.58                    | 20.65                       | 20.72                     |                        |             |
| Channel         |            |         |           | 18675                    | 18900                       | 19125                     |                        |             |
| Frequency (MHz) |            |         |           | 1857.5                   | 1880                        | 1902.5                    |                        |             |
| 15              | QPSK       | 1       | 0         | 20.67                    | 20.79                       | 20.90                     | 22.3                   | 0           |
| 15              | QPSK       | 1       | 37        | 20.63                    | 20.65                       | 20.57                     |                        |             |
| 15              | QPSK       | 1       | 74        | 20.88                    | 21.00                       | 21.05                     |                        |             |
| 15              | QPSK       | 36      | 0         | 20.77                    | 20.92                       | 20.97                     | 22.3                   | 0           |
| 15              | QPSK       | 36      | 20        | 20.79                    | 20.87                       | 20.99                     |                        |             |
| 15              | QPSK       | 36      | 39        | 20.76                    | 20.89                       | 20.92                     |                        |             |
| 15              | QPSK       | 75      | 0         | 20.74                    | 20.91                       | 20.99                     | 22.3                   | 0           |
| 15              | 16QAM      | 1       | 0         | 21.11                    | 20.96                       | 21.07                     |                        |             |
| 15              | 16QAM      | 1       | 37        | 20.76                    | 21.04                       | 21.05                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 21.12                    | 21.00                       | 21.06                     | 22                     | 0.3         |
| 15              | 16QAM      | 36      | 0         | 20.44                    | 20.59                       | 20.68                     |                        |             |
| 15              | 16QAM      | 36      | 20        | 20.50                    | 20.63                       | 20.70                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 20.44                    | 20.58                       | 20.62                     | 22                     | 0.3         |
| 15              | 16QAM      | 75      | 0         | 20.45                    | 20.62                       | 20.73                     |                        |             |
| Channel         |            |         |           | 18650                    | 18900                       | 19150                     |                        |             |
| Frequency (MHz) |            |         |           | 1855                     | 1880                        | 1905                      |                        |             |
| 10              | QPSK       | 1       | 0         | 20.44                    | 20.60                       | 20.67                     | 22.3                   | 0           |
| 10              | QPSK       | 1       | 25        | 20.52                    | 20.66                       | 20.73                     |                        |             |
| 10              | QPSK       | 1       | 49        | 20.64                    | 20.71                       | 20.92                     |                        |             |
| 10              | QPSK       | 25      | 0         | 20.58                    | 20.73                       | 20.95                     | 22.3                   | 0           |
| 10              | QPSK       | 25      | 12        | 20.60                    | 20.73                       | 20.83                     |                        |             |
| 10              | QPSK       | 25      | 25        | 20.59                    | 20.74                       | 20.85                     |                        |             |
| 10              | QPSK       | 50      | 0         | 20.58                    | 20.75                       | 20.88                     | 22.3                   | 0           |
| 10              | 16QAM      | 1       | 0         | 20.93                    | 21.03                       | 21.17                     |                        |             |
| 10              | 16QAM      | 1       | 25        | 20.86                    | 20.93                       | 21.03                     |                        |             |
| 10              | 16QAM      | 1       | 49        | 20.90                    | 21.04                       | 21.02                     | 22                     | 0.3         |
| 10              | 16QAM      | 25      | 0         | 20.31                    | 20.46                       | 20.64                     |                        |             |
| 10              | 16QAM      | 25      | 12        | 20.30                    | 20.41                       | 20.53                     |                        |             |
| 10              | 16QAM      | 25      | 25        | 20.33                    | 20.47                       | 20.55                     | 22                     | 0.3         |
| 10              | 16QAM      | 50      | 0         | 20.31                    | 20.41                       | 20.54                     |                        |             |



| Channel         |       |    |    | 18625  | 18900 | 19175  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1852.5 | 1880  | 1907.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 20.63  | 20.51 | 20.60  | 22.3                   | 0           |
| 5               | QPSK  | 1  | 12 | 20.46  | 20.68 | 20.76  |                        |             |
| 5               | QPSK  | 1  | 24 | 20.48  | 20.69 | 20.82  |                        |             |
| 5               | QPSK  | 12 | 0  | 20.65  | 20.81 | 21.05  | 22.3                   | 0           |
| 5               | QPSK  | 12 | 7  | 20.61  | 20.78 | 20.91  |                        |             |
| 5               | QPSK  | 12 | 13 | 20.59  | 20.69 | 20.91  |                        |             |
| 5               | QPSK  | 25 | 0  | 20.61  | 20.75 | 20.91  |                        |             |
| 5               | 16QAM | 1  | 0  | 20.86  | 21.06 | 21.14  | 22.3                   | 0           |
| 5               | 16QAM | 1  | 12 | 20.76  | 20.96 | 20.98  |                        |             |
| 5               | 16QAM | 1  | 24 | 20.78  | 20.92 | 21.08  |                        |             |
| 5               | 16QAM | 12 | 0  | 20.38  | 20.54 | 20.69  | 22                     | 0.3         |
| 5               | 16QAM | 12 | 7  | 20.30  | 20.46 | 20.65  |                        |             |
| 5               | 16QAM | 12 | 13 | 20.32  | 20.42 | 20.64  |                        |             |
| 5               | 16QAM | 25 | 0  | 20.33  | 20.49 | 20.61  |                        |             |
| Channel         |       |    |    | 18615  | 18900 | 19185  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1851.5 | 1880  | 1908.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 20.54  | 20.42 | 20.53  | 22.3                   | 0           |
| 3               | QPSK  | 1  | 8  | 20.48  | 20.65 | 20.83  |                        |             |
| 3               | QPSK  | 1  | 14 | 20.43  | 20.57 | 20.78  |                        |             |
| 3               | QPSK  | 8  | 0  | 20.56  | 20.73 | 20.90  | 22.3                   | 0           |
| 3               | QPSK  | 8  | 4  | 20.61  | 20.78 | 20.91  |                        |             |
| 3               | QPSK  | 8  | 7  | 20.53  | 20.71 | 20.85  |                        |             |
| 3               | QPSK  | 15 | 0  | 20.57  | 20.77 | 20.86  |                        |             |
| 3               | 16QAM | 1  | 0  | 20.81  | 20.97 | 21.13  | 22.3                   | 0           |
| 3               | 16QAM | 1  | 8  | 20.75  | 20.91 | 21.12  |                        |             |
| 3               | 16QAM | 1  | 14 | 20.71  | 20.79 | 21.02  |                        |             |
| 3               | 16QAM | 8  | 0  | 20.35  | 20.52 | 20.66  | 22                     | 0.3         |
| 3               | 16QAM | 8  | 4  | 20.32  | 20.50 | 20.66  |                        |             |
| 3               | 16QAM | 8  | 7  | 20.30  | 20.45 | 20.62  |                        |             |
| 3               | 16QAM | 15 | 0  | 20.31  | 20.44 | 20.61  |                        |             |
| Channel         |       |    |    | 18607  | 18900 | 19193  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1850.7 | 1880  | 1909.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 20.50  | 20.48 | 20.51  | 22.3                   | 0           |
| 1.4             | QPSK  | 1  | 3  | 20.55  | 20.73 | 20.89  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 20.48  | 20.59 | 20.81  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 20.52  | 20.64 | 20.81  |                        |             |
| 1.4             | QPSK  | 3  | 1  | 20.56  | 20.72 | 20.86  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 20.50  | 20.59 | 20.84  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 20.58  | 20.75 | 20.89  | 22.3                   | 0           |
| 1.4             | 16QAM | 1  | 0  | 20.73  | 20.88 | 21.09  | 22.3                   | 0           |
| 1.4             | 16QAM | 1  | 3  | 20.82  | 20.97 | 21.13  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 20.74  | 20.92 | 21.04  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 20.57  | 20.71 | 20.85  |                        |             |
| 1.4             | 16QAM | 3  | 1  | 20.56  | 20.73 | 20.89  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 20.49  | 20.70 | 20.86  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 20.33  | 20.50 | 20.69  | 22                     | 0.3         |



**<LTE Band 4>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|-------------|
| Channel         |            |         |           | 20050                    | 20175                       | 20300                     |                        |             |
| Frequency (MHz) |            |         |           | 1720                     | 1732.5                      | 1745                      |                        |             |
| 20              | QPSK       | 1       | 0         | 20.56                    | 20.86                       | 20.50                     | 22.2                   | 0           |
| 20              | QPSK       | 1       | 49        | 20.76                    | 20.87                       | 20.88                     |                        |             |
| 20              | QPSK       | 1       | 99        | 20.69                    | 20.79                       | 20.85                     |                        |             |
| 20              | QPSK       | 50      | 0         | 20.91                    | 21.02                       | 20.97                     | 22.2                   | 0           |
| 20              | QPSK       | 50      | 24        | 20.93                    | 20.99                       | 20.91                     |                        |             |
| 20              | QPSK       | 50      | 50        | 20.78                    | 20.93                       | 20.91                     |                        |             |
| 20              | QPSK       | 100     | 0         | 20.91                    | 21.01                       | 20.92                     |                        |             |
| 20              | 16QAM      | 1       | 0         | 20.68                    | 20.80                       | 20.88                     | 22.2                   | 0           |
| 20              | 16QAM      | 1       | 49        | 20.86                    | 20.94                       | 20.99                     |                        |             |
| 20              | 16QAM      | 1       | 99        | 20.69                    | 20.76                       | 20.96                     |                        |             |
| 20              | 16QAM      | 50      | 0         | 20.54                    | 20.56                       | 20.60                     | 22                     | 0.2         |
| 20              | 16QAM      | 50      | 24        | 20.49                    | 20.60                       | 20.51                     |                        |             |
| 20              | 16QAM      | 50      | 50        | 20.39                    | 20.53                       | 20.56                     |                        |             |
| 20              | 16QAM      | 100     | 0         | 20.54                    | 20.52                       | 20.57                     |                        |             |
| Channel         |            |         |           | 20025                    | 20175                       | 20325                     | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |            |         |           | 1717.5                   | 1732.5                      | 1747.5                    |                        |             |
| 15              | QPSK       | 1       | 0         | 20.20                    | 20.25                       | 20.31                     | 22.2                   | 0           |
| 15              | QPSK       | 1       | 37        | 20.53                    | 20.57                       | 20.59                     |                        |             |
| 15              | QPSK       | 1       | 74        | 20.57                    | 20.54                       | 20.67                     |                        |             |
| 15              | QPSK       | 36      | 0         | 20.69                    | 20.74                       | 20.89                     | 22.2                   | 0           |
| 15              | QPSK       | 36      | 20        | 20.75                    | 20.77                       | 20.79                     |                        |             |
| 15              | QPSK       | 36      | 39        | 20.66                    | 20.69                       | 20.71                     |                        |             |
| 15              | QPSK       | 75      | 0         | 20.74                    | 20.77                       | 20.78                     |                        |             |
| 15              | 16QAM      | 1       | 0         | 20.84                    | 20.99                       | 20.98                     | 22.2                   | 0           |
| 15              | 16QAM      | 1       | 37        | 20.76                    | 20.66                       | 20.92                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 20.76                    | 20.78                       | 20.88                     |                        |             |
| 15              | 16QAM      | 36      | 0         | 20.51                    | 20.50                       | 20.67                     | 22                     | 0.2         |
| 15              | 16QAM      | 36      | 20        | 20.53                    | 20.59                       | 20.61                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 20.47                    | 20.51                       | 20.48                     |                        |             |
| 15              | 16QAM      | 75      | 0         | 20.51                    | 20.58                       | 20.58                     |                        |             |
| Channel         |            |         |           | 20000                    | 20175                       | 20350                     | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |            |         |           | 1715                     | 1732.5                      | 1750                      |                        |             |
| 10              | QPSK       | 1       | 0         | 20.58                    | 20.53                       | 20.51                     | 22.2                   | 0           |
| 10              | QPSK       | 1       | 25        | 20.72                    | 20.81                       | 20.71                     |                        |             |
| 10              | QPSK       | 1       | 49        | 21.01                    | 20.98                       | 20.93                     |                        |             |
| 10              | QPSK       | 25      | 0         | 20.92                    | 20.91                       | 20.90                     | 22.2                   | 0           |
| 10              | QPSK       | 25      | 12        | 20.89                    | 20.90                       | 20.85                     |                        |             |
| 10              | QPSK       | 25      | 25        | 20.85                    | 21.00                       | 20.93                     |                        |             |
| 10              | QPSK       | 50      | 0         | 20.91                    | 20.97                       | 20.90                     |                        |             |
| 10              | 16QAM      | 1       | 0         | 20.83                    | 20.86                       | 21.01                     | 22.2                   | 0           |
| 10              | 16QAM      | 1       | 25        | 21.01                    | 20.87                       | 21.00                     |                        |             |
| 10              | 16QAM      | 1       | 49        | 20.83                    | 20.89                       | 20.82                     |                        |             |
| 10              | 16QAM      | 25      | 0         | 20.74                    | 20.77                       | 20.70                     | 22                     | 0.2         |
| 10              | 16QAM      | 25      | 12        | 20.67                    | 20.72                       | 20.68                     |                        |             |
| 10              | 16QAM      | 25      | 25        | 20.82                    | 20.76                       | 20.77                     |                        |             |
| 10              | 16QAM      | 50      | 0         | 20.80                    | 20.82                       | 20.69                     |                        |             |



| Channel         |       |    |    | 19975  | 20175  | 20375  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|--------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1712.5 | 1732.5 | 1752.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 20.25  | 20.22  | 20.23  | 22.2                   | 0           |
| 5               | QPSK  | 1  | 12 | 20.74  | 20.83  | 20.75  |                        |             |
| 5               | QPSK  | 1  | 24 | 20.83  | 20.75  | 20.72  |                        |             |
| 5               | QPSK  | 12 | 0  | 20.93  | 20.89  | 20.92  | 22.2                   | 0           |
| 5               | QPSK  | 12 | 7  | 20.90  | 20.88  | 20.82  |                        |             |
| 5               | QPSK  | 12 | 13 | 20.83  | 20.84  | 20.85  |                        |             |
| 5               | QPSK  | 25 | 0  | 20.92  | 20.91  | 20.85  |                        |             |
| 5               | 16QAM | 1  | 0  | 20.82  | 20.89  | 21.00  | 22.2                   | 0           |
| 5               | 16QAM | 1  | 12 | 20.82  | 20.85  | 20.99  |                        |             |
| 5               | 16QAM | 1  | 24 | 20.86  | 20.94  | 21.01  |                        |             |
| 5               | 16QAM | 12 | 0  | 20.74  | 20.71  | 20.74  | 22                     | 0.2         |
| 5               | 16QAM | 12 | 7  | 20.70  | 20.73  | 20.66  |                        |             |
| 5               | 16QAM | 12 | 13 | 20.67  | 20.64  | 20.70  |                        |             |
| 5               | 16QAM | 25 | 0  | 20.72  | 20.75  | 20.66  |                        |             |
| Channel         |       |    |    | 19965  | 20175  | 20385  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1711.5 | 1732.5 | 1753.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 20.76  | 20.26  | 20.23  | 22.2                   | 0           |
| 3               | QPSK  | 1  | 8  | 20.75  | 20.74  | 20.71  |                        |             |
| 3               | QPSK  | 1  | 14 | 20.68  | 20.64  | 20.61  |                        |             |
| 3               | QPSK  | 8  | 0  | 20.78  | 20.78  | 20.75  | 22.2                   | 0           |
| 3               | QPSK  | 8  | 4  | 20.79  | 20.80  | 20.78  |                        |             |
| 3               | QPSK  | 8  | 7  | 20.68  | 20.76  | 20.73  |                        |             |
| 3               | QPSK  | 15 | 0  | 20.78  | 20.77  | 20.66  |                        |             |
| 3               | 16QAM | 1  | 0  | 20.98  | 20.96  | 20.93  | 22.2                   | 0           |
| 3               | 16QAM | 1  | 8  | 21.01  | 20.98  | 20.96  |                        |             |
| 3               | 16QAM | 1  | 14 | 20.92  | 20.86  | 20.90  |                        |             |
| 3               | 16QAM | 8  | 0  | 20.61  | 20.61  | 20.60  | 22                     | 0.2         |
| 3               | 16QAM | 8  | 4  | 20.66  | 20.66  | 20.62  |                        |             |
| 3               | 16QAM | 8  | 7  | 20.57  | 20.61  | 20.57  |                        |             |
| 3               | 16QAM | 15 | 0  | 20.62  | 20.62  | 20.50  |                        |             |
| Channel         |       |    |    | 19957  | 20175  | 20393  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1710.7 | 1732.5 | 1754.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 20.64  | 20.23  | 20.28  | 22.2                   | 0           |
| 1.4             | QPSK  | 1  | 3  | 20.66  | 20.72  | 20.68  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 20.63  | 20.67  | 20.58  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 20.53  | 20.60  | 20.68  |                        |             |
| 1.4             | QPSK  | 3  | 1  | 20.80  | 20.74  | 20.72  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 20.66  | 20.70  | 20.67  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 20.66  | 20.77  | 20.74  | 22.2                   | 0           |
| 1.4             | 16QAM | 1  | 0  | 20.91  | 20.83  | 20.91  | 22.2                   | 0           |
| 1.4             | 16QAM | 1  | 3  | 20.90  | 20.98  | 20.93  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 20.88  | 20.89  | 20.81  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 20.75  | 20.65  | 20.69  |                        |             |
| 1.4             | 16QAM | 3  | 1  | 20.78  | 20.77  | 20.72  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 20.64  | 20.71  | 20.65  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 20.58  | 20.66  | 20.59  | 22                     | 0.2         |



**<LTE Band 5>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 20450                 | 20525                    | 20600                  | 24                  | 0        |
| Frequency (MHz) |            |         |           | 829                   | 836.5                    | 844                    |                     |          |
| 10              | QPSK       | 1       | 0         | 22.61                 | 22.85                    | 22.77                  |                     |          |
| 10              | QPSK       | 1       | 25        | 22.53                 | 22.48                    | 22.37                  | 23                  | 1        |
| 10              | QPSK       | 1       | 49        | 22.77                 | 22.78                    | 22.84                  |                     |          |
| 10              | QPSK       | 25      | 0         | 21.65                 | 21.59                    | 21.74                  |                     |          |
| 10              | QPSK       | 25      | 12        | 21.62                 | 21.55                    | 21.63                  | 23                  | 1        |
| 10              | QPSK       | 25      | 25        | 21.63                 | 21.60                    | 21.77                  |                     |          |
| 10              | QPSK       | 50      | 0         | 21.64                 | 21.64                    | 21.75                  |                     |          |
| 10              | 16QAM      | 1       | 0         | 21.84                 | 21.93                    | 21.96                  | 23                  | 1        |
| 10              | 16QAM      | 1       | 25        | 21.81                 | 21.73                    | 21.78                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 21.97                 | 22.08                    | 22.08                  |                     |          |
| 10              | 16QAM      | 25      | 0         | 20.64                 | 20.57                    | 20.72                  | 22                  | 2        |
| 10              | 16QAM      | 25      | 12        | 20.61                 | 20.53                    | 20.64                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.63                 | 20.64                    | 20.69                  |                     |          |
| 10              | 16QAM      | 50      | 0         | 20.66                 | 20.63                    | 20.78                  | 24                  | 0        |
| Channel         |            |         |           | 20425                 | 20525                    | 20625                  |                     |          |
| Frequency (MHz) |            |         |           | 826.5                 | 836.5                    | 846.5                  |                     |          |
| 5               | QPSK       | 1       | 0         | 22.61                 | 22.52                    | 22.57                  | 24                  | 0        |
| 5               | QPSK       | 1       | 12        | 22.54                 | 22.57                    | 22.36                  |                     |          |
| 5               | QPSK       | 1       | 24        | 22.53                 | 22.55                    | 22.51                  |                     |          |
| 5               | QPSK       | 12      | 0         | 21.57                 | 21.57                    | 21.61                  | 23                  | 1        |
| 5               | QPSK       | 12      | 7         | 21.63                 | 21.66                    | 21.58                  |                     |          |
| 5               | QPSK       | 12      | 13        | 21.59                 | 21.62                    | 21.72                  |                     |          |
| 5               | QPSK       | 25      | 0         | 21.66                 | 21.67                    | 21.60                  | 23                  | 1        |
| 5               | 16QAM      | 1       | 0         | 21.87                 | 21.81                    | 21.83                  |                     |          |
| 5               | 16QAM      | 1       | 12        | 21.85                 | 21.83                    | 21.73                  |                     |          |
| 5               | 16QAM      | 1       | 24        | 21.81                 | 21.77                    | 21.71                  | 22                  | 2        |
| 5               | 16QAM      | 12      | 0         | 20.62                 | 20.61                    | 20.61                  |                     |          |
| 5               | 16QAM      | 12      | 7         | 20.67                 | 20.59                    | 20.63                  |                     |          |
| 5               | 16QAM      | 12      | 13        | 20.59                 | 20.55                    | 20.63                  | 24                  | 0        |
| 5               | 16QAM      | 25      | 0         | 20.69                 | 20.59                    | 20.55                  |                     |          |
| Channel         |            |         |           | 20415                 | 20525                    | 20635                  |                     |          |
| Frequency (MHz) |            |         |           | 825.5                 | 836.5                    | 847.5                  |                     |          |
| 3               | QPSK       | 1       | 0         | 22.38                 | 22.56                    | 22.56                  | 24                  | 0        |
| 3               | QPSK       | 1       | 8         | 22.51                 | 22.48                    | 22.47                  |                     |          |
| 3               | QPSK       | 1       | 14        | 22.48                 | 22.41                    | 22.39                  |                     |          |
| 3               | QPSK       | 8       | 0         | 21.55                 | 21.54                    | 21.49                  | 23                  | 1        |
| 3               | QPSK       | 8       | 4         | 21.54                 | 21.55                    | 21.56                  |                     |          |
| 3               | QPSK       | 8       | 7         | 21.48                 | 21.48                    | 21.50                  |                     |          |
| 3               | QPSK       | 15      | 0         | 21.50                 | 21.58                    | 21.49                  | 23                  | 1        |
| 3               | 16QAM      | 1       | 0         | 21.79                 | 21.70                    | 21.71                  |                     |          |
| 3               | 16QAM      | 1       | 8         | 21.79                 | 21.78                    | 21.72                  |                     |          |
| 3               | 16QAM      | 1       | 14        | 21.73                 | 21.68                    | 21.72                  | 22                  | 2        |
| 3               | 16QAM      | 8       | 0         | 20.61                 | 20.62                    | 20.64                  |                     |          |
| 3               | 16QAM      | 8       | 4         | 20.62                 | 20.61                    | 20.67                  |                     |          |
| 3               | 16QAM      | 8       | 7         | 20.57                 | 20.54                    | 20.59                  | 22                  | 2        |
| 3               | 16QAM      | 15      | 0         | 20.54                 | 20.61                    | 20.51                  |                     |          |



# Exhibit 11

Report No. : FA720310

| Channel         |       |   |   | 20407 | 20525 | 20643 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|---|---|-------|-------|-------|------------------------|-------------|
| Frequency (MHz) |       |   |   | 824.7 | 836.5 | 848.3 |                        |             |
| 1.4             | QPSK  | 1 | 0 | 22.48 | 22.54 | 22.53 | 24                     | 0           |
| 1.4             | QPSK  | 1 | 3 | 22.55 | 22.58 | 22.58 |                        |             |
| 1.4             | QPSK  | 1 | 5 | 22.52 | 22.50 | 22.46 |                        |             |
| 1.4             | QPSK  | 3 | 0 | 22.46 | 22.47 | 22.43 |                        |             |
| 1.4             | QPSK  | 3 | 1 | 22.52 | 22.48 | 22.42 |                        |             |
| 1.4             | QPSK  | 3 | 3 | 22.53 | 22.55 | 22.49 |                        |             |
| 1.4             | QPSK  | 6 | 0 | 21.56 | 21.59 | 21.59 | 23                     | 1           |
| 1.4             | 16QAM | 1 | 0 | 21.73 | 21.72 | 21.75 | 23                     | 1           |
| 1.4             | 16QAM | 1 | 3 | 21.81 | 21.86 | 21.80 |                        |             |
| 1.4             | 16QAM | 1 | 5 | 21.75 | 21.71 | 21.69 |                        |             |
| 1.4             | 16QAM | 3 | 0 | 21.47 | 21.50 | 21.59 |                        |             |
| 1.4             | 16QAM | 3 | 1 | 21.56 | 21.54 | 21.57 |                        |             |
| 1.4             | 16QAM | 3 | 3 | 21.54 | 21.55 | 21.54 |                        |             |
| 1.4             | 16QAM | 6 | 0 | 20.60 | 20.70 | 20.56 | 22                     | 2           |

**<LTE Band 7>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 20850                 | 21100                    | 21350                  | 23.6                | 0        |
| Frequency (MHz) |            |         |           | 2510                  | 2535                     | 2560                   |                     |          |
| 20              | QPSK       | 1       | 0         | 22.00                 | 21.78                    | 22.12                  |                     |          |
| 20              | QPSK       | 1       | 49        | 21.96                 | 21.89                    | 21.93                  | 23                  | 0.6      |
| 20              | QPSK       | 1       | 99        | 22.01                 | 21.98                    | 22.13                  |                     |          |
| 20              | QPSK       | 50      | 0         | 21.71                 | 21.66                    | 21.72                  |                     |          |
| 20              | QPSK       | 50      | 24        | 21.65                 | 21.64                    | 21.70                  | 23                  | 0.6      |
| 20              | QPSK       | 50      | 50        | 21.68                 | 21.67                    | 21.69                  |                     |          |
| 20              | QPSK       | 100     | 0         | 21.68                 | 21.69                    | 21.70                  |                     |          |
| 20              | 16QAM      | 1       | 0         | 21.68                 | 21.66                    | 21.75                  | 23                  | 0.6      |
| 20              | 16QAM      | 1       | 49        | 21.74                 | 21.66                    | 21.72                  |                     |          |
| 20              | 16QAM      | 1       | 99        | 21.76                 | 21.84                    | 21.72                  |                     |          |
| 20              | 16QAM      | 50      | 0         | 20.48                 | 20.51                    | 20.49                  | 22                  | 1.6      |
| 20              | 16QAM      | 50      | 24        | 20.44                 | 20.50                    | 20.49                  |                     |          |
| 20              | 16QAM      | 50      | 50        | 20.47                 | 20.48                    | 20.49                  |                     |          |
| 20              | 16QAM      | 100     | 0         | 20.43                 | 20.42                    | 20.52                  | 23.6                | 0        |
| Channel         |            |         |           | 20825                 | 21100                    | 21375                  |                     |          |
| Frequency (MHz) |            |         |           | 2507.5                | 2535                     | 2562.5                 |                     |          |
| 15              | QPSK       | 1       | 0         | 21.89                 | 21.76                    | 21.93                  | 23.6                | 0        |
| 15              | QPSK       | 1       | 37        | 22.00                 | 21.72                    | 21.68                  |                     |          |
| 15              | QPSK       | 1       | 74        | 21.97                 | 22.09                    | 21.99                  |                     |          |
| 15              | QPSK       | 36      | 0         | 21.43                 | 21.42                    | 21.55                  | 23                  | 0.6      |
| 15              | QPSK       | 36      | 20        | 21.54                 | 21.41                    | 21.62                  |                     |          |
| 15              | QPSK       | 36      | 39        | 21.43                 | 21.47                    | 21.49                  |                     |          |
| 15              | QPSK       | 75      | 0         | 21.47                 | 21.42                    | 21.46                  | 23                  | 0.6      |
| 15              | 16QAM      | 1       | 0         | 21.64                 | 21.57                    | 21.70                  |                     |          |
| 15              | 16QAM      | 1       | 37        | 21.65                 | 21.55                    | 21.58                  |                     |          |
| 15              | 16QAM      | 1       | 74        | 21.68                 | 21.74                    | 21.66                  | 22                  | 1.6      |
| 15              | 16QAM      | 36      | 0         | 20.44                 | 20.43                    | 20.53                  |                     |          |
| 15              | 16QAM      | 36      | 20        | 20.53                 | 20.46                    | 20.59                  |                     |          |
| 15              | 16QAM      | 36      | 39        | 20.44                 | 20.49                    | 20.51                  | 23.6                | 0        |
| 15              | 16QAM      | 75      | 0         | 20.48                 | 20.47                    | 20.49                  |                     |          |
| Channel         |            |         |           | 20800                 | 21100                    | 21400                  |                     |          |
| Frequency (MHz) |            |         |           | 2505                  | 2535                     | 2565                   |                     |          |
| 10              | QPSK       | 1       | 0         | 22.13                 | 22.11                    | 22.36                  | 23.6                | 0        |
| 10              | QPSK       | 1       | 25        | 22.08                 | 21.95                    | 22.02                  |                     |          |
| 10              | QPSK       | 1       | 49        | 22.04                 | 22.03                    | 22.03                  |                     |          |
| 10              | QPSK       | 25      | 0         | 21.59                 | 21.55                    | 21.60                  | 23                  | 0.6      |
| 10              | QPSK       | 25      | 12        | 21.67                 | 21.46                    | 21.57                  |                     |          |
| 10              | QPSK       | 25      | 25        | 21.57                 | 21.55                    | 21.57                  |                     |          |
| 10              | QPSK       | 50      | 0         | 21.58                 | 21.47                    | 21.54                  | 23                  | 0.6      |
| 10              | 16QAM      | 1       | 0         | 21.92                 | 21.91                    | 21.97                  |                     |          |
| 10              | 16QAM      | 1       | 25        | 21.74                 | 21.67                    | 21.75                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 21.99                 | 21.78                    | 21.92                  | 22                  | 1.6      |
| 10              | 16QAM      | 25      | 0         | 20.58                 | 20.52                    | 20.64                  |                     |          |
| 10              | 16QAM      | 25      | 12        | 20.67                 | 20.45                    | 20.61                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.53                 | 20.52                    | 20.55                  | 22                  | 1.6      |
| 10              | 16QAM      | 50      | 0         | 20.57                 | 20.51                    | 20.54                  |                     |          |



# Exhibit 11

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| Channel         |       |    |    | 20775  | 21100 | 21425  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 2502.5 | 2535  | 2567.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 22.00  | 21.94 | 22.00  | 23.6                   | 0           |
| 5               | QPSK  | 1  | 12 | 22.09  | 21.95 | 22.09  |                        |             |
| 5               | QPSK  | 1  | 24 | 22.04  | 22.03 | 22.05  |                        |             |
| 5               | QPSK  | 12 | 0  | 21.62  | 21.56 | 21.60  | 23                     | 0.6         |
| 5               | QPSK  | 12 | 7  | 21.56  | 21.48 | 21.58  |                        |             |
| 5               | QPSK  | 12 | 13 | 21.59  | 21.48 | 21.56  |                        |             |
| 5               | QPSK  | 25 | 0  | 21.60  | 21.53 | 21.59  |                        |             |
| 5               | 16QAM | 1  | 0  | 21.82  | 21.76 | 21.76  | 23                     | 0.6         |
| 5               | 16QAM | 1  | 12 | 21.75  | 21.56 | 21.69  |                        |             |
| 5               | 16QAM | 1  | 24 | 21.77  | 21.74 | 21.80  |                        |             |
| 5               | 16QAM | 12 | 0  | 20.69  | 20.56 | 20.62  | 22                     | 1.6         |
| 5               | 16QAM | 12 | 7  | 20.57  | 20.48 | 20.63  |                        |             |
| 5               | 16QAM | 12 | 13 | 20.63  | 20.50 | 20.61  |                        |             |
| 5               | 16QAM | 25 | 0  | 20.58  | 20.49 | 20.60  |                        |             |



**<LTE Band 12>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 23060                 | 23095                    | 23130                  |                     |          |
| Frequency (MHz) |            |         |           | 704                   | 707.5                    | 711                    |                     |          |
| 10              | QPSK       | 1       | 0         | 22.19                 | 22.19                    | 22.32                  | 24                  | 0        |
| 10              | QPSK       | 1       | 25        | 22.47                 | 22.69                    | 22.67                  |                     |          |
| 10              | QPSK       | 1       | 49        | 22.19                 | 22.26                    | 22.22                  |                     |          |
| 10              | QPSK       | 25      | 0         | 21.44                 | 21.44                    | 21.52                  | 23                  | 1        |
| 10              | QPSK       | 25      | 12        | 21.50                 | 21.70                    | 21.68                  |                     |          |
| 10              | QPSK       | 25      | 25        | 21.49                 | 21.60                    | 21.58                  |                     |          |
| 10              | QPSK       | 50      | 0         | 21.48                 | 21.62                    | 21.58                  | 23                  | 1        |
| 10              | 16QAM      | 1       | 0         | 21.42                 | 21.46                    | 21.49                  |                     |          |
| 10              | 16QAM      | 1       | 25        | 21.87                 | 21.79                    | 21.82                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 21.50                 | 21.52                    | 21.44                  | 22                  | 2        |
| 10              | 16QAM      | 25      | 0         | 20.43                 | 20.45                    | 20.54                  |                     |          |
| 10              | 16QAM      | 25      | 12        | 20.53                 | 20.63                    | 20.72                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.52                 | 20.60                    | 20.58                  | 22                  | 2        |
| 10              | 16QAM      | 50      | 0         | 20.45                 | 20.49                    | 20.62                  |                     |          |
| Channel         |            |         |           | 23035                 | 23095                    | 23155                  | Tune-up limit (dBm) | MPR (dB) |
| Frequency (MHz) |            |         |           | 701.5                 | 707.5                    | 713.5                  |                     |          |
| 5               | QPSK       | 1       | 0         | 22.48                 | 22.62                    | 22.66                  | 24                  | 0        |
| 5               | QPSK       | 1       | 12        | 22.17                 | 22.29                    | 22.43                  |                     |          |
| 5               | QPSK       | 1       | 24        | 22.37                 | 22.66                    | 22.45                  |                     |          |
| 5               | QPSK       | 12      | 0         | 21.36                 | 21.65                    | 21.56                  | 23                  | 1        |
| 5               | QPSK       | 12      | 7         | 21.43                 | 21.65                    | 21.58                  |                     |          |
| 5               | QPSK       | 12      | 13        | 21.42                 | 21.65                    | 21.55                  |                     |          |
| 5               | QPSK       | 25      | 0         | 21.40                 | 21.65                    | 21.60                  | 23                  | 1        |
| 5               | 16QAM      | 1       | 0         | 21.55                 | 21.80                    | 21.77                  |                     |          |
| 5               | 16QAM      | 1       | 12        | 21.55                 | 21.78                    | 21.73                  |                     |          |
| 5               | 16QAM      | 1       | 24        | 21.65                 | 21.96                    | 21.81                  | 22                  | 2        |
| 5               | 16QAM      | 12      | 0         | 20.36                 | 20.63                    | 20.56                  |                     |          |
| 5               | 16QAM      | 12      | 7         | 20.45                 | 20.64                    | 20.52                  |                     |          |
| 5               | 16QAM      | 12      | 13        | 20.44                 | 20.69                    | 20.57                  | 22                  | 2        |
| 5               | 16QAM      | 25      | 0         | 20.43                 | 20.65                    | 20.58                  |                     |          |
| Channel         |            |         |           | 23025                 | 23095                    | 23165                  | Tune-up limit (dBm) | MPR (dB) |
| Frequency (MHz) |            |         |           | 700.5                 | 707.5                    | 714.5                  |                     |          |
| 3               | QPSK       | 1       | 0         | 22.44                 | 22.68                    | 22.62                  | 24                  | 0        |
| 3               | QPSK       | 1       | 8         | 22.35                 | 22.59                    | 22.45                  |                     |          |
| 3               | QPSK       | 1       | 14        | 22.37                 | 22.54                    | 22.40                  |                     |          |
| 3               | QPSK       | 8       | 0         | 21.41                 | 21.68                    | 21.54                  | 23                  | 1        |
| 3               | QPSK       | 8       | 4         | 21.39                 | 21.61                    | 21.58                  |                     |          |
| 3               | QPSK       | 8       | 7         | 21.40                 | 21.58                    | 21.55                  |                     |          |
| 3               | QPSK       | 15      | 0         | 21.38                 | 21.58                    | 21.55                  | 23                  | 1        |
| 3               | 16QAM      | 1       | 0         | 21.54                 | 21.80                    | 21.73                  |                     |          |
| 3               | 16QAM      | 1       | 8         | 21.58                 | 21.94                    | 21.68                  |                     |          |
| 3               | 16QAM      | 1       | 14        | 21.62                 | 21.85                    | 21.69                  | 22                  | 2        |
| 3               | 16QAM      | 8       | 0         | 20.46                 | 20.71                    | 20.61                  |                     |          |
| 3               | 16QAM      | 8       | 4         | 20.39                 | 20.70                    | 20.60                  |                     |          |
| 3               | 16QAM      | 8       | 7         | 20.45                 | 20.70                    | 20.61                  | 22                  | 2        |
| 3               | 16QAM      | 15      | 0         | 20.36                 | 20.64                    | 20.55                  |                     |          |



# Exhibit 11

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| Channel         |       |   |   | 23017 | 23095 | 23173 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|---|---|-------|-------|-------|------------------------|-------------|
| Frequency (MHz) |       |   |   | 699.7 | 707.5 | 715.3 |                        |             |
| 1.4             | QPSK  | 1 | 0 | 22.45 | 22.64 | 22.57 | 24                     | 0           |
| 1.4             | QPSK  | 1 | 3 | 22.37 | 22.55 | 22.44 |                        |             |
| 1.4             | QPSK  | 1 | 5 | 22.21 | 22.54 | 22.34 |                        |             |
| 1.4             | QPSK  | 3 | 0 | 22.32 | 22.50 | 22.44 |                        |             |
| 1.4             | QPSK  | 3 | 1 | 22.35 | 22.56 | 22.44 |                        |             |
| 1.4             | QPSK  | 3 | 3 | 22.35 | 22.53 | 22.36 |                        |             |
| 1.4             | QPSK  | 6 | 0 | 21.37 | 21.59 | 21.50 | 23                     | 1           |
| 1.4             | 16QAM | 1 | 0 | 21.53 | 21.71 | 21.67 | 23                     | 1           |
| 1.4             | 16QAM | 1 | 3 | 21.63 | 21.81 | 21.69 |                        |             |
| 1.4             | 16QAM | 1 | 5 | 21.53 | 21.76 | 21.75 |                        |             |
| 1.4             | 16QAM | 3 | 0 | 21.36 | 21.56 | 21.48 |                        |             |
| 1.4             | 16QAM | 3 | 1 | 21.42 | 21.61 | 21.51 |                        |             |
| 1.4             | 16QAM | 3 | 3 | 21.35 | 21.55 | 21.42 |                        |             |
| 1.4             | 16QAM | 6 | 0 | 20.46 | 20.59 | 20.49 | 22                     | 2           |

**<LTE Band 13>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power<br>Low<br>Ch. / Freq. | Power<br>Middle<br>Ch. / Freq. | Power<br>High<br>Ch. / Freq. | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|------------|---------|-----------|-----------------------------|--------------------------------|------------------------------|------------------------|-------------|
| Channel         |            |         |           | 23230                       |                                |                              | 24                     | 0           |
| Frequency (MHz) |            |         |           | 782                         |                                |                              |                        |             |
| 10              | QPSK       | 1       | 0         | 22.98                       |                                |                              |                        |             |
| 10              | QPSK       | 1       | 25        | 22.80                       |                                |                              | 23                     | 1           |
| 10              | QPSK       | 1       | 49        | 23.00                       |                                |                              |                        |             |
| 10              | QPSK       | 25      | 0         | 21.97                       |                                |                              |                        |             |
| 10              | QPSK       | 25      | 12        | 21.80                       |                                |                              | 23                     | 1           |
| 10              | QPSK       | 25      | 25        | 21.90                       |                                |                              |                        |             |
| 10              | QPSK       | 50      | 0         | 21.85                       |                                |                              |                        |             |
| 10              | 16QAM      | 1       | 0         | 22.12                       |                                |                              | 23                     | 1           |
| 10              | 16QAM      | 1       | 25        | 21.97                       |                                |                              |                        |             |
| 10              | 16QAM      | 1       | 49        | 22.12                       |                                |                              |                        |             |
| 10              | 16QAM      | 25      | 0         | 20.87                       |                                |                              | 22                     | 2           |
| 10              | 16QAM      | 25      | 12        | 20.81                       |                                |                              |                        |             |
| 10              | 16QAM      | 25      | 25        | 20.87                       |                                |                              |                        |             |
| 10              | 16QAM      | 50      | 0         | 20.96                       |                                |                              | 24                     | 0           |
| Channel         |            |         |           | 23205                       | 23230                          | 23255                        |                        |             |
| Frequency (MHz) |            |         |           | 779.5                       | 782                            | 784.5                        |                        |             |
| 5               | QPSK       | 1       | 0         | 22.69                       | 22.90                          | 22.87                        | 24                     | 0           |
| 5               | QPSK       | 1       | 12        | 22.47                       | 22.77                          | 22.75                        |                        |             |
| 5               | QPSK       | 1       | 24        | 22.58                       | 22.81                          | 22.69                        |                        |             |
| 5               | QPSK       | 12      | 0         | 21.65                       | 21.86                          | 21.87                        | 23                     | 1           |
| 5               | QPSK       | 12      | 7         | 21.69                       | 21.87                          | 21.94                        |                        |             |
| 5               | QPSK       | 12      | 13        | 21.65                       | 21.87                          | 21.82                        |                        |             |
| 5               | QPSK       | 25      | 0         | 21.64                       | 21.90                          | 21.88                        | 23                     | 1           |
| 5               | 16QAM      | 1       | 0         | 21.78                       | 22.05                          | 22.00                        |                        |             |
| 5               | 16QAM      | 1       | 12        | 21.79                       | 22.00                          | 21.94                        |                        |             |
| 5               | 16QAM      | 1       | 24        | 21.84                       | 22.00                          | 21.88                        | 22                     | 2           |
| 5               | 16QAM      | 12      | 0         | 20.69                       | 20.89                          | 20.79                        |                        |             |
| 5               | 16QAM      | 12      | 7         | 20.68                       | 20.91                          | 20.87                        |                        |             |
| 5               | 16QAM      | 12      | 13        | 20.68                       | 20.87                          | 20.79                        | 22                     | 2           |
| 5               | 16QAM      | 25      | 0         | 20.69                       | 20.89                          | 20.83                        |                        |             |



**<LTE Band 17>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 23780                 | 23790                    | 23800                  | 24                  | 0        |
| Frequency (MHz) |            |         |           | 709                   | 710                      | 711                    |                     |          |
| 10              | QPSK       | 1       | 0         | 22.22                 | 22.31                    | 22.42                  |                     |          |
| 10              | QPSK       | 1       | 25        | 22.54                 | 22.66                    | 22.60                  | 23                  | 1        |
| 10              | QPSK       | 1       | 49        | 22.37                 | 22.39                    | 22.36                  |                     |          |
| 10              | QPSK       | 25      | 0         | 21.62                 | 21.42                    | 21.48                  |                     |          |
| 10              | QPSK       | 25      | 12        | 21.69                 | 21.71                    | 21.71                  | 23                  | 1        |
| 10              | QPSK       | 25      | 25        | 21.58                 | 21.62                    | 21.65                  |                     |          |
| 10              | QPSK       | 50      | 0         | 21.55                 | 21.52                    | 21.54                  |                     |          |
| 10              | 16QAM      | 1       | 0         | 21.45                 | 21.46                    | 21.39                  | 23                  | 1        |
| 10              | 16QAM      | 1       | 25        | 21.84                 | 21.87                    | 21.84                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 21.47                 | 21.45                    | 21.46                  |                     |          |
| 10              | 16QAM      | 25      | 0         | 20.56                 | 20.49                    | 20.50                  | 22                  | 2        |
| 10              | 16QAM      | 25      | 12        | 20.69                 | 20.73                    | 20.72                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.57                 | 20.54                    | 20.57                  |                     |          |
| 10              | 16QAM      | 50      | 0         | 20.60                 | 20.59                    | 20.57                  | 24                  | 0        |
| Channel         |            |         |           | 23755                 | 23790                    | 23825                  |                     |          |
| Frequency (MHz) |            |         |           | 706.5                 | 710                      | 713.5                  |                     |          |
| 5               | QPSK       | 1       | 0         | 22.64                 | 22.77                    | 22.74                  | 24                  | 0        |
| 5               | QPSK       | 1       | 12        | 22.34                 | 22.61                    | 22.53                  |                     |          |
| 5               | QPSK       | 1       | 24        | 22.51                 | 22.62                    | 22.51                  |                     |          |
| 5               | QPSK       | 12      | 0         | 21.53                 | 21.63                    | 21.65                  | 23                  | 1        |
| 5               | QPSK       | 12      | 7         | 21.57                 | 21.69                    | 21.75                  |                     |          |
| 5               | QPSK       | 12      | 13        | 21.60                 | 21.76                    | 21.65                  |                     |          |
| 5               | QPSK       | 25      | 0         | 21.50                 | 21.71                    | 21.73                  | 23                  | 1        |
| 5               | 16QAM      | 1       | 0         | 21.72                 | 21.86                    | 21.90                  |                     |          |
| 5               | 16QAM      | 1       | 12        | 21.76                 | 21.88                    | 21.78                  |                     |          |
| 5               | 16QAM      | 1       | 24        | 21.79                 | 21.87                    | 21.82                  | 22                  | 2        |
| 5               | 16QAM      | 12      | 0         | 20.54                 | 20.67                    | 20.64                  |                     |          |
| 5               | 16QAM      | 12      | 7         | 20.57                 | 20.70                    | 20.71                  |                     |          |
| 5               | 16QAM      | 12      | 13        | 20.60                 | 20.74                    | 20.67                  | 22                  | 2        |
| 5               | 16QAM      | 25      | 0         | 20.53                 | 20.72                    | 20.72                  |                     |          |

**<LTE Band 25>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 26140                 | 26340                    | 26590                  |                     |          |
| Frequency (MHz) |            |         |           | 1860                  | 1880                     | 1905                   |                     |          |
| 20              | QPSK       | 1       | 0         | 19.78                 | 19.99                    | 19.88                  | 21.4                | 0        |
| 20              | QPSK       | 1       | 49        | 20.24                 | 20.66                    | 20.37                  |                     |          |
| 20              | QPSK       | 1       | 99        | 20.13                 | 20.29                    | 20.24                  |                     |          |
| 20              | QPSK       | 50      | 0         | 20.40                 | 20.68                    | 20.50                  | 21.4                | 0        |
| 20              | QPSK       | 50      | 24        | 20.36                 | 20.53                    | 20.47                  |                     |          |
| 20              | QPSK       | 50      | 50        | 20.35                 | 20.52                    | 20.49                  |                     |          |
| 20              | QPSK       | 100     | 0         | 20.42                 | 20.53                    | 20.52                  | 21.4                | 0        |
| 20              | 16QAM      | 1       | 0         | 20.17                 | 20.35                    | 20.37                  |                     |          |
| 20              | 16QAM      | 1       | 49        | 20.36                 | 20.37                    | 20.43                  |                     |          |
| 20              | 16QAM      | 1       | 99        | 20.01                 | 20.21                    | 20.06                  | 21.4                | 0        |
| 20              | 16QAM      | 50      | 0         | 20.05                 | 20.32                    | 20.23                  |                     |          |
| 20              | 16QAM      | 50      | 24        | 20.16                 | 20.20                    | 20.21                  |                     |          |
| 20              | 16QAM      | 50      | 50        | 20.07                 | 20.24                    | 20.21                  | 21.4                | 0        |
| 20              | 16QAM      | 100     | 0         | 20.10                 | 20.21                    | 20.24                  |                     |          |
| Channel         |            |         |           | 26115                 | 26340                    | 26615                  |                     |          |
| Frequency (MHz) |            |         |           | 1857.5                | 1880                     | 1907.5                 |                     |          |
| 15              | QPSK       | 1       | 0         | 19.46                 | 19.60                    | 19.67                  | 21.4                | 0        |
| 15              | QPSK       | 1       | 37        | 19.90                 | 20.11                    | 19.85                  |                     |          |
| 15              | QPSK       | 1       | 74        | 20.16                 | 20.35                    | 20.30                  |                     |          |
| 15              | QPSK       | 36      | 0         | 20.13                 | 20.32                    | 20.31                  | 21.4                | 0        |
| 15              | QPSK       | 36      | 20        | 20.13                 | 20.37                    | 20.32                  |                     |          |
| 15              | QPSK       | 36      | 39        | 20.28                 | 20.32                    | 20.26                  |                     |          |
| 15              | QPSK       | 75      | 0         | 20.17                 | 20.37                    | 20.39                  | 21.4                | 0        |
| 15              | 16QAM      | 1       | 0         | 20.25                 | 20.27                    | 20.34                  |                     |          |
| 15              | 16QAM      | 1       | 37        | 20.20                 | 20.35                    | 20.28                  |                     |          |
| 15              | 16QAM      | 1       | 74        | 20.34                 | 20.32                    | 20.39                  | 21.4                | 0        |
| 15              | 16QAM      | 36      | 0         | 20.13                 | 20.36                    | 20.34                  |                     |          |
| 15              | 16QAM      | 36      | 20        | 20.11                 | 20.34                    | 20.30                  |                     |          |
| 15              | 16QAM      | 36      | 39        | 20.27                 | 20.35                    | 20.35                  | 21.4                | 0        |
| 15              | 16QAM      | 75      | 0         | 20.13                 | 20.39                    | 20.39                  |                     |          |
| Channel         |            |         |           | 26090                 | 26340                    | 26640                  |                     |          |
| Frequency (MHz) |            |         |           | 1855                  | 1880                     | 1910                   |                     |          |
| 10              | QPSK       | 1       | 0         | 19.54                 | 19.54                    | 19.68                  | 21.4                | 0        |
| 10              | QPSK       | 1       | 25        | 19.84                 | 19.84                    | 20.06                  |                     |          |
| 10              | QPSK       | 1       | 49        | 20.08                 | 20.09                    | 20.39                  |                     |          |
| 10              | QPSK       | 25      | 0         | 19.98                 | 19.96                    | 20.19                  | 21.4                | 0        |
| 10              | QPSK       | 25      | 12        | 19.94                 | 19.94                    | 20.18                  |                     |          |
| 10              | QPSK       | 25      | 25        | 19.98                 | 19.89                    | 20.26                  |                     |          |
| 10              | QPSK       | 50      | 0         | 19.97                 | 19.97                    | 20.20                  | 21.4                | 0        |
| 10              | 16QAM      | 1       | 0         | 20.35                 | 20.38                    | 20.40                  |                     |          |
| 10              | 16QAM      | 1       | 25        | 20.29                 | 20.09                    | 20.35                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 20.38                 | 20.43                    | 20.38                  | 21.4                | 0        |
| 10              | 16QAM      | 25      | 0         | 19.97                 | 19.96                    | 20.20                  |                     |          |
| 10              | 16QAM      | 25      | 12        | 19.94                 | 19.97                    | 20.20                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 19.96                 | 19.93                    | 20.28                  | 21.4                | 0        |
| 10              | 16QAM      | 50      | 0         | 19.99                 | 19.93                    | 20.23                  |                     |          |



| Channel         |       |    |    | 26065  | 26340 | 26665  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1852.5 | 1880  | 1912.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 19.42  | 19.40 | 19.58  | 21.4                   | 0           |
| 5               | QPSK  | 1  | 12 | 19.84  | 19.85 | 20.13  |                        |             |
| 5               | QPSK  | 1  | 24 | 19.86  | 19.81 | 20.13  |                        |             |
| 5               | QPSK  | 12 | 0  | 19.99  | 19.95 | 20.18  | 21.4                   | 0           |
| 5               | QPSK  | 12 | 7  | 19.92  | 19.90 | 20.16  |                        |             |
| 5               | QPSK  | 12 | 13 | 19.92  | 19.90 | 20.07  |                        |             |
| 5               | QPSK  | 25 | 0  | 19.95  | 19.94 | 20.23  |                        |             |
| 5               | 16QAM | 1  | 0  | 20.29  | 20.25 | 20.33  | 21.4                   | 0           |
| 5               | 16QAM | 1  | 12 | 20.15  | 20.15 | 20.38  |                        |             |
| 5               | 16QAM | 1  | 24 | 20.16  | 20.13 | 20.34  |                        |             |
| 5               | 16QAM | 12 | 0  | 20.01  | 20.01 | 20.20  | 21.4                   | 0           |
| 5               | 16QAM | 12 | 7  | 19.97  | 19.94 | 20.17  |                        |             |
| 5               | 16QAM | 12 | 13 | 19.94  | 19.89 | 20.06  |                        |             |
| 5               | 16QAM | 25 | 0  | 19.95  | 19.92 | 20.18  |                        |             |
| Channel         |       |    |    | 26055  | 26340 | 26675  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1851.5 | 1880  | 1913.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 19.58  | 19.48 | 19.52  | 21.4                   | 0           |
| 3               | QPSK  | 1  | 8  | 19.90  | 19.86 | 20.10  |                        |             |
| 3               | QPSK  | 1  | 14 | 19.83  | 19.81 | 20.10  |                        |             |
| 3               | QPSK  | 8  | 0  | 19.94  | 19.90 | 20.12  | 21.4                   | 0           |
| 3               | QPSK  | 8  | 4  | 19.89  | 19.89 | 20.14  |                        |             |
| 3               | QPSK  | 8  | 7  | 19.87  | 19.89 | 20.15  |                        |             |
| 3               | QPSK  | 15 | 0  | 19.92  | 19.88 | 20.13  |                        |             |
| 3               | 16QAM | 1  | 0  | 20.18  | 20.20 | 20.36  | 21.4                   | 0           |
| 3               | 16QAM | 1  | 8  | 20.18  | 20.16 | 20.39  |                        |             |
| 3               | 16QAM | 1  | 14 | 20.09  | 20.07 | 20.42  |                        |             |
| 3               | 16QAM | 8  | 0  | 20.01  | 19.96 | 20.17  | 21.4                   | 0           |
| 3               | 16QAM | 8  | 4  | 19.98  | 19.97 | 20.15  |                        |             |
| 3               | 16QAM | 8  | 7  | 19.95  | 19.93 | 20.22  |                        |             |
| 3               | 16QAM | 15 | 0  | 19.92  | 19.92 | 20.12  |                        |             |
| Channel         |       |    |    | 26047  | 26340 | 26683  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1850.7 | 1880  | 1914.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 19.46  | 19.52 | 19.47  | 21.4                   | 0           |
| 1.4             | QPSK  | 1  | 3  | 19.97  | 19.93 | 20.15  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 19.87  | 19.84 | 20.10  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 19.91  | 19.86 | 20.17  |                        |             |
| 1.4             | QPSK  | 3  | 1  | 19.96  | 19.92 | 20.18  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 19.92  | 19.79 | 20.15  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 19.93  | 19.91 | 20.15  | 21.4                   | 0           |
| 1.4             | 16QAM | 1  | 0  | 20.25  | 20.12 | 20.41  | 21.4                   | 0           |
| 1.4             | 16QAM | 1  | 3  | 20.23  | 20.16 | 20.37  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 20.11  | 20.04 | 20.30  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 19.94  | 19.93 | 20.18  |                        |             |
| 1.4             | 16QAM | 3  | 1  | 19.95  | 19.95 | 20.18  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 19.90  | 19.92 | 20.13  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 19.96  | 19.94 | 20.27  | 21.4                   | 0           |

**<LTE Band 26>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 26765                 | 26865                    | 26965                  | 24                  | 0        |
| Frequency (MHz) |            |         |           | 821.5                 | 831.5                    | 841.5                  |                     |          |
| 15              | QPSK       | 1       | 0         | 22.92                 | 22.87                    | 22.90                  |                     |          |
| 15              | QPSK       | 1       | 37        | 22.52                 | 22.65                    | 22.44                  | 23                  | 1        |
| 15              | QPSK       | 1       | 74        | 23.04                 | 23.06                    | 22.96                  |                     |          |
| 15              | QPSK       | 36      | 0         | 21.79                 | 21.92                    | 21.85                  |                     |          |
| 15              | QPSK       | 36      | 20        | 21.60                 | 21.64                    | 21.60                  | 23                  | 1        |
| 15              | QPSK       | 36      | 39        | 21.52                 | 21.36                    | 21.40                  |                     |          |
| 15              | QPSK       | 75      | 0         | 21.68                 | 21.64                    | 21.76                  |                     |          |
| 15              | 16QAM      | 1       | 0         | 22.15                 | 22.05                    | 22.02                  | 23                  | 1        |
| 15              | 16QAM      | 1       | 37        | 21.77                 | 21.83                    | 21.80                  |                     |          |
| 15              | 16QAM      | 1       | 74        | 22.26                 | 22.26                    | 22.19                  |                     |          |
| 15              | 16QAM      | 36      | 0         | 20.75                 | 20.85                    | 20.87                  | 22                  | 2        |
| 15              | 16QAM      | 36      | 20        | 20.61                 | 20.49                    | 20.57                  |                     |          |
| 15              | 16QAM      | 36      | 39        | 20.44                 | 20.42                    | 20.30                  |                     |          |
| 15              | 16QAM      | 75      | 0         | 20.66                 | 20.57                    | 20.69                  | 24                  | 0        |
| Channel         |            |         |           | 26740                 | 26865                    | 26990                  |                     |          |
| Frequency (MHz) |            |         |           | 819                   | 831.5                    | 844                    |                     |          |
| 10              | QPSK       | 1       | 0         | 22.34                 | 22.19                    | 22.38                  | 24                  | 0        |
| 10              | QPSK       | 1       | 25        | 22.49                 | 22.51                    | 22.55                  |                     |          |
| 10              | QPSK       | 1       | 49        | 22.70                 | 22.75                    | 22.79                  |                     |          |
| 10              | QPSK       | 25      | 0         | 21.60                 | 21.58                    | 21.74                  | 23                  | 1        |
| 10              | QPSK       | 25      | 12        | 21.58                 | 21.62                    | 21.67                  |                     |          |
| 10              | QPSK       | 25      | 25        | 21.66                 | 21.64                    | 21.81                  |                     |          |
| 10              | QPSK       | 50      | 0         | 21.62                 | 21.63                    | 21.73                  | 23                  | 1        |
| 10              | 16QAM      | 1       | 0         | 22.18                 | 22.03                    | 22.17                  |                     |          |
| 10              | 16QAM      | 1       | 25        | 21.78                 | 21.79                    | 21.87                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 21.97                 | 21.96                    | 22.06                  | 22                  | 2        |
| 10              | 16QAM      | 25      | 0         | 20.67                 | 20.66                    | 20.72                  |                     |          |
| 10              | 16QAM      | 25      | 12        | 20.58                 | 20.64                    | 20.67                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.62                 | 20.64                    | 20.66                  | 24                  | 0        |
| 10              | 16QAM      | 50      | 0         | 20.66                 | 20.65                    | 20.74                  |                     |          |
| Channel         |            |         |           | 26715                 | 26865                    | 27015                  |                     |          |
| Frequency (MHz) |            |         |           | 816.5                 | 831.5                    | 846.5                  | 24                  | 0        |
| 5               | QPSK       | 1       | 0         | 22.67                 | 22.64                    | 22.72                  |                     |          |
| 5               | QPSK       | 1       | 12        | 22.43                 | 22.45                    | 22.52                  |                     |          |
| 5               | QPSK       | 1       | 24        | 22.43                 | 22.51                    | 22.46                  | 23                  | 1        |
| 5               | QPSK       | 12      | 0         | 21.59                 | 21.56                    | 21.59                  |                     |          |
| 5               | QPSK       | 12      | 7         | 21.54                 | 21.58                    | 21.62                  |                     |          |
| 5               | QPSK       | 12      | 13        | 21.52                 | 21.55                    | 21.63                  | 23                  | 1        |
| 5               | QPSK       | 25      | 0         | 21.58                 | 21.58                    | 21.67                  |                     |          |
| 5               | 16QAM      | 1       | 0         | 21.80                 | 21.80                    | 21.83                  |                     |          |
| 5               | 16QAM      | 1       | 12        | 21.74                 | 21.76                    | 21.85                  | 23                  | 1        |
| 5               | 16QAM      | 1       | 24        | 21.71                 | 21.73                    | 21.82                  |                     |          |
| 5               | 16QAM      | 12      | 0         | 20.60                 | 20.59                    | 20.62                  |                     |          |
| 5               | 16QAM      | 12      | 7         | 20.58                 | 20.50                    | 20.59                  | 22                  | 2        |
| 5               | 16QAM      | 12      | 13        | 20.56                 | 20.46                    | 20.66                  |                     |          |
| 5               | 16QAM      | 25      | 0         | 20.58                 | 20.49                    | 20.60                  |                     |          |

| Channel         |       |    |    | 26705 | 26865 | 27025 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|-------|-------|-------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 815.5 | 831.5 | 847.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 22.60 | 22.62 | 22.63 | 24                     | 0           |
| 3               | QPSK  | 1  | 8  | 22.51 | 22.54 | 22.42 |                        |             |
| 3               | QPSK  | 1  | 14 | 22.47 | 22.47 | 22.48 |                        |             |
| 3               | QPSK  | 8  | 0  | 21.53 | 21.57 | 21.54 | 23                     | 1           |
| 3               | QPSK  | 8  | 4  | 21.58 | 21.52 | 21.60 |                        |             |
| 3               | QPSK  | 8  | 7  | 21.48 | 21.47 | 21.60 |                        |             |
| 3               | QPSK  | 15 | 0  | 21.53 | 21.47 | 21.63 |                        |             |
| 3               | 16QAM | 1  | 0  | 21.75 | 21.64 | 21.78 | 23                     | 1           |
| 3               | 16QAM | 1  | 8  | 21.81 | 21.69 | 21.85 |                        |             |
| 3               | 16QAM | 1  | 14 | 21.75 | 21.61 | 21.70 |                        |             |
| 3               | 16QAM | 8  | 0  | 20.57 | 20.53 | 20.63 | 22                     | 2           |
| 3               | 16QAM | 8  | 4  | 20.65 | 20.54 | 20.66 |                        |             |
| 3               | 16QAM | 8  | 7  | 20.54 | 20.51 | 20.62 |                        |             |
| 3               | 16QAM | 15 | 0  | 20.58 | 20.50 | 20.57 |                        |             |
| Channel         |       |    |    | 26697 | 26865 | 27033 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 814.7 | 831.5 | 848.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 22.59 | 22.57 | 22.60 | 24                     | 0           |
| 1.4             | QPSK  | 1  | 3  | 22.44 | 22.49 | 22.48 |                        |             |
| 1.4             | QPSK  | 1  | 5  | 22.41 | 22.42 | 22.44 |                        |             |
| 1.4             | QPSK  | 3  | 0  | 22.44 | 22.48 | 22.39 |                        |             |
| 1.4             | QPSK  | 3  | 1  | 22.51 | 22.49 | 22.46 |                        |             |
| 1.4             | QPSK  | 3  | 3  | 22.42 | 22.49 | 22.51 |                        |             |
| 1.4             | QPSK  | 6  | 0  | 21.44 | 21.54 | 21.46 | 23                     | 1           |
| 1.4             | 16QAM | 1  | 0  | 21.70 | 21.69 | 21.72 | 23                     | 1           |
| 1.4             | 16QAM | 1  | 3  | 21.71 | 21.79 | 21.88 |                        |             |
| 1.4             | 16QAM | 1  | 5  | 21.64 | 21.70 | 21.77 |                        |             |
| 1.4             | 16QAM | 3  | 0  | 21.49 | 21.51 | 21.51 |                        |             |
| 1.4             | 16QAM | 3  | 1  | 21.58 | 21.54 | 21.53 |                        |             |
| 1.4             | 16QAM | 3  | 3  | 21.42 | 21.46 | 21.53 |                        |             |
| 1.4             | 16QAM | 6  | 0  | 20.48 | 20.59 | 20.59 | 22                     | 2           |



**<LTE Band 30>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 27710                 |                          |                        |                     |          |
| Frequency (MHz) |            |         |           | 2310                  |                          |                        |                     |          |
| 10              | QPSK       | 1       | 0         | 22.15                 |                          |                        | 23.1                | 0        |
| 10              | QPSK       | 1       | 25        | 21.59                 |                          |                        |                     |          |
| 10              | QPSK       | 1       | 49        | 22.16                 |                          |                        |                     |          |
| 10              | QPSK       | 25      | 0         | 21.65                 |                          |                        | 23                  | 0.1      |
| 10              | QPSK       | 25      | 12        | 21.60                 |                          |                        |                     |          |
| 10              | QPSK       | 25      | 25        | 21.67                 |                          |                        |                     |          |
| 10              | QPSK       | 50      | 0         | 21.67                 |                          |                        | 23                  | 0.1      |
| 10              | 16QAM      | 1       | 0         | 22.11                 |                          |                        |                     |          |
| 10              | 16QAM      | 1       | 25        | 21.74                 |                          |                        |                     |          |
| 10              | 16QAM      | 1       | 49        | 21.97                 |                          |                        | 22                  | 1.1      |
| 10              | 16QAM      | 25      | 0         | 20.64                 |                          |                        |                     |          |
| 10              | 16QAM      | 25      | 12        | 20.58                 |                          |                        |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.65                 |                          |                        |                     |          |
| 10              | 16QAM      | 50      | 0         | 20.61                 |                          |                        |                     |          |
| Channel         |            |         |           | 27685                 | 27710                    | 27735                  | Tune-up limit (dBm) | MPR (dB) |
| Frequency (MHz) |            |         |           | 2307.5                | 2310                     | 2312.5                 |                     |          |
| 5               | QPSK       | 1       | 0         | 21.82                 | 21.21                    | 21.12                  | 23.1                | 0        |
| 5               | QPSK       | 1       | 12        | 21.69                 | 21.58                    | 21.62                  |                     |          |
| 5               | QPSK       | 1       | 24        | 21.60                 | 21.66                    | 21.66                  |                     |          |
| 5               | QPSK       | 12      | 0         | 21.71                 | 21.66                    | 21.60                  | 23                  | 0.1      |
| 5               | QPSK       | 12      | 7         | 21.64                 | 21.59                    | 21.67                  |                     |          |
| 5               | QPSK       | 12      | 13        | 21.61                 | 21.61                    | 21.57                  |                     |          |
| 5               | QPSK       | 25      | 0         | 21.71                 | 21.65                    | 21.65                  | 23                  | 0.1      |
| 5               | 16QAM      | 1       | 0         | 21.88                 | 21.86                    | 21.94                  |                     |          |
| 5               | 16QAM      | 1       | 12        | 21.83                 | 21.82                    | 21.93                  |                     |          |
| 5               | 16QAM      | 1       | 24        | 22.00                 | 21.91                    | 21.98                  | 22                  | 1.1      |
| 5               | 16QAM      | 12      | 0         | 20.75                 | 20.70                    | 20.66                  |                     |          |
| 5               | 16QAM      | 12      | 7         | 20.67                 | 20.55                    | 20.73                  |                     |          |
| 5               | 16QAM      | 12      | 13        | 20.59                 | 20.68                    | 20.61                  |                     |          |
| 5               | 16QAM      | 25      | 0         | 20.64                 | 20.63                    | 20.60                  |                     |          |

**<LTE Band 66>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 132072                | 132322                   | 132572                 | 22.9                | 0        |
| Frequency (MHz) |            |         |           | 1720                  | 1745                     | 1770                   |                     |          |
| 20              | QPSK       | 1       | 0         | 21.44                 | 21.74                    | 21.73                  | 22.9                | 0        |
| 20              | QPSK       | 1       | 49        | 21.57                 | 21.79                    | 21.85                  |                     |          |
| 20              | QPSK       | 1       | 99        | 22.25                 | 22.32                    | 22.57                  |                     |          |
| 20              | QPSK       | 50      | 0         | 21.61                 | 21.78                    | 22.03                  | 22.9                | 0        |
| 20              | QPSK       | 50      | 24        | 21.62                 | 21.84                    | 22.00                  |                     |          |
| 20              | QPSK       | 50      | 50        | 21.75                 | 21.87                    | 22.05                  |                     |          |
| 20              | QPSK       | 100     | 0         | 21.70                 | 21.90                    | 22.08                  | 22.9                | 0        |
| 20              | 16QAM      | 1       | 0         | 21.62                 | 21.90                    | 22.22                  |                     |          |
| 20              | 16QAM      | 1       | 49        | 21.43                 | 22.02                    | 22.19                  |                     |          |
| 20              | 16QAM      | 1       | 99        | 22.20                 | 22.53                    | 22.53                  | 22                  | 0.9      |
| 20              | 16QAM      | 50      | 0         | 20.92                 | 20.95                    | 21.10                  |                     |          |
| 20              | 16QAM      | 50      | 24        | 20.93                 | 20.94                    | 21.12                  |                     |          |
| 20              | 16QAM      | 50      | 50        | 20.90                 | 20.99                    | 21.18                  | 22                  | 0.9      |
| 20              | 16QAM      | 100     | 0         | 20.91                 | 20.93                    | 21.10                  |                     |          |
| Channel         |            |         |           | 132047                | 132322                   | 132597                 | 22.9                | 0        |
| Frequency (MHz) |            |         |           | 1717.5                | 1745                     | 1772.5                 |                     |          |
| 15              | QPSK       | 1       | 0         | 21.46                 | 21.71                    | 22.39                  | 22.9                | 0        |
| 15              | QPSK       | 1       | 37        | 21.57                 | 21.78                    | 21.89                  |                     |          |
| 15              | QPSK       | 1       | 74        | 21.82                 | 22.05                    | 22.20                  |                     |          |
| 15              | QPSK       | 36      | 0         | 21.70                 | 21.92                    | 22.10                  | 22.9                | 0        |
| 15              | QPSK       | 36      | 20        | 21.61                 | 21.86                    | 22.02                  |                     |          |
| 15              | QPSK       | 36      | 39        | 21.61                 | 21.82                    | 22.01                  |                     |          |
| 15              | QPSK       | 75      | 0         | 21.66                 | 21.89                    | 22.08                  | 22.9                | 0        |
| 15              | 16QAM      | 1       | 0         | 22.11                 | 22.32                    | 22.49                  |                     |          |
| 15              | 16QAM      | 1       | 37        | 21.72                 | 22.01                    | 22.15                  |                     |          |
| 15              | 16QAM      | 1       | 74        | 22.03                 | 22.23                    | 22.44                  | 22                  | 0.9      |
| 15              | 16QAM      | 36      | 0         | 20.96                 | 21.01                    | 21.19                  |                     |          |
| 15              | 16QAM      | 36      | 20        | 20.91                 | 20.97                    | 21.13                  |                     |          |
| 15              | 16QAM      | 36      | 39        | 20.90                 | 20.92                    | 21.10                  | 22                  | 0.9      |
| 15              | 16QAM      | 75      | 0         | 20.91                 | 20.96                    | 21.15                  |                     |          |
| Channel         |            |         |           | 132022                | 132322                   | 132622                 | 22.9                | 0        |
| Frequency (MHz) |            |         |           | 1715                  | 1745                     | 1775                   |                     |          |
| 10              | QPSK       | 1       | 0         | 21.15                 | 21.33                    | 21.54                  | 22.9                | 0        |
| 10              | QPSK       | 1       | 25        | 21.67                 | 21.95                    | 22.02                  |                     |          |
| 10              | QPSK       | 1       | 49        | 22.20                 | 22.47                    | 22.54                  |                     |          |
| 10              | QPSK       | 25      | 0         | 21.71                 | 21.92                    | 22.03                  | 22.9                | 0        |
| 10              | QPSK       | 25      | 12        | 21.78                 | 22.03                    | 22.15                  |                     |          |
| 10              | QPSK       | 25      | 25        | 21.86                 | 22.15                    | 22.22                  |                     |          |
| 10              | QPSK       | 50      | 0         | 21.77                 | 22.04                    | 22.13                  | 22.9                | 0        |
| 10              | 16QAM      | 1       | 0         | 21.37                 | 21.64                    | 21.81                  |                     |          |
| 10              | 16QAM      | 1       | 25        | 21.93                 | 22.17                    | 22.27                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 22.45                 | 22.48                    | 22.50                  | 22                  | 0.9      |
| 10              | 16QAM      | 25      | 0         | 21.01                 | 21.06                    | 21.16                  |                     |          |
| 10              | 16QAM      | 25      | 12        | 21.06                 | 21.18                    | 21.26                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 21.16                 | 21.24                    | 21.29                  | 22                  | 0.9      |
| 10              | 16QAM      | 50      | 0         | 21.09                 | 21.14                    | 21.23                  |                     |          |



| Channel         |       |    |    | 131997 | 132322 | 132647 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|--------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1712.5 | 1745   | 1777.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 21.37  | 21.67  | 21.76  | 22.9                   | 0           |
| 5               | QPSK  | 1  | 12 | 21.66  | 21.97  | 22.08  |                        |             |
| 5               | QPSK  | 1  | 24 | 21.71  | 21.99  | 22.08  |                        |             |
| 5               | QPSK  | 12 | 0  | 21.75  | 22.07  | 22.13  | 22.9                   | 0           |
| 5               | QPSK  | 12 | 7  | 21.71  | 22.04  | 22.11  |                        |             |
| 5               | QPSK  | 12 | 13 | 21.70  | 21.98  | 22.08  |                        |             |
| 5               | QPSK  | 25 | 0  | 21.75  | 22.00  | 22.15  |                        |             |
| 5               | 16QAM | 1  | 0  | 22.12  | 22.36  | 22.50  | 22.9                   | 0           |
| 5               | 16QAM | 1  | 12 | 21.94  | 22.22  | 22.35  |                        |             |
| 5               | 16QAM | 1  | 24 | 21.96  | 22.25  | 22.52  |                        |             |
| 5               | 16QAM | 12 | 0  | 21.07  | 21.17  | 21.26  | 22                     | 0.9         |
| 5               | 16QAM | 12 | 7  | 21.06  | 21.11  | 21.21  |                        |             |
| 5               | 16QAM | 12 | 13 | 21.01  | 21.13  | 21.21  |                        |             |
| 5               | 16QAM | 25 | 0  | 21.06  | 21.16  | 21.22  |                        |             |
| Channel         |       |    |    | 131987 | 132322 | 132657 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1711.5 | 1745   | 1778.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 21.28  | 21.56  | 21.65  | 22.9                   | 0           |
| 3               | QPSK  | 1  | 8  | 21.68  | 21.98  | 22.08  |                        |             |
| 3               | QPSK  | 1  | 14 | 21.69  | 21.93  | 22.04  |                        |             |
| 3               | QPSK  | 8  | 0  | 21.75  | 22.02  | 22.11  | 22.9                   | 0           |
| 3               | QPSK  | 8  | 4  | 21.74  | 21.98  | 22.11  |                        |             |
| 3               | QPSK  | 8  | 7  | 21.71  | 21.98  | 22.09  |                        |             |
| 3               | QPSK  | 15 | 0  | 21.70  | 22.02  | 22.12  |                        |             |
| 3               | 16QAM | 1  | 0  | 22.05  | 22.36  | 22.47  | 22.9                   | 0           |
| 3               | 16QAM | 1  | 8  | 21.99  | 22.31  | 22.37  |                        |             |
| 3               | 16QAM | 1  | 14 | 21.89  | 22.22  | 22.38  |                        |             |
| 3               | 16QAM | 8  | 0  | 21.09  | 21.17  | 21.23  | 22                     | 0.9         |
| 3               | 16QAM | 8  | 4  | 21.09  | 21.18  | 21.27  |                        |             |
| 3               | 16QAM | 8  | 7  | 21.02  | 21.14  | 21.25  |                        |             |
| 3               | 16QAM | 15 | 0  | 21.03  | 21.12  | 21.22  |                        |             |
| Channel         |       |    |    | 131979 | 132322 | 132665 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1710.7 | 1745   | 1779.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 21.19  | 21.46  | 21.58  | 22.9                   | 0           |
| 1.4             | QPSK  | 1  | 3  | 21.69  | 21.98  | 22.12  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 21.65  | 21.93  | 22.02  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 21.70  | 21.97  | 22.06  |                        |             |
| 1.4             | QPSK  | 3  | 1  | 21.69  | 21.99  | 22.12  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 21.67  | 21.95  | 22.08  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 21.65  | 21.93  | 22.07  | 22.9                   | 0           |
| 1.4             | 16QAM | 1  | 0  | 21.92  | 22.24  | 22.36  | 22.9                   | 0           |
| 1.4             | 16QAM | 1  | 3  | 21.98  | 22.27  | 22.35  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 21.91  | 22.18  | 22.32  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 21.70  | 21.97  | 22.08  |                        |             |
| 1.4             | 16QAM | 3  | 1  | 21.74  | 21.99  | 22.09  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 21.65  | 21.93  | 22.04  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 21.00  | 21.16  | 21.25  | 22                     | 0.9         |

**<At-Head Power Mode>**
**<LTE Band 2>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|-------------|
| Channel         |            |         |           | 18700                    | 18900                       | 19100                     |                        |             |
| Frequency (MHz) |            |         |           | 1860                     | 1880                        | 1900                      |                        |             |
| 20              | QPSK       | 1       | 0         | 22.33                    | 22.55                       | 22.47                     | 24                     | 0           |
| 20              | QPSK       | 1       | 49        | 22.24                    | 22.38                       | 22.44                     |                        |             |
| 20              | QPSK       | 1       | 99        | 22.09                    | 22.14                       | 22.28                     |                        |             |
| 20              | QPSK       | 50      | 0         | 21.35                    | 21.48                       | 21.55                     | 23                     | 1           |
| 20              | QPSK       | 50      | 24        | 21.28                    | 21.45                       | 21.50                     |                        |             |
| 20              | QPSK       | 50      | 50        | 21.34                    | 21.47                       | 21.48                     |                        |             |
| 20              | QPSK       | 100     | 0         | 21.31                    | 21.52                       | 21.41                     | 23                     | 1           |
| 20              | 16QAM      | 1       | 0         | 21.47                    | 21.65                       | 21.69                     |                        |             |
| 20              | 16QAM      | 1       | 49        | 21.54                    | 21.59                       | 21.67                     |                        |             |
| 20              | 16QAM      | 1       | 99        | 21.48                    | 21.58                       | 21.61                     | 22                     | 2           |
| 20              | 16QAM      | 50      | 0         | 20.31                    | 20.43                       | 20.47                     |                        |             |
| 20              | 16QAM      | 50      | 24        | 20.31                    | 20.44                       | 20.51                     |                        |             |
| 20              | 16QAM      | 50      | 50        | 20.34                    | 20.43                       | 20.46                     | 22                     | 2           |
| 20              | 16QAM      | 100     | 0         | 20.29                    | 20.42                       | 20.51                     |                        |             |
| Channel         |            |         |           | 18675                    | 18900                       | 19125                     | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |            |         |           | 1857.5                   | 1880                        | 1902.5                    |                        |             |
| 15              | QPSK       | 1       | 0         | 22.45                    | 22.35                       | 22.44                     | 24                     | 0           |
| 15              | QPSK       | 1       | 37        | 22.05                    | 22.09                       | 22.19                     |                        |             |
| 15              | QPSK       | 1       | 74        | 22.39                    | 22.53                       | 22.54                     |                        |             |
| 15              | QPSK       | 36      | 0         | 21.30                    | 21.44                       | 21.51                     | 23                     | 1           |
| 15              | QPSK       | 36      | 20        | 21.29                    | 21.40                       | 21.51                     |                        |             |
| 15              | QPSK       | 36      | 39        | 21.28                    | 21.38                       | 21.48                     |                        |             |
| 15              | QPSK       | 75      | 0         | 21.28                    | 21.40                       | 21.50                     | 23                     | 1           |
| 15              | 16QAM      | 1       | 0         | 21.63                    | 21.78                       | 21.77                     |                        |             |
| 15              | 16QAM      | 1       | 37        | 21.42                    | 21.44                       | 21.59                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 21.67                    | 21.77                       | 21.77                     | 22                     | 2           |
| 15              | 16QAM      | 36      | 0         | 20.28                    | 20.42                       | 20.49                     |                        |             |
| 15              | 16QAM      | 36      | 20        | 20.29                    | 20.42                       | 20.50                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 20.27                    | 20.42                       | 20.49                     | 22                     | 2           |
| 15              | 16QAM      | 75      | 0         | 20.26                    | 20.40                       | 20.50                     |                        |             |
| Channel         |            |         |           | 18650                    | 18900                       | 19150                     | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |            |         |           | 1855                     | 1880                        | 1905                      |                        |             |
| 10              | QPSK       | 1       | 0         | 22.07                    | 22.15                       | 22.31                     | 24                     | 0           |
| 10              | QPSK       | 1       | 25        | 22.08                    | 22.26                       | 22.37                     |                        |             |
| 10              | QPSK       | 1       | 49        | 22.20                    | 22.30                       | 22.50                     |                        |             |
| 10              | QPSK       | 25      | 0         | 21.20                    | 21.31                       | 21.48                     | 23                     | 1           |
| 10              | QPSK       | 25      | 12        | 21.16                    | 21.31                       | 21.41                     |                        |             |
| 10              | QPSK       | 25      | 25        | 21.18                    | 21.32                       | 21.42                     |                        |             |
| 10              | QPSK       | 50      | 0         | 21.17                    | 21.34                       | 21.41                     | 23                     | 1           |
| 10              | 16QAM      | 1       | 0         | 21.49                    | 21.63                       | 21.79                     |                        |             |
| 10              | 16QAM      | 1       | 25        | 21.37                    | 21.53                       | 21.64                     |                        |             |
| 10              | 16QAM      | 1       | 49        | 21.49                    | 21.58                       | 21.74                     | 22                     | 2           |
| 10              | 16QAM      | 25      | 0         | 20.19                    | 20.32                       | 20.52                     |                        |             |
| 10              | 16QAM      | 25      | 12        | 20.17                    | 20.32                       | 20.43                     |                        |             |
| 10              | 16QAM      | 25      | 25        | 20.16                    | 20.35                       | 20.42                     | 22                     | 2           |
| 10              | 16QAM      | 50      | 0         | 20.17                    | 20.29                       | 20.41                     |                        |             |



| Channel         |       |    |    | 18625  | 18900 | 19175  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1852.5 | 1880  | 1907.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 22.24  | 22.13 | 22.17  | 24                     | 0           |
| 5               | QPSK  | 1  | 12 | 22.06  | 22.24 | 22.20  |                        |             |
| 5               | QPSK  | 1  | 24 | 22.10  | 22.28 | 22.39  |                        |             |
| 5               | QPSK  | 12 | 0  | 21.22  | 21.40 | 21.61  | 23                     | 1           |
| 5               | QPSK  | 12 | 7  | 21.18  | 21.32 | 21.45  |                        |             |
| 5               | QPSK  | 12 | 13 | 21.15  | 21.29 | 21.47  |                        |             |
| 5               | QPSK  | 25 | 0  | 21.24  | 21.38 | 21.47  | 23                     | 1           |
| 5               | 16QAM | 1  | 0  | 21.45  | 21.65 | 21.72  |                        |             |
| 5               | 16QAM | 1  | 12 | 21.25  | 21.49 | 21.61  |                        |             |
| 5               | 16QAM | 1  | 24 | 21.35  | 21.56 | 21.63  | 22                     | 2           |
| 5               | 16QAM | 12 | 0  | 20.26  | 20.42 | 20.55  |                        |             |
| 5               | 16QAM | 12 | 7  | 20.23  | 20.35 | 20.52  |                        |             |
| 5               | 16QAM | 12 | 13 | 20.21  | 20.32 | 20.48  | 22                     | 2           |
| 5               | 16QAM | 25 | 0  | 20.19  | 20.33 | 20.48  |                        |             |
| Channel         |       |    |    | 18615  | 18900 | 19185  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1851.5 | 1880  | 1908.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 22.16  | 22.00 | 22.12  | 24                     | 0           |
| 3               | QPSK  | 1  | 8  | 22.09  | 22.22 | 22.41  |                        |             |
| 3               | QPSK  | 1  | 14 | 22.03  | 22.13 | 22.35  |                        |             |
| 3               | QPSK  | 8  | 0  | 21.16  | 21.30 | 21.46  | 23                     | 1           |
| 3               | QPSK  | 8  | 4  | 21.16  | 21.31 | 21.47  |                        |             |
| 3               | QPSK  | 8  | 7  | 21.12  | 21.25 | 21.47  |                        |             |
| 3               | QPSK  | 15 | 0  | 21.18  | 21.31 | 21.44  | 23                     | 1           |
| 3               | 16QAM | 1  | 0  | 21.38  | 21.56 | 21.69  |                        |             |
| 3               | 16QAM | 1  | 8  | 21.36  | 21.50 | 21.66  |                        |             |
| 3               | 16QAM | 1  | 14 | 21.29  | 21.42 | 21.59  | 22                     | 2           |
| 3               | 16QAM | 8  | 0  | 20.22  | 20.39 | 20.52  |                        |             |
| 3               | 16QAM | 8  | 4  | 20.22  | 20.39 | 20.53  |                        |             |
| 3               | 16QAM | 8  | 7  | 20.19  | 20.33 | 20.50  | 22                     | 2           |
| 3               | 16QAM | 15 | 0  | 20.21  | 20.32 | 20.45  |                        |             |
| Channel         |       |    |    | 18607  | 18900 | 19193  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1850.7 | 1880  | 1909.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 22.05  | 22.05 | 22.04  | 24                     | 0           |
| 1.4             | QPSK  | 1  | 3  | 22.14  | 22.31 | 22.44  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 22.04  | 22.18 | 22.34  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 22.08  | 22.21 | 22.34  | 24                     | 0           |
| 1.4             | QPSK  | 3  | 1  | 22.10  | 22.26 | 22.40  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 22.06  | 22.23 | 22.37  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 21.11  | 21.27 | 21.45  | 23                     | 1           |
| 1.4             | 16QAM | 1  | 0  | 21.31  | 21.48 | 21.61  | 23                     | 1           |
| 1.4             | 16QAM | 1  | 3  | 21.42  | 21.54 | 21.65  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 21.28  | 21.46 | 21.60  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 21.11  | 21.24 | 21.39  | 23                     | 1           |
| 1.4             | 16QAM | 3  | 1  | 21.14  | 21.28 | 21.44  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 21.05  | 21.21 | 21.39  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 20.21  | 20.36 | 20.49  | 22                     | 2           |



**<LTE Band 4>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 20050                 | 20175                    | 20300                  |                     |          |
| Frequency (MHz) |            |         |           | 1720                  | 1732.5                   | 1745                   |                     |          |
| 20              | QPSK       | 1       | 0         | 22.17                 | 22.19                    | 22.03                  |                     |          |
| 20              | QPSK       | 1       | 49        | 22.28                 | 22.32                    | 22.38                  | 24                  | 0        |
| 20              | QPSK       | 1       | 99        | 22.34                 | 22.40                    | 22.39                  |                     |          |
| 20              | QPSK       | 50      | 0         | 21.37                 | 21.44                    | 21.44                  |                     |          |
| 20              | QPSK       | 50      | 24        | 21.41                 | 21.44                    | 21.46                  | 23                  | 1        |
| 20              | QPSK       | 50      | 50        | 21.37                 | 21.51                    | 21.39                  |                     |          |
| 20              | QPSK       | 100     | 0         | 21.37                 | 21.41                    | 21.48                  |                     |          |
| 20              | 16QAM      | 1       | 0         | 21.41                 | 21.41                    | 21.46                  | 23                  | 1        |
| 20              | 16QAM      | 1       | 49        | 21.54                 | 21.46                    | 21.55                  |                     |          |
| 20              | 16QAM      | 1       | 99        | 21.55                 | 21.45                    | 21.62                  |                     |          |
| 20              | 16QAM      | 50      | 0         | 20.37                 | 20.46                    | 20.44                  | 22                  | 2        |
| 20              | 16QAM      | 50      | 24        | 20.41                 | 20.46                    | 20.55                  |                     |          |
| 20              | 16QAM      | 50      | 50        | 20.38                 | 20.49                    | 20.41                  |                     |          |
| 20              | 16QAM      | 100     | 0         | 20.40                 | 20.43                    | 20.52                  |                     |          |
| Channel         |            |         |           | 20025                 | 20175                    | 20325                  | Tune-up limit (dBm) | MPR (dB) |
| Frequency (MHz) |            |         |           | 1717.5                | 1732.5                   | 1747.5                 |                     |          |
| 15              | QPSK       | 1       | 0         | 22.13                 | 22.40                    | 22.25                  |                     |          |
| 15              | QPSK       | 1       | 37        | 22.29                 | 22.24                    | 22.30                  | 24                  | 0        |
| 15              | QPSK       | 1       | 74        | 22.28                 | 22.30                    | 22.41                  |                     |          |
| 15              | QPSK       | 36      | 0         | 21.44                 | 21.44                    | 21.61                  |                     |          |
| 15              | QPSK       | 36      | 20        | 21.48                 | 21.48                    | 21.52                  | 23                  | 1        |
| 15              | QPSK       | 36      | 39        | 21.37                 | 21.40                    | 21.45                  |                     |          |
| 15              | QPSK       | 75      | 0         | 21.45                 | 21.48                    | 21.52                  |                     |          |
| 15              | 16QAM      | 1       | 0         | 21.62                 | 21.76                    | 21.75                  | 23                  | 1        |
| 15              | 16QAM      | 1       | 37        | 21.53                 | 21.51                    | 21.74                  |                     |          |
| 15              | 16QAM      | 1       | 74        | 21.48                 | 21.50                    | 21.68                  |                     |          |
| 15              | 16QAM      | 36      | 0         | 20.40                 | 20.43                    | 20.63                  | 22                  | 2        |
| 15              | 16QAM      | 36      | 20        | 20.48                 | 20.54                    | 20.57                  |                     |          |
| 15              | 16QAM      | 36      | 39        | 20.37                 | 20.42                    | 20.46                  |                     |          |
| 15              | 16QAM      | 75      | 0         | 20.48                 | 20.51                    | 20.57                  |                     |          |
| Channel         |            |         |           | 20000                 | 20175                    | 20350                  | Tune-up limit (dBm) | MPR (dB) |
| Frequency (MHz) |            |         |           | 1715                  | 1732.5                   | 1750                   |                     |          |
| 10              | QPSK       | 1       | 0         | 22.45                 | 22.41                    | 22.54                  |                     |          |
| 10              | QPSK       | 1       | 25        | 22.39                 | 22.46                    | 22.39                  | 24                  | 0        |
| 10              | QPSK       | 1       | 49        | 22.49                 | 22.66                    | 22.65                  |                     |          |
| 10              | QPSK       | 25      | 0         | 21.56                 | 21.58                    | 21.53                  |                     |          |
| 10              | QPSK       | 25      | 12        | 21.51                 | 21.55                    | 21.52                  | 23                  | 1        |
| 10              | QPSK       | 25      | 25        | 21.62                 | 21.61                    | 21.65                  |                     |          |
| 10              | QPSK       | 50      | 0         | 21.59                 | 21.63                    | 21.55                  |                     |          |
| 10              | 16QAM      | 1       | 0         | 22.05                 | 21.98                    | 21.99                  | 23                  | 1        |
| 10              | 16QAM      | 1       | 25        | 21.65                 | 21.69                    | 21.66                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 22.07                 | 22.08                    | 22.09                  |                     |          |
| 10              | 16QAM      | 25      | 0         | 20.56                 | 20.63                    | 20.54                  | 22                  | 2        |
| 10              | 16QAM      | 25      | 12        | 20.49                 | 20.59                    | 20.51                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.65                 | 20.60                    | 20.62                  |                     |          |
| 10              | 16QAM      | 50      | 0         | 20.64                 | 20.65                    | 20.57                  |                     |          |



| Channel         |       |    |    | 19975  | 20175  | 20375  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|--------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1712.5 | 1732.5 | 1752.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 22.21  | 22.32  | 22.22  | 24                     | 0           |
| 5               | QPSK  | 1  | 12 | 22.38  | 22.44  | 22.38  |                        |             |
| 5               | QPSK  | 1  | 24 | 22.43  | 22.37  | 22.37  |                        |             |
| 5               | QPSK  | 12 | 0  | 21.61  | 21.53  | 21.59  | 23                     | 1           |
| 5               | QPSK  | 12 | 7  | 21.49  | 21.53  | 21.51  |                        |             |
| 5               | QPSK  | 12 | 13 | 21.42  | 21.49  | 21.51  |                        |             |
| 5               | QPSK  | 25 | 0  | 21.49  | 21.56  | 21.54  |                        |             |
| 5               | 16QAM | 1  | 0  | 21.84  | 21.74  | 21.79  | 23                     | 1           |
| 5               | 16QAM | 1  | 12 | 21.71  | 21.72  | 21.66  |                        |             |
| 5               | 16QAM | 1  | 24 | 21.69  | 21.58  | 21.64  |                        |             |
| 5               | 16QAM | 12 | 0  | 20.56  | 20.58  | 20.60  | 22                     | 2           |
| 5               | 16QAM | 12 | 7  | 20.50  | 20.60  | 20.52  |                        |             |
| 5               | 16QAM | 12 | 13 | 20.47  | 20.51  | 20.55  |                        |             |
| 5               | 16QAM | 25 | 0  | 20.56  | 20.58  | 20.49  |                        |             |
| Channel         |       |    |    | 19965  | 20175  | 20385  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1711.5 | 1732.5 | 1753.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 22.45  | 22.31  | 22.40  | 24                     | 0           |
| 3               | QPSK  | 1  | 8  | 22.46  | 22.46  | 22.30  |                        |             |
| 3               | QPSK  | 1  | 14 | 22.37  | 22.34  | 22.32  |                        |             |
| 3               | QPSK  | 8  | 0  | 21.49  | 21.43  | 21.46  | 23                     | 1           |
| 3               | QPSK  | 8  | 4  | 21.55  | 21.54  | 21.52  |                        |             |
| 3               | QPSK  | 8  | 7  | 21.44  | 21.50  | 21.48  |                        |             |
| 3               | QPSK  | 15 | 0  | 21.49  | 21.51  | 21.40  |                        |             |
| 3               | 16QAM | 1  | 0  | 21.73  | 21.68  | 21.67  | 23                     | 1           |
| 3               | 16QAM | 1  | 8  | 21.70  | 21.68  | 21.71  |                        |             |
| 3               | 16QAM | 1  | 14 | 21.65  | 21.47  | 21.57  |                        |             |
| 3               | 16QAM | 8  | 0  | 20.56  | 20.49  | 20.54  | 22                     | 2           |
| 3               | 16QAM | 8  | 4  | 20.56  | 20.61  | 20.59  |                        |             |
| 3               | 16QAM | 8  | 7  | 20.48  | 20.56  | 20.54  |                        |             |
| 3               | 16QAM | 15 | 0  | 20.51  | 20.55  | 20.42  |                        |             |
| Channel         |       |    |    | 19957  | 20175  | 20393  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1710.7 | 1732.5 | 1754.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 22.23  | 22.17  | 22.05  | 24                     | 0           |
| 1.4             | QPSK  | 1  | 3  | 22.37  | 22.48  | 22.45  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 22.34  | 22.38  | 22.35  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 22.45  | 22.30  | 22.42  |                        |             |
| 1.4             | QPSK  | 3  | 1  | 22.48  | 22.45  | 22.43  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 22.36  | 22.40  | 22.39  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 21.39  | 21.45  | 21.45  | 23                     | 1           |
| 1.4             | 16QAM | 1  | 0  | 21.66  | 21.55  | 21.66  | 23                     | 1           |
| 1.4             | 16QAM | 1  | 3  | 21.63  | 21.71  | 21.69  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 21.59  | 21.63  | 21.57  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 21.46  | 21.34  | 21.45  |                        |             |
| 1.4             | 16QAM | 3  | 1  | 21.52  | 21.47  | 21.46  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 21.36  | 21.41  | 21.40  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 20.47  | 20.56  | 20.51  | 22                     | 2           |



**<LTE Band 5>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 20450                 | 20525                    | 20600                  | 24                  | 0        |
| Frequency (MHz) |            |         |           | 829                   | 836.5                    | 844                    |                     |          |
| 10              | QPSK       | 1       | 0         | 22.61                 | 22.85                    | 22.77                  |                     |          |
| 10              | QPSK       | 1       | 25        | 22.53                 | 22.48                    | 22.37                  | 23                  | 1        |
| 10              | QPSK       | 1       | 49        | 22.77                 | 22.78                    | 22.84                  |                     |          |
| 10              | QPSK       | 25      | 0         | 21.65                 | 21.59                    | 21.74                  |                     |          |
| 10              | QPSK       | 25      | 12        | 21.62                 | 21.55                    | 21.63                  | 23                  | 1        |
| 10              | QPSK       | 25      | 25        | 21.63                 | 21.60                    | 21.77                  |                     |          |
| 10              | QPSK       | 50      | 0         | 21.64                 | 21.64                    | 21.75                  |                     |          |
| 10              | 16QAM      | 1       | 0         | 21.84                 | 21.93                    | 21.96                  | 23                  | 1        |
| 10              | 16QAM      | 1       | 25        | 21.81                 | 21.73                    | 21.78                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 21.97                 | 22.08                    | 22.08                  |                     |          |
| 10              | 16QAM      | 25      | 0         | 20.64                 | 20.57                    | 20.72                  | 22                  | 2        |
| 10              | 16QAM      | 25      | 12        | 20.61                 | 20.53                    | 20.64                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.63                 | 20.64                    | 20.69                  |                     |          |
| 10              | 16QAM      | 50      | 0         | 20.66                 | 20.63                    | 20.78                  | 24                  | 0        |
| Channel         |            |         |           | 20425                 | 20525                    | 20625                  |                     |          |
| Frequency (MHz) |            |         |           | 826.5                 | 836.5                    | 846.5                  |                     |          |
| 5               | QPSK       | 1       | 0         | 22.61                 | 22.52                    | 22.57                  | 24                  | 0        |
| 5               | QPSK       | 1       | 12        | 22.54                 | 22.57                    | 22.36                  |                     |          |
| 5               | QPSK       | 1       | 24        | 22.53                 | 22.55                    | 22.51                  |                     |          |
| 5               | QPSK       | 12      | 0         | 21.57                 | 21.57                    | 21.61                  | 23                  | 1        |
| 5               | QPSK       | 12      | 7         | 21.63                 | 21.66                    | 21.58                  |                     |          |
| 5               | QPSK       | 12      | 13        | 21.59                 | 21.62                    | 21.72                  |                     |          |
| 5               | QPSK       | 25      | 0         | 21.66                 | 21.67                    | 21.60                  | 23                  | 1        |
| 5               | 16QAM      | 1       | 0         | 21.87                 | 21.81                    | 21.83                  |                     |          |
| 5               | 16QAM      | 1       | 12        | 21.85                 | 21.83                    | 21.73                  |                     |          |
| 5               | 16QAM      | 1       | 24        | 21.81                 | 21.77                    | 21.71                  | 22                  | 2        |
| 5               | 16QAM      | 12      | 0         | 20.62                 | 20.61                    | 20.61                  |                     |          |
| 5               | 16QAM      | 12      | 7         | 20.67                 | 20.59                    | 20.63                  |                     |          |
| 5               | 16QAM      | 12      | 13        | 20.59                 | 20.55                    | 20.63                  | 24                  | 0        |
| 5               | 16QAM      | 25      | 0         | 20.69                 | 20.59                    | 20.55                  |                     |          |
| Channel         |            |         |           | 20415                 | 20525                    | 20635                  |                     |          |
| Frequency (MHz) |            |         |           | 825.5                 | 836.5                    | 847.5                  |                     |          |
| 3               | QPSK       | 1       | 0         | 22.38                 | 22.56                    | 22.56                  | 24                  | 0        |
| 3               | QPSK       | 1       | 8         | 22.51                 | 22.48                    | 22.47                  |                     |          |
| 3               | QPSK       | 1       | 14        | 22.48                 | 22.41                    | 22.39                  |                     |          |
| 3               | QPSK       | 8       | 0         | 21.55                 | 21.54                    | 21.49                  | 23                  | 1        |
| 3               | QPSK       | 8       | 4         | 21.54                 | 21.55                    | 21.56                  |                     |          |
| 3               | QPSK       | 8       | 7         | 21.48                 | 21.48                    | 21.50                  |                     |          |
| 3               | QPSK       | 15      | 0         | 21.50                 | 21.58                    | 21.49                  | 23                  | 1        |
| 3               | 16QAM      | 1       | 0         | 21.79                 | 21.70                    | 21.71                  |                     |          |
| 3               | 16QAM      | 1       | 8         | 21.79                 | 21.78                    | 21.72                  |                     |          |
| 3               | 16QAM      | 1       | 14        | 21.73                 | 21.68                    | 21.72                  | 22                  | 2        |
| 3               | 16QAM      | 8       | 0         | 20.61                 | 20.62                    | 20.64                  |                     |          |
| 3               | 16QAM      | 8       | 4         | 20.62                 | 20.61                    | 20.67                  |                     |          |
| 3               | 16QAM      | 8       | 7         | 20.57                 | 20.54                    | 20.59                  | 22                  | 2        |
| 3               | 16QAM      | 15      | 0         | 20.54                 | 20.61                    | 20.51                  |                     |          |



# Exhibit 11

Report No. : FA720310

| Channel         |       |   |   | 20407 | 20525 | 20643 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|---|---|-------|-------|-------|------------------------|-------------|
| Frequency (MHz) |       |   |   | 824.7 | 836.5 | 848.3 |                        |             |
| 1.4             | QPSK  | 1 | 0 | 22.48 | 22.54 | 22.53 | 24                     | 0           |
| 1.4             | QPSK  | 1 | 3 | 22.55 | 22.58 | 22.58 |                        |             |
| 1.4             | QPSK  | 1 | 5 | 22.52 | 22.50 | 22.46 |                        |             |
| 1.4             | QPSK  | 3 | 0 | 22.46 | 22.47 | 22.43 |                        |             |
| 1.4             | QPSK  | 3 | 1 | 22.52 | 22.48 | 22.42 |                        |             |
| 1.4             | QPSK  | 3 | 3 | 22.53 | 22.55 | 22.49 |                        |             |
| 1.4             | QPSK  | 6 | 0 | 21.56 | 21.59 | 21.59 | 23                     | 1           |
| 1.4             | 16QAM | 1 | 0 | 21.73 | 21.72 | 21.75 | 23                     | 1           |
| 1.4             | 16QAM | 1 | 3 | 21.81 | 21.86 | 21.80 |                        |             |
| 1.4             | 16QAM | 1 | 5 | 21.75 | 21.71 | 21.69 |                        |             |
| 1.4             | 16QAM | 3 | 0 | 21.47 | 21.50 | 21.59 |                        |             |
| 1.4             | 16QAM | 3 | 1 | 21.56 | 21.54 | 21.57 |                        |             |
| 1.4             | 16QAM | 3 | 3 | 21.54 | 21.55 | 21.54 |                        |             |
| 1.4             | 16QAM | 6 | 0 | 20.60 | 20.70 | 20.56 | 22                     | 2           |



**<LTE Band 7>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 20850                 | 21100                    | 21350                  |                     |          |
| Frequency (MHz) |            |         |           | 2510                  | 2535                     | 2560                   |                     |          |
| 20              | QPSK       | 1       | 0         | 22.23                 | 22.15                    | 22.32                  | 24                  | 0        |
| 20              | QPSK       | 1       | 49        | 22.32                 | 22.35                    | 22.50                  |                     |          |
| 20              | QPSK       | 1       | 99        | 22.29                 | 22.23                    | 22.44                  |                     |          |
| 20              | QPSK       | 50      | 0         | 21.42                 | 21.43                    | 21.47                  | 23                  | 1        |
| 20              | QPSK       | 50      | 24        | 21.38                 | 21.42                    | 21.44                  |                     |          |
| 20              | QPSK       | 50      | 50        | 21.41                 | 21.38                    | 21.51                  |                     |          |
| 20              | QPSK       | 100     | 0         | 21.37                 | 21.32                    | 21.48                  |                     |          |
| 20              | 16QAM      | 1       | 0         | 21.65                 | 21.59                    | 21.75                  | 23                  | 1        |
| 20              | 16QAM      | 1       | 49        | 21.70                 | 21.75                    | 21.77                  |                     |          |
| 20              | 16QAM      | 1       | 99        | 21.66                 | 21.69                    | 21.69                  |                     |          |
| 20              | 16QAM      | 50      | 0         | 20.41                 | 20.42                    | 20.47                  | 22                  | 2        |
| 20              | 16QAM      | 50      | 24        | 20.36                 | 20.37                    | 20.49                  |                     |          |
| 20              | 16QAM      | 50      | 50        | 20.40                 | 20.47                    | 20.47                  |                     |          |
| 20              | 16QAM      | 100     | 0         | 20.36                 | 20.37                    | 20.50                  |                     |          |
| Channel         |            |         |           | 20825                 | 21100                    | 21375                  | Tune-up limit (dBm) | MPR (dB) |
| Frequency (MHz) |            |         |           | 2507.5                | 2535                     | 2562.5                 |                     |          |
| 15              | QPSK       | 1       | 0         | 22.24                 | 22.16                    | 22.31                  | 24                  | 0        |
| 15              | QPSK       | 1       | 37        | 22.36                 | 22.39                    | 22.06                  |                     |          |
| 15              | QPSK       | 1       | 74        | 22.34                 | 22.47                    | 22.40                  |                     |          |
| 15              | QPSK       | 36      | 0         | 21.43                 | 21.39                    | 21.52                  | 23                  | 1        |
| 15              | QPSK       | 36      | 20        | 21.45                 | 21.41                    | 21.57                  |                     |          |
| 15              | QPSK       | 36      | 39        | 21.39                 | 21.50                    | 21.49                  |                     |          |
| 15              | QPSK       | 75      | 0         | 21.39                 | 21.38                    | 21.47                  |                     |          |
| 15              | 16QAM      | 1       | 0         | 21.58                 | 21.53                    | 21.66                  | 23                  | 1        |
| 15              | 16QAM      | 1       | 37        | 21.63                 | 21.63                    | 21.64                  |                     |          |
| 15              | 16QAM      | 1       | 74        | 21.62                 | 21.66                    | 21.71                  |                     |          |
| 15              | 16QAM      | 36      | 0         | 20.40                 | 20.39                    | 20.51                  | 22                  | 2        |
| 15              | 16QAM      | 36      | 20        | 20.45                 | 20.45                    | 20.62                  |                     |          |
| 15              | 16QAM      | 36      | 39        | 20.37                 | 20.48                    | 20.49                  |                     |          |
| 15              | 16QAM      | 75      | 0         | 20.39                 | 20.40                    | 20.48                  |                     |          |
| Channel         |            |         |           | 20800                 | 21100                    | 21400                  | Tune-up limit (dBm) | MPR (dB) |
| Frequency (MHz) |            |         |           | 2505                  | 2535                     | 2565                   |                     |          |
| 10              | QPSK       | 1       | 0         | 22.56                 | 22.56                    | 22.64                  | 24                  | 0        |
| 10              | QPSK       | 1       | 25        | 22.37                 | 22.36                    | 22.56                  |                     |          |
| 10              | QPSK       | 1       | 49        | 22.60                 | 22.54                    | 22.70                  |                     |          |
| 10              | QPSK       | 25      | 0         | 21.47                 | 21.51                    | 21.56                  | 23                  | 1        |
| 10              | QPSK       | 25      | 12        | 21.54                 | 21.43                    | 21.57                  |                     |          |
| 10              | QPSK       | 25      | 25        | 21.42                 | 21.53                    | 21.58                  |                     |          |
| 10              | QPSK       | 50      | 0         | 21.44                 | 21.48                    | 21.51                  |                     |          |
| 10              | 16QAM      | 1       | 0         | 21.83                 | 21.96                    | 22.01                  | 23                  | 1        |
| 10              | 16QAM      | 1       | 25        | 21.62                 | 21.63                    | 21.80                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 21.80                 | 21.82                    | 21.87                  |                     |          |
| 10              | 16QAM      | 25      | 0         | 20.49                 | 20.51                    | 20.60                  | 22                  | 2        |
| 10              | 16QAM      | 25      | 12        | 20.55                 | 20.46                    | 20.58                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.42                 | 20.51                    | 20.61                  |                     |          |
| 10              | 16QAM      | 50      | 0         | 20.48                 | 20.48                    | 20.55                  |                     |          |

| Channel         |       |    |    | 20775  | 21100 | 21425  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 2502.5 | 2535  | 2567.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 22.28  | 22.31 | 22.41  | 24                     | 0           |
| 5               | QPSK  | 1  | 12 | 22.29  | 22.32 | 22.35  |                        |             |
| 5               | QPSK  | 1  | 24 | 22.34  | 22.42 | 22.53  |                        |             |
| 5               | QPSK  | 12 | 0  | 21.51  | 21.50 | 21.55  | 23                     | 1           |
| 5               | QPSK  | 12 | 7  | 21.50  | 21.42 | 21.56  |                        |             |
| 5               | QPSK  | 12 | 13 | 21.54  | 21.44 | 21.50  |                        |             |
| 5               | QPSK  | 25 | 0  | 21.52  | 21.45 | 21.56  |                        |             |
| 5               | 16QAM | 1  | 0  | 21.76  | 21.65 | 21.75  | 23                     | 1           |
| 5               | 16QAM | 1  | 12 | 21.67  | 21.58 | 21.64  |                        |             |
| 5               | 16QAM | 1  | 24 | 21.69  | 21.69 | 21.74  |                        |             |
| 5               | 16QAM | 12 | 0  | 20.61  | 20.57 | 20.59  | 22                     | 2           |
| 5               | 16QAM | 12 | 7  | 20.55  | 20.45 | 20.60  |                        |             |
| 5               | 16QAM | 12 | 13 | 20.57  | 20.47 | 20.58  |                        |             |
| 5               | 16QAM | 25 | 0  | 20.51  | 20.46 | 20.59  |                        |             |



**<LTE Band 12>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 23060                 | 23095                    | 23130                  |                     |          |
| Frequency (MHz) |            |         |           | 704                   | 707.5                    | 711                    |                     |          |
| 10              | QPSK       | 1       | 0         | 22.19                 | 22.19                    | 22.32                  | 24                  | 0        |
| 10              | QPSK       | 1       | 25        | 22.47                 | 22.69                    | 22.67                  |                     |          |
| 10              | QPSK       | 1       | 49        | 22.19                 | 22.26                    | 22.22                  |                     |          |
| 10              | QPSK       | 25      | 0         | 21.44                 | 21.44                    | 21.52                  | 23                  | 1        |
| 10              | QPSK       | 25      | 12        | 21.50                 | 21.70                    | 21.68                  |                     |          |
| 10              | QPSK       | 25      | 25        | 21.49                 | 21.60                    | 21.58                  |                     |          |
| 10              | QPSK       | 50      | 0         | 21.48                 | 21.62                    | 21.58                  | 23                  | 1        |
| 10              | 16QAM      | 1       | 0         | 21.42                 | 21.46                    | 21.49                  |                     |          |
| 10              | 16QAM      | 1       | 25        | 21.87                 | 21.79                    | 21.82                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 21.50                 | 21.52                    | 21.44                  | 22                  | 2        |
| 10              | 16QAM      | 25      | 0         | 20.43                 | 20.45                    | 20.54                  |                     |          |
| 10              | 16QAM      | 25      | 12        | 20.53                 | 20.63                    | 20.72                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.52                 | 20.60                    | 20.58                  | 22                  | 2        |
| 10              | 16QAM      | 50      | 0         | 20.45                 | 20.49                    | 20.62                  |                     |          |
| Channel         |            |         |           | 23035                 | 23095                    | 23155                  | Tune-up limit (dBm) | MPR (dB) |
| Frequency (MHz) |            |         |           | 701.5                 | 707.5                    | 713.5                  |                     |          |
| 5               | QPSK       | 1       | 0         | 22.48                 | 22.62                    | 22.66                  | 24                  | 0        |
| 5               | QPSK       | 1       | 12        | 22.17                 | 22.29                    | 22.43                  |                     |          |
| 5               | QPSK       | 1       | 24        | 22.37                 | 22.66                    | 22.45                  |                     |          |
| 5               | QPSK       | 12      | 0         | 21.36                 | 21.65                    | 21.56                  | 23                  | 1        |
| 5               | QPSK       | 12      | 7         | 21.43                 | 21.65                    | 21.58                  |                     |          |
| 5               | QPSK       | 12      | 13        | 21.42                 | 21.65                    | 21.55                  |                     |          |
| 5               | QPSK       | 25      | 0         | 21.40                 | 21.65                    | 21.60                  | 23                  | 1        |
| 5               | 16QAM      | 1       | 0         | 21.55                 | 21.80                    | 21.77                  |                     |          |
| 5               | 16QAM      | 1       | 12        | 21.55                 | 21.78                    | 21.73                  |                     |          |
| 5               | 16QAM      | 1       | 24        | 21.65                 | 21.96                    | 21.81                  | 22                  | 2        |
| 5               | 16QAM      | 12      | 0         | 20.36                 | 20.63                    | 20.56                  |                     |          |
| 5               | 16QAM      | 12      | 7         | 20.45                 | 20.64                    | 20.52                  |                     |          |
| 5               | 16QAM      | 12      | 13        | 20.44                 | 20.69                    | 20.57                  | 22                  | 2        |
| 5               | 16QAM      | 25      | 0         | 20.43                 | 20.65                    | 20.58                  |                     |          |
| Channel         |            |         |           | 23025                 | 23095                    | 23165                  | Tune-up limit (dBm) | MPR (dB) |
| Frequency (MHz) |            |         |           | 700.5                 | 707.5                    | 714.5                  |                     |          |
| 3               | QPSK       | 1       | 0         | 22.44                 | 22.68                    | 22.62                  | 24                  | 0        |
| 3               | QPSK       | 1       | 8         | 22.35                 | 22.59                    | 22.45                  |                     |          |
| 3               | QPSK       | 1       | 14        | 22.37                 | 22.54                    | 22.40                  |                     |          |
| 3               | QPSK       | 8       | 0         | 21.41                 | 21.68                    | 21.54                  | 23                  | 1        |
| 3               | QPSK       | 8       | 4         | 21.39                 | 21.61                    | 21.58                  |                     |          |
| 3               | QPSK       | 8       | 7         | 21.40                 | 21.58                    | 21.55                  |                     |          |
| 3               | QPSK       | 15      | 0         | 21.38                 | 21.58                    | 21.55                  | 23                  | 1        |
| 3               | 16QAM      | 1       | 0         | 21.54                 | 21.80                    | 21.73                  |                     |          |
| 3               | 16QAM      | 1       | 8         | 21.58                 | 21.94                    | 21.68                  |                     |          |
| 3               | 16QAM      | 1       | 14        | 21.62                 | 21.85                    | 21.69                  | 22                  | 2        |
| 3               | 16QAM      | 8       | 0         | 20.46                 | 20.71                    | 20.61                  |                     |          |
| 3               | 16QAM      | 8       | 4         | 20.39                 | 20.70                    | 20.60                  |                     |          |
| 3               | 16QAM      | 8       | 7         | 20.45                 | 20.70                    | 20.61                  | 22                  | 2        |
| 3               | 16QAM      | 15      | 0         | 20.36                 | 20.64                    | 20.55                  |                     |          |

| Channel         |       |   |   | 23017 | 23095 | 23173 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|---|---|-------|-------|-------|------------------------|-------------|
| Frequency (MHz) |       |   |   | 699.7 | 707.5 | 715.3 |                        |             |
| 1.4             | QPSK  | 1 | 0 | 22.45 | 22.64 | 22.57 | 24                     | 0           |
| 1.4             | QPSK  | 1 | 3 | 22.37 | 22.55 | 22.44 |                        |             |
| 1.4             | QPSK  | 1 | 5 | 22.21 | 22.54 | 22.34 |                        |             |
| 1.4             | QPSK  | 3 | 0 | 22.32 | 22.50 | 22.44 |                        |             |
| 1.4             | QPSK  | 3 | 1 | 22.35 | 22.56 | 22.44 |                        |             |
| 1.4             | QPSK  | 3 | 3 | 22.35 | 22.53 | 22.36 |                        |             |
| 1.4             | QPSK  | 6 | 0 | 21.37 | 21.59 | 21.50 | 23                     | 1           |
| 1.4             | 16QAM | 1 | 0 | 21.53 | 21.71 | 21.67 | 23                     | 1           |
| 1.4             | 16QAM | 1 | 3 | 21.63 | 21.81 | 21.69 |                        |             |
| 1.4             | 16QAM | 1 | 5 | 21.53 | 21.76 | 21.75 |                        |             |
| 1.4             | 16QAM | 3 | 0 | 21.36 | 21.56 | 21.48 |                        |             |
| 1.4             | 16QAM | 3 | 1 | 21.42 | 21.61 | 21.51 |                        |             |
| 1.4             | 16QAM | 3 | 3 | 21.35 | 21.55 | 21.42 |                        |             |
| 1.4             | 16QAM | 6 | 0 | 20.46 | 20.59 | 20.49 | 22                     | 2           |



<LTE Band 13>

| BW [MHz]        | Modulation | RB Size | RB Offset | Power<br>Low<br>Ch. / Freq. | Power<br>Middle<br>Ch. / Freq. | Power<br>High<br>Ch. / Freq. | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|------------|---------|-----------|-----------------------------|--------------------------------|------------------------------|------------------------|-------------|
| Channel         |            |         |           | 23230                       |                                |                              |                        |             |
| Frequency (MHz) |            |         |           | 782                         |                                |                              |                        |             |
| 10              | QPSK       | 1       | 0         | 22.98                       |                                |                              | 24                     | 0           |
| 10              | QPSK       | 1       | 25        | 22.80                       |                                |                              |                        |             |
| 10              | QPSK       | 1       | 49        | 23.00                       |                                |                              |                        |             |
| 10              | QPSK       | 25      | 0         | 21.97                       |                                |                              | 23                     | 1           |
| 10              | QPSK       | 25      | 12        | 21.80                       |                                |                              |                        |             |
| 10              | QPSK       | 25      | 25        | 21.90                       |                                |                              |                        |             |
| 10              | QPSK       | 50      | 0         | 21.85                       |                                |                              | 23                     | 1           |
| 10              | 16QAM      | 1       | 0         | 22.12                       |                                |                              |                        |             |
| 10              | 16QAM      | 1       | 25        | 21.97                       |                                |                              |                        |             |
| 10              | 16QAM      | 1       | 49        | 22.12                       |                                |                              | 22                     | 2           |
| 10              | 16QAM      | 25      | 0         | 20.87                       |                                |                              |                        |             |
| 10              | 16QAM      | 25      | 12        | 20.81                       |                                |                              |                        |             |
| 10              | 16QAM      | 25      | 25        | 20.87                       |                                |                              | 22                     | 2           |
| 10              | 16QAM      | 50      | 0         | 20.96                       |                                |                              |                        |             |
| Channel         |            |         |           | 23205                       | 23230                          | 23255                        | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |            |         |           | 779.5                       | 782                            | 784.5                        |                        |             |
| 5               | QPSK       | 1       | 0         | 22.69                       | 22.90                          | 22.87                        | 24                     | 0           |
| 5               | QPSK       | 1       | 12        | 22.47                       | 22.77                          | 22.75                        |                        |             |
| 5               | QPSK       | 1       | 24        | 22.58                       | 22.81                          | 22.69                        |                        |             |
| 5               | QPSK       | 12      | 0         | 21.65                       | 21.86                          | 21.87                        | 23                     | 1           |
| 5               | QPSK       | 12      | 7         | 21.69                       | 21.87                          | 21.94                        |                        |             |
| 5               | QPSK       | 12      | 13        | 21.65                       | 21.87                          | 21.82                        |                        |             |
| 5               | QPSK       | 25      | 0         | 21.64                       | 21.90                          | 21.88                        | 23                     | 1           |
| 5               | 16QAM      | 1       | 0         | 21.78                       | 22.05                          | 22.00                        |                        |             |
| 5               | 16QAM      | 1       | 12        | 21.79                       | 22.00                          | 21.94                        |                        |             |
| 5               | 16QAM      | 1       | 24        | 21.84                       | 22.00                          | 21.88                        | 22                     | 2           |
| 5               | 16QAM      | 12      | 0         | 20.69                       | 20.89                          | 20.79                        |                        |             |
| 5               | 16QAM      | 12      | 7         | 20.68                       | 20.91                          | 20.87                        |                        |             |
| 5               | 16QAM      | 12      | 13        | 20.68                       | 20.87                          | 20.79                        | 22                     | 2           |
| 5               | 16QAM      | 25      | 0         | 20.69                       | 20.89                          | 20.83                        |                        |             |

**<LTE Band 17>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 23780                 | 23790                    | 23800                  |                     |          |
| Frequency (MHz) |            |         |           | 709                   | 710                      | 711                    |                     |          |
| 10              | QPSK       | 1       | 0         | 22.22                 | 22.31                    | 22.42                  | 24                  | 0        |
| 10              | QPSK       | 1       | 25        | 22.54                 | 22.66                    | 22.60                  |                     |          |
| 10              | QPSK       | 1       | 49        | 22.37                 | 22.39                    | 22.36                  |                     |          |
| 10              | QPSK       | 25      | 0         | 21.62                 | 21.42                    | 21.48                  | 23                  | 1        |
| 10              | QPSK       | 25      | 12        | 21.69                 | 21.71                    | 21.71                  |                     |          |
| 10              | QPSK       | 25      | 25        | 21.58                 | 21.62                    | 21.65                  |                     |          |
| 10              | QPSK       | 50      | 0         | 21.55                 | 21.52                    | 21.54                  | 23                  | 1        |
| 10              | 16QAM      | 1       | 0         | 21.45                 | 21.46                    | 21.39                  |                     |          |
| 10              | 16QAM      | 1       | 25        | 21.84                 | 21.87                    | 21.84                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 21.47                 | 21.45                    | 21.46                  | 22                  | 2        |
| 10              | 16QAM      | 25      | 0         | 20.56                 | 20.49                    | 20.50                  |                     |          |
| 10              | 16QAM      | 25      | 12        | 20.69                 | 20.73                    | 20.72                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.57                 | 20.54                    | 20.57                  | 22                  | 2        |
| 10              | 16QAM      | 50      | 0         | 20.60                 | 20.59                    | 20.57                  |                     |          |
| Channel         |            |         |           | 23755                 | 23790                    | 23825                  |                     |          |
| Frequency (MHz) |            |         |           | 706.5                 | 710                      | 713.5                  |                     |          |
| 5               | QPSK       | 1       | 0         | 22.64                 | 22.77                    | 22.74                  | 24                  | 0        |
| 5               | QPSK       | 1       | 12        | 22.34                 | 22.61                    | 22.53                  |                     |          |
| 5               | QPSK       | 1       | 24        | 22.51                 | 22.62                    | 22.51                  |                     |          |
| 5               | QPSK       | 12      | 0         | 21.53                 | 21.63                    | 21.65                  | 23                  | 1        |
| 5               | QPSK       | 12      | 7         | 21.57                 | 21.69                    | 21.75                  |                     |          |
| 5               | QPSK       | 12      | 13        | 21.60                 | 21.76                    | 21.65                  |                     |          |
| 5               | QPSK       | 25      | 0         | 21.50                 | 21.71                    | 21.73                  | 23                  | 1        |
| 5               | 16QAM      | 1       | 0         | 21.72                 | 21.86                    | 21.90                  |                     |          |
| 5               | 16QAM      | 1       | 12        | 21.76                 | 21.88                    | 21.78                  |                     |          |
| 5               | 16QAM      | 1       | 24        | 21.79                 | 21.87                    | 21.82                  | 22                  | 2        |
| 5               | 16QAM      | 12      | 0         | 20.54                 | 20.67                    | 20.64                  |                     |          |
| 5               | 16QAM      | 12      | 7         | 20.57                 | 20.70                    | 20.71                  |                     |          |
| 5               | 16QAM      | 12      | 13        | 20.60                 | 20.74                    | 20.67                  | 22                  | 2        |
| 5               | 16QAM      | 25      | 0         | 20.53                 | 20.72                    | 20.72                  |                     |          |

**<LTE Band 25>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 26140                 | 26340                    | 26590                  |                     |          |
| Frequency (MHz) |            |         |           | 1860                  | 1880                     | 1905                   |                     |          |
| 20              | QPSK       | 1       | 0         | 22.44                 | 22.51                    | 22.49                  |                     |          |
| 20              | QPSK       | 1       | 49        | 22.37                 | 22.57                    | 22.49                  | 24                  | 0        |
| 20              | QPSK       | 1       | 99        | 22.39                 | 22.55                    | 22.38                  |                     |          |
| 20              | QPSK       | 50      | 0         | 21.54                 | 21.60                    | 21.58                  |                     |          |
| 20              | QPSK       | 50      | 24        | 21.42                 | 21.66                    | 21.57                  | 23                  | 1        |
| 20              | QPSK       | 50      | 50        | 21.42                 | 21.61                    | 21.54                  |                     |          |
| 20              | QPSK       | 100     | 0         | 21.45                 | 21.65                    | 21.57                  |                     |          |
| 20              | 16QAM      | 1       | 0         | 21.77                 | 21.88                    | 21.84                  | 23                  | 1        |
| 20              | 16QAM      | 1       | 49        | 21.69                 | 21.69                    | 21.77                  |                     |          |
| 20              | 16QAM      | 1       | 99        | 21.81                 | 21.88                    | 21.87                  |                     |          |
| 20              | 16QAM      | 50      | 0         | 20.50                 | 20.63                    | 20.60                  | 22                  | 2        |
| 20              | 16QAM      | 50      | 24        | 20.48                 | 20.66                    | 20.59                  |                     |          |
| 20              | 16QAM      | 50      | 50        | 20.42                 | 20.59                    | 20.55                  |                     |          |
| 20              | 16QAM      | 100     | 0         | 20.47                 | 20.64                    | 20.58                  |                     |          |
| Channel         |            |         |           | 26115                 | 26340                    | 26615                  | Tune-up limit (dBm) | MPR (dB) |
| Frequency (MHz) |            |         |           | 1857.5                | 1880                     | 1907.5                 |                     |          |
| 15              | QPSK       | 1       | 0         | 22.56                 | 22.69                    | 22.70                  |                     |          |
| 15              | QPSK       | 1       | 37        | 22.30                 | 22.42                    | 22.39                  | 24                  | 0        |
| 15              | QPSK       | 1       | 74        | 22.56                 | 22.76                    | 22.71                  |                     |          |
| 15              | QPSK       | 36      | 0         | 21.52                 | 21.70                    | 21.70                  |                     |          |
| 15              | QPSK       | 36      | 20        | 21.54                 | 21.69                    | 21.68                  | 23                  | 1        |
| 15              | QPSK       | 36      | 39        | 21.62                 | 21.68                    | 21.70                  |                     |          |
| 15              | QPSK       | 75      | 0         | 21.55                 | 21.73                    | 21.73                  |                     |          |
| 15              | 16QAM      | 1       | 0         | 21.76                 | 21.87                    | 21.85                  | 23                  | 1        |
| 15              | 16QAM      | 1       | 37        | 21.58                 | 21.90                    | 21.90                  |                     |          |
| 15              | 16QAM      | 1       | 74        | 21.81                 | 22.01                    | 21.74                  |                     |          |
| 15              | 16QAM      | 36      | 0         | 20.58                 | 20.70                    | 20.71                  | 22                  | 2        |
| 15              | 16QAM      | 36      | 20        | 20.49                 | 20.71                    | 20.67                  |                     |          |
| 15              | 16QAM      | 36      | 39        | 20.63                 | 20.70                    | 20.65                  |                     |          |
| 15              | 16QAM      | 75      | 0         | 20.49                 | 20.71                    | 20.73                  |                     |          |
| Channel         |            |         |           | 26090                 | 26340                    | 26640                  | Tune-up limit (dBm) | MPR (dB) |
| Frequency (MHz) |            |         |           | 1855                  | 1880                     | 1910                   |                     |          |
| 10              | QPSK       | 1       | 0         | 22.62                 | 22.61                    | 22.78                  |                     |          |
| 10              | QPSK       | 1       | 25        | 22.39                 | 22.32                    | 22.72                  | 24                  | 0        |
| 10              | QPSK       | 1       | 49        | 22.56                 | 22.56                    | 22.80                  |                     |          |
| 10              | QPSK       | 25      | 0         | 21.48                 | 21.40                    | 21.66                  |                     |          |
| 10              | QPSK       | 25      | 12        | 21.46                 | 21.42                    | 21.65                  | 23                  | 1        |
| 10              | QPSK       | 25      | 25        | 21.46                 | 21.47                    | 21.75                  |                     |          |
| 10              | QPSK       | 50      | 0         | 21.43                 | 21.40                    | 21.67                  |                     |          |
| 10              | 16QAM      | 1       | 0         | 21.83                 | 21.86                    | 22.09                  | 23                  | 1        |
| 10              | 16QAM      | 1       | 25        | 21.66                 | 21.60                    | 21.84                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 21.87                 | 21.84                    | 22.03                  |                     |          |
| 10              | 16QAM      | 25      | 0         | 20.43                 | 20.41                    | 20.66                  | 22                  | 2        |
| 10              | 16QAM      | 25      | 12        | 20.45                 | 20.42                    | 20.66                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.42                 | 20.45                    | 20.66                  |                     |          |
| 10              | 16QAM      | 50      | 0         | 20.42                 | 20.46                    | 20.68                  |                     |          |



| Channel         |       |    |    | 26065  | 26340 | 26665  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1852.5 | 1880  | 1912.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 22.54  | 22.52 | 22.71  | 24                     | 0           |
| 5               | QPSK  | 1  | 12 | 22.35  | 22.27 | 22.65  |                        |             |
| 5               | QPSK  | 1  | 24 | 22.36  | 22.32 | 22.57  |                        |             |
| 5               | QPSK  | 12 | 0  | 21.47  | 21.47 | 21.60  | 23                     | 1           |
| 5               | QPSK  | 12 | 7  | 21.40  | 21.39 | 21.59  |                        |             |
| 5               | QPSK  | 12 | 13 | 21.40  | 21.32 | 21.48  |                        |             |
| 5               | QPSK  | 25 | 0  | 21.42  | 21.37 | 21.67  |                        |             |
| 5               | 16QAM | 1  | 0  | 21.76  | 21.76 | 22.03  | 23                     | 1           |
| 5               | 16QAM | 1  | 12 | 21.64  | 21.56 | 21.62  |                        |             |
| 5               | 16QAM | 1  | 24 | 21.62  | 21.61 | 21.85  |                        |             |
| 5               | 16QAM | 12 | 0  | 20.48  | 20.49 | 20.63  | 22                     | 2           |
| 5               | 16QAM | 12 | 7  | 20.45  | 20.42 | 20.64  |                        |             |
| 5               | 16QAM | 12 | 13 | 20.39  | 20.41 | 20.59  |                        |             |
| 5               | 16QAM | 25 | 0  | 20.41  | 20.40 | 20.70  |                        |             |
| Channel         |       |    |    | 26055  | 26340 | 26675  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1851.5 | 1880  | 1913.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 22.40  | 22.41 | 22.63  | 24                     | 0           |
| 3               | QPSK  | 1  | 8  | 22.39  | 22.34 | 22.58  |                        |             |
| 3               | QPSK  | 1  | 14 | 22.32  | 22.26 | 22.56  |                        |             |
| 3               | QPSK  | 8  | 0  | 21.43  | 21.39 | 21.60  | 23                     | 1           |
| 3               | QPSK  | 8  | 4  | 21.43  | 21.35 | 21.57  |                        |             |
| 3               | QPSK  | 8  | 7  | 21.35  | 21.33 | 21.62  |                        |             |
| 3               | QPSK  | 15 | 0  | 21.41  | 21.35 | 21.58  |                        |             |
| 3               | 16QAM | 1  | 0  | 21.70  | 21.64 | 21.97  | 23                     | 1           |
| 3               | 16QAM | 1  | 8  | 21.67  | 21.63 | 21.96  |                        |             |
| 3               | 16QAM | 1  | 14 | 21.60  | 21.54 | 21.92  |                        |             |
| 3               | 16QAM | 8  | 0  | 20.45  | 20.40 | 20.62  | 22                     | 2           |
| 3               | 16QAM | 8  | 4  | 20.45  | 20.44 | 20.62  |                        |             |
| 3               | 16QAM | 8  | 7  | 20.42  | 20.41 | 20.66  |                        |             |
| 3               | 16QAM | 15 | 0  | 20.42  | 20.40 | 20.60  |                        |             |
| Channel         |       |    |    | 26047  | 26340 | 26683  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1850.7 | 1880  | 1914.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 22.35  | 22.34 | 22.59  | 24                     | 0           |
| 1.4             | QPSK  | 1  | 3  | 22.40  | 22.39 | 22.64  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 22.33  | 22.29 | 22.61  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 22.39  | 22.31 | 22.60  |                        |             |
| 1.4             | QPSK  | 3  | 1  | 22.40  | 22.37 | 22.60  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 22.36  | 22.35 | 22.60  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 21.36  | 21.35 | 21.61  | 23                     | 1           |
| 1.4             | 16QAM | 1  | 0  | 21.64  | 21.58 | 22.08  | 23                     | 1           |
| 1.4             | 16QAM | 1  | 3  | 21.67  | 21.61 | 21.98  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 21.60  | 21.58 | 21.87  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 21.38  | 21.33 | 21.59  |                        |             |
| 1.4             | 16QAM | 3  | 1  | 21.42  | 21.39 | 21.59  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 21.37  | 21.31 | 21.54  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 20.42  | 20.38 | 20.77  | 22                     | 2           |



**<LTE Band 26>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 26765                 | 26865                    | 26965                  | 24                  | 0        |
| Frequency (MHz) |            |         |           | 821.5                 | 831.5                    | 841.5                  |                     |          |
| 15              | QPSK       | 1       | 0         | 22.92                 | 22.87                    | 22.90                  |                     |          |
| 15              | QPSK       | 1       | 37        | 22.52                 | 22.65                    | 22.44                  | 23                  | 1        |
| 15              | QPSK       | 1       | 74        | 23.04                 | 23.06                    | 22.96                  |                     |          |
| 15              | QPSK       | 36      | 0         | 21.79                 | 21.92                    | 21.85                  |                     |          |
| 15              | QPSK       | 36      | 20        | 21.60                 | 21.64                    | 21.60                  | 23                  | 1        |
| 15              | QPSK       | 36      | 39        | 21.52                 | 21.36                    | 21.40                  |                     |          |
| 15              | QPSK       | 75      | 0         | 21.68                 | 21.64                    | 21.76                  |                     |          |
| 15              | 16QAM      | 1       | 0         | 22.15                 | 22.05                    | 22.02                  | 23                  | 1        |
| 15              | 16QAM      | 1       | 37        | 21.77                 | 21.83                    | 21.80                  |                     |          |
| 15              | 16QAM      | 1       | 74        | 22.26                 | 22.26                    | 22.19                  |                     |          |
| 15              | 16QAM      | 36      | 0         | 20.75                 | 20.85                    | 20.87                  | 22                  | 2        |
| 15              | 16QAM      | 36      | 20        | 20.61                 | 20.49                    | 20.57                  |                     |          |
| 15              | 16QAM      | 36      | 39        | 20.44                 | 20.42                    | 20.30                  |                     |          |
| 15              | 16QAM      | 75      | 0         | 20.66                 | 20.57                    | 20.69                  | 24                  | 0        |
| Channel         |            |         |           | 26740                 | 26865                    | 26990                  |                     |          |
| Frequency (MHz) |            |         |           | 819                   | 831.5                    | 844                    |                     |          |
| 10              | QPSK       | 1       | 0         | 22.34                 | 22.19                    | 22.38                  | 24                  | 0        |
| 10              | QPSK       | 1       | 25        | 22.49                 | 22.51                    | 22.55                  |                     |          |
| 10              | QPSK       | 1       | 49        | 22.70                 | 22.75                    | 22.79                  |                     |          |
| 10              | QPSK       | 25      | 0         | 21.60                 | 21.58                    | 21.74                  | 23                  | 1        |
| 10              | QPSK       | 25      | 12        | 21.58                 | 21.62                    | 21.67                  |                     |          |
| 10              | QPSK       | 25      | 25        | 21.66                 | 21.64                    | 21.81                  |                     |          |
| 10              | QPSK       | 50      | 0         | 21.62                 | 21.63                    | 21.73                  | 23                  | 1        |
| 10              | 16QAM      | 1       | 0         | 22.18                 | 22.03                    | 22.17                  |                     |          |
| 10              | 16QAM      | 1       | 25        | 21.78                 | 21.79                    | 21.87                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 21.97                 | 21.96                    | 22.06                  | 22                  | 2        |
| 10              | 16QAM      | 25      | 0         | 20.67                 | 20.66                    | 20.72                  |                     |          |
| 10              | 16QAM      | 25      | 12        | 20.58                 | 20.64                    | 20.67                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.62                 | 20.64                    | 20.66                  | 24                  | 0        |
| 10              | 16QAM      | 50      | 0         | 20.66                 | 20.65                    | 20.74                  |                     |          |
| Channel         |            |         |           | 26715                 | 26865                    | 27015                  |                     |          |
| Frequency (MHz) |            |         |           | 816.5                 | 831.5                    | 846.5                  |                     |          |
| 5               | QPSK       | 1       | 0         | 22.67                 | 22.64                    | 22.72                  | 24                  | 0        |
| 5               | QPSK       | 1       | 12        | 22.43                 | 22.45                    | 22.52                  |                     |          |
| 5               | QPSK       | 1       | 24        | 22.43                 | 22.51                    | 22.46                  |                     |          |
| 5               | QPSK       | 12      | 0         | 21.59                 | 21.56                    | 21.59                  | 23                  | 1        |
| 5               | QPSK       | 12      | 7         | 21.54                 | 21.58                    | 21.62                  |                     |          |
| 5               | QPSK       | 12      | 13        | 21.52                 | 21.55                    | 21.63                  |                     |          |
| 5               | QPSK       | 25      | 0         | 21.58                 | 21.58                    | 21.67                  | 23                  | 1        |
| 5               | 16QAM      | 1       | 0         | 21.80                 | 21.80                    | 21.83                  |                     |          |
| 5               | 16QAM      | 1       | 12        | 21.74                 | 21.76                    | 21.85                  |                     |          |
| 5               | 16QAM      | 1       | 24        | 21.71                 | 21.73                    | 21.82                  | 22                  | 2        |
| 5               | 16QAM      | 12      | 0         | 20.60                 | 20.59                    | 20.62                  |                     |          |
| 5               | 16QAM      | 12      | 7         | 20.58                 | 20.50                    | 20.59                  |                     |          |
| 5               | 16QAM      | 12      | 13        | 20.56                 | 20.46                    | 20.66                  | 22                  | 2        |
| 5               | 16QAM      | 25      | 0         | 20.58                 | 20.49                    | 20.60                  |                     |          |

| Channel         |       |    |    | 26705 | 26865 | 27025 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|-------|-------|-------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 815.5 | 831.5 | 847.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 22.60 | 22.62 | 22.63 | 24                     | 0           |
| 3               | QPSK  | 1  | 8  | 22.51 | 22.54 | 22.42 |                        |             |
| 3               | QPSK  | 1  | 14 | 22.47 | 22.47 | 22.48 |                        |             |
| 3               | QPSK  | 8  | 0  | 21.53 | 21.57 | 21.54 | 23                     | 1           |
| 3               | QPSK  | 8  | 4  | 21.58 | 21.52 | 21.60 |                        |             |
| 3               | QPSK  | 8  | 7  | 21.48 | 21.47 | 21.60 |                        |             |
| 3               | QPSK  | 15 | 0  | 21.53 | 21.47 | 21.63 |                        |             |
| 3               | 16QAM | 1  | 0  | 21.75 | 21.64 | 21.78 | 23                     | 1           |
| 3               | 16QAM | 1  | 8  | 21.81 | 21.69 | 21.85 |                        |             |
| 3               | 16QAM | 1  | 14 | 21.75 | 21.61 | 21.70 |                        |             |
| 3               | 16QAM | 8  | 0  | 20.57 | 20.53 | 20.63 | 22                     | 2           |
| 3               | 16QAM | 8  | 4  | 20.65 | 20.54 | 20.66 |                        |             |
| 3               | 16QAM | 8  | 7  | 20.54 | 20.51 | 20.62 |                        |             |
| 3               | 16QAM | 15 | 0  | 20.58 | 20.50 | 20.57 |                        |             |
| Channel         |       |    |    | 26697 | 26865 | 27033 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 814.7 | 831.5 | 848.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 22.59 | 22.57 | 22.60 | 24                     | 0           |
| 1.4             | QPSK  | 1  | 3  | 22.44 | 22.49 | 22.48 |                        |             |
| 1.4             | QPSK  | 1  | 5  | 22.41 | 22.42 | 22.44 |                        |             |
| 1.4             | QPSK  | 3  | 0  | 22.44 | 22.48 | 22.39 |                        |             |
| 1.4             | QPSK  | 3  | 1  | 22.51 | 22.49 | 22.46 |                        |             |
| 1.4             | QPSK  | 3  | 3  | 22.42 | 22.49 | 22.51 |                        |             |
| 1.4             | QPSK  | 6  | 0  | 21.44 | 21.54 | 21.46 | 23                     | 1           |
| 1.4             | 16QAM | 1  | 0  | 21.70 | 21.69 | 21.72 | 23                     | 1           |
| 1.4             | 16QAM | 1  | 3  | 21.71 | 21.79 | 21.88 |                        |             |
| 1.4             | 16QAM | 1  | 5  | 21.64 | 21.70 | 21.77 |                        |             |
| 1.4             | 16QAM | 3  | 0  | 21.49 | 21.51 | 21.51 |                        |             |
| 1.4             | 16QAM | 3  | 1  | 21.58 | 21.54 | 21.53 |                        |             |
| 1.4             | 16QAM | 3  | 3  | 21.42 | 21.46 | 21.53 |                        |             |
| 1.4             | 16QAM | 6  | 0  | 20.48 | 20.59 | 20.59 | 22                     | 2           |

**<LTE Band 30>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 27710                 |                          |                        |                     |          |
| Frequency (MHz) |            |         |           | 2310                  |                          |                        |                     |          |
| 10              | QPSK       | 1       | 0         | 22.83                 |                          |                        | 24                  | 0        |
| 10              | QPSK       | 1       | 25        | 22.45                 |                          |                        |                     |          |
| 10              | QPSK       | 1       | 49        | 22.72                 |                          |                        |                     |          |
| 10              | QPSK       | 25      | 0         | 21.59                 |                          |                        | 23                  | 1        |
| 10              | QPSK       | 25      | 12        | 21.56                 |                          |                        |                     |          |
| 10              | QPSK       | 25      | 25        | 21.61                 |                          |                        |                     |          |
| 10              | QPSK       | 50      | 0         | 21.62                 |                          |                        | 23                  | 1        |
| 10              | 16QAM      | 1       | 0         | 22.05                 |                          |                        |                     |          |
| 10              | 16QAM      | 1       | 25        | 21.76                 |                          |                        |                     |          |
| 10              | 16QAM      | 1       | 49        | 21.94                 |                          |                        | 22                  | 2        |
| 10              | 16QAM      | 25      | 0         | 20.68                 |                          |                        |                     |          |
| 10              | 16QAM      | 25      | 12        | 20.55                 |                          |                        |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.61                 |                          |                        | 22                  | 2        |
| 10              | 16QAM      | 50      | 0         | 20.56                 |                          |                        |                     |          |
| Channel         |            |         |           | 27685                 | 27710                    | 27735                  | Tune-up limit (dBm) | MPR (dB) |
| Frequency (MHz) |            |         |           | 2307.5                | 2310                     | 2312.5                 |                     |          |
| 5               | QPSK       | 1       | 0         | 22.05                 | 22.07                    | 22.01                  | 24                  | 0        |
| 5               | QPSK       | 1       | 12        | 22.57                 | 22.59                    | 22.67                  |                     |          |
| 5               | QPSK       | 1       | 24        | 22.51                 | 22.65                    | 22.68                  |                     |          |
| 5               | QPSK       | 12      | 0         | 21.68                 | 21.65                    | 21.60                  | 23                  | 1        |
| 5               | QPSK       | 12      | 7         | 21.64                 | 21.59                    | 21.66                  |                     |          |
| 5               | QPSK       | 12      | 13        | 21.56                 | 21.57                    | 21.60                  |                     |          |
| 5               | QPSK       | 25      | 0         | 21.64                 | 21.62                    | 21.60                  | 23                  | 1        |
| 5               | 16QAM      | 1       | 0         | 21.96                 | 22.14                    | 22.07                  |                     |          |
| 5               | 16QAM      | 1       | 12        | 21.88                 | 21.80                    | 21.81                  |                     |          |
| 5               | 16QAM      | 1       | 24        | 21.93                 | 21.82                    | 21.85                  | 22                  | 2        |
| 5               | 16QAM      | 12      | 0         | 20.68                 | 20.65                    | 20.60                  |                     |          |
| 5               | 16QAM      | 12      | 7         | 20.67                 | 20.55                    | 20.73                  |                     |          |
| 5               | 16QAM      | 12      | 13        | 20.57                 | 20.58                    | 20.58                  | 22                  | 2        |
| 5               | 16QAM      | 25      | 0         | 20.67                 | 20.60                    | 20.62                  |                     |          |

**<LTE Band 66>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 132072                | 132322                   | 132572                 |                     |          |
| Frequency (MHz) |            |         |           | 1720                  | 1745                     | 1770                   |                     |          |
| 20              | QPSK       | 1       | 0         | 22.28                 | 22.69                    | 22.83                  |                     |          |
| 20              | QPSK       | 1       | 49        | 22.48                 | 22.70                    | 22.84                  | 24                  | 0        |
| 20              | QPSK       | 1       | 99        | 22.50                 | 22.84                    | 23.00                  |                     |          |
| 20              | QPSK       | 50      | 0         | 21.51                 | 21.69                    | 21.84                  |                     |          |
| 20              | QPSK       | 50      | 24        | 21.51                 | 21.75                    | 21.94                  | 23                  | 1        |
| 20              | QPSK       | 50      | 50        | 21.55                 | 21.81                    | 21.97                  |                     |          |
| 20              | QPSK       | 100     | 0         | 21.49                 | 21.71                    | 21.89                  |                     |          |
| 20              | 16QAM      | 1       | 0         | 21.66                 | 21.83                    | 22.06                  | 23                  | 1        |
| 20              | 16QAM      | 1       | 49        | 21.66                 | 21.93                    | 22.17                  |                     |          |
| 20              | 16QAM      | 1       | 99        | 21.71                 | 21.94                    | 22.14                  |                     |          |
| 20              | 16QAM      | 50      | 0         | 20.45                 | 20.64                    | 20.84                  | 22                  | 2        |
| 20              | 16QAM      | 50      | 24        | 20.52                 | 20.75                    | 20.93                  |                     |          |
| 20              | 16QAM      | 50      | 50        | 20.57                 | 20.78                    | 20.97                  |                     |          |
| 20              | 16QAM      | 100     | 0         | 20.54                 | 20.74                    | 20.90                  |                     |          |
| Channel         |            |         |           | 132047                | 132322                   | 132597                 | Tune-up limit (dBm) | MPR (dB) |
| Frequency (MHz) |            |         |           | 1717.5                | 1745                     | 1772.5                 |                     |          |
| 15              | QPSK       | 1       | 0         | 22.87                 | 23.13                    | 23.31                  |                     |          |
| 15              | QPSK       | 1       | 37        | 22.48                 | 22.82                    | 23.28                  | 24                  | 0        |
| 15              | QPSK       | 1       | 74        | 22.82                 | 23.01                    | 23.07                  |                     |          |
| 15              | QPSK       | 36      | 0         | 21.63                 | 21.86                    | 22.04                  |                     |          |
| 15              | QPSK       | 36      | 20        | 21.52                 | 21.78                    | 21.94                  | 23                  | 1        |
| 15              | QPSK       | 36      | 39        | 21.54                 | 21.76                    | 21.94                  |                     |          |
| 15              | QPSK       | 75      | 0         | 21.55                 | 21.77                    | 21.97                  |                     |          |
| 15              | 16QAM      | 1       | 0         | 22.08                 | 22.25                    | 22.54                  | 23                  | 1        |
| 15              | 16QAM      | 1       | 37        | 21.71                 | 21.89                    | 22.14                  |                     |          |
| 15              | 16QAM      | 1       | 74        | 21.96                 | 22.16                    | 22.34                  |                     |          |
| 15              | 16QAM      | 36      | 0         | 20.58                 | 20.84                    | 21.02                  | 22                  | 2        |
| 15              | 16QAM      | 36      | 20        | 20.53                 | 20.76                    | 20.97                  |                     |          |
| 15              | 16QAM      | 36      | 39        | 20.52                 | 20.75                    | 20.87                  |                     |          |
| 15              | 16QAM      | 75      | 0         | 20.53                 | 20.82                    | 20.98                  |                     |          |
| Channel         |            |         |           | 132022                | 132322                   | 132622                 | Tune-up limit (dBm) | MPR (dB) |
| Frequency (MHz) |            |         |           | 1715                  | 1745                     | 1775                   |                     |          |
| 10              | QPSK       | 1       | 0         | 22.13                 | 22.41                    | 22.66                  |                     |          |
| 10              | QPSK       | 1       | 25        | 22.70                 | 23.10                    | 23.15                  | 24                  | 0        |
| 10              | QPSK       | 1       | 49        | 23.23                 | 23.48                    | 23.17                  |                     |          |
| 10              | QPSK       | 25      | 0         | 21.60                 | 21.86                    | 22.06                  |                     |          |
| 10              | QPSK       | 25      | 12        | 21.71                 | 22.00                    | 22.18                  | 23                  | 1        |
| 10              | QPSK       | 25      | 25        | 21.78                 | 22.05                    | 22.24                  |                     |          |
| 10              | QPSK       | 50      | 0         | 21.72                 | 21.96                    | 22.14                  |                     |          |
| 10              | 16QAM      | 1       | 0         | 21.32                 | 21.57                    | 21.81                  | 23                  | 1        |
| 10              | 16QAM      | 1       | 25        | 21.85                 | 22.12                    | 22.34                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 22.36                 | 22.59                    | 22.76                  |                     |          |
| 10              | 16QAM      | 25      | 0         | 20.63                 | 20.85                    | 21.05                  | 22                  | 2        |
| 10              | 16QAM      | 25      | 12        | 20.73                 | 20.97                    | 21.16                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.75                 | 21.00                    | 21.20                  |                     |          |
| 10              | 16QAM      | 50      | 0         | 20.71                 | 20.95                    | 21.16                  |                     |          |



| Channel         |       |    |    | 131997 | 132322 | 132647 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|--------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1712.5 | 1745   | 1777.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 22.59  | 23.00  | 23.07  | 24                     | 0           |
| 5               | QPSK  | 1  | 12 | 22.66  | 22.89  | 23.11  |                        |             |
| 5               | QPSK  | 1  | 24 | 22.69  | 22.91  | 23.06  |                        |             |
| 5               | QPSK  | 12 | 0  | 21.74  | 22.00  | 22.16  | 23                     | 1           |
| 5               | QPSK  | 12 | 7  | 21.72  | 21.96  | 22.12  |                        |             |
| 5               | QPSK  | 12 | 13 | 21.71  | 21.90  | 22.10  |                        |             |
| 5               | QPSK  | 25 | 0  | 21.78  | 21.95  | 22.14  | 23                     | 1           |
| 5               | 16QAM | 1  | 0  | 22.10  | 22.37  | 22.48  |                        |             |
| 5               | 16QAM | 1  | 12 | 21.90  | 22.11  | 22.35  |                        |             |
| 5               | 16QAM | 1  | 24 | 21.96  | 22.16  | 22.33  | 22                     | 2           |
| 5               | 16QAM | 12 | 0  | 20.76  | 20.99  | 21.20  |                        |             |
| 5               | 16QAM | 12 | 7  | 20.75  | 20.98  | 21.14  |                        |             |
| 5               | 16QAM | 12 | 13 | 20.65  | 20.94  | 21.12  | 22                     | 2           |
| 5               | 16QAM | 25 | 0  | 20.63  | 20.95  | 21.14  |                        |             |
| Channel         |       |    |    | 131987 | 132322 | 132657 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1711.5 | 1745   | 1778.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 22.49  | 22.98  | 22.97  | 24                     | 0           |
| 3               | QPSK  | 1  | 8  | 22.62  | 22.88  | 23.11  |                        |             |
| 3               | QPSK  | 1  | 14 | 22.55  | 22.92  | 23.08  |                        |             |
| 3               | QPSK  | 8  | 0  | 21.63  | 21.90  | 22.15  | 23                     | 1           |
| 3               | QPSK  | 8  | 4  | 21.61  | 21.94  | 22.10  |                        |             |
| 3               | QPSK  | 8  | 7  | 21.59  | 21.87  | 22.11  |                        |             |
| 3               | QPSK  | 15 | 0  | 21.59  | 21.89  | 22.13  | 23                     | 1           |
| 3               | 16QAM | 1  | 0  | 21.91  | 22.21  | 22.36  |                        |             |
| 3               | 16QAM | 1  | 8  | 21.89  | 22.24  | 22.54  |                        |             |
| 3               | 16QAM | 1  | 14 | 21.89  | 22.13  | 22.40  | 22                     | 2           |
| 3               | 16QAM | 8  | 0  | 20.67  | 20.96  | 21.17  |                        |             |
| 3               | 16QAM | 8  | 4  | 20.66  | 20.96  | 21.18  |                        |             |
| 3               | 16QAM | 8  | 7  | 20.63  | 20.95  | 21.16  | 22                     | 2           |
| 3               | 16QAM | 15 | 0  | 20.63  | 20.95  | 21.14  |                        |             |
| Channel         |       |    |    | 131979 | 132322 | 132665 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1710.7 | 1745   | 1779.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 22.61  | 22.92  | 23.12  | 24                     | 0           |
| 1.4             | QPSK  | 1  | 3  | 22.65  | 22.98  | 23.20  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 22.57  | 22.90  | 23.17  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 22.56  | 22.88  | 23.12  |                        |             |
| 1.4             | QPSK  | 3  | 1  | 22.62  | 22.94  | 23.14  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 22.58  | 22.88  | 23.12  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 21.58  | 21.86  | 22.09  | 23                     | 1           |
| 1.4             | 16QAM | 1  | 0  | 21.80  | 22.15  | 22.42  | 23                     | 1           |
| 1.4             | 16QAM | 1  | 3  | 21.88  | 22.26  | 22.40  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 21.82  | 22.13  | 22.45  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 21.57  | 21.87  | 22.10  |                        |             |
| 1.4             | 16QAM | 3  | 1  | 21.62  | 21.90  | 22.13  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 21.55  | 21.86  | 22.08  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 20.62  | 20.97  | 21.16  | 22                     | 2           |

**<Near-body and Hotspot Mode>**
**<LTE Band 2>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|-------------|
| Channel         |            |         |           | 18700                    | 18900                       | 19100                     |                        |             |
| Frequency (MHz) |            |         |           | 1860                     | 1880                        | 1900                      |                        |             |
| 20              | QPSK       | 1       | 0         | 20.08                    | 20.23                       | 20.17                     | 21.5                   | 0           |
| 20              | QPSK       | 1       | 49        | 20.05                    | 20.16                       | 19.99                     |                        |             |
| 20              | QPSK       | 1       | 99        | 19.97                    | 20.05                       | 20.07                     |                        |             |
| 20              | QPSK       | 50      | 0         | 19.98                    | 20.10                       | 20.18                     | 21.5                   | 0           |
| 20              | QPSK       | 50      | 24        | 19.97                    | 20.11                       | 20.14                     |                        |             |
| 20              | QPSK       | 50      | 50        | 19.83                    | 19.90                       | 19.98                     |                        |             |
| 20              | QPSK       | 100     | 0         | 19.98                    | 20.06                       | 20.14                     | 21.5                   | 0           |
| 20              | 16QAM      | 1       | 0         | 19.98                    | 20.03                       | 20.08                     |                        |             |
| 20              | 16QAM      | 1       | 49        | 19.87                    | 20.00                       | 19.98                     |                        |             |
| 20              | 16QAM      | 1       | 99        | 19.88                    | 19.99                       | 19.84                     | 21.5                   | 0           |
| 20              | 16QAM      | 50      | 0         | 20.02                    | 20.11                       | 20.19                     |                        |             |
| 20              | 16QAM      | 50      | 24        | 19.99                    | 20.14                       | 19.93                     |                        |             |
| 20              | 16QAM      | 50      | 50        | 19.84                    | 19.93                       | 20.00                     | 21.5                   | 0           |
| 20              | 16QAM      | 100     | 0         | 19.93                    | 20.04                       | 20.10                     |                        |             |
| Channel         |            |         |           | 18675                    | 18900                       | 19125                     |                        |             |
| Frequency (MHz) |            |         |           | 1857.5                   | 1880                        | 1902.5                    |                        |             |
| 15              | QPSK       | 1       | 0         | 19.71                    | 19.90                       | 19.99                     | 21.5                   | 0           |
| 15              | QPSK       | 1       | 37        | 19.53                    | 19.50                       | 19.84                     |                        |             |
| 15              | QPSK       | 1       | 74        | 19.91                    | 20.08                       | 20.09                     |                        |             |
| 15              | QPSK       | 36      | 0         | 19.84                    | 19.97                       | 20.09                     | 21.5                   | 0           |
| 15              | QPSK       | 36      | 20        | 19.85                    | 20.01                       | 20.03                     |                        |             |
| 15              | QPSK       | 36      | 39        | 19.84                    | 19.97                       | 20.03                     |                        |             |
| 15              | QPSK       | 75      | 0         | 19.84                    | 19.95                       | 20.04                     | 21.5                   | 0           |
| 15              | 16QAM      | 1       | 0         | 19.82                    | 20.06                       | 20.07                     |                        |             |
| 15              | 16QAM      | 1       | 37        | 19.98                    | 19.98                       | 20.13                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 19.82                    | 20.03                       | 19.85                     | 21.5                   | 0           |
| 15              | 16QAM      | 36      | 0         | 19.88                    | 19.97                       | 20.09                     |                        |             |
| 15              | 16QAM      | 36      | 20        | 19.81                    | 19.98                       | 20.06                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 19.77                    | 19.99                       | 19.99                     | 21.5                   | 0           |
| 15              | 16QAM      | 75      | 0         | 19.81                    | 19.98                       | 20.11                     |                        |             |
| Channel         |            |         |           | 18650                    | 18900                       | 19150                     |                        |             |
| Frequency (MHz) |            |         |           | 1855                     | 1880                        | 1905                      |                        |             |
| 10              | QPSK       | 1       | 0         | 19.50                    | 19.60                       | 19.71                     | 21.5                   | 0           |
| 10              | QPSK       | 1       | 25        | 19.51                    | 19.65                       | 19.71                     |                        |             |
| 10              | QPSK       | 1       | 49        | 19.63                    | 19.73                       | 19.93                     |                        |             |
| 10              | QPSK       | 25      | 0         | 19.64                    | 19.79                       | 19.96                     | 21.5                   | 0           |
| 10              | QPSK       | 25      | 12        | 19.58                    | 19.77                       | 19.86                     |                        |             |
| 10              | QPSK       | 25      | 25        | 19.62                    | 19.81                       | 19.90                     |                        |             |
| 10              | QPSK       | 50      | 0         | 19.58                    | 19.78                       | 19.86                     | 21.5                   | 0           |
| 10              | 16QAM      | 1       | 0         | 19.95                    | 20.08                       | 19.96                     |                        |             |
| 10              | 16QAM      | 1       | 25        | 19.78                    | 19.93                       | 20.05                     |                        |             |
| 10              | 16QAM      | 1       | 49        | 19.94                    | 20.04                       | 19.93                     | 21.5                   | 0           |
| 10              | 16QAM      | 25      | 0         | 19.63                    | 19.72                       | 19.99                     |                        |             |
| 10              | 16QAM      | 25      | 12        | 19.61                    | 19.77                       | 19.90                     |                        |             |
| 10              | 16QAM      | 25      | 25        | 19.56                    | 19.78                       | 19.86                     | 21.5                   | 0           |
| 10              | 16QAM      | 50      | 0         | 19.62                    | 19.76                       | 19.91                     |                        |             |



| Channel         |       |    |    | 18625  | 18900 | 19175  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1852.5 | 1880  | 1907.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 19.55  | 19.75 | 19.80  | 21.5                   | 0           |
| 5               | QPSK  | 1  | 12 | 19.70  | 19.86 | 20.00  |                        |             |
| 5               | QPSK  | 1  | 24 | 19.72  | 19.88 | 20.04  |                        |             |
| 5               | QPSK  | 12 | 0  | 19.83  | 20.01 | 20.22  | 21.5                   | 0           |
| 5               | QPSK  | 12 | 7  | 19.82  | 20.01 | 20.11  |                        |             |
| 5               | QPSK  | 12 | 13 | 19.82  | 19.90 | 20.14  |                        |             |
| 5               | QPSK  | 25 | 0  | 19.85  | 19.99 | 20.13  |                        |             |
| 5               | 16QAM | 1  | 0  | 20.04  | 20.07 | 20.08  | 21.5                   | 0           |
| 5               | 16QAM | 1  | 12 | 19.88  | 20.15 | 19.96  |                        |             |
| 5               | 16QAM | 1  | 24 | 19.95  | 20.08 | 20.11  |                        |             |
| 5               | 16QAM | 12 | 0  | 19.91  | 20.06 | 20.22  | 21.5                   | 0           |
| 5               | 16QAM | 12 | 7  | 19.87  | 20.00 | 20.17  |                        |             |
| 5               | 16QAM | 12 | 13 | 19.78  | 19.96 | 20.13  |                        |             |
| 5               | 16QAM | 25 | 0  | 19.81  | 19.97 | 20.14  |                        |             |
| Channel         |       |    |    | 18615  | 18900 | 19185  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1851.5 | 1880  | 1908.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 19.75  | 19.67 | 19.76  | 21.5                   | 0           |
| 3               | QPSK  | 1  | 8  | 19.74  | 19.87 | 20.03  |                        |             |
| 3               | QPSK  | 1  | 14 | 19.66  | 19.82 | 19.99  |                        |             |
| 3               | QPSK  | 8  | 0  | 19.84  | 19.97 | 20.15  | 21.5                   | 0           |
| 3               | QPSK  | 8  | 4  | 19.84  | 20.00 | 20.16  |                        |             |
| 3               | QPSK  | 8  | 7  | 19.79  | 19.93 | 20.09  |                        |             |
| 3               | QPSK  | 15 | 0  | 19.79  | 19.99 | 20.12  |                        |             |
| 3               | 16QAM | 1  | 0  | 20.02  | 20.04 | 20.11  | 21.5                   | 0           |
| 3               | 16QAM | 1  | 8  | 19.99  | 20.05 | 20.10  |                        |             |
| 3               | 16QAM | 1  | 14 | 19.90  | 20.00 | 20.07  |                        |             |
| 3               | 16QAM | 8  | 0  | 19.86  | 20.04 | 20.19  | 21.5                   | 0           |
| 3               | 16QAM | 8  | 4  | 19.87  | 20.06 | 20.20  |                        |             |
| 3               | 16QAM | 8  | 7  | 19.86  | 20.02 | 20.17  |                        |             |
| 3               | 16QAM | 15 | 0  | 19.79  | 19.97 | 20.16  |                        |             |
| Channel         |       |    |    | 18607  | 18900 | 19193  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1850.7 | 1880  | 1909.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 19.66  | 19.59 | 19.74  | 21.5                   | 0           |
| 1.4             | QPSK  | 1  | 3  | 19.76  | 19.95 | 20.07  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 19.64  | 19.87 | 20.00  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 19.66  | 19.84 | 20.01  |                        |             |
| 1.4             | QPSK  | 3  | 1  | 19.76  | 19.91 | 20.06  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 19.71  | 19.84 | 20.01  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 19.76  | 19.96 | 20.08  | 21.5                   | 0           |
| 1.4             | 16QAM | 1  | 0  | 19.88  | 20.01 | 20.08  | 21.5                   | 0           |
| 1.4             | 16QAM | 1  | 3  | 19.94  | 20.20 | 20.01  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 19.91  | 20.07 | 20.22  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 19.71  | 19.92 | 20.09  |                        |             |
| 1.4             | 16QAM | 3  | 1  | 19.76  | 19.94 | 20.09  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 19.70  | 19.91 | 20.07  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 19.85  | 20.02 | 20.16  | 21.5                   | 0           |

**<LTE Band 4>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 20050                 | 20175                    | 20300                  |                     |          |
| Frequency (MHz) |            |         |           | 1720                  | 1732.5                   | 1745                   |                     |          |
| 20              | QPSK       | 1       | 0         | 19.51                 | 19.58                    | 19.43                  |                     |          |
| 20              | QPSK       | 1       | 49        | 19.47                 | 19.49                    | 19.42                  | 20.7                | 0        |
| 20              | QPSK       | 1       | 99        | 19.38                 | 19.48                    | 19.41                  |                     |          |
| 20              | QPSK       | 50      | 0         | 19.39                 | 19.45                    | 19.39                  |                     |          |
| 20              | QPSK       | 50      | 24        | 19.36                 | 19.42                    | 19.35                  | 20.7                | 0        |
| 20              | QPSK       | 50      | 50        | 19.31                 | 19.38                    | 19.37                  |                     |          |
| 20              | QPSK       | 100     | 0         | 19.36                 | 19.45                    | 19.42                  |                     |          |
| 20              | 16QAM      | 1       | 0         | 19.11                 | 19.14                    | 19.14                  | 20.7                | 0        |
| 20              | 16QAM      | 1       | 49        | 19.24                 | 19.27                    | 19.23                  |                     |          |
| 20              | 16QAM      | 1       | 99        | 19.25                 | 19.36                    | 19.40                  |                     |          |
| 20              | 16QAM      | 50      | 0         | 19.28                 | 19.32                    | 19.38                  | 20.7                | 0        |
| 20              | 16QAM      | 50      | 24        | 19.29                 | 19.35                    | 19.30                  |                     |          |
| 20              | 16QAM      | 50      | 50        | 19.15                 | 19.31                    | 19.32                  |                     |          |
| 20              | 16QAM      | 100     | 0         | 19.25                 | 19.31                    | 19.33                  |                     |          |
| Channel         |            |         |           | 20025                 | 20175                    | 20325                  |                     |          |
| Frequency (MHz) |            |         |           | 1717.5                | 1732.5                   | 1747.5                 |                     |          |
| 15              | QPSK       | 1       | 0         | 18.76                 | 18.81                    | 18.88                  |                     |          |
| 15              | QPSK       | 1       | 37        | 19.08                 | 19.22                    | 19.11                  | 20.7                | 0        |
| 15              | QPSK       | 1       | 74        | 19.16                 | 19.13                    | 19.25                  |                     |          |
| 15              | QPSK       | 36      | 0         | 19.25                 | 19.29                    | 19.46                  |                     |          |
| 15              | QPSK       | 36      | 20        | 19.33                 | 19.37                    | 19.40                  | 20.7                | 0        |
| 15              | QPSK       | 36      | 39        | 19.23                 | 19.27                    | 19.29                  |                     |          |
| 15              | QPSK       | 75      | 0         | 19.32                 | 19.34                    | 19.36                  |                     |          |
| 15              | 16QAM      | 1       | 0         | 19.46                 | 19.30                    | 19.55                  | 20.7                | 0        |
| 15              | 16QAM      | 1       | 37        | 19.32                 | 19.34                    | 19.34                  |                     |          |
| 15              | 16QAM      | 1       | 74        | 19.36                 | 19.40                    | 19.46                  |                     |          |
| 15              | 16QAM      | 36      | 0         | 19.28                 | 19.32                    | 19.43                  | 20.7                | 0        |
| 15              | 16QAM      | 36      | 20        | 19.30                 | 19.34                    | 19.38                  |                     |          |
| 15              | 16QAM      | 36      | 39        | 19.25                 | 19.26                    | 19.30                  |                     |          |
| 15              | 16QAM      | 75      | 0         | 19.26                 | 19.32                    | 19.41                  |                     |          |
| Channel         |            |         |           | 20000                 | 20175                    | 20350                  |                     |          |
| Frequency (MHz) |            |         |           | 1715                  | 1732.5                   | 1750                   |                     |          |
| 10              | QPSK       | 1       | 0         | 19.16                 | 19.10                    | 19.05                  |                     |          |
| 10              | QPSK       | 1       | 25        | 19.18                 | 19.28                    | 19.23                  | 20.7                | 0        |
| 10              | QPSK       | 1       | 49        | 19.26                 | 19.42                    | 19.41                  |                     |          |
| 10              | QPSK       | 25      | 0         | 19.40                 | 19.44                    | 19.37                  |                     |          |
| 10              | QPSK       | 25      | 12        | 19.33                 | 19.41                    | 19.37                  | 20.7                | 0        |
| 10              | QPSK       | 25      | 25        | 19.46                 | 19.44                    | 19.50                  |                     |          |
| 10              | QPSK       | 50      | 0         | 19.45                 | 19.48                    | 19.39                  |                     |          |
| 10              | 16QAM      | 1       | 0         | 19.29                 | 19.42                    | 19.44                  | 20.7                | 0        |
| 10              | 16QAM      | 1       | 25        | 19.47                 | 19.54                    | 19.47                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 19.53                 | 19.43                    | 19.35                  |                     |          |
| 10              | 16QAM      | 25      | 0         | 19.45                 | 19.47                    | 19.34                  | 20.7                | 0        |
| 10              | 16QAM      | 25      | 12        | 19.33                 | 19.42                    | 19.33                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 19.47                 | 19.41                    | 19.40                  |                     |          |
| 10              | 16QAM      | 50      | 0         | 19.47                 | 19.47                    | 19.40                  |                     |          |



| Channel         |       |    |    | 19975  | 20175  | 20375  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|--------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1712.5 | 1732.5 | 1752.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 19.45  | 18.76  | 18.80  | 20.7                   | 0           |
| 5               | QPSK  | 1  | 12 | 19.30  | 19.38  | 19.22  |                        |             |
| 5               | QPSK  | 1  | 24 | 19.28  | 19.25  | 19.23  |                        |             |
| 5               | QPSK  | 12 | 0  | 19.53  | 19.40  | 19.41  | 20.7                   | 0           |
| 5               | QPSK  | 12 | 7  | 19.42  | 19.43  | 19.33  |                        |             |
| 5               | QPSK  | 12 | 13 | 19.30  | 19.37  | 19.38  |                        |             |
| 5               | QPSK  | 25 | 0  | 19.43  | 19.44  | 19.33  |                        |             |
| 5               | 16QAM | 1  | 0  | 19.42  | 19.35  | 19.42  | 20.7                   | 0           |
| 5               | 16QAM | 1  | 12 | 19.48  | 19.55  | 19.51  |                        |             |
| 5               | 16QAM | 1  | 24 | 19.57  | 19.48  | 19.48  |                        |             |
| 5               | 16QAM | 12 | 0  | 19.47  | 19.44  | 19.46  | 20.7                   | 0           |
| 5               | 16QAM | 12 | 7  | 19.39  | 19.42  | 19.37  |                        |             |
| 5               | 16QAM | 12 | 13 | 19.29  | 19.37  | 19.35  |                        |             |
| 5               | 16QAM | 25 | 0  | 19.42  | 19.46  | 19.33  |                        |             |
| Channel         |       |    |    | 19965  | 20175  | 20385  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1711.5 | 1732.5 | 1753.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 19.20  | 19.46  | 19.47  | 20.7                   | 0           |
| 3               | QPSK  | 1  | 8  | 19.33  | 19.30  | 19.26  |                        |             |
| 3               | QPSK  | 1  | 14 | 19.24  | 19.20  | 19.19  |                        |             |
| 3               | QPSK  | 8  | 0  | 19.36  | 19.34  | 19.30  | 20.7                   | 0           |
| 3               | QPSK  | 8  | 4  | 19.40  | 19.37  | 19.38  |                        |             |
| 3               | QPSK  | 8  | 7  | 19.30  | 19.33  | 19.31  |                        |             |
| 3               | QPSK  | 15 | 0  | 19.36  | 19.37  | 19.26  |                        |             |
| 3               | 16QAM | 1  | 0  | 19.29  | 19.42  | 19.49  | 20.7                   | 0           |
| 3               | 16QAM | 1  | 8  | 19.32  | 19.55  | 19.56  |                        |             |
| 3               | 16QAM | 1  | 14 | 19.48  | 19.47  | 19.39  |                        |             |
| 3               | 16QAM | 8  | 0  | 19.50  | 19.39  | 19.34  | 20.7                   | 0           |
| 3               | 16QAM | 8  | 4  | 19.57  | 19.43  | 19.44  |                        |             |
| 3               | 16QAM | 8  | 7  | 19.47  | 19.39  | 19.36  |                        |             |
| 3               | 16QAM | 15 | 0  | 19.47  | 19.37  | 19.28  |                        |             |
| Channel         |       |    |    | 19957  | 20175  | 20393  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1710.7 | 1732.5 | 1754.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 19.20  | 19.27  | 19.24  | 20.7                   | 0           |
| 1.4             | QPSK  | 1  | 3  | 19.29  | 19.33  | 19.27  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 19.24  | 19.25  | 19.17  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 19.33  | 19.21  | 19.26  |                        |             |
| 1.4             | QPSK  | 3  | 1  | 19.39  | 19.34  | 19.26  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 19.24  | 19.30  | 19.21  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 19.31  | 19.39  | 19.33  | 20.7                   | 0           |
| 1.4             | 16QAM | 1  | 0  | 19.56  | 19.41  | 19.48  | 20.7                   | 0           |
| 1.4             | 16QAM | 1  | 3  | 19.54  | 19.44  | 19.49  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 19.50  | 19.45  | 19.44  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 19.33  | 19.25  | 19.28  |                        |             |
| 1.4             | 16QAM | 3  | 1  | 19.42  | 19.37  | 19.32  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 19.27  | 19.27  | 19.24  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 19.39  | 19.46  | 19.38  | 20.7                   | 0           |



**<LTE Band 5>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 20450                 | 20525                    | 20600                  | 22.1                | 0        |
| Frequency (MHz) |            |         |           | 829                   | 836.5                    | 844                    |                     |          |
| 10              | QPSK       | 1       | 0         | 21.12                 | 21.28                    | 21.21                  |                     |          |
| 10              | QPSK       | 1       | 25        | 20.81                 | 20.79                    | 20.80                  | 22.1                | 0        |
| 10              | QPSK       | 1       | 49        | 21.01                 | 20.99                    | 20.99                  |                     |          |
| 10              | QPSK       | 25      | 0         | 20.81                 | 20.94                    | 20.89                  |                     |          |
| 10              | QPSK       | 25      | 12        | 20.91                 | 20.79                    | 20.81                  | 22.1                | 0        |
| 10              | QPSK       | 25      | 25        | 20.93                 | 20.90                    | 20.87                  |                     |          |
| 10              | QPSK       | 50      | 0         | 20.95                 | 20.97                    | 20.93                  |                     |          |
| 10              | 16QAM      | 1       | 0         | 21.14                 | 21.16                    | 21.11                  | 22.1                | 0        |
| 10              | 16QAM      | 1       | 25        | 21.06                 | 20.99                    | 20.93                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 21.24                 | 21.26                    | 21.22                  |                     |          |
| 10              | 16QAM      | 25      | 0         | 20.77                 | 20.73                    | 20.77                  | 22                  | 0.1      |
| 10              | 16QAM      | 25      | 12        | 20.82                 | 20.70                    | 20.71                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.80                 | 20.79                    | 20.83                  |                     |          |
| 10              | 16QAM      | 50      | 0         | 20.85                 | 20.81                    | 20.87                  | 22.1                | 0        |
| Channel         |            |         |           | 20425                 | 20525                    | 20625                  |                     |          |
| Frequency (MHz) |            |         |           | 826.5                 | 836.5                    | 846.5                  |                     |          |
| 5               | QPSK       | 1       | 0         | 20.95                 | 20.95                    | 20.97                  | 22.1                | 0        |
| 5               | QPSK       | 1       | 12        | 20.68                 | 20.74                    | 20.62                  |                     |          |
| 5               | QPSK       | 1       | 24        | 20.67                 | 20.69                    | 20.65                  |                     |          |
| 5               | QPSK       | 12      | 0         | 20.79                 | 20.81                    | 20.82                  | 22.1                | 0        |
| 5               | QPSK       | 12      | 7         | 20.89                 | 20.85                    | 20.73                  |                     |          |
| 5               | QPSK       | 12      | 13        | 20.76                 | 20.78                    | 20.80                  |                     |          |
| 5               | QPSK       | 25      | 0         | 20.88                 | 20.83                    | 20.82                  | 22.1                | 0        |
| 5               | 16QAM      | 1       | 0         | 21.04                 | 21.02                    | 20.99                  |                     |          |
| 5               | 16QAM      | 1       | 12        | 21.04                 | 20.99                    | 20.91                  |                     |          |
| 5               | 16QAM      | 1       | 24        | 20.98                 | 20.98                    | 20.89                  | 22                  | 0.1      |
| 5               | 16QAM      | 12      | 0         | 20.73                 | 20.70                    | 20.73                  |                     |          |
| 5               | 16QAM      | 12      | 7         | 20.81                 | 20.79                    | 20.68                  |                     |          |
| 5               | 16QAM      | 12      | 13        | 20.71                 | 20.72                    | 20.76                  | 22.1                | 0        |
| 5               | 16QAM      | 25      | 0         | 20.74                 | 20.78                    | 20.65                  |                     |          |
| Channel         |            |         |           | 20415                 | 20525                    | 20635                  |                     |          |
| Frequency (MHz) |            |         |           | 825.5                 | 836.5                    | 847.5                  |                     |          |
| 3               | QPSK       | 1       | 0         | 20.71                 | 20.87                    | 20.91                  | 22.1                | 0        |
| 3               | QPSK       | 1       | 8         | 20.73                 | 20.75                    | 20.74                  |                     |          |
| 3               | QPSK       | 1       | 14        | 20.70                 | 20.64                    | 20.66                  |                     |          |
| 3               | QPSK       | 8       | 0         | 20.79                 | 20.79                    | 20.75                  | 22.1                | 0        |
| 3               | QPSK       | 8       | 4         | 20.81                 | 20.83                    | 20.82                  |                     |          |
| 3               | QPSK       | 8       | 7         | 20.73                 | 20.72                    | 20.73                  |                     |          |
| 3               | QPSK       | 15      | 0         | 20.77                 | 20.82                    | 20.76                  | 22.1                | 0        |
| 3               | 16QAM      | 1       | 0         | 20.97                 | 20.94                    | 20.93                  |                     |          |
| 3               | 16QAM      | 1       | 8         | 21.00                 | 20.99                    | 21.02                  |                     |          |
| 3               | 16QAM      | 1       | 14        | 21.00                 | 20.93                    | 20.87                  | 22                  | 0.1      |
| 3               | 16QAM      | 8       | 0         | 20.76                 | 20.73                    | 20.72                  |                     |          |
| 3               | 16QAM      | 8       | 4         | 20.76                 | 20.78                    | 20.76                  |                     |          |
| 3               | 16QAM      | 8       | 7         | 20.73                 | 20.70                    | 20.72                  | 22                  | 0.1      |
| 3               | 16QAM      | 15      | 0         | 20.70                 | 20.75                    | 20.67                  |                     |          |

| Channel         |       |   |   | 20407 | 20525 | 20643 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|---|---|-------|-------|-------|------------------------|-------------|
| Frequency (MHz) |       |   |   | 824.7 | 836.5 | 848.3 |                        |             |
| 1.4             | QPSK  | 1 | 0 | 20.62 | 20.85 | 20.89 | 22.1                   | 0           |
| 1.4             | QPSK  | 1 | 3 | 20.72 | 20.78 | 20.72 |                        |             |
| 1.4             | QPSK  | 1 | 5 | 20.74 | 20.64 | 20.65 |                        |             |
| 1.4             | QPSK  | 3 | 0 | 20.65 | 20.62 | 20.65 |                        |             |
| 1.4             | QPSK  | 3 | 1 | 20.72 | 20.65 | 20.63 |                        |             |
| 1.4             | QPSK  | 3 | 3 | 20.72 | 20.70 | 20.63 |                        |             |
| 1.4             | QPSK  | 6 | 0 | 20.75 | 20.79 | 20.80 | 22.1                   | 0           |
| 1.4             | 16QAM | 1 | 0 | 20.92 | 20.92 | 20.90 | 22.1                   | 0           |
| 1.4             | 16QAM | 1 | 3 | 20.99 | 21.03 | 20.95 |                        |             |
| 1.4             | 16QAM | 1 | 5 | 20.91 | 20.91 | 20.89 |                        |             |
| 1.4             | 16QAM | 3 | 0 | 20.69 | 20.69 | 20.72 |                        |             |
| 1.4             | 16QAM | 3 | 1 | 20.76 | 20.70 | 20.68 |                        |             |
| 1.4             | 16QAM | 3 | 3 | 20.75 | 20.75 | 20.72 |                        |             |
| 1.4             | 16QAM | 6 | 0 | 20.68 | 20.78 | 20.72 | 22                     | 0.1         |



**<LTE Band 7>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 20850                 | 21100                    | 21350                  | 23.2                | 0        |
| Frequency (MHz) |            |         |           | 2510                  | 2535                     | 2560                   |                     |          |
| 20              | QPSK       | 1       | 0         | 21.56                 | 21.39                    | 21.44                  |                     |          |
| 20              | QPSK       | 1       | 49        | 21.45                 | 21.40                    | 21.49                  | 23                  | 0.2      |
| 20              | QPSK       | 1       | 99        | 21.65                 | 21.64                    | 21.81                  |                     |          |
| 20              | QPSK       | 50      | 0         | 21.48                 | 21.46                    | 21.51                  |                     |          |
| 20              | QPSK       | 50      | 24        | 21.44                 | 21.41                    | 21.50                  | 23                  | 0.2      |
| 20              | QPSK       | 50      | 50        | 21.46                 | 21.41                    | 21.45                  |                     |          |
| 20              | QPSK       | 100     | 0         | 21.40                 | 21.47                    | 21.53                  |                     |          |
| 20              | 16QAM      | 1       | 0         | 21.60                 | 21.55                    | 21.71                  | 23                  | 0.2      |
| 20              | 16QAM      | 1       | 49        | 21.62                 | 21.62                    | 21.71                  |                     |          |
| 20              | 16QAM      | 1       | 99        | 21.62                 | 21.71                    | 21.72                  |                     |          |
| 20              | 16QAM      | 50      | 0         | 20.44                 | 20.45                    | 20.53                  | 22                  | 1.2      |
| 20              | 16QAM      | 50      | 24        | 20.42                 | 20.46                    | 20.49                  |                     |          |
| 20              | 16QAM      | 50      | 50        | 20.46                 | 20.43                    | 20.50                  |                     |          |
| 20              | 16QAM      | 100     | 0         | 20.43                 | 20.40                    | 20.52                  | 23.2                | 0        |
| Channel         |            |         |           | 20825                 | 21100                    | 21375                  |                     |          |
| Frequency (MHz) |            |         |           | 2507.5                | 2535                     | 2562.5                 |                     |          |
| 15              | QPSK       | 1       | 0         | 21.50                 | 21.38                    | 21.51                  | 23.2                | 0        |
| 15              | QPSK       | 1       | 37        | 21.78                 | 21.47                    | 21.37                  |                     |          |
| 15              | QPSK       | 1       | 74        | 21.50                 | 21.63                    | 21.59                  |                     |          |
| 15              | QPSK       | 36      | 0         | 21.43                 | 21.40                    | 21.51                  | 23                  | 0.2      |
| 15              | QPSK       | 36      | 20        | 21.52                 | 21.37                    | 21.61                  |                     |          |
| 15              | QPSK       | 36      | 39        | 21.42                 | 21.49                    | 21.48                  |                     |          |
| 15              | QPSK       | 75      | 0         | 21.46                 | 21.40                    | 21.44                  | 23                  | 0.2      |
| 15              | 16QAM      | 1       | 0         | 21.60                 | 21.57                    | 21.63                  |                     |          |
| 15              | 16QAM      | 1       | 37        | 21.65                 | 21.64                    | 21.60                  |                     |          |
| 15              | 16QAM      | 1       | 74        | 21.63                 | 21.71                    | 21.70                  | 22                  | 1.2      |
| 15              | 16QAM      | 36      | 0         | 20.44                 | 20.43                    | 20.51                  |                     |          |
| 15              | 16QAM      | 36      | 20        | 20.54                 | 20.47                    | 20.59                  |                     |          |
| 15              | 16QAM      | 36      | 39        | 20.38                 | 20.51                    | 20.49                  | 23.2                | 0        |
| 15              | 16QAM      | 75      | 0         | 20.45                 | 20.46                    | 20.48                  |                     |          |
| Channel         |            |         |           | 20800                 | 21100                    | 21400                  |                     |          |
| Frequency (MHz) |            |         |           | 2505                  | 2535                     | 2565                   |                     |          |
| 10              | QPSK       | 1       | 0         | 21.80                 | 21.78                    | 21.76                  | 23.2                | 0        |
| 10              | QPSK       | 1       | 25        | 21.67                 | 21.58                    | 21.75                  |                     |          |
| 10              | QPSK       | 1       | 49        | 21.78                 | 21.75                    | 21.79                  |                     |          |
| 10              | QPSK       | 25      | 0         | 21.70                 | 21.53                    | 21.61                  | 23                  | 0.2      |
| 10              | QPSK       | 25      | 12        | 21.69                 | 21.47                    | 21.59                  |                     |          |
| 10              | QPSK       | 25      | 25        | 21.52                 | 21.49                    | 21.57                  |                     |          |
| 10              | QPSK       | 50      | 0         | 21.58                 | 21.49                    | 21.62                  | 23                  | 0.2      |
| 10              | 16QAM      | 1       | 0         | 21.62                 | 21.78                    | 21.79                  |                     |          |
| 10              | 16QAM      | 1       | 25        | 21.77                 | 21.65                    | 21.78                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 21.68                 | 21.72                    | 21.79                  | 22                  | 1.2      |
| 10              | 16QAM      | 25      | 0         | 20.60                 | 20.55                    | 20.66                  |                     |          |
| 10              | 16QAM      | 25      | 12        | 20.68                 | 20.49                    | 20.62                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.55                 | 20.53                    | 20.61                  | 22                  | 1.2      |
| 10              | 16QAM      | 50      | 0         | 20.59                 | 20.46                    | 20.54                  |                     |          |

| Channel         |       |    |    | 20775  | 21100 | 21425  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 2502.5 | 2535  | 2567.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 21.30  | 21.52 | 21.56  | 23.2                   | 0           |
| 5               | QPSK  | 1  | 12 | 21.58  | 21.53 | 21.69  |                        |             |
| 5               | QPSK  | 1  | 24 | 21.59  | 21.64 | 21.73  |                        |             |
| 5               | QPSK  | 12 | 0  | 21.55  | 21.53 | 21.60  | 23                     | 0.2         |
| 5               | QPSK  | 12 | 7  | 21.52  | 21.44 | 21.62  |                        |             |
| 5               | QPSK  | 12 | 13 | 21.52  | 21.51 | 21.55  |                        |             |
| 5               | QPSK  | 25 | 0  | 21.49  | 21.49 | 21.59  |                        |             |
| 5               | 16QAM | 1  | 0  | 21.69  | 21.76 | 21.73  | 23                     | 0.2         |
| 5               | 16QAM | 1  | 12 | 21.70  | 21.65 | 21.70  |                        |             |
| 5               | 16QAM | 1  | 24 | 21.69  | 21.73 | 21.78  |                        |             |
| 5               | 16QAM | 12 | 0  | 20.59  | 20.57 | 20.66  | 22                     | 1.2         |
| 5               | 16QAM | 12 | 7  | 20.54  | 20.50 | 20.61  |                        |             |
| 5               | 16QAM | 12 | 13 | 20.53  | 20.55 | 20.55  |                        |             |
| 5               | 16QAM | 25 | 0  | 20.50  | 20.50 | 20.62  |                        |             |

**<LTE Band 12>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 23060                 | 23095                    | 23130                  | 22.2                | 0        |
| Frequency (MHz) |            |         |           | 704                   | 707.5                    | 711                    |                     |          |
| 10              | QPSK       | 1       | 0         | 20.73                 | 20.75                    | 20.74                  |                     |          |
| 10              | QPSK       | 1       | 25        | 20.92                 | 21.08                    | 21.07                  | 22.2                | 0        |
| 10              | QPSK       | 1       | 49        | 20.63                 | 20.64                    | 20.60                  |                     |          |
| 10              | QPSK       | 25      | 0         | 20.71                 | 20.75                    | 20.82                  |                     |          |
| 10              | QPSK       | 25      | 12        | 20.80                 | 20.93                    | 20.92                  | 22.2                | 0        |
| 10              | QPSK       | 25      | 25        | 20.78                 | 20.86                    | 20.87                  |                     |          |
| 10              | QPSK       | 50      | 0         | 20.78                 | 20.89                    | 20.85                  |                     |          |
| 10              | 16QAM      | 1       | 0         | 20.61                 | 20.65                    | 20.75                  | 22.2                | 0        |
| 10              | 16QAM      | 1       | 25        | 20.95                 | 20.99                    | 20.95                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 20.79                 | 20.79                    | 20.71                  |                     |          |
| 10              | 16QAM      | 25      | 0         | 20.55                 | 20.56                    | 20.63                  | 21                  | 1.2      |
| 10              | 16QAM      | 25      | 12        | 20.60                 | 20.78                    | 20.83                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.63                 | 20.70                    | 20.70                  |                     |          |
| 10              | 16QAM      | 50      | 0         | 20.58                 | 20.66                    | 20.69                  | 22.2                | 0        |
| Channel         |            |         |           | 23035                 | 23095                    | 23155                  |                     |          |
| Frequency (MHz) |            |         |           | 701.5                 | 707.5                    | 713.5                  |                     |          |
| 5               | QPSK       | 1       | 0         | 20.83                 | 20.99                    | 21.07                  | 22.2                | 0        |
| 5               | QPSK       | 1       | 12        | 20.59                 | 20.82                    | 20.77                  |                     |          |
| 5               | QPSK       | 1       | 24        | 20.66                 | 21.04                    | 20.78                  |                     |          |
| 5               | QPSK       | 12      | 0         | 20.77                 | 21.03                    | 20.90                  | 22.2                | 0        |
| 5               | QPSK       | 12      | 7         | 20.85                 | 21.02                    | 20.92                  |                     |          |
| 5               | QPSK       | 12      | 13        | 20.82                 | 21.00                    | 20.91                  |                     |          |
| 5               | QPSK       | 25      | 0         | 20.75                 | 20.94                    | 20.84                  | 22.2                | 0        |
| 5               | 16QAM      | 1       | 0         | 20.97                 | 20.89                    | 20.92                  |                     |          |
| 5               | 16QAM      | 1       | 12        | 20.90                 | 20.85                    | 21.01                  |                     |          |
| 5               | 16QAM      | 1       | 24        | 21.01                 | 20.92                    | 20.96                  | 21                  | 1.2      |
| 5               | 16QAM      | 12      | 0         | 20.54                 | 20.84                    | 20.76                  |                     |          |
| 5               | 16QAM      | 12      | 7         | 20.64                 | 20.81                    | 20.69                  |                     |          |
| 5               | 16QAM      | 12      | 13        | 20.57                 | 20.80                    | 20.74                  | 22.2                | 0        |
| 5               | 16QAM      | 25      | 0         | 20.63                 | 20.87                    | 20.79                  |                     |          |
| Channel         |            |         |           | 23025                 | 23095                    | 23165                  |                     |          |
| Frequency (MHz) |            |         |           | 700.5                 | 707.5                    | 714.5                  |                     |          |
| 3               | QPSK       | 1       | 0         | 20.88                 | 21.02                    | 21.05                  | 22.2                | 0        |
| 3               | QPSK       | 1       | 8         | 20.69                 | 20.94                    | 20.80                  |                     |          |
| 3               | QPSK       | 1       | 14        | 20.70                 | 20.88                    | 20.78                  |                     |          |
| 3               | QPSK       | 8       | 0         | 20.75                 | 21.06                    | 20.92                  | 22.2                | 0        |
| 3               | QPSK       | 8       | 4         | 20.72                 | 20.96                    | 20.93                  |                     |          |
| 3               | QPSK       | 8       | 7         | 20.77                 | 21.00                    | 20.89                  |                     |          |
| 3               | QPSK       | 15      | 0         | 20.70                 | 20.95                    | 20.93                  | 22.2                | 0        |
| 3               | 16QAM      | 1       | 0         | 20.90                 | 20.93                    | 20.88                  |                     |          |
| 3               | 16QAM      | 1       | 8         | 20.95                 | 20.82                    | 20.92                  |                     |          |
| 3               | 16QAM      | 1       | 14        | 20.86                 | 20.88                    | 20.91                  | 21                  | 1.2      |
| 3               | 16QAM      | 8       | 0         | 20.65                 | 20.95                    | 20.76                  |                     |          |
| 3               | 16QAM      | 8       | 4         | 20.63                 | 20.87                    | 20.78                  |                     |          |
| 3               | 16QAM      | 8       | 7         | 20.60                 | 20.83                    | 20.82                  | 21                  | 1.2      |
| 3               | 16QAM      | 15      | 0         | 20.52                 | 20.78                    | 20.75                  |                     |          |

| Channel         |       |   |   | 23017 | 23095 | 23173 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|---|---|-------|-------|-------|------------------------|-------------|
| Frequency (MHz) |       |   |   | 699.7 | 707.5 | 715.3 |                        |             |
| 1.4             | QPSK  | 1 | 0 | 20.64 | 20.75 | 20.88 | 22.2                   | 0           |
| 1.4             | QPSK  | 1 | 3 | 20.73 | 20.85 | 20.79 |                        |             |
| 1.4             | QPSK  | 1 | 5 | 20.56 | 20.88 | 20.77 |                        |             |
| 1.4             | QPSK  | 3 | 0 | 20.69 | 20.84 | 20.81 |                        |             |
| 1.4             | QPSK  | 3 | 1 | 20.74 | 20.83 | 20.82 |                        |             |
| 1.4             | QPSK  | 3 | 3 | 20.68 | 20.81 | 20.64 |                        |             |
| 1.4             | QPSK  | 6 | 0 | 20.75 | 20.93 | 20.83 | 22.2                   | 0           |
| 1.4             | 16QAM | 1 | 0 | 20.87 | 20.81 | 20.98 | 22.2                   | 0           |
| 1.4             | 16QAM | 1 | 3 | 20.97 | 20.88 | 20.88 |                        |             |
| 1.4             | 16QAM | 1 | 5 | 20.87 | 20.92 | 20.81 |                        |             |
| 1.4             | 16QAM | 3 | 0 | 20.71 | 20.89 | 20.84 |                        |             |
| 1.4             | 16QAM | 3 | 1 | 20.77 | 20.78 | 20.85 |                        |             |
| 1.4             | 16QAM | 3 | 3 | 20.75 | 20.81 | 20.76 |                        |             |
| 1.4             | 16QAM | 6 | 0 | 20.60 | 20.70 | 20.68 | 21                     | 1.2         |



**<LTE Band 13>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|-------------|
| Channel         |            |         |           | 23230                    |                             |                           |                        |             |
| Frequency (MHz) |            |         |           | 782                      |                             |                           |                        |             |
| 10              | QPSK       | 1       | 0         | 21.63                    |                             |                           | 22.4                   | 0           |
| 10              | QPSK       | 1       | 25        | 21.44                    |                             |                           |                        |             |
| 10              | QPSK       | 1       | 49        | 21.57                    |                             |                           |                        |             |
| 10              | QPSK       | 25      | 0         | 21.54                    |                             |                           | 22.4                   | 0           |
| 10              | QPSK       | 25      | 12        | 21.50                    |                             |                           |                        |             |
| 10              | QPSK       | 25      | 25        | 21.40                    |                             |                           |                        |             |
| 10              | QPSK       | 50      | 0         | 21.36                    |                             |                           | 22.4                   | 0           |
| 10              | 16QAM      | 1       | 0         | 21.61                    |                             |                           |                        |             |
| 10              | 16QAM      | 1       | 25        | 21.48                    |                             |                           |                        |             |
| 10              | 16QAM      | 1       | 49        | 21.58                    |                             |                           | 22                     | 0.4         |
| 10              | 16QAM      | 25      | 0         | 21.01                    |                             |                           |                        |             |
| 10              | 16QAM      | 25      | 12        | 20.96                    |                             |                           |                        |             |
| 10              | 16QAM      | 25      | 25        | 21.01                    |                             |                           | 22                     | 0.4         |
| 10              | 16QAM      | 50      | 0         | 21.06                    |                             |                           |                        |             |
| Channel         |            |         |           | 23205                    | 23230                       | 23255                     | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |            |         |           | 779.5                    | 782                         | 784.5                     |                        |             |
| 5               | QPSK       | 1       | 0         | 21.23                    | 21.36                       | 21.25                     | 22.4                   | 0           |
| 5               | QPSK       | 1       | 12        | 21.02                    | 21.23                       | 21.29                     |                        |             |
| 5               | QPSK       | 1       | 24        | 21.16                    | 21.24                       | 21.26                     |                        |             |
| 5               | QPSK       | 12      | 0         | 21.24                    | 21.29                       | 21.36                     | 22.4                   | 0           |
| 5               | QPSK       | 12      | 7         | 21.23                    | 21.34                       | 21.42                     |                        |             |
| 5               | QPSK       | 12      | 13        | 21.20                    | 21.33                       | 21.39                     |                        |             |
| 5               | QPSK       | 25      | 0         | 21.24                    | 21.32                       | 21.45                     | 22.4                   | 0           |
| 5               | 16QAM      | 1       | 0         | 21.33                    | 21.53                       | 21.54                     |                        |             |
| 5               | 16QAM      | 1       | 12        | 21.30                    | 21.52                       | 21.48                     |                        |             |
| 5               | 16QAM      | 1       | 24        | 21.41                    | 21.49                       | 21.45                     | 22                     | 0.4         |
| 5               | 16QAM      | 12      | 0         | 20.88                    | 20.94                       | 20.92                     |                        |             |
| 5               | 16QAM      | 12      | 7         | 20.84                    | 20.93                       | 21.01                     |                        |             |
| 5               | 16QAM      | 12      | 13        | 20.83                    | 20.90                       | 20.97                     |                        |             |
| 5               | 16QAM      | 25      | 0         | 20.83                    | 20.99                       | 21.01                     |                        |             |

**<LTE Band 17>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 23780                 | 23790                    | 23800                  | 22                  | 0        |
| Frequency (MHz) |            |         |           | 709                   | 710                      | 711                    |                     |          |
| 10              | QPSK       | 1       | 0         | 20.73                 | 20.72                    | 20.82                  |                     |          |
| 10              | QPSK       | 1       | 25        | 20.89                 | 20.98                    | 20.94                  | 22                  | 0        |
| 10              | QPSK       | 1       | 49        | 20.44                 | 20.53                    | 20.57                  |                     |          |
| 10              | QPSK       | 25      | 0         | 20.57                 | 20.55                    | 20.61                  |                     |          |
| 10              | QPSK       | 25      | 12        | 20.72                 | 20.81                    | 20.79                  | 22                  | 0        |
| 10              | QPSK       | 25      | 25        | 20.66                 | 20.60                    | 20.69                  |                     |          |
| 10              | QPSK       | 50      | 0         | 20.61                 | 20.64                    | 20.59                  |                     |          |
| 10              | 16QAM      | 1       | 0         | 20.42                 | 20.46                    | 20.52                  | 22                  | 0        |
| 10              | 16QAM      | 1       | 25        | 20.90                 | 20.96                    | 20.91                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 20.53                 | 20.60                    | 20.46                  |                     |          |
| 10              | 16QAM      | 25      | 0         | 20.67                 | 20.53                    | 20.56                  | 22                  | 0        |
| 10              | 16QAM      | 25      | 12        | 20.74                 | 20.76                    | 20.78                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.62                 | 20.58                    | 20.67                  |                     |          |
| 10              | 16QAM      | 50      | 0         | 20.60                 | 20.60                    | 20.62                  | 22                  | 0        |
| Channel         |            |         |           | 23755                 | 23790                    | 23825                  |                     |          |
| Frequency (MHz) |            |         |           | 706.5                 | 710                      | 713.5                  |                     |          |
| 5               | QPSK       | 1       | 0         | 20.77                 | 20.90                    | 20.93                  | 22                  | 0        |
| 5               | QPSK       | 1       | 12        | 20.49                 | 20.77                    | 20.62                  |                     |          |
| 5               | QPSK       | 1       | 24        | 20.67                 | 20.81                    | 20.64                  |                     |          |
| 5               | QPSK       | 12      | 0         | 20.66                 | 20.78                    | 20.82                  | 22                  | 0        |
| 5               | QPSK       | 12      | 7         | 20.74                 | 20.84                    | 20.88                  |                     |          |
| 5               | QPSK       | 12      | 13        | 20.75                 | 20.82                    | 20.86                  |                     |          |
| 5               | QPSK       | 25      | 0         | 20.69                 | 20.94                    | 20.85                  | 22                  | 0        |
| 5               | 16QAM      | 1       | 0         | 20.82                 | 20.92                    | 20.83                  |                     |          |
| 5               | 16QAM      | 1       | 12        | 20.79                 | 20.89                    | 20.90                  |                     |          |
| 5               | 16QAM      | 1       | 24        | 20.94                 | 20.86                    | 20.95                  | 22                  | 0        |
| 5               | 16QAM      | 12      | 0         | 20.70                 | 20.92                    | 20.83                  |                     |          |
| 5               | 16QAM      | 12      | 7         | 20.76                 | 20.86                    | 20.91                  |                     |          |
| 5               | 16QAM      | 12      | 13        | 20.76                 | 20.93                    | 20.81                  | 22                  | 0        |
| 5               | 16QAM      | 25      | 0         | 20.68                 | 20.86                    | 20.95                  |                     |          |



**<LTE Band 25>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 26140                 | 26340                    | 26590                  |                     |          |
| Frequency (MHz) |            |         |           | 1860                  | 1880                     | 1905                   |                     |          |
| 20              | QPSK       | 1       | 0         | 19.50                 | 19.54                    | 19.41                  | 20.8                | 0        |
| 20              | QPSK       | 1       | 49        | 19.83                 | 19.86                    | 19.85                  |                     |          |
| 20              | QPSK       | 1       | 99        | 19.53                 | 19.66                    | 19.64                  |                     |          |
| 20              | QPSK       | 50      | 0         | 19.44                 | 19.63                    | 19.55                  | 20.8                | 0        |
| 20              | QPSK       | 50      | 24        | 19.49                 | 19.65                    | 19.56                  |                     |          |
| 20              | QPSK       | 50      | 50        | 19.42                 | 19.59                    | 19.54                  |                     |          |
| 20              | QPSK       | 100     | 0         | 19.45                 | 19.61                    | 19.58                  |                     |          |
| 20              | 16QAM      | 1       | 0         | 19.72                 | 19.58                    | 19.52                  | 20.8                | 0        |
| 20              | 16QAM      | 1       | 49        | 19.63                 | 19.70                    | 19.56                  |                     |          |
| 20              | 16QAM      | 1       | 99        | 19.29                 | 19.61                    | 19.56                  |                     |          |
| 20              | 16QAM      | 50      | 0         | 19.47                 | 19.64                    | 19.56                  | 20.8                | 0        |
| 20              | 16QAM      | 50      | 24        | 19.48                 | 19.65                    | 19.59                  |                     |          |
| 20              | 16QAM      | 50      | 50        | 19.44                 | 19.54                    | 19.56                  |                     |          |
| 20              | 16QAM      | 100     | 0         | 19.50                 | 19.57                    | 19.58                  |                     |          |
| Channel         |            |         |           | 26115                 | 26340                    | 26615                  |                     |          |
| Frequency (MHz) |            |         |           | 1857.5                | 1880                     | 1907.5                 |                     |          |
| 15              | QPSK       | 1       | 0         | 18.91                 | 19.00                    | 19.04                  | 20.8                | 0        |
| 15              | QPSK       | 1       | 37        | 19.17                 | 19.46                    | 19.26                  |                     |          |
| 15              | QPSK       | 1       | 74        | 19.48                 | 19.63                    | 19.55                  |                     |          |
| 15              | QPSK       | 36      | 0         | 19.45                 | 19.66                    | 19.67                  | 20.8                | 0        |
| 15              | QPSK       | 36      | 20        | 19.45                 | 19.66                    | 19.62                  |                     |          |
| 15              | QPSK       | 36      | 39        | 19.59                 | 19.67                    | 19.64                  |                     |          |
| 15              | QPSK       | 75      | 0         | 19.48                 | 19.69                    | 19.67                  |                     |          |
| 15              | 16QAM      | 1       | 0         | 19.45                 | 19.52                    | 19.81                  | 20.8                | 0        |
| 15              | 16QAM      | 1       | 37        | 19.50                 | 19.68                    | 19.64                  |                     |          |
| 15              | 16QAM      | 1       | 74        | 19.64                 | 19.61                    | 19.53                  |                     |          |
| 15              | 16QAM      | 36      | 0         | 19.47                 | 19.67                    | 19.68                  | 20.8                | 0        |
| 15              | 16QAM      | 36      | 20        | 19.40                 | 19.67                    | 19.61                  |                     |          |
| 15              | 16QAM      | 36      | 39        | 19.61                 | 19.68                    | 19.60                  |                     |          |
| 15              | 16QAM      | 75      | 0         | 19.41                 | 19.73                    | 19.68                  |                     |          |
| Channel         |            |         |           | 26090                 | 26340                    | 26640                  |                     |          |
| Frequency (MHz) |            |         |           | 1855                  | 1880                     | 1910                   |                     |          |
| 10              | QPSK       | 1       | 0         | 18.97                 | 18.99                    | 19.19                  | 20.8                | 0        |
| 10              | QPSK       | 1       | 25        | 19.28                 | 19.28                    | 19.47                  |                     |          |
| 10              | QPSK       | 1       | 49        | 19.47                 | 19.54                    | 19.60                  |                     |          |
| 10              | QPSK       | 25      | 0         | 19.40                 | 19.37                    | 19.62                  | 20.8                | 0        |
| 10              | QPSK       | 25      | 12        | 19.39                 | 19.36                    | 19.59                  |                     |          |
| 10              | QPSK       | 25      | 25        | 19.37                 | 19.38                    | 19.71                  |                     |          |
| 10              | QPSK       | 50      | 0         | 19.39                 | 19.40                    | 19.65                  |                     |          |
| 10              | 16QAM      | 1       | 0         | 19.58                 | 19.77                    | 19.57                  | 20.8                | 0        |
| 10              | 16QAM      | 1       | 25        | 19.58                 | 19.57                    | 19.78                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 19.50                 | 19.54                    | 19.59                  |                     |          |
| 10              | 16QAM      | 25      | 0         | 19.42                 | 19.39                    | 19.63                  | 20.8                | 0        |
| 10              | 16QAM      | 25      | 12        | 19.38                 | 19.39                    | 19.62                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 19.41                 | 19.37                    | 19.68                  |                     |          |
| 10              | 16QAM      | 50      | 0         | 19.39                 | 19.35                    | 19.69                  |                     |          |



| Channel         |       |    |    | 26065  | 26340 | 26665  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1852.5 | 1880  | 1912.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 18.84  | 18.84 | 19.05  | 20.8                   | 0           |
| 5               | QPSK  | 1  | 12 | 19.36  | 19.32 | 19.57  |                        |             |
| 5               | QPSK  | 1  | 24 | 19.28  | 19.28 | 19.57  |                        |             |
| 5               | QPSK  | 12 | 0  | 19.43  | 19.44 | 19.63  | 20.8                   | 0           |
| 5               | QPSK  | 12 | 7  | 19.39  | 19.35 | 19.61  |                        |             |
| 5               | QPSK  | 12 | 13 | 19.34  | 19.32 | 19.45  |                        |             |
| 5               | QPSK  | 25 | 0  | 19.43  | 19.39 | 19.63  |                        |             |
| 5               | 16QAM | 1  | 0  | 19.76  | 19.72 | 19.53  | 20.8                   | 0           |
| 5               | 16QAM | 1  | 12 | 19.61  | 19.70 | 19.75  |                        |             |
| 5               | 16QAM | 1  | 24 | 19.61  | 19.69 | 19.53  |                        |             |
| 5               | 16QAM | 12 | 0  | 19.49  | 19.47 | 19.65  | 20.8                   | 0           |
| 5               | 16QAM | 12 | 7  | 19.40  | 19.39 | 19.62  |                        |             |
| 5               | 16QAM | 12 | 13 | 19.35  | 19.36 | 19.49  |                        |             |
| 5               | 16QAM | 25 | 0  | 19.37  | 19.36 | 19.65  |                        |             |
| Channel         |       |    |    | 26055  | 26340 | 26675  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1851.5 | 1880  | 1913.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 19.71  | 19.74 | 18.97  | 20.8                   | 0           |
| 3               | QPSK  | 1  | 8  | 19.30  | 19.29 | 19.51  |                        |             |
| 3               | QPSK  | 1  | 14 | 19.27  | 19.26 | 19.50  |                        |             |
| 3               | QPSK  | 8  | 0  | 19.38  | 19.35 | 19.55  | 20.8                   | 0           |
| 3               | QPSK  | 8  | 4  | 19.32  | 19.33 | 19.55  |                        |             |
| 3               | QPSK  | 8  | 7  | 19.31  | 19.32 | 19.57  |                        |             |
| 3               | QPSK  | 15 | 0  | 19.36  | 19.35 | 19.55  |                        |             |
| 3               | 16QAM | 1  | 0  | 19.66  | 19.68 | 19.61  | 20.8                   | 0           |
| 3               | 16QAM | 1  | 8  | 19.58  | 19.62 | 19.78  |                        |             |
| 3               | 16QAM | 1  | 14 | 19.52  | 19.51 | 19.58  |                        |             |
| 3               | 16QAM | 8  | 0  | 19.41  | 19.42 | 19.59  | 20.8                   | 0           |
| 3               | 16QAM | 8  | 4  | 19.41  | 19.41 | 19.56  |                        |             |
| 3               | 16QAM | 8  | 7  | 19.38  | 19.39 | 19.64  |                        |             |
| 3               | 16QAM | 15 | 0  | 19.35  | 19.34 | 19.57  |                        |             |
| Channel         |       |    |    | 26047  | 26340 | 26683  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1850.7 | 1880  | 1914.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 19.67  | 19.69 | 18.87  | 20.8                   | 0           |
| 1.4             | QPSK  | 1  | 3  | 19.38  | 19.33 | 19.61  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 19.27  | 19.22 | 19.51  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 19.29  | 19.31 | 19.55  |                        |             |
| 1.4             | QPSK  | 3  | 1  | 19.38  | 19.34 | 19.58  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 19.31  | 19.30 | 19.55  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 19.36  | 19.34 | 19.58  | 20.8                   | 0           |
| 1.4             | 16QAM | 1  | 0  | 19.56  | 19.50 | 19.52  | 20.8                   | 0           |
| 1.4             | 16QAM | 1  | 3  | 19.60  | 19.61 | 19.58  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 19.48  | 19.49 | 19.78  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 19.33  | 19.35 | 19.56  |                        |             |
| 1.4             | 16QAM | 3  | 1  | 19.38  | 19.38 | 19.59  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 19.33  | 19.34 | 19.54  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 19.38  | 19.38 | 19.66  | 20.8                   | 0           |

**<LTE Band 26>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|-------------|
| Channel         |            |         |           | 26765                    | 26865                       | 26965                     |                        |             |
| Frequency (MHz) |            |         |           | 821.5                    | 831.5                       | 841.5                     |                        |             |
| 15              | QPSK       | 1       | 0         | 21.36                    | 21.29                       | 21.35                     |                        |             |
| 15              | QPSK       | 1       | 37        | 21.52                    | 22.20                       | 21.30                     | 23                     | 0           |
| 15              | QPSK       | 1       | 74        | 22.03                    | 22.04                       | 21.86                     |                        |             |
| 15              | QPSK       | 36      | 0         | 21.87                    | 22.00                       | 21.98                     |                        |             |
| 15              | QPSK       | 36      | 20        | 21.67                    | 21.70                       | 21.66                     | 23                     | 0           |
| 15              | QPSK       | 36      | 39        | 21.58                    | 21.54                       | 21.48                     |                        |             |
| 15              | QPSK       | 75      | 0         | 21.78                    | 21.81                       | 21.80                     |                        |             |
| 15              | 16QAM      | 1       | 0         | 22.15                    | 22.17                       | 22.08                     | 23                     | 0           |
| 15              | 16QAM      | 1       | 37        | 21.87                    | 21.85                       | 21.81                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 22.34                    | 22.29                       | 22.19                     |                        |             |
| 15              | 16QAM      | 36      | 0         | 20.88                    | 20.98                       | 20.97                     | 22                     | 1           |
| 15              | 16QAM      | 36      | 20        | 20.70                    | 20.67                       | 20.68                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 20.57                    | 20.48                       | 20.48                     |                        |             |
| 15              | 16QAM      | 75      | 0         | 20.73                    | 20.69                       | 20.79                     |                        |             |
| Channel         |            |         |           | 26740                    | 26865                       | 26990                     | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |            |         |           | 819                      | 831.5                       | 844                       |                        |             |
| 10              | QPSK       | 1       | 0         | 21.40                    | 21.29                       | 21.43                     | 23                     | 0           |
| 10              | QPSK       | 1       | 25        | 21.53                    | 21.56                       | 21.63                     |                        |             |
| 10              | QPSK       | 1       | 49        | 21.78                    | 21.83                       | 21.87                     |                        |             |
| 10              | QPSK       | 25      | 0         | 21.79                    | 21.75                       | 21.81                     | 23                     | 0           |
| 10              | QPSK       | 25      | 12        | 21.73                    | 21.71                       | 21.76                     |                        |             |
| 10              | QPSK       | 25      | 25        | 21.75                    | 21.77                       | 21.90                     |                        |             |
| 10              | QPSK       | 50      | 0         | 21.70                    | 21.74                       | 21.79                     |                        |             |
| 10              | 16QAM      | 1       | 0         | 22.13                    | 22.15                       | 22.30                     | 23                     | 0           |
| 10              | 16QAM      | 1       | 25        | 21.91                    | 21.84                       | 21.95                     |                        |             |
| 10              | 16QAM      | 1       | 49        | 22.12                    | 22.10                       | 22.11                     |                        |             |
| 10              | 16QAM      | 25      | 0         | 20.72                    | 20.73                       | 20.83                     | 22                     | 1           |
| 10              | 16QAM      | 25      | 12        | 20.69                    | 20.72                       | 20.78                     |                        |             |
| 10              | 16QAM      | 25      | 25        | 20.73                    | 20.74                       | 20.76                     |                        |             |
| 10              | 16QAM      | 50      | 0         | 20.74                    | 20.71                       | 20.86                     |                        |             |
| Channel         |            |         |           | 26715                    | 26865                       | 27015                     | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |            |         |           | 816.5                    | 831.5                       | 846.5                     |                        |             |
| 5               | QPSK       | 1       | 0         | 21.69                    | 21.00                       | 21.08                     | 23                     | 0           |
| 5               | QPSK       | 1       | 12        | 21.58                    | 21.55                       | 21.58                     |                        |             |
| 5               | QPSK       | 1       | 24        | 21.62                    | 21.56                       | 21.61                     |                        |             |
| 5               | QPSK       | 12      | 0         | 21.78                    | 21.70                       | 21.70                     | 23                     | 0           |
| 5               | QPSK       | 12      | 7         | 21.78                    | 21.67                       | 21.66                     |                        |             |
| 5               | QPSK       | 12      | 13        | 21.74                    | 21.64                       | 21.71                     |                        |             |
| 5               | QPSK       | 25      | 0         | 21.78                    | 21.69                       | 21.79                     |                        |             |
| 5               | 16QAM      | 1       | 0         | 21.97                    | 21.85                       | 21.93                     | 23                     | 0           |
| 5               | 16QAM      | 1       | 12        | 21.89                    | 21.83                       | 21.86                     |                        |             |
| 5               | 16QAM      | 1       | 24        | 21.89                    | 21.83                       | 21.84                     |                        |             |
| 5               | 16QAM      | 12      | 0         | 20.77                    | 20.69                       | 20.72                     | 22                     | 1           |
| 5               | 16QAM      | 12      | 7         | 20.79                    | 20.72                       | 20.72                     |                        |             |
| 5               | 16QAM      | 12      | 13        | 20.67                    | 20.68                       | 20.71                     |                        |             |
| 5               | 16QAM      | 25      | 0         | 20.60                    | 20.69                       | 20.70                     |                        |             |

| Channel         |       |    |    | 26705 | 26865 | 27025 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|-------|-------|-------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 815.5 | 831.5 | 847.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 21.67 | 21.98 | 21.96 | 23                     | 0           |
| 3               | QPSK  | 1  | 8  | 21.68 | 21.60 | 21.57 |                        |             |
| 3               | QPSK  | 1  | 14 | 21.65 | 21.51 | 21.56 |                        |             |
| 3               | QPSK  | 8  | 0  | 21.74 | 21.68 | 21.61 | 23                     | 0           |
| 3               | QPSK  | 8  | 4  | 21.76 | 21.64 | 21.66 |                        |             |
| 3               | QPSK  | 8  | 7  | 21.72 | 21.66 | 21.68 |                        |             |
| 3               | QPSK  | 15 | 0  | 21.76 | 21.67 | 21.67 |                        |             |
| 3               | 16QAM | 1  | 0  | 21.79 | 21.80 | 21.84 | 23                     | 0           |
| 3               | 16QAM | 1  | 8  | 21.97 | 21.85 | 21.89 |                        |             |
| 3               | 16QAM | 1  | 14 | 21.90 | 21.77 | 21.89 |                        |             |
| 3               | 16QAM | 8  | 0  | 20.77 | 20.70 | 20.72 | 22                     | 1           |
| 3               | 16QAM | 8  | 4  | 20.88 | 20.72 | 20.79 |                        |             |
| 3               | 16QAM | 8  | 7  | 20.67 | 20.69 | 20.88 |                        |             |
| 3               | 16QAM | 15 | 0  | 20.65 | 20.66 | 20.78 |                        |             |
| Channel         |       |    |    | 26697 | 26865 | 27033 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 814.7 | 831.5 | 848.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 21.56 | 21.94 | 21.97 | 23                     | 0           |
| 1.4             | QPSK  | 1  | 3  | 21.61 | 21.59 | 21.61 |                        |             |
| 1.4             | QPSK  | 1  | 5  | 21.61 | 21.49 | 21.55 |                        |             |
| 1.4             | QPSK  | 3  | 0  | 21.68 | 21.55 | 21.55 |                        |             |
| 1.4             | QPSK  | 3  | 1  | 21.74 | 21.57 | 21.63 |                        |             |
| 1.4             | QPSK  | 3  | 3  | 21.60 | 21.52 | 21.66 |                        |             |
| 1.4             | QPSK  | 6  | 0  | 21.63 | 21.60 | 21.75 | 23                     | 0           |
| 1.4             | 16QAM | 1  | 0  | 21.86 | 21.74 | 21.89 | 23                     | 0           |
| 1.4             | 16QAM | 1  | 3  | 21.87 | 21.84 | 21.93 |                        |             |
| 1.4             | 16QAM | 1  | 5  | 21.81 | 21.76 | 21.83 |                        |             |
| 1.4             | 16QAM | 3  | 0  | 21.71 | 21.58 | 21.66 |                        |             |
| 1.4             | 16QAM | 3  | 1  | 21.77 | 21.63 | 21.74 |                        |             |
| 1.4             | 16QAM | 3  | 3  | 21.63 | 21.55 | 21.68 |                        |             |
| 1.4             | 16QAM | 6  | 0  | 20.67 | 20.68 | 20.75 | 22                     | 1           |

**<LTE Band 30>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|-------------|
| Channel         |            |         |           | 27710                    |                             |                           |                        |             |
| Frequency (MHz) |            |         |           | 2310                     |                             |                           |                        |             |
| 10              | QPSK       | 1       | 0         | 20.83                    |                             |                           | 22.2                   | 0           |
| 10              | QPSK       | 1       | 25        | 20.96                    |                             |                           |                        |             |
| 10              | QPSK       | 1       | 49        | 21.06                    |                             |                           |                        |             |
| 10              | QPSK       | 25      | 0         | 20.81                    |                             |                           | 22.2                   | 0           |
| 10              | QPSK       | 25      | 12        | 20.74                    |                             |                           |                        |             |
| 10              | QPSK       | 25      | 25        | 20.89                    |                             |                           |                        |             |
| 10              | QPSK       | 50      | 0         | 20.96                    |                             |                           | 22.2                   | 0           |
| 10              | 16QAM      | 1       | 0         | 20.96                    |                             |                           |                        |             |
| 10              | 16QAM      | 1       | 25        | 20.83                    |                             |                           |                        |             |
| 10              | 16QAM      | 1       | 49        | 20.90                    |                             |                           | 22.2                   | 0           |
| 10              | 16QAM      | 25      | 0         | 20.62                    |                             |                           |                        |             |
| 10              | 16QAM      | 25      | 12        | 20.59                    |                             |                           |                        |             |
| 10              | 16QAM      | 25      | 25        | 20.63                    |                             |                           | 22                     | 0.2         |
| 10              | 16QAM      | 50      | 0         | 20.66                    |                             |                           |                        |             |
| Channel         |            |         |           | 27685                    | 27710                       | 27735                     | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |            |         |           | 2307.5                   | 2310                        | 2312.5                    |                        |             |
| 5               | QPSK       | 1       | 0         | 20.84                    | 20.24                       | 20.21                     | 22.2                   | 0           |
| 5               | QPSK       | 1       | 12        | 20.81                    | 20.65                       | 20.71                     |                        |             |
| 5               | QPSK       | 1       | 24        | 20.69                    | 20.69                       | 20.70                     |                        |             |
| 5               | QPSK       | 12      | 0         | 20.85                    | 20.82                       | 20.76                     | 22.2                   | 0           |
| 5               | QPSK       | 12      | 7         | 20.81                    | 20.74                       | 20.89                     |                        |             |
| 5               | QPSK       | 12      | 13        | 20.77                    | 20.70                       | 20.80                     |                        |             |
| 5               | QPSK       | 25      | 0         | 20.83                    | 20.75                       | 20.81                     | 22.2                   | 0           |
| 5               | 16QAM      | 1       | 0         | 20.90                    | 20.87                       | 20.86                     |                        |             |
| 5               | 16QAM      | 1       | 12        | 21.00                    | 20.81                       | 20.89                     |                        |             |
| 5               | 16QAM      | 1       | 24        | 21.00                    | 20.86                       | 21.05                     | 22                     | 0.2         |
| 5               | 16QAM      | 12      | 0         | 20.69                    | 20.65                       | 20.60                     |                        |             |
| 5               | 16QAM      | 12      | 7         | 20.64                    | 20.57                       | 20.70                     |                        |             |
| 5               | 16QAM      | 12      | 13        | 20.58                    | 20.59                       | 20.59                     | 22                     | 0.2         |
| 5               | 16QAM      | 25      | 0         | 20.66                    | 20.58                       | 20.61                     |                        |             |

**<LTE Band 66>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 132072                | 132322                   | 132572                 | 21.5                | 0        |
| Frequency (MHz) |            |         |           | 1720                  | 1745                     | 1770                   |                     |          |
| 20              | QPSK       | 1       | 0         | 20.08                 | 20.32                    | 20.44                  |                     |          |
| 20              | QPSK       | 1       | 49        | 20.08                 | 20.34                    | 20.47                  | 21.5                | 0        |
| 20              | QPSK       | 1       | 99        | 20.64                 | 20.87                    | 20.99                  |                     |          |
| 20              | QPSK       | 50      | 0         | 20.15                 | 20.34                    | 20.55                  |                     |          |
| 20              | QPSK       | 50      | 24        | 20.17                 | 20.41                    | 20.59                  | 21.5                | 0        |
| 20              | QPSK       | 50      | 50        | 20.24                 | 20.44                    | 20.63                  |                     |          |
| 20              | QPSK       | 100     | 0         | 20.19                 | 20.41                    | 20.59                  |                     |          |
| 20              | 16QAM      | 1       | 0         | 20.32                 | 20.50                    | 20.76                  | 21.5                | 0        |
| 20              | 16QAM      | 1       | 49        | 20.24                 | 20.58                    | 20.83                  |                     |          |
| 20              | 16QAM      | 1       | 99        | 20.63                 | 20.86                    | 20.95                  |                     |          |
| 20              | 16QAM      | 50      | 0         | 20.21                 | 20.36                    | 20.57                  | 21.5                | 0        |
| 20              | 16QAM      | 50      | 24        | 20.28                 | 20.40                    | 20.64                  |                     |          |
| 20              | 16QAM      | 50      | 50        | 20.35                 | 20.46                    | 20.64                  |                     |          |
| 20              | 16QAM      | 100     | 0         | 20.34                 | 20.41                    | 20.53                  | 21.5                | 0        |
| Channel         |            |         |           | 132047                | 132322                   | 132597                 |                     |          |
| Frequency (MHz) |            |         |           | 1717.5                | 1745                     | 1772.5                 |                     |          |
| 15              | QPSK       | 1       | 0         | 20.41                 | 20.59                    | 20.81                  | 21.5                | 0        |
| 15              | QPSK       | 1       | 37        | 20.32                 | 20.47                    | 20.46                  |                     |          |
| 15              | QPSK       | 1       | 74        | 20.36                 | 20.68                    | 20.66                  |                     |          |
| 15              | QPSK       | 36      | 0         | 20.21                 | 20.55                    | 20.57                  | 21.5                | 0        |
| 15              | QPSK       | 36      | 20        | 20.14                 | 20.45                    | 20.46                  |                     |          |
| 15              | QPSK       | 36      | 39        | 20.14                 | 20.43                    | 20.46                  |                     |          |
| 15              | QPSK       | 75      | 0         | 20.18                 | 20.52                    | 20.50                  | 21.5                | 0        |
| 15              | 16QAM      | 1       | 0         | 20.67                 | 20.96                    | 20.95                  |                     |          |
| 15              | 16QAM      | 1       | 37        | 20.58                 | 20.77                    | 20.69                  |                     |          |
| 15              | 16QAM      | 1       | 74        | 20.68                 | 20.91                    | 20.98                  | 21.5                | 0        |
| 15              | 16QAM      | 36      | 0         | 20.29                 | 20.55                    | 20.63                  |                     |          |
| 15              | 16QAM      | 36      | 20        | 20.25                 | 20.49                    | 20.53                  |                     |          |
| 15              | 16QAM      | 36      | 39        | 20.25                 | 20.43                    | 20.52                  | 21.5                | 0        |
| 15              | 16QAM      | 75      | 0         | 20.25                 | 20.49                    | 20.60                  |                     |          |
| Channel         |            |         |           | 132022                | 132322                   | 132622                 | 21.5                | 0        |
| Frequency (MHz) |            |         |           | 1715                  | 1745                     | 1775                   |                     |          |
| 10              | QPSK       | 1       | 0         | 20.22                 | 20.38                    | 20.61                  |                     |          |
| 10              | QPSK       | 1       | 25        | 20.25                 | 20.52                    | 20.52                  | 21.5                | 0        |
| 10              | QPSK       | 1       | 49        | 20.40                 | 20.60                    | 20.64                  |                     |          |
| 10              | QPSK       | 25      | 0         | 20.46                 | 20.54                    | 20.69                  | 21.5                | 0        |
| 10              | QPSK       | 25      | 12        | 20.37                 | 20.54                    | 20.61                  |                     |          |
| 10              | QPSK       | 25      | 25        | 20.47                 | 20.60                    | 20.61                  |                     |          |
| 10              | QPSK       | 50      | 0         | 20.36                 | 20.50                    | 20.75                  | 21.5                | 0        |
| 10              | 16QAM      | 1       | 0         | 20.85                 | 20.81                    | 20.82                  |                     |          |
| 10              | 16QAM      | 1       | 25        | 20.48                 | 20.79                    | 20.86                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 20.71                 | 20.90                    | 20.73                  | 21.5                | 0        |
| 10              | 16QAM      | 25      | 0         | 20.33                 | 20.60                    | 20.85                  |                     |          |
| 10              | 16QAM      | 25      | 12        | 20.47                 | 20.61                    | 20.74                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.31                 | 20.55                    | 20.59                  | 21.5                | 0        |
| 10              | 16QAM      | 50      | 0         | 20.36                 | 20.57                    | 20.78                  |                     |          |



| Channel         |       |    |    | 131997 | 132322 | 132647 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|--------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1712.5 | 1745   | 1777.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 20.28  | 20.62  | 20.65  | 21.5                   | 0           |
| 5               | QPSK  | 1  | 12 | 20.48  | 20.69  | 20.89  |                        |             |
| 5               | QPSK  | 1  | 24 | 20.49  | 20.60  | 20.87  |                        |             |
| 5               | QPSK  | 12 | 0  | 20.54  | 20.74  | 20.95  | 21.5                   | 0           |
| 5               | QPSK  | 12 | 7  | 20.55  | 20.87  | 20.95  |                        |             |
| 5               | QPSK  | 12 | 13 | 20.52  | 20.64  | 20.98  |                        |             |
| 5               | QPSK  | 25 | 0  | 20.64  | 20.79  | 20.97  |                        |             |
| 5               | 16QAM | 1  | 0  | 20.79  | 20.85  | 20.84  | 21.5                   | 0           |
| 5               | 16QAM | 1  | 12 | 20.61  | 20.94  | 20.74  |                        |             |
| 5               | 16QAM | 1  | 24 | 20.82  | 20.86  | 20.87  |                        |             |
| 5               | 16QAM | 12 | 0  | 20.80  | 20.80  | 20.96  | 21.5                   | 0           |
| 5               | 16QAM | 12 | 7  | 20.64  | 20.90  | 20.96  |                        |             |
| 5               | 16QAM | 12 | 13 | 20.53  | 20.84  | 20.84  |                        |             |
| 5               | 16QAM | 25 | 0  | 20.64  | 20.83  | 20.97  |                        |             |
| Channel         |       |    |    | 131987 | 132322 | 132657 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1711.5 | 1745   | 1778.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 20.64  | 20.56  | 20.52  | 21.5                   | 0           |
| 3               | QPSK  | 1  | 8  | 20.54  | 20.74  | 20.91  |                        |             |
| 3               | QPSK  | 1  | 14 | 20.51  | 20.58  | 20.87  |                        |             |
| 3               | QPSK  | 8  | 0  | 20.62  | 20.69  | 20.88  | 21.5                   | 0           |
| 3               | QPSK  | 8  | 4  | 20.60  | 20.84  | 20.97  |                        |             |
| 3               | QPSK  | 8  | 7  | 20.52  | 20.64  | 20.84  |                        |             |
| 3               | QPSK  | 15 | 0  | 20.62  | 20.77  | 20.86  |                        |             |
| 3               | 16QAM | 1  | 0  | 20.80  | 20.94  | 20.98  | 21.5                   | 0           |
| 3               | 16QAM | 1  | 8  | 20.78  | 20.90  | 20.95  |                        |             |
| 3               | 16QAM | 1  | 14 | 20.72  | 20.70  | 20.83  |                        |             |
| 3               | 16QAM | 8  | 0  | 20.74  | 20.77  | 20.96  | 21.5                   | 0           |
| 3               | 16QAM | 8  | 4  | 20.63  | 20.88  | 20.98  |                        |             |
| 3               | 16QAM | 8  | 7  | 20.73  | 20.91  | 20.95  |                        |             |
| 3               | 16QAM | 15 | 0  | 20.60  | 20.79  | 20.98  |                        |             |
| Channel         |       |    |    | 131979 | 132322 | 132665 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1710.7 | 1745   | 1779.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 20.54  | 20.36  | 20.58  | 21.5                   | 0           |
| 1.4             | QPSK  | 1  | 3  | 20.49  | 20.70  | 20.88  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 20.47  | 20.75  | 20.89  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 20.52  | 20.59  | 20.90  |                        |             |
| 1.4             | QPSK  | 3  | 1  | 20.51  | 20.69  | 20.94  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 20.58  | 20.61  | 20.76  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 20.65  | 20.82  | 20.81  | 21.5                   | 0           |
| 1.4             | 16QAM | 1  | 0  | 20.77  | 20.82  | 20.89  | 21.5                   | 0           |
| 1.4             | 16QAM | 1  | 3  | 20.81  | 20.94  | 20.88  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 20.73  | 20.78  | 20.95  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 20.61  | 20.81  | 20.96  |                        |             |
| 1.4             | 16QAM | 3  | 1  | 20.52  | 20.72  | 20.97  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 20.54  | 20.77  | 20.97  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 20.37  | 20.82  | 20.86  | 21.5                   | 0           |

### <TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

SAR was tested with a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by 3GPP.

- 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations
- “special subframe S” contains both uplink and downlink transmissions, it has been taken into consideration to determine the transmission duty factor according to the worst case uplink and downlink cyclic prefix requirements for UpPTS
- Establishing connections with base station simulators ensure a consistent means for testing SAR and recommended for evaluating SAR. The Anritsu MT8820C (firmware: #22.52#004) was used for LTE output power measurements and SAR testing.

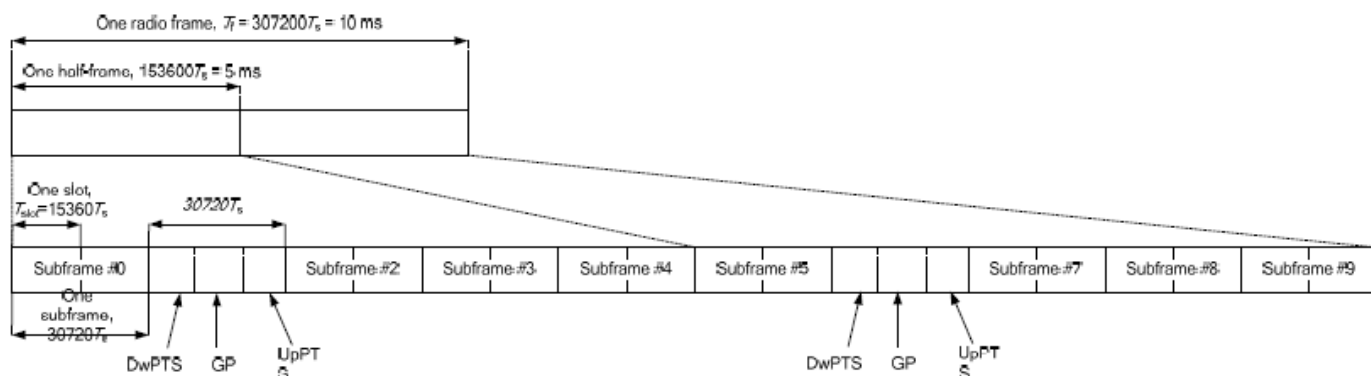


**Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).**

**Table 4.2-2: Uplink-downlink configurations.**

| Uplink-downlink configuration | Downlink-to-Uplink Switch-point periodicity | Subframe number |   |   |   |   |   |   |   |   |   |
|-------------------------------|---------------------------------------------|-----------------|---|---|---|---|---|---|---|---|---|
|                               |                                             | 0               | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 0                             | 5 ms                                        | D               | S | U | U | U | D | S | U | U | U |
| 1                             | 5 ms                                        | D               | S | U | U | D | D | S | U | U | D |
| 2                             | 5 ms                                        | D               | S | U | D | D | D | S | U | D | D |
| 3                             | 10 ms                                       | D               | S | U | U | U | D | D | D | D | D |
| 4                             | 10 ms                                       | D               | S | U | U | D | D | D | D | D | D |
| 5                             | 10 ms                                       | D               | S | U | D | D | D | D | D | D | D |
| 6                             | 5 ms                                        | D               | S | U | U | U | D | S | U | U | D |

**Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).**

| Special subframe configuration | Normal cyclic prefix in downlink |                                |                                  | Extended cyclic prefix in downlink |                                |                                  |
|--------------------------------|----------------------------------|--------------------------------|----------------------------------|------------------------------------|--------------------------------|----------------------------------|
|                                | DwPTS                            | UpPTS                          |                                  | DwPTS                              | UpPTS                          |                                  |
|                                |                                  | Normal cyclic prefix in uplink | Extended cyclic prefix in uplink |                                    | Normal cyclic prefix in uplink | Extended cyclic prefix in uplink |
| 0                              | $6592 \cdot T_s$                 | $2192 \cdot T_s$               | $2560 \cdot T_s$                 | $7680 \cdot T_s$                   | $2192 \cdot T_s$               | $2560 \cdot T_s$                 |
| 1                              | $19760 \cdot T_s$                |                                |                                  | $20480 \cdot T_s$                  |                                |                                  |
| 2                              | $21952 \cdot T_s$                |                                |                                  | $23040 \cdot T_s$                  |                                |                                  |
| 3                              | $24144 \cdot T_s$                |                                |                                  | $25600 \cdot T_s$                  |                                |                                  |
| 4                              | $26336 \cdot T_s$                | $4384 \cdot T_s$               | $5120 \cdot T_s$                 | $7680 \cdot T_s$                   | $4384 \cdot T_s$               | $5120 \cdot T_s$                 |
| 5                              | $6592 \cdot T_s$                 |                                |                                  | $20480 \cdot T_s$                  |                                |                                  |
| 6                              | $19760 \cdot T_s$                |                                |                                  | $23040 \cdot T_s$                  |                                |                                  |
| 7                              | $21952 \cdot T_s$                |                                |                                  | $12800 \cdot T_s$                  | -                              | -                                |
| 8                              | $24144 \cdot T_s$                |                                |                                  | -                                  |                                |                                  |
| 9                              | $13168 \cdot T_s$                |                                |                                  | -                                  |                                |                                  |

| Special subframe (30720·T <sub>s</sub> ): Normal cyclic prefix in downlink (UpPTS) |                                |                                |                                  |
|------------------------------------------------------------------------------------|--------------------------------|--------------------------------|----------------------------------|
|                                                                                    | Special subframe configuration | Normal cyclic prefix in uplink | Extended cyclic prefix in uplink |
| Uplink duty factor in one special subframe                                         | 0~4                            | 7.13%                          | 8.33%                            |
|                                                                                    | 5~9                            | 14.3%                          | 16.7%                            |

| Special subframe(30720·T <sub>s</sub> ): Extended cyclic prefix in downlink (UpPTS) |                                |                                |                                  |
|-------------------------------------------------------------------------------------|--------------------------------|--------------------------------|----------------------------------|
|                                                                                     | Special subframe configuration | Normal cyclic prefix in uplink | Extended cyclic prefix in uplink |
| Uplink duty factor in one special subframe                                          | 0~3                            | 7.13%                          | 8.33%                            |
|                                                                                     | 4~7                            | 14.3%                          | 16.7%                            |

The highest duty factor is resulted from:

- Uplink-downlink configuration: 0. In a half-frame consisted of 5 subframes, uplink operation is in 3 uplink subframes and 1 special subframe.
- special subframe configuration: 5-9 for normal cyclic prefix in downlink, 4-7 for extended cyclic prefix in downlink
- for special subframe with extended cyclic prefix in uplink, the total uplink duty factor in one half-frame is:  
 $(3+0.167)/5 = 63.3\%$
- for special subframe with normal cyclic prefix in uplink, the total uplink duty factor in one half-frame is:  
 $(3+0.143)/5 = 62.9\%$
- For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix  $63.3\%/62.9\% = 1.006$  is applied to scale-up the measured SAR result. The scaled TDD LTE SAR = measured SAR (W/kg)\* Tune-up Scaling Factor\* scaling factor for extended cyclic prefix.

**<Default Power Mode>**
**<LTE Band 38>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|-------------|
| Channel         |            |         |           | 37850                    | 38000                       | 38150                     |                        |             |
| Frequency (MHz) |            |         |           | 2580                     | 2595                        | 2610                      |                        |             |
| 20              | QPSK       | 1       | 0         | 22.24                    | 22.15                       | 22.12                     |                        |             |
| 20              | QPSK       | 1       | 49        | 22.22                    | 22.44                       | 22.23                     | 24                     | 0           |
| 20              | QPSK       | 1       | 99        | 22.62                    | 22.33                       | 22.39                     |                        |             |
| 20              | QPSK       | 50      | 0         | 21.42                    | 21.34                       | 21.05                     |                        |             |
| 20              | QPSK       | 50      | 24        | 21.42                    | 21.43                       | 21.34                     | 23                     | 1           |
| 20              | QPSK       | 50      | 50        | 21.48                    | 21.10                       | 21.00                     |                        |             |
| 20              | QPSK       | 100     | 0         | 21.43                    | 21.07                       | 21.08                     |                        |             |
| 20              | 16QAM      | 1       | 0         | 21.29                    | 21.22                       | 21.18                     | 23                     | 1           |
| 20              | 16QAM      | 1       | 49        | 21.58                    | 21.55                       | 21.23                     |                        |             |
| 20              | 16QAM      | 1       | 99        | 21.61                    | 21.54                       | 21.27                     |                        |             |
| 20              | 16QAM      | 50      | 0         | 20.47                    | 20.28                       | 20.28                     | 22                     | 2           |
| 20              | 16QAM      | 50      | 24        | 20.46                    | 20.61                       | 20.39                     |                        |             |
| 20              | 16QAM      | 50      | 50        | 20.36                    | 20.44                       | 20.28                     |                        |             |
| 20              | 16QAM      | 100     | 0         | 20.45                    | 20.52                       | 20.25                     |                        |             |
| Channel         |            |         |           | 37825                    | 38000                       | 38175                     |                        |             |
| Frequency (MHz) |            |         |           | 2577.5                   | 2595                        | 2612.5                    |                        |             |
| 15              | QPSK       | 1       | 0         | 22.15                    | 22.20                       | 22.12                     |                        |             |
| 15              | QPSK       | 1       | 37        | 22.29                    | 22.32                       | 22.16                     | 24                     | 0           |
| 15              | QPSK       | 1       | 74        | 22.55                    | 22.59                       | 22.27                     |                        |             |
| 15              | QPSK       | 36      | 0         | 21.30                    | 21.19                       | 21.16                     |                        |             |
| 15              | QPSK       | 36      | 20        | 21.53                    | 21.49                       | 21.32                     | 23                     | 1           |
| 15              | QPSK       | 36      | 39        | 21.47                    | 21.38                       | 21.32                     |                        |             |
| 15              | QPSK       | 75      | 0         | 21.28                    | 21.35                       | 21.23                     |                        |             |
| 15              | 16QAM      | 1       | 0         | 21.30                    | 21.19                       | 21.10                     | 23                     | 1           |
| 15              | 16QAM      | 1       | 37        | 21.47                    | 21.59                       | 21.06                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 21.76                    | 21.97                       | 21.61                     |                        |             |
| 15              | 16QAM      | 36      | 0         | 20.18                    | 20.20                       | 20.19                     | 22                     | 2           |
| 15              | 16QAM      | 36      | 20        | 20.39                    | 20.44                       | 20.29                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 20.38                    | 20.43                       | 20.34                     |                        |             |
| 15              | 16QAM      | 75      | 0         | 20.42                    | 20.45                       | 20.24                     |                        |             |
| Channel         |            |         |           | 37800                    | 38000                       | 38200                     |                        |             |
| Frequency (MHz) |            |         |           | 2575                     | 2595                        | 2615                      |                        |             |
| 10              | QPSK       | 1       | 0         | 22.41                    | 22.27                       | 22.49                     |                        |             |
| 10              | QPSK       | 1       | 25        | 22.44                    | 22.54                       | 22.50                     | 24                     | 0           |
| 10              | QPSK       | 1       | 49        | 22.75                    | 22.68                       | 22.64                     |                        |             |
| 10              | QPSK       | 25      | 0         | 21.61                    | 21.55                       | 21.52                     |                        |             |
| 10              | QPSK       | 25      | 12        | 21.64                    | 21.60                       | 21.48                     | 23                     | 1           |
| 10              | QPSK       | 25      | 25        | 21.74                    | 21.56                       | 21.47                     |                        |             |
| 10              | QPSK       | 50      | 0         | 21.60                    | 21.63                       | 21.55                     |                        |             |
| 10              | 16QAM      | 1       | 0         | 21.89                    | 21.58                       | 21.53                     | 23                     | 1           |
| 10              | 16QAM      | 1       | 25        | 21.69                    | 21.69                       | 21.49                     |                        |             |
| 10              | 16QAM      | 1       | 49        | 22.08                    | 21.85                       | 21.70                     |                        |             |
| 10              | 16QAM      | 25      | 0         | 20.63                    | 20.65                       | 20.37                     | 22                     | 2           |
| 10              | 16QAM      | 25      | 12        | 20.54                    | 20.68                       | 20.40                     |                        |             |
| 10              | 16QAM      | 25      | 25        | 20.70                    | 20.62                       | 20.40                     |                        |             |
| 10              | 16QAM      | 50      | 0         | 20.65                    | 20.73                       | 20.44                     |                        |             |



# Exhibit 11

Report No. : FA720310

| Channel         |       |    |    | 37775  | 38000 | 38225  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 2572.5 | 2595  | 2617.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 22.64  | 22.62 | 22.39  | 24                     | 0           |
| 5               | QPSK  | 1  | 12 | 22.52  | 22.58 | 22.11  |                        |             |
| 5               | QPSK  | 1  | 24 | 22.60  | 22.50 | 22.31  |                        |             |
| 5               | QPSK  | 12 | 0  | 21.73  | 21.60 | 21.47  | 23                     | 1           |
| 5               | QPSK  | 12 | 7  | 21.66  | 21.64 | 21.52  |                        |             |
| 5               | QPSK  | 12 | 13 | 21.59  | 21.62 | 21.48  |                        |             |
| 5               | QPSK  | 25 | 0  | 21.66  | 21.66 | 21.49  |                        |             |
| 5               | 16QAM | 1  | 0  | 21.76  | 21.72 | 21.17  | 23                     | 1           |
| 5               | 16QAM | 1  | 12 | 21.86  | 21.87 | 21.34  |                        |             |
| 5               | 16QAM | 1  | 24 | 21.67  | 21.64 | 21.45  |                        |             |
| 5               | 16QAM | 12 | 0  | 20.62  | 20.60 | 20.44  | 22                     | 2           |
| 5               | 16QAM | 12 | 7  | 20.61  | 20.51 | 20.34  |                        |             |
| 5               | 16QAM | 12 | 13 | 20.60  | 20.65 | 20.32  |                        |             |
| 5               | 16QAM | 25 | 0  | 20.65  | 20.68 | 20.40  |                        |             |

**<LTE Band 41>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Low Middle Ch. / Freq. | Power Middle Ch. / Freq. | Power High Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|------------------------------|--------------------------|-------------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 39750                 | 40185                        | 40620                    | 41055                         | 41490                  |                     |          |
| Frequency (MHz) |            |         |           | 2506                  | 2549.5                       | 2593                     | 2636.5                        | 2680                   |                     |          |
| 20              | QPSK       | 1       | 0         | 22.07                 | 22.12                        | 22.02                    | 22.01                         | 22.08                  | 24                  | 0        |
| 20              | QPSK       | 1       | 49        | 22.33                 | 22.30                        | 22.28                    | 22.12                         | 22.31                  |                     |          |
| 20              | QPSK       | 1       | 99        | 22.47                 | 22.56                        | 22.57                    | 22.31                         | 22.44                  |                     |          |
| 20              | QPSK       | 50      | 0         | 21.52                 | 21.37                        | 21.50                    | 21.24                         | 21.38                  | 23                  | 1        |
| 20              | QPSK       | 50      | 24        | 21.43                 | 21.45                        | 21.42                    | 21.10                         | 21.36                  |                     |          |
| 20              | QPSK       | 50      | 50        | 21.48                 | 21.64                        | 21.52                    | 21.25                         | 21.54                  |                     |          |
| 20              | QPSK       | 100     | 0         | 21.54                 | 21.54                        | 21.45                    | 21.27                         | 21.43                  | 23                  | 1        |
| 20              | 16QAM      | 1       | 0         | 21.85                 | 21.66                        | 21.27                    | 21.01                         | 21.46                  |                     |          |
| 20              | 16QAM      | 1       | 49        | 21.61                 | 21.30                        | 21.41                    | 21.23                         | 21.55                  |                     |          |
| 20              | 16QAM      | 1       | 99        | 21.30                 | 21.50                        | 21.75                    | 21.29                         | 21.33                  | 22                  | 2        |
| 20              | 16QAM      | 50      | 0         | 20.49                 | 20.51                        | 20.52                    | 20.23                         | 20.39                  |                     |          |
| 20              | 16QAM      | 50      | 24        | 20.46                 | 20.49                        | 20.42                    | 20.31                         | 20.29                  |                     |          |
| 20              | 16QAM      | 50      | 50        | 20.51                 | 20.58                        | 20.56                    | 20.33                         | 20.53                  | 22                  | 2        |
| 20              | 16QAM      | 100     | 0         | 20.54                 | 20.43                        | 20.46                    | 20.26                         | 20.49                  |                     |          |
| Channel         |            |         |           | 39725                 | 40173                        | 40620                    | 41068                         | 41515                  | Tune-up limit (dBm) | MPR (dB) |
| Frequency (MHz) |            |         |           | 2503.5                | 2548.3                       | 2593                     | 2637.8                        | 2682.5                 |                     |          |
| 15              | QPSK       | 1       | 0         | 22.42                 | 22.36                        | 22.32                    | 22.23                         | 22.25                  | 24                  | 0        |
| 15              | QPSK       | 1       | 37        | 22.63                 | 22.41                        | 22.32                    | 22.06                         | 22.04                  |                     |          |
| 15              | QPSK       | 1       | 74        | 22.51                 | 22.65                        | 22.64                    | 22.03                         | 22.52                  |                     |          |
| 15              | QPSK       | 36      | 0         | 21.46                 | 21.40                        | 21.51                    | 21.20                         | 21.37                  | 23                  | 1        |
| 15              | QPSK       | 36      | 20        | 21.51                 | 21.47                        | 21.47                    | 21.16                         | 21.27                  |                     |          |
| 15              | QPSK       | 36      | 39        | 21.49                 | 21.57                        | 21.19                    | 21.22                         | 21.32                  |                     |          |
| 15              | QPSK       | 75      | 0         | 21.52                 | 21.49                        | 21.10                    | 21.23                         | 21.32                  | 23                  | 1        |
| 15              | 16QAM      | 1       | 0         | 22.00                 | 21.70                        | 21.29                    | 21.44                         | 21.47                  |                     |          |
| 15              | 16QAM      | 1       | 37        | 21.93                 | 21.79                        | 21.11                    | 21.14                         | 21.23                  |                     |          |
| 15              | 16QAM      | 1       | 74        | 21.65                 | 21.82                        | 21.75                    | 21.40                         | 21.87                  | 22                  | 2        |
| 15              | 16QAM      | 36      | 0         | 20.44                 | 20.44                        | 20.50                    | 20.25                         | 20.36                  |                     |          |
| 15              | 16QAM      | 36      | 20        | 20.46                 | 20.46                        | 20.35                    | 20.11                         | 20.20                  |                     |          |
| 15              | 16QAM      | 36      | 39        | 20.45                 | 20.61                        | 20.51                    | 20.24                         | 20.37                  | 22                  | 2        |
| 15              | 16QAM      | 75      | 0         | 20.57                 | 20.62                        | 20.52                    | 20.20                         | 20.41                  |                     |          |
| Channel         |            |         |           | 39700                 | 40160                        | 40620                    | 41080                         | 41540                  | Tune-up limit (dBm) | MPR (dB) |
| Frequency (MHz) |            |         |           | 2501                  | 2547                         | 2593                     | 2639                          | 2685                   |                     |          |
| 10              | QPSK       | 1       | 0         | 22.47                 | 22.31                        | 22.49                    | 22.20                         | 22.33                  | 24                  | 0        |
| 10              | QPSK       | 1       | 25        | 22.46                 | 22.35                        | 22.41                    | 22.15                         | 22.29                  |                     |          |
| 10              | QPSK       | 1       | 49        | 22.62                 | 22.73                        | 22.79                    | 22.54                         | 22.55                  |                     |          |
| 10              | QPSK       | 25      | 0         | 21.66                 | 21.39                        | 21.53                    | 21.29                         | 21.43                  | 23                  | 1        |
| 10              | QPSK       | 25      | 12        | 21.63                 | 21.38                        | 21.46                    | 21.36                         | 21.39                  |                     |          |
| 10              | QPSK       | 25      | 25        | 21.62                 | 21.42                        | 21.64                    | 21.20                         | 21.45                  |                     |          |
| 10              | QPSK       | 50      | 0         | 21.58                 | 21.38                        | 21.40                    | 21.35                         | 21.37                  | 23                  | 1        |
| 10              | 16QAM      | 1       | 0         | 21.71                 | 21.47                        | 21.75                    | 21.45                         | 21.60                  |                     |          |
| 10              | 16QAM      | 1       | 25        | 21.54                 | 21.36                        | 21.51                    | 21.37                         | 21.47                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 21.67                 | 21.72                        | 21.63                    | 21.63                         | 21.83                  | 22                  | 2        |
| 10              | 16QAM      | 25      | 0         | 20.60                 | 20.36                        | 20.52                    | 20.31                         | 20.47                  |                     |          |
| 10              | 16QAM      | 25      | 12        | 20.59                 | 20.43                        | 20.51                    | 20.32                         | 20.28                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.57                 | 20.46                        | 20.34                    | 20.33                         | 20.45                  | 22                  | 2        |
| 10              | 16QAM      | 50      | 0         | 20.54                 | 20.43                        | 20.53                    | 20.41                         | 20.40                  |                     |          |

| Channel         |       |    |    | 39675  | 40148  | 40620 | 41093   | 41565  | Tune-up<br>limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|--------|-------|---------|--------|---------------------------|-------------|
| Frequency (MHz) |       |    |    | 2498.5 | 2545.8 | 2593  | 2640.30 | 2687.5 |                           |             |
| 5               | QPSK  | 1  | 0  | 22.37  | 22.26  | 22.42 | 22.15   | 22.24  | 24                        | 0           |
| 5               | QPSK  | 1  | 12 | 22.40  | 22.31  | 22.33 | 22.18   | 22.38  |                           |             |
| 5               | QPSK  | 1  | 24 | 22.44  | 22.30  | 22.50 | 22.19   | 22.31  |                           |             |
| 5               | QPSK  | 12 | 0  | 21.58  | 21.39  | 21.51 | 21.32   | 21.40  | 23                        | 1           |
| 5               | QPSK  | 12 | 7  | 21.53  | 21.38  | 21.42 | 21.23   | 21.42  |                           |             |
| 5               | QPSK  | 12 | 13 | 21.49  | 21.36  | 21.51 | 21.33   | 21.35  |                           |             |
| 5               | QPSK  | 25 | 0  | 21.61  | 21.34  | 21.47 | 21.05   | 21.38  | 23                        | 1           |
| 5               | 16QAM | 1  | 0  | 21.58  | 21.65  | 21.58 | 21.39   | 21.52  |                           |             |
| 5               | 16QAM | 1  | 12 | 21.73  | 21.42  | 21.66 | 21.42   | 21.78  |                           |             |
| 5               | 16QAM | 1  | 24 | 21.42  | 21.32  | 21.61 | 21.31   | 21.46  | 22                        | 2           |
| 5               | 16QAM | 12 | 0  | 20.48  | 20.40  | 20.51 | 20.33   | 20.46  |                           |             |
| 5               | 16QAM | 12 | 7  | 20.49  | 20.38  | 20.49 | 20.21   | 20.32  |                           |             |
| 5               | 16QAM | 12 | 13 | 20.40  | 20.37  | 20.51 | 20.24   | 20.22  |                           |             |
| 5               | 16QAM | 25 | 0  | 20.54  | 20.29  | 20.37 | 20.25   | 20.43  |                           |             |

**<At-Head Power Mode>**
**<LTE Band 38>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|-------------|
| Channel         |            |         |           | 37850                    | 38000                       | 38150                     |                        |             |
| Frequency (MHz) |            |         |           | 2580                     | 2595                        | 2610                      |                        |             |
| 20              | QPSK       | 1       | 0         | 22.24                    | 22.15                       | 22.12                     | 24                     | 0           |
| 20              | QPSK       | 1       | 49        | 22.22                    | 22.44                       | 22.23                     |                        |             |
| 20              | QPSK       | 1       | 99        | 22.62                    | 22.33                       | 22.39                     |                        |             |
| 20              | QPSK       | 50      | 0         | 21.42                    | 21.34                       | 21.05                     | 23                     | 1           |
| 20              | QPSK       | 50      | 24        | 21.42                    | 21.43                       | 21.34                     |                        |             |
| 20              | QPSK       | 50      | 50        | 21.48                    | 21.10                       | 21.00                     |                        |             |
| 20              | QPSK       | 100     | 0         | 21.43                    | 21.07                       | 21.08                     | 23                     | 1           |
| 20              | 16QAM      | 1       | 0         | 21.29                    | 21.22                       | 21.18                     |                        |             |
| 20              | 16QAM      | 1       | 49        | 21.58                    | 21.55                       | 21.23                     |                        |             |
| 20              | 16QAM      | 1       | 99        | 21.61                    | 21.54                       | 21.27                     | 22                     | 2           |
| 20              | 16QAM      | 50      | 0         | 20.47                    | 20.28                       | 20.28                     |                        |             |
| 20              | 16QAM      | 50      | 24        | 20.46                    | 20.61                       | 20.39                     |                        |             |
| 20              | 16QAM      | 50      | 50        | 20.36                    | 20.44                       | 20.28                     | 22                     | 2           |
| 20              | 16QAM      | 100     | 0         | 20.45                    | 20.52                       | 20.25                     |                        |             |
| Channel         |            |         |           | 37825                    | 38000                       | 38175                     |                        |             |
| Frequency (MHz) |            |         |           | 2577.5                   | 2595                        | 2612.5                    |                        |             |
| 15              | QPSK       | 1       | 0         | 22.15                    | 22.20                       | 22.12                     | 24                     | 0           |
| 15              | QPSK       | 1       | 37        | 22.29                    | 22.32                       | 22.16                     |                        |             |
| 15              | QPSK       | 1       | 74        | 22.55                    | 22.59                       | 22.27                     |                        |             |
| 15              | QPSK       | 36      | 0         | 21.30                    | 21.19                       | 21.16                     | 23                     | 1           |
| 15              | QPSK       | 36      | 20        | 21.53                    | 21.49                       | 21.32                     |                        |             |
| 15              | QPSK       | 36      | 39        | 21.47                    | 21.38                       | 21.32                     |                        |             |
| 15              | QPSK       | 75      | 0         | 21.28                    | 21.35                       | 21.23                     | 23                     | 1           |
| 15              | 16QAM      | 1       | 0         | 21.30                    | 21.19                       | 21.10                     |                        |             |
| 15              | 16QAM      | 1       | 37        | 21.47                    | 21.59                       | 21.06                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 21.76                    | 21.97                       | 21.61                     | 22                     | 2           |
| 15              | 16QAM      | 36      | 0         | 20.18                    | 20.20                       | 20.19                     |                        |             |
| 15              | 16QAM      | 36      | 20        | 20.39                    | 20.44                       | 20.29                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 20.38                    | 20.43                       | 20.34                     | 22                     | 2           |
| 15              | 16QAM      | 75      | 0         | 20.42                    | 20.45                       | 20.24                     |                        |             |
| Channel         |            |         |           | 37800                    | 38000                       | 38200                     |                        |             |
| Frequency (MHz) |            |         |           | 2575                     | 2595                        | 2615                      |                        |             |
| 10              | QPSK       | 1       | 0         | 22.41                    | 22.27                       | 22.49                     | 24                     | 0           |
| 10              | QPSK       | 1       | 25        | 22.44                    | 22.54                       | 22.50                     |                        |             |
| 10              | QPSK       | 1       | 49        | 22.75                    | 22.68                       | 22.64                     |                        |             |
| 10              | QPSK       | 25      | 0         | 21.61                    | 21.55                       | 21.52                     | 23                     | 1           |
| 10              | QPSK       | 25      | 12        | 21.64                    | 21.60                       | 21.48                     |                        |             |
| 10              | QPSK       | 25      | 25        | 21.74                    | 21.56                       | 21.47                     |                        |             |
| 10              | QPSK       | 50      | 0         | 21.60                    | 21.63                       | 21.55                     | 23                     | 1           |
| 10              | 16QAM      | 1       | 0         | 21.89                    | 21.58                       | 21.53                     |                        |             |
| 10              | 16QAM      | 1       | 25        | 21.69                    | 21.69                       | 21.49                     |                        |             |
| 10              | 16QAM      | 1       | 49        | 22.08                    | 21.85                       | 21.70                     | 22                     | 2           |
| 10              | 16QAM      | 25      | 0         | 20.63                    | 20.65                       | 20.37                     |                        |             |
| 10              | 16QAM      | 25      | 12        | 20.54                    | 20.68                       | 20.40                     |                        |             |
| 10              | 16QAM      | 25      | 25        | 20.70                    | 20.62                       | 20.40                     | 22                     | 2           |
| 10              | 16QAM      | 50      | 0         | 20.65                    | 20.73                       | 20.44                     |                        |             |



# Exhibit 11

Report No. : FA720310

| Channel         |       |    |    | 37775  | 38000 | 38225  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 2572.5 | 2595  | 2617.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 22.64  | 22.62 | 22.39  | 24                     | 0           |
| 5               | QPSK  | 1  | 12 | 22.52  | 22.58 | 22.11  |                        |             |
| 5               | QPSK  | 1  | 24 | 22.60  | 22.50 | 22.31  |                        |             |
| 5               | QPSK  | 12 | 0  | 21.73  | 21.60 | 21.47  | 23                     | 1           |
| 5               | QPSK  | 12 | 7  | 21.66  | 21.64 | 21.52  |                        |             |
| 5               | QPSK  | 12 | 13 | 21.59  | 21.62 | 21.48  |                        |             |
| 5               | QPSK  | 25 | 0  | 21.66  | 21.66 | 21.49  |                        |             |
| 5               | 16QAM | 1  | 0  | 21.76  | 21.72 | 21.17  | 23                     | 1           |
| 5               | 16QAM | 1  | 12 | 21.86  | 21.87 | 21.34  |                        |             |
| 5               | 16QAM | 1  | 24 | 21.67  | 21.64 | 21.45  |                        |             |
| 5               | 16QAM | 12 | 0  | 20.62  | 20.60 | 20.44  | 22                     | 2           |
| 5               | 16QAM | 12 | 7  | 20.61  | 20.51 | 20.34  |                        |             |
| 5               | 16QAM | 12 | 13 | 20.60  | 20.65 | 20.32  |                        |             |
| 5               | 16QAM | 25 | 0  | 20.65  | 20.68 | 20.40  |                        |             |

**<LTE Band 41>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Low Middle Ch. / Freq. | Power Middle Ch. / Freq. | Power High Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|------------------------------|--------------------------|-------------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 39750                 | 40185                        | 40620                    | 41055                         | 41490                  |                     |          |
| Frequency (MHz) |            |         |           | 2506                  | 2549.5                       | 2593                     | 2636.5                        | 2680                   |                     |          |
| 20              | QPSK       | 1       | 0         | 22.07                 | 22.12                        | 22.02                    | 22.01                         | 22.08                  | 24                  | 0        |
| 20              | QPSK       | 1       | 49        | 22.33                 | 22.30                        | 22.28                    | 22.12                         | 22.31                  |                     |          |
| 20              | QPSK       | 1       | 99        | 22.47                 | 22.56                        | 22.57                    | 22.31                         | 22.44                  |                     |          |
| 20              | QPSK       | 50      | 0         | 21.52                 | 21.37                        | 21.50                    | 21.24                         | 21.38                  | 23                  | 1        |
| 20              | QPSK       | 50      | 24        | 21.43                 | 21.45                        | 21.42                    | 21.10                         | 21.36                  |                     |          |
| 20              | QPSK       | 50      | 50        | 21.48                 | 21.64                        | 21.52                    | 21.25                         | 21.54                  |                     |          |
| 20              | QPSK       | 100     | 0         | 21.54                 | 21.54                        | 21.45                    | 21.27                         | 21.43                  | 23                  | 1        |
| 20              | 16QAM      | 1       | 0         | 21.85                 | 21.66                        | 21.27                    | 21.01                         | 21.46                  |                     |          |
| 20              | 16QAM      | 1       | 49        | 21.61                 | 21.30                        | 21.41                    | 21.23                         | 21.55                  |                     |          |
| 20              | 16QAM      | 1       | 99        | 21.30                 | 21.50                        | 21.75                    | 21.29                         | 21.33                  | 22                  | 2        |
| 20              | 16QAM      | 50      | 0         | 20.49                 | 20.51                        | 20.52                    | 20.23                         | 20.39                  |                     |          |
| 20              | 16QAM      | 50      | 24        | 20.46                 | 20.49                        | 20.42                    | 20.31                         | 20.29                  |                     |          |
| 20              | 16QAM      | 50      | 50        | 20.51                 | 20.58                        | 20.56                    | 20.33                         | 20.53                  | 22                  | 2        |
| 20              | 16QAM      | 100     | 0         | 20.54                 | 20.43                        | 20.46                    | 20.26                         | 20.49                  |                     |          |
| Channel         |            |         |           | 39725                 | 40173                        | 40620                    | 41068                         | 41515                  | Tune-up limit (dBm) | MPR (dB) |
| Frequency (MHz) |            |         |           | 2503.5                | 2548.3                       | 2593                     | 2637.8                        | 2682.5                 |                     |          |
| 15              | QPSK       | 1       | 0         | 22.42                 | 22.36                        | 22.32                    | 22.23                         | 22.25                  | 24                  | 0        |
| 15              | QPSK       | 1       | 37        | 22.63                 | 22.41                        | 22.32                    | 22.06                         | 22.04                  |                     |          |
| 15              | QPSK       | 1       | 74        | 22.51                 | 22.65                        | 22.64                    | 22.03                         | 22.52                  |                     |          |
| 15              | QPSK       | 36      | 0         | 21.46                 | 21.40                        | 21.51                    | 21.20                         | 21.37                  | 23                  | 1        |
| 15              | QPSK       | 36      | 20        | 21.51                 | 21.47                        | 21.47                    | 21.16                         | 21.27                  |                     |          |
| 15              | QPSK       | 36      | 39        | 21.49                 | 21.57                        | 21.19                    | 21.22                         | 21.32                  |                     |          |
| 15              | QPSK       | 75      | 0         | 21.52                 | 21.49                        | 21.10                    | 21.23                         | 21.32                  | 23                  | 1        |
| 15              | 16QAM      | 1       | 0         | 22.00                 | 21.70                        | 21.29                    | 21.44                         | 21.47                  |                     |          |
| 15              | 16QAM      | 1       | 37        | 21.93                 | 21.79                        | 21.11                    | 21.14                         | 21.23                  |                     |          |
| 15              | 16QAM      | 1       | 74        | 21.65                 | 21.82                        | 21.75                    | 21.40                         | 21.87                  | 22                  | 2        |
| 15              | 16QAM      | 36      | 0         | 20.44                 | 20.44                        | 20.50                    | 20.25                         | 20.36                  |                     |          |
| 15              | 16QAM      | 36      | 20        | 20.46                 | 20.46                        | 20.35                    | 20.11                         | 20.20                  |                     |          |
| 15              | 16QAM      | 36      | 39        | 20.45                 | 20.61                        | 20.51                    | 20.24                         | 20.37                  | 22                  | 2        |
| 15              | 16QAM      | 75      | 0         | 20.57                 | 20.62                        | 20.52                    | 20.20                         | 20.41                  |                     |          |
| Channel         |            |         |           | 39700                 | 40160                        | 40620                    | 41080                         | 41540                  | Tune-up limit (dBm) | MPR (dB) |
| Frequency (MHz) |            |         |           | 2501                  | 2547                         | 2593                     | 2639                          | 2685                   |                     |          |
| 10              | QPSK       | 1       | 0         | 22.47                 | 22.31                        | 22.49                    | 22.20                         | 22.33                  | 24                  | 0        |
| 10              | QPSK       | 1       | 25        | 22.46                 | 22.35                        | 22.41                    | 22.15                         | 22.29                  |                     |          |
| 10              | QPSK       | 1       | 49        | 22.62                 | 22.73                        | 22.79                    | 22.54                         | 22.55                  |                     |          |
| 10              | QPSK       | 25      | 0         | 21.66                 | 21.39                        | 21.53                    | 21.29                         | 21.43                  | 23                  | 1        |
| 10              | QPSK       | 25      | 12        | 21.63                 | 21.38                        | 21.46                    | 21.36                         | 21.39                  |                     |          |
| 10              | QPSK       | 25      | 25        | 21.62                 | 21.42                        | 21.64                    | 21.20                         | 21.45                  |                     |          |
| 10              | QPSK       | 50      | 0         | 21.58                 | 21.38                        | 21.40                    | 21.35                         | 21.37                  | 23                  | 1        |
| 10              | 16QAM      | 1       | 0         | 21.71                 | 21.47                        | 21.75                    | 21.45                         | 21.60                  |                     |          |
| 10              | 16QAM      | 1       | 25        | 21.54                 | 21.36                        | 21.51                    | 21.37                         | 21.47                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 21.67                 | 21.72                        | 21.63                    | 21.63                         | 21.83                  | 22                  | 2        |
| 10              | 16QAM      | 25      | 0         | 20.60                 | 20.36                        | 20.52                    | 20.31                         | 20.47                  |                     |          |
| 10              | 16QAM      | 25      | 12        | 20.59                 | 20.43                        | 20.51                    | 20.32                         | 20.28                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.57                 | 20.46                        | 20.34                    | 20.33                         | 20.45                  | 22                  | 2        |
| 10              | 16QAM      | 50      | 0         | 20.54                 | 20.43                        | 20.53                    | 20.41                         | 20.40                  |                     |          |

| Channel         |       |    |    | 39675  | 40148  | 40620 | 41093   | 41565  | Tune-up<br>limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|--------|-------|---------|--------|---------------------------|-------------|
| Frequency (MHz) |       |    |    | 2498.5 | 2545.8 | 2593  | 2640.30 | 2687.5 |                           |             |
| 5               | QPSK  | 1  | 0  | 22.37  | 22.26  | 22.42 | 22.15   | 22.24  | 24                        | 0           |
| 5               | QPSK  | 1  | 12 | 22.40  | 22.31  | 22.33 | 22.18   | 22.38  |                           |             |
| 5               | QPSK  | 1  | 24 | 22.44  | 22.30  | 22.50 | 22.19   | 22.31  |                           |             |
| 5               | QPSK  | 12 | 0  | 21.58  | 21.39  | 21.51 | 21.32   | 21.40  | 23                        | 1           |
| 5               | QPSK  | 12 | 7  | 21.53  | 21.38  | 21.42 | 21.23   | 21.42  |                           |             |
| 5               | QPSK  | 12 | 13 | 21.49  | 21.36  | 21.51 | 21.33   | 21.35  |                           |             |
| 5               | QPSK  | 25 | 0  | 21.61  | 21.34  | 21.47 | 21.05   | 21.38  | 23                        | 1           |
| 5               | 16QAM | 1  | 0  | 21.58  | 21.65  | 21.58 | 21.39   | 21.52  |                           |             |
| 5               | 16QAM | 1  | 12 | 21.73  | 21.42  | 21.66 | 21.42   | 21.78  |                           |             |
| 5               | 16QAM | 1  | 24 | 21.42  | 21.32  | 21.61 | 21.31   | 21.46  | 22                        | 2           |
| 5               | 16QAM | 12 | 0  | 20.48  | 20.40  | 20.51 | 20.33   | 20.46  |                           |             |
| 5               | 16QAM | 12 | 7  | 20.49  | 20.38  | 20.49 | 20.21   | 20.32  |                           |             |
| 5               | 16QAM | 12 | 13 | 20.40  | 20.37  | 20.51 | 20.24   | 20.22  |                           |             |
| 5               | 16QAM | 25 | 0  | 20.54  | 20.29  | 20.37 | 20.25   | 20.43  |                           |             |

**<Near-body and Hotspot Mode>**
**<LTE Band 38>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|-------------|
| Channel         |            |         |           | 37850                    | 38000                       | 38150                     |                        |             |
| Frequency (MHz) |            |         |           | 2580                     | 2595                        | 2610                      |                        |             |
| 20              | QPSK       | 1       | 0         | 22.24                    | 22.15                       | 22.12                     | 24                     | 0           |
| 20              | QPSK       | 1       | 49        | 22.22                    | 22.44                       | 22.23                     |                        |             |
| 20              | QPSK       | 1       | 99        | 22.62                    | 22.33                       | 22.39                     |                        |             |
| 20              | QPSK       | 50      | 0         | 21.42                    | 21.34                       | 21.05                     | 23                     | 1           |
| 20              | QPSK       | 50      | 24        | 21.42                    | 21.43                       | 21.34                     |                        |             |
| 20              | QPSK       | 50      | 50        | 21.48                    | 21.10                       | 21.00                     |                        |             |
| 20              | QPSK       | 100     | 0         | 21.43                    | 21.07                       | 21.08                     | 23                     | 1           |
| 20              | 16QAM      | 1       | 0         | 21.29                    | 21.22                       | 21.18                     |                        |             |
| 20              | 16QAM      | 1       | 49        | 21.58                    | 21.55                       | 21.23                     |                        |             |
| 20              | 16QAM      | 1       | 99        | 21.61                    | 21.54                       | 21.27                     | 22                     | 2           |
| 20              | 16QAM      | 50      | 0         | 20.47                    | 20.28                       | 20.28                     |                        |             |
| 20              | 16QAM      | 50      | 24        | 20.46                    | 20.61                       | 20.39                     |                        |             |
| 20              | 16QAM      | 50      | 50        | 20.36                    | 20.44                       | 20.28                     | 22                     | 2           |
| 20              | 16QAM      | 100     | 0         | 20.45                    | 20.52                       | 20.25                     |                        |             |
| Channel         |            |         |           | 37825                    | 38000                       | 38175                     |                        |             |
| Frequency (MHz) |            |         |           | 2577.5                   | 2595                        | 2612.5                    |                        |             |
| 15              | QPSK       | 1       | 0         | 22.15                    | 22.20                       | 22.12                     | 24                     | 0           |
| 15              | QPSK       | 1       | 37        | 22.29                    | 22.32                       | 22.16                     |                        |             |
| 15              | QPSK       | 1       | 74        | 22.55                    | 22.59                       | 22.27                     |                        |             |
| 15              | QPSK       | 36      | 0         | 21.30                    | 21.19                       | 21.16                     | 23                     | 1           |
| 15              | QPSK       | 36      | 20        | 21.53                    | 21.49                       | 21.32                     |                        |             |
| 15              | QPSK       | 36      | 39        | 21.47                    | 21.38                       | 21.32                     |                        |             |
| 15              | QPSK       | 75      | 0         | 21.28                    | 21.35                       | 21.23                     | 23                     | 1           |
| 15              | 16QAM      | 1       | 0         | 21.30                    | 21.19                       | 21.10                     |                        |             |
| 15              | 16QAM      | 1       | 37        | 21.47                    | 21.59                       | 21.06                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 21.76                    | 21.97                       | 21.61                     | 22                     | 2           |
| 15              | 16QAM      | 36      | 0         | 20.18                    | 20.20                       | 20.19                     |                        |             |
| 15              | 16QAM      | 36      | 20        | 20.39                    | 20.44                       | 20.29                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 20.38                    | 20.43                       | 20.34                     | 22                     | 2           |
| 15              | 16QAM      | 75      | 0         | 20.42                    | 20.45                       | 20.24                     |                        |             |
| Channel         |            |         |           | 37800                    | 38000                       | 38200                     |                        |             |
| Frequency (MHz) |            |         |           | 2575                     | 2595                        | 2615                      |                        |             |
| 10              | QPSK       | 1       | 0         | 22.41                    | 22.27                       | 22.49                     | 24                     | 0           |
| 10              | QPSK       | 1       | 25        | 22.44                    | 22.54                       | 22.50                     |                        |             |
| 10              | QPSK       | 1       | 49        | 22.75                    | 22.68                       | 22.64                     |                        |             |
| 10              | QPSK       | 25      | 0         | 21.61                    | 21.55                       | 21.52                     | 23                     | 1           |
| 10              | QPSK       | 25      | 12        | 21.64                    | 21.60                       | 21.48                     |                        |             |
| 10              | QPSK       | 25      | 25        | 21.74                    | 21.56                       | 21.47                     |                        |             |
| 10              | QPSK       | 50      | 0         | 21.60                    | 21.63                       | 21.55                     | 23                     | 1           |
| 10              | 16QAM      | 1       | 0         | 21.89                    | 21.58                       | 21.53                     |                        |             |
| 10              | 16QAM      | 1       | 25        | 21.69                    | 21.69                       | 21.49                     |                        |             |
| 10              | 16QAM      | 1       | 49        | 22.08                    | 21.85                       | 21.70                     | 22                     | 2           |
| 10              | 16QAM      | 25      | 0         | 20.63                    | 20.65                       | 20.37                     |                        |             |
| 10              | 16QAM      | 25      | 12        | 20.54                    | 20.68                       | 20.40                     |                        |             |
| 10              | 16QAM      | 25      | 25        | 20.70                    | 20.62                       | 20.40                     | 22                     | 2           |
| 10              | 16QAM      | 50      | 0         | 20.65                    | 20.73                       | 20.44                     |                        |             |



# Exhibit 11

Report No. : FA720310

| Channel         |       |    |    | 37775  | 38000 | 38225  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 2572.5 | 2595  | 2617.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 22.64  | 22.62 | 22.39  | 24                     | 0           |
| 5               | QPSK  | 1  | 12 | 22.52  | 22.58 | 22.11  |                        |             |
| 5               | QPSK  | 1  | 24 | 22.60  | 22.50 | 22.31  |                        |             |
| 5               | QPSK  | 12 | 0  | 21.73  | 21.60 | 21.47  | 23                     | 1           |
| 5               | QPSK  | 12 | 7  | 21.66  | 21.64 | 21.52  |                        |             |
| 5               | QPSK  | 12 | 13 | 21.59  | 21.62 | 21.48  |                        |             |
| 5               | QPSK  | 25 | 0  | 21.66  | 21.66 | 21.49  |                        |             |
| 5               | 16QAM | 1  | 0  | 21.76  | 21.72 | 21.17  | 23                     | 1           |
| 5               | 16QAM | 1  | 12 | 21.86  | 21.87 | 21.34  |                        |             |
| 5               | 16QAM | 1  | 24 | 21.67  | 21.64 | 21.45  |                        |             |
| 5               | 16QAM | 12 | 0  | 20.62  | 20.60 | 20.44  | 22                     | 2           |
| 5               | 16QAM | 12 | 7  | 20.61  | 20.51 | 20.34  |                        |             |
| 5               | 16QAM | 12 | 13 | 20.60  | 20.65 | 20.32  |                        |             |
| 5               | 16QAM | 25 | 0  | 20.65  | 20.68 | 20.40  |                        |             |

**<LTE Band 41>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Low Middle Ch. / Freq. | Power Middle Ch. / Freq. | Power High Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) | MPR (dB) |
|-----------------|------------|---------|-----------|-----------------------|------------------------------|--------------------------|-------------------------------|------------------------|---------------------|----------|
| Channel         |            |         |           | 39750                 | 40185                        | 40620                    | 41055                         | 41490                  |                     |          |
| Frequency (MHz) |            |         |           | 2506                  | 2549.5                       | 2593                     | 2636.5                        | 2680                   |                     |          |
| 20              | QPSK       | 1       | 0         | 22.07                 | 22.12                        | 22.02                    | 22.01                         | 22.08                  | 24                  | 0        |
| 20              | QPSK       | 1       | 49        | 22.33                 | 22.30                        | 22.28                    | 22.12                         | 22.31                  |                     |          |
| 20              | QPSK       | 1       | 99        | 22.47                 | 22.56                        | 22.57                    | 22.31                         | 22.44                  |                     |          |
| 20              | QPSK       | 50      | 0         | 21.52                 | 21.37                        | 21.50                    | 21.24                         | 21.38                  | 23                  | 1        |
| 20              | QPSK       | 50      | 24        | 21.43                 | 21.45                        | 21.42                    | 21.10                         | 21.36                  |                     |          |
| 20              | QPSK       | 50      | 50        | 21.48                 | 21.64                        | 21.52                    | 21.25                         | 21.54                  |                     |          |
| 20              | QPSK       | 100     | 0         | 21.54                 | 21.54                        | 21.45                    | 21.27                         | 21.43                  | 23                  | 1        |
| 20              | 16QAM      | 1       | 0         | 21.85                 | 21.66                        | 21.27                    | 21.01                         | 21.46                  |                     |          |
| 20              | 16QAM      | 1       | 49        | 21.61                 | 21.30                        | 21.41                    | 21.23                         | 21.55                  |                     |          |
| 20              | 16QAM      | 1       | 99        | 21.30                 | 21.50                        | 21.75                    | 21.29                         | 21.33                  | 22                  | 2        |
| 20              | 16QAM      | 50      | 0         | 20.49                 | 20.51                        | 20.52                    | 20.23                         | 20.39                  |                     |          |
| 20              | 16QAM      | 50      | 24        | 20.46                 | 20.49                        | 20.42                    | 20.31                         | 20.29                  |                     |          |
| 20              | 16QAM      | 50      | 50        | 20.51                 | 20.58                        | 20.56                    | 20.33                         | 20.53                  | 22                  | 2        |
| 20              | 16QAM      | 100     | 0         | 20.54                 | 20.43                        | 20.46                    | 20.26                         | 20.49                  |                     |          |
| Channel         |            |         |           | 39725                 | 40173                        | 40620                    | 41068                         | 41515                  | Tune-up limit (dBm) | MPR (dB) |
| Frequency (MHz) |            |         |           | 2503.5                | 2548.3                       | 2593                     | 2637.8                        | 2682.5                 |                     |          |
| 15              | QPSK       | 1       | 0         | 22.42                 | 22.36                        | 22.32                    | 22.23                         | 22.25                  | 24                  | 0        |
| 15              | QPSK       | 1       | 37        | 22.63                 | 22.41                        | 22.32                    | 22.06                         | 22.04                  |                     |          |
| 15              | QPSK       | 1       | 74        | 22.51                 | 22.65                        | 22.64                    | 22.03                         | 22.52                  |                     |          |
| 15              | QPSK       | 36      | 0         | 21.46                 | 21.40                        | 21.51                    | 21.20                         | 21.37                  | 23                  | 1        |
| 15              | QPSK       | 36      | 20        | 21.51                 | 21.47                        | 21.47                    | 21.16                         | 21.27                  |                     |          |
| 15              | QPSK       | 36      | 39        | 21.49                 | 21.57                        | 21.19                    | 21.22                         | 21.32                  |                     |          |
| 15              | QPSK       | 75      | 0         | 21.52                 | 21.49                        | 21.10                    | 21.23                         | 21.32                  | 23                  | 1        |
| 15              | 16QAM      | 1       | 0         | 22.00                 | 21.70                        | 21.29                    | 21.44                         | 21.47                  |                     |          |
| 15              | 16QAM      | 1       | 37        | 21.93                 | 21.79                        | 21.11                    | 21.14                         | 21.23                  |                     |          |
| 15              | 16QAM      | 1       | 74        | 21.65                 | 21.82                        | 21.75                    | 21.40                         | 21.87                  | 22                  | 2        |
| 15              | 16QAM      | 36      | 0         | 20.44                 | 20.44                        | 20.50                    | 20.25                         | 20.36                  |                     |          |
| 15              | 16QAM      | 36      | 20        | 20.46                 | 20.46                        | 20.35                    | 20.11                         | 20.20                  |                     |          |
| 15              | 16QAM      | 36      | 39        | 20.45                 | 20.61                        | 20.51                    | 20.24                         | 20.37                  | 22                  | 2        |
| 15              | 16QAM      | 75      | 0         | 20.57                 | 20.62                        | 20.52                    | 20.20                         | 20.41                  |                     |          |
| Channel         |            |         |           | 39700                 | 40160                        | 40620                    | 41080                         | 41540                  | Tune-up limit (dBm) | MPR (dB) |
| Frequency (MHz) |            |         |           | 2501                  | 2547                         | 2593                     | 2639                          | 2685                   |                     |          |
| 10              | QPSK       | 1       | 0         | 22.47                 | 22.31                        | 22.49                    | 22.20                         | 22.33                  | 24                  | 0        |
| 10              | QPSK       | 1       | 25        | 22.46                 | 22.35                        | 22.41                    | 22.15                         | 22.29                  |                     |          |
| 10              | QPSK       | 1       | 49        | 22.62                 | 22.73                        | 22.79                    | 22.54                         | 22.55                  |                     |          |
| 10              | QPSK       | 25      | 0         | 21.66                 | 21.39                        | 21.53                    | 21.29                         | 21.43                  | 23                  | 1        |
| 10              | QPSK       | 25      | 12        | 21.63                 | 21.38                        | 21.46                    | 21.36                         | 21.39                  |                     |          |
| 10              | QPSK       | 25      | 25        | 21.62                 | 21.42                        | 21.64                    | 21.20                         | 21.45                  |                     |          |
| 10              | QPSK       | 50      | 0         | 21.58                 | 21.38                        | 21.40                    | 21.35                         | 21.37                  | 23                  | 1        |
| 10              | 16QAM      | 1       | 0         | 21.71                 | 21.47                        | 21.75                    | 21.45                         | 21.60                  |                     |          |
| 10              | 16QAM      | 1       | 25        | 21.54                 | 21.36                        | 21.51                    | 21.37                         | 21.47                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 21.67                 | 21.72                        | 21.63                    | 21.63                         | 21.83                  | 22                  | 2        |
| 10              | 16QAM      | 25      | 0         | 20.60                 | 20.36                        | 20.52                    | 20.31                         | 20.47                  |                     |          |
| 10              | 16QAM      | 25      | 12        | 20.59                 | 20.43                        | 20.51                    | 20.32                         | 20.28                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.57                 | 20.46                        | 20.34                    | 20.33                         | 20.45                  | 22                  | 2        |
| 10              | 16QAM      | 50      | 0         | 20.54                 | 20.43                        | 20.53                    | 20.41                         | 20.40                  |                     |          |

| Channel         |       |    |    | 39675  | 40148  | 40620 | 41093   | 41565  | Tune-up<br>limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|--------|-------|---------|--------|---------------------------|-------------|
| Frequency (MHz) |       |    |    | 2498.5 | 2545.8 | 2593  | 2640.30 | 2687.5 |                           |             |
| 5               | QPSK  | 1  | 0  | 22.37  | 22.26  | 22.42 | 22.15   | 22.24  | 24                        | 0           |
| 5               | QPSK  | 1  | 12 | 22.40  | 22.31  | 22.33 | 22.18   | 22.38  |                           |             |
| 5               | QPSK  | 1  | 24 | 22.44  | 22.30  | 22.50 | 22.19   | 22.31  |                           |             |
| 5               | QPSK  | 12 | 0  | 21.58  | 21.39  | 21.51 | 21.32   | 21.40  | 23                        | 1           |
| 5               | QPSK  | 12 | 7  | 21.53  | 21.38  | 21.42 | 21.23   | 21.42  |                           |             |
| 5               | QPSK  | 12 | 13 | 21.49  | 21.36  | 21.51 | 21.33   | 21.35  |                           |             |
| 5               | QPSK  | 25 | 0  | 21.61  | 21.34  | 21.47 | 21.05   | 21.38  | 23                        | 1           |
| 5               | 16QAM | 1  | 0  | 21.58  | 21.65  | 21.58 | 21.39   | 21.52  |                           |             |
| 5               | 16QAM | 1  | 12 | 21.73  | 21.42  | 21.66 | 21.42   | 21.78  |                           |             |
| 5               | 16QAM | 1  | 24 | 21.42  | 21.32  | 21.61 | 21.31   | 21.46  | 22                        | 2           |
| 5               | 16QAM | 12 | 0  | 20.48  | 20.40  | 20.51 | 20.33   | 20.46  |                           |             |
| 5               | 16QAM | 12 | 7  | 20.49  | 20.38  | 20.49 | 20.21   | 20.32  |                           |             |
| 5               | 16QAM | 12 | 13 | 20.40  | 20.37  | 20.51 | 20.24   | 20.22  |                           |             |
| 5               | 16QAM | 25 | 0  | 20.54  | 20.29  | 20.37 | 20.25   | 20.43  |                           |             |

### <LTE Carrier Aggregation>

**General Note:**

1. This device supports Carrier Aggregation on downlink only for inter and intra band, Uplink CA is not supported. For the device supports bands and bandwidths and configurations are provided as follow table was according to 3GPP.
2. All permutations exist. No restrictions on Pcell & Scell combinations. Only LTE Band 29A is limited to Scell.

| E-UTRA CA Configuration | E-UTRA Bands | 1.4 MHz | 3 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz | Maximum aggregated bandwidth [MHz] | Bandwidth combination set |
|-------------------------|--------------|---------|-------|-------|--------|--------|--------|------------------------------------|---------------------------|
| CA_2A-4A                | 2            | Yes     | Yes   | Yes   | Yes    | Yes    | Yes    | 40                                 | 0                         |
|                         | 4            |         |       | Yes   | Yes    | Yes    | Yes    |                                    |                           |
| CA_2A-4A                | 2            |         |       | Yes   | Yes    |        |        | 20                                 | 1                         |
|                         | 4            |         |       | Yes   | Yes    |        |        |                                    |                           |
| CA_2A-4A                | 2            |         |       | Yes   | Yes    | Yes    | Yes    | 40                                 | 2                         |
|                         | 4            |         |       | Yes   | Yes    | Yes    | Yes    |                                    |                           |
| CA_2A-5A                | 2            |         |       | Yes   | Yes    | Yes    | Yes    | 30                                 | 0                         |
|                         | 5            |         |       | Yes   | Yes    |        |        |                                    |                           |
| CA_2A-5A                | 2            |         |       | Yes   | Yes    |        |        | 20                                 | 1                         |
|                         | 5            |         |       | Yes   | Yes    |        |        |                                    |                           |
| CA_2A-12A               | 2            |         |       | Yes   | Yes    | Yes    | Yes    | 30                                 | 0                         |
|                         | 12           |         |       | Yes   | Yes    |        |        |                                    |                           |
| CA_2A-12A               | 2            |         |       | Yes   | Yes    | Yes    | Yes    | 30                                 | 1                         |
|                         | 12           |         | Yes   | Yes   | Yes    |        |        |                                    |                           |
| CA_2A-12A               | 2            |         |       | Yes   | Yes    |        |        | 20                                 | 2                         |
|                         | 12           |         |       | Yes   | Yes    |        |        |                                    |                           |
| CA_2A-13A               | 2            |         |       | Yes   | Yes    | Yes    | Yes    | 30                                 | 0                         |
|                         | 13           |         |       |       | Yes    |        |        |                                    |                           |
| CA_2A-13A               | 2            |         |       | Yes   | Yes    |        |        | 20                                 | 1                         |
|                         | 13           |         |       |       | Yes    |        |        |                                    |                           |
| CA_2A-17A               | 2            |         |       | Yes   | Yes    |        |        | 20                                 | 0                         |
|                         | 17           |         |       | Yes   | Yes    |        |        |                                    |                           |
| CA_2A-29A               | 2            |         |       | Yes   | Yes    |        |        | 20                                 | 0                         |
|                         | 29           |         | Yes   | Yes   | Yes    |        |        |                                    |                           |
| CA_2A-29A               | 2            |         |       | Yes   | Yes    |        |        | 20                                 | 1                         |
|                         | 29           |         |       | Yes   | Yes    |        |        |                                    |                           |
| CA_2A-29A               | 2            |         |       | Yes   | Yes    | Yes    | Yes    | 30                                 | 2                         |
|                         | 29           |         |       | Yes   | Yes    |        |        |                                    |                           |
| CA_2A-66A               | 2            | Yes     | Yes   | Yes   | Yes    | Yes    | Yes    | 40                                 | 1                         |
|                         | 66           |         |       | Yes   | Yes    | Yes    | Yes    |                                    |                           |
| CA_2A-66A               | 2            |         |       | Yes   | Yes    |        |        | 20                                 | 1                         |
|                         | 66           |         |       | Yes   | Yes    |        |        |                                    |                           |
| CA_2A-66A               | 2            |         |       | Yes   | Yes    | Yes    | Yes    | 40                                 | 2                         |
|                         | 66           |         |       | Yes   | Yes    | Yes    | Yes    |                                    |                           |
| CA_4A-5A                | 4            |         |       | Yes   | Yes    |        |        | 20                                 | 0                         |
|                         | 5            |         |       | Yes   | Yes    |        |        |                                    |                           |
|                         | 4            |         |       | Yes   | Yes    | Yes    | Yes    |                                    |                           |
| CA_4A-7A                | 5            |         |       | Yes   | Yes    |        |        | 30                                 | 1                         |
|                         | 4            |         |       | Yes   | Yes    |        |        |                                    |                           |
|                         | 5            |         |       | Yes   | Yes    |        |        |                                    |                           |
| CA_4A-7A                | 4            |         |       | Yes   | Yes    |        |        | 30                                 | 0                         |
|                         | 7            |         |       | Yes   | Yes    | Yes    | Yes    |                                    |                           |
|                         | 4            |         |       | Yes   | Yes    | Yes    | Yes    |                                    |                           |
| CA_4A-7A                | 7            |         |       | Yes   | Yes    | Yes    | Yes    | 40                                 | 1                         |
|                         | 7            |         |       | Yes   | Yes    | Yes    | Yes    |                                    |                           |



| E-UTRA CA Configuration | E-UTRA Bands | 1.4 MHz | 3 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz | Maximum aggregated bandwidth [MHz] | Bandwidth combination set |
|-------------------------|--------------|---------|-------|-------|--------|--------|--------|------------------------------------|---------------------------|
| CA_4A-12A               | 4            | Yes     | Yes   | Yes   | Yes    |        |        | 20                                 | 0                         |
|                         | 12           |         |       | Yes   | Yes    |        |        |                                    |                           |
|                         | 4            | Yes     | Yes   | Yes   | Yes    | Yes    | Yes    | 30                                 | 1                         |
|                         | 12           |         |       | Yes   | Yes    |        |        |                                    |                           |
|                         | 4            |         |       | Yes   | Yes    | Yes    | Yes    | 30                                 | 2                         |
|                         | 12           |         | Yes   | Yes   | Yes    |        |        |                                    |                           |
|                         | 4            |         |       | Yes   | Yes    |        |        | 20                                 | 3                         |
|                         | 12           |         |       | Yes   | Yes    |        |        |                                    |                           |
|                         | 4            |         |       | Yes   | Yes    | Yes    | Yes    | 30                                 | 4                         |
|                         | 12           |         |       | Yes   | Yes    |        |        |                                    |                           |
| CA_4A-13A               | 4            |         |       | Yes   | Yes    | Yes    | Yes    | 30                                 | 0                         |
|                         | 13           |         |       |       | Yes    |        |        |                                    |                           |
|                         | 4            |         |       | Yes   | Yes    |        |        | 20                                 | 1                         |
| CA_4A-17A               | 13           |         |       |       | Yes    |        |        |                                    |                           |
|                         | 4            |         |       | Yes   | Yes    |        |        | 20                                 | 0                         |
| CA_4A-29A               | 17           |         |       | Yes   | Yes    |        |        |                                    |                           |
|                         | 4            |         |       | Yes   | Yes    |        |        | 20                                 | 0                         |
|                         | 29           |         | Yes   | Yes   | Yes    |        |        |                                    |                           |
|                         | 4            |         |       | Yes   | Yes    |        |        | 20                                 | 1                         |
|                         | 29           |         |       | Yes   | Yes    |        |        |                                    |                           |
| CA_4A-30A               | 4            |         |       | Yes   | Yes    | Yes    | Yes    | 30                                 | 2                         |
|                         | 29           |         |       | Yes   | Yes    |        |        |                                    |                           |
|                         | 4            |         |       | Yes   | Yes    | Yes    | Yes    | 30                                 | 0                         |
| CA_5A-7A                | 30           |         |       | Yes   | Yes    |        |        |                                    |                           |
|                         | 5            | Yes     | Yes   | Yes   | Yes    |        |        | 30                                 | 0                         |
|                         | 7            |         |       |       | Yes    | Yes    | Yes    |                                    |                           |
|                         | 5            |         |       | Yes   | Yes    |        |        | 30                                 | 1                         |
| CA_5A-30A               | 7            |         |       |       | Yes    | Yes    | Yes    |                                    |                           |
|                         | 5            |         |       | Yes   | Yes    |        |        | 20                                 | 0                         |
| CA_5A-66A               | 30           |         |       | Yes   | Yes    |        |        |                                    |                           |
|                         | 5            |         |       | Yes   | Yes    |        |        | 30                                 | 0                         |
| CA_12A-30A              | 66           |         |       | Yes   | Yes    | Yes    | Yes    |                                    |                           |
|                         | 12           |         |       | Yes   | Yes    |        |        | 20                                 | 0                         |
|                         | 30           |         |       | Yes   | Yes    |        |        |                                    |                           |
| CA_12A-66A              | 12           |         |       | Yes   | Yes    |        |        | 20                                 | 0                         |
|                         | 66           | Yes     | Yes   | Yes   | Yes    |        |        |                                    |                           |
|                         | 12           |         |       | Yes   | Yes    |        |        | 30                                 | 1                         |
|                         | 66           | Yes     | Yes   | Yes   | Yes    | Yes    | Yes    |                                    |                           |
|                         | 12           |         | Yes   | Yes   | Yes    |        |        | 30                                 | 2                         |
|                         | 66           |         |       | Yes   | Yes    | Yes    | Yes    |                                    |                           |
|                         | 12           |         |       | Yes   | Yes    |        |        | 20                                 | 3                         |
|                         | 66           |         |       | Yes   | Yes    |        |        |                                    |                           |
|                         | 12           |         |       | Yes   | Yes    |        |        | 30                                 | 4                         |
|                         | 66           |         |       | Yes   | Yes    | Yes    | Yes    |                                    |                           |
|                         | 12           |         |       | Yes   | Yes    |        |        | 20                                 | 5                         |
| CA_13A-66A              | 66           |         |       | Yes   | Yes    | Yes    |        |                                    |                           |
|                         | 13           |         |       | Yes   | Yes    |        |        | 30                                 | 0                         |
| CA_29A-30A              | 66           |         |       | Yes   | Yes    | Yes    | Yes    |                                    |                           |
|                         | 29           |         |       | Yes   | Yes    |        |        | 20                                 | 0                         |
| CA_29A-66A              | 30           |         |       | Yes   | Yes    |        |        |                                    |                           |
|                         | 29           |         |       | Yes   | Yes    |        |        | 30                                 | 0                         |
|                         | 30           |         |       | Yes   | Yes    | Yes    | Yes    |                                    |                           |

| E-UTRA<br>CA Configuration | Channel<br>bandwidths for<br>carrier [MHz] | Channel<br>bandwidths for<br>carrier [MHz] | Maximum<br>aggregated<br>bandwidth<br>[MHz] | Bandwidth<br>combination set |
|----------------------------|--------------------------------------------|--------------------------------------------|---------------------------------------------|------------------------------|
| CA_5B                      | 5,10                                       | 10                                         | 20                                          | 0                            |
|                            | 10                                         | 5                                          |                                             |                              |
| CA_41C                     | 10                                         | 20                                         | 40                                          | 0                            |
|                            | 15                                         | 15,20                                      |                                             |                              |
|                            | 20                                         | 10,15,20                                   |                                             |                              |
|                            | 5, 10                                      | 20                                         | 40                                          | 1                            |
|                            | 15                                         | 15, 20                                     |                                             |                              |
|                            | 20                                         | 5, 10, 15, 20                              |                                             |                              |
|                            | 10                                         | 15, 20                                     | 40                                          | 2                            |
|                            | 15                                         | 10, 15, 20                                 |                                             |                              |
|                            | 20                                         | 10, 15, 20                                 |                                             |                              |
|                            | 10                                         | 20                                         | 40                                          | 3                            |
|                            | 20                                         | 20                                         |                                             |                              |
| CA_66C                     | 5                                          | 20                                         | 40                                          | 0                            |
|                            | 10                                         | 15, 20                                     |                                             |                              |
|                            | 15                                         | 10, 15, 20                                 |                                             |                              |
|                            | 20                                         | 5, 10, 15, 20                              |                                             |                              |
| CA_2A-2A                   | 5,10,15,20                                 | 5,10,15,20                                 | 40                                          | 0                            |
| CA_4A-4A                   | 5,10,15,20                                 | 5,10,15,20                                 | 40                                          | 0                            |
|                            | 5, 10                                      | 5, 10                                      | 20                                          | 1                            |
| CA_7A-7A                   | 5                                          | 15                                         | 40                                          | 0                            |
|                            | 10                                         | 10,15                                      |                                             |                              |
|                            | 15                                         | 15,20                                      |                                             |                              |
|                            | 20                                         | 20                                         |                                             |                              |
|                            | 5,10,15,20                                 | 5,10,15,20                                 | 40                                          | 1                            |
| CA_25A-25A                 | 5, 10                                      | 5, 10                                      | 20                                          | 0                            |
|                            | 5,10,15,20                                 | 5,10,15,20                                 | 40                                          | 1                            |
| CA_66A-66A                 | 5,10,15,20                                 | 5,10,15,20                                 | 40                                          | 0                            |

**LTE Carrier Aggregation Conducted Power**
**General Note:**

- i. According to KDB941225 D05A v01r02, Uplink maximum output power measurement with downlink carrier aggregation active should be measured, using the highest output channel measured without downlink carrier aggregation, to confirm that uplink maximum output power with downlink carrier aggregation active remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output measured without downlink carrier aggregation active.
- ii. Uplink maximum output power with downlink carrier aggregation active does not show more than ¼ dB higher than the maximum output power without downlink carrier aggregation active, therefore SAR evaluation with downlink carrier aggregation active can be excluded.
- iii. The device supports downlink carrier aggregation only. Uplink carrier aggregation is not supported. For power measurement were control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
- iv. Selected highest measured power when downlink carrier aggregation is inactive for conducted power comparison with downlink carrier aggregation is active, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.
- v. For non-contiguous intra-band CA, the SCC selected to provide maximum separation from the PCC and must remain fully within the downlink transmission band.
- vi. For Inter-band CA, the SCC selected highest bandwidth and near the middle of its transmission band.
- vii. For Intra-band, contiguous CA, the downlink channels selected to perform the uplink power measurement must satisfy 3GPP channel spacing (5.4.1A of 3GPP TS 36.521 or equivalent) and channel bandwidth (5.4.2A) requirements.

$$\text{Nominal channel spacing} = \left\lceil \frac{BW_{\text{Channel}(1)} + BW_{\text{Channel}(2)} - 0.1|BW_{\text{Channel}(1)} - BW_{\text{Channel}(2)}|}{0.6} \right\rceil 0.3 \text{ [MHz]}$$



<At-Head Power Mode>

| Configure  |                | PCC      |          |                |            |      |        | SCC          |          |          |                | Power      |                        |                       |
|------------|----------------|----------|----------|----------------|------------|------|--------|--------------|----------|----------|----------------|------------|------------------------|-----------------------|
|            |                | LTE Band | BW (MHz) | UL Freq. (MHz) | UL Channel | Mod. | UL# RB | UL RB Offset | LTE Band | BW (MHz) | DL Freq. (MHz) | DL Channel | With CA Tx.Power (dBm) | W/O CA Tx.Power (dBm) |
| Inter-Band |                | Band 2   | 20       | 1880           | 18900      | QPSK | 1      | 0            | Band 4   | 20       | 2132.5         | 2175       | 22.53                  | 22.55                 |
|            |                | Band 4   | 10       | 1732.5         | 20175      | QPSK | 1      | 49           | Band 2   | 20       | 1960           | 900        | 22.60                  | 22.66                 |
|            |                | Band 2   | 20       | 1880           | 18900      | QPSK | 1      | 0            | Band 5   | 10       | 881.5          | 2525       | 22.54                  | 22.55                 |
|            |                | Band 5   | 10       | 836.5          | 20525      | QPSK | 1      | 0            | Band 2   | 20       | 1960           | 900        | 22.81                  | 22.85                 |
|            |                | Band 2   | 20       | 1880           | 18900      | QPSK | 1      | 0            | Band 12  | 10       | 737.5          | 5095       | 22.52                  | 22.55                 |
|            |                | Band 12  | 10       | 707.5          | 23095      | QPSK | 1      | 25           | Band 2   | 20       | 1960           | 900        | 22.65                  | 22.69                 |
|            |                | Band 2   | 20       | 1880           | 18900      | QPSK | 1      | 0            | Band 13  | 10       | 751            | 5230       | 22.52                  | 22.55                 |
|            |                | Ban 13   | 10       | 782            | 23230      | QPSK | 1      | 49           | Band 2   | 20       | 1960           | 900        | 23.00                  | 23.00                 |
|            |                | Band 2   | 10       | 1905           | 19150      | QPSK | 1      | 49           | Band 17  | 10       | 740            | 5790       | 22.48                  | 22.50                 |
|            |                | Ban 17   | 5        | 710            | 23790      | QPSK | 1      | 0            | Band 2   | 10       | 1960           | 900        | 22.76                  | 22.77                 |
|            |                | Band 2   | 20       | 1880           | 18900      | QPSK | 1      | 0            | Band 29  | 10       | 722.5          | 9715       | 22.55                  | 22.55                 |
|            |                | Band 2   | 20       | 1880           | 18900      | QPSK | 1      | 0            | Band 66  | 20       | 2145           | 66786      | 22.54                  | 22.55                 |
|            |                | Band 66  | 10       | 1745           | 132322     | QPSK | 1      | 49           | Band 2   | 20       | 1960           | 900        | 23.42                  | 23.48                 |
|            |                | Band 4   | 10       | 1732.5         | 20175      | QPSK | 1      | 49           | Band 5   | 10       | 881.5          | 2525       | 22.61                  | 22.66                 |
|            |                | Band 5   | 10       | 836.5          | 20525      | QPSK | 1      | 0            | Band 4   | 20       | 2132.5         | 2175       | 22.82                  | 22.85                 |
|            |                | Band 4   | 10       | 1732.5         | 20175      | QPSK | 1      | 49           | Band 7   | 20       | 2655           | 3100       | 22.62                  | 22.66                 |
|            |                | Band 7   | 10       | 2565           | 21400      | QPSK | 1      | 49           | Band 4   | 20       | 2132.5         | 2175       | 22.69                  | 22.70                 |
|            |                | Band 4   | 10       | 1732.5         | 20175      | QPSK | 1      | 49           | Band 12  | 10       | 737.5          | 5095       | 22.65                  | 22.66                 |
|            |                | Band 12  | 10       | 707.5          | 23095      | QPSK | 1      | 25           | Band 4   | 20       | 2132.5         | 2175       | 22.63                  | 22.69                 |
|            |                | Band 4   | 10       | 1732.5         | 20175      | QPSK | 1      | 49           | Band 13  | 10       | 751            | 5230       | 22.64                  | 22.66                 |
|            |                | Band 13  | 10       | 782            | 23230      | QPSK | 1      | 49           | Band 4   | 20       | 2132.5         | 2175       | 22.99                  | 23.00                 |
|            |                | Band 4   | 10       | 1732.5         | 20175      | QPSK | 1      | 49           | Band 17  | 10       | 740            | 5790       | 22.66                  | 22.66                 |
|            |                | Band 17  | 5        | 710            | 23790      | QPSK | 1      | 0            | Band 4   | 10       | 2132.5         | 2175       | 22.76                  | 22.77                 |
|            |                | Band 4   | 10       | 1732.5         | 20175      | QPSK | 1      | 49           | Band 29  | 10       | 722.5          | 9715       | 22.64                  | 22.66                 |
|            |                | Band 4   | 10       | 1732.5         | 20175      | QPSK | 1      | 49           | Band 30  | 10       | 2355           | 9820       | 22.63                  | 22.66                 |
|            |                | Band 30  | 10       | 2310           | 27710      | QPSK | 1      | 0            | Band 4   | 20       | 2132.5         | 2175       | 22.83                  | 22.83                 |
|            |                | Band 5   | 10       | 836.5          | 20525      | QPSK | 1      | 0            | Band 7   | 20       | 2655           | 3100       | 22.84                  | 22.85                 |
|            |                | Band 7   | 10       | 2565           | 21400      | QPSK | 1      | 49           | Band 5   | 10       | 881.5          | 2525       | 22.69                  | 22.70                 |
|            |                | Band 5   | 10       | 836.5          | 20525      | QPSK | 1      | 0            | Band 30  | 10       | 2355           | 9820       | 22.81                  | 22.85                 |
|            |                | Band 30  | 10       | 2310           | 27710      | QPSK | 1      | 0            | Band 5   | 10       | 881.5          | 2525       | 22.80                  | 22.83                 |
|            |                | Band 5   | 10       | 836.5          | 20525      | QPSK | 1      | 0            | Band 66  | 20       | 2145           | 66786      | 22.80                  | 22.85                 |
|            |                | Band 66  | 10       | 1745           | 132322     | QPSK | 1      | 49           | Band 5   | 10       | 881.5          | 2525       | 23.45                  | 23.48                 |
|            |                | Band 12  | 10       | 707.5          | 23095      | QPSK | 1      | 25           | Band 30  | 10       | 2355           | 9820       | 22.67                  | 22.69                 |
|            |                | Band 30  | 10       | 2310           | 27710      | QPSK | 1      | 0            | Band 12  | 10       | 737.5          | 5095       | 22.81                  | 22.83                 |
|            |                | Band 12  | 10       | 707.5          | 23095      | QPSK | 1      | 25           | Band 66  | 20       | 2145           | 66786      | 22.65                  | 22.69                 |
|            |                | Band 66  | 10       | 1745           | 132322     | QPSK | 1      | 49           | Band 12  | 10       | 737.5          | 5095       | 23.44                  | 23.48                 |
|            |                | Band 13  | 10       | 782            | 23230      | QPSK | 1      | 49           | Band 66  | 20       | 2145           | 66786      | 22.98                  | 23.00                 |
|            |                | Band 66  | 10       | 1745           | 132322     | QPSK | 1      | 49           | Band 13  | 10       | 751            | 5230       | 23.46                  | 23.48                 |
|            |                | Band 30  | 10       | 2310           | 27710      | QPSK | 1      | 0            | Band 29  | 10       | 722.5          | 9715       | 22.80                  | 22.83                 |
|            |                | Band 66  | 10       | 1745           | 132322     | QPSK | 1      | 49           | Band 29  | 10       | 722.5          | 9715       | 23.47                  | 23.48                 |
| Intra-Band | Non-Contiguous | Band 2   | 20       | 1880           | 18900      | QPSK | 1      | 0            | Band 2   | 5        | 1987.5         | 1175       | 22.51                  | 22.55                 |
|            |                | Band 4   | 10       | 1732.5         | 20175      | QPSK | 1      | 49           | Band 4   | 5        | 2152.5         | 2375       | 22.64                  | 22.66                 |
|            |                | Band 7   | 10       | 2565           | 21400      | QPSK | 1      | 49           | Band 7   | 5        | 2622.5         | 2775       | 22.68                  | 22.70                 |
|            |                | Band 25  | 10       | 1910           | 26640      | QPSK | 1      | 49           | Band 25  | 5        | 1932.5         | 8065       | 22.79                  | 22.80                 |
|            |                | Band 66  | 10       | 1745           | 132322     | QPSK | 1      | 49           | Band 66  | 5        | 2177.5         | 67111      | 23.45                  | 23.48                 |
|            | Contiguous     | Band 5   | 10       | 836.5          | 20525      | QPSK | 1      | 0            | Band 5   | 10       | 891.4          | 2624       | 22.80                  | 22.85                 |
|            |                | Band 41  | 10       | 2593           | 40620      | QPSK | 1      | 49           | Band 41  | 20       | 2607.4         | 40764      | 22.75                  | 22.79                 |
|            | Band 66        | 10       | 1745     | 132322         | QPSK       | 1    | 49     | Band 66      | 20       | 2159.4   | 66930          | 23.43      | 23.48                  |                       |



**<Near-Body and Hotspot Power Mode>**

| Configure  |                | PCC      |          |                |            |       |        | SCC          |          |       |          | Power      |                        |                       |
|------------|----------------|----------|----------|----------------|------------|-------|--------|--------------|----------|-------|----------|------------|------------------------|-----------------------|
|            |                | LTE Band | BW (MHz) | UL Freq. (MHz) | UL Channel | Mod.  | UL# RB | UL RB Offset | LTE Band | BW    | DL Freq. | DL Channel | With CA Tx.Power (dBm) | W/O CA Tx.Power (dBm) |
|            |                |          |          |                |            |       |        |              |          | (MHz) | (MHz)    |            |                        |                       |
| Inter-Band |                | Band 2   | 20       | 1880           | 18900      | QPSK  | 1      | 0            | Band 4   | 20    | 2132.5   | 2175       | 20.22                  | 20.23                 |
|            |                | Band 4   | 20       | 1732.5         | 20175      | QPSK  | 1      | 0            | Band 2   | 20    | 1960     | 900        | 19.55                  | 19.58                 |
|            |                | Band 2   | 20       | 1880           | 18900      | QPSK  | 1      | 0            | Band 5   | 10    | 881.5    | 2525       | 20.21                  | 20.23                 |
|            |                | Band 5   | 10       | 836.5          | 20525      | QPSK  | 1      | 0            | Band 2   | 20    | 1960     | 900        | 21.25                  | 21.28                 |
|            |                | Band 2   | 20       | 1880           | 18900      | QPSK  | 1      | 0            | Band 12  | 10    | 737.5    | 5095       | 20.20                  | 20.23                 |
|            |                | Band 12  | 10       | 707.5          | 23095      | QPSK  | 1      | 25           | Band 2   | 20    | 1960     | 900        | 21.05                  | 21.08                 |
|            |                | Band 2   | 20       | 1880           | 18900      | QPSK  | 1      | 0            | Band 13  | 10    | 751      | 5230       | 20.19                  | 20.23                 |
|            |                | Ban 13   | 10       | 782            | 23230      | QPSK  | 1      | 0            | Band 2   | 20    | 1960     | 900        | 21.60                  | 21.63                 |
|            |                | Band 2   | 10       | 1880           | 18900      | 16QAM | 1      | 0            | Band 17  | 10    | 740      | 5790       | 20.07                  | 20.08                 |
|            |                | Ban 17   | 10       | 710            | 23790      | QPSK  | 1      | 25           | Band 2   | 10    | 1960     | 900        | 20.98                  | 20.98                 |
|            |                | Band 2   | 20       | 1880           | 18900      | QPSK  | 1      | 0            | Band 29  | 10    | 722.5    | 9715       | 20.22                  | 20.23                 |
|            |                | Band 2   | 20       | 1880           | 18900      | QPSK  | 1      | 0            | Band 66  | 20    | 2145     | 66786      | 20.20                  | 20.23                 |
|            |                | Band 66  | 20       | 1770           | 132572     | QPSK  | 1      | 99           | Band 2   | 20    | 1960     | 900        | 20.95                  | 20.99                 |
|            |                | Band 4   | 20       | 1732.5         | 20175      | QPSK  | 1      | 0            | Band 5   | 10    | 881.5    | 2525       | 19.50                  | 19.58                 |
|            |                | Band 5   | 10       | 836.5          | 20525      | QPSK  | 1      | 0            | Band 4   | 20    | 2132.5   | 2175       | 21.24                  | 21.28                 |
|            |                | Band 4   | 20       | 1732.5         | 20175      | QPSK  | 1      | 0            | Band 7   | 20    | 2655     | 3100       | 19.55                  | 19.58                 |
|            |                | Band 7   | 20       | 2560           | 21350      | QPSK  | 1      | 99           | Band 4   | 20    | 2132.5   | 2175       | 21.80                  | 21.81                 |
|            |                | Band 4   | 20       | 1732.5         | 20175      | QPSK  | 1      | 0            | Band 12  | 10    | 737.5    | 5095       | 19.56                  | 19.58                 |
|            |                | Band 12  | 10       | 707.5          | 23095      | QPSK  | 1      | 25           | Band 4   | 20    | 2132.5   | 2175       | 21.06                  | 21.08                 |
|            |                | Band 4   | 20       | 1732.5         | 20175      | QPSK  | 1      | 0            | Band 13  | 10    | 751      | 5230       | 19.50                  | 19.58                 |
|            |                | Band 13  | 10       | 782            | 23230      | QPSK  | 1      | 0            | Band 4   | 20    | 2132.5   | 2175       | 21.60                  | 21.63                 |
|            |                | Band 4   | 10       | 1732.5         | 20175      | 16QAM | 1      | 25           | Band 17  | 10    | 740      | 5790       | 19.51                  | 19.54                 |
|            |                | Band 17  | 10       | 710            | 23790      | QPSK  | 1      | 25           | Band 4   | 10    | 2132.5   | 2175       | 20.98                  | 20.98                 |
|            |                | Band 4   | 20       | 1732.5         | 20175      | QPSK  | 1      | 0            | Band 29  | 10    | 722.5    | 9715       | 19.53                  | 19.58                 |
|            |                | Band 4   | 20       | 1732.5         | 20175      | QPSK  | 1      | 0            | Band 30  | 10    | 2355     | 9820       | 19.54                  | 19.58                 |
|            |                | Band 30  | 10       | 2310           | 27710      | QPSK  | 1      | 49           | Band 4   | 20    | 2132.5   | 2175       | 21.05                  | 21.06                 |
|            |                | Band 5   | 10       | 836.5          | 20525      | QPSK  | 1      | 0            | Band 7   | 20    | 2655     | 3100       | 21.27                  | 21.28                 |
|            |                | Band 7   | 20       | 2560           | 21350      | QPSK  | 1      | 99           | Band 5   | 10    | 881.5    | 2525       | 21.80                  | 21.81                 |
|            |                | Band 5   | 10       | 836.5          | 20525      | QPSK  | 1      | 0            | Band 30  | 10    | 2355     | 9820       | 21.28                  | 21.28                 |
|            |                | Band 30  | 10       | 2310           | 27710      | QPSK  | 1      | 49           | Band 5   | 10    | 881.5    | 2525       | 21.00                  | 21.06                 |
|            |                | Band 5   | 10       | 836.5          | 20525      | QPSK  | 1      | 0            | Band 66  | 20    | 2145     | 66786      | 21.25                  | 21.28                 |
|            |                | Band 66  | 20       | 1770           | 132572     | QPSK  | 1      | 99           | Band 5   | 10    | 881.5    | 2525       | 20.95                  | 20.99                 |
|            |                | Band 12  | 10       | 707.5          | 23095      | QPSK  | 1      | 25           | Band 30  | 10    | 2355     | 9820       | 21.05                  | 21.08                 |
|            |                | Band 30  | 10       | 2310           | 27710      | QPSK  | 1      | 49           | Band 12  | 10    | 737.5    | 5095       | 21.05                  | 21.06                 |
|            |                | Band 12  | 10       | 707.5          | 23095      | QPSK  | 1      | 25           | Band 66  | 20    | 2145     | 66786      | 21.07                  | 21.08                 |
|            |                | Band 66  | 20       | 1770           | 132572     | QPSK  | 1      | 99           | Band 12  | 10    | 737.5    | 5095       | 20.98                  | 20.99                 |
|            |                | Band 13  | 10       | 782            | 23230      | QPSK  | 1      | 0            | Band 66  | 20    | 2145     | 66786      | 21.60                  | 21.63                 |
|            |                | Band 66  | 20       | 1770           | 132572     | QPSK  | 1      | 99           | Band 13  | 10    | 751      | 5230       | 20.96                  | 20.99                 |
|            |                | Band 30  | 10       | 2310           | 27710      | QPSK  | 1      | 49           | Band 29  | 10    | 722.5    | 9715       | 21.00                  | 21.06                 |
|            |                | Band 66  | 20       | 1770           | 132572     | QPSK  | 1      | 99           | Band 29  | 10    | 722.5    | 9715       | 20.97                  | 20.99                 |
| Intra-Band | Non-Contiguous | Band 2   | 20       | 1880           | 18900      | QPSK  | 1      | 0            | Band 2   | 5     | 1987.5   | 1175       | 20.20                  | 20.23                 |
|            |                | Band 4   | 20       | 1732.5         | 20175      | QPSK  | 1      | 0            | Band 4   | 5     | 2152.5   | 2375       | 19.53                  | 19.58                 |
|            |                | Band 7   | 20       | 2560           | 21350      | QPSK  | 1      | 99           | Band 7   | 5     | 2622.5   | 2775       | 21.78                  | 21.81                 |
|            |                | Band 25  | 20       | 1880           | 26340      | QPSK  | 1      | 49           | Band 25  | 5     | 1992.5   | 8665       | 19.85                  | 19.86                 |
|            |                | Band 66  | 20       | 1770           | 132572     | QPSK  | 1      | 99           | Band 66  | 5     | 2112.5   | 66461      | 20.98                  | 20.99                 |
|            | Contiguous     | Band 5   | 10       | 836.5          | 20525      | QPSK  | 1      | 0            | Band 5   | 10    | 891.4    | 2624       | 21.22                  | 21.28                 |
|            |                | Band 66  | 20       | 1770           | 132572     | QPSK  | 1      | 99           | Band 66  | 20    | 2150.2   | 66838      | 20.96                  | 20.99                 |



**<Default Power Mode>**

| Configure  |                | PCC      |          |                |            |       |        | SCC          |          |       |          | Power      |                        |                       |
|------------|----------------|----------|----------|----------------|------------|-------|--------|--------------|----------|-------|----------|------------|------------------------|-----------------------|
|            |                | LTE Band | BW (MHz) | UL Freq. (MHz) | UL Channel | Mod.  | UL# RB | UL RB Offset | LTE Band | BW    | DL Freq. | DL Channel | With CA Tx.Power (dBm) | W/O CA Tx.Power (dBm) |
|            |                |          |          |                |            |       |        |              |          | (MHz) | (MHz)    |            |                        |                       |
| Inter-Band |                | Band 2   | 20       | 1900           | 19100      | QPSK  | 50     | 0            | Band 4   | 20    | 2132.5   | 2175       | 21.18                  | 21.20                 |
|            |                | Band 4   | 20       | 1732.5         | 20175      | QPSK  | 50     | 0            | Band 2   | 20    | 1960     | 900        | 21.00                  | 21.02                 |
|            |                | Band 2   | 20       | 1900           | 19100      | QPSK  | 50     | 0            | Band 5   | 10    | 881.5    | 2525       | 21.17                  | 21.20                 |
|            |                | Band 2   | 20       | 1900           | 19100      | QPSK  | 50     | 0            | Band 12  | 10    | 737.5    | 5095       | 21.18                  | 21.20                 |
|            |                | Band 2   | 20       | 1900           | 19100      | QPSK  | 50     | 0            | Band 13  | 10    | 751      | 5230       | 21.19                  | 21.20                 |
|            |                | Band 2   | 10       | 1905           | 19150      | 16QAM | 1      | 0            | Band 17  | 10    | 740      | 5790       | 21.15                  | 21.17                 |
|            |                | Band 2   | 20       | 1900           | 19100      | QPSK  | 50     | 0            | Band 29  | 10    | 722.5    | 9715       | 21.19                  | 21.20                 |
|            |                | Band 2   | 20       | 1900           | 19100      | QPSK  | 50     | 0            | Band 66  | 20    | 2145     | 66786      | 21.17                  | 21.20                 |
|            |                | Band 66  | 20       | 1770           | 132572     | QPSK  | 1      | 99           | Band 2   | 20    | 1960     | 900        | 22.50                  | 22.57                 |
|            |                | Band 4   | 20       | 1732.5         | 20175      | QPSK  | 50     | 0            | Band 5   | 10    | 881.5    | 2525       | 21.00                  | 21.02                 |
|            |                | Band 4   | 20       | 1732.5         | 20175      | QPSK  | 50     | 0            | Band 7   | 20    | 2655     | 3100       | 21.01                  | 21.02                 |
|            |                | Band 7   | 10       | 2565           | 21400      | QPSK  | 1      | 0            | Band 4   | 20    | 2132.5   | 2175       | 22.34                  | 22.36                 |
|            |                | Band 4   | 20       | 1732.5         | 20175      | QPSK  | 50     | 0            | Band 12  | 10    | 737.5    | 5095       | 20.99                  | 21.02                 |
|            |                | Band 4   | 20       | 1732.5         | 20175      | QPSK  | 50     | 0            | Band 13  | 10    | 751      | 5230       | 20.98                  | 21.02                 |
|            |                | Band 4   | 10       | 1715           | 20000      | QPSK  | 1      | 49           | Band 17  | 10    | 740      | 5790       | 20.99                  | 21.01                 |
|            |                | Band 4   | 20       | 1732.5         | 20175      | QPSK  | 50     | 0            | Band 29  | 10    | 722.5    | 9715       | 21.00                  | 21.02                 |
|            |                | Band 4   | 20       | 1732.5         | 20175      | QPSK  | 50     | 0            | Band 30  | 10    | 2355     | 9820       | 21.02                  | 21.02                 |
|            |                | Band 30  | 10       | 2310           | 27710      | QPSK  | 1      | 49           | Band 4   | 20    | 2132.5   | 2175       | 22.15                  | 22.16                 |
|            |                | Band 7   | 10       | 2565           | 21400      | QPSK  | 1      | 0            | Band 5   | 10    | 881.5    | 2525       | 22.30                  | 22.36                 |
|            |                | Band 30  | 10       | 2310           | 27710      | QPSK  | 1      | 49           | Band 5   | 10    | 881.5    | 2525       | 22.11                  | 22.16                 |
|            |                | Band 66  | 20       | 1770           | 132572     | QPSK  | 1      | 99           | Band 5   | 10    | 881.5    | 2525       | 22.54                  | 22.57                 |
|            |                | Band 30  | 10       | 2310           | 27710      | QPSK  | 1      | 49           | Band 12  | 10    | 737.5    | 5095       | 22.12                  | 22.16                 |
|            |                | Band 66  | 20       | 1770           | 132572     | QPSK  | 1      | 99           | Band 12  | 10    | 737.5    | 5095       | 22.54                  | 22.57                 |
|            |                | Band 66  | 20       | 1770           | 132572     | QPSK  | 1      | 99           | Band 13  | 10    | 751      | 5230       | 22.56                  | 22.57                 |
|            |                | Band 30  | 10       | 2310           | 27710      | QPSK  | 1      | 49           | Band 29  | 10    | 722.5    | 9715       | 22.13                  | 22.16                 |
|            |                | Band 66  | 20       | 1770           | 132572     | QPSK  | 1      | 99           | Band 29  | 10    | 722.5    | 9715       | 22.55                  | 22.57                 |
| Intra-Band | Non-Contiguous | Band 2   | 20       | 1900           | 19100      | QPSK  | 50     | 0            | Band 2   | 5     | 1932.5   | 625        | 21.15                  | 21.20                 |
|            |                | Band 4   | 20       | 1732.5         | 20175      | QPSK  | 50     | 0            | Band 4   | 5     | 2152.5   | 2375       | 21.00                  | 21.02                 |
|            |                | Band 7   | 10       | 2565           | 21400      | QPSK  | 1      | 0            | Band 7   | 5     | 2622.5   | 2775       | 22.31                  | 22.36                 |
|            |                | Band 25  | 20       | 1880           | 26340      | QPSK  | 50     | 0            | Band 25  | 5     | 1932.5   | 8065       | 20.61                  | 20.68                 |
|            |                | Band 66  | 20       | 1770           | 132572     | QPSK  | 1      | 99           | Band 66  | 5     | 2112.5   | 66461      | 20.55                  | 22.57                 |
|            | Contiguous     | Band 66  | 20       | 1770           | 132572     | QPSK  | 1      | 99           | Band 66  | 20    | 2159.4   | 66930      | 22.55                  | 22.57                 |

**<WLAN Conducted Power>****General Note:**

1. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
2. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
3. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
4. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.<sup>18</sup> The initial test position procedure is described in the following:
  - a. When the reported SAR of the initial test position is  $\leq 0.4$  W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
  - b. When the reported SAR of the test position is  $> 0.4$  W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is  $\leq 0.8$  W/kg or all required test position are tested.
  - c. For all positions/configurations, when the reported SAR is  $> 0.8$  W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is  $\leq 1.2$  W/kg or all required channels are tested.

**<Default Power Mode>**
**<2.4GHz WLAN>**

|             | Mode              | Channel | Frequency (MHz) | Average power (dBm) | Tune-Up Limit | Duty Cycle % |
|-------------|-------------------|---------|-----------------|---------------------|---------------|--------------|
| 2.4GHz WLAN | 802.11b 1Mbps     | CH 1    | 2412            | 17.90               | 18.00         | 97.63        |
|             |                   | CH 6    | 2437            | 18.63               | 19.00         |              |
|             |                   | CH 11   | 2462            | 17.51               | 18.00         |              |
|             | 802.11g 6Mbps     | CH 1    | 2412            | 14.31               | 14.50         | 87.18        |
|             |                   | CH 6    | 2437            | 17.72               | 18.00         |              |
|             |                   | CH 11   | 2462            | 12.71               | 13.00         |              |
|             | 802.11n-HT20 MCS0 | CH 1    | 2412            | 13.55               | 14.00         | 85.81        |
|             |                   | CH 6    | 2437            | 16.21               | 16.50         |              |
|             |                   | CH 11   | 2462            | 11.74               | 12.00         |              |

**<5GHz WLAN>**

|             | Mode              | Channel | Frequency (MHz) | Average power (dBm) | Tune-Up Limit | Duty Cycle % |
|-------------|-------------------|---------|-----------------|---------------------|---------------|--------------|
| 5.2GHz WLAN | 802.11a 6Mbps     | CH 36   | 5180            | 18.91               | 19.00         | 86.92        |
|             |                   | CH 40   | 5200            | 19.45               | 19.70         |              |
|             |                   | CH 44   | 5220            | 19.46               | 19.70         |              |
|             |                   | CH 48   | 5240            | 19.21               | 19.70         |              |
|             | 802.11n-HT20 MCS0 | CH 36   | 5180            | 18.56               | 19.00         | 85.91        |
|             |                   | CH 40   | 5200            | 19.52               | 19.70         |              |
|             |                   | CH 44   | 5220            | 19.56               | 19.70         |              |
|             |                   | CH 48   | 5240            | 19.21               | 19.70         |              |
|             | 802.11n-HT40 MCS0 | CH 38   | 5190            | 14.05               | 14.50         | 85.14        |
|             |                   | CH 46   | 5230            | 20.08               | 20.50         |              |

|             | Mode              | Channel | Frequency (MHz) | Average power (dBm) | Tune-Up Limit | Duty Cycle % |
|-------------|-------------------|---------|-----------------|---------------------|---------------|--------------|
| 5.3GHz WLAN | 802.11a 6Mbps     | CH 52   | 5260            | 19.06               | 19.70         | 86.92        |
|             |                   | CH 56   | 5280            | 19.00               | 19.70         |              |
|             |                   | CH 60   | 5300            | 18.86               | 19.70         |              |
|             |                   | CH 64   | 5320            | 18.36               | 18.50         |              |
|             | 802.11n-HT20 MCS0 | CH 52   | 5260            | 19.19               | 19.70         | 85.91        |
|             |                   | CH 56   | 5280            | 19.00               | 19.70         |              |
|             |                   | CH 60   | 5300            | 19.04               | 19.70         |              |
|             |                   | CH 64   | 5320            | 17.93               | 18.50         |              |
|             | 802.11n-HT40 MCS0 | CH 54   | 5270            | 19.66               | 19.70         | 85.14        |
|             |                   | CH 62   | 5310            | 13.42               | 13.50         |              |

|             | Mode              | Channel | Frequency (MHz) | Average power (dBm) | Tune-Up Limit | Duty Cycle % |
|-------------|-------------------|---------|-----------------|---------------------|---------------|--------------|
| 5.5GHz WLAN | 802.11a 6Mbps     | CH 100  | 5500            | 18.05               | 19.20         | 86.92        |
|             |                   | CH 116  | 5580            | 18.23               | 19.20         |              |
|             |                   | CH 124  | 5620            | 18.26               | 19.20         |              |
|             |                   | CH 132  | 5660            | 18.36               | 19.20         |              |
|             |                   | CH 140  | 5700            | 18.67               | 19.20         |              |
|             |                   | CH 144  | 5720            | 18.59               | 19.20         |              |
|             | 802.11n-HT20 MCS0 | CH 100  | 5500            | 18.13               | 19.20         | 85.91        |
|             |                   | CH 116  | 5580            | 18.15               | 19.20         |              |
|             |                   | CH 124  | 5620            | 18.20               | 19.20         |              |
|             |                   | CH 132  | 5660            | 18.05               | 19.20         |              |
|             |                   | CH 140  | 5700            | 18.16               | 19.20         |              |
|             |                   | CH 144  | 5720            | 18.04               | 19.20         |              |
|             | 802.11n-HT40 MCS0 | CH 102  | 5510            | 15.85               | 16.00         | 85.14        |
|             |                   | CH 110  | 5550            | 18.87               | 19.20         |              |
|             |                   | CH 126  | 5630            | 18.80               | 19.20         |              |
|             |                   | CH 134  | 5670            | 18.35               | 19.20         |              |
|             |                   | CH 142  | 5710            | 18.30               | 19.20         |              |

|             | Mode              | Channel | Frequency (MHz) | Average power (dBm) | Tune-Up Limit | Duty Cycle % |
|-------------|-------------------|---------|-----------------|---------------------|---------------|--------------|
| 5.8GHz WLAN | 802.11a MCS0      | CH 149  | 5745            | 18.42               | 19.00         | 86.92        |
|             |                   | CH 157  | 5785            | 18.61               | 19.00         |              |
|             |                   | CH 165  | 5825            | 18.36               | 19.00         |              |
|             | 802.11n-HT20 MCS0 | CH 149  | 5745            | 18.07               | 19.00         | 85.91        |
|             |                   | CH 157  | 5785            | 18.20               | 19.00         |              |
|             |                   | CH 165  | 5825            | 18.11               | 19.00         |              |
|             | 802.11n-HT40 MCS0 | CH 151  | 5755            | 16.59               | 17.00         | 85.14        |
|             |                   | CH 159  | 5795            | 18.50               | 19.00         |              |

**<At-Head Power Mode>**
**<2.4GHz WLAN>**

|             | Mode              | Channel | Frequency (MHz) | Average power (dBm) | Tune-Up Limit | Duty Cycle % |
|-------------|-------------------|---------|-----------------|---------------------|---------------|--------------|
| 2.4GHz WLAN | 802.11b 1Mbps     | 1       | 2412            | 15.92               | 16.00         | 97.63        |
|             |                   | 6       | 2437            | 15.60               | 16.00         |              |
|             |                   | 11      | 2462            | 15.70               | 16.00         |              |
|             | 802.11g 6Mbps     | 1       | 2412            | 14.31               | 14.50         | 87.18        |
|             |                   | 6       | 2437            | 15.82               | 16.00         |              |
|             |                   | 11      | 2462            | 12.71               | 13.00         |              |
|             | 802.11n-HT20 MCS0 | 1       | 2412            | 13.55               | 14.00         | 85.81        |
|             |                   | 6       | 2437            | 15.81               | 16.00         |              |
|             |                   | 11      | 2462            | 11.74               | 12.00         |              |

**<5GHz WLAN>**

|             | Mode              | Channel | Frequency (MHz) | Average power (dBm) | Tune-Up Limit | Duty Cycle % |
|-------------|-------------------|---------|-----------------|---------------------|---------------|--------------|
| 5.2GHz WLAN | 802.11a 6Mbps     | 36      | 5180            | 15.05               | 15.50         | 86.92        |
|             |                   | 40      | 5200            | 15.03               | 15.50         |              |
|             |                   | 44      | 5220            | 15.02               | 15.50         |              |
|             |                   | 48      | 5240            | 15.37               | 15.50         |              |
|             | 802.11n-HT20 MCS0 | 36      | 5180            | 15.43               | 15.50         | 85.91        |
|             |                   | 40      | 5200            | 15.12               | 15.50         |              |
|             |                   | 44      | 5220            | 15.02               | 15.50         |              |
|             |                   | 48      | 5240            | 15.41               | 15.50         |              |
|             | 802.11n-HT40 MCS0 | 38      | 5190            | 14.05               | 14.50         | 85.14        |
|             |                   | 46      | 5230            | 15.35               | 15.50         |              |

|             | Mode              | Channel | Frequency (MHz) | Average power (dBm) | Tune-Up Limit | Duty Cycle % |
|-------------|-------------------|---------|-----------------|---------------------|---------------|--------------|
| 5.3GHz WLAN | 802.11a 6Mbps     | 52      | 5260            | 15.01               | 15.50         | 86.92        |
|             |                   | 56      | 5280            | 15.06               | 15.50         |              |
|             |                   | 60      | 5300            | 15.17               | 15.50         |              |
|             |                   | 64      | 5320            | 15.46               | 15.50         |              |
|             | 802.11n-HT20 MCS0 | 52      | 5260            | 15.26               | 15.50         | 85.91        |
|             |                   | 56      | 5280            | 15.27               | 15.50         |              |
|             |                   | 60      | 5300            | 15.34               | 15.50         |              |
|             |                   | 64      | 5320            | 15.11               | 15.50         |              |
|             | 802.11n-HT40 MCS0 | 54      | 5270            | 15.31               | 15.50         | 85.14        |
|             |                   | 62      | 5310            | 13.42               | 13.50         |              |

|             | Mode              | Channel | Frequency (MHz) | Average power (dBm) | Tune-Up Limit | Duty Cycle % |
|-------------|-------------------|---------|-----------------|---------------------|---------------|--------------|
| 5.5GHz WLAN | 802.11a 6Mbps     | 100     | 5500            | 15.39               | 15.50         | 86.92        |
|             |                   | 116     | 5580            | 15.16               | 15.50         |              |
|             |                   | 124     | 5620            | 15.20               | 15.50         |              |
|             |                   | 132     | 5660            | 15.15               | 15.50         |              |
|             |                   | 140     | 5700            | 15.42               | 15.50         |              |
|             |                   | 144     | 5720            | 15.43               | 15.50         |              |
|             | 802.11n-HT20 MCS0 | 100     | 5500            | 15.44               | 15.50         | 85.91        |
|             |                   | 116     | 5580            | 15.01               | 15.50         |              |
|             |                   | 124     | 5620            | 15.15               | 15.50         |              |
|             |                   | 132     | 5660            | 15.17               | 15.50         |              |
|             |                   | 140     | 5700            | 15.49               | 15.50         |              |
|             |                   | 144     | 5720            | 15.40               | 15.50         |              |
|             | 802.11n-HT40 MCS0 | 102     | 5510            | 15.27               | 15.50         | 85.14        |
|             |                   | 110     | 5550            | 15.01               | 15.50         |              |
|             |                   | 126     | 5630            | 15.22               | 15.50         |              |
|             |                   | 134     | 5670            | 15.46               | 15.50         |              |
|             |                   | 142     | 5710            | 15.25               | 15.50         |              |

|             | Mode              | Channel | Frequency (MHz) | Average power (dBm) | Tune-Up Limit | Duty Cycle % |
|-------------|-------------------|---------|-----------------|---------------------|---------------|--------------|
| 5.8GHz WLAN | 802.11a 6Mbps     | 149     | 5745            | 15.45               | 15.50         | 86.92        |
|             |                   | 157     | 5785            | 15.36               | 15.50         |              |
|             |                   | 165     | 5825            | 15.16               | 15.50         |              |
|             | 802.11n-HT20 MCS0 | 149     | 5745            | 15.36               | 15.50         | 85.91        |
|             |                   | 157     | 5785            | 15.26               | 15.50         |              |
|             |                   | 165     | 5825            | 15.25               | 15.50         |              |
|             | 802.11n-HT40 MCS0 | 151     | 5755            | 15.31               | 15.50         | 85.14        |
|             |                   | 159     | 5795            | 15.38               | 15.50         |              |

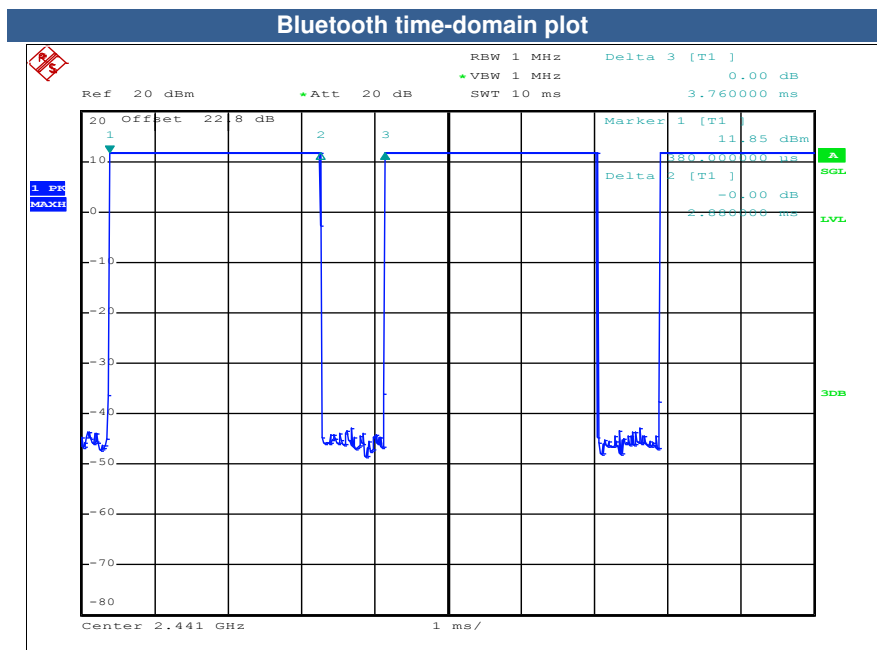
**<2.4GHz Bluetooth>**

| Mode          | Channel | Frequency (MHz) | Average power (dBm) |       |       |
|---------------|---------|-----------------|---------------------|-------|-------|
|               |         |                 | 1Mbps               | 2Mbps | 3Mbps |
| BR / EDR      | CH 00   | 2402            | 11.36               | 9.27  | 9.28  |
|               | CH 39   | 2441            | 11.96               | 9.94  | 9.97  |
|               | CH 78   | 2480            | 8.75                | 6.60  | 6.66  |
| Tune-up Limit | CH 00   | 2402            | 11.5                | 9.5   | 9.5   |
|               | CH 39   | 2441            | 12                  | 10    | 10    |
|               | CH 78   | 2480            | 9                   | 7     | 7     |

| Mode          | Channel | Frequency (MHz) | Average power (dBm) |  |
|---------------|---------|-----------------|---------------------|--|
|               |         |                 | GFSK                |  |
| LE            | CH 00   | 2402            | 7.10                |  |
|               | CH 19   | 2440            | 7.86                |  |
|               | CH 39   | 2480            | 4.80                |  |
| Tune-up Limit | CH 00   | 2402            | 7.5                 |  |
|               | CH 19   | 2440            | 8                   |  |
|               | CH 39   | 2480            | 5                   |  |

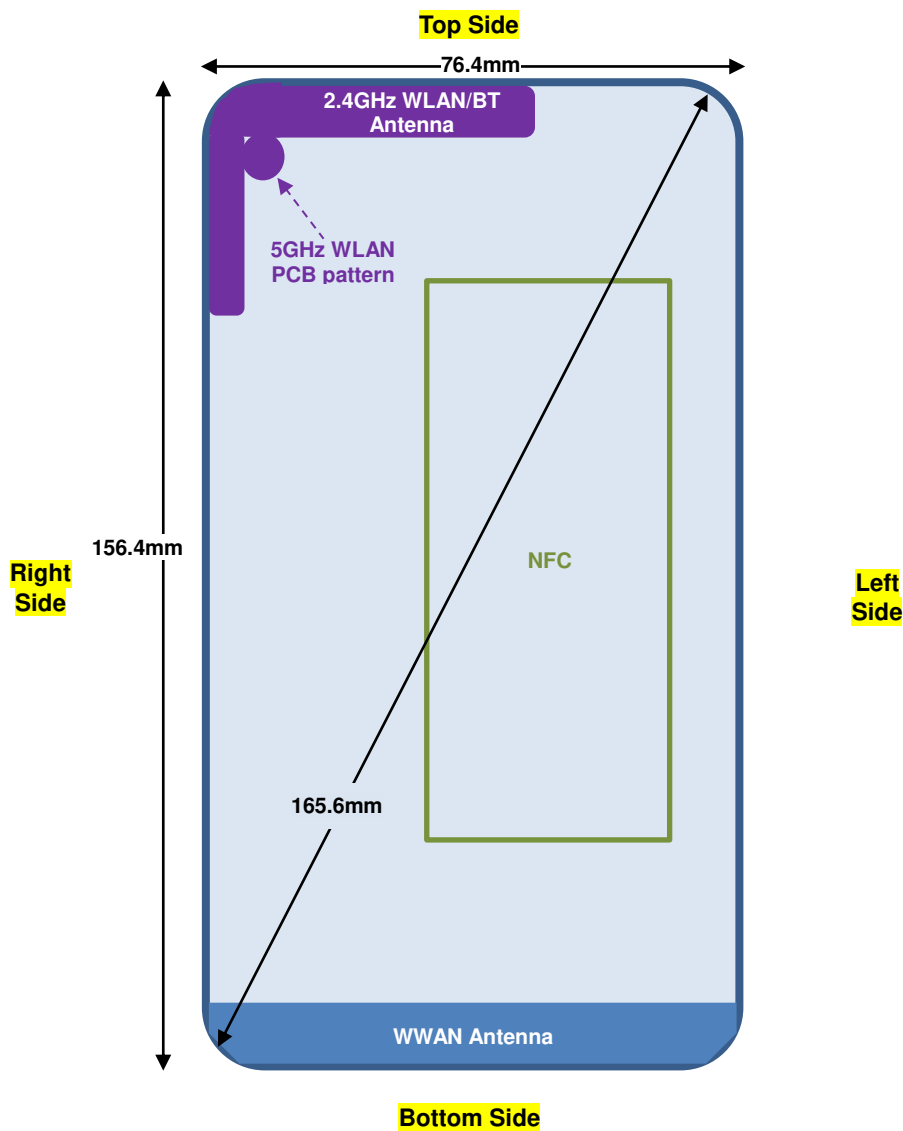
**General Note:**

- For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
- The Bluetooth duty cycle is 76.6% as following figure, according to 2016 Oct. TCB workshop for Bluetooth SAR scaling need further consideration and the theoretical duty cycle is 83.3%, therefore the actual duty cycle will be scaled up to the theoretical value of Bluetooth reported SAR calculation



### 13. Antenna Location

<Mobile Phone>



**Back View**

| Distance of the Antenna to the EUT surface/edge |        |        |          |             |            |           |
|-------------------------------------------------|--------|--------|----------|-------------|------------|-----------|
| Antennas                                        | Back   | Front  | Top Side | Bottom Side | Right Side | Left Side |
| WWAN Main                                       | ≤ 25mm | ≤ 25mm | >25mm    | ≤ 25mm      | ≤ 25mm     | ≤ 25mm    |
| BT&WLAN                                         | ≤ 25mm | ≤ 25mm | ≤ 25mm   | >25mm       | ≤ 25mm     | ≤ 25mm    |

| Positions for SAR tests; Hotspot mode |      |       |          |             |            |           |
|---------------------------------------|------|-------|----------|-------------|------------|-----------|
| Antennas                              | Back | Front | Top Side | Bottom Side | Right Side | Left Side |
| WWAN Main                             | Yes  | Yes   | No       | Yes         | Yes        | Yes       |
| BT&WLAN                               | Yes  | Yes   | Yes      | No          | Yes        | Yes       |

**General Note:**

- Referring to KDB 941225 D06 v02r01, when the overall device length and width are  $\geq 9\text{cm} \times 5\text{cm}$ , the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge

## 14. SAR Test Results

### General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
  - a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
  - b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
  - c. For WWAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)\*Tune-up Scaling Factor
  - d. For WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)\* Duty Cycle scaling factor \* Tune-up scaling factor
  - e. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix  $63.3\%/62.9\% = 1.006$  is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg) \* Tune-up Scaling Factor\* scaling factor for extended cyclic prefix.
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
  - $\leq 0.8$  W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is  $\leq 100$  MHz
  - $\leq 0.6$  W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
  - $\leq 0.4$  W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is  $\geq 200$  MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is  $\geq 0.8$ W/kg.
4. Per KDB 648474 D04v01r03, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is  $\leq 1.2$  W/kg, SAR testing with a headset connected to the handset is not required.
5. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension  $> 15.0$  cm or an overall diagonal dimension  $> 16.0$  cm, when hotspot mode applies, 10-g Product Specific SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR  $> 1.2$  W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold, for this device bottom side of UMTS B2,CDMA BC1, LTE B2 / B4 / B25 / B30 /B66 and left side of UMTS B5,CDMA BC10, LTE B12 / B13 / B17 SAR for WWAN transmitter scaled to maximum output power is higher than 1.2W/kg, therefore product specific SAR is necessary.
6. For 5.3GHz / 5.5GHz WLAN product specific SAR is necessary, due to an overall diagonal dimension is  $> 16$ cm.
7. According to TCB workshop October 2016, when the highest reported SAR of an antenna is  $> 1.2$  W/kg, holder perturbation verification is required for each antenna, using the highest SAR configuration among all applicable frequency bands; however for the SAR measurement was used a low-loss foam block performed testing, the relative permittivity and loss tangent of the foam material is 1.0 and  $10^{-5}$ , respectively, therefore holder perturbation verification is not required even highest reported SAR is  $> 1.2$ W/kg.
8. When the device operating under different conditions of At-Head, body-worn, near-body, hotspot and free space will limit different maximum output powers in several cellular transmitters and the detail mechanisms description of the different output power levels are included in the operation description.
9. The device used different output power mechanisms for SAR compliance for WLAN transmitter for held-to-are exposure conditions and detail descriptions of the output power mechanism are included in the operational description.
10. The device is used different output powers for SAR compliance and the output power states as following and showing on the below SAR test tables
  - Output power state1, the RF output power is limit in At-Head Power mode.
  - Output power state2, the RF output power is limit in near-body and hotspot power mode.
  - Output power state3, the RF output power is limit in default power mode

**GSM Note:**

1. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS (4Tx slots) for GSM850/GSM1900 is considered as the primary mode.
2. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is  $\leq \frac{1}{4}$  dB higher than the primary mode, SAR measurement is not required for the secondary mode.

**UMTS Note:**

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is  $\leq \frac{1}{4}$  dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is  $\leq 1.2$  W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

**CDMA Note:**

1. Per KDB 941225 D01v03r01, SAR for next to the ear head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55.
2. Per KDB 941225 D01v03r01, for Body-worn accessory SAR is measured in RC3 with the handset configured in TDSO/SO32 to transmit at full rate on FCH only with all other code channels disabled. The body-worn accessory procedures in KDB Publication 447498 are applied. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCH), with FCH only as the primary mode.

**LTE Note:**

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are  $\leq 0.8$  W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is  $> 1.45$  W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is  $> \text{not } \frac{1}{2}$  dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is  $> \text{not } \frac{1}{2}$  dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4 / B5 / B12 / B17 / B26/ B38 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

**WLAN Note:**

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n head SAR testing is required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is  $> 1.2$  W/kg.
2. Per KDB 248227 D01v02r02, U-NII-1 SAR testing is not required when the U-NII-2A band highest reported SAR for a test configuration is  $\leq 1.2$  W/kg, SAR is not required for U-NII-1 band.
3. When the reported SAR of the test position is  $> 0.4$  W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is  $\leq 0.8$  W/kg or all required test position are tested.
4. For all positions / configurations, when the reported SAR is  $> 0.8$  W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is  $\leq 1.2$  W/kg or all required channels are tested.
5. During SAR testing the WLAN transmission was verified using a spectrum analyzer.

# **14.1 Head SAR**

## **<GSM SAR>**

| Plot No. | Band    | Mode              | Test Position | Gap (mm) | Output Power States | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|---------|-------------------|---------------|----------|---------------------|-----|-------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
|          | GSM850  | GPRS (4 Tx slots) | Right Cheek   | 0mm      | 1                   | 189 | 836.4       | 25.72               | 27.50               | 1.507                  | 0                | 0.178                  | 0.268                  |
|          | GSM850  | GPRS (4 Tx slots) | Right Tilted  | 0mm      | 1                   | 189 | 836.4       | 25.72               | 27.50               | 1.507                  | 0.09             | 0.083                  | 0.125                  |
| 01       | GSM850  | GPRS (4 Tx slots) | Left Cheek    | 0mm      | 1                   | 189 | 836.4       | 25.72               | 27.50               | 1.507                  | 0.05             | 0.239                  | 0.360                  |
|          | GSM850  | GPRS (4 Tx slots) | Left Cheek    | 0mm      | 1                   | 128 | 824.2       | 25.69               | 27.50               | 1.517                  | 0.03             | 0.220                  | 0.334                  |
|          | GSM850  | GPRS (4 Tx slots) | Left Cheek    | 0mm      | 1                   | 251 | 848.8       | 25.71               | 27.50               | 1.510                  | -0.04            | 0.225                  | 0.340                  |
|          | GSM850  | GPRS (4 Tx slots) | Left Tilted   | 0mm      | 1                   | 189 | 836.4       | 25.72               | 27.50               | 1.507                  | 0.02             | 0.082                  | 0.124                  |
|          | GSM1900 | GPRS (4 Tx slots) | Right Cheek   | 0mm      | 1                   | 512 | 1850.2      | 22.75               | 24.50               | 1.496                  | 0.02             | 0.131                  | 0.196                  |
|          | GSM1900 | GPRS (4 Tx slots) | Right Tilted  | 0mm      | 1                   | 512 | 1850.2      | 22.75               | 24.50               | 1.496                  | -0.15            | 0.058                  | 0.087                  |
|          | GSM1900 | GPRS (4 Tx slots) | Left Cheek    | 0mm      | 1                   | 512 | 1850.2      | 22.75               | 24.50               | 1.496                  | 0.1              | 0.149                  | 0.223                  |
| 02       | GSM1900 | GPRS (4 Tx slots) | Left Cheek    | 0mm      | 1                   | 661 | 1880        | 22.63               | 24.50               | 1.538                  | 0.18             | 0.173                  | 0.266                  |
|          | GSM1900 | GPRS (4 Tx slots) | Left Cheek    | 0mm      | 1                   | 810 | 1909.8      | 22.61               | 24.50               | 1.545                  | 0.12             | 0.115                  | 0.178                  |
|          | GSM1900 | GPRS (4 Tx slots) | Left Tilted   | 0mm      | 1                   | 512 | 1850.2      | 22.75               | 24.50               | 1.496                  | 0.1              | 0.058                  | 0.087                  |

## **<WCDMA SAR>**

| Plot No. | Band     | Mode         | Test Position | Gap (mm) | Output Power States | Ch.  | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|----------|--------------|---------------|----------|---------------------|------|-------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
|          | WCDMA II | RMC 12.2Kbps | Right Cheek   | 0mm      | 1                   | 9538 | 1907.6      | 22.89               | 24.00               | 1.291                  | -0.09            | 0.429                  | 0.554                  |
|          | WCDMA II | RMC 12.2Kbps | Right Cheek   | 0mm      | 1                   | 9262 | 1852.4      | 22.70               | 24.00               | 1.349                  | -0.02            | 0.407                  | 0.549                  |
| 03       | WCDMA II | RMC 12.2Kbps | Right Cheek   | 0mm      | 1                   | 9400 | 1880        | 22.73               | 24.00               | 1.340                  | 0.01             | 0.418                  | 0.560                  |
|          | WCDMA II | RMC 12.2Kbps | Right Tilted  | 0mm      | 1                   | 9538 | 1907.6      | 22.89               | 24.00               | 1.291                  | -0.05            | 0.137                  | 0.177                  |
|          | WCDMA II | RMC 12.2Kbps | Left Cheek    | 0mm      | 1                   | 9538 | 1907.6      | 22.89               | 24.00               | 1.291                  | 0.07             | 0.303                  | 0.391                  |
|          | WCDMA II | RMC 12.2Kbps | Left Tilted   | 0mm      | 1                   | 9538 | 1907.6      | 22.89               | 24.00               | 1.291                  | 0.09             | 0.118                  | 0.152                  |
|          | WCDMA IV | RMC 12.2Kbps | Right Cheek   | 0mm      | 1                   | 1513 | 1752.6      | 22.93               | 24.00               | 1.279                  | 0.02             | 0.405                  | 0.518                  |
|          | WCDMA IV | RMC 12.2Kbps | Right Tilted  | 0mm      | 1                   | 1513 | 1752.6      | 22.93               | 24.00               | 1.279                  | 0.05             | 0.168                  | 0.215                  |
| 04       | WCDMA IV | RMC 12.2Kbps | Left Cheek    | 0mm      | 1                   | 1513 | 1752.6      | 22.93               | 24.00               | 1.279                  | 0                | 0.492                  | 0.629                  |
|          | WCDMA IV | RMC 12.2Kbps | Left Cheek    | 0mm      | 1                   | 1312 | 1712.4      | 22.88               | 24.00               | 1.294                  | 0                | 0.375                  | 0.485                  |
|          | WCDMA IV | RMC 12.2Kbps | Left Cheek    | 0mm      | 1                   | 1413 | 1732.6      | 22.82               | 24.00               | 1.312                  | 0.01             | 0.358                  | 0.470                  |
|          | WCDMA IV | RMC 12.2Kbps | Left Tilted   | 0mm      | 1                   | 1513 | 1752.6      | 22.93               | 24.00               | 1.279                  | -0.04            | 0.151                  | 0.193                  |
|          | WCDMA V  | RMC 12.2Kbps | Right Cheek   | 0mm      | 1                   | 4182 | 836.4       | 22.86               | 24.00               | 1.300                  | -0.08            | 0.276                  | 0.359                  |
|          | WCDMA V  | RMC 12.2Kbps | Right Tilted  | 0mm      | 1                   | 4182 | 836.4       | 22.86               | 24.00               | 1.300                  | 0.11             | 0.128                  | 0.166                  |
| 05       | WCDMA V  | RMC 12.2Kbps | Left Cheek    | 0mm      | 1                   | 4182 | 836.4       | 22.86               | 24.00               | 1.300                  | -0.05            | 0.315                  | 0.410                  |
|          | WCDMA V  | RMC 12.2Kbps | Left Cheek    | 0mm      | 1                   | 4132 | 826.4       | 22.62               | 24.00               | 1.374                  | -0.13            | 0.292                  | 0.401                  |
|          | WCDMA V  | RMC 12.2Kbps | Left Cheek    | 0mm      | 1                   | 4233 | 846.6       | 22.58               | 24.00               | 1.387                  | -0.11            | 0.291                  | 0.404                  |
|          | WCDMA V  | RMC 12.2Kbps | Left Tilted   | 0mm      | 1                   | 4182 | 836.4       | 22.86               | 24.00               | 1.300                  | -0.03            | 0.126                  | 0.164                  |

**<CDMA SAR>**

| Plot No. | Band      | Mode           | Test Position | Gap (mm) | Output Power States | Ch.  | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|-----------|----------------|---------------|----------|---------------------|------|-------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
|          | CDMA BC0  | 1xRTT RC3 SO55 | Right Cheek   | 0mm      | 1                   | 1013 | 824.7       | 23.98               | 25.00               | 1.265                  | 0.02             | 0.282                  | 0.357                  |
|          | CDMA BC0  | 1xRTT RC3 SO55 | Right Tilted  | 0mm      | 1                   | 1013 | 824.7       | 23.98               | 25.00               | 1.265                  | 0.1              | 0.122                  | 0.154                  |
|          | CDMA BC0  | 1xRTT RC3 SO55 | Left Cheek    | 0mm      | 1                   | 1013 | 824.7       | 23.98               | 25.00               | 1.265                  | -0.1             | 0.302                  | 0.382                  |
| 06       | CDMA BC0  | 1xRTT RC3 SO55 | Left Cheek    | 0mm      | 1                   | 384  | 836.52      | 23.97               | 25.00               | 1.268                  | -0.02            | 0.329                  | 0.417                  |
|          | CDMA BC0  | 1xRTT RC3 SO55 | Left Cheek    | 0mm      | 1                   | 777  | 848.31      | 23.90               | 25.00               | 1.288                  | -0.09            | 0.273                  | 0.352                  |
|          | CDMA BC0  | 1xRTT RC3 SO55 | Left Tilted   | 0mm      | 1                   | 1013 | 824.7       | 23.98               | 25.00               | 1.265                  | 0.1              | 0.146                  | 0.185                  |
|          | CDMA BC1  | 1xRTT RC3 SO55 | Right Cheek   | 0mm      | 1                   | 600  | 1880        | 23.90               | 25.00               | 1.288                  | -0.15            | 0.306                  | 0.394                  |
|          | CDMA BC1  | 1xRTT RC3 SO55 | Right Tilted  | 0mm      | 1                   | 600  | 1880        | 23.90               | 25.00               | 1.288                  | 0                | 0.150                  | 0.193                  |
|          | CDMA BC1  | 1xRTT RC3 SO55 | Left Cheek    | 0mm      | 1                   | 600  | 1880        | 23.90               | 25.00               | 1.288                  | -0.07            | 0.363                  | 0.468                  |
| 07       | CDMA BC1  | 1xRTT RC3 SO55 | Left Cheek    | 0mm      | 1                   | 25   | 1851.25     | 23.70               | 25.00               | 1.349                  | -0.04            | 0.357                  | 0.482                  |
|          | CDMA BC1  | 1xRTT RC3 SO55 | Left Cheek    | 0mm      | 1                   | 1175 | 1908.75     | 23.84               | 25.00               | 1.306                  | 0.05             | 0.325                  | 0.425                  |
|          | CDMA BC1  | 1xRTT RC3 SO55 | Left Tilted   | 0mm      | 1                   | 600  | 1880        | 23.90               | 25.00               | 1.288                  | 0.1              | 0.113                  | 0.146                  |
|          | CDMA BC10 | 1xRTT RC3 SO55 | Right Cheek   | 0mm      | 1                   | 580  | 820.5       | 24.09               | 25.00               | 1.233                  | -0.13            | 0.368                  | 0.454                  |
|          | CDMA BC10 | 1xRTT RC3 SO55 | Right Tilted  | 0mm      | 1                   | 580  | 820.5       | 24.09               | 25.00               | 1.233                  | 0.02             | 0.166                  | 0.205                  |
| 08       | CDMA BC10 | 1xRTT RC3 SO55 | Left Cheek    | 0mm      | 1                   | 580  | 820.5       | 24.09               | 25.00               | 1.233                  | -0.05            | 0.406                  | 0.501                  |
|          | CDMA BC10 | 1xRTT RC3 SO55 | Left Tilted   | 0mm      | 1                   | 580  | 820.5       | 24.09               | 25.00               | 1.233                  | 0.04             | 0.165                  | 0.203                  |

**<FDD LTE SAR>**

| Plot No. | Band       | BW (MHz) | Modulation | RB Size | RB offset | Test Position | Gap (mm) | Output Power States | Ch.   | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|------------|----------|------------|---------|-----------|---------------|----------|---------------------|-------|-------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
|          | LTE Band 2 | 20M      | QPSK       | 1       | 0         | Right Cheek   | 0mm      | 1                   | 18900 | 1880        | 22.55               | 24.00               | 1.396                  | -0.19            | 0.334                  | 0.466                  |
| 09       | LTE Band 2 | 20M      | QPSK       | 1       | 0         | Right Cheek   | 0mm      | 1                   | 18700 | 1860        | 22.33               | 24.00               | 1.469                  | -0.04            | 0.334                  | 0.491                  |
|          | LTE Band 2 | 20M      | QPSK       | 1       | 0         | Right Cheek   | 0mm      | 1                   | 19100 | 1900        | 22.47               | 24.00               | 1.422                  | -0.09            | 0.324                  | 0.461                  |
|          | LTE Band 2 | 20M      | QPSK       | 50      | 0         | Right Cheek   | 0mm      | 1                   | 19100 | 1900        | 21.55               | 23.00               | 1.396                  | 0.14             | 0.219                  | 0.306                  |
|          | LTE Band 2 | 20M      | QPSK       | 1       | 0         | Right Tilted  | 0mm      | 1                   | 18900 | 1880        | 22.55               | 24.00               | 1.396                  | 0.04             | 0.138                  | 0.193                  |
|          | LTE Band 2 | 20M      | QPSK       | 50      | 0         | Right Tilted  | 0mm      | 1                   | 19100 | 1900        | 21.55               | 23.00               | 1.396                  | 0.04             | 0.080                  | 0.112                  |
|          | LTE Band 2 | 20M      | QPSK       | 1       | 0         | Left Cheek    | 0mm      | 1                   | 18900 | 1880        | 22.55               | 24.00               | 1.396                  | 0.13             | 0.266                  | 0.371                  |
|          | LTE Band 2 | 20M      | QPSK       | 50      | 0         | Left Cheek    | 0mm      | 1                   | 19100 | 1900        | 21.55               | 23.00               | 1.396                  | 0.1              | 0.165                  | 0.230                  |
|          | LTE Band 2 | 20M      | QPSK       | 1       | 0         | Left Tilted   | 0mm      | 1                   | 18900 | 1880        | 22.55               | 24.00               | 1.396                  | 0.04             | 0.112                  | 0.156                  |
|          | LTE Band 2 | 20M      | QPSK       | 50      | 0         | Left Tilted   | 0mm      | 1                   | 19100 | 1900        | 21.55               | 23.00               | 1.396                  | 0.14             | 0.052                  | 0.073                  |
|          | LTE Band 4 | 20M      | QPSK       | 1       | 99        | Right Cheek   | 0mm      | 1                   | 20175 | 1732.5      | 22.40               | 24.00               | 1.445                  | 0.12             | 0.407                  | 0.588                  |
|          | LTE Band 4 | 20M      | QPSK       | 50      | 50        | Right Cheek   | 0mm      | 1                   | 20175 | 1732.5      | 21.51               | 23.00               | 1.409                  | 0.1              | 0.206                  | 0.290                  |
|          | LTE Band 4 | 20M      | QPSK       | 1       | 99        | Right Tilted  | 0mm      | 1                   | 20175 | 1732.5      | 22.40               | 24.00               | 1.445                  | 0.1              | 0.128                  | 0.185                  |
|          | LTE Band 4 | 20M      | QPSK       | 50      | 50        | Right Tilted  | 0mm      | 1                   | 20175 | 1732.5      | 21.51               | 23.00               | 1.409                  | -0.07            | 0.071                  | 0.100                  |
| 10       | LTE Band 4 | 20M      | QPSK       | 1       | 99        | Left Cheek    | 0mm      | 1                   | 20175 | 1732.5      | 22.40               | 24.00               | 1.445                  | 0.09             | 0.430                  | 0.622                  |
|          | LTE Band 4 | 20M      | QPSK       | 50      | 50        | Left Cheek    | 0mm      | 1                   | 20175 | 1732.5      | 21.51               | 23.00               | 1.409                  | 0.14             | 0.221                  | 0.311                  |
|          | LTE Band 4 | 20M      | QPSK       | 1       | 99        | Left Tilted   | 0mm      | 1                   | 20175 | 1732.5      | 22.40               | 24.00               | 1.445                  | -0.06            | 0.112                  | 0.162                  |
|          | LTE Band 4 | 20M      | QPSK       | 50      | 50        | Left Tilted   | 0mm      | 1                   | 20175 | 1732.5      | 21.51               | 23.00               | 1.409                  | 0.02             | 0.057                  | 0.080                  |
|          | LTE Band 5 | 10M      | QPSK       | 1       | 0         | Right Cheek   | 0mm      | 1                   | 20525 | 836.5       | 22.85               | 24.00               | 1.303                  | -0.11            | 0.334                  | 0.435                  |
|          | LTE Band 5 | 10M      | QPSK       | 25      | 25        | Right Cheek   | 0mm      | 1                   | 20525 | 836.5       | 21.60               | 23.00               | 1.380                  | 0.01             | 0.155                  | 0.214                  |
|          | LTE Band 5 | 10M      | QPSK       | 1       | 0         | Right Tilted  | 0mm      | 1                   | 20525 | 836.5       | 22.85               | 24.00               | 1.303                  | -0.01            | 0.162                  | 0.211                  |
|          | LTE Band 5 | 10M      | QPSK       | 25      | 25        | Right Tilted  | 0mm      | 1                   | 20525 | 836.5       | 21.60               | 23.00               | 1.380                  | -0.11            | 0.072                  | 0.099                  |
| 11       | LTE Band 5 | 10M      | QPSK       | 1       | 0         | Left Cheek    | 0mm      | 1                   | 20525 | 836.5       | 22.85               | 24.00               | 1.303                  | -0.14            | 0.359                  | 0.468                  |
|          | LTE Band 5 | 10M      | QPSK       | 25      | 25        | Left Cheek    | 0mm      | 1                   | 20525 | 836.5       | 21.60               | 23.00               | 1.380                  | -0.04            | 0.162                  | 0.224                  |
|          | LTE Band 5 | 10M      | QPSK       | 1       | 0         | Left Tilted   | 0mm      | 1                   | 20525 | 836.5       | 22.85               | 24.00               | 1.303                  | -0.1             | 0.179                  | 0.233                  |
|          | LTE Band 5 | 10M      | QPSK       | 25      | 25        | Left Tilted   | 0mm      | 1                   | 20525 | 836.5       | 21.60               | 23.00               | 1.380                  | -0.14            | 0.081                  | 0.112                  |



| Plot No. | Band        | BW (MHz) | Modulation | RB Size | RB offset | Test Position | Gap (mm) | Output Power States | Ch.   | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|-------------|----------|------------|---------|-----------|---------------|----------|---------------------|-------|-------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
|          | LTE Band 7  | 20M      | QPSK       | 1       | 49        | Right Cheek   | 0mm      | 1                   | 21350 | 2560        | 22.50               | 24.00               | 1.413                  | 0.06             | 0.104                  | 0.147                  |
|          | LTE Band 7  | 20M      | QPSK       | 50      | 50        | Right Cheek   | 0mm      | 1                   | 21350 | 2560        | 21.51               | 23.00               | 1.409                  | -0.02            | 0.071                  | 0.100                  |
|          | LTE Band 7  | 20M      | QPSK       | 1       | 49        | Right Tilted  | 0mm      | 1                   | 21350 | 2560        | 22.50               | 24.00               | 1.413                  | 0.02             | 0.085                  | 0.120                  |
|          | LTE Band 7  | 20M      | QPSK       | 50      | 50        | Right Tilted  | 0mm      | 1                   | 21350 | 2560        | 21.51               | 23.00               | 1.409                  | 0.16             | 0.060                  | 0.085                  |
|          | LTE Band 7  | 20M      | QPSK       | 1       | 49        | Left Cheek    | 0mm      | 1                   | 21350 | 2560        | 22.50               | 24.00               | 1.413                  | -0.15            | 0.379                  | 0.535                  |
|          | LTE Band 7  | 20M      | QPSK       | 1       | 49        | Left Cheek    | 0mm      | 1                   | 20850 | 2510        | 22.32               | 24.00               | 1.472                  | -0.03            | 0.347                  | 0.511                  |
| 12       | LTE Band 7  | 20M      | QPSK       | 1       | 49        | Left Cheek    | 0mm      | 1                   | 21100 | 2535        | 22.35               | 24.00               | 1.462                  | -0.17            | 0.386                  | 0.564                  |
|          | LTE Band 7  | 20M      | QPSK       | 50      | 50        | Left Cheek    | 0mm      | 1                   | 21350 | 2560        | 21.51               | 23.00               | 1.409                  | -0.1             | 0.267                  | 0.376                  |
|          | LTE Band 7  | 20M      | QPSK       | 1       | 49        | Left Tilted   | 0mm      | 1                   | 21350 | 2560        | 22.50               | 24.00               | 1.413                  | 0.16             | 0.124                  | 0.175                  |
|          | LTE Band 7  | 20M      | QPSK       | 50      | 50        | Left Tilted   | 0mm      | 1                   | 21350 | 2560        | 21.51               | 23.00               | 1.409                  | 0.08             | 0.080                  | 0.113                  |
|          | LTE Band 12 | 10M      | QPSK       | 1       | 25        | Right Cheek   | 0mm      | 1                   | 23095 | 707.5       | 22.69               | 24.00               | 1.352                  | -0.13            | 0.104                  | 0.141                  |
|          | LTE Band 12 | 10M      | QPSK       | 25      | 12        | Right Cheek   | 0mm      | 1                   | 23095 | 707.5       | 21.70               | 23.00               | 1.349                  | 0.07             | 0.080                  | 0.108                  |
|          | LTE Band 12 | 10M      | QPSK       | 1       | 25        | Right Tilted  | 0mm      | 1                   | 23095 | 707.5       | 22.69               | 24.00               | 1.352                  | 0.03             | 0.041                  | 0.055                  |
|          | LTE Band 12 | 10M      | QPSK       | 25      | 12        | Right Tilted  | 0mm      | 1                   | 23095 | 707.5       | 21.70               | 23.00               | 1.349                  | 0.18             | 0.032                  | 0.043                  |
| 13       | LTE Band 12 | 10M      | QPSK       | 1       | 25        | Left Cheek    | 0mm      | 1                   | 23095 | 707.5       | 22.69               | 24.00               | 1.352                  | -0.06            | 0.213                  | 0.288                  |
|          | LTE Band 12 | 10M      | QPSK       | 25      | 12        | Left Cheek    | 0mm      | 1                   | 23095 | 707.5       | 21.70               | 23.00               | 1.349                  | -0.08            | 0.139                  | 0.188                  |
|          | LTE Band 12 | 10M      | QPSK       | 1       | 25        | Left Tilted   | 0mm      | 1                   | 23095 | 707.5       | 22.69               | 24.00               | 1.352                  | 0.01             | 0.054                  | 0.073                  |
|          | LTE Band 12 | 10M      | QPSK       | 25      | 12        | Left Tilted   | 0mm      | 1                   | 23095 | 707.5       | 21.70               | 23.00               | 1.349                  | 0.05             | 0.041                  | 0.055                  |
|          | LTE Band 13 | 10M      | QPSK       | 1       | 49        | Right Cheek   | 0mm      | 1                   | 23230 | 782         | 23.00               | 24.00               | 1.259                  | -0.16            | 0.291                  | 0.366                  |
|          | LTE Band 13 | 10M      | QPSK       | 25      | 0         | Right Cheek   | 0mm      | 1                   | 23230 | 782         | 21.97               | 23.00               | 1.268                  | -0.03            | 0.180                  | 0.228                  |
|          | LTE Band 13 | 10M      | QPSK       | 1       | 49        | Right Tilted  | 0mm      | 1                   | 23230 | 782         | 23.00               | 24.00               | 1.259                  | -0.03            | 0.137                  | 0.172                  |
|          | LTE Band 13 | 10M      | QPSK       | 25      | 0         | Right Tilted  | 0mm      | 1                   | 23230 | 782         | 21.97               | 23.00               | 1.268                  | 0.15             | 0.088                  | 0.112                  |
| 14       | LTE Band 13 | 10M      | QPSK       | 1       | 49        | Left Cheek    | 0mm      | 1                   | 23230 | 782         | 23.00               | 24.00               | 1.259                  | 0.01             | 0.340                  | 0.428                  |
|          | LTE Band 13 | 10M      | QPSK       | 25      | 0         | Left Cheek    | 0mm      | 1                   | 23230 | 782         | 21.97               | 23.00               | 1.268                  | -0.05            | 0.208                  | 0.264                  |
|          | LTE Band 13 | 10M      | QPSK       | 1       | 49        | Left Tilted   | 0mm      | 1                   | 23230 | 782         | 23.00               | 24.00               | 1.259                  | -0.03            | 0.149                  | 0.188                  |
|          | LTE Band 13 | 10M      | QPSK       | 25      | 0         | Left Tilted   | 0mm      | 1                   | 23230 | 782         | 21.97               | 23.00               | 1.268                  | 0.05             | 0.089                  | 0.113                  |
|          | LTE Band 17 | 10M      | QPSK       | 1       | 25        | Right Cheek   | 0mm      | 1                   | 23790 | 710         | 22.66               | 24.00               | 1.361                  | -0.1             | 0.201                  | 0.274                  |
|          | LTE Band 17 | 10M      | QPSK       | 25      | 12        | Right Cheek   | 0mm      | 1                   | 23790 | 710         | 21.71               | 23.00               | 1.346                  | 0.17             | 0.093                  | 0.125                  |
|          | LTE Band 17 | 10M      | QPSK       | 1       | 25        | Right Tilted  | 0mm      | 1                   | 23790 | 710         | 22.66               | 24.00               | 1.361                  | 0.14             | 0.074                  | 0.101                  |
|          | LTE Band 17 | 10M      | QPSK       | 25      | 12        | Right Tilted  | 0mm      | 1                   | 23790 | 710         | 21.71               | 23.00               | 1.346                  | 0.02             | 0.037                  | 0.050                  |
| 15       | LTE Band 17 | 10M      | QPSK       | 1       | 25        | Left Cheek    | 0mm      | 1                   | 23790 | 710         | 22.66               | 24.00               | 1.361                  | -0.14            | 0.267                  | 0.364                  |
|          | LTE Band 17 | 10M      | QPSK       | 25      | 12        | Left Cheek    | 0mm      | 1                   | 23790 | 710         | 21.71               | 23.00               | 1.346                  | -0.01            | 0.137                  | 0.184                  |
|          | LTE Band 17 | 10M      | QPSK       | 1       | 25        | Left Tilted   | 0mm      | 1                   | 23790 | 710         | 22.66               | 24.00               | 1.361                  | 0.01             | 0.057                  | 0.078                  |
|          | LTE Band 17 | 10M      | QPSK       | 25      | 12        | Left Tilted   | 0mm      | 1                   | 23790 | 710         | 21.71               | 23.00               | 1.346                  | -0.11            | 0.044                  | 0.059                  |
|          | LTE Band 25 | 20M      | QPSK       | 1       | 49        | Right Cheek   | 0mm      | 1                   | 26340 | 1880        | 22.57               | 24.00               | 1.390                  | 0.18             | 0.433                  | 0.602                  |
| 16       | LTE Band 25 | 20M      | QPSK       | 1       | 0         | Right Cheek   | 0mm      | 1                   | 26140 | 1860        | 22.44               | 24.00               | 1.432                  | -0.19            | 0.498                  | 0.713                  |
|          | LTE Band 25 | 20M      | QPSK       | 1       | 0         | Right Cheek   | 0mm      | 1                   | 26590 | 1905        | 22.49               | 24.00               | 1.416                  | 0.13             | 0.417                  | 0.590                  |
|          | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Right Cheek   | 0mm      | 1                   | 26340 | 1880        | 21.66               | 23.00               | 1.361                  | 0.08             | 0.223                  | 0.304                  |
|          | LTE Band 25 | 20M      | QPSK       | 1       | 49        | Right Tilted  | 0mm      | 1                   | 26340 | 1880        | 22.57               | 24.00               | 1.390                  | 0.19             | 0.173                  | 0.240                  |
|          | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Right Tilted  | 0mm      | 1                   | 26340 | 1880        | 21.66               | 23.00               | 1.361                  | 0.14             | 0.087                  | 0.118                  |
|          | LTE Band 25 | 20M      | QPSK       | 1       | 49        | Left Cheek    | 0mm      | 1                   | 26340 | 1880        | 22.57               | 24.00               | 1.390                  | 0.14             | 0.380                  | 0.528                  |
|          | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Left Cheek    | 0mm      | 1                   | 26340 | 1880        | 21.66               | 23.00               | 1.361                  | 0.08             | 0.203                  | 0.276                  |
|          | LTE Band 25 | 20M      | QPSK       | 1       | 49        | Left Tilted   | 0mm      | 1                   | 26340 | 1880        | 22.57               | 24.00               | 1.390                  | -0.1             | 0.156                  | 0.217                  |
|          | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Left Tilted   | 0mm      | 1                   | 26340 | 1880        | 21.66               | 23.00               | 1.361                  | -0.02            | 0.082                  | 0.112                  |
|          | LTE Band 2  | 15M      | QPSK       | 1       | 74        | Right Cheek   | 0mm      | 1                   | 26865 | 831.5       | 23.06               | 24.00               | 1.242                  | 0.08             | 0.304                  | 0.377                  |
|          | LTE Band 2  | 15M      | QPSK       | 36      | 0         | Right Cheek   | 0mm      | 1                   | 26865 | 831.5       | 21.92               | 23.00               | 1.282                  | -0.03            | 0.153                  | 0.196                  |
|          | LTE Band 2  | 15M      | QPSK       | 1       | 74        | Right Tilted  | 0mm      | 1                   | 26865 | 831.5       | 23.06               | 24.00               | 1.242                  | -0.08            | 0.132                  | 0.164                  |
|          | LTE Band 2  | 15M      | QPSK       | 36      | 0         | Right Tilted  | 0mm      | 1                   | 26865 | 831.5       | 21.92               | 23.00               | 1.282                  | -0.15            | 0.068                  | 0.087                  |
| 17       | LTE Band 2  | 15M      | QPSK       | 1       | 74        | Left Cheek    | 0mm      | 1                   | 26865 | 831.5       | 23.06               | 24.00               | 1.242                  | -0.02            | 0.329                  | 0.409                  |
|          | LTE Band 2  | 15M      | QPSK       | 36      | 0         | Left Cheek    | 0mm      | 1                   | 26865 | 831.5       | 21.92               | 23.00               | 1.282                  | -0.1             | 0.169                  | 0.217                  |
|          | LTE Band 2  | 15M      | QPSK       | 1       | 74        | Left Tilted   | 0mm      | 1                   | 26865 | 831.5       | 23.06               | 24.00               | 1.242                  | -0.03            | 0.159                  | 0.197                  |
|          | LTE Band 2  | 15M      | QPSK       | 36      | 0         | Left Tilted   | 0mm      | 1                   | 26865 | 831.5       | 21.92               | 23.00               | 1.282                  | -0.09            | 0.078                  | 0.100                  |



| Plot No. | Band        | BW (MHz) | Modulation | RB Size | RB offset | Test Position | Gap (mm) | Output Power States | Ch.    | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|-------------|----------|------------|---------|-----------|---------------|----------|---------------------|--------|-------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
|          | LTE Band 30 | 10M      | QPSK       | 1       | 0         | Right Cheek   | 0mm      | 1                   | 27710  | 2310        | 22.83               | 24.00               | 1.309                  | 0.1              | 0.119                  | 0.156                  |
|          | LTE Band 30 | 10M      | QPSK       | 25      | 25        | Right Cheek   | 0mm      | 1                   | 27710  | 2310        | 21.61               | 23.00               | 1.377                  | 0.11             | 0.059                  | 0.081                  |
|          | LTE Band 30 | 10M      | QPSK       | 1       | 0         | Right Tilted  | 0mm      | 1                   | 27710  | 2310        | 22.83               | 24.00               | 1.309                  | -0.08            | 0.064                  | 0.084                  |
|          | LTE Band 30 | 10M      | QPSK       | 25      | 25        | Right Tilted  | 0mm      | 1                   | 27710  | 2310        | 21.61               | 23.00               | 1.377                  | 0.16             | 0.035                  | 0.048                  |
| 18       | LTE Band 30 | 10M      | QPSK       | 1       | 0         | Left Cheek    | 0mm      | 1                   | 27710  | 2310        | 22.83               | 24.00               | 1.309                  | -0.07            | 0.244                  | 0.319                  |
|          | LTE Band 30 | 10M      | QPSK       | 25      | 25        | Left Cheek    | 0mm      | 1                   | 27710  | 2310        | 21.61               | 23.00               | 1.377                  | 0.05             | 0.128                  | 0.176                  |
|          | LTE Band 30 | 10M      | QPSK       | 1       | 0         | Left Tilted   | 0mm      | 1                   | 27710  | 2310        | 22.83               | 24.00               | 1.309                  | 0.11             | 0.093                  | 0.122                  |
|          | LTE Band 30 | 10M      | QPSK       | 25      | 25        | Left Tilted   | 0mm      | 1                   | 27710  | 2310        | 21.61               | 23.00               | 1.377                  | 0.08             | 0.042                  | 0.058                  |
|          | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Right Cheek   | 0mm      | 1                   | 132572 | 1770        | 23.00               | 24.00               | 1.259                  | -0.01            | 0.392                  | 0.493                  |
|          | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Right Cheek   | 0mm      | 1                   | 132072 | 1720        | 22.50               | 24.00               | 1.413                  | -0.01            | 0.361                  | 0.510                  |
| 19       | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Right Cheek   | 0mm      | 1                   | 132322 | 1745        | 22.84               | 24.00               | 1.306                  | -0.1             | 0.407                  | 0.532                  |
|          | LTE Band 66 | 20M      | QPSK       | 50      | 50        | Right Cheek   | 0mm      | 1                   | 132572 | 1770        | 21.97               | 23.00               | 1.268                  | -0.04            | 0.268                  | 0.340                  |
|          | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Right Tilted  | 0mm      | 1                   | 132572 | 1770        | 23.00               | 24.00               | 1.259                  | -0.06            | 0.114                  | 0.144                  |
|          | LTE Band 66 | 20M      | QPSK       | 50      | 50        | Right Tilted  | 0mm      | 1                   | 132572 | 1770        | 21.97               | 23.00               | 1.268                  | -0.06            | 0.077                  | 0.098                  |
|          | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Left Cheek    | 0mm      | 1                   | 132572 | 1770        | 23.00               | 24.00               | 1.259                  | -0.04            | 0.331                  | 0.417                  |
|          | LTE Band 66 | 20M      | QPSK       | 50      | 50        | Left Cheek    | 0mm      | 1                   | 132572 | 1770        | 21.97               | 23.00               | 1.268                  | 0.19             | 0.230                  | 0.292                  |
|          | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Left Tilted   | 0mm      | 1                   | 132572 | 1770        | 23.00               | 24.00               | 1.259                  | -0.05            | 0.117                  | 0.147                  |
|          | LTE Band 66 | 20M      | QPSK       | 50      | 50        | Left Tilted   | 0mm      | 1                   | 132572 | 1770        | 21.97               | 23.00               | 1.268                  | 0.06             | 0.079                  | 0.100                  |

**<TDD LTE SAR>**

| Plot No. | Band        | BW (MHz) | Modulation | RB Size | RB offset | Test Position | Gap (mm) | Output Power States | Ch.   | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Duty Cycle % | Duty Cycle Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|-------------|----------|------------|---------|-----------|---------------|----------|---------------------|-------|-------------|---------------------|---------------------|------------------------|--------------|---------------------------|------------------|------------------------|------------------------|
|          | LTE Band 38 | 20M      | QPSK       | 1       | 99        | Right Cheek   | 0mm      | 1                   | 37850 | 2580        | 22.62               | 24.00               | 1.374                  | 62.9         | 1.006                     | -0.13            | 0.074                  | 0.102                  |
|          | LTE Band 38 | 20M      | QPSK       | 50      | 50        | Right Cheek   | 0mm      | 1                   | 37850 | 2580        | 21.48               | 23.00               | 1.419                  | 62.9         | 1.006                     | -0.1             | 0.055                  | 0.079                  |
|          | LTE Band 38 | 20M      | QPSK       | 1       | 99        | Right Tilted  | 0mm      | 1                   | 37850 | 2580        | 22.62               | 24.00               | 1.374                  | 62.9         | 1.006                     | 0.1              | 0.045                  | 0.062                  |
|          | LTE Band 38 | 20M      | QPSK       | 50      | 50        | Right Tilted  | 0mm      | 1                   | 37850 | 2580        | 21.48               | 23.00               | 1.419                  | 62.9         | 1.006                     | -0.11            | 0.033                  | 0.047                  |
|          | LTE Band 38 | 20M      | QPSK       | 1       | 99        | Left Cheek    | 0mm      | 1                   | 37850 | 2580        | 22.62               | 24.00               | 1.374                  | 62.9         | 1.006                     | 0.03             | 0.148                  | 0.205                  |
| 20       | LTE Band 38 | 20M      | QPSK       | 1       | 49        | Left Cheek    | 0mm      | 1                   | 38000 | 2595        | 22.44               | 24.00               | 1.432                  | 62.9         | 1.006                     | -0.17            | 0.203                  | 0.292                  |
|          | LTE Band 38 | 20M      | QPSK       | 1       | 99        | Left Cheek    | 0mm      | 1                   | 38150 | 2610        | 22.39               | 23.00               | 1.151                  | 62.9         | 1.006                     | -0.19            | 0.190                  | 0.220                  |
|          | LTE Band 38 | 20M      | QPSK       | 50      | 50        | Left Cheek    | 0mm      | 1                   | 37850 | 2580        | 21.48               | 23.00               | 1.419                  | 62.9         | 1.006                     | -0.03            | 0.115                  | 0.164                  |
|          | LTE Band 38 | 20M      | QPSK       | 1       | 99        | Left Tilted   | 0mm      | 1                   | 37850 | 2580        | 22.62               | 24.00               | 1.374                  | 62.9         | 1.006                     | -0.13            | 0.044                  | 0.061                  |
|          | LTE Band 38 | 20M      | QPSK       | 50      | 50        | Left Tilted   | 0mm      | 1                   | 37850 | 2580        | 21.48               | 23.00               | 1.419                  | 62.9         | 1.006                     | -0.14            | 0.035                  | 0.050                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Right Cheek   | 0mm      | 1                   | 40620 | 2593        | 22.57               | 24.00               | 1.390                  | 62.9         | 1.006                     | 0.15             | 0.097                  | 0.136                  |
|          | LTE Band 41 | 20M      | QPSK       | 50      | 50        | Right Cheek   | 0mm      | 1                   | 40185 | 2549.5      | 21.64               | 23.00               | 1.368                  | 62.9         | 1.006                     | -0.1             | 0.065                  | 0.089                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Right Tilted  | 0mm      | 1                   | 40620 | 2593        | 22.57               | 24.00               | 1.390                  | 62.9         | 1.006                     | 0.16             | 0.054                  | 0.076                  |
|          | LTE Band 41 | 20M      | QPSK       | 50      | 50        | Right Tilted  | 0mm      | 1                   | 40185 | 2549.5      | 21.64               | 23.00               | 1.368                  | 62.9         | 1.006                     | -0.18            | 0.042                  | 0.058                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Left Cheek    | 0mm      | 1                   | 40620 | 2593        | 22.57               | 24.00               | 1.390                  | 62.9         | 1.006                     | 0.16             | 0.223                  | 0.312                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Left Cheek    | 0mm      | 1                   | 39750 | 2506        | 22.47               | 24.00               | 1.422                  | 62.9         | 1.006                     | -0.15            | 0.203                  | 0.290                  |
| 21       | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Left Cheek    | 0mm      | 1                   | 40185 | 2549.5      | 22.56               | 24.00               | 1.393                  | 62.9         | 1.006                     | 0                | 0.230                  | 0.322                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Left Cheek    | 0mm      | 1                   | 41055 | 2636.5      | 22.31               | 24.00               | 1.476                  | 62.9         | 1.006                     | -0.16            | 0.196                  | 0.291                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Left Cheek    | 0mm      | 1                   | 41490 | 2680        | 22.44               | 24.00               | 1.432                  | 62.9         | 1.006                     | 0.14             | 0.222                  | 0.320                  |
|          | LTE Band 41 | 20M      | QPSK       | 50      | 50        | Left Cheek    | 0mm      | 1                   | 40620 | 2593        | 21.64               | 23.00               | 1.368                  | 62.9         | 1.006                     | 0.13             | 0.150                  | 0.206                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Left Tilted   | 0mm      | 1                   | 40620 | 2593        | 22.57               | 24.00               | 1.390                  | 62.9         | 1.006                     | 0.01             | 0.043                  | 0.060                  |
|          | LTE Band 41 | 20M      | QPSK       | 50      | 50        | Left Tilted   | 0mm      | 1                   | 40185 | 2549.5      | 21.64               | 23.00               | 1.368                  | 62.9         | 1.006                     | -0.01            | 0.034                  | 0.047                  |



**<WLAN SAR>**

| Plot No. | Band       | Mode              | Test Position | Gap (mm) | Output Power States | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Duty Cycle % | Duty Cycle Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|------------|-------------------|---------------|----------|---------------------|-----|-------------|---------------------|---------------------|------------------------|--------------|---------------------------|------------------|------------------------|------------------------|
|          | WLAN2.4GHz | 802.11b 1Mbps     | Right Cheek   | 0mm      | 1                   | 1   | 2412        | 15.92               | 16.00               | 1.018                  | 97.63        | 1.024                     | 0.062            | 0.492                  | 0.513                  |
|          | WLAN2.4GHz | 802.11b 1Mbps     | Right Tilted  | 0mm      | 1                   | 1   | 2412        | 15.92               | 16.00               | 1.018                  | 97.63        | 1.024                     | 0.082            | 0.437                  | 0.455                  |
| 22       | WLAN2.4GHz | 802.11b 1Mbps     | Left Cheek    | 0mm      | 1                   | 1   | 2412        | 15.92               | 16.00               | 1.018                  | 97.63        | 1.024                     | 0.014            | 1.240                  | 1.292                  |
|          | WLAN2.4GHz | 802.11b 1Mbps     | Left Cheek    | 0mm      | 1                   | 11  | 2462        | 15.70               | 16.00               | 1.070                  | 97.63        | 1.024                     | 0.026            | 1.040                  | 1.140                  |
|          | WLAN2.4GHz | 802.11b 1Mbps     | Left Tilted   | 0mm      | 1                   | 1   | 2412        | 15.92               | 16.00               | 1.018                  | 97.63        | 1.024                     | 0.024            | 0.760                  | 0.792                  |
|          | WLAN2.4GHz | 802.11g 6Mbps     | Right Cheek   | 0mm      | 1                   | 6   | 2462        | 15.82               | 16.00               | 1.043                  | 87.18        | 1.147                     | 0.062            | 0.242                  | 0.290                  |
|          | WLAN2.4GHz | 802.11g 6Mbps     | Right Tilted  | 0mm      | 1                   | 6   | 2462        | 15.82               | 16.00               | 1.043                  | 87.18        | 1.147                     | 0.082            | 0.187                  | 0.224                  |
|          | WLAN2.4GHz | 802.11g 6Mbps     | Left Cheek    | 0mm      | 1                   | 6   | 2462        | 15.82               | 16.00               | 1.043                  | 87.18        | 1.147                     | 0.014            | 0.990                  | 1.185                  |
|          | WLAN2.4GHz | 802.11g 6Mbps     | Left Tilted   | 0mm      | 1                   | 6   | 2462        | 15.82               | 16.00               | 1.043                  | 87.18        | 1.147                     | 0.024            | 0.510                  | 0.610                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Right Cheek   | 0mm      | 1                   | 54  | 5270        | 15.31               | 15.50               | 1.045                  | 85.14        | 1.175                     | 0.1              | 0.332                  | 0.408                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Right Tilted  | 0mm      | 1                   | 54  | 5270        | 15.31               | 15.50               | 1.045                  | 85.14        | 1.175                     | 0.075            | 0.278                  | 0.341                  |
| 23       | WLAN5GHz   | 802.11n-HT40 MCS0 | Left Cheek    | 0mm      | 1                   | 54  | 5270        | 15.31               | 15.50               | 1.045                  | 85.14        | 1.175                     | -0.149           | 0.949                  | 1.165                  |
|          | WLAN5GHz   | 802.11a 6Mbps     | Left Cheek    | 0mm      | 1                   | 64  | 5320        | 15.46               | 15.50               | 1.010                  | 86.92        | 1.150                     | -0.157           | 0.952                  | 1.105                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Left Tilted   | 0mm      | 1                   | 54  | 5270        | 15.31               | 15.50               | 1.045                  | 85.14        | 1.175                     | -0.085           | 0.564                  | 0.692                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Right Cheek   | 0mm      | 1                   | 134 | 5670        | 15.46               | 15.50               | 1.009                  | 85.14        | 1.175                     | -0.008           | 0.564                  | 0.669                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Right Tilted  | 0mm      | 1                   | 134 | 5670        | 15.46               | 15.50               | 1.009                  | 85.14        | 1.175                     | 0.142            | 0.452                  | 0.536                  |
| 24       | WLAN5GHz   | 802.11n-HT40 MCS0 | Left Cheek    | 0mm      | 1                   | 134 | 5670        | 15.46               | 15.50               | 1.009                  | 85.14        | 1.175                     | -0.045           | 1.080                  | 1.281                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Left Cheek    | 0mm      | 1                   | 102 | 5510        | 15.27               | 15.50               | 1.054                  | 85.14        | 1.175                     | 0.009            | 0.935                  | 1.158                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Left Tilted   | 0mm      | 1                   | 134 | 5670        | 15.46               | 15.50               | 1.009                  | 85.14        | 1.175                     | 0.116            | 0.812                  | 0.963                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Left Tilted   | 0mm      | 1                   | 102 | 5510        | 15.27               | 15.50               | 1.054                  | 85.14        | 1.175                     | 0.066            | 0.581                  | 0.720                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Right Cheek   | 0mm      | 1                   | 159 | 5795        | 15.38               | 15.50               | 1.028                  | 85.14        | 1.175                     | -0.018           | 0.501                  | 0.605                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Right Tilted  | 0mm      | 1                   | 159 | 5795        | 15.38               | 15.50               | 1.028                  | 85.14        | 1.175                     | -0.073           | 0.442                  | 0.534                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Left Cheek    | 0mm      | 1                   | 159 | 5795        | 15.38               | 15.50               | 1.028                  | 85.14        | 1.175                     | -0.065           | 0.913                  | 1.103                  |
| 25       | WLAN5GHz   | 802.11n-HT40 MCS0 | Left Cheek    | 0mm      | 1                   | 151 | 5755        | 15.31               | 15.50               | 1.045                  | 85.14        | 1.175                     | -0.131           | 1.060                  | 1.301                  |
|          | WLAN5GHz   | 802.11a 6Mbps     | Left Cheek    | 0mm      | 1                   | 149 | 5745        | 15.45               | 15.50               | 1.012                  | 86.92        | 1.150                     | 0.026            | 1.020                  | 1.187                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Left Tilted   | 0mm      | 1                   | 159 | 5795        | 15.38               | 15.50               | 1.028                  | 85.14        | 1.175                     | 0.107            | 0.659                  | 0.796                  |

## 14.2 Hotspot SAR

### <GSM SAR>

| Plot No. | Band    | Mode              | Test Position | Gap (mm) | Output Power States | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|---------|-------------------|---------------|----------|---------------------|-----|-------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
| 26       | GSM850  | GPRS (4 Tx slots) | Front         | 10mm     | 3                   | 189 | 836.4       | 25.72               | 27.50               | 1.507                  | -0.06            | 0.764                  | 1.151                  |
|          | GSM850  | GPRS (4 Tx slots) | Front         | 10mm     | 3                   | 128 | 824.2       | 25.69               | 27.50               | 1.517                  | 0.06             | 0.743                  | 1.127                  |
|          | GSM850  | GPRS (4 Tx slots) | Front         | 10mm     | 3                   | 251 | 848.8       | 25.71               | 27.50               | 1.510                  | 0.06             | 0.726                  | 1.096                  |
|          | GSM850  | GPRS (4 Tx slots) | Back          | 10mm     | 3                   | 189 | 836.4       | 25.72               | 27.50               | 1.507                  | -0.1             | 0.660                  | 0.994                  |
|          | GSM850  | GPRS (4 Tx slots) | Back          | 10mm     | 3                   | 128 | 824.2       | 25.69               | 27.50               | 1.517                  | -0.03            | 0.644                  | 0.977                  |
|          | GSM850  | GPRS (4 Tx slots) | Back          | 10mm     | 3                   | 251 | 848.8       | 25.71               | 27.50               | 1.510                  | 0.09             | 0.653                  | 0.986                  |
|          | GSM850  | GPRS (4 Tx slots) | Left Side     | 10mm     | 3                   | 189 | 836.4       | 25.72               | 27.50               | 1.507                  | 0.11             | 0.461                  | 0.695                  |
|          | GSM850  | GPRS (4 Tx slots) | Right Side    | 10mm     | 3                   | 189 | 836.4       | 25.72               | 27.50               | 1.507                  | 0.03             | 0.242                  | 0.365                  |
|          | GSM850  | GPRS (4 Tx slots) | Bottom Side   | 10mm     | 3                   | 189 | 836.4       | 25.72               | 27.50               | 1.507                  | -0.16            | 0.273                  | 0.411                  |
|          | GSM1900 | GPRS (4 Tx slots) | Front         | 10mm     | 3                   | 512 | 1850.2      | 22.75               | 24.50               | 1.496                  | -0.04            | 0.483                  | 0.723                  |
|          | GSM1900 | GPRS (4 Tx slots) | Front         | 10mm     | 3                   | 661 | 1880        | 22.63               | 24.50               | 1.538                  | 0.01             | 0.449                  | 0.691                  |
|          | GSM1900 | GPRS (4 Tx slots) | Front         | 10mm     | 3                   | 810 | 1909.8      | 22.61               | 24.50               | 1.545                  | 0.01             | 0.397                  | 0.613                  |
|          | GSM1900 | GPRS (4 Tx slots) | Back          | 10mm     | 3                   | 512 | 1850.2      | 22.75               | 24.50               | 1.496                  | -0.07            | 0.413                  | 0.618                  |
|          | GSM1900 | GPRS (4 Tx slots) | Left Side     | 10mm     | 3                   | 512 | 1850.2      | 22.75               | 24.50               | 1.496                  | -0.08            | 0.099                  | 0.148                  |
|          | GSM1900 | GPRS (4 Tx slots) | Right Side    | 10mm     | 3                   | 512 | 1850.2      | 22.75               | 24.50               | 1.496                  | 0.1              | 0.177                  | 0.265                  |
| 27       | GSM1900 | GPRS (4 Tx slots) | Bottom Side   | 10mm     | 3                   | 512 | 1850.2      | 22.75               | 24.50               | 1.496                  | -0.12            | 0.487                  | 0.729                  |
|          | GSM1900 | GPRS (4 Tx slots) | Bottom Side   | 10mm     | 3                   | 661 | 1880        | 22.63               | 24.50               | 1.538                  | 0                | 0.471                  | 0.724                  |
|          | GSM1900 | GPRS (4 Tx slots) | Bottom Side   | 10mm     | 3                   | 810 | 1909.8      | 22.61               | 24.50               | 1.545                  | -0.01            | 0.459                  | 0.709                  |

### <WCDMA SAR>

| Plot No. | Band     | Mode         | Test Position | Gap (mm) | Output Power States | Ch.  | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|----------|--------------|---------------|----------|---------------------|------|-------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
| 28       | WCDMA II | RMC 12.2Kbps | Front         | 10mm     | 2                   | 9538 | 1907.6      | 20.19               | 21.30               | 1.291                  | -0.01            | 0.926                  | 1.196                  |
|          | WCDMA II | RMC 12.2Kbps | Front         | 10mm     | 2                   | 9262 | 1852.4      | 19.90               | 21.30               | 1.380                  | -0.04            | 0.865                  | 1.194                  |
|          | WCDMA II | RMC 12.2Kbps | Front         | 10mm     | 2                   | 9400 | 1880        | 19.97               | 21.30               | 1.358                  | -0.04            | 0.880                  | 1.195                  |
|          | WCDMA II | RMC 12.2Kbps | Back          | 10mm     | 2                   | 9538 | 1907.6      | 20.19               | 21.30               | 1.291                  | -0.05            | 0.816                  | 1.054                  |
|          | WCDMA II | RMC 12.2Kbps | Back          | 10mm     | 2                   | 9262 | 1852.4      | 19.90               | 21.30               | 1.380                  | -0.01            | 0.751                  | 1.037                  |
|          | WCDMA II | RMC 12.2Kbps | Back          | 10mm     | 2                   | 9400 | 1880        | 19.97               | 21.30               | 1.358                  | -0.02            | 0.786                  | 1.068                  |
|          | WCDMA II | RMC 12.2Kbps | Left Side     | 10mm     | 2                   | 9538 | 1907.6      | 20.19               | 21.30               | 1.291                  | 0.09             | 0.188                  | 0.243                  |
|          | WCDMA II | RMC 12.2Kbps | Right Side    | 10mm     | 2                   | 9538 | 1907.6      | 20.19               | 21.30               | 1.291                  | 0.12             | 0.305                  | 0.394                  |
|          | WCDMA II | RMC 12.2Kbps | Bottom Side   | 10mm     | 2                   | 9538 | 1907.6      | 20.19               | 21.30               | 1.291                  | -0.11            | 0.913                  | 1.179                  |
|          | WCDMA II | RMC 12.2Kbps | Bottom Side   | 10mm     | 2                   | 9262 | 1852.4      | 19.90               | 21.30               | 1.380                  | -0.18            | 0.839                  | 1.158                  |
|          | WCDMA II | RMC 12.2Kbps | Bottom Side   | 10mm     | 2                   | 9400 | 1880        | 19.97               | 21.30               | 1.358                  | -0.1             | 0.856                  | 1.163                  |
|          | WCDMA IV | RMC 12.2Kbps | Front         | 10mm     | 2                   | 1513 | 1752.6      | 20.88               | 21.20               | 1.076                  | -0.03            | 0.801                  | 0.862                  |
|          | WCDMA IV | RMC 12.2Kbps | Front         | 10mm     | 2                   | 1312 | 1712.4      | 20.68               | 21.20               | 1.127                  | -0.04            | 0.799                  | 0.901                  |
|          | WCDMA IV | RMC 12.2Kbps | Front         | 10mm     | 2                   | 1413 | 1732.6      | 20.76               | 21.20               | 1.107                  | -0.01            | 0.812                  | 0.899                  |
|          | WCDMA IV | RMC 12.2Kbps | Back          | 10mm     | 2                   | 1513 | 1752.6      | 20.88               | 21.20               | 1.076                  | 0.01             | 0.790                  | 0.850                  |
|          | WCDMA IV | RMC 12.2Kbps | Back          | 10mm     | 2                   | 1312 | 1712.4      | 20.68               | 21.20               | 1.127                  | 0.01             | 0.762                  | 0.859                  |
|          | WCDMA IV | RMC 12.2Kbps | Back          | 10mm     | 2                   | 1413 | 1732.6      | 20.76               | 21.20               | 1.107                  | -0.1             | 0.767                  | 0.849                  |
|          | WCDMA IV | RMC 12.2Kbps | Left Side     | 10mm     | 2                   | 1513 | 1752.6      | 20.88               | 21.20               | 1.076                  | 0.17             | 0.209                  | 0.225                  |
|          | WCDMA IV | RMC 12.2Kbps | Right Side    | 10mm     | 2                   | 1513 | 1752.6      | 20.88               | 21.20               | 1.076                  | 0.15             | 0.319                  | 0.343                  |
| 29       | WCDMA IV | RMC 12.2Kbps | Bottom Side   | 10mm     | 2                   | 1513 | 1752.6      | 20.88               | 21.20               | 1.076                  | -0.15            | 0.921                  | 0.991                  |
|          | WCDMA IV | RMC 12.2Kbps | Bottom Side   | 10mm     | 2                   | 1312 | 1712.4      | 20.68               | 21.20               | 1.127                  | -0.15            | 0.789                  | 0.889                  |
|          | WCDMA IV | RMC 12.2Kbps | Bottom Side   | 10mm     | 2                   | 1413 | 1732.6      | 20.76               | 21.20               | 1.107                  | -0.12            | 0.874                  | 0.967                  |
|          | WCDMA V  | RMC 12.2Kbps | Front         | 10mm     | 2                   | 4182 | 836.4       | 21.50               | 22.20               | 1.175                  | -0.17            | 0.809                  | 0.950                  |
| 30       | WCDMA V  | RMC 12.2Kbps | Front         | 10mm     | 2                   | 4132 | 826.4       | 21.28               | 22.20               | 1.236                  | -0.07            | 0.795                  | 0.983                  |
|          | WCDMA V  | RMC 12.2Kbps | Front         | 10mm     | 2                   | 4233 | 846.6       | 21.18               | 22.20               | 1.265                  | -0.07            | 0.771                  | 0.975                  |
|          | WCDMA V  | RMC 12.2Kbps | Back          | 10mm     | 2                   | 4182 | 836.4       | 21.50               | 22.20               | 1.175                  | -0.06            | 0.760                  | 0.893                  |
|          | WCDMA V  | RMC 12.2Kbps | Back          | 10mm     | 2                   | 4132 | 826.4       | 21.28               | 22.20               | 1.236                  | -0.19            | 0.689                  | 0.852                  |
|          | WCDMA V  | RMC 12.2Kbps | Back          | 10mm     | 2                   | 4233 | 846.6       | 21.18               | 22.20               | 1.265                  | -0.15            | 0.646                  | 0.817                  |
|          | WCDMA V  | RMC 12.2Kbps | Left Side     | 10mm     | 2                   | 4182 | 836.4       | 21.50               | 22.20               | 1.175                  | -0.07            | 0.719                  | 0.845                  |
|          | WCDMA V  | RMC 12.2Kbps | Left Side     | 10mm     | 2                   | 4132 | 826.4       | 21.28               | 22.20               | 1.236                  | 0.02             | 0.693                  | 0.857                  |
|          | WCDMA V  | RMC 12.2Kbps | Left Side     | 10mm     | 2                   | 4233 | 846.6       | 21.18               | 22.20               | 1.265                  | -0.09            | 0.754                  | 0.954                  |
|          | WCDMA V  | RMC 12.2Kbps | Right Side    | 10mm     | 2                   | 4182 | 836.4       | 21.50               | 22.20               | 1.175                  | -0.06            | 0.389                  | 0.457                  |
|          | WCDMA V  | RMC 12.2Kbps | Bottom Side   | 10mm     | 2                   | 4182 | 836.4       | 21.50               | 22.20               | 1.175                  | -0.12            | 0.296                  | 0.348                  |

**<CDMA SAR>**

| Plot No. | Band      | Mode           | Test Position | Gap (mm) | Output Power States | Ch.  | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|-----------|----------------|---------------|----------|---------------------|------|-------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
|          | CDMA BC0  | RTAP 153.6Kbps | Front         | 10mm     | 2                   | 384  | 836.52      | 21.76               | 22.90               | 1.300                  | -0.01            | 0.868                  | 1.129                  |
|          | CDMA BC0  | RTAP 153.6Kbps | Front         | 10mm     | 2                   | 777  | 848.31      | 21.64               | 22.90               | 1.337                  | -0.03            | 0.780                  | 1.043                  |
| 31       | CDMA BC0  | RTAP 153.6Kbps | Front         | 10mm     | 2                   | 1013 | 824.7       | 21.72               | 22.90               | 1.312                  | -0.08            | 0.889                  | 1.167                  |
|          | CDMA BC0  | RTAP 153.6Kbps | Back          | 10mm     | 2                   | 384  | 836.52      | 21.76               | 22.90               | 1.300                  | -0.08            | 0.779                  | 1.013                  |
|          | CDMA BC0  | RTAP 153.6Kbps | Back          | 10mm     | 2                   | 1013 | 824.7       | 21.72               | 22.90               | 1.312                  | -0.03            | 0.773                  | 1.014                  |
|          | CDMA BC0  | RTAP 153.6Kbps | Back          | 10mm     | 2                   | 777  | 848.31      | 21.64               | 22.90               | 1.337                  | -0.1             | 0.778                  | 1.040                  |
|          | CDMA BC0  | RTAP 153.6Kbps | Left Side     | 10mm     | 2                   | 384  | 836.52      | 21.76               | 22.90               | 1.300                  | 0.07             | 0.567                  | 0.737                  |
|          | CDMA BC0  | RTAP 153.6Kbps | Right Side    | 10mm     | 2                   | 384  | 836.52      | 21.76               | 22.90               | 1.300                  | 0.06             | 0.301                  | 0.391                  |
|          | CDMA BC0  | RTAP 153.6Kbps | Bottom Side   | 10mm     | 2                   | 384  | 836.52      | 21.76               | 22.90               | 1.300                  | -0.14            | 0.396                  | 0.515                  |
|          | CDMA BC1  | RTAP 153.6Kbps | Front         | 10mm     | 2                   | 600  | 1880        | 21.88               | 22.50               | 1.153                  | 0.02             | 1.000                  | 1.153                  |
|          | CDMA BC1  | RTAP 153.6Kbps | Front         | 10mm     | 2                   | 25   | 1851.25     | 21.60               | 22.50               | 1.230                  | -0.06            | 0.946                  | 1.164                  |
|          | CDMA BC1  | RTAP 153.6Kbps | Front         | 10mm     | 2                   | 1175 | 1908.75     | 21.87               | 22.50               | 1.156                  | -0.11            | 1.010                  | 1.168                  |
|          | CDMA BC1  | RTAP 153.6Kbps | Back          | 10mm     | 2                   | 600  | 1880        | 21.88               | 22.50               | 1.153                  | -0.08            | 0.910                  | 1.050                  |
|          | CDMA BC1  | RTAP 153.6Kbps | Back          | 10mm     | 2                   | 25   | 1851.25     | 21.60               | 22.50               | 1.230                  | -0.07            | 0.866                  | 1.065                  |
|          | CDMA BC1  | RTAP 153.6Kbps | Back          | 10mm     | 2                   | 1175 | 1908.75     | 21.87               | 22.50               | 1.156                  | -0.02            | 0.892                  | 1.031                  |
|          | CDMA BC1  | RTAP 153.6Kbps | Left Side     | 10mm     | 2                   | 600  | 1880        | 21.88               | 22.50               | 1.153                  | 0.06             | 0.305                  | 0.352                  |
|          | CDMA BC1  | RTAP 153.6Kbps | Right Side    | 10mm     | 2                   | 600  | 1880        | 21.88               | 22.50               | 1.153                  | 0.01             | 0.445                  | 0.513                  |
|          | CDMA BC1  | RTAP 153.6Kbps | Bottom Side   | 10mm     | 2                   | 600  | 1880        | 21.88               | 22.50               | 1.153                  | -0.19            | 0.988                  | 1.140                  |
| 32       | CDMA BC1  | RTAP 153.6Kbps | Bottom Side   | 10mm     | 2                   | 25   | 1851.25     | 21.60               | 22.50               | 1.230                  | 0.08             | 0.966                  | 1.188                  |
|          | CDMA BC1  | RTAP 153.6Kbps | Bottom Side   | 10mm     | 2                   | 1175 | 1908.75     | 21.87               | 22.50               | 1.156                  | 0.01             | 1.010                  | 1.168                  |
| 33       | CDMA BC10 | RTAP 153.6Kbps | Front         | 10mm     | 2                   | 580  | 820.5       | 20.15               | 21.00               | 1.216                  | -0.08            | 0.666                  | 0.810                  |
|          | CDMA BC10 | RTAP 153.6Kbps | Back          | 10mm     | 2                   | 580  | 820.5       | 20.15               | 21.00               | 1.216                  | -0.01            | 0.572                  | 0.696                  |
|          | CDMA BC10 | RTAP 153.6Kbps | Left Side     | 10mm     | 2                   | 580  | 820.5       | 20.15               | 21.00               | 1.216                  | -0.03            | 0.584                  | 0.710                  |
|          | CDMA BC10 | RTAP 153.6Kbps | Right Side    | 10mm     | 2                   | 580  | 820.5       | 20.15               | 21.00               | 1.216                  | -0.06            | 0.324                  | 0.394                  |
|          | CDMA BC10 | RTAP 153.6Kbps | Bottom Side   | 10mm     | 2                   | 580  | 820.5       | 20.15               | 21.00               | 1.216                  | -0.1             | 0.266                  | 0.324                  |



## &lt;FDD LTE SAR&gt;

| Plot No. | Band       | BW (MHz) | Modulation | RB Size | RB offset | Test Position | Gap (mm) | Output Power States | Ch.   | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|------------|----------|------------|---------|-----------|---------------|----------|---------------------|-------|-------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
|          | LTE Band 2 | 20M      | QPSK       | 1       | 0         | Front         | 10mm     | 2                   | 18900 | 1880        | 20.23               | 21.50               | 1.340                  | 0                | 0.688                  | 0.922                  |
|          | LTE Band 2 | 20M      | QPSK       | 1       | 0         | Front         | 10mm     | 2                   | 18700 | 1860        | 20.08               | 21.50               | 1.387                  | -0.02            | 0.664                  | 0.921                  |
|          | LTE Band 2 | 20M      | QPSK       | 1       | 0         | Front         | 10mm     | 2                   | 19100 | 1900        | 20.17               | 21.50               | 1.358                  | 0.07             | 0.708                  | 0.962                  |
|          | LTE Band 2 | 20M      | QPSK       | 50      | 0         | Front         | 10mm     | 2                   | 19100 | 1900        | 20.18               | 21.50               | 1.355                  | -0.13            | 0.727                  | 0.985                  |
|          | LTE Band 2 | 20M      | QPSK       | 50      | 0         | Front         | 10mm     | 2                   | 18700 | 1860        | 19.98               | 21.50               | 1.419                  | -0.05            | 0.677                  | 0.961                  |
|          | LTE Band 2 | 20M      | QPSK       | 50      | 24        | Front         | 10mm     | 2                   | 18900 | 1880        | 20.11               | 21.50               | 1.377                  | 0.02             | 0.700                  | 0.964                  |
|          | LTE Band 2 | 20M      | QPSK       | 100     | 0         | Front         | 10mm     | 2                   | 19100 | 1900        | 20.14               | 21.50               | 1.368                  | -0.09            | 0.711                  | 0.972                  |
|          | LTE Band 2 | 20M      | QPSK       | 1       | 0         | Back          | 10mm     | 2                   | 18900 | 1880        | 20.23               | 21.50               | 1.340                  | 0.14             | 0.626                  | 0.839                  |
|          | LTE Band 2 | 20M      | QPSK       | 1       | 0         | Back          | 10mm     | 2                   | 18700 | 1860        | 20.08               | 21.50               | 1.387                  | -0.02            | 0.659                  | 0.914                  |
|          | LTE Band 2 | 20M      | QPSK       | 1       | 0         | Back          | 10mm     | 2                   | 19100 | 1900        | 20.17               | 21.50               | 1.358                  | -0.05            | 0.689                  | 0.936                  |
|          | LTE Band 2 | 20M      | QPSK       | 50      | 0         | Back          | 10mm     | 2                   | 19100 | 1900        | 20.18               | 21.50               | 1.355                  | -0.05            | 0.663                  | 0.898                  |
|          | LTE Band 2 | 20M      | QPSK       | 50      | 0         | Back          | 10mm     | 2                   | 18700 | 1860        | 19.98               | 21.50               | 1.419                  | 0.04             | 0.633                  | 0.898                  |
|          | LTE Band 2 | 20M      | QPSK       | 50      | 24        | Back          | 10mm     | 2                   | 18900 | 1880        | 20.11               | 21.50               | 1.377                  | -0.03            | 0.657                  | 0.905                  |
|          | LTE Band 2 | 20M      | QPSK       | 100     | 0         | Back          | 10mm     | 2                   | 19100 | 1900        | 20.14               | 21.50               | 1.368                  | 0.07             | 0.656                  | 0.897                  |
|          | LTE Band 2 | 20M      | QPSK       | 1       | 0         | Left Side     | 10mm     | 2                   | 18900 | 1880        | 20.23               | 21.50               | 1.340                  | 0                | 0.265                  | 0.355                  |
|          | LTE Band 2 | 20M      | QPSK       | 50      | 0         | Left Side     | 10mm     | 2                   | 19100 | 1900        | 20.18               | 21.50               | 1.355                  | -0.12            | 0.164                  | 0.222                  |
|          | LTE Band 2 | 20M      | QPSK       | 1       | 0         | Right Side    | 10mm     | 2                   | 18900 | 1880        | 20.23               | 21.50               | 1.340                  | 0.05             | 0.436                  | 0.584                  |
|          | LTE Band 2 | 20M      | QPSK       | 50      | 0         | Right Side    | 10mm     | 2                   | 19100 | 1900        | 20.18               | 21.50               | 1.355                  | -0.04            | 0.277                  | 0.375                  |
|          | LTE Band 2 | 20M      | QPSK       | 1       | 0         | Bottom Side   | 10mm     | 2                   | 18900 | 1880        | 20.23               | 21.50               | 1.340                  | 0.02             | 0.753                  | 1.009                  |
|          | LTE Band 2 | 20M      | QPSK       | 1       | 0         | Bottom Side   | 10mm     | 2                   | 18700 | 1860        | 20.08               | 21.50               | 1.387                  | 0.13             | 0.742                  | 1.029                  |
| 34       | LTE Band 2 | 20M      | QPSK       | 1       | 0         | Bottom Side   | 10mm     | 2                   | 19100 | 1900        | 20.17               | 21.50               | 1.358                  | -0.08            | 0.781                  | 1.061                  |
|          | LTE Band 2 | 20M      | QPSK       | 50      | 0         | Bottom Side   | 10mm     | 2                   | 19100 | 1900        | 20.18               | 21.50               | 1.355                  | 0.06             | 0.777                  | 1.053                  |
|          | LTE Band 2 | 20M      | QPSK       | 50      | 0         | Bottom Side   | 10mm     | 2                   | 18700 | 1860        | 19.98               | 21.50               | 1.419                  | -0.08            | 0.741                  | 1.052                  |
|          | LTE Band 2 | 20M      | QPSK       | 50      | 24        | Bottom Side   | 10mm     | 2                   | 18900 | 1880        | 20.11               | 21.50               | 1.377                  | 0.03             | 0.761                  | 1.048                  |
|          | LTE Band 2 | 20M      | QPSK       | 100     | 0         | Bottom Side   | 10mm     | 2                   | 19100 | 1900        | 20.14               | 21.50               | 1.368                  | 0                | 0.774                  | 1.059                  |
|          | LTE Band 4 | 20M      | QPSK       | 1       | 0         | Front         | 10mm     | 2                   | 20175 | 1732.5      | 19.58               | 20.70               | 1.294                  | -0.12            | 0.711                  | 0.920                  |
|          | LTE Band 4 | 20M      | QPSK       | 50      | 0         | Front         | 10mm     | 2                   | 20175 | 1732.5      | 19.45               | 20.70               | 1.334                  | -0.15            | 0.796                  | 1.061                  |
| 35       | LTE Band 4 | 20M      | QPSK       | 100     | 0         | Front         | 10mm     | 2                   | 20175 | 1732.5      | 19.45               | 20.70               | 1.334                  | -0.04            | 0.808                  | 1.077                  |
|          | LTE Band 4 | 20M      | QPSK       | 1       | 0         | Back          | 10mm     | 2                   | 20175 | 1732.5      | 19.58               | 20.70               | 1.294                  | -0.01            | 0.680                  | 0.880                  |
|          | LTE Band 4 | 20M      | QPSK       | 50      | 0         | Back          | 10mm     | 2                   | 20175 | 1732.5      | 19.45               | 20.70               | 1.334                  | 0.01             | 0.742                  | 0.989                  |
|          | LTE Band 4 | 20M      | QPSK       | 100     | 0         | Back          | 10mm     | 2                   | 20175 | 1732.5      | 19.45               | 20.70               | 1.334                  | 0.08             | 0.737                  | 0.983                  |
|          | LTE Band 4 | 20M      | QPSK       | 1       | 0         | Left Side     | 10mm     | 2                   | 20175 | 1732.5      | 19.58               | 20.70               | 1.294                  | 0.12             | 0.371                  | 0.480                  |
|          | LTE Band 4 | 20M      | QPSK       | 50      | 0         | Left Side     | 10mm     | 2                   | 20175 | 1732.5      | 19.45               | 20.70               | 1.334                  | 0.15             | 0.197                  | 0.263                  |
|          | LTE Band 4 | 20M      | QPSK       | 1       | 0         | Right Side    | 10mm     | 2                   | 20175 | 1732.5      | 19.58               | 20.70               | 1.294                  | 0.18             | 0.607                  | 0.786                  |
|          | LTE Band 4 | 20M      | QPSK       | 50      | 0         | Right Side    | 10mm     | 2                   | 20175 | 1732.5      | 19.45               | 20.70               | 1.334                  | 0.05             | 0.313                  | 0.417                  |
|          | LTE Band 4 | 20M      | QPSK       | 1       | 0         | Bottom Side   | 10mm     | 2                   | 20175 | 1732.5      | 19.58               | 20.70               | 1.294                  | -0.07            | 0.713                  | 0.923                  |
|          | LTE Band 4 | 20M      | QPSK       | 50      | 0         | Bottom Side   | 10mm     | 2                   | 20175 | 1732.5      | 19.45               | 20.70               | 1.334                  | -0.13            | 0.805                  | 1.073                  |
|          | LTE Band 4 | 20M      | QPSK       | 100     | 0         | Bottom Side   | 10mm     | 2                   | 20175 | 1732.5      | 19.45               | 20.70               | 1.334                  | -0.1             | 0.780                  | 1.040                  |
|          | LTE Band 5 | 10M      | QPSK       | 1       | 0         | Front         | 10mm     | 2                   | 20525 | 836.5       | 21.28               | 22.10               | 1.208                  | -0.13            | 0.711                  | 0.859                  |
|          | LTE Band 5 | 10M      | QPSK       | 25      | 0         | Front         | 10mm     | 2                   | 20525 | 836.5       | 20.94               | 22.10               | 1.306                  | 0.06             | 0.610                  | 0.797                  |
|          | LTE Band 5 | 10M      | QPSK       | 50      | 0         | Front         | 10mm     | 2                   | 20525 | 836.5       | 20.97               | 22.10               | 1.297                  | -0.1             | 0.642                  | 0.833                  |
| 36       | LTE Band 5 | 10M      | QPSK       | 1       | 0         | Back          | 10mm     | 2                   | 20525 | 836.5       | 21.28               | 22.10               | 1.208                  | -0.03            | 0.740                  | 0.894                  |
|          | LTE Band 5 | 10M      | QPSK       | 25      | 0         | Back          | 10mm     | 2                   | 20525 | 836.5       | 20.94               | 22.10               | 1.306                  | -0.05            | 0.594                  | 0.776                  |
|          | LTE Band 5 | 10M      | QPSK       | 50      | 0         | Back          | 10mm     | 2                   | 20525 | 836.5       | 20.97               | 22.10               | 1.297                  | -0.13            | 0.590                  | 0.765                  |
|          | LTE Band 5 | 10M      | QPSK       | 1       | 0         | Left Side     | 10mm     | 2                   | 20525 | 836.5       | 21.28               | 22.10               | 1.208                  | 0                | 0.490                  | 0.592                  |
|          | LTE Band 5 | 10M      | QPSK       | 25      | 0         | Left Side     | 10mm     | 2                   | 20525 | 836.5       | 20.94               | 22.10               | 1.306                  | 0.03             | 0.362                  | 0.473                  |
|          | LTE Band 5 | 10M      | QPSK       | 1       | 0         | Right Side    | 10mm     | 2                   | 20525 | 836.5       | 21.28               | 22.10               | 1.208                  | -0.15            | 0.396                  | 0.478                  |
|          | LTE Band 5 | 10M      | QPSK       | 25      | 0         | Right Side    | 10mm     | 2                   | 20525 | 836.5       | 20.94               | 22.10               | 1.306                  | -0.04            | 0.187                  | 0.244                  |
|          | LTE Band 5 | 10M      | QPSK       | 1       | 0         | Bottom Side   | 10mm     | 2                   | 20525 | 836.5       | 21.28               | 22.10               | 1.208                  | -0.16            | 0.348                  | 0.420                  |
|          | LTE Band 5 | 10M      | QPSK       | 25      | 0         | Bottom Side   | 10mm     | 2                   | 20525 | 836.5       | 20.94               | 22.10               | 1.306                  | -0.1             | 0.246                  | 0.321                  |



| Plot No. | Band        | BW (MHz) | Modulation | RB Size | RB offset | Test Position | Gap (mm) | Output Power States | Ch.   | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|-------------|----------|------------|---------|-----------|---------------|----------|---------------------|-------|-------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
|          | LTE Band 7  | 20M      | QPSK       | 1       | 99        | Front         | 10mm     | 2                   | 21350 | 2560        | 21.64               | 23.20               | 1.432                  | 0.1              | 0.624                  | 0.894                  |
| 37       | LTE Band 7  | 20M      | QPSK       | 1       | 99        | Front         | 10mm     | 2                   | 20850 | 2510        | 21.65               | 23.20               | 1.429                  | 0.12             | 0.721                  | 1.030                  |
|          | LTE Band 7  | 20M      | QPSK       | 1       | 99        | Front         | 10mm     | 2                   | 21100 | 2535        | 21.81               | 23.20               | 1.377                  | 0.07             | 0.668                  | 0.920                  |
|          | LTE Band 7  | 20M      | QPSK       | 50      | 0         | Front         | 10mm     | 2                   | 21350 | 2560        | 21.51               | 23.00               | 1.409                  | 0.08             | 0.612                  | 0.862                  |
|          | LTE Band 7  | 20M      | QPSK       | 50      | 0         | Front         | 10mm     | 2                   | 20850 | 2510        | 21.48               | 23.00               | 1.419                  | 0.1              | 0.678                  | 0.962                  |
|          | LTE Band 7  | 20M      | QPSK       | 50      | 0         | Front         | 10mm     | 2                   | 21100 | 2535        | 21.46               | 23.00               | 1.426                  | 0.13             | 0.646                  | 0.921                  |
|          | LTE Band 7  | 20M      | QPSK       | 100     | 0         | Front         | 10mm     | 2                   | 21350 | 2560        | 21.47               | 23.00               | 1.422                  | 0.11             | 0.606                  | 0.862                  |
|          | LTE Band 7  | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 2                   | 21350 | 2560        | 21.64               | 23.20               | 1.432                  | -0.1             | 0.624                  | 0.894                  |
|          | LTE Band 7  | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 2                   | 20850 | 2510        | 21.65               | 23.20               | 1.429                  | -0.04            | 0.705                  | 1.007                  |
|          | LTE Band 7  | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 2                   | 21100 | 2535        | 21.81               | 23.20               | 1.377                  | -0.1             | 0.671                  | 0.924                  |
|          | LTE Band 7  | 20M      | QPSK       | 50      | 0         | Back          | 10mm     | 2                   | 21350 | 2560        | 21.51               | 23.00               | 1.409                  | 0.01             | 0.589                  | 0.830                  |
|          | LTE Band 7  | 20M      | QPSK       | 50      | 0         | Back          | 10mm     | 2                   | 20850 | 2510        | 21.48               | 23.00               | 1.419                  | -0.11            | 0.633                  | 0.898                  |
|          | LTE Band 7  | 20M      | QPSK       | 50      | 0         | Back          | 10mm     | 2                   | 21100 | 2535        | 21.46               | 23.00               | 1.426                  | -0.01            | 0.613                  | 0.874                  |
|          | LTE Band 7  | 20M      | QPSK       | 100     | 0         | Back          | 10mm     | 2                   | 21350 | 2560        | 21.47               | 23.00               | 1.422                  | -0.14            | 0.584                  | 0.831                  |
|          | LTE Band 7  | 20M      | QPSK       | 1       | 99        | Left Side     | 10mm     | 2                   | 21350 | 2560        | 21.81               | 23.20               | 1.377                  | 0.16             | 0.062                  | 0.085                  |
|          | LTE Band 7  | 20M      | QPSK       | 50      | 0         | Left Side     | 10mm     | 2                   | 21350 | 2560        | 21.51               | 23.00               | 1.409                  | -0.18            | 0.131                  | 0.185                  |
|          | LTE Band 7  | 20M      | QPSK       | 1       | 99        | Right Side    | 10mm     | 2                   | 21350 | 2560        | 21.81               | 23.20               | 1.377                  | -0.05            | 0.069                  | 0.095                  |
|          | LTE Band 7  | 20M      | QPSK       | 50      | 0         | Right Side    | 10mm     | 2                   | 21350 | 2560        | 21.51               | 23.00               | 1.409                  | -0.1             | 0.050                  | 0.070                  |
|          | LTE Band 7  | 20M      | QPSK       | 1       | 99        | Bottom Side   | 10mm     | 2                   | 21350 | 2560        | 21.64               | 23.20               | 1.432                  | -0.15            | 0.682                  | 0.977                  |
|          | LTE Band 7  | 20M      | QPSK       | 1       | 99        | Bottom Side   | 10mm     | 2                   | 20850 | 2510        | 21.65               | 23.20               | 1.429                  | -0.14            | 0.696                  | 0.995                  |
|          | LTE Band 7  | 20M      | QPSK       | 1       | 99        | Bottom Side   | 10mm     | 2                   | 21100 | 2535        | 21.81               | 23.20               | 1.377                  | -0.18            | 0.667                  | 0.919                  |
|          | LTE Band 7  | 20M      | QPSK       | 50      | 0         | Bottom Side   | 10mm     | 2                   | 21350 | 2560        | 21.51               | 23.00               | 1.409                  | -0.18            | 0.569                  | 0.802                  |
|          | LTE Band 7  | 20M      | QPSK       | 50      | 0         | Bottom Side   | 10mm     | 2                   | 20850 | 2510        | 21.48               | 23.00               | 1.419                  | -0.17            | 0.614                  | 0.871                  |
|          | LTE Band 7  | 20M      | QPSK       | 50      | 0         | Bottom Side   | 10mm     | 2                   | 21100 | 2535        | 21.46               | 23.00               | 1.426                  | -0.09            | 0.615                  | 0.877                  |
|          | LTE Band 7  | 20M      | QPSK       | 100     | 0         | Bottom Side   | 10mm     | 2                   | 21350 | 2560        | 21.47               | 23.00               | 1.422                  | -0.16            | 0.590                  | 0.839                  |
| 38       | LTE Band 12 | 10M      | QPSK       | 1       | 25        | Front         | 10mm     | 2                   | 23095 | 707.5       | 21.08               | 22.20               | 1.294                  | -0.05            | 0.766                  | 0.991                  |
|          | LTE Band 12 | 10M      | QPSK       | 25      | 12        | Front         | 10mm     | 2                   | 23095 | 707.5       | 20.93               | 22.20               | 1.340                  | 0.11             | 0.607                  | 0.813                  |
|          | LTE Band 12 | 10M      | QPSK       | 50      | 0         | Front         | 10mm     | 2                   | 23095 | 707.5       | 20.89               | 22.20               | 1.352                  | 0.03             | 0.578                  | 0.781                  |
|          | LTE Band 12 | 10M      | QPSK       | 1       | 25        | Back          | 10mm     | 2                   | 23095 | 707.5       | 21.08               | 22.20               | 1.294                  | 0.01             | 0.752                  | 0.973                  |
|          | LTE Band 12 | 10M      | QPSK       | 25      | 12        | Back          | 10mm     | 2                   | 23095 | 707.5       | 20.93               | 22.20               | 1.340                  | -0.08            | 0.596                  | 0.798                  |
|          | LTE Band 12 | 10M      | QPSK       | 50      | 0         | Back          | 10mm     | 2                   | 23095 | 707.5       | 20.89               | 22.20               | 1.352                  | -0.15            | 0.565                  | 0.764                  |
|          | LTE Band 12 | 10M      | QPSK       | 1       | 25        | Left Side     | 10mm     | 2                   | 23095 | 707.5       | 21.08               | 22.20               | 1.294                  | -0.12            | 0.758                  | 0.981                  |
|          | LTE Band 12 | 10M      | QPSK       | 25      | 12        | Left Side     | 10mm     | 2                   | 23095 | 707.5       | 20.93               | 22.20               | 1.340                  | -0.04            | 0.425                  | 0.569                  |
|          | LTE Band 12 | 10M      | QPSK       | 50      | 0         | Left Side     | 10mm     | 2                   | 23095 | 707.5       | 20.89               | 22.20               | 1.352                  | -0.19            | 0.405                  | 0.548                  |
|          | LTE Band 12 | 10M      | QPSK       | 1       | 25        | Right Side    | 10mm     | 2                   | 23095 | 707.5       | 21.08               | 22.20               | 1.294                  | -0.04            | 0.180                  | 0.233                  |
|          | LTE Band 12 | 10M      | QPSK       | 25      | 12        | Right Side    | 10mm     | 2                   | 23095 | 707.5       | 20.93               | 22.20               | 1.340                  | -0.1             | 0.099                  | 0.133                  |
|          | LTE Band 12 | 10M      | QPSK       | 1       | 25        | Bottom Side   | 10mm     | 2                   | 23095 | 707.5       | 21.08               | 22.20               | 1.294                  | 0                | 0.253                  | 0.327                  |
|          | LTE Band 12 | 10M      | QPSK       | 25      | 12        | Bottom Side   | 10mm     | 2                   | 23095 | 707.5       | 20.93               | 22.20               | 1.340                  | -0.13            | 0.185                  | 0.248                  |
|          | LTE Band 13 | 10M      | QPSK       | 1       | 0         | Front         | 10mm     | 2                   | 23230 | 782         | 21.63               | 22.40               | 1.194                  | -0.03            | 0.934                  | 1.115                  |
|          | LTE Band 13 | 10M      | QPSK       | 25      | 0         | Front         | 10mm     | 2                   | 23230 | 782         | 21.54               | 22.40               | 1.219                  | -0.15            | 0.818                  | 0.997                  |
|          | LTE Band 13 | 10M      | QPSK       | 50      | 0         | Front         | 10mm     | 2                   | 23230 | 782         | 21.36               | 22.40               | 1.271                  | -0.01            | 0.799                  | 1.015                  |
| 39       | LTE Band 13 | 10M      | QPSK       | 1       | 0         | Back          | 10mm     | 2                   | 23230 | 782         | 21.63               | 22.40               | 1.194                  | -0.13            | 1.000                  | 1.194                  |
|          | LTE Band 13 | 10M      | QPSK       | 25      | 0         | Back          | 10mm     | 2                   | 23230 | 782         | 21.54               | 22.40               | 1.219                  | -0.13            | 0.721                  | 0.879                  |
|          | LTE Band 13 | 10M      | QPSK       | 50      | 0         | Back          | 10mm     | 2                   | 23230 | 782         | 21.36               | 22.40               | 1.271                  | 0                | 0.667                  | 0.847                  |
|          | LTE Band 13 | 10M      | QPSK       | 1       | 0         | Left Side     | 10mm     | 2                   | 23230 | 782         | 21.63               | 22.40               | 1.194                  | -0.1             | 0.928                  | 1.108                  |
|          | LTE Band 13 | 10M      | QPSK       | 25      | 0         | Left Side     | 10mm     | 2                   | 23230 | 782         | 21.54               | 22.40               | 1.219                  | -0.09            | 0.439                  | 0.535                  |
|          | LTE Band 13 | 10M      | QPSK       | 50      | 0         | Left Side     | 10mm     | 2                   | 23230 | 782         | 21.36               | 22.40               | 1.271                  | -0.17            | 0.424                  | 0.539                  |
|          | LTE Band 13 | 10M      | QPSK       | 1       | 0         | Right Side    | 10mm     | 2                   | 23230 | 782         | 21.63               | 22.40               | 1.194                  | -0.19            | 0.548                  | 0.654                  |
|          | LTE Band 13 | 10M      | QPSK       | 25      | 0         | Right Side    | 10mm     | 2                   | 23230 | 782         | 21.54               | 22.40               | 1.219                  | -0.08            | 0.259                  | 0.316                  |
|          | LTE Band 13 | 10M      | QPSK       | 1       | 0         | Bottom Side   | 10mm     | 2                   | 23230 | 782         | 21.63               | 22.40               | 1.194                  | -0.19            | 0.431                  | 0.515                  |
|          | LTE Band 13 | 10M      | QPSK       | 25      | 0         | Bottom Side   | 10mm     | 2                   | 23230 | 782         | 21.54               | 22.40               | 1.219                  | -0.17            | 0.307                  | 0.374                  |



| Plot No. | Band        | BW (MHz) | Modulation | RB Size | RB offset | Test Position | Gap (mm) | Output Power States | Ch.   | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|-------------|----------|------------|---------|-----------|---------------|----------|---------------------|-------|-------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
|          | LTE Band 17 | 10M      | QPSK       | 1       | 25        | Front         | 10mm     | 2                   | 23790 | 710         | 20.98               | 22.00               | 1.265                  | 0.07             | 0.673                  | 0.851                  |
|          | LTE Band 17 | 10M      | QPSK       | 25      | 12        | Front         | 10mm     | 2                   | 23790 | 710         | 20.81               | 22.00               | 1.315                  | -0.19            | 0.609                  | 0.801                  |
|          | LTE Band 17 | 10M      | QPSK       | 50      | 0         | Front         | 10mm     | 2                   | 23790 | 710         | 20.64               | 22.00               | 1.368                  | -0.1             | 0.594                  | 0.812                  |
|          | LTE Band 17 | 10M      | QPSK       | 1       | 25        | Back          | 10mm     | 2                   | 23790 | 710         | 20.98               | 22.00               | 1.265                  | 0.06             | 0.752                  | 0.951                  |
|          | LTE Band 17 | 10M      | QPSK       | 25      | 12        | Back          | 10mm     | 2                   | 23790 | 710         | 20.81               | 22.00               | 1.315                  | -0.02            | 0.598                  | 0.787                  |
|          | LTE Band 17 | 10M      | QPSK       | 50      | 0         | Back          | 10mm     | 2                   | 23790 | 710         | 20.64               | 22.00               | 1.368                  | 0.03             | 0.571                  | 0.781                  |
| 40       | LTE Band 17 | 10M      | QPSK       | 1       | 25        | Left Side     | 10mm     | 2                   | 23790 | 710         | 20.98               | 22.00               | 1.265                  | 0.14             | 0.873                  | 1.104                  |
|          | LTE Band 17 | 10M      | QPSK       | 25      | 12        | Left Side     | 10mm     | 2                   | 23790 | 710         | 20.81               | 22.00               | 1.315                  | -0.19            | 0.424                  | 0.558                  |
|          | LTE Band 17 | 10M      | QPSK       | 50      | 0         | Left Side     | 10mm     | 2                   | 23790 | 710         | 20.64               | 22.00               | 1.368                  | -0.15            | 0.412                  | 0.564                  |
|          | LTE Band 17 | 10M      | QPSK       | 1       | 25        | Right Side    | 10mm     | 2                   | 23790 | 710         | 20.98               | 22.00               | 1.265                  | -0.17            | 0.205                  | 0.259                  |
|          | LTE Band 17 | 10M      | QPSK       | 25      | 12        | Right Side    | 10mm     | 2                   | 23790 | 710         | 20.81               | 22.00               | 1.315                  | -0.01            | 0.096                  | 0.126                  |
|          | LTE Band 17 | 10M      | QPSK       | 1       | 25        | Bottom Side   | 10mm     | 2                   | 23790 | 710         | 20.98               | 22.00               | 1.265                  | 0.15             | 0.237                  | 0.300                  |
|          | LTE Band 17 | 10M      | QPSK       | 25      | 12        | Bottom Side   | 10mm     | 2                   | 23790 | 710         | 20.81               | 22.00               | 1.315                  | -0.15            | 0.184                  | 0.242                  |
|          | LTE Band 25 | 20M      | QPSK       | 1       | 49        | Front         | 10mm     | 2                   | 26340 | 1880        | 19.86               | 20.80               | 1.242                  | -0.17            | 0.733                  | 0.910                  |
|          | LTE Band 25 | 20M      | QPSK       | 1       | 49        | Front         | 10mm     | 2                   | 26140 | 1860        | 19.83               | 20.80               | 1.250                  | 0.01             | 0.726                  | 0.908                  |
|          | LTE Band 25 | 20M      | QPSK       | 1       | 49        | Front         | 10mm     | 2                   | 26590 | 1905        | 19.85               | 20.80               | 1.245                  | 0.11             | 0.772                  | 0.961                  |
|          | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Front         | 10mm     | 2                   | 26340 | 1880        | 19.65               | 20.80               | 1.303                  | 0.04             | 0.735                  | 0.958                  |
|          | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Front         | 10mm     | 2                   | 26140 | 1860        | 19.49               | 20.80               | 1.352                  | -0.03            | 0.732                  | 0.990                  |
|          | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Front         | 10mm     | 2                   | 26590 | 1905        | 19.56               | 20.80               | 1.330                  | -0.04            | 0.779                  | 1.036                  |
|          | LTE Band 25 | 20M      | QPSK       | 100     | 0         | Front         | 10mm     | 2                   | 26340 | 1880        | 19.61               | 20.80               | 1.315                  | -0.02            | 0.749                  | 0.985                  |
|          | LTE Band 25 | 20M      | QPSK       | 1       | 49        | Back          | 10mm     | 2                   | 26340 | 1880        | 19.86               | 20.80               | 1.242                  | 0.08             | 0.717                  | 0.890                  |
|          | LTE Band 25 | 20M      | QPSK       | 1       | 49        | Back          | 10mm     | 2                   | 26140 | 1860        | 19.83               | 20.80               | 1.250                  | -0.11            | 0.726                  | 0.908                  |
|          | LTE Band 25 | 20M      | QPSK       | 1       | 49        | Back          | 10mm     | 2                   | 26590 | 1905        | 19.85               | 20.80               | 1.245                  | 0                | 0.747                  | 0.930                  |
|          | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Back          | 10mm     | 2                   | 26340 | 1880        | 19.65               | 20.80               | 1.303                  | 0                | 0.718                  | 0.936                  |
|          | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Back          | 10mm     | 2                   | 26140 | 1860        | 19.49               | 20.80               | 1.352                  | -0.1             | 0.692                  | 0.936                  |
|          | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Back          | 10mm     | 2                   | 26590 | 1905        | 19.56               | 20.80               | 1.330                  | 0                | 0.722                  | 0.961                  |
|          | LTE Band 25 | 20M      | QPSK       | 100     | 0         | Back          | 10mm     | 2                   | 26340 | 1880        | 19.61               | 20.80               | 1.315                  | -0.06            | 0.717                  | 0.943                  |
|          | LTE Band 25 | 20M      | QPSK       | 1       | 49        | Left Side     | 10mm     | 2                   | 26340 | 1880        | 19.86               | 20.80               | 1.242                  | -0.05            | 0.344                  | 0.427                  |
|          | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Left Side     | 10mm     | 2                   | 26340 | 1880        | 19.65               | 20.80               | 1.303                  | 0.07             | 0.179                  | 0.233                  |
|          | LTE Band 25 | 20M      | QPSK       | 1       | 49        | Right Side    | 10mm     | 2                   | 26340 | 1880        | 19.86               | 20.80               | 1.242                  | 0.02             | 0.549                  | 0.682                  |
|          | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Right Side    | 10mm     | 2                   | 26340 | 1880        | 19.65               | 20.80               | 1.303                  | 0.05             | 0.292                  | 0.381                  |
|          | LTE Band 25 | 20M      | QPSK       | 1       | 49        | Bottom Side   | 10mm     | 2                   | 26340 | 1880        | 19.86               | 20.80               | 1.242                  | 0.16             | 0.815                  | 1.012                  |
|          | LTE Band 25 | 20M      | QPSK       | 1       | 49        | Bottom Side   | 10mm     | 2                   | 26140 | 1860        | 19.83               | 20.80               | 1.250                  | -0.13            | 0.808                  | 1.010                  |
|          | LTE Band 25 | 20M      | QPSK       | 1       | 49        | Bottom Side   | 10mm     | 2                   | 26590 | 1905        | 19.85               | 20.80               | 1.245                  | 0.04             | 0.839                  | 1.044                  |
|          | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Bottom Side   | 10mm     | 2                   | 26340 | 1880        | 19.65               | 20.80               | 1.303                  | -0.03            | 0.831                  | 1.083                  |
|          | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Bottom Side   | 10mm     | 2                   | 26140 | 1860        | 19.49               | 20.80               | 1.352                  | 0.11             | 0.814                  | 1.101                  |
| 41       | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Bottom Side   | 10mm     | 2                   | 26590 | 1905        | 19.56               | 20.80               | 1.330                  | 0.04             | 0.839                  | 1.116                  |
|          | LTE Band 25 | 20M      | QPSK       | 100     | 0         | Bottom Side   | 10mm     | 2                   | 26340 | 1880        | 19.61               | 20.80               | 1.315                  | -0.04            | 0.834                  | 1.097                  |
| 42       | LTE Band 26 | 15M      | QPSK       | 1       | 37        | Front         | 10mm     | 2                   | 26865 | 831.5       | 22.20               | 23.00               | 1.202                  | 0.13             | 0.870                  | 1.046                  |
|          | LTE Band 26 | 15M      | QPSK       | 36      | 0         | Front         | 10mm     | 2                   | 26865 | 831.5       | 22.00               | 23.00               | 1.259                  | 0.04             | 0.645                  | 0.812                  |
|          | LTE Band 26 | 15M      | QPSK       | 75      | 0         | Front         | 10mm     | 2                   | 26865 | 831.5       | 21.81               | 23.00               | 1.315                  | 0.15             | 0.635                  | 0.835                  |
|          | LTE Band 26 | 15M      | QPSK       | 1       | 37        | Back          | 10mm     | 2                   | 26865 | 831.5       | 22.20               | 23.00               | 1.202                  | 0.01             | 0.796                  | 0.957                  |
|          | LTE Band 26 | 15M      | QPSK       | 36      | 0         | Back          | 10mm     | 2                   | 26865 | 831.5       | 22.00               | 23.00               | 1.259                  | -0.12            | 0.615                  | 0.774                  |
|          | LTE Band 26 | 15M      | QPSK       | 75      | 0         | Back          | 10mm     | 2                   | 26865 | 831.5       | 21.81               | 23.00               | 1.315                  | -0.15            | 0.570                  | 0.750                  |
|          | LTE Band 26 | 15M      | QPSK       | 1       | 37        | Left Side     | 10mm     | 2                   | 26865 | 831.5       | 22.20               | 23.00               | 1.202                  | -0.11            | 0.536                  | 0.644                  |
|          | LTE Band 26 | 15M      | QPSK       | 36      | 0         | Left Side     | 10mm     | 2                   | 26865 | 831.5       | 22.00               | 23.00               | 1.259                  | -0.05            | 0.382                  | 0.481                  |
|          | LTE Band 26 | 15M      | QPSK       | 1       | 37        | Right Side    | 10mm     | 2                   | 26865 | 831.5       | 22.20               | 23.00               | 1.202                  | -0.12            | 0.332                  | 0.399                  |
|          | LTE Band 26 | 15M      | QPSK       | 36      | 0         | Right Side    | 10mm     | 2                   | 26865 | 831.5       | 22.00               | 23.00               | 1.259                  | -0.15            | 0.194                  | 0.244                  |
|          | LTE Band 26 | 15M      | QPSK       | 1       | 37        | Bottom Side   | 10mm     | 2                   | 26865 | 831.5       | 22.20               | 23.00               | 1.202                  | -0.13            | 0.355                  | 0.427                  |
|          | LTE Band 26 | 15M      | QPSK       | 36      | 0         | Bottom Side   | 10mm     | 2                   | 26865 | 831.5       | 22.00               | 23.00               | 1.259                  | -0.15            | 0.262                  | 0.330                  |



| Plot No. | Band        | BW (MHz) | Modulation | RB Size | RB offset | Test Position | Gap (mm) | Output Power States | Ch.    | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|-------------|----------|------------|---------|-----------|---------------|----------|---------------------|--------|-------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
|          | LTE Band 30 | 10M      | QPSK       | 1       | 49        | Front         | 10mm     | 2                   | 27710  | 2355        | 21.06               | 22.20               | 1.300                  | -0.13            | 0.397                  | 0.516                  |
|          | LTE Band 30 | 10M      | QPSK       | 25      | 25        | Front         | 10mm     | 2                   | 27710  | 2355        | 20.89               | 22.20               | 1.352                  | 0.07             | 0.418                  | 0.565                  |
|          | LTE Band 30 | 10M      | QPSK       | 1       | 49        | Back          | 10mm     | 2                   | 27710  | 2355        | 21.06               | 22.20               | 1.300                  | -0.18            | 0.711                  | 0.924                  |
|          | LTE Band 30 | 10M      | QPSK       | 25      | 25        | Back          | 10mm     | 2                   | 27710  | 2355        | 20.89               | 22.20               | 1.352                  | -0.13            | 0.785                  | 1.061                  |
| 43       | LTE Band 30 | 10M      | QPSK       | 50      | 0         | Back          | 10mm     | 2                   | 27710  | 2355        | 20.96               | 22.20               | 1.330                  | 0.02             | 0.894                  | 1.189                  |
|          | LTE Band 30 | 10M      | QPSK       | 1       | 49        | Left Side     | 10mm     | 2                   | 27710  | 2355        | 21.06               | 22.20               | 1.300                  | 0.11             | 0.087                  | 0.113                  |
|          | LTE Band 30 | 10M      | QPSK       | 25      | 25        | Left Side     | 10mm     | 2                   | 27710  | 2355        | 20.89               | 22.20               | 1.352                  | 0.17             | 0.093                  | 0.126                  |
|          | LTE Band 30 | 10M      | QPSK       | 1       | 49        | Right Side    | 10mm     | 2                   | 27710  | 2355        | 21.06               | 22.20               | 1.300                  | -0.19            | 0.046                  | 0.060                  |
|          | LTE Band 30 | 10M      | QPSK       | 25      | 25        | Right Side    | 10mm     | 2                   | 27710  | 2355        | 20.89               | 22.20               | 1.352                  | 0.02             | 0.052                  | 0.070                  |
|          | LTE Band 30 | 10M      | QPSK       | 1       | 49        | Bottom Side   | 10mm     | 2                   | 27710  | 2355        | 21.06               | 22.20               | 1.300                  | 0.03             | 0.725                  | 0.943                  |
|          | LTE Band 30 | 10M      | QPSK       | 25      | 25        | Bottom Side   | 10mm     | 2                   | 27710  | 2355        | 20.89               | 22.20               | 1.352                  | 0.04             | 0.784                  | 1.060                  |
|          | LTE Band 30 | 10M      | QPSK       | 50      | 0         | Bottom Side   | 10mm     | 2                   | 27710  | 2355        | 20.96               | 22.20               | 1.330                  | 0.15             | 0.796                  | 1.059                  |
|          | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Front         | 10mm     | 2                   | 132572 | 1770        | 20.99               | 21.50               | 1.125                  | 0.08             | 0.827                  | 0.930                  |
|          | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Front         | 10mm     | 2                   | 132072 | 1720        | 20.64               | 21.50               | 1.219                  | 0.1              | 0.795                  | 0.969                  |
|          | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Front         | 10mm     | 2                   | 132322 | 1745        | 20.87               | 21.50               | 1.156                  | -0.01            | 0.768                  | 0.888                  |
|          | LTE Band 66 | 20M      | QPSK       | 50      | 50        | Front         | 10mm     | 2                   | 132572 | 1770        | 20.63               | 21.50               | 1.222                  | -0.14            | 0.787                  | 0.962                  |
|          | LTE Band 66 | 20M      | QPSK       | 50      | 50        | Front         | 10mm     | 2                   | 132072 | 1720        | 20.24               | 21.50               | 1.337                  | -0.11            | 0.697                  | 0.932                  |
|          | LTE Band 66 | 20M      | QPSK       | 50      | 50        | Front         | 10mm     | 2                   | 132322 | 1745        | 20.44               | 21.50               | 1.276                  | -0.13            | 0.738                  | 0.942                  |
|          | LTE Band 66 | 20M      | QPSK       | 100     | 0         | Front         | 10mm     | 2                   | 132572 | 1770        | 20.59               | 21.50               | 1.233                  | -0.05            | 0.789                  | 0.973                  |
|          | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 2                   | 132572 | 1770        | 20.99               | 21.50               | 1.125                  | 0.07             | 0.748                  | 0.841                  |
|          | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 2                   | 132072 | 1720        | 20.64               | 21.50               | 1.219                  | -0.15            | 0.706                  | 0.861                  |
|          | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 2                   | 132322 | 1745        | 20.87               | 21.50               | 1.156                  | -0.13            | 0.733                  | 0.847                  |
|          | LTE Band 66 | 20M      | QPSK       | 50      | 50        | Back          | 10mm     | 2                   | 132572 | 1770        | 20.63               | 21.50               | 1.222                  | -0.03            | 0.709                  | 0.866                  |
|          | LTE Band 66 | 20M      | QPSK       | 50      | 50        | Back          | 10mm     | 2                   | 132072 | 1720        | 20.24               | 21.50               | 1.337                  | 0.06             | 0.650                  | 0.869                  |
|          | LTE Band 66 | 20M      | QPSK       | 50      | 50        | Back          | 10mm     | 2                   | 132322 | 1745        | 20.44               | 21.50               | 1.276                  | 0.09             | 0.688                  | 0.878                  |
|          | LTE Band 66 | 20M      | QPSK       | 100     | 0         | Back          | 10mm     | 2                   | 132572 | 1770        | 20.59               | 21.50               | 1.233                  | 0.01             | 0.712                  | 0.878                  |
|          | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Left Side     | 10mm     | 2                   | 132572 | 1770        | 20.99               | 21.50               | 1.125                  | -0.15            | 0.295                  | 0.332                  |
|          | LTE Band 66 | 20M      | QPSK       | 50      | 50        | Left Side     | 10mm     | 2                   | 132572 | 1770        | 20.63               | 21.50               | 1.222                  | -0.05            | 0.209                  | 0.255                  |
|          | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Right Side    | 10mm     | 2                   | 132572 | 1770        | 20.99               | 21.50               | 1.125                  | -0.12            | 0.544                  | 0.612                  |
|          | LTE Band 66 | 20M      | QPSK       | 50      | 50        | Right Side    | 10mm     | 2                   | 132572 | 1770        | 20.63               | 21.50               | 1.222                  | 0.17             | 0.386                  | 0.472                  |
| 44       | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Bottom Side   | 10mm     | 2                   | 132572 | 1770        | 20.99               | 21.50               | 1.125                  | -0.18            | 0.884                  | 0.994                  |
|          | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Bottom Side   | 10mm     | 2                   | 132072 | 1720        | 20.64               | 21.50               | 1.219                  | -0.12            | 0.742                  | 0.904                  |
|          | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Bottom Side   | 10mm     | 2                   | 132322 | 1745        | 20.87               | 21.50               | 1.156                  | -0.12            | 0.799                  | 0.924                  |
|          | LTE Band 66 | 20M      | QPSK       | 50      | 50        | Bottom Side   | 10mm     | 2                   | 132572 | 1770        | 20.63               | 21.50               | 1.222                  | 0.04             | 0.805                  | 0.984                  |
|          | LTE Band 66 | 20M      | QPSK       | 50      | 50        | Bottom Side   | 10mm     | 2                   | 132072 | 1720        | 20.24               | 21.50               | 1.337                  | 0.14             | 0.715                  | 0.956                  |
|          | LTE Band 66 | 20M      | QPSK       | 50      | 50        | Bottom Side   | 10mm     | 2                   | 132322 | 1745        | 20.44               | 21.50               | 1.276                  | 0.1              | 0.773                  | 0.987                  |
|          | LTE Band 66 | 20M      | QPSK       | 100     | 0         | Bottom Side   | 10mm     | 2                   | 132572 | 1770        | 20.59               | 21.50               | 1.233                  | 0.07             | 0.804                  | 0.991                  |



**<TDD LTE SAR>**

| Plot No. | Band        | BW (MHz) | Modulation | RB Size | RB offset | Test Position | Gap (mm) | Output Power States | Ch.   | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Duty Cycle % | Duty Cycle Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|-------------|----------|------------|---------|-----------|---------------|----------|---------------------|-------|-------------|---------------------|---------------------|------------------------|--------------|---------------------------|------------------|------------------------|------------------------|
|          | LTE Band 38 | 20M      | QPSK       | 1       | 99        | Front         | 10mm     | 3                   | 37850 | 2580        | 22.62               | 24.00               | 1.374                  | 62.9         | 1.006                     | 0.16             | 0.319                  | 0.441                  |
|          | LTE Band 38 | 20M      | QPSK       | 50      | 50        | Front         | 10mm     | 3                   | 37850 | 2580        | 21.48               | 23.00               | 1.419                  | 62.9         | 1.006                     | 0.11             | 0.239                  | 0.341                  |
|          | LTE Band 38 | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 3                   | 37850 | 2580        | 22.62               | 24.00               | 1.374                  | 62.9         | 1.006                     | 0.09             | 0.418                  | 0.578                  |
|          | LTE Band 38 | 20M      | QPSK       | 50      | 50        | Back          | 10mm     | 3                   | 37850 | 2580        | 21.48               | 23.00               | 1.419                  | 62.9         | 1.006                     | -0.16            | 0.326                  | 0.465                  |
|          | LTE Band 38 | 20M      | QPSK       | 1       | 99        | Left Side     | 10mm     | 3                   | 37850 | 2580        | 22.62               | 24.00               | 1.374                  | 62.9         | 1.006                     | 0.05             | 0.109                  | 0.151                  |
|          | LTE Band 38 | 20M      | QPSK       | 50      | 50        | Left Side     | 10mm     | 3                   | 37850 | 2580        | 21.48               | 23.00               | 1.419                  | 62.9         | 1.006                     | -0.1             | 0.085                  | 0.121                  |
|          | LTE Band 38 | 20M      | QPSK       | 1       | 99        | Right Side    | 10mm     | 3                   | 37850 | 2580        | 22.62               | 24.00               | 1.374                  | 62.9         | 1.006                     | -0.05            | 0.040                  | 0.055                  |
|          | LTE Band 38 | 20M      | QPSK       | 50      | 50        | Right Side    | 10mm     | 3                   | 37850 | 2580        | 21.48               | 23.00               | 1.419                  | 62.9         | 1.006                     | 0.01             | 0.031                  | 0.044                  |
|          | LTE Band 38 | 20M      | QPSK       | 1       | 99        | Bottom Side   | 10mm     | 3                   | 37850 | 2580        | 22.62               | 24.00               | 1.374                  | 62.9         | 1.006                     | 0.12             | 0.423                  | 0.585                  |
| 45       | LTE Band 38 | 20M      | QPSK       | 1       | 49        | Bottom Side   | 10mm     | 3                   | 38000 | 2595        | 22.44               | 24.00               | 1.432                  | 62.9         | 1.006                     | 0.17             | 0.473                  | 0.681                  |
|          | LTE Band 38 | 20M      | QPSK       | 1       | 99        | Bottom Side   | 10mm     | 3                   | 38150 | 2610        | 22.39               | 24.00               | 1.449                  | 62.9         | 1.006                     | 0.07             | 0.449                  | 0.654                  |
|          | LTE Band 38 | 20M      | QPSK       | 50      | 50        | Bottom Side   | 10mm     | 3                   | 37850 | 2580        | 21.48               | 23.00               | 1.419                  | 62.9         | 1.006                     | 0.03             | 0.337                  | 0.481                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Front         | 10mm     | 3                   | 40620 | 2593        | 22.57               | 24.00               | 1.390                  | 62.9         | 1.006                     | -0.05            | 0.427                  | 0.597                  |
|          | LTE Band 41 | 20M      | QPSK       | 50      | 50        | Front         | 10mm     | 3                   | 40185 | 2549.5      | 21.64               | 23.00               | 1.368                  | 62.9         | 1.006                     | -0.06            | 0.408                  | 0.561                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 3                   | 40620 | 2593        | 22.57               | 24.00               | 1.390                  | 62.9         | 1.006                     | -0.07            | 0.505                  | 0.706                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 3                   | 39750 | 2506        | 22.47               | 24.00               | 1.422                  | 62.9         | 1.006                     | 0.19             | 0.535                  | 0.766                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 3                   | 40185 | 2549.5      | 22.56               | 24.00               | 1.393                  | 62.9         | 1.006                     | 0.08             | 0.564                  | 0.790                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 3                   | 41055 | 2636.5      | 22.31               | 24.00               | 1.476                  | 62.9         | 1.006                     | -0.04            | 0.438                  | 0.650                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 3                   | 41490 | 2680        | 22.44               | 24.00               | 1.432                  | 62.9         | 1.006                     | -0.15            | 0.431                  | 0.621                  |
|          | LTE Band 41 | 20M      | QPSK       | 50      | 50        | Back          | 10mm     | 3                   | 40185 | 2549.5      | 21.64               | 23.00               | 1.368                  | 62.9         | 1.006                     | -0.04            | 0.360                  | 0.495                  |
|          | LTE Band 41 | 20M      | QPSK       | 100     | 0         | Back          | 10mm     | 3                   | 40185 | 2549.5      | 21.54               | 23.00               | 1.400                  | 62.9         | 1.006                     | 0.16             | 0.527                  | 0.742                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Left Side     | 10mm     | 3                   | 40620 | 2593        | 22.57               | 24.00               | 1.390                  | 62.9         | 1.006                     | 0.1              | 0.150                  | 0.210                  |
|          | LTE Band 41 | 20M      | QPSK       | 50      | 50        | Left Side     | 10mm     | 3                   | 40185 | 2549.5      | 21.64               | 23.00               | 1.368                  | 62.9         | 1.006                     | -0.04            | 0.107                  | 0.147                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Right Side    | 10mm     | 3                   | 40620 | 2593        | 22.57               | 24.00               | 1.390                  | 62.9         | 1.006                     | 0.06             | 0.056                  | 0.078                  |
|          | LTE Band 41 | 20M      | QPSK       | 50      | 50        | Right Side    | 10mm     | 3                   | 40185 | 2549.5      | 21.64               | 23.00               | 1.368                  | 62.9         | 1.006                     | 0.06             | 0.037                  | 0.051                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Bottom Side   | 10mm     | 3                   | 40620 | 2593        | 22.57               | 24.00               | 1.390                  | 62.9         | 1.006                     | -0.09            | 0.600                  | 0.839                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Bottom Side   | 10mm     | 3                   | 39750 | 2506        | 22.47               | 24.00               | 1.422                  | 62.9         | 1.006                     | -0.12            | 0.628                  | 0.899                  |
| 46       | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Bottom Side   | 10mm     | 3                   | 40185 | 2549.5      | 22.56               | 24.00               | 1.393                  | 62.9         | 1.006                     | -0.02            | 0.650                  | 0.911                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Bottom Side   | 10mm     | 3                   | 41055 | 2636.5      | 22.31               | 24.00               | 1.476                  | 62.9         | 1.006                     | -0.01            | 0.551                  | 0.818                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Bottom Side   | 10mm     | 3                   | 41490 | 2680        | 22.44               | 24.00               | 1.432                  | 62.9         | 1.006                     | -0.13            | 0.514                  | 0.741                  |
|          | LTE Band 41 | 20M      | QPSK       | 50      | 50        | Bottom Side   | 10mm     | 3                   | 40185 | 2549.5      | 21.64               | 23.00               | 1.368                  | 62.9         | 1.006                     | -0.1             | 0.433                  | 0.596                  |
|          | LTE Band 41 | 20M      | QPSK       | 100     | 0         | Bottom Side   | 10mm     | 3                   | 40185 | 2549.5      | 21.54               | 23.00               | 1.400                  | 62.9         | 1.006                     | -0.15            | 0.451                  | 0.635                  |

**<WLAN SAR>**

| Plot No. | Band       | Mode              | Test Position | Gap (mm) | Output Power States | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Duty Cycle % | Duty Cycle Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|------------|-------------------|---------------|----------|---------------------|-----|-------------|---------------------|---------------------|------------------------|--------------|---------------------------|------------------|------------------------|------------------------|
|          | WLAN2.4GHz | 802.11b 1Mbps     | Front         | 10mm     | 3                   | 6   | 2437        | 18.63               | 19.00               | 1.089                  | 97.63        | 1.024                     | 0.019            | 0.286                  | 0.319                  |
| 47       | WLAN2.4GHz | 802.11b 1Mbps     | Back          | 10mm     | 3                   | 6   | 2437        | 18.63               | 19.00               | 1.089                  | 97.63        | 1.024                     | -0.044           | 0.361                  | 0.403                  |
|          | WLAN2.4GHz | 802.11b 1Mbps     | Back          | 10mm     | 3                   | 1   | 2412        | 17.90               | 18.00               | 1.023                  | 97.63        | 1.024                     | -0.047           | 0.314                  | 0.329                  |
|          | WLAN2.4GHz | 802.11b 1Mbps     | Back          | 10mm     | 3                   | 11  | 2462        | 17.51               | 18.00               | 1.119                  | 97.63        | 1.024                     | 0.021            | 0.327                  | 0.375                  |
|          | WLAN2.4GHz | 802.11b 1Mbps     | Left Side     | 10mm     | 3                   | 6   | 2437        | 18.63               | 19.00               | 1.089                  | 97.63        | 1.024                     | 0.118            | 0.026                  | 0.029                  |
|          | WLAN2.4GHz | 802.11b 1Mbps     | Right Side    | 10mm     | 3                   | 6   | 2437        | 18.63               | 19.00               | 1.089                  | 97.63        | 1.024                     | 0.152            | 0.082                  | 0.091                  |
|          | WLAN2.4GHz | 802.11b 1Mbps     | Top Side      | 10mm     | 3                   | 6   | 2437        | 18.63               | 19.00               | 1.089                  | 97.63        | 1.024                     | 0.058            | 0.134                  | 0.149                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Front         | 10mm     | 3                   | 46  | 5230        | 20.08               | 20.50               | 1.102                  | 85.14        | 1.175                     | -0.077           | 0.125                  | 0.162                  |
| 48       | WLAN5GHz   | 802.11n-HT40 MCS0 | Back          | 10mm     | 3                   | 46  | 5230        | 20.08               | 20.50               | 1.102                  | 85.14        | 1.175                     | 0.001            | 0.364                  | 0.471                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Back          | 10mm     | 3                   | 38  | 5190        | 14.05               | 14.50               | 1.109                  | 85.14        | 1.175                     | -0.12            | 0.070                  | 0.091                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Left Side     | 10mm     | 3                   | 46  | 5230        | 20.08               | 20.50               | 1.102                  | 85.14        | 1.175                     | -0.128           | 0.015                  | 0.019                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Right Side    | 10mm     | 3                   | 46  | 5230        | 20.08               | 20.50               | 1.102                  | 85.14        | 1.175                     | -0.081           | 0.035                  | 0.045                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Top Side      | 10mm     | 3                   | 46  | 5230        | 20.08               | 20.50               | 1.102                  | 85.14        | 1.175                     | 0.053            | 0.084                  | 0.109                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Front         | 10mm     | 3                   | 159 | 5795        | 18.50               | 19.00               | 1.122                  | 85.14        | 1.175                     | 0.104            | 0.222                  | 0.293                  |
| 49       | WLAN5GHz   | 802.11n-HT40 MCS0 | Back          | 10mm     | 3                   | 159 | 5795        | 18.50               | 19.00               | 1.122                  | 85.14        | 1.175                     | -0.144           | 0.226                  | 0.298                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Back          | 10mm     | 3                   | 151 | 5755        | 16.59               | 17.00               | 1.099                  | 85.14        | 1.175                     | -0.103           | 0.176                  | 0.227                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Left Side     | 10mm     | 3                   | 159 | 5795        | 18.50               | 19.00               | 1.122                  | 85.14        | 1.175                     | -0.077           | 0.027                  | 0.036                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Right Side    | 10mm     | 3                   | 159 | 5795        | 18.50               | 19.00               | 1.122                  | 85.14        | 1.175                     | -0.18            | 0.073                  | 0.096                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Top Side      | 10mm     | 3                   | 159 | 5795        | 18.50               | 19.00               | 1.122                  | 85.14        | 1.175                     | 0.011            | 0.076                  | 0.100                  |

**14.3 Product Specific SAR**
**<WCDMA SAR>**

| Plot No. | Band     | Mode         | Test Position | Gap (mm) | Output Power States | Ch.  | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 10g SAR (W/kg) | Reported 10g SAR (W/kg) |
|----------|----------|--------------|---------------|----------|---------------------|------|-------------|---------------------|---------------------|------------------------|------------------|-------------------------|-------------------------|
|          | WCDMA II | RMC 12.2Kbps | Bottom Side   | 0mm      | 3                   | 9538 | 1907.6      | 20.83               | 22.00               | 1.309                  | -0.18            | 2.800                   | 3.666                   |
| 50       | WCDMA II | RMC 12.2Kbps | Bottom Side   | 0mm      | 3                   | 9262 | 1852.4      | 20.56               | 22.00               | 1.393                  | -0.17            | 2.640                   | 3.678                   |
|          | WCDMA II | RMC 12.2Kbps | Bottom Side   | 0mm      | 3                   | 9400 | 1880        | 20.63               | 22.00               | 1.371                  | 0.07             | 2.670                   | 3.660                   |
| 51       | WCDMA V  | RMC 12.2Kbps | Left Side     | 0mm      | 3                   | 4182 | 836.4       | 22.86               | 24.00               | 1.300                  | 0.18             | 1.660                   | 2.158                   |
|          | WCDMA V  | RMC 12.2Kbps | Left Side     | 0mm      | 3                   | 4132 | 826.4       | 22.62               | 24.00               | 1.374                  | 0.19             | 1.570                   | 2.157                   |
|          | WCDMA V  | RMC 12.2Kbps | Left Side     | 0mm      | 3                   | 4233 | 846.6       | 22.58               | 24.00               | 1.387                  | 0.19             | 1.530                   | 2.122                   |

**<CDMA SAR>**

| Plot No. | Band      | Mode           | Test Position | Gap (mm) | Output Power States | Ch.  | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 10g SAR (W/kg) | Reported 10g SAR (W/kg) |
|----------|-----------|----------------|---------------|----------|---------------------|------|-------------|---------------------|---------------------|------------------------|------------------|-------------------------|-------------------------|
| 52       | CDMA BC1  | RTAP 153.6Kbps | Bottom Side   | 0mm      | 3                   | 1175 | 1908.75     | 22.45               | 22.80               | 1.084                  | 0.12             | 3.030                   | 3.284                   |
|          | CDMA BC1  | RTAP 153.6Kbps | Bottom Side   | 0mm      | 3                   | 600  | 1880        | 22.52               | 22.80               | 1.067                  | 0.12             | 3.050                   | 3.253                   |
|          | CDMA BC1  | RTAP 153.6Kbps | Bottom Side   | 0mm      | 3                   | 25   | 1851.25     | 22.27               | 22.80               | 1.130                  | 0.12             | 2.820                   | 3.186                   |
| 53       | CDMA BC10 | RTAP 153.6Kbps | Left Side     | 0mm      | 3                   | 580  | 820.5       | 24.03               | 25.00               | 1.250                  | -0.04            | 1.210                   | 1.513                   |

**<LTE SAR>**

| Plot No. | Band        | BW (MHz) | Modulation | RB Size | RB offset | Test Position | Gap (mm) | Output Power States | Ch.    | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 10g SAR (W/kg) | Reported 10g SAR (W/kg) |
|----------|-------------|----------|------------|---------|-----------|---------------|----------|---------------------|--------|-------------|---------------------|---------------------|------------------------|------------------|-------------------------|-------------------------|
|          | LTE Band 2  | 20M      | QPSK       | 1       | 0         | Bottom Side   | 0mm      | 3                   | 18900  | 1880        | 20.91               | 22.30               | 1.377                  | -0.05            | 2.430                   | 3.347                   |
|          | LTE Band 2  | 20M      | QPSK       | 1       | 0         | Bottom Side   | 0mm      | 3                   | 18700  | 1860        | 20.78               | 22.30               | 1.419                  | -0.04            | 2.290                   | 3.250                   |
| 54       | LTE Band 2  | 20M      | QPSK       | 1       | 0         | Bottom Side   | 0mm      | 3                   | 19100  | 1900        | 20.82               | 22.30               | 1.406                  | 0.04             | 2.440                   | 3.431                   |
| 55       | LTE Band 4  | 20M      | QPSK       | 50      | 0         | Bottom Side   | 0mm      | 3                   | 20175  | 1732.5      | 21.02               | 22.20               | 1.312                  | -0.18            | 1.970                   | 2.585                   |
| 56       | LTE Band 12 | 10M      | QPSK       | 1       | 25        | Left Side     | 0mm      | 3                   | 23095  | 707.5       | 22.69               | 24.00               | 1.352                  | -0.03            | 1.310                   | 1.771                   |
| 57       | LTE Band 13 | 10M      | QPSK       | 1       | 49        | Left Side     | 0mm      | 3                   | 23230  | 782         | 23.00               | 24.00               | 1.259                  | 0.19             | 1.830                   | 2.304                   |
| 58       | LTE Band 17 | 10M      | QPSK       | 1       | 25        | Left Side     | 0mm      | 3                   | 23790  | 710         | 22.66               | 24.00               | 1.361                  | 0.11             | 1.440                   | 1.960                   |
| 59       | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Bottom Side   | 0mm      | 3                   | 26590  | 1905        | 20.47               | 21.40               | 1.239                  | 0.05             | 2.390                   | 2.961                   |
|          | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Bottom Side   | 0mm      | 3                   | 26140  | 1860        | 20.36               | 21.40               | 1.271                  | 0.01             | 2.320                   | 2.948                   |
|          | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Bottom Side   | 0mm      | 3                   | 26340  | 1880        | 20.53               | 21.40               | 1.222                  | 0.07             | 2.390                   | 2.920                   |
| 60       | LTE Band 30 | 10M      | QPSK       | 50      | 0         | Bottom Side   | 0mm      | 3                   | 27710  | 2355        | 21.67               | 23.00               | 1.358                  | 0.17             | 1.810                   | 2.459                   |
| 61       | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Bottom Side   | 0mm      | 3                   | 132572 | 1770        | 22.57               | 22.90               | 1.079                  | -0.18            | 2.890                   | 3.118                   |
|          | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Bottom Side   | 0mm      | 3                   | 132072 | 1720        | 22.25               | 22.90               | 1.161                  | -0.12            | 2.330                   | 2.706                   |
|          | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Bottom Side   | 0mm      | 3                   | 132322 | 1745        | 22.32               | 22.90               | 1.143                  | -0.13            | 2.700                   | 3.086                   |

**<WLAN SAR>**

| Plot No. | Band     | Mode              | Test Position | Gap (mm) | Output Power States | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Duty Cycle % | Duty Cycle Scaling Factor | Power Drift (dB) | Measured 10g SAR (W/kg) | Reported 10g SAR (W/kg) |
|----------|----------|-------------------|---------------|----------|---------------------|-----|-------------|---------------------|---------------------|------------------------|--------------|---------------------------|------------------|-------------------------|-------------------------|
| 62       | WLAN5GHz | 802.11n-HT40 MCS0 | Front         | 0mm      | 3                   | 54  | 5270        | 19.66               | 19.70               | 1.009                  | 85.14        | 1.175                     | -0.152           | 1.910                   | 2.265                   |
|          | WLAN5GHz | 802.11a 6Mbps     | Front         | 0mm      | 3                   | 52  | 5260        | 19.06               | 19.70               | 1.159                  | 86.92        | 1.150                     | -0.13            | 1.480                   | 1.972                   |
|          | WLAN5GHz | 802.11n-HT40 MCS0 | Back          | 0mm      | 3                   | 54  | 5270        | 19.66               | 19.70               | 1.009                  | 85.14        | 1.175                     | 0.008            | 0.649                   | 0.770                   |
|          | WLAN5GHz | 802.11n-HT40 MCS0 | Left Side     | 0mm      | 3                   | 54  | 5270        | 19.66               | 19.70               | 1.009                  | 85.14        | 1.175                     | -0.039           | 0.023                   | 0.027                   |
|          | WLAN5GHz | 802.11n-HT40 MCS0 | Right Side    | 0mm      | 3                   | 54  | 5270        | 19.66               | 19.70               | 1.009                  | 85.14        | 1.175                     | -0.165           | 0.155                   | 0.184                   |
|          | WLAN5GHz | 802.11n-HT40 MCS0 | Top Side      | 0mm      | 3                   | 54  | 5270        | 19.66               | 19.70               | 1.009                  | 85.14        | 1.175                     | -0.006           | 0.221                   | 0.262                   |
| 63       | WLAN5GHz | 802.11n-HT40 MCS0 | Front         | 0mm      | 3                   | 110 | 5550        | 18.87               | 19.20               | 1.079                  | 85.14        | 1.175                     | 0.059            | 2.180                   | 2.764                   |
|          | WLAN5GHz | 802.11n-HT40 MCS0 | Front         | 0mm      | 3                   | 134 | 5670        | 18.35               | 19.20               | 1.216                  | 85.14        | 1.175                     | 0.019            | 1.890                   | 2.701                   |
|          | WLAN5GHz | 802.11n-HT40 MCS0 | Back          | 0mm      | 3                   | 110 | 5550        | 18.87               | 19.20               | 1.079                  | 85.14        | 1.175                     | -0.056           | 0.668                   | 0.847                   |
|          | WLAN5GHz | 802.11n-HT40 MCS0 | Left Side     | 0mm      | 3                   | 110 | 5550        | 18.87               | 19.20               | 1.079                  | 85.14        | 1.175                     | -0.083           | 0.066                   | 0.084                   |
|          | WLAN5GHz | 802.11n-HT40 MCS0 | Right Side    | 0mm      | 3                   | 110 | 5550        | 18.87               | 19.20               | 1.079                  | 85.14        | 1.175                     | 0.139            | 0.184                   | 0.233                   |
|          | WLAN5GHz | 802.11n-HT40 MCS0 | Top Side      | 0mm      | 3                   | 110 | 5550        | 18.87               | 19.20               | 1.079                  | 85.14        | 1.175                     | -0.039           | 0.147                   | 0.186                   |

# **14.4 Body Worn Accessory SAR**

## **<GSM SAR>**

| Plot No. | Band    | Mode              | Test Position | Gap (mm) | Output Power States | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|---------|-------------------|---------------|----------|---------------------|-----|-------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
| 64       | GSM850  | GPRS (4 Tx slots) | Front         | 10mm     | 3                   | 189 | 836.4       | 25.72               | 27.50               | 1.507                  | -0.06            | 0.764                  | 1.151                  |
|          | GSM850  | GPRS (4 Tx slots) | Front         | 10mm     | 3                   | 128 | 824.2       | 25.69               | 27.50               | 1.517                  | 0.06             | 0.743                  | 1.127                  |
|          | GSM850  | GPRS (4 Tx slots) | Front         | 10mm     | 3                   | 251 | 848.8       | 25.71               | 27.50               | 1.510                  | 0.06             | 0.726                  | 1.096                  |
|          | GSM850  | GPRS (4 Tx slots) | Back          | 10mm     | 3                   | 189 | 836.4       | 25.72               | 27.50               | 1.507                  | -0.1             | 0.660                  | 0.994                  |
|          | GSM850  | GPRS (4 Tx slots) | Back          | 10mm     | 3                   | 128 | 824.2       | 25.69               | 27.50               | 1.517                  | -0.03            | 0.644                  | 0.977                  |
|          | GSM850  | GPRS (4 Tx slots) | Back          | 10mm     | 3                   | 251 | 848.8       | 25.71               | 27.50               | 1.510                  | 0.09             | 0.653                  | 0.986                  |
| 65       | GSM1900 | GPRS (4 Tx slots) | Front         | 10mm     | 3                   | 512 | 1850.2      | 22.75               | 24.50               | 1.496                  | -0.04            | 0.483                  | 0.723                  |
|          | GSM1900 | GPRS (4 Tx slots) | Front         | 10mm     | 3                   | 661 | 1880        | 22.63               | 24.50               | 1.538                  | 0.01             | 0.449                  | 0.691                  |
|          | GSM1900 | GPRS (4 Tx slots) | Front         | 10mm     | 3                   | 810 | 1909.8      | 22.61               | 24.50               | 1.545                  | 0.01             | 0.397                  | 0.613                  |
|          | GSM1900 | GPRS (4 Tx slots) | Back          | 10mm     | 3                   | 512 | 1850.2      | 22.75               | 24.50               | 1.496                  | -0.07            | 0.413                  | 0.618                  |

## **<WCDMA SAR>**

| Plot No. | Band     | Mode         | Test Position | Gap (mm) | Output Power States | Ch.  | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|----------|--------------|---------------|----------|---------------------|------|-------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
| 66       | WCDMA II | RMC 12.2Kbps | Front         | 10mm     | 2                   | 9538 | 1907.6      | 20.19               | 21.30               | 1.291                  | -0.01            | 0.926                  | 1.196                  |
|          | WCDMA II | RMC 12.2Kbps | Front         | 10mm     | 2                   | 9262 | 1852.4      | 19.90               | 21.30               | 1.380                  | -0.04            | 0.865                  | 1.194                  |
|          | WCDMA II | RMC 12.2Kbps | Front         | 10mm     | 2                   | 9400 | 1880        | 19.97               | 21.30               | 1.358                  | -0.04            | 0.880                  | 1.195                  |
|          | WCDMA II | RMC 12.2Kbps | Back          | 10mm     | 2                   | 9538 | 1907.6      | 20.19               | 21.30               | 1.291                  | -0.05            | 0.816                  | 1.054                  |
|          | WCDMA II | RMC 12.2Kbps | Back          | 10mm     | 2                   | 9262 | 1852.4      | 19.90               | 21.30               | 1.380                  | -0.01            | 0.751                  | 1.037                  |
|          | WCDMA II | RMC 12.2Kbps | Back          | 10mm     | 2                   | 9400 | 1880        | 19.97               | 21.30               | 1.358                  | -0.02            | 0.786                  | 1.068                  |
|          | WCDMA IV | RMC 12.2Kbps | Front         | 10mm     | 2                   | 1513 | 1752.6      | 20.88               | 21.20               | 1.076                  | -0.03            | 0.801                  | 0.862                  |
| 67       | WCDMA IV | RMC 12.2Kbps | Front         | 10mm     | 2                   | 1312 | 1712.4      | 20.68               | 21.20               | 1.127                  | -0.04            | 0.799                  | 0.901                  |
|          | WCDMA IV | RMC 12.2Kbps | Front         | 10mm     | 2                   | 1413 | 1732.6      | 20.76               | 21.20               | 1.107                  | -0.01            | 0.812                  | 0.899                  |
|          | WCDMA IV | RMC 12.2Kbps | Back          | 10mm     | 2                   | 1513 | 1752.6      | 20.88               | 21.20               | 1.076                  | 0.01             | 0.790                  | 0.850                  |
|          | WCDMA IV | RMC 12.2Kbps | Back          | 10mm     | 2                   | 1312 | 1712.4      | 20.68               | 21.20               | 1.127                  | 0.01             | 0.762                  | 0.859                  |
|          | WCDMA IV | RMC 12.2Kbps | Back          | 10mm     | 2                   | 1413 | 1732.6      | 20.76               | 21.20               | 1.107                  | -0.1             | 0.767                  | 0.849                  |
|          | WCDMA V  | RMC 12.2Kbps | Front         | 10mm     | 2                   | 4182 | 836.4       | 21.50               | 22.20               | 1.175                  | -0.17            | 0.809                  | 0.950                  |
| 68       | WCDMA V  | RMC 12.2Kbps | Front         | 10mm     | 2                   | 4132 | 826.4       | 21.28               | 22.20               | 1.236                  | -0.07            | 0.795                  | 0.983                  |
|          | WCDMA V  | RMC 12.2Kbps | Front         | 10mm     | 2                   | 4233 | 846.6       | 21.18               | 22.20               | 1.265                  | -0.07            | 0.771                  | 0.975                  |
|          | WCDMA V  | RMC 12.2Kbps | Back          | 10mm     | 2                   | 4182 | 836.4       | 21.50               | 22.20               | 1.175                  | -0.06            | 0.760                  | 0.893                  |
|          | WCDMA V  | RMC 12.2Kbps | Back          | 10mm     | 2                   | 4132 | 826.4       | 21.28               | 22.20               | 1.236                  | -0.19            | 0.689                  | 0.852                  |
|          | WCDMA V  | RMC 12.2Kbps | Back          | 10mm     | 2                   | 4233 | 846.6       | 21.18               | 22.20               | 1.265                  | -0.15            | 0.646                  | 0.817                  |

**<CDMA SAR>**

| Plot No. | Band      | Mode           | Test Position | Gap (mm) | Output Power States | Ch.  | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|-----------|----------------|---------------|----------|---------------------|------|-------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
| 69       | CDMA BC0  | 1xRTT RC3 SO32 | Front         | 10mm     | 2                   | 384  | 836.52      | 21.73               | 22.90               | 1.309                  | 0.02             | 0.883                  | 1.156                  |
|          | CDMA BC0  | 1xRTT RC3 SO32 | Front         | 10mm     | 2                   | 1013 | 824.7       | 21.70               | 22.90               | 1.318                  | -0.03            | 0.844                  | 1.113                  |
|          | CDMA BC0  | 1xRTT RC3 SO32 | Front         | 10mm     | 2                   | 777  | 848.31      | 21.68               | 22.90               | 1.324                  | -0.09            | 0.833                  | 1.103                  |
|          | CDMA BC0  | 1xRTT RC3 SO32 | Back          | 10mm     | 2                   | 384  | 836.52      | 21.73               | 22.90               | 1.309                  | -0.02            | 0.804                  | 1.053                  |
|          | CDMA BC0  | 1xRTT RC3 SO32 | Back          | 10mm     | 2                   | 1013 | 824.7       | 21.70               | 22.90               | 1.318                  | -0.04            | 0.799                  | 1.053                  |
|          | CDMA BC0  | 1xRTT RC3 SO32 | Back          | 10mm     | 2                   | 777  | 848.31      | 21.68               | 22.90               | 1.324                  | 0.05             | 0.819                  | 1.085                  |
|          | CDMA BC1  | 1xRTT RC3 SO32 | Front         | 10mm     | 2                   | 600  | 1880        | 21.86               | 22.50               | 1.159                  | -0.18            | 0.992                  | 1.150                  |
|          | CDMA BC1  | 1xRTT RC3 SO32 | Front         | 10mm     | 2                   | 25   | 1851.25     | 21.64               | 22.50               | 1.219                  | -0.04            | 0.906                  | 1.104                  |
| 70       | CDMA BC1  | 1xRTT RC3 SO32 | Front         | 10mm     | 2                   | 1175 | 1908.75     | 21.84               | 22.50               | 1.164                  | 0.04             | 1.000                  | 1.164                  |
|          | CDMA BC1  | 1xRTT RC3 SO32 | Back          | 10mm     | 2                   | 600  | 1880        | 21.86               | 22.50               | 1.159                  | -0.07            | 0.857                  | 0.993                  |
|          | CDMA BC1  | 1xRTT RC3 SO32 | Back          | 10mm     | 2                   | 25   | 1851.25     | 21.64               | 22.50               | 1.219                  | 0.11             | 0.818                  | 0.997                  |
|          | CDMA BC1  | 1xRTT RC3 SO32 | Back          | 10mm     | 2                   | 1175 | 1908.75     | 21.84               | 22.50               | 1.164                  | 0                | 0.864                  | 1.006                  |
| 71       | CDMA BC1C | 1xRTT RC3 SO32 | Front         | 10mm     | 2                   | 580  | 820.5       | 20.04               | 21.00               | 1.247                  | -0.03            | 0.655                  | 0.817                  |
|          | CDMA BC10 | 1xRTT RC3 SO32 | Back          | 10mm     | 2                   | 580  | 820.5       | 20.04               | 21.00               | 1.247                  | -0.14            | 0.583                  | 0.727                  |

**<FDD LTE SAR>**

| Plot No. | Band       | BW (MHz) | Modulation | RB Size | RB offset | Test Position | Gap (mm) | Output Power States | Ch.   | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|------------|----------|------------|---------|-----------|---------------|----------|---------------------|-------|-------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
|          | LTE Band 2 | 20M      | QPSK       | 1       | 0         | Front         | 10mm     | 2                   | 18900 | 1880        | 20.23               | 21.50               | 1.340                  | 0                | 0.688                  | 0.922                  |
|          | LTE Band 2 | 20M      | QPSK       | 1       | 0         | Front         | 10mm     | 2                   | 18700 | 1860        | 20.08               | 21.50               | 1.387                  | -0.02            | 0.664                  | 0.921                  |
|          | LTE Band 2 | 20M      | QPSK       | 1       | 0         | Front         | 10mm     | 2                   | 19100 | 1900        | 20.17               | 21.50               | 1.358                  | 0.07             | 0.708                  | 0.962                  |
| 72       | LTE Band 2 | 20M      | QPSK       | 50      | 0         | Front         | 10mm     | 2                   | 19100 | 1900        | 20.18               | 21.50               | 1.355                  | -0.13            | 0.727                  | 0.985                  |
|          | LTE Band 2 | 20M      | QPSK       | 50      | 0         | Front         | 10mm     | 2                   | 18700 | 1860        | 19.98               | 21.50               | 1.419                  | -0.05            | 0.677                  | 0.961                  |
|          | LTE Band 2 | 20M      | QPSK       | 50      | 24        | Front         | 10mm     | 2                   | 18900 | 1880        | 20.11               | 21.50               | 1.377                  | 0.02             | 0.700                  | 0.964                  |
|          | LTE Band 2 | 20M      | QPSK       | 100     | 0         | Front         | 10mm     | 2                   | 19100 | 1900        | 20.14               | 21.50               | 1.368                  | -0.09            | 0.711                  | 0.972                  |
|          | LTE Band 2 | 20M      | QPSK       | 1       | 0         | Back          | 10mm     | 2                   | 18900 | 1880        | 20.23               | 21.50               | 1.340                  | 0.14             | 0.626                  | 0.839                  |
|          | LTE Band 2 | 20M      | QPSK       | 1       | 0         | Back          | 10mm     | 2                   | 18700 | 1860        | 20.08               | 21.50               | 1.387                  | -0.02            | 0.659                  | 0.914                  |
|          | LTE Band 2 | 20M      | QPSK       | 1       | 0         | Back          | 10mm     | 2                   | 19100 | 1900        | 20.17               | 21.50               | 1.358                  | -0.05            | 0.689                  | 0.936                  |
|          | LTE Band 2 | 20M      | QPSK       | 50      | 0         | Back          | 10mm     | 2                   | 19100 | 1900        | 20.18               | 21.50               | 1.355                  | -0.05            | 0.663                  | 0.898                  |
|          | LTE Band 2 | 20M      | QPSK       | 50      | 0         | Back          | 10mm     | 2                   | 18700 | 1860        | 19.98               | 21.50               | 1.419                  | 0.04             | 0.633                  | 0.898                  |
|          | LTE Band 2 | 20M      | QPSK       | 50      | 24        | Back          | 10mm     | 2                   | 18900 | 1880        | 20.11               | 21.50               | 1.377                  | -0.03            | 0.657                  | 0.905                  |
|          | LTE Band 2 | 20M      | QPSK       | 100     | 0         | Back          | 10mm     | 2                   | 19100 | 1900        | 20.14               | 21.50               | 1.368                  | 0.07             | 0.656                  | 0.897                  |
|          | LTE Band 4 | 20M      | QPSK       | 1       | 0         | Front         | 10mm     | 2                   | 20175 | 1732.5      | 19.58               | 20.70               | 1.294                  | -0.12            | 0.711                  | 0.920                  |
|          | LTE Band 4 | 20M      | QPSK       | 50      | 0         | Front         | 10mm     | 2                   | 20175 | 1732.5      | 19.45               | 20.70               | 1.334                  | -0.15            | 0.796                  | 1.061                  |
| 73       | LTE Band 4 | 20M      | QPSK       | 100     | 0         | Front         | 10mm     | 2                   | 20175 | 1732.5      | 19.45               | 20.70               | 1.334                  | -0.04            | 0.808                  | 1.077                  |
|          | LTE Band 4 | 20M      | QPSK       | 1       | 0         | Back          | 10mm     | 2                   | 20175 | 1732.5      | 19.58               | 20.70               | 1.294                  | -0.01            | 0.680                  | 0.880                  |
|          | LTE Band 4 | 20M      | QPSK       | 50      | 0         | Back          | 10mm     | 2                   | 20175 | 1732.5      | 19.45               | 20.70               | 1.334                  | 0.01             | 0.742                  | 0.989                  |
|          | LTE Band 4 | 20M      | QPSK       | 100     | 0         | Back          | 10mm     | 2                   | 20175 | 1732.5      | 19.45               | 20.70               | 1.334                  | 0.08             | 0.737                  | 0.983                  |
|          | LTE Band 5 | 10M      | QPSK       | 1       | 0         | Front         | 10mm     | 2                   | 20525 | 836.5       | 21.28               | 22.10               | 1.208                  | -0.13            | 0.711                  | 0.859                  |
|          | LTE Band 5 | 10M      | QPSK       | 25      | 0         | Front         | 10mm     | 2                   | 20525 | 836.5       | 20.94               | 22.10               | 1.306                  | 0.06             | 0.610                  | 0.797                  |
|          | LTE Band 5 | 10M      | QPSK       | 50      | 0         | Front         | 10mm     | 2                   | 20525 | 836.5       | 20.97               | 22.10               | 1.297                  | -0.1             | 0.642                  | 0.833                  |
| 74       | LTE Band 5 | 10M      | QPSK       | 1       | 0         | Back          | 10mm     | 2                   | 20525 | 836.5       | 21.28               | 22.10               | 1.208                  | -0.03            | 0.740                  | 0.894                  |
|          | LTE Band 5 | 10M      | QPSK       | 25      | 0         | Back          | 10mm     | 2                   | 20525 | 836.5       | 20.94               | 22.10               | 1.306                  | -0.05            | 0.594                  | 0.776                  |
|          | LTE Band 5 | 10M      | QPSK       | 50      | 0         | Back          | 10mm     | 2                   | 20525 | 836.5       | 20.97               | 22.10               | 1.297                  | -0.13            | 0.590                  | 0.765                  |



| Plot No. | Band        | BW (MHz) | Modulation | RB Size | RB offset | Test Position | Gap (mm) | Output Power States | Ch.   | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|-------------|----------|------------|---------|-----------|---------------|----------|---------------------|-------|-------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
|          | LTE Band 7  | 20M      | QPSK       | 1       | 99        | Front         | 10mm     | 2                   | 21350 | 2560        | 21.64               | 23.20               | 1.432                  | 0.1              | 0.624                  | 0.894                  |
| 75       | LTE Band 7  | 20M      | QPSK       | 1       | 99        | Front         | 10mm     | 2                   | 20850 | 2510        | 21.65               | 23.20               | 1.429                  | 0.12             | 0.721                  | 1.030                  |
|          | LTE Band 7  | 20M      | QPSK       | 1       | 99        | Front         | 10mm     | 2                   | 21100 | 2535        | 21.81               | 23.20               | 1.377                  | 0.07             | 0.668                  | 0.920                  |
|          | LTE Band 7  | 20M      | QPSK       | 50      | 0         | Front         | 10mm     | 2                   | 21350 | 2560        | 21.51               | 23.00               | 1.409                  | 0.08             | 0.612                  | 0.862                  |
|          | LTE Band 7  | 20M      | QPSK       | 50      | 0         | Front         | 10mm     | 2                   | 20850 | 2510        | 21.48               | 23.00               | 1.419                  | 0.1              | 0.678                  | 0.962                  |
|          | LTE Band 7  | 20M      | QPSK       | 50      | 0         | Front         | 10mm     | 2                   | 21100 | 2535        | 21.46               | 23.00               | 1.426                  | 0.13             | 0.646                  | 0.921                  |
|          | LTE Band 7  | 20M      | QPSK       | 100     | 0         | Front         | 10mm     | 2                   | 21350 | 2560        | 21.47               | 23.00               | 1.422                  | 0.11             | 0.606                  | 0.862                  |
|          | LTE Band 7  | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 2                   | 21350 | 2560        | 21.64               | 23.20               | 1.432                  | -0.1             | 0.624                  | 0.894                  |
|          | LTE Band 7  | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 2                   | 20850 | 2510        | 21.65               | 23.20               | 1.429                  | -0.04            | 0.705                  | 1.007                  |
|          | LTE Band 7  | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 2                   | 21100 | 2535        | 21.81               | 23.20               | 1.377                  | -0.1             | 0.671                  | 0.924                  |
|          | LTE Band 7  | 20M      | QPSK       | 50      | 0         | Back          | 10mm     | 2                   | 21350 | 2560        | 21.51               | 23.00               | 1.409                  | 0.01             | 0.589                  | 0.830                  |
|          | LTE Band 7  | 20M      | QPSK       | 50      | 0         | Back          | 10mm     | 2                   | 20850 | 2510        | 21.48               | 23.00               | 1.419                  | -0.11            | 0.633                  | 0.898                  |
|          | LTE Band 7  | 20M      | QPSK       | 50      | 0         | Back          | 10mm     | 2                   | 21100 | 2535        | 21.46               | 23.00               | 1.426                  | -0.01            | 0.613                  | 0.874                  |
|          | LTE Band 7  | 20M      | QPSK       | 100     | 0         | Back          | 10mm     | 2                   | 21350 | 2560        | 21.47               | 23.00               | 1.422                  | -0.14            | 0.584                  | 0.831                  |
| 76       | LTE Band 12 | 10M      | QPSK       | 1       | 25        | Front         | 10mm     | 2                   | 23095 | 707.5       | 21.08               | 22.20               | 1.294                  | -0.05            | 0.766                  | 0.991                  |
|          | LTE Band 12 | 10M      | QPSK       | 25      | 12        | Front         | 10mm     | 2                   | 23095 | 707.5       | 20.93               | 22.20               | 1.340                  | 0.11             | 0.607                  | 0.813                  |
|          | LTE Band 12 | 10M      | QPSK       | 50      | 0         | Front         | 10mm     | 2                   | 23095 | 707.5       | 20.89               | 22.20               | 1.352                  | 0.03             | 0.578                  | 0.781                  |
|          | LTE Band 12 | 10M      | QPSK       | 1       | 25        | Back          | 10mm     | 2                   | 23095 | 707.5       | 21.08               | 22.20               | 1.294                  | 0.01             | 0.752                  | 0.973                  |
|          | LTE Band 12 | 10M      | QPSK       | 25      | 12        | Back          | 10mm     | 2                   | 23095 | 707.5       | 20.93               | 22.20               | 1.340                  | -0.08            | 0.596                  | 0.798                  |
|          | LTE Band 12 | 10M      | QPSK       | 50      | 0         | Back          | 10mm     | 2                   | 23095 | 707.5       | 20.89               | 22.20               | 1.352                  | -0.15            | 0.565                  | 0.764                  |
|          | LTE Band 13 | 10M      | QPSK       | 1       | 0         | Front         | 10mm     | 2                   | 23230 | 782         | 21.63               | 22.40               | 1.194                  | -0.03            | 0.934                  | 1.115                  |
|          | LTE Band 13 | 10M      | QPSK       | 25      | 0         | Front         | 10mm     | 2                   | 23230 | 782         | 21.54               | 22.40               | 1.219                  | -0.15            | 0.818                  | 0.997                  |
|          | LTE Band 13 | 10M      | QPSK       | 50      | 0         | Front         | 10mm     | 2                   | 23230 | 782         | 21.36               | 22.40               | 1.271                  | -0.01            | 0.799                  | 1.015                  |
| 77       | LTE Band 13 | 10M      | QPSK       | 1       | 0         | Back          | 10mm     | 2                   | 23230 | 782         | 21.63               | 22.40               | 1.194                  | -0.13            | 1.000                  | 1.194                  |
|          | LTE Band 13 | 10M      | QPSK       | 25      | 0         | Back          | 10mm     | 2                   | 23230 | 782         | 21.54               | 22.40               | 1.219                  | -0.13            | 0.721                  | 0.879                  |
|          | LTE Band 13 | 10M      | QPSK       | 50      | 0         | Back          | 10mm     | 2                   | 23230 | 782         | 21.36               | 22.40               | 1.271                  | 0                | 0.667                  | 0.847                  |
|          | LTE Band 17 | 10M      | QPSK       | 1       | 25        | Front         | 10mm     | 2                   | 23790 | 710         | 20.98               | 22.00               | 1.265                  | 0.07             | 0.673                  | 0.851                  |
|          | LTE Band 17 | 10M      | QPSK       | 25      | 12        | Front         | 10mm     | 2                   | 23790 | 710         | 20.81               | 22.00               | 1.315                  | -0.19            | 0.609                  | 0.801                  |
|          | LTE Band 17 | 10M      | QPSK       | 50      | 0         | Front         | 10mm     | 2                   | 23790 | 710         | 20.64               | 22.00               | 1.368                  | -0.1             | 0.594                  | 0.812                  |
| 78       | LTE Band 17 | 10M      | QPSK       | 1       | 25        | Back          | 10mm     | 2                   | 23790 | 710         | 20.98               | 22.00               | 1.265                  | 0.06             | 0.752                  | 0.951                  |
|          | LTE Band 17 | 10M      | QPSK       | 25      | 12        | Back          | 10mm     | 2                   | 23790 | 710         | 20.81               | 22.00               | 1.315                  | -0.02            | 0.598                  | 0.787                  |
|          | LTE Band 17 | 10M      | QPSK       | 50      | 0         | Back          | 10mm     | 2                   | 23790 | 710         | 20.64               | 22.00               | 1.368                  | 0.03             | 0.571                  | 0.781                  |
|          | LTE Band 25 | 20M      | QPSK       | 1       | 49        | Front         | 10mm     | 2                   | 26340 | 1880        | 19.86               | 20.80               | 1.242                  | -0.17            | 0.733                  | 0.910                  |
|          | LTE Band 25 | 20M      | QPSK       | 1       | 49        | Front         | 10mm     | 2                   | 26140 | 1860        | 19.83               | 20.80               | 1.250                  | 0.01             | 0.726                  | 0.908                  |
|          | LTE Band 25 | 20M      | QPSK       | 1       | 49        | Front         | 10mm     | 2                   | 26590 | 1905        | 19.85               | 20.80               | 1.245                  | 0.11             | 0.772                  | 0.961                  |
|          | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Front         | 10mm     | 2                   | 26340 | 1880        | 19.65               | 20.80               | 1.303                  | 0.04             | 0.735                  | 0.958                  |
|          | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Front         | 10mm     | 2                   | 26140 | 1860        | 19.49               | 20.80               | 1.352                  | -0.03            | 0.732                  | 0.990                  |
| 79       | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Front         | 10mm     | 2                   | 26590 | 1905        | 19.56               | 20.80               | 1.330                  | -0.04            | 0.779                  | 1.036                  |
|          | LTE Band 25 | 20M      | QPSK       | 100     | 0         | Front         | 10mm     | 2                   | 26340 | 1880        | 19.61               | 20.80               | 1.315                  | -0.02            | 0.749                  | 0.985                  |
|          | LTE Band 25 | 20M      | QPSK       | 1       | 49        | Back          | 10mm     | 2                   | 26340 | 1880        | 19.86               | 20.80               | 1.242                  | 0.08             | 0.717                  | 0.890                  |
|          | LTE Band 25 | 20M      | QPSK       | 1       | 49        | Back          | 10mm     | 2                   | 26140 | 1860        | 19.83               | 20.80               | 1.250                  | -0.11            | 0.726                  | 0.908                  |
|          | LTE Band 25 | 20M      | QPSK       | 1       | 49        | Back          | 10mm     | 2                   | 26590 | 1905        | 19.85               | 20.80               | 1.245                  | 0                | 0.747                  | 0.930                  |
|          | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Back          | 10mm     | 2                   | 26340 | 1880        | 19.65               | 20.80               | 1.303                  | 0                | 0.718                  | 0.936                  |
|          | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Back          | 10mm     | 2                   | 26140 | 1860        | 19.49               | 20.80               | 1.352                  | -0.1             | 0.692                  | 0.936                  |
|          | LTE Band 25 | 20M      | QPSK       | 50      | 24        | Back          | 10mm     | 2                   | 26590 | 1905        | 19.56               | 20.80               | 1.330                  | 0                | 0.722                  | 0.961                  |
|          | LTE Band 25 | 20M      | QPSK       | 100     | 0         | Back          | 10mm     | 2                   | 26340 | 1880        | 19.61               | 20.80               | 1.315                  | -0.06            | 0.717                  | 0.943                  |
| 80       | LTE Band 26 | 15M      | QPSK       | 1       | 37        | Front         | 10mm     | 2                   | 26865 | 831.5       | 22.20               | 23.00               | 1.202                  | 0.13             | 0.870                  | 1.046                  |
|          | LTE Band 26 | 15M      | QPSK       | 36      | 0         | Front         | 10mm     | 2                   | 26865 | 831.5       | 22.00               | 23.00               | 1.259                  | 0.04             | 0.645                  | 0.812                  |
|          | LTE Band 26 | 15M      | QPSK       | 75      | 0         | Front         | 10mm     | 2                   | 26865 | 831.5       | 21.81               | 23.00               | 1.315                  | 0.15             | 0.635                  | 0.835                  |
|          | LTE Band 26 | 15M      | QPSK       | 1       | 37        | Back          | 10mm     | 2                   | 26865 | 831.5       | 22.20               | 23.00               | 1.202                  | 0.01             | 0.796                  | 0.957                  |
|          | LTE Band 26 | 15M      | QPSK       | 36      | 0         | Back          | 10mm     | 2                   | 26865 | 831.5       | 22.00               | 23.00               | 1.259                  | -0.12            | 0.615                  | 0.774                  |
|          | LTE Band 26 | 15M      | QPSK       | 75      | 0         | Back          | 10mm     | 2                   | 26865 | 831.5       | 21.81               | 23.00               | 1.315                  | -0.15            | 0.570                  | 0.750                  |



| Plot No. | Band        | BW (MHz) | Modulation | RB Size | RB offset | Test Position | Gap (mm) | Output Power States | Ch.    | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|-------------|----------|------------|---------|-----------|---------------|----------|---------------------|--------|-------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
|          | LTE Band 30 | 10M      | QPSK       | 1       | 49        | Front         | 10mm     | 2                   | 27710  | 2355        | 21.06               | 22.20               | 1.300                  | -0.13            | 0.397                  | 0.516                  |
|          | LTE Band 30 | 10M      | QPSK       | 25      | 25        | Front         | 10mm     | 2                   | 27710  | 2355        | 20.89               | 22.20               | 1.352                  | 0.07             | 0.418                  | 0.565                  |
|          | LTE Band 30 | 10M      | QPSK       | 1       | 49        | Back          | 10mm     | 2                   | 27710  | 2355        | 21.06               | 22.20               | 1.300                  | -0.18            | 0.711                  | 0.924                  |
|          | LTE Band 30 | 10M      | QPSK       | 25      | 25        | Back          | 10mm     | 2                   | 27710  | 2355        | 20.89               | 22.20               | 1.352                  | -0.13            | 0.785                  | 1.061                  |
| 81       | LTE Band 30 | 10M      | QPSK       | 50      | 0         | Back          | 10mm     | 2                   | 27710  | 2355        | 20.96               | 22.20               | 1.330                  | 0.02             | 0.894                  | 1.189                  |
|          | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Front         | 10mm     | 2                   | 132572 | 1770        | 20.99               | 21.50               | 1.125                  | 0.08             | 0.827                  | 0.930                  |
|          | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Front         | 10mm     | 2                   | 132072 | 1720        | 20.64               | 21.50               | 1.219                  | 0.1              | 0.795                  | 0.969                  |
|          | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Front         | 10mm     | 2                   | 132322 | 1745        | 20.87               | 21.50               | 1.156                  | -0.01            | 0.768                  | 0.888                  |
|          | LTE Band 66 | 20M      | QPSK       | 50      | 50        | Front         | 10mm     | 2                   | 132572 | 1770        | 20.63               | 21.50               | 1.222                  | -0.14            | 0.787                  | 0.962                  |
|          | LTE Band 66 | 20M      | QPSK       | 50      | 50        | Front         | 10mm     | 2                   | 132072 | 1720        | 20.24               | 21.50               | 1.337                  | -0.11            | 0.697                  | 0.932                  |
|          | LTE Band 66 | 20M      | QPSK       | 50      | 50        | Front         | 10mm     | 2                   | 132322 | 1745        | 20.44               | 21.50               | 1.276                  | -0.13            | 0.738                  | 0.942                  |
| 82       | LTE Band 66 | 20M      | QPSK       | 100     | 0         | Front         | 10mm     | 2                   | 132572 | 1770        | 20.59               | 21.50               | 1.233                  | -0.05            | 0.789                  | 0.973                  |
|          | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 2                   | 132572 | 1770        | 20.99               | 21.50               | 1.125                  | 0.07             | 0.748                  | 0.841                  |
|          | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 2                   | 132072 | 1720        | 20.64               | 21.50               | 1.219                  | -0.15            | 0.706                  | 0.861                  |
|          | LTE Band 66 | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 2                   | 132322 | 1745        | 20.87               | 21.50               | 1.156                  | -0.13            | 0.733                  | 0.847                  |
|          | LTE Band 66 | 20M      | QPSK       | 50      | 50        | Back          | 10mm     | 2                   | 132572 | 1770        | 20.63               | 21.50               | 1.222                  | -0.03            | 0.709                  | 0.866                  |
|          | LTE Band 66 | 20M      | QPSK       | 50      | 50        | Back          | 10mm     | 2                   | 132072 | 1720        | 20.24               | 21.50               | 1.337                  | 0.06             | 0.650                  | 0.869                  |
|          | LTE Band 66 | 20M      | QPSK       | 50      | 50        | Back          | 10mm     | 2                   | 132322 | 1745        | 20.44               | 21.50               | 1.276                  | 0.09             | 0.688                  | 0.878                  |
|          | LTE Band 66 | 20M      | QPSK       | 100     | 0         | Back          | 10mm     | 2                   | 132572 | 1770        | 20.59               | 21.50               | 1.233                  | 0.01             | 0.712                  | 0.878                  |

**<TDD LTE SAR>**

| Plot No. | Band        | BW (MHz) | Modulation | RB Size | RB offset | Test Position | Gap (mm) | Output Power States | Ch.   | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Duty Cycle % | Duty Cycle Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|-------------|----------|------------|---------|-----------|---------------|----------|---------------------|-------|-------------|---------------------|---------------------|------------------------|--------------|---------------------------|------------------|------------------------|------------------------|
|          | LTE Band 38 | 20M      | QPSK       | 1       | 99        | Front         | 10mm     | 3                   | 37850 | 2580        | 22.62               | 24.00               | 1.374                  | 62.9         | 1.006                     | 0.16             | 0.319                  | 0.441                  |
|          | LTE Band 38 | 20M      | QPSK       | 50      | 50        | Front         | 10mm     | 3                   | 37850 | 2580        | 21.48               | 23.00               | 1.419                  | 62.9         | 1.006                     | 0.11             | 0.239                  | 0.341                  |
| 83       | LTE Band 38 | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 3                   | 37850 | 2580        | 22.62               | 24.00               | 1.374                  | 62.9         | 1.006                     | 0.09             | 0.418                  | 0.578                  |
|          | LTE Band 38 | 20M      | QPSK       | 50      | 50        | Back          | 10mm     | 3                   | 37850 | 2580        | 21.48               | 23.00               | 1.419                  | 62.9         | 1.006                     | -0.16            | 0.326                  | 0.465                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Front         | 10mm     | 3                   | 40620 | 2593        | 22.57               | 24.00               | 1.390                  | 62.9         | 1.006                     | -0.05            | 0.427                  | 0.597                  |
|          | LTE Band 41 | 20M      | QPSK       | 50      | 50        | Front         | 10mm     | 3                   | 40185 | 2549.5      | 21.64               | 23.00               | 1.368                  | 62.9         | 1.006                     | -0.06            | 0.408                  | 0.561                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 3                   | 40620 | 2593        | 22.57               | 24.00               | 1.390                  | 62.9         | 1.006                     | -0.07            | 0.505                  | 0.706                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 3                   | 39750 | 2506        | 22.47               | 24.00               | 1.422                  | 62.9         | 1.006                     | 0.19             | 0.535                  | 0.766                  |
| 84       | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 3                   | 40185 | 2549.5      | 22.56               | 24.00               | 1.393                  | 62.9         | 1.006                     | 0.08             | 0.564                  | 0.790                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 3                   | 41055 | 2636.5      | 22.31               | 24.00               | 1.476                  | 62.9         | 1.006                     | -0.04            | 0.438                  | 0.650                  |
|          | LTE Band 41 | 20M      | QPSK       | 1       | 99        | Back          | 10mm     | 3                   | 41490 | 2680        | 22.44               | 24.00               | 1.432                  | 62.9         | 1.006                     | -0.15            | 0.431                  | 0.621                  |
|          | LTE Band 41 | 20M      | QPSK       | 50      | 50        | Back          | 10mm     | 3                   | 40185 | 2549.5      | 21.64               | 23.00               | 1.368                  | 62.9         | 1.006                     | -0.04            | 0.360                  | 0.495                  |
|          | LTE Band 41 | 20M      | QPSK       | 100     | 0         | Back          | 10mm     | 3                   | 40185 | 2549.5      | 21.54               | 23.00               | 1.400                  | 62.9         | 1.006                     | 0.16             | 0.527                  | 0.742                  |

**<WLAN SAR>**

| Plot No. | Band       | Mode              | Test Position | Gap (mm) | Output Power States | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Duty Cycle % | Duty Cycle Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|------------|-------------------|---------------|----------|---------------------|-----|-------------|---------------------|---------------------|------------------------|--------------|---------------------------|------------------|------------------------|------------------------|
|          | WLAN2.4GHz | 802.11b 1Mbps     | Front         | 10mm     | 3                   | 6   | 2437        | 18.63               | 19.00               | 1.089                  | 97.63        | 1.024                     | 0.019            | 0.286                  | 0.319                  |
| 85       | WLAN2.4GHz | 802.11b 1Mbps     | Back          | 10mm     | 3                   | 6   | 2437        | 18.63               | 19.00               | 1.089                  | 97.63        | 1.024                     | -0.044           | 0.361                  | 0.403                  |
|          | WLAN2.4GHz | 802.11b 1Mbps     | Back          | 10mm     | 3                   | 1   | 2412        | 17.90               | 18.00               | 1.023                  | 97.63        | 1.024                     | -0.047           | 0.314                  | 0.329                  |
|          | WLAN2.4GHz | 802.11b 1Mbps     | Back          | 10mm     | 3                   | 11  | 2462        | 17.51               | 18.00               | 1.119                  | 97.63        | 1.024                     | 0.021            | 0.327                  | 0.375                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Front         | 10mm     | 3                   | 54  | 5270        | 19.66               | 19.70               | 1.009                  | 85.14        | 1.175                     | -0.142           | 0.231                  | 0.274                  |
| 86       | WLAN5GHz   | 802.11n-HT40 MCS0 | Back          | 10mm     | 3                   | 54  | 5270        | 19.66               | 19.70               | 1.009                  | 85.14        | 1.175                     | -0.063           | 0.437                  | 0.518                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Back          | 10mm     | 3                   | 62  | 5310        | 13.42               | 13.50               | 1.019                  | 85.14        | 1.175                     | -0.105           | 0.126                  | 0.151                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Front         | 10mm     | 3                   | 110 | 5550        | 18.87               | 19.20               | 1.079                  | 85.14        | 1.175                     | 0.051            | 0.322                  | 0.408                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Back          | 10mm     | 3                   | 110 | 5550        | 18.87               | 19.20               | 1.079                  | 85.14        | 1.175                     | 0.063            | 0.341                  | 0.432                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Back          | 10mm     | 3                   | 102 | 5510        | 15.85               | 16.00               | 1.035                  | 85.14        | 1.175                     | -0.046           | 0.168                  | 0.204                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Back          | 10mm     | 3                   | 134 | 5670        | 18.35               | 19.20               | 1.216                  | 85.14        | 1.175                     | 0.074            | 0.353                  | 0.504                  |
| 87       | WLAN5GHz   | 802.11n-HT40 MCS0 | Back          | 10mm     | 3                   | 142 | 5710        | 18.30               | 19.20               | 1.230                  | 85.14        | 1.175                     | 0.132            | 0.373                  | 0.539                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Front         | 10mm     | 3                   | 159 | 5795        | 18.50               | 19.00               | 1.122                  | 85.14        | 1.175                     | 0.104            | 0.222                  | 0.293                  |
| 88       | WLAN5GHz   | 802.11n-HT40 MCS0 | Back          | 10mm     | 3                   | 159 | 5795        | 18.50               | 19.00               | 1.122                  | 85.14        | 1.175                     | -0.144           | 0.226                  | 0.298                  |
|          | WLAN5GHz   | 802.11n-HT40 MCS0 | Back          | 10mm     | 3                   | 151 | 5755        | 16.59               | 17.00               | 1.099                  | 85.14        | 1.175                     | -0.103           | 0.176                  | 0.227                  |

**<Bluetooth SAR>**

| Plot No. | Band      | Mode  | Test Position | Gap (mm) | Output Power States | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Duty Cycle % | Duty Cycle Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|-----------|-------|---------------|----------|---------------------|-----|-------------|---------------------|---------------------|------------------------|--------------|---------------------------|------------------|------------------------|------------------------|
|          | Bluetooth | 1Mbps | Front         | 10mm     | 3                   | 39  | 2441        | 11.96               | 12.00               | 1.009                  | 76.6         | 1.087                     | -0.176           | 0.046                  | 0.050                  |
| 89       | Bluetooth | 1Mbps | Back          | 10mm     | 3                   | 39  | 2441        | 11.96               | 12.00               | 1.009                  | 76.6         | 1.087                     | 0.102            | 0.060                  | 0.066                  |
|          | Bluetooth | 1Mbps | Back          | 10mm     | 3                   | 0   | 2402        | 11.36               | 11.50               | 1.033                  | 76.6         | 1.087                     | -0.17            | 0.043                  | 0.048                  |
|          | Bluetooth | 1Mbps | Back          | 10mm     | 3                   | 78  | 2480        | 8.75                | 9.00                | 1.059                  | 76.6         | 1.087                     | -0.197           | 0.027                  | 0.031                  |



### 14.5 Repeated SAR Measurement

| No. | Band        | Mode              | Test Position | Gap (mm) | Output Power States | Ch.   | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Duty Cycle % | Duty Cycle Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Ratio | Reported 1g SAR (W/kg) |
|-----|-------------|-------------------|---------------|----------|---------------------|-------|-------------|---------------------|---------------------|------------------------|--------------|---------------------------|------------------|------------------------|-------|------------------------|
| 1st | WLAN2.4GHz  | 802.11b 1Mbps     | Left Cheek    | 0mm      | 1                   | 1     | 2412        | 15.92               | 16.00               | 1.018                  | 97.63        | 1.024                     | 0.014            | 1.240                  |       | 1.292                  |
| 2nd | WLAN2.4GHz  | 802.11b 1Mbps     | Left Cheek    | 0mm      | 1                   | 1     | 2412        | 15.92               | 16.00               | 1.018                  | 97.63        | 1.024                     | -0.031           | 1.120                  | 1.11  | 1.167                  |
| 1st | WLAN5GHz    | 802.11a 6Mbps     | Left Cheek    | 0mm      | 1                   | 64    | 5320        | 15.46               | 15.50               | 1.010                  | 86.92        | 1.150                     | -0.157           | 0.952                  |       | 1.105                  |
| 2nd | WLAN5GHz    | 802.11a 6Mbps     | Left Cheek    | 0mm      | 1                   | 64    | 5320        | 15.46               | 15.50               | 1.010                  | 86.92        | 1.150                     | -0.042           | 0.923                  | 1.03  | 1.072                  |
| 1st | WLAN5GHz    | 802.11n-HT40 MCS0 | Left Cheek    | 0mm      | 1                   | 134   | 5670        | 15.46               | 15.50               | 1.009                  | 85.14        | 1.175                     | -0.045           | 1.080                  |       | 1.281                  |
| 2nd | WLAN5GHz    | 802.11n-HT40 MCS0 | Left Cheek    | 0mm      | 1                   | 134   | 5670        | 15.46               | 15.50               | 1.009                  | 85.14        | 1.175                     | -0.108           | 1.050                  | 1.03  | 1.245                  |
| 1st | WLAN5GHz    | 802.11n-HT40 MCS0 | Left Cheek    | 0mm      | 1                   | 151   | 5755        | 15.31               | 15.50               | 1.045                  | 85.14        | 1.175                     | -0.131           | 1.060                  |       | 1.301                  |
| 2nd | WLAN5GHz    | 802.11n-HT40 MCS0 | Left Cheek    | 0mm      | 1                   | 151   | 5755        | 15.31               | 15.50               | 1.045                  | 85.14        | 1.175                     | -0.036           | 1.010                  | 1.05  | 1.240                  |
| 1st | WCDMA IV    | RMC 12.2Kbps      | Bottom Side   | 10mm     | 2                   | 1513  | 1752.6      | 20.88               | 21.20               | 1.076                  |              | 1.000                     | -0.15            | 0.921                  |       | 0.991                  |
| 2nd | WCDMA IV    | RMC 12.2Kbps      | Bottom Side   | 10mm     | 2                   | 1513  | 1752.6      | 20.88               | 21.20               | 1.076                  |              | 1.000                     | -0.15            | 0.908                  | 1.01  | 0.977                  |
| 1st | CDMA BC0    | RTAP 153.6Kbps    | Front         | 10mm     | 2                   | 1013  | 824.7       | 21.72               | 22.90               | 1.312                  |              | 1.000                     | -0.08            | 0.889                  |       | 1.167                  |
| 2nd | CDMA BC0    | RTAP 153.6Kbps    | Front         | 10mm     | 2                   | 1013  | 824.7       | 21.72               | 22.90               | 1.312                  |              | 1.000                     | -0.06            | 0.840                  | 1.06  | 1.102                  |
| 1st | CDMA BC1    | RTAP 153.6Kbps    | Front         | 10mm     | 2                   | 1175  | 1908.75     | 21.87               | 22.50               | 1.156                  |              | 1.000                     | -0.11            | 1.010                  |       | 1.168                  |
| 2nd | CDMA BC1    | RTAP 153.6Kbps    | Front         | 10mm     | 2                   | 1175  | 1908.75     | 21.87               | 22.50               | 1.156                  |              | 1.000                     | -0.13            | 0.972                  | 1.04  | 1.124                  |
| 1st | LTE Band 13 | 10M_QPSK_1_0      | Back          | 10mm     | 2                   | 23230 | 782         | 21.63               | 22.40               | 1.194                  |              | 1.000                     | -0.13            | 1.000                  |       | 1.194                  |
| 2nd | LTE Band 13 | 10M_QPSK_1_0      | Back          | 10mm     | 2                   | 23230 | 782         | 21.63               | 22.40               | 1.194                  |              | 1.000                     | -0.15            | 0.991                  | 1.01  | 1.183                  |
| 1st | LTE Band 30 | 10M_QPSK_50_0     | Back          | 10mm     | 2                   | 27710 | 2355        | 20.96               | 22.20               | 1.330                  |              | 1.000                     | 0.02             | 0.894                  |       | 1.189                  |
| 2nd | LTE Band 30 | 10M_QPSK_50_0     | Back          | 10mm     | 2                   | 27710 | 2355        | 20.96               | 22.20               | 1.330                  |              | 1.000                     | 0.15             | 0.871                  | 1.03  | 1.159                  |

| No. | Band        | Mode              | Test Position | Gap (mm) | Output Power States | Ch.    | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Duty Cycle % | Duty Cycle Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Ratio | Reported 1g SAR (W/kg) |
|-----|-------------|-------------------|---------------|----------|---------------------|--------|-------------|---------------------|---------------------|------------------------|--------------|---------------------------|------------------|------------------------|-------|------------------------|
| 1st | CDMA BC1    | RTAP 153.6Kbps    | Bottom Side   | 0mm      | 3                   | 600    | 1880        | 22.52               | 22.80               | 1.067                  |              | 1.000                     | 0.12             | 3.050                  |       | 3.253                  |
| 2nd | CDMA BC1    | RTAP 153.6Kbps    | Bottom Side   | 0mm      | 3                   | 600    | 1880        | 22.52               | 22.80               | 1.067                  |              | 1.000                     | -0.04            | 3.050                  | 1.00  | 3.253                  |
| 1st | LTE Band 66 | 20M_QPSK_1_99     | Bottom Side   | 0mm      | 3                   | 132572 | 1770        | 22.57               | 22.90               | 1.079                  |              | 1.000                     | -0.18            | 2.890                  |       | 3.118                  |
| 2nd | LTE Band 66 | 20M_QPSK_1_99     | Bottom Side   | 0mm      | 3                   | 132572 | 1770        | 22.57               | 22.90               | 1.079                  |              | 1.000                     | -0.1             | 2.690                  | 1.07  | 2.902                  |
| 1st | WLAN5GHz    | 802.11n-HT40 MCS0 | Front         | 0mm      | 3                   | 110    | 5550        | 18.87               | 19.20               | 1.079                  | 85.14        | 1.175                     | 0.059            | 2.180                  |       | 2.764                  |
| 2nd | WLAN5GHz    | 802.11n-HT40 MCS0 | Front         | 0mm      | 3                   | 110    | 5550        | 18.87               | 19.20               | 1.079                  | 85.14        | 1.175                     | -0.188           | 1.840                  | 1.18  | 2.333                  |

#### General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is  $\geq 0.8$ W/kg.
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is  $\leq 1.2$  and the measured SAR  $< 1.45$ W/kg, only one repeated measurement is required.
3. Per KDB 865664 D01v01r04, if the Product Specific repeated SAR is necessary, the same procedures should be adapted for measurements according to Product Specific and occupational exposure limits by applying a factor of 2.5 for Product Specific exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
4. The ratio is the difference in percentage between original and repeated *measured SAR*.
5. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

## 15. Simultaneous Transmission Analysis

| NO. | Simultaneous Transmission Configurations | Portable Handset |           |         |                  |
|-----|------------------------------------------|------------------|-----------|---------|------------------|
|     |                                          | Head             | Body-worn | Hotspot | Product Specific |
| 1.  | GSM Voice + WLAN2.4GHz                   | Yes              | Yes       |         | Yes              |
| 2.  | GPRS/EDGE + WLAN2.4GHz                   | Yes              | Yes       | Yes     | Yes              |
| 3.  | WCDMA + WLAN2.4GHz                       | Yes              | Yes       | Yes     | Yes              |
| 4.  | LTE + WLAN2.4GHz                         | Yes              | Yes       | Yes     | Yes              |
| 5.  | GSM Voice + Bluetooth                    |                  | Yes       |         | Yes              |
| 6.  | GPRS/EDGE + Bluetooth                    |                  | Yes       |         | Yes              |
| 7.  | WCDMA+ Bluetooth                         |                  | Yes       |         | Yes              |
| 8.  | LTE + Bluetooth                          |                  | Yes       |         | Yes              |
| 9.  | GSM Voice + WLAN5GHz                     | Yes              | Yes       |         | Yes              |
| 10. | GPRS/EDGE + WLAN5GHz                     | Yes              | Yes       | Yes     | Yes              |
| 11. | WCDMA + WLAN5GHz                         | Yes              | Yes       | Yes     | Yes              |
| 12. | LTE + WLAN5GHz                           | Yes              | Yes       | Yes     | Yes              |
| 13. | GSM Voice + WLAN5GHz + Bluetooth         |                  | Yes       |         | Yes              |
| 14. | GPRS/EDGE + WLAN5GHz + Bluetooth         |                  | Yes       |         | Yes              |
| 15. | WCDMA + WLAN5GHz + Bluetooth             |                  | Yes       |         | Yes              |
| 16. | LTE + WLAN5GHz + Bluetooth               |                  | Yes       |         | Yes              |

**General Note:**

- This device 2.4GHz / 5.2GHz / 5.8GHz WLAN supports Hotspot operation.
- The worst case WLAN reported SAR for each configuration was used for SAR summation. Therefore, the following summations represent the absolute worst cases for simultaneous transmission with WLAN.
- 2.4GHz WLAN and Bluetooth share the same antenna, and cannot transmit simultaneously.
- EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment.
- The Scaled SAR summation is calculated based on the same configuration and test position.
- Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
  - Scalar SAR summation < 1.6W/kg.
  - $SPLSR = (SAR1 + SAR2)^{1.5} / (\text{min. separation distance, mm})$ , and the peak separation distance is determined from the square root of  $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$ , where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
  - If  $SPLSR \leq 0.04$ , simultaneously transmission SAR measurement is not necessary.
  - Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.
  - The SPLSR calculated results please refer to section 15.5.
- For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01v06 based on the formula below.
  - $(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm}) \cdot [\sqrt{f(\text{GHz})} / x] \text{ W/kg}$  for test separation distances  $\leq 50 \text{ mm}$ ; where  $x = 7.5$  for 1-g SAR, and  $x = 18.75$  for 10-g SAR.
  - When the minimum separation distance is < 5mm, the distance is used 5mm to determine SAR test exclusion.
  - 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the test separation distances is > 50 mm.

| Bluetooth<br>Max Power | Exposure Position           | Product Specific |
|------------------------|-----------------------------|------------------|
|                        | Test separation             | 5 mm             |
| 12dBm                  | Estimated<br>10g SAR (W/kg) | 0.269W/kg        |

**15.1 Head Exposure Conditions**

| WWAN Band |           | Exposure Position | 1                | 2                | 1+2<br>Summed<br>1g SAR<br>(W/kg) | SPLSR | Case No |
|-----------|-----------|-------------------|------------------|------------------|-----------------------------------|-------|---------|
|           |           |                   | WWAN             | 2.4GHz WLAN      |                                   |       |         |
|           |           |                   | 1g SAR<br>(W/kg) | 1g SAR<br>(W/kg) |                                   |       |         |
| GSM       | GSM850    | Right Cheek       | 0.268            | 0.513            | <b>0.78</b>                       |       |         |
|           |           | Right Tilted      | 0.125            | 0.455            | <b>0.58</b>                       |       |         |
|           |           | Left Cheek        | 0.360            | 1.292            | <b>1.65</b>                       | 0.02  | Case 1  |
|           |           | Left Tilted       | 0.124            | 0.792            | <b>0.92</b>                       |       |         |
|           | GSM1900   | Right Cheek       | 0.196            | 0.513            | <b>0.71</b>                       |       |         |
|           |           | Right Tilted      | 0.087            | 0.455            | <b>0.54</b>                       |       |         |
|           |           | Left Cheek        | 0.266            | 1.292            | <b>1.56</b>                       |       |         |
|           |           | Left Tilted       | 0.087            | 0.792            | <b>0.88</b>                       |       |         |
| WCDMA     | WCDMA II  | Right Cheek       | 0.560            | 0.513            | <b>1.07</b>                       |       |         |
|           |           | Right Tilted      | 0.177            | 0.455            | <b>0.63</b>                       |       |         |
|           |           | Left Cheek        | 0.391            | 1.292            | <b>1.68</b>                       | 0.02  | Case 2  |
|           |           | Left Tilted       | 0.152            | 0.792            | <b>0.94</b>                       |       |         |
|           | WCDMA IV  | Right Cheek       | 0.518            | 0.513            | <b>1.03</b>                       |       |         |
|           |           | Right Tilted      | 0.215            | 0.455            | <b>0.67</b>                       |       |         |
|           |           | Left Cheek        | 0.629            | 1.292            | <b>1.92</b>                       | 0.03  | Case 3  |
|           |           | Left Tilted       | 0.193            | 0.792            | <b>0.99</b>                       |       |         |
|           | WCDMA V   | Right Cheek       | 0.359            | 0.513            | <b>0.87</b>                       |       |         |
|           |           | Right Tilted      | 0.166            | 0.455            | <b>0.62</b>                       |       |         |
|           |           | Left Cheek        | 0.410            | 1.292            | <b>1.70</b>                       | 0.02  | Case 4  |
|           |           | Left Tilted       | 0.164            | 0.792            | <b>0.96</b>                       |       |         |
| CDMA      | CDMA BC0  | Right Cheek       | 0.357            | 0.513            | <b>0.87</b>                       |       |         |
|           |           | Right Tilted      | 0.154            | 0.455            | <b>0.61</b>                       |       |         |
|           |           | Left Cheek        | 0.417            | 1.292            | <b>1.71</b>                       | 0.02  | Case 5  |
|           |           | Left Tilted       | 0.185            | 0.792            | <b>0.98</b>                       |       |         |
|           | CDMA BC1  | Right Cheek       | 0.394            | 0.513            | <b>0.91</b>                       |       |         |
|           |           | Right Tilted      | 0.193            | 0.455            | <b>0.65</b>                       |       |         |
|           |           | Left Cheek        | 0.482            | 1.292            | <b>1.77</b>                       | 0.02  | Case 6  |
|           |           | Left Tilted       | 0.146            | 0.792            | <b>0.94</b>                       |       |         |
|           | CDMA BC10 | Right Cheek       | 0.454            | 0.513            | <b>0.97</b>                       |       |         |
|           |           | Right Tilted      | 0.205            | 0.455            | <b>0.66</b>                       |       |         |
|           |           | Left Cheek        | 0.501            | 1.292            | <b>1.79</b>                       | 0.02  | Case 7  |
|           |           | Left Tilted       | 0.203            | 0.792            | <b>1.00</b>                       |       |         |



| WWAN Band |             | Exposure Position | 1                | 2                | 1+2<br>Summed<br>1g SAR (W/kg) | SPLSR | Case No |
|-----------|-------------|-------------------|------------------|------------------|--------------------------------|-------|---------|
|           |             |                   | WWAN             | 2.4GHz WLAN      |                                |       |         |
|           |             |                   | 1g SAR<br>(W/kg) | 1g SAR<br>(W/kg) |                                |       |         |
| LTE       | LTE Band 2  | Right Cheek       | 0.491            | 0.513            | 1.00                           |       |         |
|           |             | Right Tilted      | 0.193            | 0.455            | 0.65                           |       |         |
|           |             | Left Cheek        | 0.371            | 1.292            | 1.66                           | 0.02  | Case 8  |
|           |             | Left Tilted       | 0.156            | 0.792            | 0.95                           |       |         |
|           | LTE Band 4  | Right Cheek       | 0.588            | 0.513            | 1.10                           |       |         |
|           |             | Right Tilted      | 0.185            | 0.455            | 0.64                           |       |         |
|           |             | Left Cheek        | 0.622            | 1.292            | 1.91                           | 0.03  | Case 9  |
|           |             | Left Tilted       | 0.162            | 0.792            | 0.95                           |       |         |
|           | LTE Band 5  | Right Cheek       | 0.435            | 0.513            | 0.95                           |       |         |
|           |             | Right Tilted      | 0.211            | 0.455            | 0.67                           |       |         |
|           |             | Left Cheek        | 0.468            | 1.292            | 1.76                           | 0.02  | Case 10 |
|           |             | Left Tilted       | 0.233            | 0.792            | 1.03                           |       |         |
|           | LTE Band 7  | Right Cheek       | 0.147            | 0.513            | 0.66                           |       |         |
|           |             | Right Tilted      | 0.120            | 0.455            | 0.58                           |       |         |
|           |             | Left Cheek        | 0.564            | 1.292            | 1.86                           | 0.02  | Case 11 |
|           |             | Left Tilted       | 0.175            | 0.792            | 0.97                           |       |         |
|           | LTE Band 12 | Right Cheek       | 0.141            | 0.513            | 0.65                           |       |         |
|           |             | Right Tilted      | 0.055            | 0.455            | 0.51                           |       |         |
|           |             | Left Cheek        | 0.288            | 1.292            | 1.58                           |       |         |
|           |             | Left Tilted       | 0.073            | 0.792            | 0.87                           |       |         |
|           | LTE Band 13 | Right Cheek       | 0.366            | 0.513            | 0.88                           |       |         |
|           |             | Right Tilted      | 0.172            | 0.455            | 0.63                           |       |         |
|           |             | Left Cheek        | 0.428            | 1.292            | 1.72                           | 0.02  | Case 12 |
|           |             | Left Tilted       | 0.188            | 0.792            | 0.98                           |       |         |
|           | LTE Band 17 | Right Cheek       | 0.274            | 0.513            | 0.79                           |       |         |
|           |             | Right Tilted      | 0.101            | 0.455            | 0.56                           |       |         |
|           |             | Left Cheek        | 0.364            | 1.292            | 1.66                           | 0.02  | Case 13 |
|           |             | Left Tilted       | 0.078            | 0.792            | 0.87                           |       |         |
|           | LTE Band 25 | Right Cheek       | 0.713            | 0.513            | 1.23                           |       |         |
|           |             | Right Tilted      | 0.240            | 0.455            | 0.70                           |       |         |
|           |             | Left Cheek        | 0.528            | 1.292            | 1.82                           | 0.03  | Case 14 |
|           |             | Left Tilted       | 0.217            | 0.792            | 1.01                           |       |         |
|           | LTE Band 26 | Right Cheek       | 0.377            | 0.513            | 0.89                           |       |         |
|           |             | Right Tilted      | 0.164            | 0.455            | 0.62                           |       |         |
|           |             | Left Cheek        | 0.409            | 1.292            | 1.70                           | 0.02  | Case 15 |
|           |             | Left Tilted       | 0.197            | 0.792            | 0.99                           |       |         |
|           | LTE Band 30 | Right Cheek       | 0.156            | 0.513            | 0.67                           |       |         |
|           |             | Right Tilted      | 0.084            | 0.455            | 0.54                           |       |         |
|           |             | Left Cheek        | 0.319            | 1.292            | 1.61                           | 0.02  | Case 16 |
|           |             | Left Tilted       | 0.122            | 0.792            | 0.91                           |       |         |
|           | LTE Band 38 | Right Cheek       | 0.102            | 0.513            | 0.62                           |       |         |
|           |             | Right Tilted      | 0.062            | 0.455            | 0.52                           |       |         |
|           |             | Left Cheek        | 0.292            | 1.292            | 1.58                           |       |         |
|           |             | Left Tilted       | 0.061            | 0.792            | 0.85                           |       |         |
|           | LTE Band 41 | Right Cheek       | 0.136            | 0.513            | 0.65                           |       |         |
|           |             | Right Tilted      | 0.076            | 0.455            | 0.53                           |       |         |
|           |             | Left Cheek        | 0.322            | 1.292            | 1.61                           | 0.02  | Case 17 |
|           |             | Left Tilted       | 0.060            | 0.792            | 0.85                           |       |         |
|           | LTE Band 66 | Right Cheek       | 0.532            | 0.513            | 1.05                           |       |         |
|           |             | Right Tilted      | 0.144            | 0.455            | 0.60                           |       |         |
|           |             | Left Cheek        | 0.417            | 1.292            | 1.71                           | 0.02  | Case 18 |
|           |             | Left Tilted       | 0.147            | 0.792            | 0.94                           |       |         |

| WWAN Band |           | Exposure Position | 1             | 3             | 1+3 Summed<br>1g SAR (W/kg) | SPLSR | Case No |
|-----------|-----------|-------------------|---------------|---------------|-----------------------------|-------|---------|
|           |           |                   | WWAN          | 5GHz WLAN     |                             |       |         |
|           |           |                   | 1g SAR (W/kg) | 1g SAR (W/kg) |                             |       |         |
| GSM       | GSM850    | Right Cheek       | 0.268         | 0.669         | <b>0.94</b>                 |       |         |
|           |           | Right Tilted      | 0.125         | 0.536         | <b>0.66</b>                 |       |         |
|           |           | Left Cheek        | 0.360         | 1.301         | <b>1.66</b>                 | 0.02  | Case 19 |
|           |           | Left Tilted       | 0.124         | 0.963         | <b>1.09</b>                 |       |         |
|           | GSM1900   | Right Cheek       | 0.196         | 0.669         | <b>0.87</b>                 |       |         |
|           |           | Right Tilted      | 0.087         | 0.536         | <b>0.62</b>                 |       |         |
|           |           | Left Cheek        | 0.266         | 1.301         | <b>1.57</b>                 |       |         |
|           |           | Left Tilted       | 0.087         | 0.963         | <b>1.05</b>                 |       |         |
| WCDMA     | WCDMA II  | Right Cheek       | 0.560         | 0.669         | <b>1.23</b>                 |       |         |
|           |           | Right Tilted      | 0.177         | 0.536         | <b>0.71</b>                 |       |         |
|           |           | Left Cheek        | 0.391         | 1.301         | <b>1.69</b>                 | 0.02  | Case 20 |
|           |           | Left Tilted       | 0.152         | 0.963         | <b>1.12</b>                 |       |         |
|           | WCDMA IV  | Right Cheek       | 0.518         | 0.669         | <b>1.19</b>                 |       |         |
|           |           | Right Tilted      | 0.215         | 0.536         | <b>0.75</b>                 |       |         |
|           |           | Left Cheek        | 0.629         | 1.301         | <b>1.93</b>                 | 0.03  | Case 21 |
|           |           | Left Tilted       | 0.193         | 0.963         | <b>1.16</b>                 |       |         |
|           | WCDMA V   | Right Cheek       | 0.359         | 0.669         | <b>1.03</b>                 |       |         |
|           |           | Right Tilted      | 0.166         | 0.536         | <b>0.70</b>                 |       |         |
|           |           | Left Cheek        | 0.410         | 1.301         | <b>1.71</b>                 | 0.02  | Case 22 |
|           |           | Left Tilted       | 0.164         | 0.963         | <b>1.13</b>                 |       |         |
| CDMA      | CDMA BC0  | Right Cheek       | 0.357         | 0.669         | <b>1.03</b>                 |       |         |
|           |           | Right Tilted      | 0.154         | 0.536         | <b>0.69</b>                 |       |         |
|           |           | Left Cheek        | 0.417         | 1.301         | <b>1.72</b>                 | 0.02  | Case 23 |
|           |           | Left Tilted       | 0.185         | 0.963         | <b>1.15</b>                 |       |         |
|           | CDMA BC1  | Right Cheek       | 0.394         | 0.669         | <b>1.06</b>                 |       |         |
|           |           | Right Tilted      | 0.193         | 0.536         | <b>0.73</b>                 |       |         |
|           |           | Left Cheek        | 0.482         | 1.301         | <b>1.78</b>                 | 0.02  | Case 24 |
|           |           | Left Tilted       | 0.146         | 0.963         | <b>1.11</b>                 |       |         |
|           | CDMA BC10 | Right Cheek       | 0.454         | 0.669         | <b>1.12</b>                 |       |         |
|           |           | Right Tilted      | 0.205         | 0.536         | <b>0.74</b>                 |       |         |
|           |           | Left Cheek        | 0.501         | 1.301         | <b>1.80</b>                 | 0.02  | Case 25 |
|           |           | Left Tilted       | 0.203         | 0.963         | <b>1.17</b>                 |       |         |



| WWAN Band |             | Exposure Position | 1                        | 3                             | 1+3 Summed<br>1g SAR (W/kg) | SPLSR | Case No |
|-----------|-------------|-------------------|--------------------------|-------------------------------|-----------------------------|-------|---------|
|           |             |                   | WWAN<br>1g SAR<br>(W/kg) | 5GHz WLAN<br>1g SAR<br>(W/kg) |                             |       |         |
| LTE       | LTE Band 2  | Right Cheek       | 0.491                    | 0.669                         | 1.16                        |       |         |
|           |             | Right Tilted      | 0.193                    | 0.536                         | 0.73                        |       |         |
|           |             | Left Cheek        | 0.371                    | 1.301                         | 1.67                        | 0.02  | Case 26 |
|           |             | Left Tilted       | 0.156                    | 0.963                         | 1.12                        |       |         |
|           | LTE Band 4  | Right Cheek       | 0.588                    | 0.669                         | 1.26                        |       |         |
|           |             | Right Tilted      | 0.185                    | 0.536                         | 0.72                        |       |         |
|           |             | Left Cheek        | 0.622                    | 1.301                         | 1.92                        | 0.03  | Case 27 |
|           |             | Left Tilted       | 0.162                    | 0.963                         | 1.13                        |       |         |
|           | LTE Band 5  | Right Cheek       | 0.435                    | 0.669                         | 1.10                        |       |         |
|           |             | Right Tilted      | 0.211                    | 0.536                         | 0.75                        |       |         |
|           |             | Left Cheek        | 0.468                    | 1.301                         | 1.77                        | 0.02  | Case 28 |
|           |             | Left Tilted       | 0.233                    | 0.963                         | 1.20                        |       |         |
|           | LTE Band 7  | Right Cheek       | 0.147                    | 0.669                         | 0.82                        |       |         |
|           |             | Right Tilted      | 0.120                    | 0.536                         | 0.66                        |       |         |
|           |             | Left Cheek        | 0.564                    | 1.301                         | 1.87                        | 0.02  | Case 29 |
|           |             | Left Tilted       | 0.175                    | 0.963                         | 1.14                        |       |         |
|           | LTE Band 12 | Right Cheek       | 0.141                    | 0.669                         | 0.81                        |       |         |
|           |             | Right Tilted      | 0.055                    | 0.536                         | 0.59                        |       |         |
|           |             | Left Cheek        | 0.288                    | 1.301                         | 1.59                        |       |         |
|           |             | Left Tilted       | 0.073                    | 0.963                         | 1.04                        |       |         |
|           | LTE Band 13 | Right Cheek       | 0.366                    | 0.669                         | 1.04                        |       |         |
|           |             | Right Tilted      | 0.172                    | 0.536                         | 0.71                        |       |         |
|           |             | Left Cheek        | 0.428                    | 1.301                         | 1.73                        | 0.02  | Case 30 |
|           |             | Left Tilted       | 0.188                    | 0.963                         | 1.15                        |       |         |
|           | LTE Band 17 | Right Cheek       | 0.274                    | 0.669                         | 0.94                        |       |         |
|           |             | Right Tilted      | 0.101                    | 0.536                         | 0.64                        |       |         |
|           |             | Left Cheek        | 0.364                    | 1.301                         | 1.67                        | 0.02  | Case 31 |
|           |             | Left Tilted       | 0.078                    | 0.963                         | 1.04                        |       |         |
|           | LTE Band 25 | Right Cheek       | 0.713                    | 0.669                         | 1.38                        |       |         |
|           |             | Right Tilted      | 0.240                    | 0.536                         | 0.78                        |       |         |
|           |             | Left Cheek        | 0.528                    | 1.301                         | 1.83                        | 0.02  | Case 32 |
|           |             | Left Tilted       | 0.217                    | 0.963                         | 1.18                        |       |         |
|           | LTE Band 26 | Right Cheek       | 0.377                    | 0.669                         | 1.05                        |       |         |
|           |             | Right Tilted      | 0.164                    | 0.536                         | 0.70                        |       |         |
|           |             | Left Cheek        | 0.409                    | 1.301                         | 1.71                        | 0.02  | Case 33 |
|           |             | Left Tilted       | 0.197                    | 0.963                         | 1.16                        |       |         |
|           | LTE Band 30 | Right Cheek       | 0.156                    | 0.669                         | 0.83                        |       |         |
|           |             | Right Tilted      | 0.084                    | 0.536                         | 0.62                        |       |         |
|           |             | Left Cheek        | 0.319                    | 1.301                         | 1.62                        | 0.02  | Case 34 |
|           |             | Left Tilted       | 0.122                    | 0.963                         | 1.09                        |       |         |
|           | LTE Band 38 | Right Cheek       | 0.102                    | 0.669                         | 0.77                        |       |         |
|           |             | Right Tilted      | 0.062                    | 0.536                         | 0.60                        |       |         |
|           |             | Left Cheek        | 0.292                    | 1.301                         | 1.59                        |       |         |
|           |             | Left Tilted       | 0.061                    | 0.963                         | 1.02                        |       |         |
|           | LTE Band 41 | Right Cheek       | 0.136                    | 0.669                         | 0.81                        |       |         |
|           |             | Right Tilted      | 0.076                    | 0.536                         | 0.61                        |       |         |
|           |             | Left Cheek        | 0.322                    | 1.301                         | 1.62                        | 0.02  | Case 35 |
|           |             | Left Tilted       | 0.060                    | 0.963                         | 1.02                        |       |         |
|           | LTE Band 66 | Right Cheek       | 0.532                    | 0.669                         | 1.20                        |       |         |
|           |             | Right Tilted      | 0.144                    | 0.536                         | 0.68                        |       |         |
|           |             | Left Cheek        | 0.417                    | 1.301                         | 1.72                        | 0.02  | Case 36 |
|           |             | Left Tilted       | 0.147                    | 0.963                         | 1.11                        |       |         |

**15.2 Hotspot Exposure Conditions**

| WWAN Band |           | Exposure Position | 1             | 2             | 1+2 Summed<br>1g SAR (W/kg) | SPLSR | Case No |
|-----------|-----------|-------------------|---------------|---------------|-----------------------------|-------|---------|
|           |           |                   | WWAN          | 2.4GHz WLAN   |                             |       |         |
|           |           |                   | 1g SAR (W/kg) | 1g SAR (W/kg) |                             |       |         |
| GSM       | GSM850    | Front             | 1.151         | 0.319         | <b>1.47</b>                 |       |         |
|           |           | Back              | 0.994         | 0.403         | <b>1.40</b>                 |       |         |
|           |           | Left side         | 0.695         | 0.029         | <b>0.72</b>                 |       |         |
|           |           | Right side        | 0.365         | 0.091         | <b>0.46</b>                 |       |         |
|           |           | Top side          |               | 0.149         | <b>0.15</b>                 |       |         |
|           |           | Bottom side       | 0.411         |               | <b>0.41</b>                 |       |         |
|           | GSM1900   | Front             | 0.723         | 0.319         | <b>1.04</b>                 |       |         |
|           |           | Back              | 0.618         | 0.403         | <b>1.02</b>                 |       |         |
|           |           | Left side         | 0.148         | 0.029         | <b>0.18</b>                 |       |         |
|           |           | Right side        | 0.265         | 0.091         | <b>0.36</b>                 |       |         |
|           |           | Top side          |               | 0.149         | <b>0.15</b>                 |       |         |
|           |           | Bottom side       | 0.729         |               | <b>0.73</b>                 |       |         |
| WCDMA     | WCDMA II  | Front             | 1.196         | 0.319         | <b>1.52</b>                 |       |         |
|           |           | Back              | 1.068         | 0.403         | <b>1.47</b>                 |       |         |
|           |           | Left side         | 0.243         | 0.029         | <b>0.27</b>                 |       |         |
|           |           | Right side        | 0.394         | 0.091         | <b>0.49</b>                 |       |         |
|           |           | Top side          |               | 0.149         | <b>0.15</b>                 |       |         |
|           |           | Bottom side       | 1.179         |               | <b>1.18</b>                 |       |         |
|           | WCDMA IV  | Front             | 0.901         | 0.319         | <b>1.22</b>                 |       |         |
|           |           | Back              | 0.859         | 0.403         | <b>1.26</b>                 |       |         |
|           |           | Left side         | 0.225         | 0.029         | <b>0.25</b>                 |       |         |
|           |           | Right side        | 0.343         | 0.091         | <b>0.43</b>                 |       |         |
|           |           | Top side          |               | 0.149         | <b>0.15</b>                 |       |         |
|           |           | Bottom side       | 0.991         |               | <b>0.99</b>                 |       |         |
|           | WCDMA V   | Front             | 0.983         | 0.319         | <b>1.30</b>                 |       |         |
|           |           | Back              | 0.893         | 0.403         | <b>1.30</b>                 |       |         |
|           |           | Left side         | 0.954         | 0.029         | <b>0.98</b>                 |       |         |
|           |           | Right side        | 0.457         | 0.091         | <b>0.55</b>                 |       |         |
|           |           | Top side          |               | 0.149         | <b>0.15</b>                 |       |         |
|           |           | Bottom side       | 0.348         |               | <b>0.35</b>                 |       |         |
| CDMA      | CDMA BC0  | Front             | 1.167         | 0.319         | <b>1.49</b>                 |       |         |
|           |           | Back              | 1.040         | 0.403         | <b>1.44</b>                 |       |         |
|           |           | Left side         | 0.737         | 0.029         | <b>0.77</b>                 |       |         |
|           |           | Right side        | 0.391         | 0.091         | <b>0.48</b>                 |       |         |
|           |           | Top side          |               | 0.149         | <b>0.15</b>                 |       |         |
|           |           | Bottom side       | 0.515         |               | <b>0.52</b>                 |       |         |
|           | CDMA BC1  | Front             | 1.168         | 0.319         | <b>1.49</b>                 |       |         |
|           |           | Back              | 1.065         | 0.403         | <b>1.47</b>                 |       |         |
|           |           | Left side         | 0.352         | 0.029         | <b>0.38</b>                 |       |         |
|           |           | Right side        | 0.513         | 0.091         | <b>0.60</b>                 |       |         |
|           |           | Top side          |               | 0.149         | <b>0.15</b>                 |       |         |
|           |           | Bottom side       | 1.188         |               | <b>1.19</b>                 |       |         |
|           | CDMA BC10 | Front             | 0.810         | 0.319         | <b>1.13</b>                 |       |         |
|           |           | Back              | 0.696         | 0.403         | <b>1.10</b>                 |       |         |
|           |           | Left side         | 0.710         | 0.029         | <b>0.74</b>                 |       |         |
|           |           | Right side        | 0.394         | 0.091         | <b>0.49</b>                 |       |         |
|           |           | Top side          |               | 0.149         | <b>0.15</b>                 |       |         |
|           |           | Bottom side       | 0.324         |               | <b>0.32</b>                 |       |         |



| WWAN Band |             | Exposure Position | 1             | 2             | 1+2 Summed<br>1g SAR (W/kg) | SPLSR | Case No |
|-----------|-------------|-------------------|---------------|---------------|-----------------------------|-------|---------|
|           |             |                   | WWAN          | 2.4GHz WLAN   |                             |       |         |
|           |             |                   | 1g SAR (W/kg) | 1g SAR (W/kg) |                             |       |         |
| LTE       | LTE Band 2  | Front             | 0.985         | 0.319         | 1.30                        |       |         |
|           |             | Back              | 0.936         | 0.403         | 1.34                        |       |         |
|           |             | Left side         | 0.355         | 0.029         | 0.38                        |       |         |
|           |             | Right side        | 0.584         | 0.091         | 0.68                        |       |         |
|           |             | Top side          |               | 0.149         | 0.15                        |       |         |
|           |             | Bottom side       | 1.061         |               | 1.06                        |       |         |
|           | LTE Band 4  | Front             | 1.077         | 0.319         | 1.40                        |       |         |
|           |             | Back              | 0.989         | 0.403         | 1.39                        |       |         |
|           |             | Left side         | 0.480         | 0.029         | 0.51                        |       |         |
|           |             | Right side        | 0.786         | 0.091         | 0.88                        |       |         |
|           |             | Top side          |               | 0.149         | 0.15                        |       |         |
|           |             | Bottom side       | 1.073         |               | 1.07                        |       |         |
|           | LTE Band 5  | Front             | 0.859         | 0.319         | 1.18                        |       |         |
|           |             | Back              | 0.894         | 0.403         | 1.30                        |       |         |
|           |             | Left side         | 0.592         | 0.029         | 0.62                        |       |         |
|           |             | Right side        | 0.478         | 0.091         | 0.57                        |       |         |
|           |             | Top side          |               | 0.149         | 0.15                        |       |         |
|           |             | Bottom side       | 0.420         |               | 0.42                        |       |         |
|           | LTE Band 7  | Front             | 1.030         | 0.319         | 1.35                        |       |         |
|           |             | Back              | 1.007         | 0.403         | 1.41                        |       |         |
|           |             | Left side         | 0.185         | 0.029         | 0.21                        |       |         |
|           |             | Right side        | 0.095         | 0.091         | 0.19                        |       |         |
|           |             | Top side          |               | 0.149         | 0.15                        |       |         |
|           |             | Bottom side       | 0.995         |               | 1.00                        |       |         |
|           | LTE Band 12 | Front             | 0.991         | 0.319         | 1.31                        |       |         |
|           |             | Back              | 0.973         | 0.403         | 1.38                        |       |         |
|           |             | Left side         | 0.981         | 0.029         | 1.01                        |       |         |
|           |             | Right side        | 0.233         | 0.091         | 0.32                        |       |         |
|           |             | Top side          |               | 0.149         | 0.15                        |       |         |
|           |             | Bottom side       | 0.327         |               | 0.33                        |       |         |
|           | LTE Band 13 | Front             | 1.115         | 0.319         | 1.43                        |       |         |
|           |             | Back              | 1.194         | 0.403         | 1.60                        | 0.01  | Case 37 |
|           |             | Left side         | 1.108         | 0.029         | 1.14                        |       |         |
|           |             | Right side        | 0.654         | 0.091         | 0.75                        |       |         |
|           |             | Top side          |               | 0.149         | 0.15                        |       |         |
|           |             | Bottom side       | 0.515         |               | 0.52                        |       |         |
|           | LTE Band 17 | Front             | 0.851         | 0.319         | 1.17                        |       |         |
|           |             | Back              | 0.951         | 0.403         | 1.35                        |       |         |
|           |             | Left side         | 1.104         | 0.029         | 1.13                        |       |         |
|           |             | Right side        | 0.259         | 0.091         | 0.35                        |       |         |
|           |             | Top side          |               | 0.149         | 0.15                        |       |         |
|           |             | Bottom side       | 0.300         |               | 0.30                        |       |         |
|           | LTE Band 25 | Front             | 1.036         | 0.319         | 1.36                        |       |         |
|           |             | Back              | 0.961         | 0.403         | 1.36                        |       |         |
|           |             | Left side         | 0.427         | 0.029         | 0.46                        |       |         |
|           |             | Right side        | 0.682         | 0.091         | 0.77                        |       |         |
|           |             | Top side          |               | 0.149         | 0.15                        |       |         |
|           |             | Bottom side       | 1.116         |               | 1.12                        |       |         |

| WWAN Band |             | Exposure Position | 1             | 2             | 1+2 Summed<br>1g SAR (W/kg) | SPLSR | Case No |
|-----------|-------------|-------------------|---------------|---------------|-----------------------------|-------|---------|
|           |             |                   | WWAN          | 2.4GHz WLAN   |                             |       |         |
|           |             |                   | 1g SAR (W/kg) | 1g SAR (W/kg) |                             |       |         |
| LTE       | LTE Band 26 | Front             | 1.046         | 0.319         | 1.37                        |       |         |
|           |             | Back              | 0.957         | 0.403         | 1.36                        |       |         |
|           |             | Left side         | 0.644         | 0.029         | 0.67                        |       |         |
|           |             | Right side        | 0.399         | 0.091         | 0.49                        |       |         |
|           |             | Top side          |               | 0.149         | 0.15                        |       |         |
|           |             | Bottom side       | 0.427         |               | 0.43                        |       |         |
|           | LTE Band 30 | Front             | 0.565         | 0.319         | 0.88                        |       |         |
|           |             | Back              | 1.189         | 0.403         | 1.59                        |       |         |
|           |             | Left side         | 0.126         | 0.029         | 0.16                        |       |         |
|           |             | Right side        | 0.070         | 0.091         | 0.16                        |       |         |
|           |             | Top side          |               | 0.149         | 0.15                        |       |         |
|           |             | Bottom side       | 1.060         |               | 1.06                        |       |         |
|           | LTE Band 38 | Front             | 0.441         | 0.319         | 0.76                        |       |         |
|           |             | Back              | 0.578         | 0.403         | 0.98                        |       |         |
|           |             | Left side         | 0.151         | 0.029         | 0.18                        |       |         |
|           |             | Right side        | 0.055         | 0.091         | 0.15                        |       |         |
|           |             | Top side          |               | 0.149         | 0.15                        |       |         |
|           |             | Bottom side       | 0.681         |               | 0.68                        |       |         |
|           | LTE Band 41 | Front             | 0.597         | 0.319         | 0.92                        |       |         |
|           |             | Back              | 0.790         | 0.403         | 1.19                        |       |         |
|           |             | Left side         | 0.210         | 0.029         | 0.24                        |       |         |
|           |             | Right side        | 0.078         | 0.091         | 0.17                        |       |         |
|           |             | Top side          |               | 0.149         | 0.15                        |       |         |
|           |             | Bottom side       | 0.911         |               | 0.91                        |       |         |
|           | LTE Band 66 | Front             | 0.973         | 0.319         | 1.29                        |       |         |
|           |             | Back              | 0.878         | 0.403         | 1.28                        |       |         |
|           |             | Left side         | 0.332         | 0.029         | 0.36                        |       |         |
|           |             | Right side        | 0.612         | 0.091         | 0.70                        |       |         |
|           |             | Top side          |               | 0.149         | 0.15                        |       |         |
|           |             | Bottom side       | 0.994         |               | 0.99                        |       |         |

| WWAN Band |           | Exposure Position | 1             | 3             | 1+3 Summed<br>1g SAR (W/kg) | SPLSR | Case No |
|-----------|-----------|-------------------|---------------|---------------|-----------------------------|-------|---------|
|           |           |                   | WWAN          | 5GHz WLAN     |                             |       |         |
|           |           |                   | 1g SAR (W/kg) | 1g SAR (W/kg) |                             |       |         |
| GSM       | GSM850    | Front             | 1.151         | 0.293         | 1.44                        |       |         |
|           |           | Back              | 0.994         | 0.471         | 1.47                        |       |         |
|           |           | Left side         | 0.695         | 0.036         | 0.73                        |       |         |
|           |           | Right side        | 0.365         | 0.096         | 0.46                        |       |         |
|           |           | Top side          |               | 0.109         | 0.11                        |       |         |
|           |           | Bottom side       | 0.411         |               | 0.41                        |       |         |
|           | GSM1900   | Front             | 0.723         | 0.293         | 1.02                        |       |         |
|           |           | Back              | 0.618         | 0.471         | 1.09                        |       |         |
|           |           | Left side         | 0.148         | 0.036         | 0.18                        |       |         |
|           |           | Right side        | 0.265         | 0.096         | 0.36                        |       |         |
|           |           | Top side          |               | 0.109         | 0.11                        |       |         |
|           |           | Bottom side       | 0.729         |               | 0.73                        |       |         |
| WCDMA     | WCDMA II  | Front             | 1.196         | 0.293         | 1.49                        |       |         |
|           |           | Back              | 1.068         | 0.471         | 1.54                        |       |         |
|           |           | Left side         | 0.243         | 0.036         | 0.28                        |       |         |
|           |           | Right side        | 0.394         | 0.096         | 0.49                        |       |         |
|           |           | Top side          |               | 0.109         | 0.11                        |       |         |
|           |           | Bottom side       | 1.179         |               | 1.18                        |       |         |
|           | WCDMA IV  | Front             | 0.901         | 0.293         | 1.19                        |       |         |
|           |           | Back              | 0.859         | 0.471         | 1.33                        |       |         |
|           |           | Left side         | 0.225         | 0.036         | 0.26                        |       |         |
|           |           | Right side        | 0.343         | 0.096         | 0.44                        |       |         |
|           |           | Top side          |               | 0.109         | 0.11                        |       |         |
|           |           | Bottom side       | 0.991         |               | 0.99                        |       |         |
|           | WCDMA V   | Front             | 0.983         | 0.293         | 1.28                        |       |         |
|           |           | Back              | 0.893         | 0.471         | 1.36                        |       |         |
|           |           | Left side         | 0.954         | 0.036         | 0.99                        |       |         |
|           |           | Right side        | 0.457         | 0.096         | 0.55                        |       |         |
|           |           | Top side          |               | 0.109         | 0.11                        |       |         |
|           |           | Bottom side       | 0.348         |               | 0.35                        |       |         |
| CDMA      | CDMA BC0  | Front             | 1.167         | 0.293         | 1.46                        |       |         |
|           |           | Back              | 1.040         | 0.471         | 1.51                        |       |         |
|           |           | Left side         | 0.737         | 0.036         | 0.77                        |       |         |
|           |           | Right side        | 0.391         | 0.096         | 0.49                        |       |         |
|           |           | Top side          |               | 0.109         | 0.11                        |       |         |
|           |           | Bottom side       | 0.515         |               | 0.52                        |       |         |
|           | CDMA BC1  | Front             | 1.168         | 0.293         | 1.46                        |       |         |
|           |           | Back              | 1.065         | 0.471         | 1.54                        |       |         |
|           |           | Left side         | 0.352         | 0.036         | 0.39                        |       |         |
|           |           | Right side        | 0.513         | 0.096         | 0.61                        |       |         |
|           |           | Top side          |               | 0.109         | 0.11                        |       |         |
|           |           | Bottom side       | 1.188         |               | 1.19                        |       |         |
|           | CDMA BC10 | Front             | 0.810         | 0.293         | 1.10                        |       |         |
|           |           | Back              | 0.696         | 0.471         | 1.17                        |       |         |
|           |           | Left side         | 0.710         | 0.036         | 0.75                        |       |         |
|           |           | Right side        | 0.394         | 0.096         | 0.49                        |       |         |
|           |           | Top side          |               | 0.109         | 0.11                        |       |         |
|           |           | Bottom side       | 0.324         |               | 0.32                        |       |         |



| WWAN Band |             | Exposure Position | 1                     | 3                          | 1+3 Summed<br>1g SAR (W/kg) | SPLSR | Case No |
|-----------|-------------|-------------------|-----------------------|----------------------------|-----------------------------|-------|---------|
|           |             |                   | WWAN<br>1g SAR (W/kg) | 5GHz WLAN<br>1g SAR (W/kg) |                             |       |         |
| LTE       | LTE Band 2  | Front             | 0.985                 | 0.293                      | 1.28                        |       |         |
|           |             | Back              | 0.936                 | 0.471                      | 1.41                        |       |         |
|           |             | Left side         | 0.355                 | 0.036                      | 0.39                        |       |         |
|           |             | Right side        | 0.584                 | 0.096                      | 0.68                        |       |         |
|           |             | Top side          |                       | 0.109                      | 0.11                        |       |         |
|           |             | Bottom side       | 1.061                 |                            | 1.06                        |       |         |
|           | LTE Band 4  | Front             | 1.077                 | 0.293                      | 1.37                        |       |         |
|           |             | Back              | 0.989                 | 0.471                      | 1.46                        |       |         |
|           |             | Left side         | 0.480                 | 0.036                      | 0.52                        |       |         |
|           |             | Right side        | 0.786                 | 0.096                      | 0.88                        |       |         |
|           |             | Top side          |                       | 0.109                      | 0.11                        |       |         |
|           |             | Bottom side       | 1.073                 |                            | 1.07                        |       |         |
|           | LTE Band 5  | Front             | 0.859                 | 0.293                      | 1.15                        |       |         |
|           |             | Back              | 0.894                 | 0.471                      | 1.37                        |       |         |
|           |             | Left side         | 0.592                 | 0.036                      | 0.63                        |       |         |
|           |             | Right side        | 0.478                 | 0.096                      | 0.57                        |       |         |
|           |             | Top side          |                       | 0.109                      | 0.11                        |       |         |
|           |             | Bottom side       | 0.420                 |                            | 0.42                        |       |         |
|           | LTE Band 7  | Front             | 1.030                 | 0.293                      | 1.32                        |       |         |
|           |             | Back              | 1.007                 | 0.471                      | 1.48                        |       |         |
|           |             | Left side         | 0.185                 | 0.036                      | 0.22                        |       |         |
|           |             | Right side        | 0.095                 | 0.096                      | 0.19                        |       |         |
|           |             | Top side          |                       | 0.109                      | 0.11                        |       |         |
|           |             | Bottom side       | 0.995                 |                            | 1.00                        |       |         |
|           | LTE Band 12 | Front             | 0.991                 | 0.293                      | 1.28                        |       |         |
|           |             | Back              | 0.973                 | 0.471                      | 1.44                        |       |         |
|           |             | Left side         | 0.981                 | 0.036                      | 1.02                        |       |         |
|           |             | Right side        | 0.233                 | 0.096                      | 0.33                        |       |         |
|           |             | Top side          |                       | 0.109                      | 0.11                        |       |         |
|           |             | Bottom side       | 0.327                 |                            | 0.33                        |       |         |
|           | LTE Band 13 | Front             | 1.115                 | 0.293                      | 1.41                        |       |         |
|           |             | Back              | 1.194                 | 0.471                      | 1.67                        | 0.01  | Case 38 |
|           |             | Left side         | 1.108                 | 0.036                      | 1.14                        |       |         |
|           |             | Right side        | 0.654                 | 0.096                      | 0.75                        |       |         |
|           |             | Top side          |                       | 0.109                      | 0.11                        |       |         |
|           |             | Bottom side       | 0.515                 |                            | 0.52                        |       |         |
|           | LTE Band 17 | Front             | 0.851                 | 0.293                      | 1.14                        |       |         |
|           |             | Back              | 0.951                 | 0.471                      | 1.42                        |       |         |
|           |             | Left side         | 1.104                 | 0.036                      | 1.14                        |       |         |
|           |             | Right side        | 0.259                 | 0.096                      | 0.36                        |       |         |
|           |             | Top side          |                       | 0.109                      | 0.11                        |       |         |
|           |             | Bottom side       | 0.300                 |                            | 0.30                        |       |         |
|           | LTE Band 25 | Front             | 1.036                 | 0.293                      | 1.33                        |       |         |
|           |             | Back              | 0.961                 | 0.471                      | 1.43                        |       |         |
|           |             | Left side         | 0.427                 | 0.036                      | 0.46                        |       |         |
|           |             | Right side        | 0.682                 | 0.096                      | 0.78                        |       |         |
|           |             | Top side          |                       | 0.109                      | 0.11                        |       |         |
|           |             | Bottom side       | 1.116                 |                            | 1.12                        |       |         |

| WWAN Band |             | Exposure Position | 1             | 3             | 1+3 Summed<br>1g SAR (W/kg) | SPLSR | Case No |
|-----------|-------------|-------------------|---------------|---------------|-----------------------------|-------|---------|
|           |             |                   | WWAN          | 5GHz WLAN     |                             |       |         |
|           |             |                   | 1g SAR (W/kg) | 1g SAR (W/kg) |                             |       |         |
| LTE       | LTE Band 26 | Front             | 1.046         | 0.293         | <b>1.34</b>                 |       |         |
|           |             | Back              | 0.957         | 0.471         | <b>1.43</b>                 |       |         |
|           |             | Left side         | 0.644         | 0.036         | <b>0.68</b>                 |       |         |
|           |             | Right side        | 0.399         | 0.096         | <b>0.50</b>                 |       |         |
|           |             | Top side          |               | 0.109         | <b>0.11</b>                 |       |         |
|           |             | Bottom side       | 0.427         |               | <b>0.43</b>                 |       |         |
|           | LTE Band 30 | Front             | 0.565         | 0.293         | <b>0.86</b>                 |       |         |
|           |             | Back              | 1.189         | 0.471         | <b>1.66</b>                 | 0.01  | Case 39 |
|           |             | Left side         | 0.126         | 0.036         | <b>0.16</b>                 |       |         |
|           |             | Right side        | 0.070         | 0.096         | <b>0.17</b>                 |       |         |
|           |             | Top side          |               | 0.109         | <b>0.11</b>                 |       |         |
|           |             | Bottom side       | 1.060         |               | <b>1.06</b>                 |       |         |
|           | LTE Band 38 | Front             | 0.441         | 0.293         | <b>0.73</b>                 |       |         |
|           |             | Back              | 0.578         | 0.471         | <b>1.05</b>                 |       |         |
|           |             | Left side         | 0.151         | 0.036         | <b>0.19</b>                 |       |         |
|           |             | Right side        | 0.055         | 0.096         | <b>0.15</b>                 |       |         |
|           |             | Top side          |               | 0.109         | <b>0.11</b>                 |       |         |
|           |             | Bottom side       | 0.681         |               | <b>0.68</b>                 |       |         |
|           | LTE Band 41 | Front             | 0.597         | 0.293         | <b>0.89</b>                 |       |         |
|           |             | Back              | 0.790         | 0.471         | <b>1.26</b>                 |       |         |
|           |             | Left side         | 0.210         | 0.036         | <b>0.25</b>                 |       |         |
|           |             | Right side        | 0.078         | 0.096         | <b>0.17</b>                 |       |         |
|           |             | Top side          |               | 0.109         | <b>0.11</b>                 |       |         |
|           |             | Bottom side       | 0.911         |               | <b>0.91</b>                 |       |         |
|           | LTE Band 66 | Front             | 0.973         | 0.293         | <b>1.27</b>                 |       |         |
|           |             | Back              | 0.878         | 0.471         | <b>1.35</b>                 |       |         |
|           |             | Left side         | 0.332         | 0.036         | <b>0.37</b>                 |       |         |
|           |             | Right side        | 0.612         | 0.096         | <b>0.71</b>                 |       |         |
|           |             | Top side          |               | 0.109         | <b>0.11</b>                 |       |         |
|           |             | Bottom side       | 0.994         |               | <b>0.99</b>                 |       |         |

### 15.3 Product Specific Exposure Conditions

**General Note:**

1. The worst case 5GHz WLAN results are taking from 5.3GHz (U-NII-2A) and 5.5GHz (U-NII-2C) perform product specific simultaneous transmission analysis.
2. According to KDB 648474 D04v01r03, for WWAN and 2.4GHz WLAN SAR ("-") was excluded, due to hotspot SAR was < 1.2W/kg.
3. According to KDB 941225 D06 v02r01, for Bluetooth and 5GHz WLAN SAR ("-") was excluded, due to transmitting antenna located larger 25mm from that surface or edge

| WWAN Band |           | Exposure Position | 1              | 2              | 3              | 4                        | 1+3+4 Summed 10g SAR (W/kg) |
|-----------|-----------|-------------------|----------------|----------------|----------------|--------------------------|-----------------------------|
|           |           |                   | WWAN           | 2.4GHz WLAN    | 5GHz WLAN      | Bluetooth                |                             |
|           |           |                   | 10g SAR (W/kg) | 10g SAR (W/kg) | 10g SAR (W/kg) | Estimated 10g SAR (W/kg) |                             |
| WCDMA     | WCDMA II  | Front             | -              | -              | 2.764          | 0.269                    | 3.03                        |
|           |           | Back              | -              | -              | 0.847          | 0.269                    | 1.12                        |
|           |           | Left side         | -              | -              | 0.084          | 0.269                    | 0.35                        |
|           |           | Right side        | -              | -              | 0.233          | 0.269                    | 0.50                        |
|           |           | Top side          | -              | -              | 0.262          | 0.269                    | 0.53                        |
|           |           | Bottom side       | 3.678          | -              | -              | -                        | 3.68                        |
|           | WCDMA V   | Front             | -              | -              | 2.764          | 0.269                    | 3.03                        |
|           |           | Back              | -              | -              | 0.847          | 0.269                    | 1.12                        |
|           |           | Left side         | 2.158          | -              | 0.084          | 0.269                    | 2.51                        |
|           |           | Right side        | -              | -              | 0.233          | 0.269                    | 0.50                        |
|           |           | Top side          | -              | -              | 0.262          | 0.269                    | 0.53                        |
|           |           | Bottom side       | -              | -              | -              | -                        | 0.00                        |
| CDMA      | CDMA BC1  | Front             | -              | -              | 2.764          | 0.269                    | 3.03                        |
|           |           | Back              | -              | -              | 0.847          | 0.269                    | 1.12                        |
|           |           | Left side         | -              | -              | 0.084          | 0.269                    | 0.35                        |
|           |           | Right side        | -              | -              | 0.233          | 0.269                    | 0.50                        |
|           |           | Top side          | -              | -              | 0.262          | 0.269                    | 0.53                        |
|           |           | Bottom side       | 3.284          | -              | -              | -                        | 3.28                        |
|           | CDMA BC10 | Front             | -              | -              | 2.764          | 0.269                    | 3.03                        |
|           |           | Back              | -              | -              | 0.847          | 0.269                    | 1.12                        |
|           |           | Left side         | 1.513          | -              | 0.084          | 0.269                    | 1.87                        |
|           |           | Right side        | -              | -              | 0.233          | 0.269                    | 0.50                        |
|           |           | Top side          | -              | -              | 0.262          | 0.269                    | 0.53                        |
|           |           | Bottom side       | -              | -              | -              | -                        | 0.00                        |



| WWAN Band |             | Exposure Position | 1                   | 2                          | 3                        | 4                                  | 1+3+4 Summed 10g SAR (W/kg) |
|-----------|-------------|-------------------|---------------------|----------------------------|--------------------------|------------------------------------|-----------------------------|
|           |             |                   | WWAN 10g SAR (W/kg) | 2.4GHz WLAN 10g SAR (W/kg) | 5GHz WLAN 10g SAR (W/kg) | Bluetooth Estimated 10g SAR (W/kg) |                             |
| LTE       | LTE Band 2  | Front             | -                   | -                          | 2.764                    | 0.269                              | 3.03                        |
|           |             | Back              | -                   | -                          | 0.847                    | 0.269                              | 1.12                        |
|           |             | Left side         | -                   | -                          | 0.084                    | 0.269                              | 0.35                        |
|           |             | Right side        | -                   | -                          | 0.233                    | 0.269                              | 0.50                        |
|           |             | Top side          | -                   | -                          | 0.262                    | 0.269                              | 0.53                        |
|           |             | Bottom side       | 3.431               | -                          | -                        | -                                  | 3.43                        |
|           | LTE Band 4  | Front             | -                   | -                          | 2.764                    | 0.269                              | 3.03                        |
|           |             | Back              | -                   | -                          | 0.847                    | 0.269                              | 1.12                        |
|           |             | Left side         | -                   | -                          | 0.084                    | 0.269                              | 0.35                        |
|           |             | Right side        | -                   | -                          | 0.233                    | 0.269                              | 0.50                        |
|           |             | Top side          | -                   | -                          | 0.262                    | 0.269                              | 0.53                        |
|           |             | Bottom side       | 2.585               | -                          | -                        | -                                  | 2.59                        |
|           | LTE Band 12 | Front             | -                   | -                          | 2.764                    | 0.269                              | 3.03                        |
|           |             | Back              | -                   | -                          | 0.847                    | 0.269                              | 1.12                        |
|           |             | Left side         | 1.771               | -                          | 0.084                    | 0.269                              | 2.12                        |
|           |             | Right side        | -                   | -                          | 0.233                    | 0.269                              | 0.50                        |
|           |             | Top side          | -                   | -                          | 0.262                    | 0.269                              | 0.53                        |
|           |             | Bottom side       | -                   | -                          | -                        | -                                  | 0.00                        |
|           | LTE Band 13 | Front             | -                   | -                          | 2.764                    | 0.269                              | 3.03                        |
|           |             | Back              | -                   | -                          | 0.847                    | 0.269                              | 1.12                        |
|           |             | Left side         | 2.304               | -                          | 0.084                    | 0.269                              | 2.66                        |
|           |             | Right side        | -                   | -                          | 0.233                    | 0.269                              | 0.50                        |
|           |             | Top side          | -                   | -                          | 0.262                    | 0.269                              | 0.53                        |
|           |             | Bottom side       | -                   | -                          | -                        | -                                  | 0.00                        |
|           | LTE Band 17 | Front             | -                   | -                          | 2.764                    | 0.269                              | 3.03                        |
|           |             | Back              | -                   | -                          | 0.847                    | 0.269                              | 1.12                        |
|           |             | Left side         | 1.960               | -                          | 0.084                    | 0.269                              | 2.31                        |
|           |             | Right side        | -                   | -                          | 0.233                    | 0.269                              | 0.50                        |
|           |             | Top side          | -                   | -                          | 0.262                    | 0.269                              | 0.53                        |
|           |             | Bottom side       | -                   | -                          | -                        | -                                  | 0.00                        |
|           | LTE Band 25 | Front             | -                   | -                          | 2.764                    | 0.269                              | 3.03                        |
|           |             | Back              | -                   | -                          | 0.847                    | 0.269                              | 1.12                        |
|           |             | Left side         | -                   | -                          | 0.084                    | 0.269                              | 0.35                        |
|           |             | Right side        | -                   | -                          | 0.233                    | 0.269                              | 0.50                        |
|           |             | Top side          | -                   | -                          | 0.262                    | 0.269                              | 0.53                        |
|           |             | Bottom side       | 2.961               | -                          | -                        | -                                  | 2.96                        |
|           | LTE Band 30 | Front             | -                   | -                          | 2.764                    | 0.269                              | 3.03                        |
|           |             | Back              | -                   | -                          | 0.847                    | 0.269                              | 1.12                        |
|           |             | Left side         | -                   | -                          | 0.084                    | 0.269                              | 0.35                        |
|           |             | Right side        | -                   | -                          | 0.233                    | 0.269                              | 0.50                        |
|           |             | Top side          | -                   | -                          | 0.262                    | 0.269                              | 0.53                        |
|           |             | Bottom side       | 2.459               | -                          | -                        | -                                  | 2.46                        |
|           | LTE Band 66 | Front             | -                   | -                          | 2.764                    | 0.269                              | 3.03                        |
|           |             | Back              | -                   | -                          | 0.847                    | 0.269                              | 1.12                        |
|           |             | Left side         | -                   | -                          | 0.084                    | 0.269                              | 0.35                        |
|           |             | Right side        | -                   | -                          | 0.233                    | 0.269                              | 0.50                        |
|           |             | Top side          | -                   | -                          | 0.262                    | 0.269                              | 0.53                        |
|           |             | Bottom side       | 3.118               | -                          | -                        | -                                  | 3.12                        |



### 15.4 Body-Worn Accessory Exposure Conditions

| WWAN Band |             | Exposure Position | 1             | 2             | 1+2 Summed<br>1g SAR (W/kg) | 1+2 SPLSR | 1+2 Case No |
|-----------|-------------|-------------------|---------------|---------------|-----------------------------|-----------|-------------|
|           |             |                   | WWAN          | 2.4GHz WLAN   |                             |           |             |
|           |             |                   | 1g SAR (W/kg) | 1g SAR (W/kg) |                             |           |             |
| GSM       | GSM850      | Front             | 1.151         | 0.319         | 1.47                        |           |             |
|           |             | Back              | 0.994         | 0.403         | 1.40                        |           |             |
|           | GSM1900     | Front             | 0.723         | 0.319         | 1.04                        |           |             |
|           |             | Back              | 0.618         | 0.403         | 1.02                        |           |             |
| WCDMA     | WCDMA II    | Front             | 1.196         | 0.319         | 1.52                        |           |             |
|           |             | Back              | 1.068         | 0.403         | 1.47                        |           |             |
|           | WCDMA IV    | Front             | 0.901         | 0.319         | 1.22                        |           |             |
|           |             | Back              | 0.859         | 0.403         | 1.26                        |           |             |
|           | WCDMA V     | Front             | 0.983         | 0.319         | 1.30                        |           |             |
|           |             | Back              | 0.893         | 0.403         | 1.30                        |           |             |
| CDMA      | CDMA BC0    | Front             | 1.156         | 0.319         | 1.48                        |           |             |
|           |             | Back              | 1.085         | 0.403         | 1.49                        |           |             |
|           | CDMA BC1    | Front             | 1.164         | 0.319         | 1.48                        |           |             |
|           |             | Back              | 1.006         | 0.403         | 1.41                        |           |             |
|           | CDMA BC10   | Front             | 0.817         | 0.319         | 1.14                        |           |             |
|           |             | Back              | 0.727         | 0.403         | 1.13                        |           |             |
| LTE       | LTE Band 2  | Front             | 0.985         | 0.319         | 1.30                        |           |             |
|           |             | Back              | 0.936         | 0.403         | 1.34                        |           |             |
|           | LTE Band 4  | Front             | 1.077         | 0.319         | 1.40                        |           |             |
|           |             | Back              | 0.989         | 0.403         | 1.39                        |           |             |
|           | LTE Band 5  | Front             | 0.859         | 0.319         | 1.18                        |           |             |
|           |             | Back              | 0.894         | 0.403         | 1.30                        |           |             |
|           | LTE Band 7  | Front             | 1.030         | 0.319         | 1.35                        |           |             |
|           |             | Back              | 1.007         | 0.403         | 1.41                        |           |             |
|           | LTE Band 12 | Front             | 0.991         | 0.319         | 1.31                        |           |             |
|           |             | Back              | 0.973         | 0.403         | 1.38                        |           |             |
|           | LTE Band 13 | Front             | 1.115         | 0.319         | 1.43                        |           |             |
|           |             | Back              | 1.194         | 0.403         | 1.60                        | 0.01      | Case 37     |
|           | LTE Band 17 | Front             | 0.851         | 0.319         | 1.17                        |           |             |
|           |             | Back              | 0.951         | 0.403         | 1.35                        |           |             |
|           | LTE Band 25 | Front             | 1.036         | 0.319         | 1.36                        |           |             |
|           |             | Back              | 0.961         | 0.403         | 1.36                        |           |             |
|           | LTE Band 26 | Front             | 1.046         | 0.319         | 1.37                        |           |             |
|           |             | Back              | 0.957         | 0.403         | 1.36                        |           |             |
|           | LTE Band 30 | Front             | 0.565         | 0.319         | 0.88                        |           |             |
|           |             | Back              | 1.189         | 0.403         | 1.59                        |           |             |
|           | LTE Band 38 | Front             | 0.441         | 0.319         | 0.76                        |           |             |
|           |             | Back              | 0.578         | 0.403         | 0.98                        |           |             |
|           | LTE Band 41 | Front             | 0.597         | 0.319         | 0.92                        |           |             |
|           |             | Back              | 0.790         | 0.403         | 1.19                        |           |             |
|           | LTE Band 66 | Front             | 0.973         | 0.319         | 1.29                        |           |             |
|           |             | Back              | 0.878         | 0.403         | 1.28                        |           |             |



| WWAN Band |             | Exposure Position | 1             | 3             | 4             | 1+3 Summed 1g SAR (W/kg) | 1+3+4 Summed 1g SAR (W/kg) | 1+4 Summed 1g SAR (W/kg) | 1+3+4 SPLSR | 1+3+4 Case No |
|-----------|-------------|-------------------|---------------|---------------|---------------|--------------------------|----------------------------|--------------------------|-------------|---------------|
|           |             |                   | WWAN          | 5GHz WLAN     | Bluetooth     |                          |                            |                          |             |               |
|           |             |                   | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) |                          |                            |                          |             |               |
| GSM       | GSM850      | Front             | 1.151         | 0.408         | 0.050         | 1.56                     | 1.61                       | 1.20                     | 0.01        | Case 40       |
|           |             | Back              | 0.994         | 0.539         | 0.066         | 1.53                     | 1.60                       | 1.06                     | 0.01        | Case 41       |
|           | GSM1900     | Front             | 0.723         | 0.408         | 0.050         | 1.13                     | 1.18                       | 0.77                     |             |               |
|           |             | Back              | 0.618         | 0.539         | 0.066         | 1.16                     | 1.22                       | 0.68                     |             |               |
| WCDMA     | WCDMA II    | Front             | 1.196         | 0.408         | 0.050         | 1.60                     | 1.65                       | 1.25                     | 0.01        | Case 42       |
|           |             | Back              | 1.068         | 0.539         | 0.066         | 1.61                     | 1.67                       | 1.13                     | 0.02        | Case 43       |
|           | WCDMA IV    | Front             | 0.901         | 0.408         | 0.050         | 1.31                     | 1.36                       | 0.95                     |             |               |
|           |             | Back              | 0.859         | 0.539         | 0.066         | 1.40                     | 1.46                       | 0.93                     |             |               |
|           | WCDMA V     | Front             | 0.983         | 0.408         | 0.050         | 1.39                     | 1.44                       | 1.03                     |             |               |
|           |             | Back              | 0.893         | 0.539         | 0.066         | 1.43                     | 1.50                       | 0.96                     |             |               |
| CDMA      | CDMA BC0    | Front             | 1.156         | 0.408         | 0.050         | 1.56                     | 1.61                       | 1.21                     | 0.01        | Case 44       |
|           |             | Back              | 1.085         | 0.539         | 0.066         | 1.62                     | 1.69                       | 1.15                     | 0.01        | Case 45       |
|           | CDMA BC1    | Front             | 1.164         | 0.408         | 0.050         | 1.57                     | 1.62                       | 1.21                     | 0.01        | Case 46       |
|           |             | Back              | 1.006         | 0.539         | 0.066         | 1.55                     | 1.61                       | 1.07                     | 0.01        | Case 47       |
|           | CDMA BC10   | Front             | 0.817         | 0.408         | 0.050         | 1.23                     | 1.28                       | 0.87                     |             |               |
|           |             | Back              | 0.727         | 0.539         | 0.066         | 1.27                     | 1.33                       | 0.79                     |             |               |
| LTE       | LTE Band 2  | Front             | 0.985         | 0.408         | 0.050         | 1.39                     | 1.44                       | 1.04                     |             |               |
|           |             | Back              | 0.936         | 0.539         | 0.066         | 1.48                     | 1.54                       | 1.00                     |             |               |
|           | LTE Band 4  | Front             | 1.077         | 0.408         | 0.050         | 1.49                     | 1.54                       | 1.13                     |             |               |
|           |             | Back              | 0.989         | 0.539         | 0.066         | 1.53                     | 1.59                       | 1.06                     |             |               |
|           | LTE Band 5  | Front             | 0.859         | 0.408         | 0.050         | 1.27                     | 1.32                       | 0.91                     |             |               |
|           |             | Back              | 0.894         | 0.539         | 0.066         | 1.43                     | 1.50                       | 0.96                     |             |               |
|           | LTE Band 7  | Front             | 1.030         | 0.408         | 0.050         | 1.44                     | 1.49                       | 1.08                     |             |               |
|           |             | Back              | 1.007         | 0.539         | 0.066         | 1.55                     | 1.61                       | 1.07                     | 0.01        | Case 48       |
|           | LTE Band 12 | Front             | 0.991         | 0.408         | 0.050         | 1.40                     | 1.45                       | 1.04                     |             |               |
|           |             | Back              | 0.973         | 0.539         | 0.066         | 1.51                     | 1.58                       | 1.04                     |             |               |
|           | LTE Band 13 | Front             | 1.115         | 0.408         | 0.050         | 1.52                     | 1.57                       | 1.17                     |             |               |
|           |             | Back              | 1.194         | 0.539         | 0.066         | 1.73                     | 1.80                       | 1.26                     | 0.02        | Case 49       |
|           | LTE Band 17 | Front             | 0.851         | 0.408         | 0.050         | 1.26                     | 1.31                       | 0.90                     |             |               |
|           |             | Back              | 0.951         | 0.539         | 0.066         | 1.49                     | 1.56                       | 1.02                     |             |               |
|           | LTE Band 25 | Front             | 1.036         | 0.408         | 0.050         | 1.44                     | 1.49                       | 1.09                     |             |               |
|           |             | Back              | 0.961         | 0.539         | 0.066         | 1.50                     | 1.57                       | 1.03                     |             |               |
|           | LTE Band 26 | Front             | 1.046         | 0.408         | 0.050         | 1.45                     | 1.50                       | 1.10                     |             |               |
|           |             | Back              | 0.957         | 0.539         | 0.066         | 1.50                     | 1.56                       | 1.02                     |             |               |
|           | LTE Band 30 | Front             | 0.565         | 0.408         | 0.050         | 0.97                     | 1.02                       | 0.62                     |             |               |
|           |             | Back              | 1.189         | 0.539         | 0.066         | 1.73                     | 1.79                       | 1.26                     | 0.02        | Case 50       |
|           | LTE Band 38 | Front             | 0.441         | 0.408         | 0.050         | 0.85                     | 0.90                       | 0.49                     |             |               |
|           |             | Back              | 0.578         | 0.539         | 0.066         | 1.12                     | 1.18                       | 0.64                     |             |               |
|           | LTE Band 41 | Front             | 0.597         | 0.408         | 0.050         | 1.01                     | 1.06                       | 0.65                     |             |               |
|           |             | Back              | 0.790         | 0.539         | 0.066         | 1.33                     | 1.40                       | 0.86                     |             |               |
|           | LTE Band 66 | Front             | 0.973         | 0.408         | 0.050         | 1.38                     | 1.43                       | 1.02                     |             |               |
|           |             | Back              | 0.878         | 0.539         | 0.066         | 1.42                     | 1.48                       | 0.94                     |             |               |

### 15.5 SPLSR Evaluation and Analysis

**General Note:**

1.  $SPLSR = (SAR_1 + SAR_2)^{1.5} / (min. \text{ separation distance, mm})$ . If  $SPLSR \leq 0.04$ , simultaneously transmission SAR measurement is not necessary

| Case 1 | Band        | Position   | SAR (W/kg) | Gap (cm) | SAR peak location (m) |       |       | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|--------|-------------|------------|------------|----------|-----------------------|-------|-------|------------------|-------------------|---------------|------------------|
|        |             |            |            |          | X                     | Y     | Z     |                  |                   |               |                  |
|        | GSM850      | Left Cheek | 0.360      | 0mm      | 66.69                 | -82.5 | 9.37  | 117.2            | 1.65              | 0.02          | Not required     |
|        | 2.4GHz WLAN |            | 1.292      | 0mm      | 11.62                 | 20.32 | -1.96 |                  |                   |               |                  |



| Case 2 | Band        | Position   | SAR (W/kg) | Gap (cm) | SAR peak location (m) |        |       | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|--------|-------------|------------|------------|----------|-----------------------|--------|-------|------------------|-------------------|---------------|------------------|
|        |             |            |            |          | X                     | Y      | Z     |                  |                   |               |                  |
|        | WCDMA II    | Left Cheek | 0.391      | 0mm      | 50.84                 | -62.71 | 1.13  | 91.9             | 1.68              | 0.02          | Not required     |
|        | 2.4GHz WLAN |            | 1.292      | 0mm      | 11.62                 | 20.32  | -1.96 |                  |                   |               |                  |



| Case 3 | Band        | Position   | SAR (W/kg) | Gap (cm) | SAR peak location (m) |       |       | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|--------|-------------|------------|------------|----------|-----------------------|-------|-------|------------------|-------------------|---------------|------------------|
|        | WCDMA IV    | Left Cheek | 0.629      | 0mm      | X                     | Y     | Z     | 94.5             | 1.92              | 0.03          | Not required     |
|        | 2.4GHz WLAN |            | 1.292      | 0mm      | 11.62                 | 20.32 | -1.96 |                  |                   |               |                  |



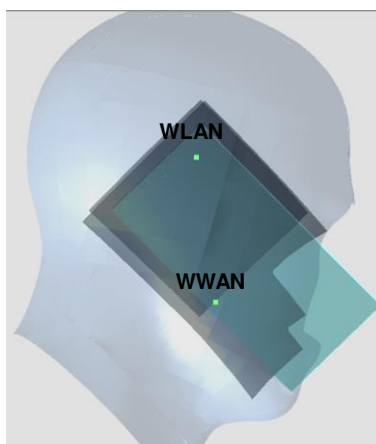
| Case 4 | Band        | Position   | SAR (W/kg) | Gap (cm) | SAR peak location (m) |       |       | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|--------|-------------|------------|------------|----------|-----------------------|-------|-------|------------------|-------------------|---------------|------------------|
|        | WCDMA V     | Left Cheek | 0.41       | 0mm      | X                     | Y     | Z     | 118.2            | 1.70              | 0.02          | Not required     |
|        | 2.4GHz WLAN |            | 1.292      | 0mm      | 11.62                 | 20.32 | -1.96 |                  |                   |               |                  |



| Case 5 | Band        | Position   | SAR (W/kg) | Gap (cm) | SAR peak location (m) |        |       | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|--------|-------------|------------|------------|----------|-----------------------|--------|-------|------------------|-------------------|---------------|------------------|
|        |             |            |            |          | X                     | Y      | Z     |                  |                   |               |                  |
|        | CDMA BC0    | Left Cheek | 0.417      | 0mm      | 71.54                 | -88.94 | 13.92 | 125.6            | 1.71              | 0.02          | Not required     |
|        | 2.4GHz WLAN |            | 1.292      | 0mm      | 11.62                 | 20.32  | -1.96 |                  |                   |               |                  |



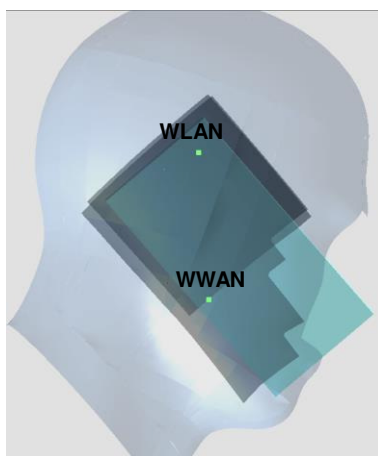
| Case 6 | Band        | Position   | SAR (W/kg) | Gap (cm) | SAR peak location (m) |        |       | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|--------|-------------|------------|------------|----------|-----------------------|--------|-------|------------------|-------------------|---------------|------------------|
|        |             |            |            |          | X                     | Y      | Z     |                  |                   |               |                  |
|        | CDMA BC1    | Left Cheek | 0.482      | 0mm      | 49.89                 | -67.75 | 0.87  | 96.1             | 1.77              | 0.02          | Not required     |
|        | 2.4GHz WLAN |            | 1.292      | 0mm      | 11.62                 | 20.32  | -1.96 |                  |                   |               |                  |



| Case 7 | Band        | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|--------|-------------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|        |             |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
|        | CDMA BC10   | Left Cheek | 0.501         | 0mm         | 68.4                  | -83.49 | 10.47 | 119.0                  | 1.79                    | 0.02             | Not required        |
|        | 2.4GHz WLAN |            | 1.292         | 0mm         | 11.62                 | 20.32  | -1.96 |                        |                         |                  |                     |



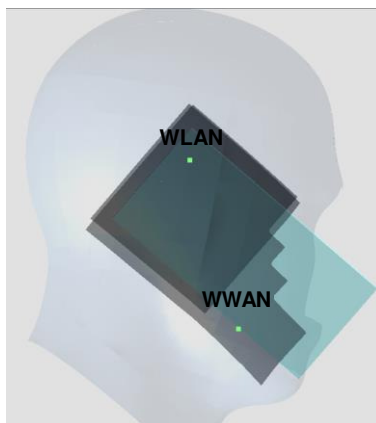
| Case 8 | Band        | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|--------|-------------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|        |             |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
|        | LTE Band 2  | Left Cheek | 0.371         | 0mm         | 52.9                  | -62.16 | 1.48  | 92.3                   | 1.66                    | 0.02             | Not required        |
|        | 2.4GHz WLAN |            | 1.292         | 0mm         | 11.62                 | 20.32  | -1.96 |                        |                         |                  |                     |



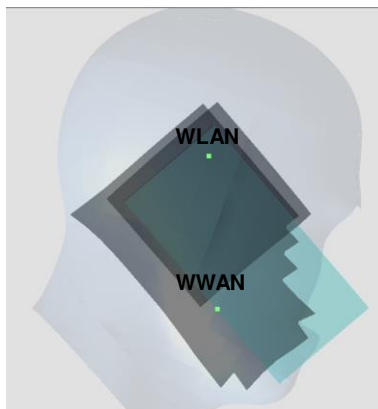
| Case 9 | Band        | Position   | SAR (W/kg) | Gap (cm) | SAR peak location (m) |       |       | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|--------|-------------|------------|------------|----------|-----------------------|-------|-------|------------------|-------------------|---------------|------------------|
|        | LTE Band 4  | Left Cheek | 0.622      | 0mm      | X                     | Y     | Z     | 92.7             | 1.91              | 0.03          | Not required     |
|        | 2.4GHz WLAN |            | 1.292      | 0mm      | 11.62                 | 20.32 | -1.96 |                  |                   |               |                  |



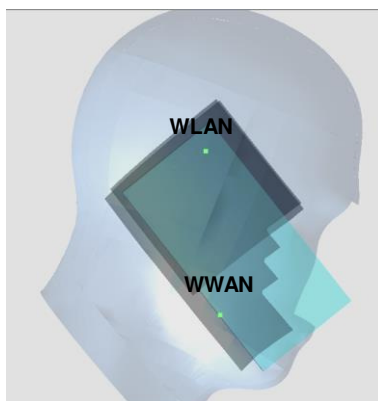
| Case 10 | Band        | Position   | SAR (W/kg) | Gap (cm) | SAR peak location (m) |       |       | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|---------|-------------|------------|------------|----------|-----------------------|-------|-------|------------------|-------------------|---------------|------------------|
|         | LTE Band 5  | Left Cheek | 0.468      | 0mm      | X                     | Y     | Z     | 120.2            | 1.76              | 0.02          | Not required     |
|         | 2.4GHz WLAN |            | 1.292      | 0mm      | 11.62                 | 20.32 | -1.96 |                  |                   |               |                  |



| Case<br>11 | Band        | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-------------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|            |             |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
|            | LTE Band 7  | Left Cheek | 0.564         | 0mm         | 54.3                  | -73.52 | 1.11  | 103.1                  | 1.86                    | 0.02             | Not required        |
|            | 2.4GHz WLAN |            | 1.292         | 0mm         | 11.62                 | 20.32  | -1.96 |                        |                         |                  |                     |



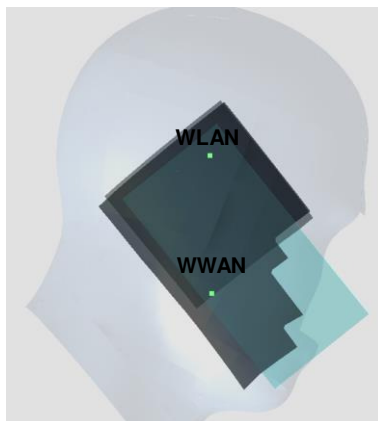
| Case<br>12 | Band        | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-------------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|            |             |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
|            | LTE Band 13 | Left Cheek | 0.428         | 0mm         | 67.32                 | -82.78 | 9.69  | 117.8                  | 1.72                    | 0.02             | Not required        |
|            | 2.4GHz WLAN |            | 1.292         | 0mm         | 11.62                 | 20.32  | -1.96 |                        |                         |                  |                     |



| Case | Band        | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------|-------------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|      |             |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
| 13   | LTE Band 17 | Left Cheek | 0.364         | 0mm         | 68.28                 | -86.84 | 11.64 | 122.0                  | 1.66                    | 0.02             | Not required        |
|      | 2.4GHz WLAN |            | 1.292         | 0mm         | 11.62                 | 20.32  | -1.96 |                        |                         |                  |                     |



| Case | Band        | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------|-------------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|      |             |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
| 14   | LTE Band 25 | Left Cheek | 0.528         | 0mm         | 53.96                 | -66.37 | 2.4   | 96.6                   | 1.82                    | 0.03             | Not required        |
|      | 2.4GHz WLAN |            | 1.292         | 0mm         | 11.62                 | 20.32  | -1.96 |                        |                         |                  |                     |



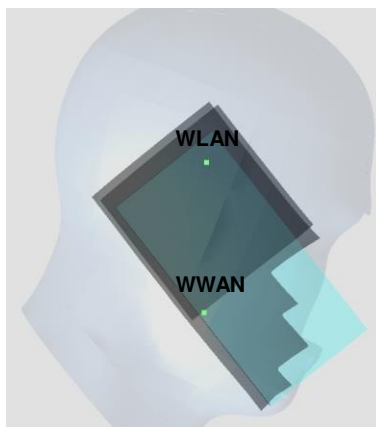
| Case<br>15 | Band        | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-------------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|            |             |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
|            | LTE Band 26 | Left Cheek | 0.409         | 0mm         | 65.95                 | -82.11 | 8.92  | 116.5                  | 1.70                    | 0.02             | Not required        |
|            | 2.4GHz WLAN |            | 1.292         | 0mm         | 11.62                 | 20.32  | -1.96 |                        |                         |                  |                     |



| Case<br>16 | Band        | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-------------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|            |             |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
|            | LTE Band 30 | Left Cheek | 0.319         | 0mm         | 45.19                 | -72.59 | 0.98  | 98.8                   | 1.61                    | 0.02             | Not required        |
|            | 2.4GHz WLAN |            | 1.292         | 0mm         | 11.62                 | 20.32  | -1.96 |                        |                         |                  |                     |



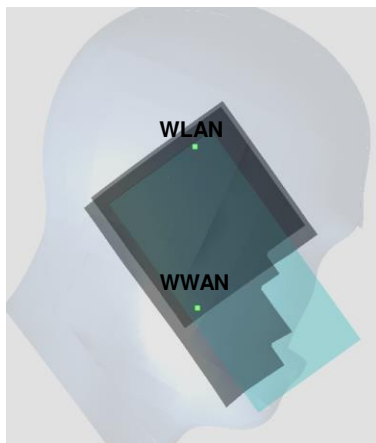
| Case<br>17 | Band        | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-------------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|            |             |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
|            | LTE Band 41 | Left Cheek | 0.322         | 0mm         | 46.61                 | -73.11 | 1.23  | 99.8                   | 1.61                    | 0.02             | Not required        |
|            | 2.4GHz WLAN |            | 1.292         | 0mm         | 11.62                 | 20.32  | -1.96 |                        |                         |                  |                     |



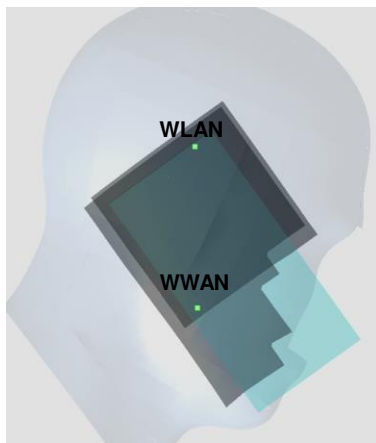
| Case<br>18 | Band        | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-------------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|            |             |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
|            | LTE Band 66 | Left Cheek | 0.417         | 0mm         | 50.4                  | -62.46 | 1.05  | 91.5                   | 1.71                    | 0.02             | Not required        |
|            | 2.4GHz WLAN |            | 1.292         | 0mm         | 11.62                 | 20.32  | -1.96 |                        |                         |                  |                     |



| Case<br>19 | Band      | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |       |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-----------|------------|---------------|-------------|-----------------------|-------|-------|------------------------|-------------------------|------------------|---------------------|
|            | GSM850    | Left Cheek | 0.360         | 0mm         | X                     | Y     | Z     | 122.8                  | 1.66                    | 0.02             | Not required        |
|            | 5GHz WLAN |            | 1.301         | 0mm         | 7.65                  | 24.66 | -1.04 |                        |                         |                  |                     |



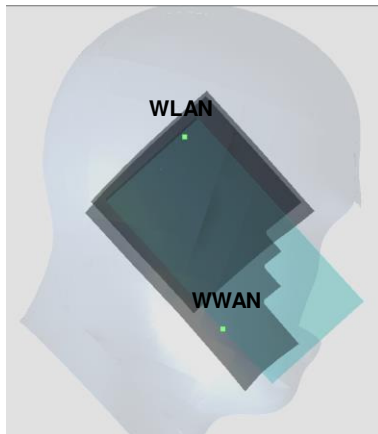
| Case<br>20 | Band      | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |       |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-----------|------------|---------------|-------------|-----------------------|-------|-------|------------------------|-------------------------|------------------|---------------------|
|            | WCDMA II  | Left Cheek | 0.391         | 0mm         | X                     | Y     | Z     | 97.5                   | 1.69                    | 0.02             | Not required        |
|            | 5GHz WLAN |            | 1.301         | 0mm         | 7.65                  | 24.66 | -1.04 |                        |                         |                  |                     |



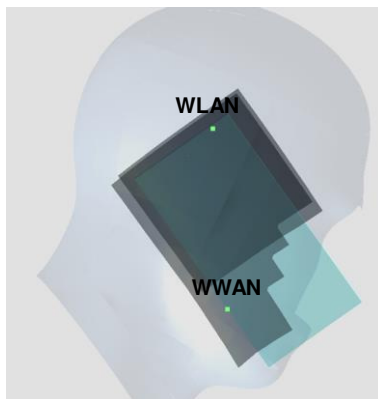
| Case<br>21 | Band      | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |       |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-----------|------------|---------------|-------------|-----------------------|-------|-------|------------------------|-------------------------|------------------|---------------------|
|            | WCDMA IV  | Left Cheek | 0.629         | 0mm         | X                     | Y     | Z     | 100.0                  | 1.93                    | 0.03             | Not required        |
|            | 5GHz WLAN |            | 1.301         | 0mm         | 7.65                  | 24.66 | -1.04 |                        |                         |                  |                     |



| Case<br>22 | Band      | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |       |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-----------|------------|---------------|-------------|-----------------------|-------|-------|------------------------|-------------------------|------------------|---------------------|
|            | WCDMA V   | Left Cheek | 0.41          | 0mm         | X                     | Y     | Z     | 123.8                  | 1.71                    | 0.02             | Not required        |
|            | 5GHz WLAN |            | 1.301         | 0mm         | 7.65                  | 24.66 | -1.04 |                        |                         |                  |                     |



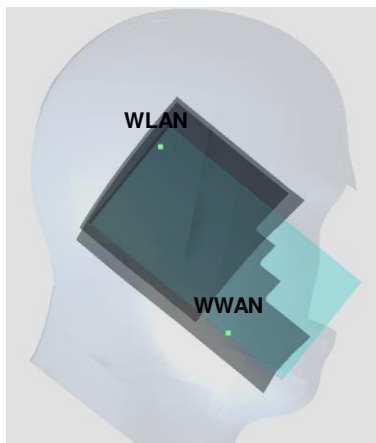
| Case<br>23 | Band      | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-----------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|            |           |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
|            | CDMA BC0  | Left Cheek | 0.417         | 0mm         | 71.54                 | -88.94 | 13.92 | 131.2                  | 1.72                    | 0.02             | Not required        |
|            | 5GHz WLAN |            | 1.301         | 0mm         | 7.65                  | 24.66  | -1.04 |                        |                         |                  |                     |



| Case<br>24 | Band      | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-----------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|            |           |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
|            | CDMA BC1  | Left Cheek | 0.482         | 0mm         | 49.89                 | -67.75 | 0.87  | 101.6                  | 1.78                    | 0.02             | Not required        |
|            | 5GHz WLAN |            | 1.301         | 0mm         | 7.65                  | 24.66  | -1.04 |                        |                         |                  |                     |



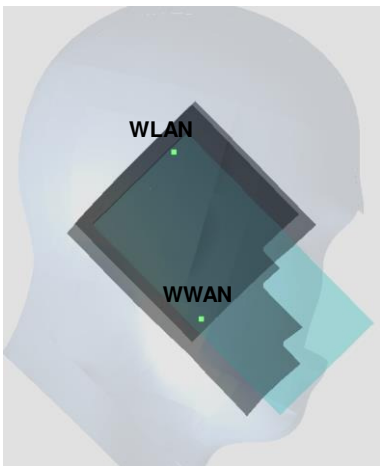
| Case<br>25 | Band      | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-----------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|            |           |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
|            | CDMA BC10 | Left Cheek | 0.501         | 0mm         | 68.4                  | -83.49 | 10.47 | 124.6                  | 1.80                    | 0.02             | Not required        |
|            | 5GHz WLAN |            | 1.301         | 0mm         | 7.65                  | 24.66  | -1.04 |                        |                         |                  |                     |



| Case<br>26 | Band       | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|------------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|            |            |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
|            | LTE Band 2 | Left Cheek | 0.371         | 0mm         | 52.9                  | -62.16 | 1.48  | 97.9                   | 1.67                    | 0.02             | Not required        |
|            | 5GHz WLAN  |            | 1.301         | 0mm         | 7.65                  | 24.66  | -1.04 |                        |                         |                  |                     |



| Case<br>27 | Band       | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|------------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|            |            |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
|            | LTE Band 4 | Left Cheek | 0.622         | 0mm         | 51.7                  | -63.22 | 1.46  | 98.3                   | 1.92                    | 0.03             | Not required        |
|            | 5GHz WLAN  |            | 1.301         | 0mm         | 7.65                  | 24.66  | -1.04 |                        |                         |                  |                     |

| Case<br>28 | Band       | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|------------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|            |            |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
|            | LTE Band 5 | Left Cheek | 0.468         | 0mm         | 64.59                 | -86.86 | 10.19 | 125.7                  | 1.77                    | 0.02             | Not required        |
|            | 5GHz WLAN  |            | 1.301         | 0mm         | 7.65                  | 24.66  | -1.04 |                        |                         |                  |                     |

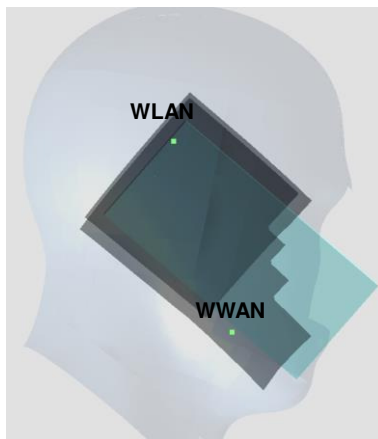

| Case<br>29 | Band       | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|------------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|            |            |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
|            | LTE Band 7 | Left Cheek | 0.564         | 0mm         | 54.3                  | -73.52 | 1.11  | 108.7                  | 1.87                    | 0.02             | Not required        |
|            | 5GHz WLAN  |            | 1.301         | 0mm         | 7.65                  | 24.66  | -1.04 |                        |                         |                  |                     |



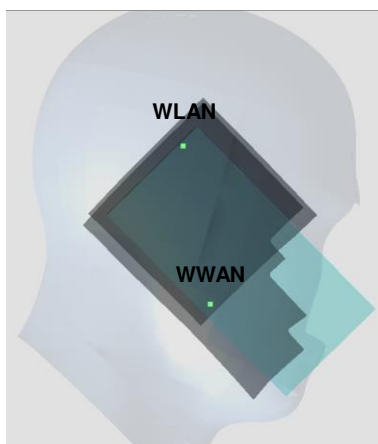
| Case<br>30 | Band        | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-------------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|            |             |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
|            | LTE Band 13 | Left Cheek | 0.428         | 0mm         | 67.32                 | -82.78 | 9.69  | 123.4                  | 1.73                    | 0.02             | Not required        |
|            | 5GHz WLAN   |            | 1.301         | 0mm         | 7.65                  | 24.66  | -1.04 |                        |                         |                  |                     |



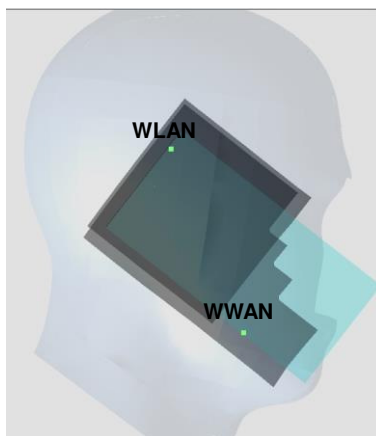
| Case<br>31 | Band        | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-------------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|            |             |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
|            | LTE Band 17 | Left Cheek | 0.364         | 0mm         | 68.28                 | -86.84 | 11.64 | 127.6                  | 1.67                    | 0.02             | Not required        |
|            | 5GHz WLAN   |            | 1.301         | 0mm         | 7.65                  | 24.66  | -1.04 |                        |                         |                  |                     |



| Case<br>32 | Band        | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-------------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|            |             |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
|            | LTE Band 25 | Left Cheek | 0.528         | 0mm         | 53.96                 | -66.37 | 2.4   | 102.2                  | 1.83                    | 0.02             | Not required        |
|            | 5GHz WLAN   |            | 1.301         | 0mm         | 7.65                  | 24.66  | -1.04 |                        |                         |                  |                     |



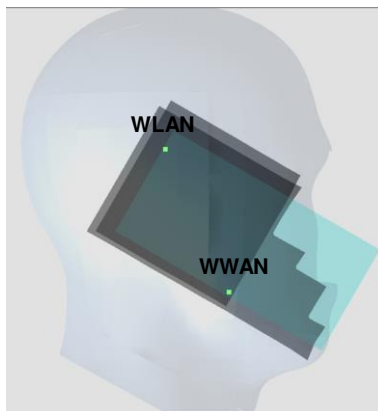
| Case<br>33 | Band        | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-------------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|            |             |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
|            | LTE Band 26 | Left Cheek | 0.409         | 0mm         | 65.95                 | -82.11 | 8.92  | 122.1                  | 1.71                    | 0.02             | Not required        |
|            | 5GHz WLAN   |            | 1.301         | 0mm         | 7.65                  | 24.66  | -1.04 |                        |                         |                  |                     |



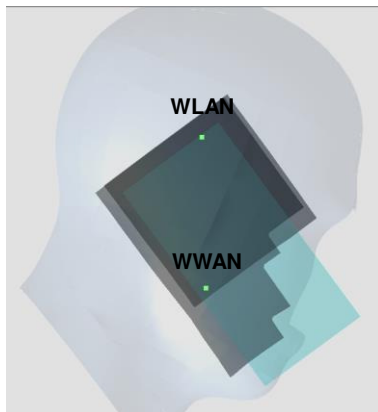
| Case<br>34 | Band        | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-------------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|            |             |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
|            | LTE Band 30 | Left Cheek | 0.319         | 0mm         | 45.19                 | -72.59 | 0.98  | 104.3                  | 1.62                    | 0.02             | Not required        |
|            | 5GHz WLAN   |            | 1.301         | 0mm         | 7.65                  | 24.66  | -1.04 |                        |                         |                  |                     |



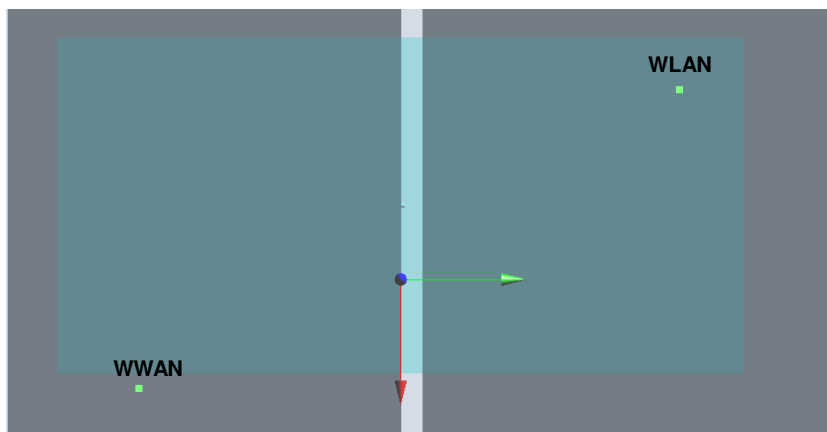
| Case | Band        | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------|-------------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|      |             |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
| 35   | LTE Band 41 | Left Cheek | 0.322         | 0mm         | 46.61                 | -73.11 | 1.23  | 105.3                  | 1.62                    | 0.02             | Not required        |
|      | 5GHz WLAN   |            | 1.301         | 0mm         | 7.65                  | 24.66  | -1.04 |                        |                         |                  |                     |



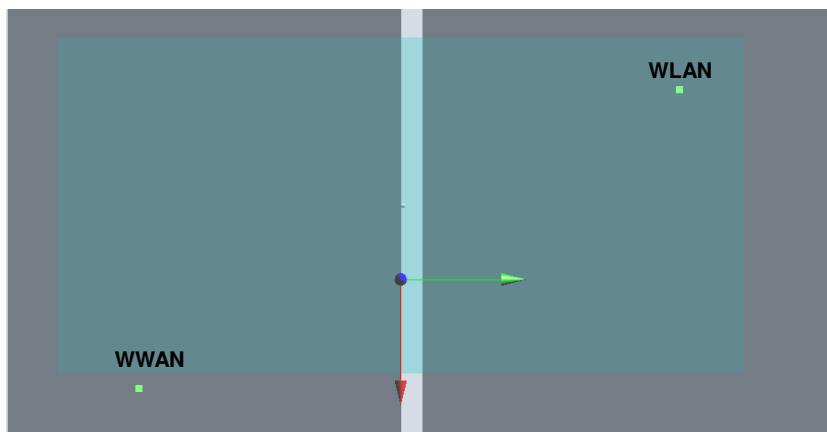
| Case | Band        | Position   | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------|-------------|------------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|      |             |            |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
| 36   | LTE Band 66 | Left Cheek | 0.417         | 0mm         | 50.4                  | -62.46 | 1.05  | 97.1                   | 1.72                    | 0.02             | Not required        |
|      | 5GHz WLAN   |            | 1.301         | 0mm         | 7.65                  | 24.66  | -1.04 |                        |                         |                  |                     |



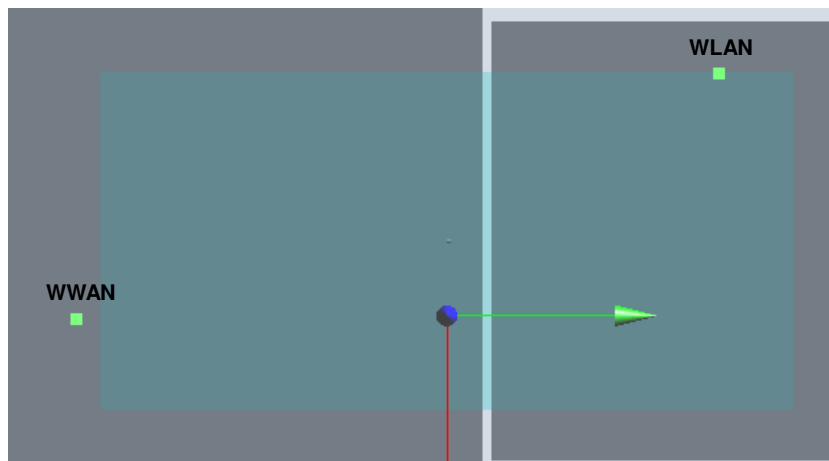
| Case | Band        | Position | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |       |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------|-------------|----------|---------------|-------------|-----------------------|-------|-------|------------------------|-------------------------|------------------|---------------------|
|      |             |          |               |             | X                     | Y     | Z     |                        |                         |                  |                     |
| 37   | LTE Band 13 | Back     | 1.194         | 10mm        | 41                    | -60.6 | -0.96 | 142.3                  | 1.60                    | 0.01             | Not required        |
|      | 2.4GHz WLAN |          | 0.403         | 10mm        | -22.43                | 66.81 | -1.98 |                        |                         |                  |                     |



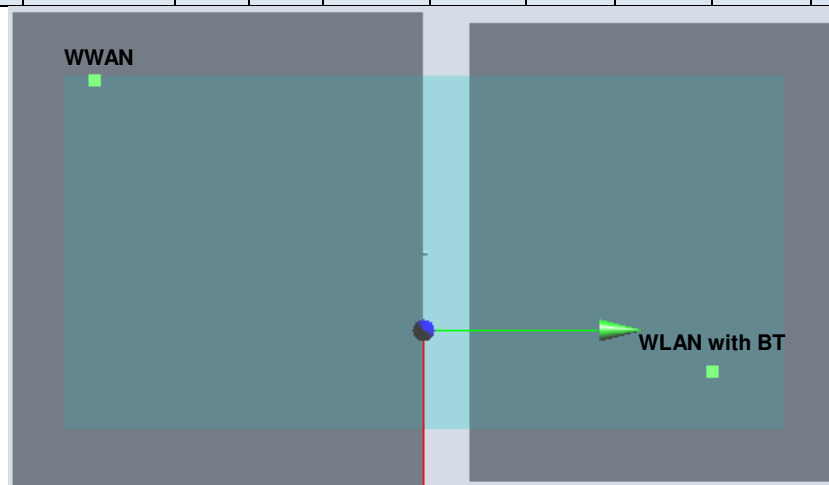
| Case | Band        | Position | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |       |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------|-------------|----------|---------------|-------------|-----------------------|-------|-------|------------------------|-------------------------|------------------|---------------------|
|      |             |          |               |             | X                     | Y     | Z     |                        |                         |                  |                     |
| 38   | LTE Band 13 | Back     | 1.194         | 10mm        | 41                    | -60.6 | -0.96 | 146.8                  | 1.67                    | 0.01             | Not required        |
|      | 5GHz WLAN   |          | 0.471         | 10mm        | -38.22                | 63.02 | -1.74 |                        |                         |                  |                     |



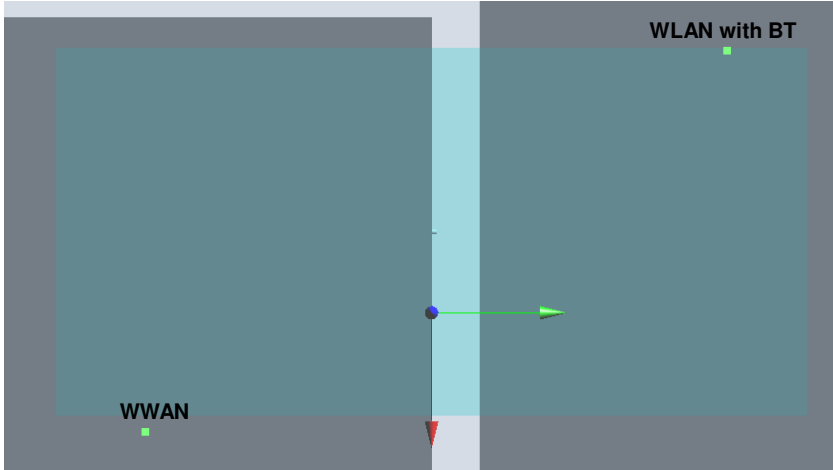
| Case | Band        | Position | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |        |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------|-------------|----------|---------------|-------------|-----------------------|--------|-------|------------------------|-------------------------|------------------|---------------------|
|      |             |          |               |             | X                     | Y      | Z     |                        |                         |                  |                     |
| 39   | LTE Band 30 | Back     | 1.189         | 10mm        | 45.19                 | -72.59 | 0.98  | 159.2                  | 1.66                    | 0.01             | Not required        |
|      | 5GHz WLAN   |          | 0.471         | 10mm        | -38.22                | 63.02  | -1.74 |                        |                         |                  |                     |



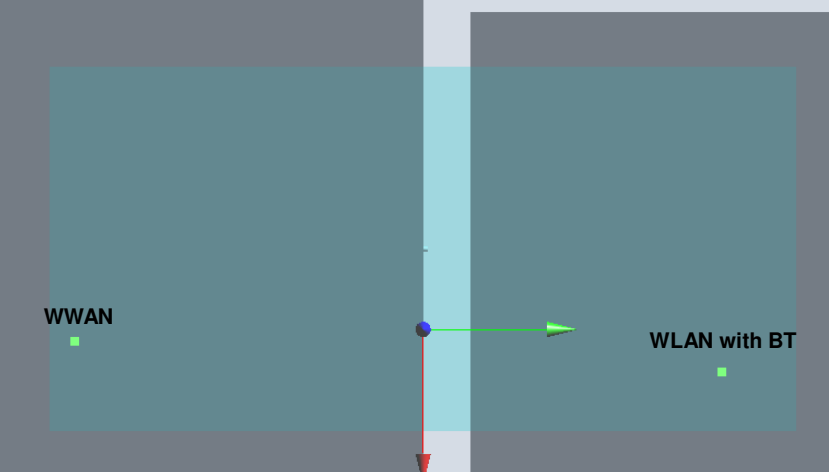
| Case | Band              | Position | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |       |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------|-------------------|----------|---------------|-------------|-----------------------|-------|-------|------------------------|-------------------------|------------------|---------------------|
|      |                   |          |               |             | X                     | Y     | Z     |                        |                         |                  |                     |
| 40   | GSM850            | Front    | 1.151         | 10mm        | -43.2                 | -66.2 | -0.38 | 146.2                  | 1.61                    | 0.01             | Not required        |
|      | 5GHz WLAN with BT |          | 0.458         | 10mm        | 23.37                 | 64.01 | -1.87 |                        |                         |                  |                     |



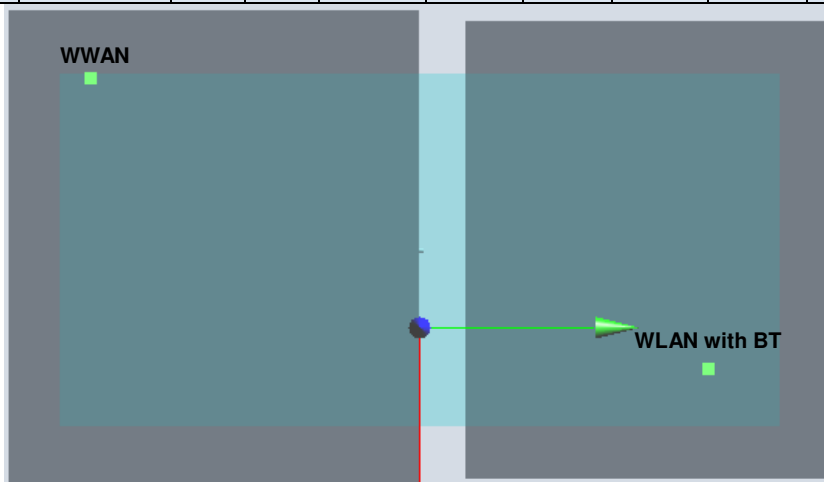
| Case<br>41 | Band              | Position | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |       |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-------------------|----------|---------------|-------------|-----------------------|-------|-------|------------------------|-------------------------|------------------|---------------------|
|            |                   |          |               |             | X                     | Y     | Z     |                        |                         |                  |                     |
|            | GSM850            | Back     | 0.994         | 10mm        | 39.4                  | -71.5 | -0.07 | 155.3                  | 1.60                    | 0.01             | Not required        |
|            | 5GHz WLAN with BT |          | 0.605         | 10mm        | -38.22                | 63.02 | -1.74 |                        |                         |                  |                     |



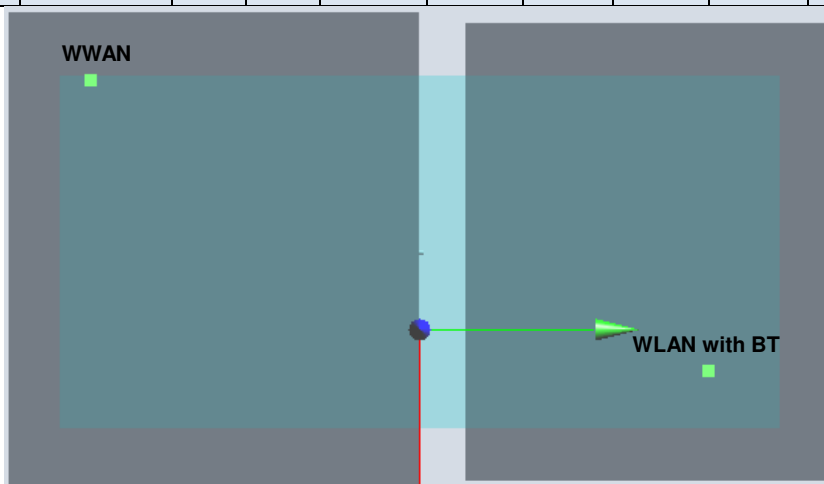
| Case<br>42 | Band              | Position | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |       |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-------------------|----------|---------------|-------------|-----------------------|-------|-------|------------------------|-------------------------|------------------|---------------------|
|            |                   |          |               |             | X                     | Y     | Z     |                        |                         |                  |                     |
|            | WCDMA II          | Front    | 1.196         | 10mm        | 18.5                  | -78.9 | -0.78 | 143.0                  | 1.65                    | 0.01             | Not required        |
|            | 5GHz WLAN with BT |          | 0.458         | 10mm        | 23.37                 | 64.01 | -1.87 |                        |                         |                  |                     |



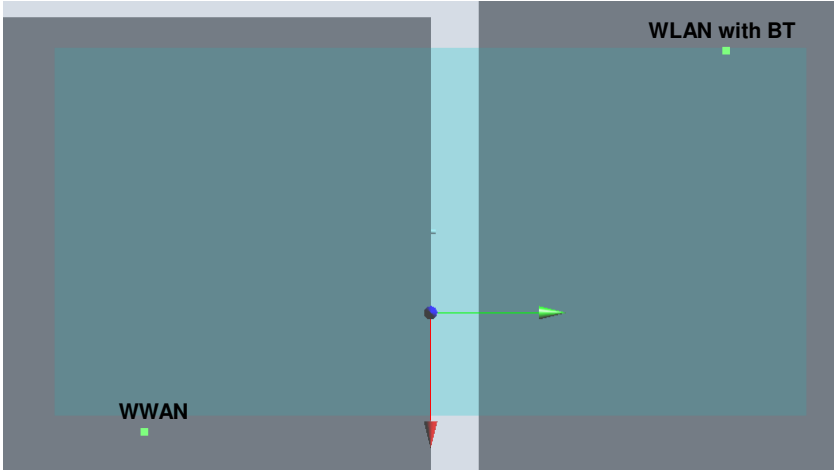
| Case 43 | Band              | Position | SAR (W/kg) | Gap (cm) | SAR peak location (m) |       |       | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|---------|-------------------|----------|------------|----------|-----------------------|-------|-------|------------------|-------------------|---------------|------------------|
|         | WCDMA II          | Back     | 1.156      | 10mm     | -24.5                 | -78.9 | -1.03 | 142.6            | 1.67              | 0.02          | Not required     |
|         | 5GHz WLAN with BT |          | 0.458      | 10mm     | 23.37                 | 64.01 | -1.87 |                  |                   |               |                  |



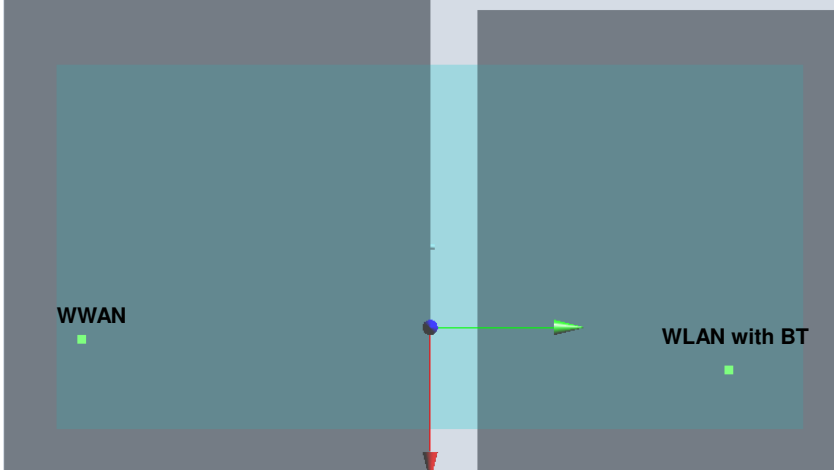
| Case 44 | Band              | Position | SAR (W/kg) | Gap (cm) | SAR peak location (m) |       |       | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|---------|-------------------|----------|------------|----------|-----------------------|-------|-------|------------------|-------------------|---------------|------------------|
|         | CDMA BC0          | Front    | 1.156      | 10mm     | -41.7                 | -67.8 | -1.43 | 147.0            | 1.61              | 0.01          | Not required     |
|         | 5GHz WLAN with BT |          | 0.458      | 10mm     | 23.37                 | 64.01 | -1.87 |                  |                   |               |                  |



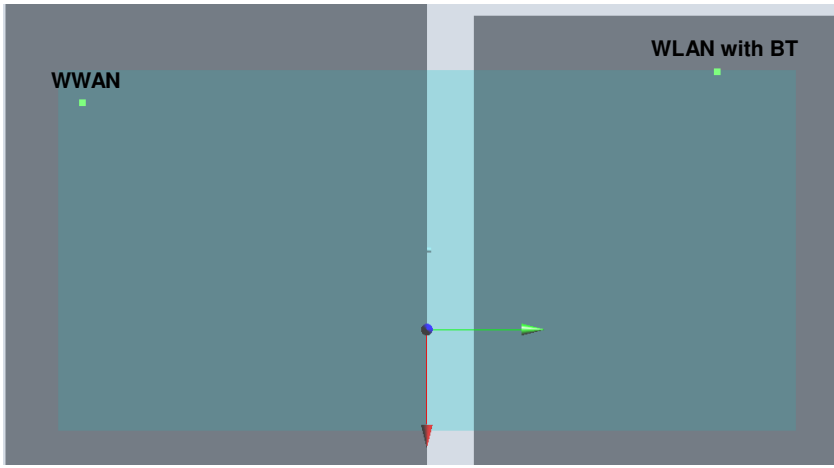
| Case<br>45 | Band              | Position | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |       |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-------------------|----------|---------------|-------------|-----------------------|-------|-------|------------------------|-------------------------|------------------|---------------------|
|            | CDMA BC0          | Back     | 1.085         | 10mm        | 39.7                  | -69.4 | -0.91 | 153.6                  | 1.69                    | 0.01             | Not required        |
|            | 5GHz WLAN with BT |          | 0.605         | 10mm        | -38.22                | 63.02 | -1.74 |                        |                         |                  |                     |



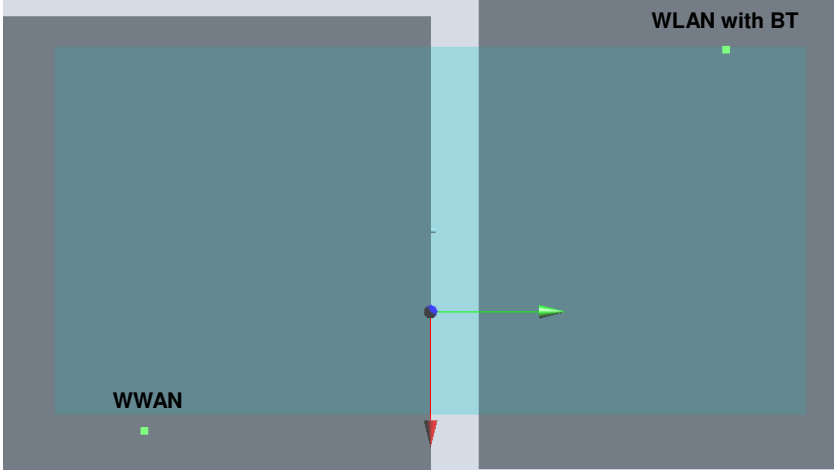
| Case<br>46 | Band              | Position | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |       |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-------------------|----------|---------------|-------------|-----------------------|-------|-------|------------------------|-------------------------|------------------|---------------------|
|            | CDMA BC1          | Front    | 1.164         | 10mm        | 18.5                  | -78.9 | -0.78 | 143.0                  | 1.62                    | 0.01             | Not required        |
|            | 5GHz WLAN with BT |          | 0.458         | 10mm        | 23.37                 | 64.01 | -1.87 |                        |                         |                  |                     |



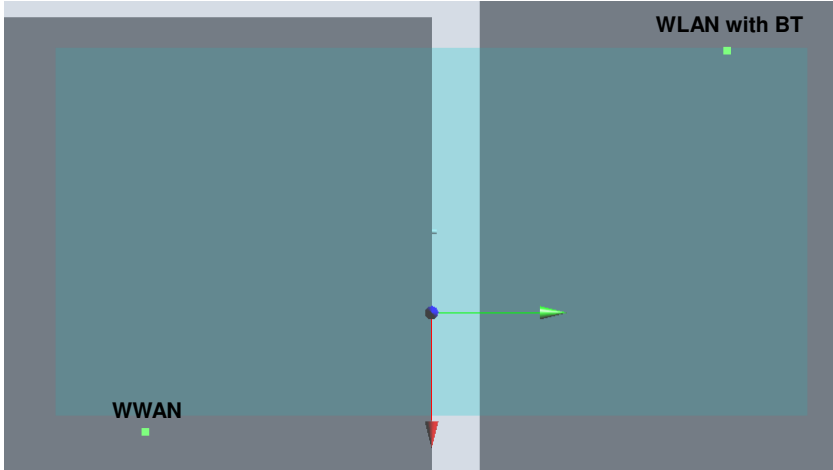
| Case<br>47 | Band              | Position | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |       |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-------------------|----------|---------------|-------------|-----------------------|-------|-------|------------------------|-------------------------|------------------|---------------------|
|            | CDMA BC1          | Back     | 1.006         | 10mm        | X                     | Y     | Z     | 144.2                  | 1.61                    | 0.01             | Not required        |
|            | 5GHz WLAN with BT |          | 0.605         | 10mm        | -38.22                | 63.02 | -1.74 |                        |                         |                  |                     |



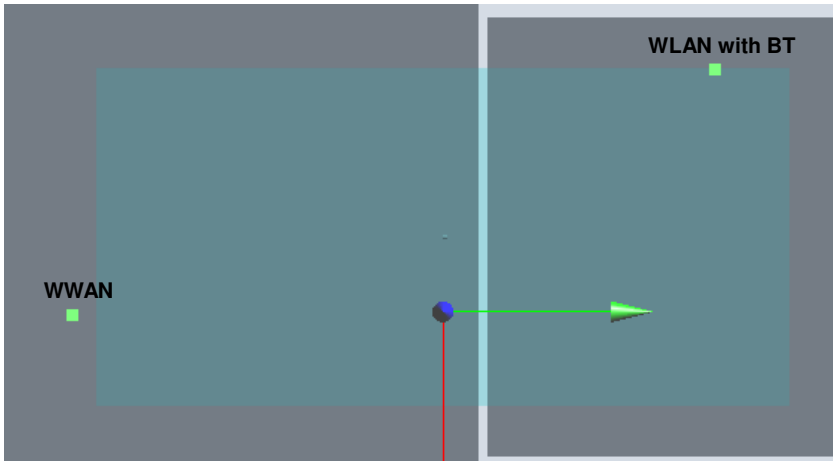
| Case<br>48 | Band              | Position | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |       |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-------------------|----------|---------------|-------------|-----------------------|-------|-------|------------------------|-------------------------|------------------|---------------------|
|            | LTE Band 7        | Back     | 1.007         | 10mm        | X                     | Y     | Z     | 156.6                  | 1.61                    | 0.01             | Not required        |
|            | 5GHz WLAN with BT |          | 0.605         | 10mm        | -38.22                | 63.02 | -1.74 |                        |                         |                  |                     |



| Case<br>49 | Band              | Position | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |       |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-------------------|----------|---------------|-------------|-----------------------|-------|-------|------------------------|-------------------------|------------------|---------------------|
|            | LTE Band 13       | Back     | 1.194         | 10mm        | 41                    | -60.6 | -0.96 | 146.8                  | 1.80                    | 0.02             | Not required        |
|            | 5GHz WLAN with BT |          | 0.605         | 10mm        | -38.22                | 63.02 | -1.74 |                        |                         |                  |                     |

| Case<br>50 | Band              | Position | SAR<br>(W/kg) | Gap<br>(cm) | SAR peak location (m) |       |       | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|------------|-------------------|----------|---------------|-------------|-----------------------|-------|-------|------------------------|-------------------------|------------------|---------------------|
|            | LTE Band 30       | Back     | 1.189         | 10mm        | 16.7                  | -82.4 | -0.04 | 155.5                  | 1.79                    | 0.02             | Not required        |
|            | 5GHz WLAN with BT |          | 0.605         | 10mm        | -38.22                | 63.02 | -1.74 |                        |                         |                  |                     |



## 16. Supplemental tuner tests results

### General Note:

- The following test procedure was followed to demonstrate that the SAR results in this report represent the appropriate SAR test conditions. For bands with dynamic tuning implemented, SAR will be measured according to the required FCC SAR test procedures with the dynamic tuner active to allow the device to automatically tune to the antenna state for the respective RF exposure test configurations. Additional single point SAR time-sweep measurements will be evaluated for other tuner states to determine that the other tuner configurations would result in equivalent or lower SAR values. The additional tuner hardware has no influence to the antenna characteristics, other than impedance matching.
- To evaluate all of the tuner states, the 144 tuner states are divided evenly among band, mode and exposure combinations so that at least one single point SAR measurement is measured in each configuration. Single point time-sweep measurements will be performed at the peak SAR location determined by the zoom scan of the configuration with the highest reported SAR for each combination. The tuner state will be established remotely so that the device is not moved for the entire series of single point SAR for the tuner states in each combination. The SAR probe will remain stationary at the same position throughout the entire series of single point measurements for each combination. The bands which are dynamically tuned are split into two separate antennas, so each antenna system will have its own test plan to cover the corresponding 144 tuner states.
- The operational decryption contains more information about the design and implementation of the dynamic antenna tuning.

### 16.1 Supplemental Head SAR results

| Mode      | Service/<br>Modulation | Frequency<br>(MHz) | Channel | RB<br>Size | RB<br>Offset | Test Position | Spacing | Measured<br>1g SAR<br>(W/kg) | Average Value of Time Sweep (W/kg) |                        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|-----------|------------------------|--------------------|---------|------------|--------------|---------------|---------|------------------------------|------------------------------------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|           |                        |                    |         |            |              |               |         |                              | Auto-Tune<br>(State 98)            | Default<br>(State 98)  | 1     | 11    | 21    | 31    | 41    | 51    | 61    | 71    | 81    | 91    | 101   | 111   | 121   | 131   | 142   |
| LTE B5    | 10M_QPSK               | 836.5              | 20525   | 1          | 0            | Left Cheek    | 0 mm    | 0.359                        | 0.592                              | 0.591                  | 0.491 | 0.279 | 0.148 | 0.097 | 0.385 | 0.318 | 0.101 | 0.185 | 0.157 | 0.195 | 0.436 | 0.018 | 0.175 | 0.206 | 0.054 |
| Mode      | Service/<br>Modulation | Frequency<br>(MHz) | Channel | RB<br>Size | RB<br>Offset | Test Position | Spacing | Measured<br>1g SAR<br>(W/kg) | Average Value of Time Sweep (W/kg) |                        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|           |                        |                    |         |            |              |               |         |                              | Auto-Tune<br>(State 98)            | Default<br>(State 97)  | 2     | 12    | 22    | 32    | 42    | 52    | 62    | 72    | 82    | 92    | 102   | 112   | 122   | 132   | 143   |
| CDMA BC0  | 1xRTT RC3 SO5          | 836.52             | 384     | N/A        | N/A          | Left Cheek    | 0 mm    | 0.329                        | 0.554                              | 0.494                  | 0.292 | 0.219 | 0.096 | 0.076 | 0.25  | 0.249 | 0.073 | 0.139 | 0.125 | 0.149 | 0.312 | 0.055 | 0.106 | 0.063 | 0.033 |
| Mode      | Service/<br>Modulation | Frequency<br>(MHz) | Channel | RB<br>Size | RB<br>Offset | Test Position | Spacing | Measured<br>1g SAR<br>(W/kg) | Average Value of Time Sweep (W/kg) |                        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|           |                        |                    |         |            |              |               |         |                              | Auto-Tune<br>(State 98)            | Default<br>(State 98)  | 3     | 13    | 23    | 33    | 43    | 53    | 63    | 73    | 83    | 93    | 103   | 113   | 123   | 133   | 144   |
| WCDMA B5  | RMC12.2Kbps            | 836.4              | 4182    | N/A        | N/A          | Left Cheek    | 0 mm    | 0.315                        | 0.473                              | 0.471                  | 0.235 | 0.191 | 0.199 | 0.059 | 0.208 | 0.209 | 0.054 | 0.119 | 0.106 | 0.121 | 0.238 | 0.231 | 0.091 | 0.439 | 0.005 |
| Mode      | Service/<br>Modulation | Frequency<br>(MHz) | Channel | RB<br>Size | RB<br>Offset | Test Position | Spacing | Measured<br>1g SAR<br>(W/kg) | Average Value of Time Sweep (W/kg) |                        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|           |                        |                    |         |            |              |               |         |                              | Auto-Tune<br>(State 70)            | Default<br>(State 12)  | 4     | 14    | 24    | 34    | 44    | 54    | 64    | 74    | 84    | 94    | 104   | 114   | 124   | 134   |       |
| LTE B13   | 10M_QPSK               | 782                | 23230   | 1          | 49           | Left Cheek    | 0 mm    | 0.34                         | 0.571                              | 0.439                  | 0.551 | 0.413 | 0.396 | 0.075 | 0.487 | 0.036 | 0.073 | 0.359 | 0.093 | 0.015 | 0.479 | 0.553 | 0.095 | 0.428 |       |
| Mode      | Service/<br>Modulation | Frequency<br>(MHz) | Channel | RB<br>Size | RB<br>Offset | Test Position | Spacing | Measured<br>1g SAR<br>(W/kg) | Average Value of Time Sweep (W/kg) |                        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|           |                        |                    |         |            |              |               |         |                              | Auto-Tune<br>(State 99)            | Default<br>(State 98)  | 5     | 15    | 25    | 35    | 45    | 55    | 65    | 75    | 85    | 95    | 105   | 115   | 125   | 135   |       |
| CDMA BC10 | 1xRTT RC3 SO5          | 820.5              | 580     | N/A        | N/A          | Left Cheek    | 0 mm    | 0.406                        | 0.615                              | 0.501                  | 0.295 | 0.219 | 0.42  | 0.045 | 0.217 | 0.372 | 0.02  | 0.195 | 0.106 | 0.078 | 0.288 | 0.273 | 0.109 | 0.336 |       |
| Mode      | Service/<br>Modulation | Frequency<br>(MHz) | Channel | RB<br>Size | RB<br>Offset | Test Position | Spacing | Measured<br>1g SAR<br>(W/kg) | Average Value of Time Sweep (W/kg) |                        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|           |                        |                    |         |            |              |               |         |                              | Auto-Tune<br>(State 93)            | Default<br>(State 16)  | 6     | 16    | 26    | 36    | 46    | 56    | 66    | 76    | 86    | 96    | 106   | 116   | 126   | 136   |       |
| LTE B30   | 10M_QPSK               | 2310               | 27710   | 1          | 0            | Left Cheek    | 0 mm    | 0.244                        | 0.393                              | 0.301                  | 0.259 | 0.3   | 0.259 | 0.28  | 0.001 | 0.102 | 0.133 | 0.348 | 0.247 | 0.245 | 0.345 | 0.189 | 0.146 | 0.191 |       |
| Mode      | Service/<br>Modulation | Frequency<br>(MHz) | Channel | RB<br>Size | RB<br>Offset | Test Position | Spacing | Measured<br>1g SAR<br>(W/kg) | Average Value of Time Sweep (W/kg) |                        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|           |                        |                    |         |            |              |               |         |                              | Auto-Tune<br>(State 60)            | Default<br>(State 60)  | 7     | 17    | 27    | 37    | 47    | 57    | 67    | 77    | 87    | 97    | 107   | 117   | 127   | 137   |       |
| LTE B12   | 10M_QPSK               | 707.5              | 23095   | 1          | 25           | Left Cheek    | 0 mm    | 0.213                        | 0.371                              | 0.367                  | 0.141 | 0.241 | 0.217 | 0.164 | 0.255 | 0.163 | 0.063 | 0.188 | 0.142 | 0.028 | 0.25  | 0.148 | 0.138 | 0.235 |       |
| Mode      | Service/<br>Modulation | Frequency<br>(MHz) | Channel | RB<br>Size | RB<br>Offset | Test Position | Spacing | Measured<br>1g SAR<br>(W/kg) | Average Value of Time Sweep (W/kg) |                        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|           |                        |                    |         |            |              |               |         |                              | Auto-Tune<br>(State 60)            | Default<br>(State 60)  | 8     | 18    | 28    | 38    | 48    | 58    | 68    | 78    | 88    | 98    | 108   | 118   | 128   | 138   |       |
| LTE B17   | 10M_QPSK               | 710                | 23790   | 1          | 25           | Left Cheek    | 0 mm    | 0.267                        | 0.416                              | 0.411                  | 0.122 | 0.286 | 0.199 | 0.045 | 0.238 | 0.173 | 0.032 | 0.194 | 0.136 | 0.036 | 0.321 | 0.196 | 0.126 | 0.269 |       |
| Mode      | Service/<br>Modulation | Frequency<br>(MHz) | Channel | RB<br>Size | RB<br>Offset | Test Position | Spacing | Measured<br>1g SAR<br>(W/kg) | Average Value of Time Sweep (W/kg) |                        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|           |                        |                    |         |            |              |               |         |                              | Auto-Tune<br>(State 98)            | Default<br>(State 98)  | 9     | 19    | 29    | 39    | 49    | 59    | 69    | 79    | 89    | 99    | 109   | 119   | 129   | 139   |       |
| LTE B26   | 15M_QPSK               | 831.5              | 26865   | 1          | 74           | Left Cheek    | 0 mm    | 0.329                        | 0.566                              | 0.557                  | 0.231 | 0.156 | 0.24  | 0.295 | 0.099 | 0.255 | 0.243 | 0.126 | 0.069 | 0.549 | 0.044 | 0.152 | 0.066 | 0.157 |       |
| Mode      | Service/<br>Modulation | Frequency<br>(MHz) | Channel | RB<br>Size | RB<br>Offset | Test Position | Spacing | Measured<br>1g SAR<br>(W/kg) | Average Value of Time Sweep (W/kg) |                        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|           |                        |                    |         |            |              |               |         |                              | Auto-Tune<br>(State 130)           | Default<br>(State 127) | 10    | 20    | 30    | 40    | 50    | 60    | 70    | 80    | 90    | 100   | 110   | 120   | 130   | 140   |       |
| LTE B41   | 20M_QPSK               | 2549.5             | 40185   | 1          | 99           | Left Cheek    | 0 mm    | 0.23                         | 0.432                              | 0.405                  | 0.395 | 0.368 | 0.397 | 0.171 | 0.347 | 0.101 | 0.401 | 0.385 | 0.382 | 0.398 | 0.377 | 0.404 | 0.429 | 0.396 |       |
| Mode      | Service/<br>Modulation | Frequency<br>(MHz) | Channel | RB<br>Size | RB<br>Offset | Test Position | Spacing | Measured<br>1g SAR<br>(W/kg) | Average Value of Time Sweep (W/kg) |                        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|           |                        |                    |         |            |              |               |         |                              | Auto-Tune<br>(State 131)           | Default<br>(State 127) | 11    | 21    | 31    | 41    | 51    | 61    | 71    | 81    | 91    | 101   | 111   | 121   | 131   | 141   |       |
| LTE B7    | 20M_QPSK               | 2535               | 21100   | 1          | 49           | Left Cheek    | 0 mm    | 0.386                        | 0.701                              | 0.597                  | 0.625 | 0.563 | 0.118 | 0.443 | 0.592 | 0.198 | 0.595 | 0.6   | 0.596 | 0.605 | 0.586 | 0.667 | 0.689 | 0.106 |       |

**16.2 Supplemental Body SAR results**

| Mode      | Service/<br>Modulation | Frequency<br>(MHz) | Channel | RB<br>Size | RB<br>Offset | Test<br>Position | Spacing | Measured<br>1g SAR<br>(W/kg) | Average Value of Time Sweep (W/kg) |                        |       |       |        |       |       |        |        |       |       |        |       |       |       |        |       |
|-----------|------------------------|--------------------|---------|------------|--------------|------------------|---------|------------------------------|------------------------------------|------------------------|-------|-------|--------|-------|-------|--------|--------|-------|-------|--------|-------|-------|-------|--------|-------|
|           |                        |                    |         |            |              |                  |         |                              | Auto-Tune<br>(State 98)            | Default<br>(State 98)  | 1     | 11    | 21     | 31    | 41    | 51     | 61     | 71    | 81    | 91     | 101   | 111   | 121   | 131    | 142   |
| LTE B5    | 10M_QPSK               | 836.5              | 20525   | 1          | 0            | Back             | 10 mm   | 0.74                         | 1.256                              | 1.247                  | 0.906 | 0.66  | 0.43   | 0.25  | 0.76  | 0.56   | 0.25   | 0.427 | 0.389 | 0.349  | 0.94  | 0.056 | 0.4   | 0.42   | 0.14  |
| Mode      | Service/<br>Modulation | Frequency<br>(MHz) | Channel | RB<br>Size | RB<br>Offset | Test<br>Position | Spacing | Measured<br>1g SAR<br>(W/kg) | Average Value of Time Sweep (W/kg) |                        |       |       |        |       |       |        |        |       |       |        |       |       |       |        |       |
|           |                        |                    |         |            |              |                  |         |                              | Auto-Tune<br>(State 97)            | Default<br>(State 97)  | 2     | 12    | 22     | 32    | 42    | 52     | 62     | 72    | 82    | 92     | 102   | 112   | 122   | 132    | 143   |
| CDMA BC0  | 1xRTT RC3 SO32         | 836.52             | 384     | N/A        | N/A          | Front            | 10 mm   | 0.883                        | 1.623                              | 1.591                  | 0.778 | 0.748 | 0.405  | 0.306 | 0.778 | 0.746  | 0.298  | 0.478 | 0.457 | 0.463  | 0.978 | 0.222 | 0.434 | 0.296  | 0.142 |
| Mode      | Service/<br>Modulation | Frequency<br>(MHz) | Channel | RB<br>Size | RB<br>Offset | Test<br>Position | Spacing | Measured<br>1g SAR<br>(W/kg) | Average Value of Time Sweep (W/kg) |                        |       |       |        |       |       |        |        |       |       |        |       |       |       |        |       |
|           |                        |                    |         |            |              |                  |         |                              | Auto-Tune<br>(State 98)            | Default<br>(State 98)  | 3     | 13    | 23     | 33    | 43    | 53     | 63     | 73    | 83    | 93     | 103   | 113   | 123   | 133    | 144   |
| WCDMA B5  | RMC12.2Kbps            | 826.4              | 4132    | N/A        | N/A          | Front            | 10 mm   | 0.795                        | 1.325                              | 1.32                   | 0.804 | 0.707 | 0.519  | 0.237 | 0.753 | 0.745  | 0.224  | 0.453 | 0.413 | 0.45   | 0.861 | 0.644 | 0.356 | 1.308  | 0.025 |
| Mode      | Service/<br>Modulation | Frequency<br>(MHz) | Channel | RB<br>Size | RB<br>Offset | Test<br>Position | Spacing | Measured<br>1g SAR<br>(W/kg) | Average Value of Time Sweep (W/kg) |                        |       |       |        |       |       |        |        |       |       |        |       |       |       |        |       |
|           |                        |                    |         |            |              |                  |         |                              | Auto-Tune<br>(State 5)             | Default<br>(State 12)  | 4     | 14    | 24     | 34    | 44    | 54     | 64     | 74    | 84    | 94     | 104   | 114   | 124   | 134    |       |
| LTE B13   | 10M_QPSK               | 782                | 23230   | 1          | 0            | Back             | 10 mm   | 1                            | 2.061                              | 1.856                  | 1.732 | 1.768 | 1.38   | 0.438 | 1.918 | 0.176  | 0.399  | 1.573 | 0.472 | 0.0796 | 1.699 | 1.561 | 0.482 | 1.523  |       |
| Mode      | Service/<br>Modulation | Frequency<br>(MHz) | Channel | RB<br>Size | RB<br>Offset | Test<br>Position | Spacing | Measured<br>1g SAR<br>(W/kg) | Average Value of Time Sweep (W/kg) |                        |       |       |        |       |       |        |        |       |       |        |       |       |       |        |       |
|           |                        |                    |         |            |              |                  |         |                              | Auto-Tune<br>(State 99)            | Default<br>(State 99)  | 5     | 15    | 25     | 35    | 45    | 55     | 65     | 75    | 85    | 95     | 105   | 115   | 125   | 135    |       |
| CDMA BC10 | 1xRTT RC3 SO32         | 820.5              | 580     | N/A        | N/A          | Front            | 10 mm   | 0.655                        | 1.153                              | 1.124                  | 0.753 | 0.651 | 0.981  | 0.165 | 0.674 | 0.891  | 0.0901 | 0.431 | 0.275 | 0.294  | 0.604 | 0.529 | 0.298 | 0.703  |       |
| Mode      | Service/<br>Modulation | Frequency<br>(MHz) | Channel | RB<br>Size | RB<br>Offset | Test<br>Position | Spacing | Measured<br>1g SAR<br>(W/kg) | Average Value of Time Sweep (W/kg) |                        |       |       |        |       |       |        |        |       |       |        |       |       |       |        |       |
|           |                        |                    |         |            |              |                  |         |                              | Auto-Tune<br>(State 93)            | Default<br>(State 16)  | 6     | 16    | 26     | 36    | 46    | 56     | 66     | 76    | 86    | 96     | 106   | 116   | 126   | 136    |       |
| LTE B30   | 10M_QPSK               | 2355               | 27710   | 50         | 0            | Back             | 10 mm   | 0.894                        | 1.836                              | 1.497                  | 1.315 | 1.493 | 1.311  | 1.404 | 0.02  | 0.57   | 0.721  | 1.694 | 1.271 | 1.194  | 1.677 | 0.987 | 0.8   | 1.003  |       |
| Mode      | Service/<br>Modulation | Frequency<br>(MHz) | Channel | RB<br>Size | RB<br>Offset | Test<br>Position | Spacing | Measured<br>1g SAR<br>(W/kg) | Average Value of Time Sweep (W/kg) |                        |       |       |        |       |       |        |        |       |       |        |       |       |       |        |       |
|           |                        |                    |         |            |              |                  |         |                              | Auto-Tune<br>(State 60)            | Default<br>(State 60)  | 7     | 17    | 27     | 37    | 47    | 57     | 67     | 77    | 87    | 97     | 107   | 117   | 127   | 137    |       |
| LTE B12   | 10M_QPSK               | 707.5              | 23095   | 1          | 25           | Front            | 10 mm   | 0.766                        | 1.381                              | 1.333                  | 0.539 | 1.015 | 0.798  | 0.498 | 0.982 | 0.623  | 0.192  | 0.666 | 0.549 | 0.106  | 0.863 | 0.569 | 0.523 | 0.838  |       |
| Mode      | Service/<br>Modulation | Frequency<br>(MHz) | Channel | RB<br>Size | RB<br>Offset | Test<br>Position | Spacing | Measured<br>1g SAR<br>(W/kg) | Average Value of Time Sweep (W/kg) |                        |       |       |        |       |       |        |        |       |       |        |       |       |       |        |       |
|           |                        |                    |         |            |              |                  |         |                              | Auto-Tune<br>(State 60)            | Default<br>(State 60)  | 8     | 18    | 28     | 38    | 48    | 58     | 68     | 78    | 88    | 98     | 108   | 118   | 128   | 138    |       |
| LTE B17   | 10M_QPSK               | 710                | 23790   | 1          | 25           | Back             | 10 mm   | 0.752                        | 1.285                              | 1.282                  | 0.591 | 0.963 | 0.871  | 0.168 | 0.826 | 0.786  | 0.149  | 0.717 | 0.467 | 0.145  | 0.972 | 0.728 | 0.413 | 0.982  |       |
| Mode      | Service/<br>Modulation | Frequency<br>(MHz) | Channel | RB<br>Size | RB<br>Offset | Test<br>Position | Spacing | Measured<br>1g SAR<br>(W/kg) | Average Value of Time Sweep (W/kg) |                        |       |       |        |       |       |        |        |       |       |        |       |       |       |        |       |
|           |                        |                    |         |            |              |                  |         |                              | Auto-Tune<br>(State 98)            | Default<br>(State 98)  | 9     | 19    | 29     | 39    | 49    | 59     | 69     | 79    | 89    | 99     | 109   | 119   | 129   | 139    |       |
| LTE B26   | 15M_QPSK               | 831.5              | 26865   | 1          | 37           | Front            | 10 mm   | 0.87                         | 1.606                              | 1.568                  | 0.792 | 0.647 | 0.849  | 0.979 | 0.429 | 0.939  | 0.454  | 0.477 | 0.244 | 1.384  | 0.179 | 0.527 | 0.271 | 0.573  |       |
| Mode      | Service/<br>Modulation | Frequency<br>(MHz) | Channel | RB<br>Size | RB<br>Offset | Test<br>Position | Spacing | Measured<br>1g SAR<br>(W/kg) | Average Value of Time Sweep (W/kg) |                        |       |       |        |       |       |        |        |       |       |        |       |       |       |        |       |
|           |                        |                    |         |            |              |                  |         |                              | Auto-Tune<br>(State 121)           | Default<br>(State 127) | 10    | 20    | 30     | 40    | 50    | 60     | 70     | 80    | 90    | 100    | 110   | 120   | 130   | 140    |       |
| LTE B41   | 20M_QPSK               | 2506               | 39750   | 1          | 99           | Back             | 10 mm   | 0.555                        | 1.142                              | 0.857                  | 0.991 | 0.836 | 0.958  | 0.171 | 0.837 | 0.0137 | 0.937  | 0.943 | 0.983 | 0.962  | 0.926 | 1.054 | 1.002 | 1.082  |       |
| Mode      | Service/<br>Modulation | Frequency<br>(MHz) | Channel | RB<br>Size | RB<br>Offset | Test<br>Position | Spacing | Measured<br>1g SAR<br>(W/kg) | Average Value of Time Sweep (W/kg) |                        |       |       |        |       |       |        |        |       |       |        |       |       |       |        |       |
|           |                        |                    |         |            |              |                  |         |                              | Auto-Tune<br>(State 121)           | Default<br>(State 127) | 11    | 21    | 31     | 41    | 51    | 61     | 71     | 81    | 91    | 101    | 111   | 121   | 131   | 141    |       |
| LTE B7    | 20M_QPSK               | 2510               | 20850   | 1          | 99           | Front            | 10 mm   | 0.721                        | 1.413                              | 1.149                  | 1.262 | 1.144 | 0.0956 | 0.709 | 1.123 | 0.254  | 1.248  | 1.242 | 1.267 | 1.245  | 1.243 | 1.384 | 1.381 | 0.0446 |       |

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## 17. Uncertainty Assessment

The component of uncertainty may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainty by the statistical analysis of a series of observations is termed a Type A evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in table below.

| Uncertainty Distributions          | Normal                     | Rectangular   | Triangular    | U-Shape       |
|------------------------------------|----------------------------|---------------|---------------|---------------|
| Multi-plying Factor <sup>(a)</sup> | 1/ $\kappa$ <sup>(b)</sup> | 1/ $\sqrt{3}$ | 1/ $\sqrt{6}$ | 1/ $\sqrt{2}$ |

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity

(b)  $\kappa$  is the coverage factor

**Table 17.1. Standard Uncertainty for Assumed Distribution**

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

| Error Description                 | Uncertainty Value (±%) | Probability | Divisor | (Ci) 1g | (Ci) 10g | Standard Uncertainty (1g) (±%) | Standard Uncertainty (10g) (±%) |
|-----------------------------------|------------------------|-------------|---------|---------|----------|--------------------------------|---------------------------------|
| <b>Measurement System</b>         |                        |             |         |         |          |                                |                                 |
| Probe Calibration                 | 6.00                   | N           | 1       | 1       | 1        | 6.0                            | 6.0                             |
| Axial Isotropy                    | 4.70                   | R           | 1.732   | 0.7     | 0.7      | 1.9                            | 1.9                             |
| Hemispherical Isotropy            | 9.60                   | R           | 1.732   | 0.7     | 0.7      | 3.9                            | 3.9                             |
| Boundary Effects                  | 1.00                   | R           | 1.732   | 1       | 1        | 0.6                            | 0.6                             |
| Linearity                         | 4.70                   | R           | 1.732   | 1       | 1        | 2.7                            | 2.7                             |
| System Detection Limits           | 1.00                   | R           | 1.732   | 1       | 1        | 0.6                            | 0.6                             |
| Modulation Response               | 4.68                   | R           | 1.732   | 1       | 1        | 2.7                            | 2.7                             |
| Readout Electronics               | 0.30                   | N           | 1       | 1       | 1        | 0.3                            | 0.3                             |
| Response Time                     | 0.00                   | R           | 1.732   | 1       | 1        | 0.0                            | 0.0                             |
| Integration Time                  | 2.60                   | R           | 1.732   | 1       | 1        | 1.5                            | 1.5                             |
| RF Ambient Noise                  | 3.00                   | R           | 1.732   | 1       | 1        | 1.7                            | 1.7                             |
| RF Ambient Reflections            | 3.00                   | R           | 1.732   | 1       | 1        | 1.7                            | 1.7                             |
| Probe Positioner                  | 0.40                   | R           | 1.732   | 1       | 1        | 0.2                            | 0.2                             |
| Probe Positioning                 | 2.90                   | R           | 1.732   | 1       | 1        | 1.7                            | 1.7                             |
| Max. SAR Eval.                    | 2.00                   | R           | 1.732   | 1       | 1        | 1.2                            | 1.2                             |
| <b>Test Sample Related</b>        |                        |             |         |         |          |                                |                                 |
| Device Positioning                | 3.03                   | N           | 1       | 1       | 1        | 3.0                            | 3.0                             |
| Device Holder                     | 3.60                   | N           | 1       | 1       | 1        | 3.6                            | 3.6                             |
| Power Drift                       | 5.00                   | R           | 1.732   | 1       | 1        | 2.9                            | 2.9                             |
| Power Scaling                     | 0.00                   | R           | 1.732   | 1       | 1        | 0.0                            | 0.0                             |
| <b>Phantom and Setup</b>          |                        |             |         |         |          |                                |                                 |
| Phantom Uncertainty               | 6.10                   | R           | 1.732   | 1       | 1        | 3.5                            | 3.5                             |
| SAR correction                    | 0.00                   | R           | 1.732   | 1       | 0.84     | 0.0                            | 0.0                             |
| Liquid Conductivity Repeatability | 0.03                   | N           | 1       | 0.78    | 0.71     | 0.0                            | 0.0                             |
| Liquid Conductivity (target)      | 5.00                   | R           | 1.732   | 0.78    | 0.71     | 2.3                            | 2.0                             |
| Liquid Conductivity (mea.)        | 2.50                   | R           | 1.732   | 0.78    | 0.71     | 1.1                            | 1.0                             |
| Temp. unc. - Conductivity         | 3.68                   | R           | 1.732   | 0.78    | 0.71     | 1.7                            | 1.5                             |
| Liquid Permittivity Repeatability | 0.02                   | N           | 1       | 0.23    | 0.26     | 0.0                            | 0.0                             |
| Liquid Permittivity (target)      | 5.00                   | R           | 1.732   | 0.23    | 0.26     | 0.7                            | 0.8                             |
| Liquid Permittivity (mea.)        | 2.50                   | R           | 1.732   | 0.23    | 0.26     | 0.3                            | 0.4                             |
| Temp. unc. - Permittivity         | 0.84                   | R           | 1.732   | 0.23    | 0.26     | 0.1                            | 0.1                             |
| <b>Combined Std. Uncertainty</b>  |                        |             |         |         |          | 11.6%                          | 11.6%                           |
| <b>Coverage Factor for 95 %</b>   |                        |             |         |         |          | K=2                            | K=2                             |
| <b>Expanded STD Uncertainty</b>   |                        |             |         |         |          | 23.2%                          | 23.1%                           |

**Table 17.2. Uncertainty Budget for frequency range 300 MHz to 3 GHz**

| Error Description                 | Uncertainty Value (±%) | Probability | Divisor | (Ci) 1g | (Ci) 10g | Standard Uncertainty (1g) (±%) | Standard Uncertainty (10g) (±%) |
|-----------------------------------|------------------------|-------------|---------|---------|----------|--------------------------------|---------------------------------|
| <b>Measurement System</b>         |                        |             |         |         |          |                                |                                 |
| Probe Calibration                 | 7.00                   | N           | 1       | 1       | 1        | 7.0                            | 7.0                             |
| Axial Isotropy                    | 4.70                   | R           | 1.732   | 0.7     | 0.7      | 1.9                            | 1.9                             |
| Hemispherical Isotropy            | 9.60                   | R           | 1.732   | 0.7     | 0.7      | 3.9                            | 3.9                             |
| Boundary Effects                  | 2.00                   | R           | 1.732   | 1       | 1        | 1.2                            | 1.2                             |
| Linearity                         | 4.70                   | R           | 1.732   | 1       | 1        | 2.7                            | 2.7                             |
| System Detection Limits           | 1.00                   | R           | 1.732   | 1       | 1        | 0.6                            | 0.6                             |
| Modulation Response               | 4.68                   | R           | 1.732   | 1       | 1        | 2.7                            | 2.7                             |
| Readout Electronics               | 0.30                   | N           | 1       | 1       | 1        | 0.3                            | 0.3                             |
| Response Time                     | 0.00                   | R           | 1.732   | 1       | 1        | 0.0                            | 0.0                             |
| Integration Time                  | 2.60                   | R           | 1.732   | 1       | 1        | 1.5                            | 1.5                             |
| RF Ambient Noise                  | 3.00                   | R           | 1.732   | 1       | 1        | 1.7                            | 1.7                             |
| RF Ambient Reflections            | 3.00                   | R           | 1.732   | 1       | 1        | 1.7                            | 1.7                             |
| Probe Positioner                  | 0.40                   | R           | 1.732   | 1       | 1        | 0.2                            | 0.2                             |
| Probe Positioning                 | 6.70                   | R           | 1.732   | 1       | 1        | 3.9                            | 3.9                             |
| Max. SAR Eval.                    | 4.00                   | R           | 1.732   | 1       | 1        | 2.3                            | 2.3                             |
| <b>Test Sample Related</b>        |                        |             |         |         |          |                                |                                 |
| Device Positioning                | 3.03                   | N           | 1       | 1       | 1        | 3.0                            | 3.0                             |
| Device Holder                     | 3.60                   | N           | 1       | 1       | 1        | 3.6                            | 3.6                             |
| Power Drift                       | 5.00                   | R           | 1.732   | 1       | 1        | 2.9                            | 2.9                             |
| Power Scaling                     | 0.00                   | R           | 1.732   | 1       | 1        | 0.0                            | 0.0                             |
| <b>Phantom and Setup</b>          |                        |             |         |         |          |                                |                                 |
| Phantom Uncertainty               | 6.60                   | R           | 1.732   | 1       | 1        | 3.8                            | 3.8                             |
| SAR correction                    | 0.00                   | R           | 1.732   | 1       | 0.84     | 0.0                            | 0.0                             |
| Liquid Conductivity Repeatability | 0.03                   | N           | 1       | 0.78    | 0.71     | 0.0                            | 0.0                             |
| Liquid Conductivity (target)      | 5.00                   | R           | 1.732   | 0.78    | 0.71     | 2.3                            | 2.0                             |
| Liquid Conductivity (mea.)        | 2.50                   | R           | 1.732   | 0.78    | 0.71     | 1.1                            | 1.0                             |
| Temp. unc. - Conductivity         | 3.68                   | R           | 1.732   | 0.78    | 0.71     | 1.7                            | 1.5                             |
| Liquid Permittivity Repeatability | 0.02                   | N           | 1       | 0.23    | 0.26     | 0.0                            | 0.0                             |
| Liquid Permittivity (target)      | 5.00                   | R           | 1.732   | 0.23    | 0.26     | 0.7                            | 0.8                             |
| Liquid Permittivity (mea.)        | 2.50                   | R           | 1.732   | 0.23    | 0.26     | 0.3                            | 0.4                             |
| Temp. unc. - Permittivity         | 0.84                   | R           | 1.732   | 0.23    | 0.26     | 0.1                            | 0.1                             |
| <b>Combined Std. Uncertainty</b>  |                        |             |         |         |          | 12.9%                          | 12.9%                           |
| <b>Coverage Factor for 95 %</b>   |                        |             |         |         |          | K=2                            | K=2                             |
| <b>Expanded STD Uncertainty</b>   |                        |             |         |         |          | 25.9%                          | 25.8%                           |

**Table 17.3. Uncertainty Budget for frequency range 3 GHz to 6 GHz**

## **18. References**

- [1] FCC 47 CFR Part 2 "Frequency Allocations and Radio Treaty Matters; General Rules and Regulations"
- [2] ANSI/IEEE Std. C95.1-1992, "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz", September 1992
- [3] IEEE Std. 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", Sep 2013
- [4] SPEAG DASY System Handbook
- [5] FCC KDB 248227 D01 v02r02, "SAR Guidance for IEEE 802.11 (WiFi) Transmitters", Oct 2015.
- [6] FCC KDB 447498 D01 v06, "Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies", Oct 2015
- [7] FCC KDB 648474 D04 v01r03, "SAR Evaluation Considerations for Wireless Handsets", Oct 2015.
- [8] FCC KDB 941225 D01 v03r01, "3G SAR MEAUREMENT PROCEDURES", Oct 2015
- [9] FCC KDB 941225 D05 v02r05, "SAR Evaluation Considerations for LTE Devices", Dec 2015
- [10] FCC KDB 941225 D05A v01r02, "Rel. 10 LTE SAR Test Guidance and KDB Inquiries", Oct 2015
- [11] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.
- [12] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.
- [13] FCC KDB 865664 D02 v01r02, "RF Exposure Compliance Reporting and Documentation Considerations" Oct 2015.