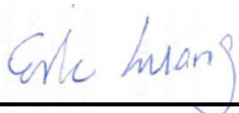


# FCC SAR Test Report

APPLICANT : Motorola Mobility LLC  
EQUIPMENT : Mobile Cellular Phone  
BRAND NAME : Motorola  
MODEL NAME : XT1929-4(SS)  
MARKETING NAME : Moto Z3 Play  
FCC ID : IHDT56XE1  
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.)



## Table of Contents

|                                                                  |            |
|------------------------------------------------------------------|------------|
| <b>1. Statement of Compliance .....</b>                          | <b>4</b>   |
| <b>2. Administration Data .....</b>                              | <b>5</b>   |
| <b>3. Guidance Applied.....</b>                                  | <b>5</b>   |
| <b>4. Equipment Under Test (EUT) Information.....</b>            | <b>6</b>   |
| 4.1 General Information .....                                    | 6          |
| 4.2 General LTE SAR Test and Reporting Considerations.....       | 8          |
| 4.3 Proximity Sensor Triggering Test.....                        | 11         |
| <b>5. RF Exposure Limits.....</b>                                | <b>17</b>  |
| 5.1 Uncontrolled Environment.....                                | 17         |
| 5.2 Controlled Environment.....                                  | 17         |
| <b>6. Specific Absorption Rate (SAR).....</b>                    | <b>18</b>  |
| 6.1 Introduction .....                                           | 18         |
| 6.2 SAR Definition.....                                          | 18         |
| <b>7. System Description and Setup .....</b>                     | <b>19</b>  |
| 7.1 E-Field Probe .....                                          | 20         |
| 7.2 Data Acquisition Electronics (DAE) .....                     | 20         |
| 7.3 Phantom.....                                                 | 21         |
| 7.4 Device Holder.....                                           | 22         |
| <b>8. Measurement Procedures .....</b>                           | <b>23</b>  |
| 8.1 Spatial Peak SAR Evaluation.....                             | 23         |
| 8.2 Power Reference Measurement.....                             | 24         |
| 8.3 Area Scan .....                                              | 24         |
| 8.4 Zoom Scan.....                                               | 25         |
| 8.5 Volume Scan Procedures.....                                  | 25         |
| 8.6 Power Drift Monitoring.....                                  | 25         |
| <b>9. Test Equipment List.....</b>                               | <b>26</b>  |
| <b>10. System Verification .....</b>                             | <b>27</b>  |
| 10.1 Tissue Simulating Liquids.....                              | 27         |
| 10.2 Tissue Verification .....                                   | 28         |
| 10.3 System Performance Check Results.....                       | 30         |
| <b>11. RF Exposure Positions.....</b>                            | <b>32</b>  |
| 11.1 Ear and handset reference point .....                       | 32         |
| 11.2 Definition of the cheek position.....                       | 33         |
| 11.3 Definition of the tilt position.....                        | 34         |
| 11.4 Body Worn Accessory .....                                   | 35         |
| 11.5 Product Specific .....                                      | 35         |
| 11.6 Wireless Router.....                                        | 36         |
| <b>12. Conducted RF Output Power (Unit: dBm).....</b>            | <b>37</b>  |
| <b>13. Antenna Location .....</b>                                | <b>172</b> |
| <b>14. SAR Test Results .....</b>                                | <b>173</b> |
| 14.1 Head SAR .....                                              | 175        |
| 14.2 Hotspot SAR .....                                           | 181        |
| 14.3 Product Specific SAR.....                                   | 189        |
| 14.4 Body Worn Accessory SAR.....                                | 191        |
| 14.5 Repeated SAR Measurement .....                              | 197        |
| 14.6 LTE Band 41 Power Class 2 and Power Class 3 Linearity ..... | 198        |
| <b>15. Simultaneous Transmission Analysis .....</b>              | <b>199</b> |
| 15.1 Head Exposure Conditions .....                              | 200        |
| 15.2 Hotspot Exposure Conditions.....                            | 202        |
| 15.3 Body-Worn Accessory Exposure Conditions .....               | 205        |
| 15.4 Product Specific Conditions .....                           | 206        |
| 15.5 SPLSR Evaluation and Analysis.....                          | 208        |
| <b>16. Supplemental tuner tests results.....</b>                 | <b>234</b> |
| 16.1 Supplemental Head SAR results.....                          | 234        |
| 16.2 Supplemental Body SAR results .....                         | 236        |
| <b>17. Uncertainty Assessment .....</b>                          | <b>237</b> |
| <b>18. References.....</b>                                       | <b>238</b> |
| <b>Appendix A. Plots of System Performance Check</b>             |            |
| <b>Appendix B. Plots of High SAR Measurement</b>                 |            |
| <b>Appendix C. DASY Calibration Certificate</b>                  |            |
| <b>Appendix D. Test Setup Photos</b>                             |            |

## Revision History

| REPORT NO. | VERSION | DESCRIPTION             | ISSUED DATE   |
|------------|---------|-------------------------|---------------|
| FA811821   | Rev. 01 | Initial issue of report | Mar. 06, 2018 |
|            |         |                         |               |
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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 , XT1929-4(SS)**, are as follows.

| Equipment Class  | Frequency Band   | Highest SAR Summary   |                            |                          |                                   | Highest Simultaneous Transmission 1g SAR (W/kg) |
|------------------|------------------|-----------------------|----------------------------|--------------------------|-----------------------------------|-------------------------------------------------|
|                  |                  | Head (Separation 0mm) | Body-worn (Separation 5mm) | Hotspot (Separation 5mm) | Product Specific (Separation 0mm) |                                                 |
|                  |                  | 1g SAR (W/kg)         |                            |                          | 10g SAR (W/kg)                    |                                                 |
| Licensed         | GSM850           | 0.18                  | 0.68                       | 0.68                     |                                   | 1.57                                            |
|                  | GSM1900          | 0.13                  | 1.15                       | 1.14                     | 1.38                              |                                                 |
|                  | WCDMA II         | 0.28                  | 1.18                       | 1.12                     | 3.02                              |                                                 |
|                  | WCDMA IV         | 0.31                  | 0.99                       | 1.18                     | 3.15                              |                                                 |
|                  | WCDMA V          | 0.41                  | 0.90                       | 0.90                     |                                   |                                                 |
|                  | CDMA BC0         | 0.30                  | 1.03                       | 0.98                     |                                   |                                                 |
|                  | CDMA BC1         | 0.35                  | 1.07                       | 1.00                     | 2.80                              |                                                 |
|                  | CDMA BC10        | 0.36                  | 0.97                       | 0.97                     |                                   |                                                 |
|                  | LTE Band 7       | 0.80                  | 1.10                       | 1.10                     | 3.19                              |                                                 |
|                  | LTE Band 12 / 17 | 0.32                  | 1.16                       | 1.16                     |                                   |                                                 |
|                  | LTE Band 13      | 0.24                  | 1.14                       | 1.14                     |                                   |                                                 |
|                  | LTE Band 14      | 0.36                  | 1.07                       | 1.07                     |                                   |                                                 |
|                  | LTE Band 2 / 25  | 0.26                  | 1.08                       | 1.15                     | 2.63                              |                                                 |
|                  | LTE Band 5 / 26  | 0.36                  | 0.92                       | 0.92                     |                                   |                                                 |
|                  | LTE Band 30      | 0.34                  | 1.07                       | 1.07                     | 3.06                              |                                                 |
|                  | LTE Band 38 / 41 | 0.62                  | 1.12                       | 1.12                     | 3.20                              |                                                 |
|                  | LTE Band 4 / 66  | 0.25                  | 0.71                       | 1.06                     | 3.14                              |                                                 |
|                  | LTE Band 71      | 0.20                  | 0.87                       | 0.87                     |                                   |                                                 |
| DTS              | 2.4GHz WLAN      | 1.13                  | 1.01                       | 1.20                     | 1.48                              | 1.57                                            |
| NII              | 5GHz WLAN        | 1.18                  | 1.02                       | 0.73                     | 2.87                              | 1.56                                            |
| DSS              | Bluetooth        | 0.14                  | 0.06                       | 0.08                     |                                   | 1.21                                            |
| Date of Testing: |                  | 2018/2/15 ~ 2018/3/10 |                            |                          |                                   |                                                 |

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) 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

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test.

| 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, Chicago IL 60654 USA |

| Manufacturer |                                                    |
|--------------|----------------------------------------------------|
| Company Name | Motorola Mobility LLC                              |
| Address      | 222 W,Merchandise Mart Plaza, Chicago IL 60654 USA |

## 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                              | XT1929-4(SS)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Marketing Name                          | Moto Z3 Play                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| FCC ID                                  | IHDT56XE1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| IMEI Code                               | 351886090018877                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 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 14: 790.5 MHz ~ 795.5 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>LTE Band 71: 665.5 MHz ~ 695.5 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, 64QAM<br>WLAN 2.4GHz : 802.11b/g/n HT20<br>WLAN 5GHz : 802.11a/n/ac HT20/HT40/VHT20/VHT40/VHT80<br>Bluetooth BR/EDR/LE<br>NFC:ASK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

| Product Feature & Specification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HW Version                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | DVT2                                                                                                                                                               |
| SW Version                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | OPW28.22                                                                                                                                                           |
| 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>This device implements antenna tuning techniques for several WWAN (cellular) operating modes and frequencies for the purpose of improving antenna efficiency over a broad range of frequencies. Specifically, this technique is employed in the GSM, WCDMA and LTE modes but not supports LTE B7/B30/B38/B41. 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> <li>This device 2.4GHz / 5.8GHz WLAN supports Hotspot operation.</li> <li>When operating in a call in talk position at the head, the device utilizes the At-Head power table. When operating in a body-worn condition, with proximity of the user's body at the front or back of the device, the device operates in the Body-Worn power table. If neither the At-Head or Body-Worn condition is detected, but the device is operating in WiFi Hotspot mode, the device utilizes the Hotspot power table. When operating in any other radiated condition, the device uses the Default power table.</li> <li>The device employs proximity sensors that detect the presence of the user's body at the front or back faces of the device. The control logic is such that, when this front or back body-worn condition is detected and the device is operating in a mode where on-body operation may be expected, the conducted power is applied in the Body-Worn power table. In this condition (user's body detected at front or back face of the device), the Body-Worn power table is applied regardless whether or not the Wi-Fi hotspot mode is active.</li> <li>Note that the Body-Worn Reduced power tables and detection schemes described above are sufficient to assure that body-worn SAR limits are met, regardless whether the Wi-Fi hotspot feature is active or not. However, because FCC has an additional specific test definition and limit for Wi-Fi hotspot mode operation, the additional Hotspot power table is applied if hand-held operation is indicated (i.e., not At-Head or Body-Worn) when the Wi-Fi hotspot feature is active. This ensures the 4 edges of the device comply with the letter of the Wi-Fi Hotspot requirement.</li> <li>The device additionally employs proximity sensors that detect the presence of tissue near the currently active transmit antenna (if that antenna may require reduced power relative the Default power table in order to meet extremity SAR limits). The control logic is such that, if the Body-Worn, At-Head or WiFi Hotspot conditions are not detected, but tissue (as a finger or hand, for example) is detected near the transmitting antenna, the Handheld Reduced power table will be applied</li> <li>Reduced power for different RF exposure conditions:<br/> Head: If audio is present at the earpiece, the device will reduce output powers on the WLAN transmitter for held-to-ear and detail descriptions of the power reduction mechanism are included in the operational description.<br/> Body worn: The device employs proximity sensors that detect the presence of the user's body at the front or back faces of the device, when operating in near-body condition by end user, the device will reduced maximum output powers on the GSM1900, WCDMA B2 / B4 / B5, CDMA BC0 / BC1 / BC10, LTE B2 / B4 / B5 / B7 / B14 / B25 / B26 / B30 / B66 / B38 / B41 and WLAN transmitter and detail descriptions of the power reduction mechanism are included in the operational description.<br/> Hotspot: When the mobile hotspot session is turn on by end user, the device will reduced output powers on the GSM1900, WCDMA B2 / B4 / B5, CDMA BC0 / BC1 / BC10, LTE B2 / B4 / B5 / B7 / B14 / B25 / B26 / B30 / B66 / B38 / B41 and WLAN transmitter and detail descriptions of the power reduction mechanism are included in the operational description.<br/> Handheld: The device additionally employs proximity sensors that detect the presence of tissue near the currently active transmit antenna, the device will reduced output powers on the GSM1900, WCDMA B2 / B4, CDMA BC1 and LTE B2 / B4 / B5 / B7 / B14 / B25 / B26 / B30 / B66 / B38 / B41 transmitter and detail descriptions of the power reduction mechanism are included in the operational description.</li> </ol> |                                                                                                                                                                    |

## 4.2 General LTE SAR Test and Reporting Considerations

| Summarized necessary items addressed in KDB 941225 D05 v02r05 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                               |         |       |        |        |        |          |
|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------|--------|--------|--------|----------|
| FCC ID                                                        | IHDT56XE1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                               |         |       |        |        |        |          |
| 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 14: 790.5 MHz ~ 795.5 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>LTE Band 71: 665.5 MHz ~ 695.5 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 14: 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<br>LTE Band 71: 5MHz, 10MHz, 15MHz, 20MHz |                                                                                                                                                                                               |         |       |        |        |        |          |
| uplink modulations used                                       | QPSK / 16QAM / 64QAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                               |         |       |        |        |        |          |
| LTE Voice / Data requirements                                 | Voice and Data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                               |         |       |        |        |        |          |
| LTE MPR permanently built-in by design                        | Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                               |         |       |        |        |        |          |
|                                                               | Modulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Channel bandwidth / Transmission bandwidth (N <sub>RB</sub> )                                                                                                                                 |         |       |        |        |        | MPR (dB) |
|                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1.4 MHz                                                                                                                                                                                       | 3.0 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz |          |
|                                                               | QPSK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | > 5                                                                                                                                                                                           | > 4     | > 8   | > 12   | > 16   | > 18   | ≤ 1      |
|                                                               | 16 QAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ≤ 5                                                                                                                                                                                           | ≤ 4     | ≤ 8   | ≤ 12   | ≤ 16   | ≤ 18   | ≤ 1      |
|                                                               | 16 QAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | > 5                                                                                                                                                                                           | > 4     | > 8   | > 12   | > 16   | > 18   | ≤ 2      |
|                                                               | 64 QAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ≤ 5                                                                                                                                                                                           | ≤ 4     | ≤ 8   | ≤ 12   | ≤ 16   | ≤ 18   | ≤ 2      |
|                                                               | 64 QAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | > 5                                                                                                                                                                                           | > 4     | > 8   | > 12   | > 16   | > 18   | ≤ 3      |
|                                                               | 256 QAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ≥ 1                                                                                                                                                                                           |         |       |        |        |        | ≤ 5      |
|                                                               | 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 operating in hotspot mode or Near-body or Product Specific that LTE B2 / B4 / B5 / B7 / B14 / B25 / B26 / B30 / B66 / B38 / B41 power reduction applied to satisfy SAR compliance.                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                               |         |       |        |        |        |          |
| 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                | (1) This device supports LTE Carrier Aggregation (CA) in the uplink for LTE Band 41 with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per FCC Guidance.<br>(2) This device supports maximum of 3 carriers in the downlink and 2 carriers in the uplink. Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.                                                                                                                                                                     |                                                                                                                                                                                               |         |       |        |        |        |          |

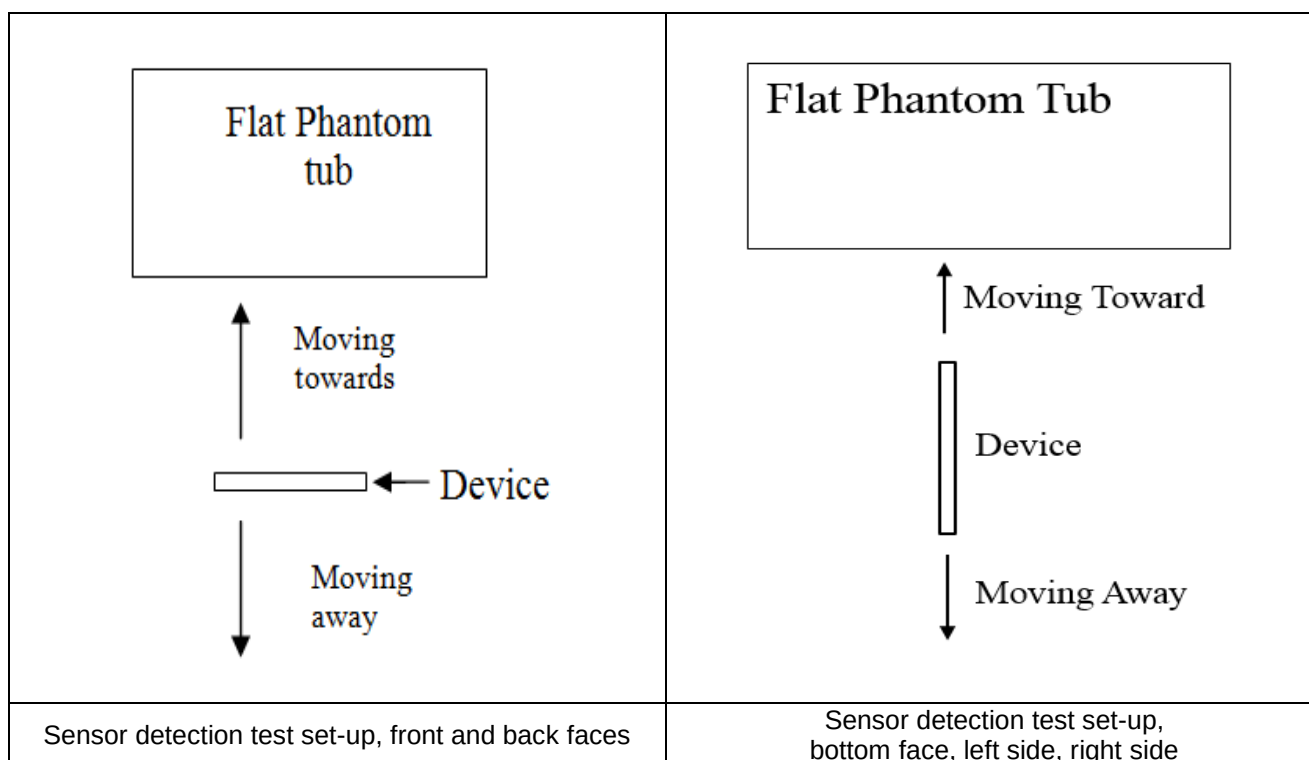
| Transmission (H, M, L) channel numbers and frequencies in each LTE band |                   |             |                  |             |                  |             |                  |             |                  |             |                  |             |  |  |
|-------------------------------------------------------------------------|-------------------|-------------|------------------|-------------|------------------|-------------|------------------|-------------|------------------|-------------|------------------|-------------|--|--|
| 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 14                                                             |                   |             |                  |             |                  |             |                  |             |                  |             |                  |             |  |  |
|                                                                         | Bandwidth 5 MHz   |             |                  |             | Bandwidth 10 MHz |             |                  |             |                  |             |                  |             |  |  |
|                                                                         | Channel #         |             | Channel #        |             | Channel #        |             | Freq.(MHz)       |             |                  |             |                  |             |  |  |
| L                                                                       | 23305             |             | 790.5            |             | 23330            |             | 793              |             |                  |             |                  |             |  |  |
| M                                                                       | 23330             |             | 793              |             |                  |             |                  |             |                  |             |                  |             |  |  |
| H                                                                       | 23355             |             | 795.5            |             |                  |             |                  |             |                  |             |                  |             |  |  |
| 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 |             | Bandwidth 20 MHz |             |
|             | Ch. #             | Freq. (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       | 26790            | 823.5       |
| M           | 26865             | 831.5       | 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       | 26940            | 839.5       |
| 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 |             | Bandwidth 25 MHz |             | Bandwidth 30 MHz |             |
|             | Ch. #             | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz)      | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) |
| L           | 37775             | 2572.5      | 37800            | 2575        | 37825            | 2577.5           | 37850            | 2580        | 37875            | 2582.5      | 37900            | 2585        |
| M           | 38000             | 2595        | 38000            | 2595        | 38000            | 2595             | 38000            | 2595        | 38000            | 2595        | 38000            | 2595        |
| H           | 38225             | 2617.5      | 38200            | 2615        | 38175            | 2612.5           | 38150            | 2610        | 38125            | 2607.5      | 38100            | 2605        |
| LTE Band 41 |                   |             |                  |             |                  |                  |                  |             |                  |             |                  |             |
|             | Bandwidth 5 MHz   |             | Bandwidth 10 MHz |             | Bandwidth 15 MHz |                  | Bandwidth 20 MHz |             | Bandwidth 25 MHz |             | Bandwidth 30 MHz |             |
|             | Ch. #             | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz)      | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) |
| L           | 39675             | 2498.5      | 39700            | 2501        | 39725            | 2503.5           | 39750            | 2506        | 39775            | 2508.5      | 39800            | 2511        |
| L<br>M      | 40148             | 2545.8      | 40160            | 2547        | 40173            | 2548.3           | 40185            | 2549.5      | 40197            | 2550.5      | 40210            | 2551.5      |
| M           | 40620             | 2593        | 40620            | 2593        | 40620            | 2593             | 40620            | 2593        | 40620            | 2593        | 40620            | 2593        |
| H<br>M      | 41093             | 2640.3      | 41080            | 2639        | 41068            | 2637.8           | 41055            | 2636.5      | 41042            | 2635        | 41030            | 2634        |
| H           | 41565             | 2687.5      | 41540            | 2685        | 41515            | 2682.5           | 41490            | 2680        | 41465            | 2677.5      | 41440            | 2675        |
| 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        |
| LTE Band 71 |                   |             |                  |             |                  |                  |                  |             |                  |             |                  |             |
|             | Bandwidth 5 MHz   |             | Bandwidth 10 MHz |             | Bandwidth 15 MHz |                  | Bandwidth 20 MHz |             | Bandwidth 25 MHz |             | Bandwidth 30 MHz |             |
|             | Ch. #             | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz)      | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) |
| L           | 133147            | 665.5       | 133172           | 668         | 133197           | 670.5            | 133222           | 673         | 133247           | 675.5       | 133272           | 678         |
| M           | 133247            | 675.5       | 133272           | 678         | 133297           | 680.5            | 133322           | 683         | 133347           | 685.5       | 133372           | 688         |
| H           | 133447            | 695.5       | 133422           | 693         | 133397           | 690.5            | 133372           | 688         | 133347           | 685.5       | 133322           | 683         |

### 4.3 Proximity Sensor Triggering Test

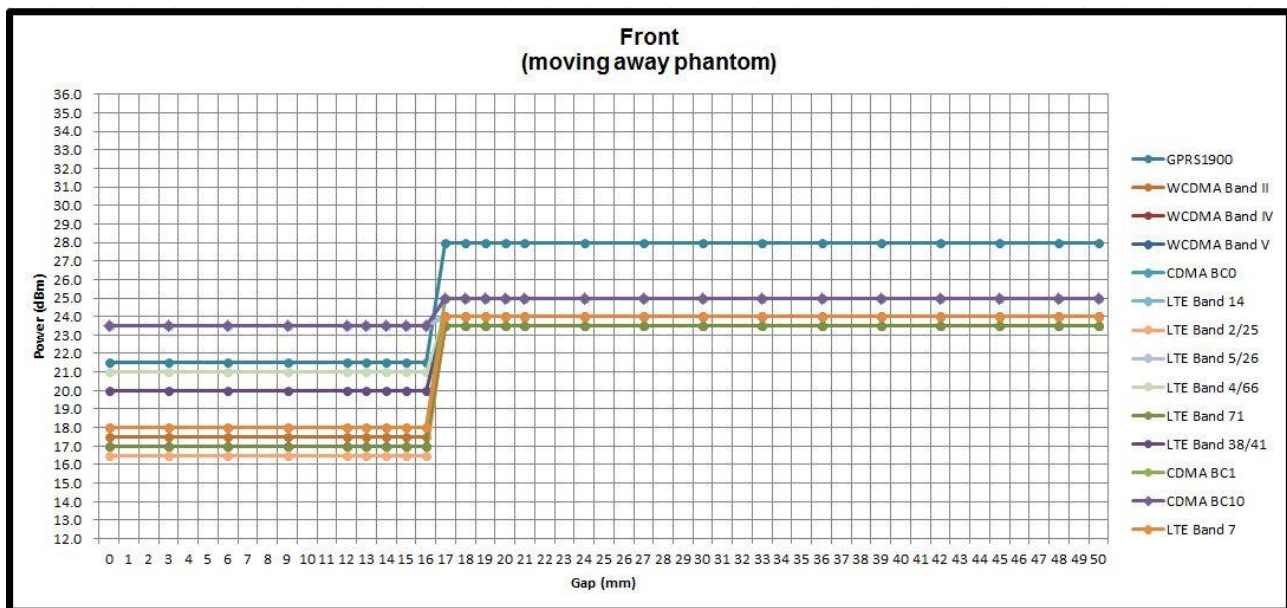
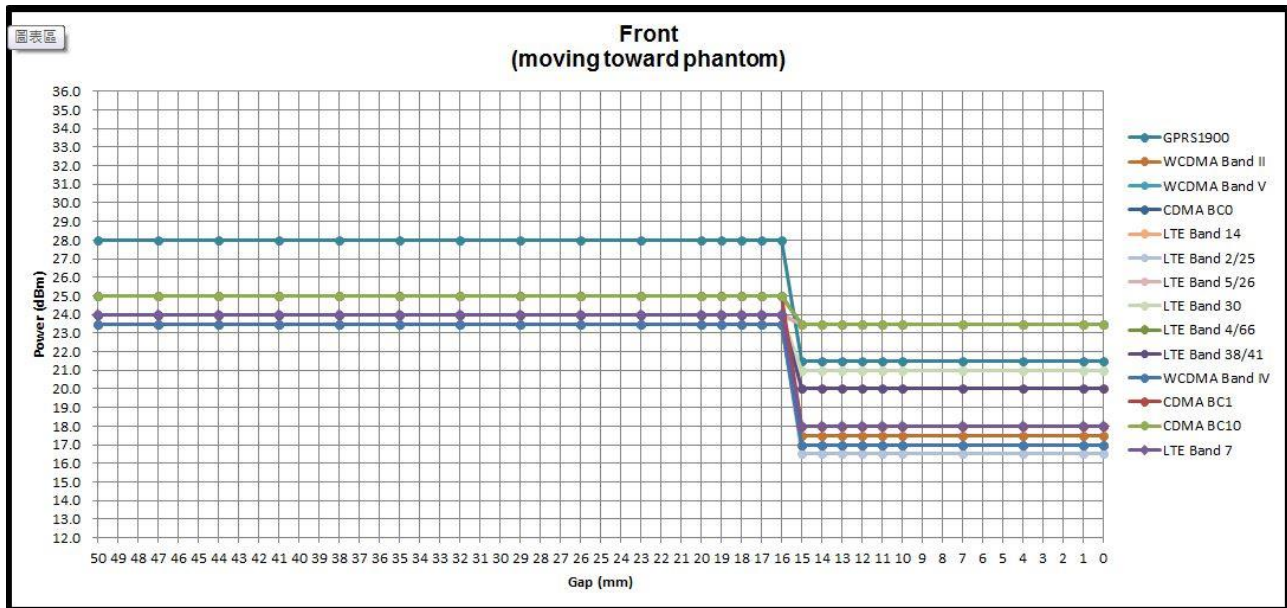
#### <Proximity Sensor Triggering Distance>:

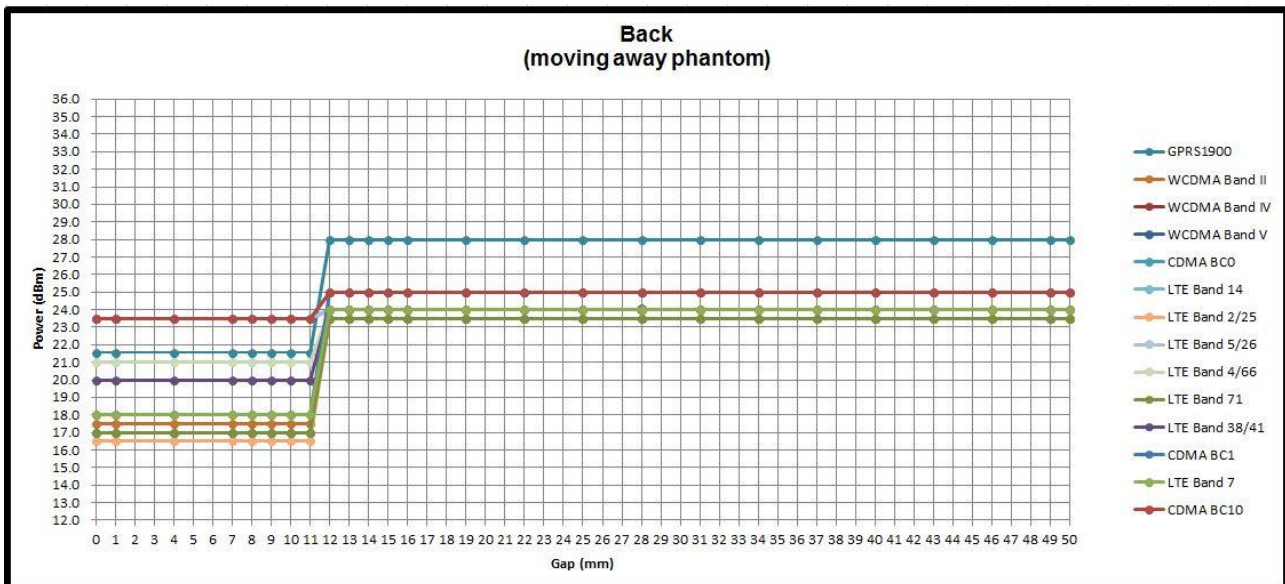
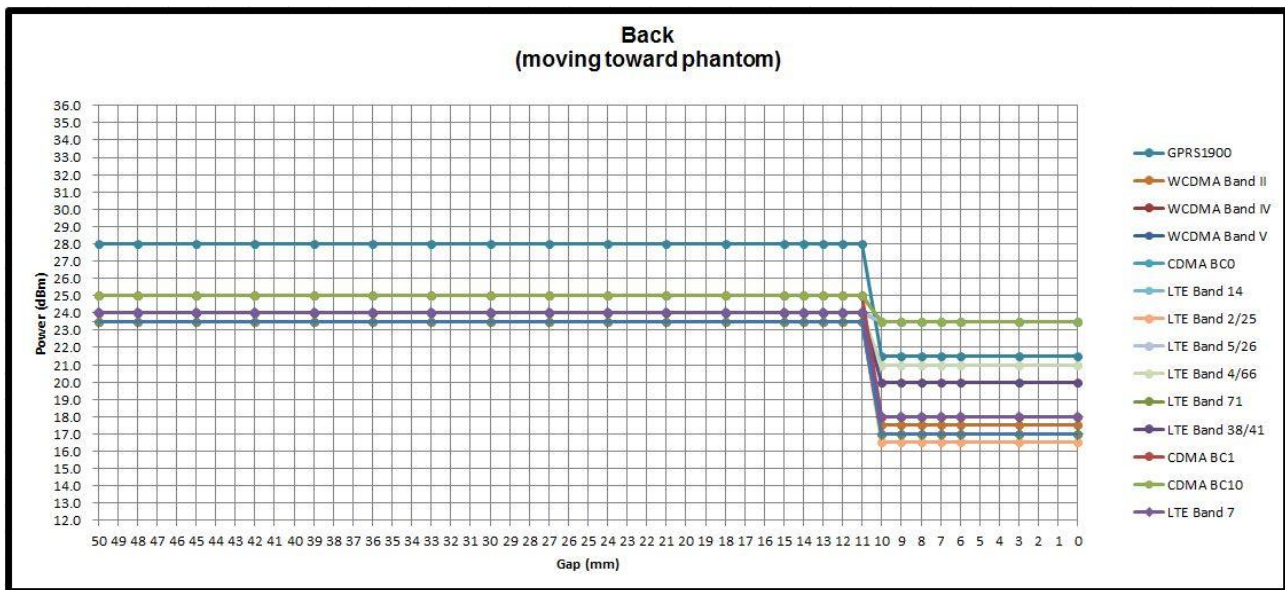
1. Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed and the tissue-equivalent medium for highest frequency (2600MHz) and lowest (750MHz) frequency was used for proximity sensor triggering testing.
2. Capacitive proximity sensors placed coincident with antenna elements at the top and bottom ends of the phone are utilized to determine when the device comes in proximity of the user's body at the front or back of the device.
3. The output power will reduce to body worn power level when top and bottom sensor pad be detected.
4. The sensors used to detect the proximity of the user's body (Body-Worn condition) at the front or back surface of the device use a detection threshold distance. The data shown in the sections below shows the distance(s).
5. The device additionally employs proximity sensors that detect the presence of tissue near the currently active transmit antenna (if that antenna may require reduced power relative the Default power table in order to meet extremity SAR limits). The control logic is such that, if the Body-Worn, At-Head or WiFi Hotspot conditions are not detected, but tissue (as a finger or hand, for example) is detected near the transmitting antenna, the Handheld Reduced power table will be applied
6. When the sensor is active, the device will reduced maximum output powers on the GSM1900, WCDMA B2 / B4 / B5, CDMA BC0 / BC1 / BC10 and LTE B2 / B4 / B5 / B7 / B14 / B25 / B26 / B30 / B66 / B38 / B41 transmitter.

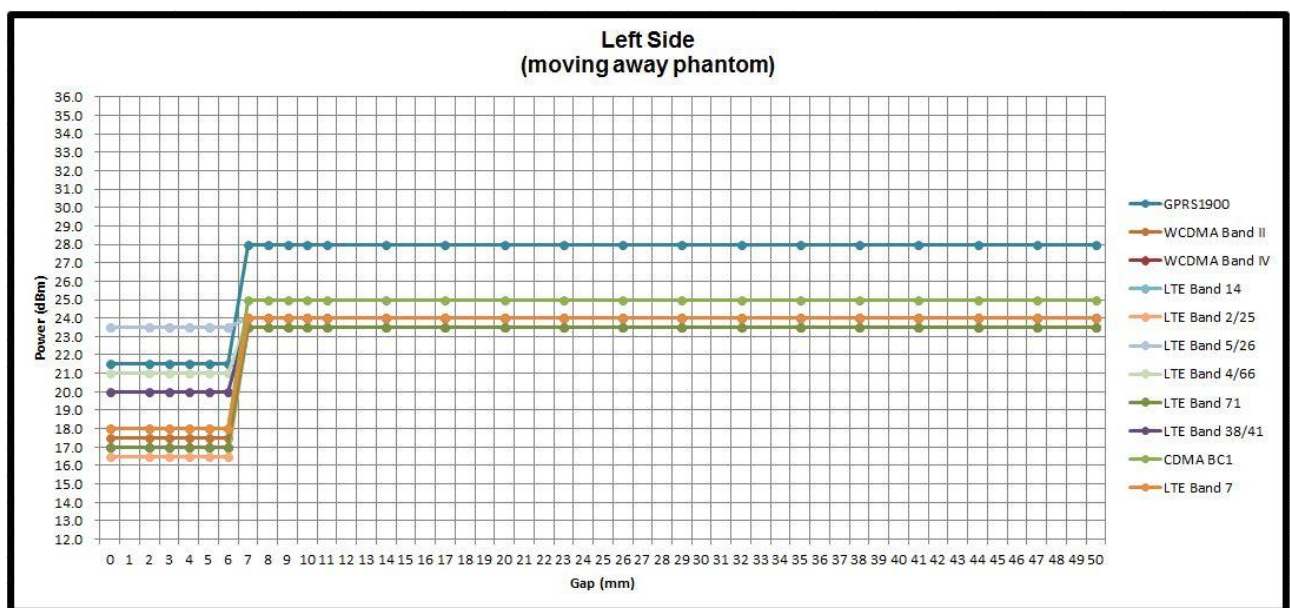
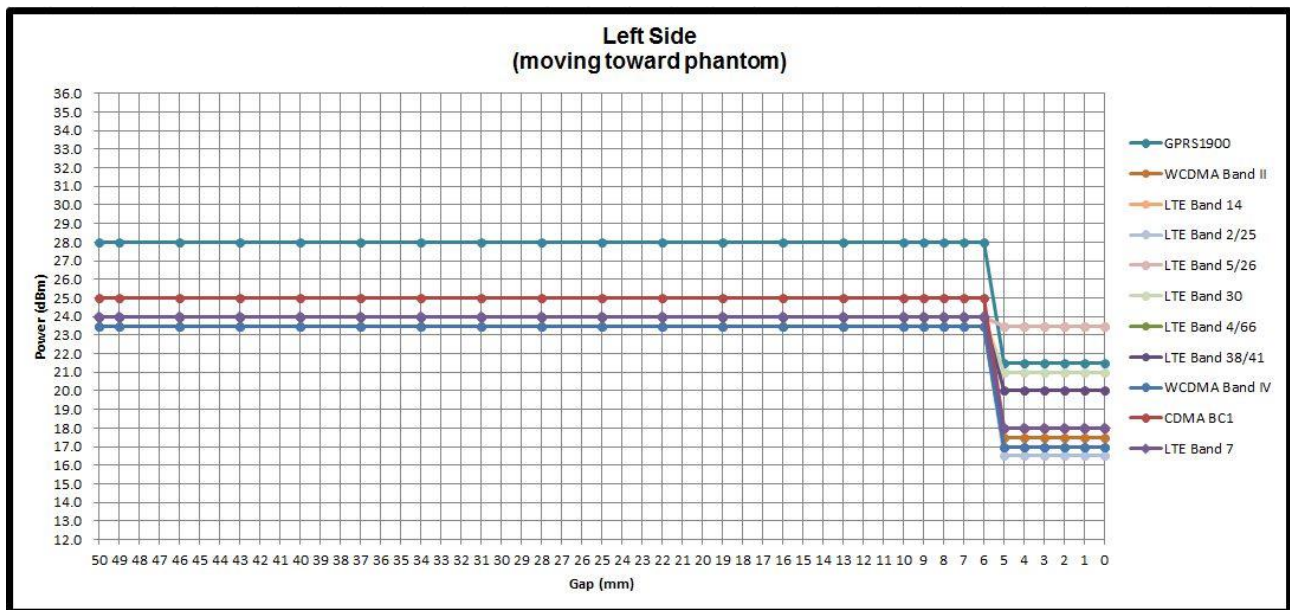


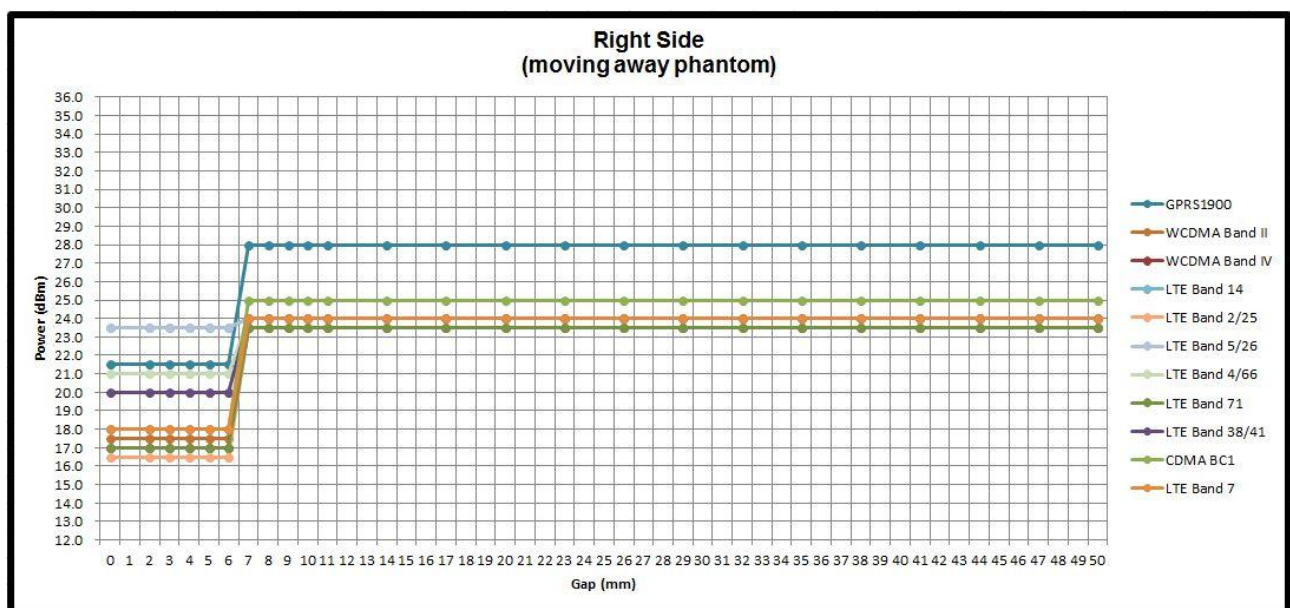
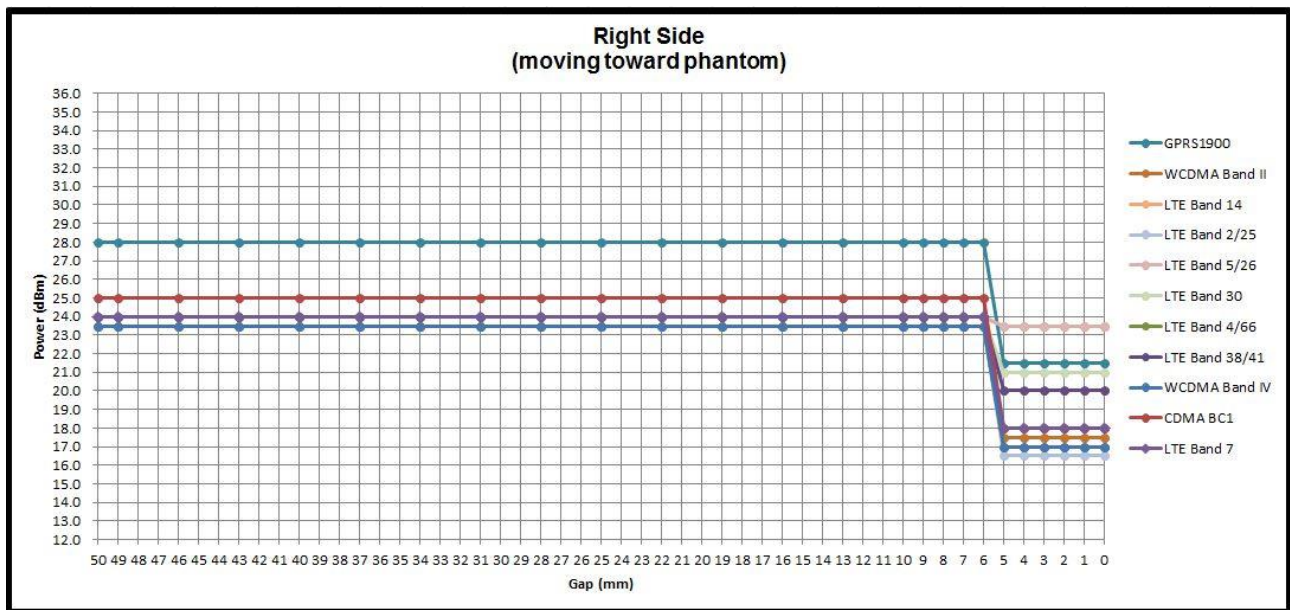
| Proximity Sensor Trigger Distance (mm) |                |             |                |             |                |             |                |             |                |             |
|----------------------------------------|----------------|-------------|----------------|-------------|----------------|-------------|----------------|-------------|----------------|-------------|
| Position                               | Front          |             | Back           |             | Bottom Side    |             | Right Side     |             | Left Side      |             |
| Position                               | Moving towards | Moving away | Moving towards | Moving away | Moving towards | Moving away | Moving towards | Moving away | Moving towards | Moving away |
| Minimum                                | 15             | 16          | 10             | 11          | 5              | 6           | 5              | 6           | 5              | 6           |

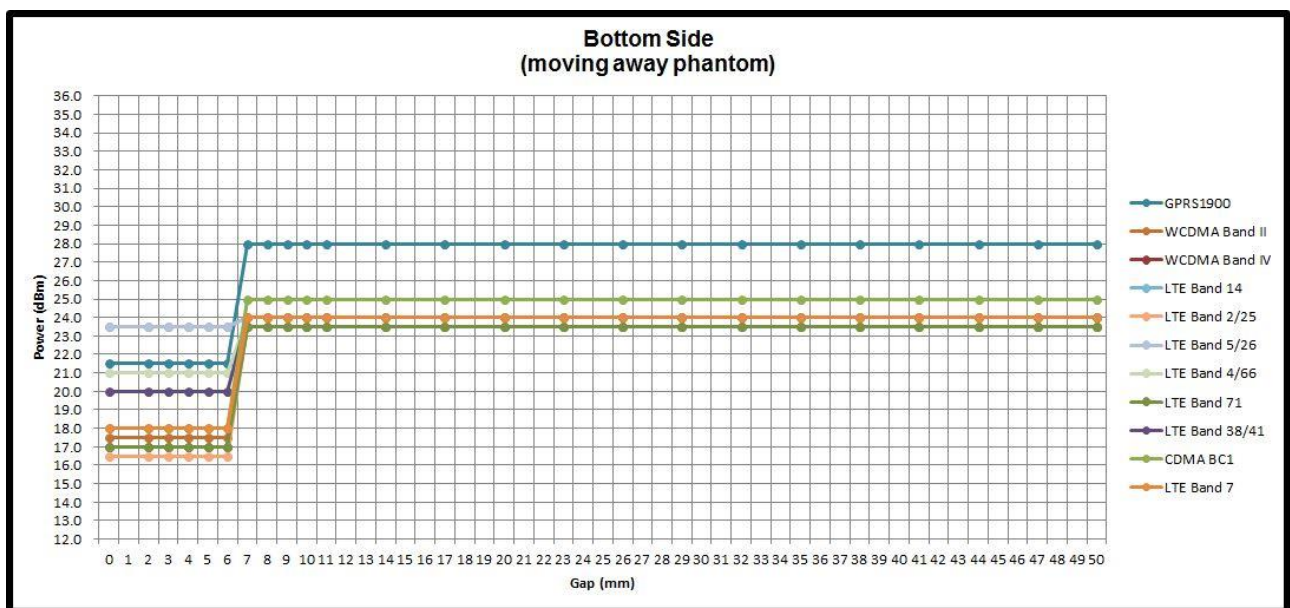
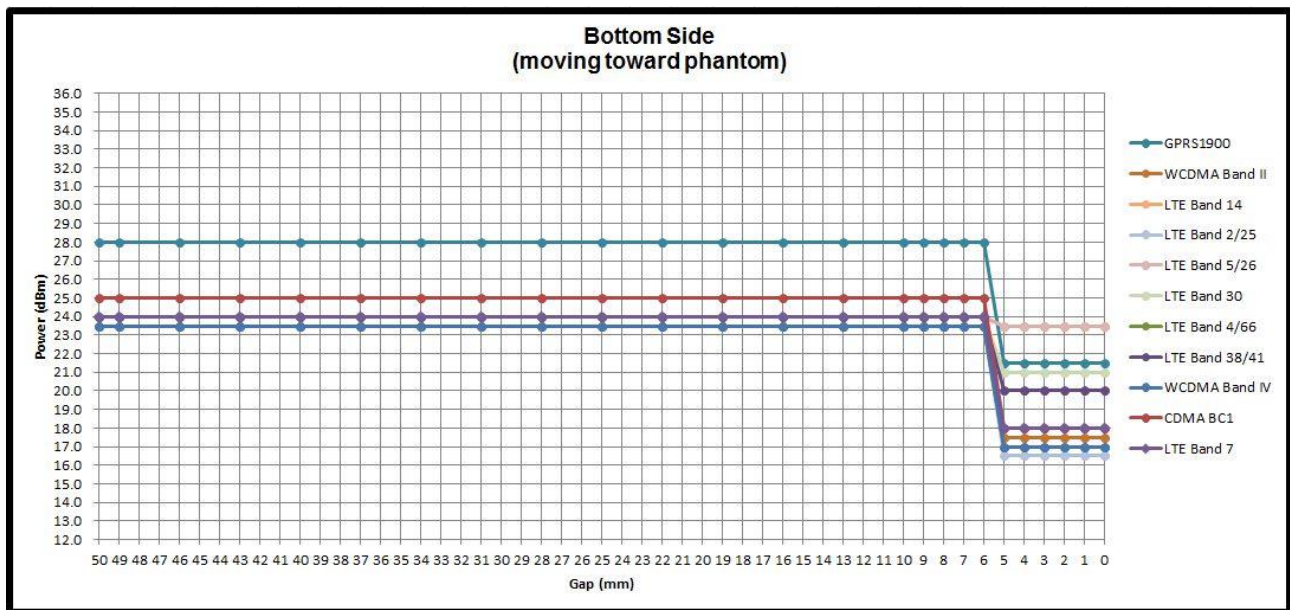
<Sensor triggers distance V.S Measure power>











## 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 (ρ). The equation description is as below:

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

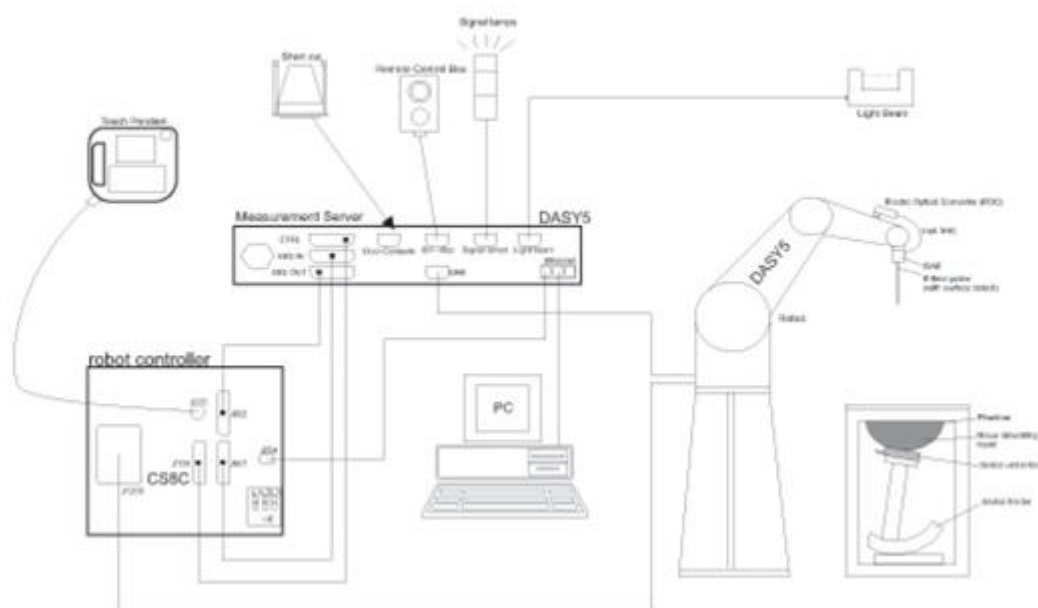
SAR is expressed in units of Watts per kilogram (W/kg)

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

Where: σ is the conductivity of the tissue, ρ 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 Appendix D 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. 22, 2017 | May. 21, 2018 |
| SPEAG         | 835MHz System Validation Kit    | D835V2        | 499            | Mar. 21, 2017 | Mar. 20, 2018 |
| SPEAG         | 1750MHz System Validation Kit   | D1750V2       | 1068           | Nov. 15, 2017 | Nov. 14, 2018 |
| SPEAG         | 1900MHz System Validation Kit   | D1900V2       | 5d041          | Sep. 28, 2017 | Sep. 27, 2018 |
| SPEAG         | 2300MHz System Validation Kit   | D2300V2       | 1006           | Jan. 17, 2018 | Jan. 16, 2019 |
| SPEAG         | 2450MHz System Validation Kit   | D2450V2       | 736            | Sep. 18, 2017 | Sep. 17, 2018 |
| SPEAG         | 2600MHz System Validation Kit   | D2600V2       | 1008           | Sep. 18, 2017 | Sep. 17, 2018 |
| SPEAG         | 5GHz System Validation Kit      | D5GHzV2       | 1006           | Sep. 26, 2017 | Sep. 25, 2018 |
| SPEAG         | Data Acquisition Electronics    | DAE3          | 393            | Aug. 10, 2017 | Aug. 09, 2018 |
| SPEAG         | Data Acquisition Electronics    | DAE3          | 495            | May. 22, 2017 | May. 21, 2018 |
| SPEAG         | Data Acquisition Electronics    | DAE4          | 1399           | Nov. 16, 2017 | Nov. 15, 2018 |
| SPEAG         | Data Acquisition Electronics    | DAE4          | 854            | May. 02, 2017 | May. 01, 2018 |
| SPEAG         | Data Acquisition Electronics    | DAE4          | 853            | Jul. 19, 2017 | Jul. 18, 2018 |
| SPEAG         | Dosimetric E-Field Probe        | EX3DV4        | 3578           | May. 05, 2017 | May. 04, 2018 |
| SPEAG         | Dosimetric E-Field Probe        | EX3DV4        | 3925           | May. 24, 2017 | May. 23, 2018 |
| SPEAG         | Dosimetric E-Field Probe        | EX3DV4        | 3931           | Sep. 29, 2017 | Sep. 28, 2018 |
| SPEAG         | Dosimetric E-Field Probe        | ES3DV3        | 3169           | May. 11, 2017 | May. 10, 2018 |
| SPEAG         | Dosimetric E-Field Probe        | EX3DV4        | 7306           | Jul. 24, 2017 | Jul. 23, 2018 |
| SPEAG         | Dosimetric E-Field Probe        | EX3DV4        | 3976           | Jan. 23, 2018 | Jan. 22, 2019 |
| Gencom        | Thermometer                     | TE1           | TM685-1        | Mar. 21, 2017 | Mar. 20, 2018 |
| Gencom        | Thermometer                     | TE1           | TM685-2        | Mar. 21, 2017 | Mar. 20, 2018 |
| WonDer        | Thermometer                     | WD-5016       | TM642-1        | Mar. 17, 2017 | Mar. 16, 2018 |
| WonDer        | Thermometer                     | WD-5016       | TM642-2        | Mar. 17, 2017 | Mar. 16, 2018 |
| WonDer        | Thermometer                     | WD-5016       | TM281-1        | Mar. 17, 2017 | Mar. 16, 2018 |
| Anritsu       | Radio Communication Analyzer    | MT8821C       | 6201341950     | Apr. 20, 2017 | Apr. 19, 2018 |
| Agilent       | Wireless Communication Test Set | E5515C        | MY50266977     | May. 30, 2017 | May. 29, 2018 |
| R&S           | BT Base Station                 | CBT32         | 100522         | Mar. 14, 2017 | Mar. 13, 2018 |
| SPEAG         | Device Holder                   | N/A           | N/A            | N/A           | N/A           |
| Anritsu       | Signal Generator                | MG3710A       | 6201502524     | Dec. 07, 2017 | Dec. 06, 2018 |
| Agilent       | ENA Network Analyzer            | E5071C        | MY46316648     | Jan. 17, 2018 | Jan. 16, 2019 |
| SPEAG         | Dielectric Probe Kit            | DAK-3.5       | 1126           | Sep. 26, 2017 | Sep. 25, 2018 |
| LINE SEIKI    | Digital Thermometer             | LKMelectronic | DTM3000SPEZIAL | Sep. 06, 2017 | Sep. 05, 2018 |
| Anritsu       | Power Meter                     | ML2495A       | 1419002        | May. 15, 2017 | May. 14, 2018 |
| Anritsu       | Power Sensor                    | MA2411B       | 1339124        | May. 15, 2017 | May. 14, 2018 |
| Anritsu       | Power Meter                     | ML2495A       | 1218006        | Oct. 06, 2017 | Oct. 05, 2018 |
| Anritsu       | Power Sensor                    | MA2411B       | 1207363        | Oct. 06, 2017 | Oct. 05, 2018 |
| Agilent       | Spectrum Analyzer               | E4408B        | MY44211028     | Aug. 23, 2017 | Aug. 22, 2018 |
| Anritsu       | Spectrum Analyzer               | MS2830A       | 6201396378     | Jun. 26, 2017 | Jun. 25, 2018 |
| Mini-Circuits | Power Amplifier                 | ZVE-8G+       | D120604        | Mar. 18, 2017 | Mar. 17, 2018 |
| Mini-Circuits | Power Amplifier                 | ZHL-42W+      | QA1344002      | Mar. 18, 2017 | Mar. 17, 2018 |
| 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        |               |

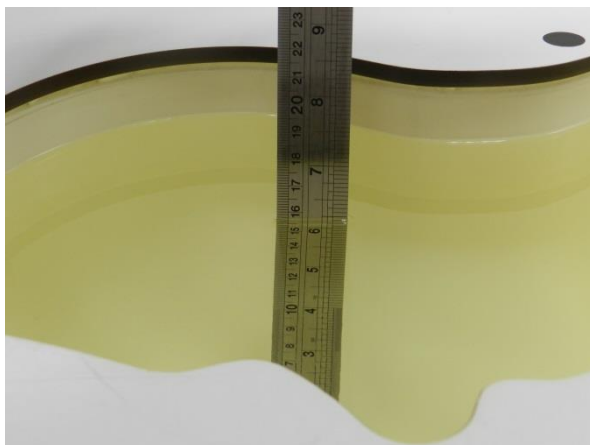
### General Note:

- 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 ( $\epsilon_r$ ) |
|------------------|-----------|-----------|---------------|----------|---------------|----------|---------------------------|-------------------------------|
| For Head         |           |           |               |          |               |          |                           |                               |
| 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                          |
| For Body         |           |           |               |          |               |          |                           |                               |
| 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>**

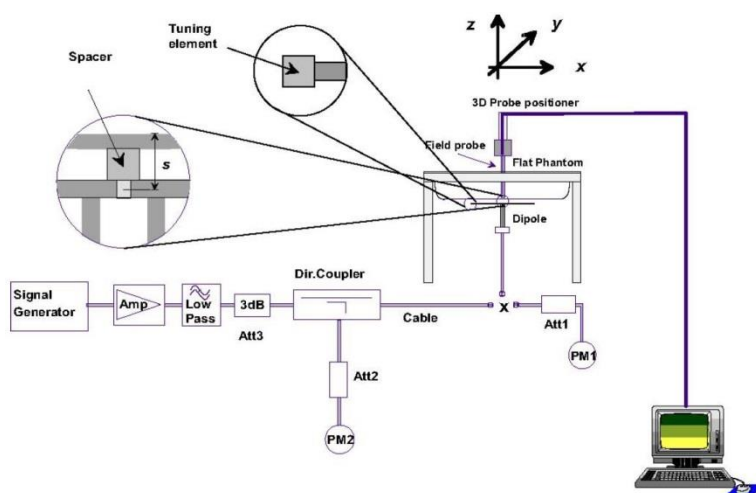
| Frequency (MHz) | Tissue Type | Liquid Temp. (°C) | Conductivity (σ) | Permittivity (ε <sub>r</sub> ) | Conductivity Target (σ) | Permittivity Target (ε <sub>r</sub> ) | Delta (σ) (%) | Delta (ε <sub>r</sub> ) (%) | Limit (%) | Date      |
|-----------------|-------------|-------------------|------------------|--------------------------------|-------------------------|---------------------------------------|---------------|-----------------------------|-----------|-----------|
| 750             | HSL         | 22.5              | 0.892            | 42.916                         | 0.89                    | 41.90                                 | 0.22          | 2.42                        | ±5        | 2018/2/16 |
| 750             | MSL         | 22.6              | 0.971            | 53.835                         | 0.96                    | 55.50                                 | 1.15          | -3.00                       | ±5        | 2018/2/17 |
| 835             | HSL         | 22.5              | 0.888            | 41.364                         | 0.90                    | 41.50                                 | -1.33         | -0.33                       | ±5        | 2018/2/16 |
| 835             | MSL         | 22.2              | 0.975            | 55.780                         | 0.97                    | 55.20                                 | 0.52          | 1.05                        | ±5        | 2018/2/17 |
| 835             | MSL         | 22.4              | 0.977            | 56.391                         | 0.97                    | 55.20                                 | 0.72          | 2.16                        | ±5        | 2018/2/19 |
| 1750            | HSL         | 22.4              | 1.343            | 41.090                         | 1.37                    | 40.10                                 | -1.97         | 2.47                        | ±5        | 2018/2/15 |
| 1750            | HSL         | 22.4              | 1.346            | 41.190                         | 1.37                    | 40.10                                 | -1.75         | 2.72                        | ±5        | 2018/2/26 |
| 1750            | MSL         | 22.3              | 1.508            | 54.719                         | 1.49                    | 53.40                                 | 1.21          | 2.47                        | ±5        | 2018/2/18 |
| 1900            | HSL         | 22.4              | 1.411            | 40.419                         | 1.40                    | 40.00                                 | 0.79          | 1.05                        | ±5        | 2018/2/15 |
| 1900            | HSL         | 22.8              | 1.423            | 40.155                         | 1.40                    | 40.00                                 | 1.64          | 0.39                        | ±5        | 2018/2/18 |
| 1900            | HSL         | 22.2              | 1.432            | 41.123                         | 1.40                    | 40.00                                 | 2.29          | 2.81                        | ±5        | 2018/2/26 |
| 1900            | HSL         | 22.3              | 1.416            | 40.239                         | 1.40                    | 40.00                                 | 1.14          | 0.60                        | ±5        | 2018/3/10 |
| 1900            | MSL         | 22.8              | 1.537            | 54.683                         | 1.52                    | 53.30                                 | 1.12          | 2.59                        | ±5        | 2018/2/18 |
| 1900            | MSL         | 22.3              | 1.511            | 55.661                         | 1.52                    | 53.30                                 | -0.59         | 4.43                        | ±5        | 2018/2/19 |
| 1900            | MSL         | 22.5              | 1.569            | 53.525                         | 1.52                    | 53.30                                 | 3.22          | 0.42                        | ±5        | 2018/2/19 |
| 1900            | MSL         | 22.3              | 1.578            | 54.868                         | 1.52                    | 53.30                                 | 3.82          | 2.94                        | ±5        | 2018/3/10 |
| 2300            | HSL         | 22.4              | 1.671            | 39.131                         | 1.67                    | 39.50                                 | 0.06          | -0.93                       | ±5        | 2018/2/27 |
| 2300            | MSL         | 22.3              | 1.826            | 53.844                         | 1.81                    | 52.90                                 | 0.88          | 1.78                        | ±5        | 2018/2/20 |
| 2300            | MSL         | 22.5              | 1.831            | 54.004                         | 1.81                    | 52.90                                 | 1.16          | 2.09                        | ±5        | 2018/2/25 |
| 2450            | HSL         | 22.4              | 1.814            | 38.994                         | 1.80                    | 39.20                                 | 0.78          | -0.53                       | ±5        | 2018/2/18 |
| 2450            | HSL         | 22.5              | 1.816            | 39.572                         | 1.80                    | 39.20                                 | 0.89          | 0.95                        | ±5        | 2018/2/25 |
| 2450            | MSL         | 22.1              | 2.008            | 53.521                         | 1.95                    | 52.70                                 | 2.97          | 1.56                        | ±5        | 2018/2/19 |
| 2450            | MSL         | 22.5              | 1.990            | 54.483                         | 1.95                    | 52.70                                 | 2.05          | 3.38                        | ±5        | 2018/2/25 |
| 2600            | HSL         | 22.1              | 1.944            | 38.185                         | 1.96                    | 39.00                                 | -0.82         | -2.09                       | ±5        | 2018/2/26 |
| 2600            | MSL         | 22.5              | 2.197            | 53.758                         | 2.16                    | 52.50                                 | 1.71          | 2.40                        | ±5        | 2018/2/20 |
| 2600            | MSL         | 22.3              | 2.220            | 52.450                         | 2.16                    | 52.50                                 | 2.78          | -0.10                       | ±5        | 2018/2/23 |
| 5250            | HSL         | 22.2              | 4.597            | 36.888                         | 4.71                    | 35.95                                 | -2.40         | 2.61                        | ±5        | 2018/2/20 |
| 5250            | MSL         | 22.2              | 5.477            | 48.057                         | 5.36                    | 48.95                                 | 2.18          | -1.82                       | ±5        | 2018/2/20 |
| 5600            | HSL         | 22.2              | 4.944            | 36.412                         | 5.07                    | 35.50                                 | -2.49         | 2.57                        | ±5        | 2018/2/20 |
| 5600            | MSL         | 22.2              | 5.946            | 47.463                         | 5.77                    | 48.50                                 | 3.05          | -2.14                       | ±5        | 2018/2/20 |
| 5750            | HSL         | 22.2              | 5.101            | 36.194                         | 5.22                    | 35.35                                 | -2.28         | 2.39                        | ±5        | 2018/2/20 |
| 5750            | MSL         | 22.2              | 6.157            | 47.219                         | 5.94                    | 48.28                                 | 3.65          | -2.20                       | ±5        | 2018/2/20 |

### 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 (%) |
|-----------|-----------------|-------------|------------------|-------------------|-----------------|-------------|------------------------|------------------------|--------------------------|---------------|
| 2018/2/16 | 750             | HSL         | 250              | D750V3-1012       | ES3DV3 - SN3169 | DAE3 Sn495  | 2.05                   | 8.22                   | 8.20                     | -0.24         |
| 2018/2/17 | 750             | MSL         | 250              | D750V3-1012       | EX3DV4 - SN3925 | DAE4 Sn853  | 2.17                   | 8.71                   | 8.68                     | -0.34         |
| 2018/2/16 | 835             | HSL         | 250              | D835V2-499        | EX3DV4 - SN3931 | DAE4 Sn1399 | 2.50                   | 9.45                   | 10.00                    | 5.82          |
| 2018/2/17 | 835             | MSL         | 250              | D835V2-499        | EX3DV4 - SN3931 | DAE4 Sn1399 | 2.52                   | 9.67                   | 10.08                    | 4.24          |
| 2018/2/19 | 835             | MSL         | 250              | D835V2-499        | EX3DV4 - SN3931 | DAE4 Sn1399 | 2.53                   | 9.67                   | 10.12                    | 4.65          |
| 2018/2/15 | 1750            | HSL         | 250              | D1750V2-1068      | EX3DV4 - SN3931 | DAE4 Sn1399 | 8.82                   | 36.70                  | 35.28                    | -3.87         |
| 2018/2/26 | 1750            | HSL         | 250              | D1750V2-1068      | EX3DV4 - SN7306 | DAE4 Sn854  | 9.32                   | 36.70                  | 37.28                    | 1.58          |
| 2018/2/18 | 1750            | MSL         | 250              | D1750V2-1068      | EX3DV4 - SN3931 | DAE4 Sn1399 | 8.63                   | 37.20                  | 34.52                    | -7.20         |
| 2018/2/15 | 1900            | HSL         | 250              | D1900V2-5d041     | EX3DV4 - SN3931 | DAE4 Sn1399 | 10.00                  | 40.50                  | 40.00                    | -1.23         |
| 2018/2/18 | 1900            | HSL         | 250              | D1900V2-5d041     | EX3DV4 - SN3925 | DAE4 Sn853  | 9.67                   | 40.50                  | 38.68                    | -4.49         |
| 2018/2/26 | 1900            | HSL         | 250              | D1900V2-5d041     | EX3DV4 - SN7306 | DAE4 Sn854  | 10.90                  | 40.50                  | 43.60                    | 7.65          |
| 2018/3/10 | 1900            | HSL         | 250              | D1900V2-5d041     | EX3DV4 - SN3976 | DAE3 Sn495  | 9.76                   | 40.50                  | 39.04                    | -3.60         |
| 2018/2/18 | 1900            | MSL         | 250              | D1900V2-5d041     | EX3DV4 - SN3925 | DAE4 Sn853  | 10.10                  | 40.70                  | 40.40                    | -0.74         |
| 2018/2/19 | 1900            | MSL         | 250              | D1900V2-5d041     | EX3DV4 - SN3931 | DAE4 Sn1399 | 9.82                   | 40.70                  | 39.28                    | -3.49         |
| 2018/2/19 | 1900            | MSL         | 250              | D1900V2-5d041     | EX3DV4 - SN3925 | DAE4 Sn853  | 9.70                   | 40.70                  | 38.80                    | -4.67         |
| 2018/3/10 | 1900            | MSL         | 250              | D1900V2-5d041     | EX3DV4 - SN3976 | DAE3 Sn495  | 10.50                  | 40.70                  | 42                       | 3.19          |
| 2018/2/27 | 2300            | HSL         | 250              | D2300V2-1006      | EX3DV4 - SN3931 | DAE4 Sn1399 | 12.50                  | 48.70                  | 50.00                    | 2.67          |
| 2018/2/20 | 2300            | MSL         | 250              | D2300V2-1006      | EX3DV4 - SN3578 | DAE3 Sn393  | 11.90                  | 47.30                  | 47.60                    | 0.63          |
| 2018/2/25 | 2300            | MSL         | 250              | D2300V2-1006      | EX3DV4 - SN3931 | DAE4 Sn1399 | 12.30                  | 47.30                  | 49.20                    | 4.02          |
| 2018/2/18 | 2450            | HSL         | 250              | D2450V2-736       | EX3DV4 - SN3925 | DAE4 Sn853  | 13.10                  | 52.40                  | 52.40                    | 0.00          |
| 2018/2/25 | 2450            | HSL         | 250              | D2450V2-736       | EX3DV4 - SN7306 | DAE4 Sn854  | 12.80                  | 52.40                  | 51.20                    | -2.29         |
| 2018/2/19 | 2450            | MSL         | 250              | D2450V2-736       | EX3DV4 - SN3925 | DAE4 Sn853  | 13.50                  | 50.80                  | 54.00                    | 6.30          |
| 2018/2/25 | 2450            | MSL         | 250              | D2450V2-736       | EX3DV4 - SN7306 | DAE4 Sn854  | 13.10                  | 50.80                  | 52.40                    | 3.15          |
| 2018/2/26 | 2600            | HSL         | 250              | D2600V2-1008      | EX3DV4 - SN3931 | DAE4 Sn1399 | 14.10                  | 56.80                  | 56.40                    | -0.70         |
| 2018/2/20 | 2600            | MSL         | 250              | D2600V2-1008      | EX3DV4 - SN3931 | DAE4 Sn1399 | 14.10                  | 55.00                  | 56.40                    | 2.55          |
| 2018/2/23 | 2600            | MSL         | 250              | D2600V2-1008      | EX3DV4 - SN3931 | DAE4 Sn1399 | 14.70                  | 55.00                  | 58.80                    | 6.91          |
| 2018/2/20 | 5250            | HSL         | 100              | D5GHzV2-1006-5250 | EX3DV4 - SN3925 | DAE4 Sn853  | 7.89                   | 78.30                  | 78.90                    | 0.77          |
| 2018/2/20 | 5250            | MSL         | 100              | D5GHzV2-1006-5250 | EX3DV4 - SN3925 | DAE4 Sn853  | 7.81                   | 77.00                  | 78.10                    | 1.43          |
| 2018/2/20 | 5600            | HSL         | 100              | D5GHzV2-1006-5600 | EX3DV4 - SN3925 | DAE4 Sn853  | 8.93                   | 85.00                  | 89.30                    | 5.06          |
| 2018/2/20 | 5600            | MSL         | 100              | D5GHzV2-1006-5600 | EX3DV4 - SN3925 | DAE4 Sn853  | 8.30                   | 80.10                  | 83.00                    | 3.62          |
| 2018/2/20 | 5750            | HSL         | 100              | D5GHzV2-1006-5750 | EX3DV4 - SN3925 | DAE4 Sn853  | 8.01                   | 78.50                  | 80.10                    | 2.04          |
| 2018/2/20 | 5750            | MSL         | 100              | D5GHzV2-1006-5750 | EX3DV4 - SN3925 | DAE4 Sn853  | 7.51                   | 75.10                  | 75.10                    | 0.00          |

| 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 (%) |
|-----------|-----------------|-------------|------------------|-------------------|-----------------|-------------|-------------------------|-------------------------|---------------------------|---------------|
| 2018/2/18 | 1750            | MSL         | 250              | D1750V2-1068      | EX3DV4 - SN3931 | DAE4 Sn1399 | 4.74                    | 19.70                   | 18.96                     | -3.76         |
| 2018/2/19 | 1900            | MSL         | 250              | D1900V2-5d041     | EX3DV4 - SN3931 | DAE4 Sn1399 | 5.15                    | 21.40                   | 20.6                      | -3.74         |
| 2018/2/19 | 1900            | MSL         | 250              | D1900V2-5d041     | EX3DV4 - SN3925 | DAE4 Sn853  | 5.07                    | 21.40                   | 20.28                     | -5.23         |
| 2018/3/10 | 1900            | MSL         | 250              | D1900V2-5d041     | EX3DV4 - SN3976 | DAE3 Sn495  | 5.50                    | 21.40                   | 22                        | 2.80          |
| 2018/2/20 | 2300            | MSL         | 250              | D2300V2-1006      | EX3DV4 - SN3578 | DAE3 Sn393  | 5.28                    | 22.80                   | 21.12                     | -7.37         |
| 2018/2/19 | 2450            | MSL         | 250              | D2450V2-736       | EX3DV4 - SN3925 | DAE4 Sn853  | 6.29                    | 23.60                   | 25.16                     | 6.61          |
| 2018/2/25 | 2450            | MSL         | 250              | D2450V2-736       | EX3DV4 - SN7306 | DAE4 Sn854  | 5.98                    | 23.60                   | 23.92                     | 1.36          |
| 2018/2/20 | 2600            | MSL         | 250              | D2600V2-1008      | EX3DV4 - SN3931 | DAE4 Sn1399 | 6.31                    | 24.50                   | 25.24                     | 3.02          |
| 2018/2/23 | 2600            | MSL         | 250              | D2600V2-1008      | EX3DV4 - SN3931 | DAE4 Sn1399 | 6.52                    | 24.50                   | 26.08                     | 6.45          |
| 2018/2/20 | 5250            | MSL         | 100              | D5GHzV2-1006-5250 | EX3DV4 - SN3925 | DAE4 Sn853  | 2.13                    | 21.30                   | 21.3                      | 0.00          |
| 2018/2/20 | 5600            | MSL         | 100              | D5GHzV2-1006-5600 | EX3DV4 - SN3925 | DAE4 Sn853  | 2.26                    | 22.40                   | 22.6                      | 0.89          |
| 2018/2/20 | 5750            | MSL         | 100              | D5GHzV2-1006-5750 | EX3DV4 - SN3925 | DAE4 Sn853  | 2.00                    | 20.80                   | 20                        | -3.85         |


**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.

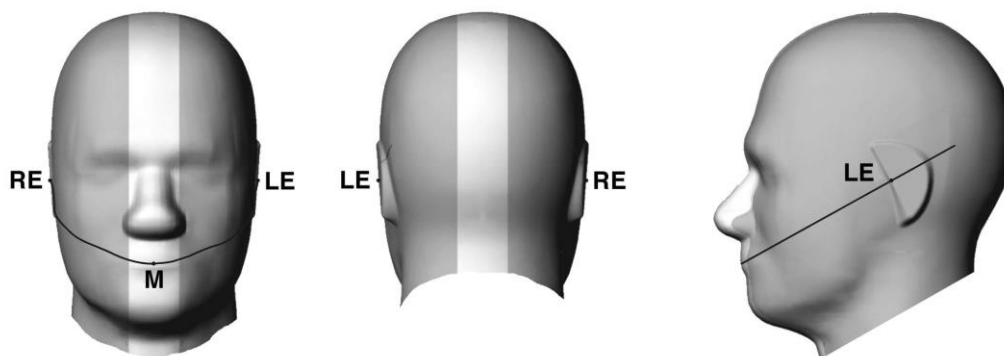


Fig 9.1.1 Front, back, and side views of SAM twin phantom

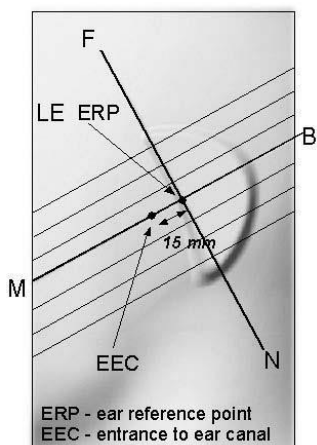


Fig 9.1.2 Close-up side view of phantom showing the ear region.

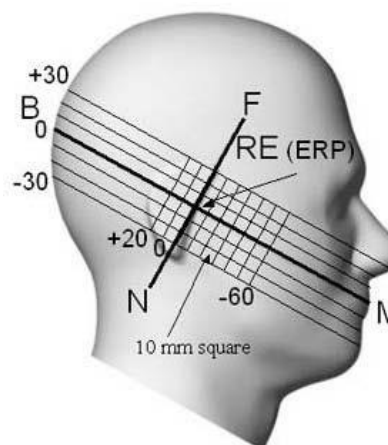
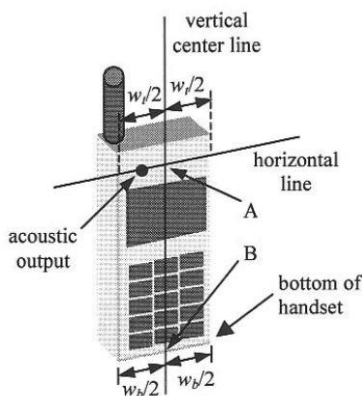


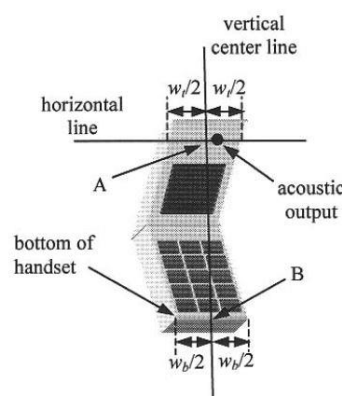
Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

## **11.2 Definition of the cheek position**

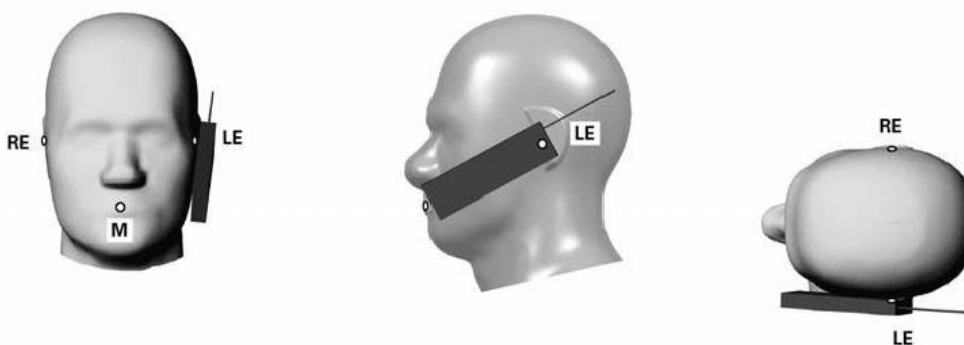
1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal 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”**



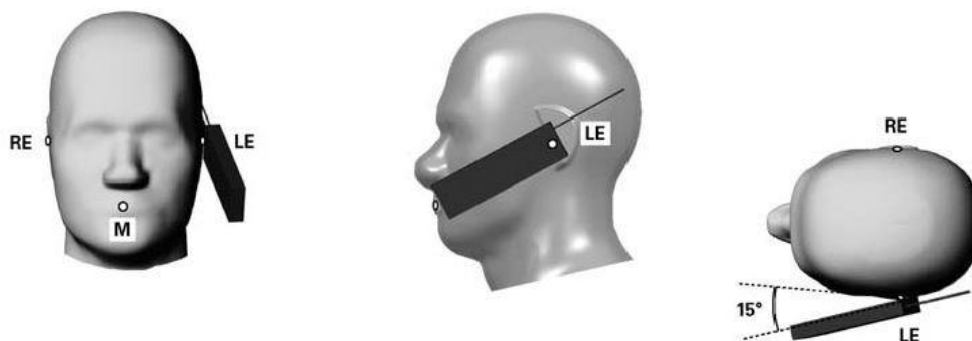
**Fig 9.2.2 Handset vertical and horizontal reference lines—“clam-shell case”**



**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-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

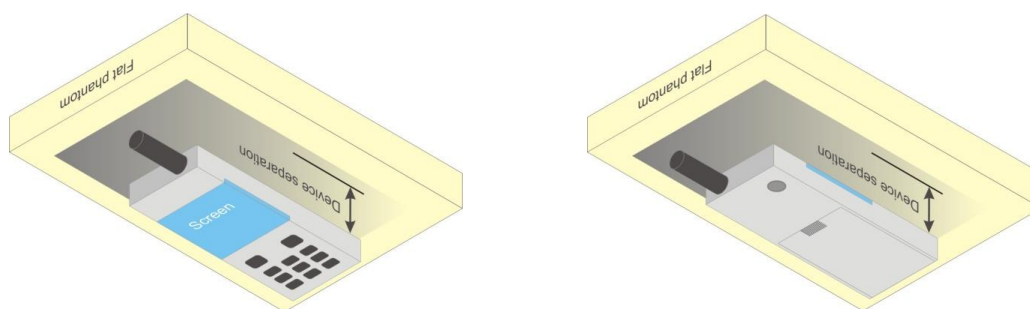


Fig 9.4 Body Worn Position

## 11.5 Product Specific

For smart phones with a display diagonal dimension  $> 15.0 \text{ cm}$  or an overall diagonal dimension  $> 16.0 \text{ cm}$  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  $\leq 25 \text{ mm}$  from that surface or edge, in direct contact with a flat phantom, for 10-g extremity 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 extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR  $> 1.2 \text{ W/kg}$ .

### **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>**

#### **General Note:**

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 (2Tx slots) for GSM850 and GPRS (3Tx slots) for GSM1900 are 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          | 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   | 31.91                     | 32.48 | 32.78 | 33.50                     | 22.91                     | 23.48 | 23.78 | 24.50                     |
| GPRS 1 Tx slot  | 31.92                     | 32.49 | 32.80 | 33.50                     | 22.92                     | 23.49 | 23.80 | 24.50                     |
| GPRS 2 Tx slots | 30.31                     | 31.04 | 31.55 | 32.00                     | 24.31                     | 25.04 | 25.55 | 26.00                     |
| GPRS 3 Tx slots | 28.20                     | 29.03 | 29.48 | 30.00                     | 23.94                     | 24.77 | 25.22 | 25.74                     |
| GPRS 4 Tx slots | 26.33                     | 27.19 | 27.86 | 28.00                     | 23.33                     | 24.19 | 24.86 | 25.00                     |
| EDGE 1 Tx slot  | 26.00                     | 26.12 | 26.16 | 27.00                     | 17.00                     | 17.12 | 17.16 | 18.00                     |
| EDGE 2 Tx slots | 24.78                     | 24.92 | 24.96 | 26.00                     | 18.78                     | 18.92 | 18.96 | 20.00                     |
| EDGE 3 Tx slots | 23.10                     | 23.20 | 23.23 | 24.50                     | 18.84                     | 18.94 | 18.97 | 20.24                     |
| EDGE 4 Tx slots | 21.44                     | 21.53 | 21.62 | 22.50                     | 18.44                     | 18.53 | 18.62 | 19.50                     |

| 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   | 29.72                     | 29.56 | 29.35  | 30.50                     | 20.72                     | 20.56 | 20.35  | 21.50                     |
| GPRS 1 Tx slot  | 29.73                     | 29.58 | 29.36  | 30.50                     | 20.73                     | 20.58 | 20.36  | 21.50                     |
| GPRS 2 Tx slots | 28.35                     | 28.38 | 28.32  | 29.50                     | 22.35                     | 22.38 | 22.32  | 23.50                     |
| GPRS 3 Tx slots | 26.74                     | 26.82 | 26.87  | 28.00                     | 22.48                     | 22.56 | 22.61  | 23.74                     |
| GPRS 4 Tx slots | 24.86                     | 25.04 | 25.17  | 26.50                     | 21.86                     | 22.04 | 22.17  | 23.50                     |
| EDGE 1 Tx slot  | 25.23                     | 25.39 | 25.48  | 26.00                     | 16.23                     | 16.39 | 16.48  | 17.00                     |
| EDGE 2 Tx slots | 24.31                     | 24.26 | 24.28  | 25.00                     | 18.31                     | 18.26 | 18.28  | 19.00                     |
| EDGE 3 Tx slots | 22.71                     | 22.64 | 22.63  | 23.00                     | 18.45                     | 18.38 | 18.37  | 18.74                     |
| EDGE 4 Tx slots | 21.07                     | 21.04 | 21.08  | 22.00                     | 18.07                     | 18.04 | 18.08  | 19.00                     |

**<Near-body Power Mode>**

| 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   | 23.81                     | 23.84 | 23.95  | 24.00                     | 14.81                     | 14.84 | 14.95  | 15.00                     |
| GPRS 1 Tx slot  | 23.84                     | 23.86 | 23.97  | 24.00                     | 14.84                     | 14.86 | 14.97  | 15.00                     |
| GPRS 2 Tx slots | 22.56                     | 22.55 | 22.67  | 23.00                     | 16.56                     | 16.55 | 16.67  | 17.00                     |
| GPRS 3 Tx slots | 20.93                     | 20.95 | 21.05  | 21.50                     | 16.67                     | 16.69 | 16.79  | 17.24                     |
| GPRS 4 Tx slots | 19.44                     | 19.45 | 19.54  | 20.00                     | 16.44                     | 16.45 | 16.54  | 17.00                     |
| EDGE 1 Tx slot  | 20.84                     | 20.65 | 20.83  | 21.00                     | 11.84                     | 11.65 | 11.83  | 12.00                     |
| EDGE 2 Tx slots | 19.77                     | 19.57 | 19.75  | 20.00                     | 13.77                     | 13.57 | 13.75  | 14.00                     |
| EDGE 3 Tx slots | 17.98                     | 17.93 | 17.99  | 18.00                     | 13.72                     | 13.67 | 13.73  | 13.74                     |
| EDGE 4 Tx slots | 16.96                     | 16.72 | 16.96  | 17.00                     | 13.96                     | 13.72 | 13.96  | 14.00                     |

**<Hotspot Power Mode>**

| 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   | 22.60                     | 22.61 | 22.72  | 23.00                     | 13.60                     | 13.61 | 13.72  | 14.00                     |
| GPRS 1 Tx slot  | 22.61                     | 22.63 | 22.74  | 23.00                     | 13.61                     | 13.63 | 13.74  | 14.00                     |
| GPRS 2 Tx slots | 21.50                     | 21.49 | 21.59  | 22.00                     | 15.50                     | 15.49 | 15.59  | 16.00                     |
| GPRS 3 Tx slots | 19.58                     | 19.60 | 19.68  | 20.50                     | 15.32                     | 15.34 | 15.42  | 16.24                     |
| GPRS 4 Tx slots | 18.64                     | 18.66 | 18.76  | 19.00                     | 15.64                     | 15.66 | 15.76  | 16.00                     |
| EDGE 1 Tx slot  | 20.84                     | 20.65 | 20.83  | 21.00                     | 11.84                     | 11.65 | 11.83  | 12.00                     |
| EDGE 2 Tx slots | 19.77                     | 19.57 | 19.75  | 20.00                     | 13.77                     | 13.57 | 13.75  | 14.00                     |
| EDGE 3 Tx slots | 17.98                     | 17.93 | 17.99  | 18.00                     | 13.72                     | 13.67 | 13.73  | 13.74                     |
| EDGE 4 Tx slots | 16.96                     | 16.72 | 16.96  | 17.00                     | 13.96                     | 13.72 | 13.96  | 14.00                     |

### <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                  |
| <p>Note 1: <math>\Delta_{ACK}</math>, <math>\Delta_{NACK}</math> and <math>\Delta_{CQI} = 30/15</math> with <math>\beta_{hs} = 30/15 * \beta_c</math>.</p> <p>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, <math>\Delta_{ACK}</math> and <math>\Delta_{NACK} = 30/15</math> with <math>\beta_{hs} = 30/15 * \beta_c</math>, and <math>\Delta_{CQI} = 24/15</math> with <math>\beta_{hs} = 24/15 * \beta_c</math>.</p> <p>Note 3: CM = 1 for <math>\beta_c/\beta_d = 12/15</math>, <math>\beta_{hs}/\beta_c = 24/15</math>. 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.</p> <p>Note 4: For subtest 2 the <math>\beta_c/\beta_d</math> 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 <math>\beta_c = 11/15</math> and <math>\beta_d = 15/15</math>.</p> |                   |                   |                   |                   |                                     |                     |                      |

### **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 4) (Note 5)               | $\beta_{ed}$ (SF) | $\beta_{ed}$ (Codes) | CM (dB) (Note 2) | MPR (dB) (Note 2) (Note 6) | AG Index (Note 5) | E-TFCI |
|----------|----------------|----------------|----------------|-------------------|-----------------------|--------------|----------------------------------------------|-------------------|----------------------|------------------|----------------------------|-------------------|--------|
| 1        | 11/15 (Note 3) | 15/15 (Note 3) | 64             | 11/15 (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                 | 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          | 0              | -              | -                 | 5/15                  | 5/15         | 47/15                                        | 4                 | 1                    | 1.0              | 0.0                        | 12                | 67     |

Note 1: For sub-test 1 to 4,  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  and  $\Delta_{CQI} = 30/15$  with  $\beta_{hs} = 30/15 * \beta_c$ . For sub-test 5,  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  and  $\Delta_{CQI} = 5/15$  with  $\beta_{hs} = 5/15 * \beta_c$ .

Note 2: CM = 1 for  $\beta_d/\beta_c = 12/15$ ,  $\beta_{hs}/\beta_c = 24/15$ . 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: 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 5:  $\beta_{ed}$  can not be set directly; it is set by Absolute Grant Value.

Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

**Setup Configuration**

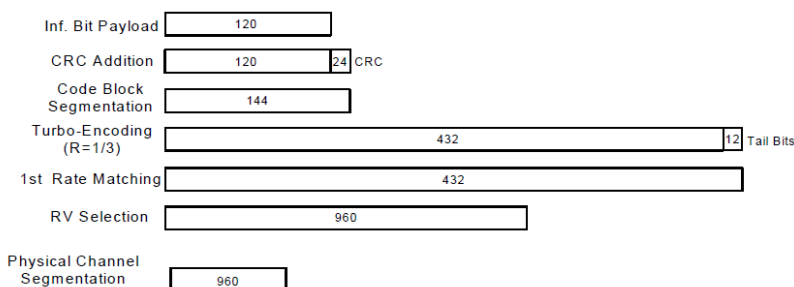
**DC-HSDPA 3GPP release 8 Setup Configuration:**

- 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. 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, and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA, DC-HSDPA) are less than  $\frac{1}{4}$  dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

**<Default Power Mode >**

| Band            |                    | WCDMA II |       |        | Tune-up Limit (dBm) | WCDMA IV |        |        | Tune-up Limit (dBm) | WCDMA V |       |       | Tune-up Limit (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       | 22.75    | 22.70 | 22.71  | 23.50               | 22.61    | 22.60  | 22.73  | 23.50               | 22.64   | 22.75 | 22.58 | 24.00               |
| 3GPP Rel 99     | RMC 12.2Kbps       | 22.76    | 22.71 | 22.73  | 23.50               | 22.62    | 22.60  | 22.74  | 23.50               | 22.64   | 22.76 | 22.60 | 24.00               |
| 3GPP Rel 6      | HSDPA Subtest-1    | 21.65    | 21.73 | 21.77  | 22.50               | 21.53    | 21.56  | 21.54  | 22.50               | 21.67   | 21.74 | 21.57 | 23.00               |
| 3GPP Rel 6      | HSDPA Subtest-2    | 21.74    | 21.77 | 21.76  | 22.50               | 21.55    | 21.57  | 21.56  | 22.50               | 21.71   | 21.75 | 21.64 | 23.00               |
| 3GPP Rel 6      | HSDPA Subtest-3    | 21.17    | 21.21 | 21.27  | 22.00               | 21.01    | 21.11  | 21.06  | 22.00               | 21.18   | 21.31 | 21.06 | 22.50               |
| 3GPP Rel 6      | HSDPA Subtest-4    | 21.16    | 21.26 | 21.33  | 22.00               | 21.01    | 21.10  | 21.09  | 22.00               | 21.15   | 20.93 | 21.11 | 22.50               |
| 3GPP Rel 8      | DC-HSDPA Subtest-1 | 21.62    | 21.63 | 21.75  | 22.50               | 21.50    | 21.51  | 21.45  | 22.00               | 21.66   | 21.72 | 21.53 | 23.00               |
| 3GPP Rel 8      | DC-HSDPA Subtest-2 | 21.67    | 21.72 | 21.72  | 22.50               | 21.51    | 21.56  | 21.47  | 22.50               | 21.66   | 21.73 | 21.63 | 23.00               |
| 3GPP Rel 8      | DC-HSDPA Subtest-3 | 21.11    | 21.15 | 21.25  | 22.00               | 20.91    | 21.04  | 20.96  | 21.50               | 21.09   | 21.28 | 20.98 | 22.50               |
| 3GPP Rel 8      | DC-HSDPA Subtest-4 | 21.16    | 21.20 | 21.27  | 22.00               | 20.99    | 21.10  | 21.01  | 21.50               | 21.08   | 20.92 | 21.02 | 22.50               |
| 3GPP Rel 6      | HSUPA Subtest-1    | 21.86    | 21.76 | 21.82  | 22.50               | 21.56    | 21.64  | 21.63  | 22.50               | 21.70   | 21.80 | 21.58 | 23.00               |
| 3GPP Rel 6      | HSUPA Subtest-2    | 19.91    | 19.76 | 19.83  | 20.50               | 19.61    | 19.64  | 19.54  | 20.50               | 19.67   | 19.77 | 19.60 | 21.00               |
| 3GPP Rel 6      | HSUPA Subtest-3    | 20.88    | 20.75 | 20.84  | 21.50               | 20.57    | 20.68  | 20.65  | 21.50               | 20.68   | 20.78 | 20.59 | 22.00               |
| 3GPP Rel 6      | HSUPA Subtest-4    | 19.84    | 19.80 | 19.87  | 20.50               | 19.57    | 19.73  | 19.68  | 20.50               | 19.68   | 19.76 | 19.58 | 21.00               |
| 3GPP Rel 6      | HSUPA Subtest-5    | 21.80    | 21.80 | 21.80  | 22.50               | 21.60    | 21.60  | 21.51  | 22.50               | 21.70   | 21.80 | 21.60 | 23.00               |

**<Near-body Power Mode>**

| Band            |                    | WCDMA II |       |        | Tune-up Limit (dBm) | WCDMA IV |        |        | Tune-up Limit (dBm) | WCDMA V |       |       | Tune-up Limit (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       | 16.38    | 16.32 | 16.28  | 17.50               | 15.20    | 15.21  | 15.26  | 17.00               | 22.18   | 22.22 | 22.14 | 23.50               |
| 3GPP Rel 99     | RMC 12.2Kbps       | 16.46    | 16.33 | 16.30  | 17.50               | 15.45    | 15.44  | 15.53  | 17.00               | 22.20   | 22.26 | 22.15 | 23.50               |
| 3GPP Rel 6      | HSDPA Subtest-1    | 15.04    | 14.96 | 15.07  | 16.50               | 14.09    | 14.09  | 14.24  | 16.00               | 20.53   | 20.64 | 20.46 | 22.50               |
| 3GPP Rel 6      | HSDPA Subtest-2    | 15.03    | 14.98 | 15.06  | 16.50               | 14.08    | 14.09  | 14.25  | 16.00               | 20.52   | 20.65 | 20.45 | 22.50               |
| 3GPP Rel 6      | HSDPA Subtest-3    | 14.52    | 14.51 | 14.58  | 16.00               | 13.58    | 13.59  | 13.69  | 15.50               | 20.04   | 20.15 | 19.95 | 22.00               |
| 3GPP Rel 6      | HSDPA Subtest-4    | 14.51    | 14.50 | 14.57  | 16.00               | 13.56    | 13.59  | 13.68  | 15.50               | 20.02   | 20.14 | 19.93 | 22.00               |
| 3GPP Rel 8      | DC-HSDPA Subtest-1 | 15.03    | 14.95 | 15.06  | 16.50               | 14.06    | 14.05  | 14.32  | 16.00               | 20.51   | 20.61 | 20.44 | 22.50               |
| 3GPP Rel 8      | DC-HSDPA Subtest-2 | 15.02    | 14.96 | 15.05  | 16.50               | 14.05    | 14.08  | 14.32  | 16.00               | 20.50   | 20.63 | 20.42 | 22.50               |
| 3GPP Rel 8      | DC-HSDPA Subtest-3 | 14.51    | 14.49 | 14.56  | 16.00               | 13.56    | 13.56  | 13.65  | 15.50               | 20.02   | 20.14 | 19.93 | 22.00               |
| 3GPP Rel 8      | DC-HSDPA Subtest-4 | 14.49    | 14.46 | 14.53  | 16.00               | 13.55    | 13.54  | 13.63  | 15.50               | 20.01   | 20.12 | 19.90 | 22.00               |
| 3GPP Rel 6      | HSUPA Subtest-1    | 15.02    | 14.98 | 15.08  | 16.50               | 14.09    | 14.05  | 14.11  | 16.00               | 20.52   | 20.61 | 20.47 | 22.50               |
| 3GPP Rel 6      | HSUPA Subtest-2    | 13.01    | 12.97 | 13.07  | 14.50               | 12.09    | 12.15  | 12.30  | 14.00               | 18.56   | 18.64 | 18.45 | 20.50               |
| 3GPP Rel 6      | HSUPA Subtest-3    | 14.03    | 13.96 | 14.07  | 15.50               | 13.08    | 13.17  | 13.23  | 15.00               | 19.55   | 19.64 | 19.46 | 21.50               |
| 3GPP Rel 6      | HSUPA Subtest-4    | 13.03    | 12.98 | 13.08  | 14.50               | 12.08    | 12.14  | 12.21  | 14.00               | 18.54   | 18.64 | 18.43 | 20.50               |
| 3GPP Rel 6      | HSUPA Subtest-5    | 15.03    | 14.99 | 15.09  | 16.50               | 14.01    | 14.07  | 14.23  | 16.00               | 20.52   | 20.61 | 20.45 | 22.50               |

**<Hotspot 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       | 13.85    | 13.82 | 13.78  | 15.50                     | 15.20    | 15.21  | 15.26  | 16.50                     | 21.52   | 21.61 | 21.44 | 23.50                     |
| 3GPP Rel 99     | RMC 12.2Kbps       | 13.95    | 13.83 | 13.79  | 15.50                     | 15.45    | 15.44  | 15.53  | 16.50                     | 22.20   | 22.26 | 22.15 | 23.50                     |
| 3GPP Rel 6      | HSDPA Subtest-1    | 12.76    | 12.71 | 12.85  | 14.50                     | 14.09    | 14.09  | 14.24  | 15.50                     | 20.53   | 20.64 | 20.46 | 22.50                     |
| 3GPP Rel 6      | HSDPA Subtest-2    | 12.78    | 12.76 | 12.88  | 14.50                     | 14.08    | 14.09  | 14.25  | 15.50                     | 20.52   | 20.65 | 20.45 | 22.50                     |
| 3GPP Rel 6      | HSDPA Subtest-3    | 12.28    | 12.26 | 12.35  | 14.00                     | 13.58    | 13.59  | 13.69  | 15.00                     | 20.04   | 20.15 | 19.95 | 22.00                     |
| 3GPP Rel 6      | HSDPA Subtest-4    | 12.28    | 12.27 | 12.36  | 14.00                     | 13.56    | 13.59  | 13.68  | 15.00                     | 20.02   | 20.14 | 19.93 | 22.00                     |
| 3GPP Rel 8      | DC-HSDPA Subtest-1 | 12.74    | 12.69 | 12.84  | 14.50                     | 14.06    | 14.05  | 14.32  | 15.50                     | 20.51   | 20.61 | 20.44 | 22.50                     |
| 3GPP Rel 8      | DC-HSDPA Subtest-2 | 12.74    | 12.73 | 12.83  | 14.50                     | 14.05    | 14.08  | 14.32  | 15.50                     | 20.50   | 20.63 | 20.42 | 22.50                     |
| 3GPP Rel 8      | DC-HSDPA Subtest-3 | 12.26    | 12.25 | 12.33  | 14.00                     | 13.56    | 13.56  | 13.65  | 15.00                     | 20.02   | 20.14 | 19.93 | 22.00                     |
| 3GPP Rel 8      | DC-HSDPA Subtest-4 | 12.25    | 12.25 | 12.35  | 14.00                     | 13.55    | 13.54  | 13.63  | 15.00                     | 20.01   | 20.12 | 19.90 | 22.00                     |
| 3GPP Rel 6      | HSUPA Subtest-1    | 12.75    | 12.73 | 12.80  | 14.50                     | 14.09    | 14.05  | 14.11  | 15.50                     | 20.52   | 20.61 | 20.47 | 22.50                     |
| 3GPP Rel 6      | HSUPA Subtest-2    | 10.74    | 10.73 | 10.79  | 12.50                     | 12.09    | 12.15  | 12.30  | 13.50                     | 18.56   | 18.64 | 18.45 | 20.50                     |
| 3GPP Rel 6      | HSUPA Subtest-3    | 11.75    | 11.76 | 11.78  | 13.50                     | 13.08    | 13.17  | 13.23  | 14.50                     | 19.55   | 19.64 | 19.46 | 21.50                     |
| 3GPP Rel 6      | HSUPA Subtest-4    | 10.72    | 10.73 | 10.81  | 12.50                     | 12.08    | 12.14  | 12.21  | 13.50                     | 18.54   | 18.64 | 18.43 | 20.50                     |
| 3GPP Rel 6      | HSUPA Subtest-5    | 12.78    | 12.76 | 12.85  | 14.50                     | 14.01    | 14.07  | 14.23  | 15.50                     | 20.52   | 20.61 | 20.45 | 22.50                     |

**<Product Specific Power Mode>**

| Band            |                    | WCDMA II |       |        | Tune-up<br>Limit<br>(dBm) | WCDMA IV |        |        | Tune-up<br>Limit<br>(dBm) |
|-----------------|--------------------|----------|-------|--------|---------------------------|----------|--------|--------|---------------------------|
| TX Channel      |                    | 9262     | 9400  | 9538   |                           | 1312     | 1413   | 1513   |                           |
| Rx Channel      |                    | 9662     | 9800  | 9938   |                           | 1537     | 1638   | 1738   |                           |
| Frequency (MHz) |                    | 1852.4   | 1880  | 1907.6 |                           | 1712.4   | 1732.6 | 1752.6 |                           |
| 3GPP Rel 99     | AMR 12.2Kbps       | 22.22    | 22.19 | 22.28  | 23.00                     | 21.86    | 21.80  | 21.96  | 22.00                     |
| 3GPP Rel 99     | RMC 12.2Kbps       | 22.23    | 22.21 | 22.31  | 23.00                     | 21.87    | 21.82  | 22.00  | 22.00                     |
| 3GPP Rel 6      | HSDPA Subtest-1    | 21.05    | 21.02 | 21.09  | 22.00                     | 20.59    | 20.67  | 20.82  | 21.00                     |
| 3GPP Rel 6      | HSDPA Subtest-2    | 21.04    | 21.03 | 21.08  | 22.00                     | 20.59    | 20.68  | 20.83  | 21.00                     |
| 3GPP Rel 6      | HSDPA Subtest-3    | 20.57    | 20.55 | 20.61  | 21.50                     | 20.08    | 20.19  | 20.32  | 20.50                     |
| 3GPP Rel 6      | HSDPA Subtest-4    | 20.55    | 20.54 | 20.59  | 21.50                     | 20.07    | 20.18  | 20.30  | 20.50                     |
| 3GPP Rel 8      | DC-HSDPA Subtest-1 | 21.03    | 21.00 | 21.07  | 22.00                     | 20.57    | 20.65  | 20.81  | 21.00                     |
| 3GPP Rel 8      | DC-HSDPA Subtest-2 | 21.03    | 21.02 | 21.05  | 22.00                     | 20.56    | 20.65  | 20.80  | 21.00                     |
| 3GPP Rel 8      | DC-HSDPA Subtest-3 | 20.56    | 20.53 | 20.59  | 21.50                     | 20.06    | 20.17  | 20.30  | 20.50                     |
| 3GPP Rel 8      | DC-HSDPA Subtest-4 | 20.52    | 20.51 | 20.57  | 21.50                     | 20.04    | 20.17  | 20.28  | 20.50                     |
| 3GPP Rel 6      | HSUPA Subtest-1    | 21.03    | 20.99 | 21.09  | 22.00                     | 20.58    | 20.66  | 20.82  | 21.00                     |
| 3GPP Rel 6      | HSUPA Subtest-2    | 19.04    | 18.99 | 19.08  | 20.00                     | 18.56    | 18.67  | 18.81  | 19.00                     |
| 3GPP Rel 6      | HSUPA Subtest-3    | 20.02    | 20.01 | 20.06  | 21.00                     | 19.57    | 19.68  | 19.80  | 20.00                     |
| 3GPP Rel 6      | HSUPA Subtest-4    | 19.05    | 19.01 | 19.09  | 20.00                     | 18.54    | 18.66  | 18.82  | 19.00                     |
| 3GPP Rel 6      | HSUPA Subtest-5    | 21.02    | 20.96 | 21.07  | 22.00                     | 20.56    | 20.65  | 20.80  | 21.00                     |

**<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             | CDMA BC0 |        |        | Tune-up<br>Limit<br>(dBm) | CDMA BC1 |       |         | Tune-up<br>Limit<br>(dBm) | CDMA BC10 |       |       | Tune-up<br>Limit<br>(dBm) |
|------------------|----------|--------|--------|---------------------------|----------|-------|---------|---------------------------|-----------|-------|-------|---------------------------|
| TX Channel       | 1013     | 384    | 777    |                           | 25       | 600   | 1175    |                           | 476       | 580   | 684   |                           |
| Frequency (MHz)  | 824.7    | 836.52 | 848.31 |                           | 1851.25  | 1880  | 1908.75 |                           | 817.9     | 820.5 | 823.1 |                           |
| RC1 SO55         | 23.85    | 23.95  | 23.98  | 25.00                     | 23.72    | 23.60 | 23.52   | 25.00                     | 23.74     | 23.82 | 23.80 | 25.00                     |
| RC3 SO55         | 23.86    | 23.96  | 23.99  | 25.00                     | 23.75    | 23.63 | 23.52   | 25.00                     | 23.74     | 23.83 | 23.81 | 25.00                     |
| RC3 SO32 (F+SCH) | 23.84    | 23.95  | 23.98  | 25.00                     | 23.74    | 23.63 | 23.50   | 25.00                     | 23.75     | 23.82 | 23.80 | 25.00                     |
| RC3 SO32 (+SCH)  | 23.85    | 23.95  | 23.96  | 25.00                     | 23.72    | 23.64 | 23.52   | 25.00                     | 23.74     | 23.83 | 23.80 | 25.00                     |
| RTAP 153.6Kbps   | 23.82    | 23.97  | 24.00  | 25.00                     | 23.80    | 23.62 | 23.55   | 25.00                     | 23.58     | 23.65 | 23.60 | 25.00                     |
| RETAP 4096Bits   | 23.85    | 23.97  | 23.90  | 25.00                     | 23.79    | 23.63 | 23.54   | 25.00                     | 23.57     | 23.64 | 23.57 | 25.00                     |

**<Near-body Power Mode>**

| Band             | CDMA BC0 |        |        | Tune-up<br>Limit<br>(dBm) | CDMA BC1 |       |         | Tune-up<br>Limit<br>(dBm) | CDMA BC10 |       |       | Tune-up<br>Limit<br>(dBm) |
|------------------|----------|--------|--------|---------------------------|----------|-------|---------|---------------------------|-----------|-------|-------|---------------------------|
| TX Channel       | 1013     | 384    | 777    |                           | 25       | 600   | 1175    |                           | 476       | 580   | 684   |                           |
| Frequency (MHz)  | 824.7    | 836.52 | 848.31 |                           | 1851.25  | 1880  | 1908.75 |                           | 817.9     | 820.5 | 823.1 |                           |
| RC1 SO55         | 22.66    | 22.76  | 22.85  | 23.50                     | 16.50    | 16.54 | 16.60   | 18.00                     | 22.53     | 22.57 | 22.49 | 23.50                     |
| RC3 SO55         | 22.67    | 22.78  | 22.86  | 23.50                     | 16.62    | 16.51 | 16.52   | 18.00                     | 22.50     | 22.58 | 22.44 | 23.50                     |
| RC3 SO32 (F+SCH) | 22.68    | 22.79  | 22.87  | 23.50                     | 16.67    | 16.65 | 16.63   | 18.00                     | 22.60     | 22.67 | 22.64 | 23.50                     |
| RC3 SO32 (+SCH)  | 22.69    | 22.76  | 22.85  | 23.50                     | 16.53    | 16.55 | 16.30   | 18.00                     | 22.52     | 22.59 | 22.47 | 23.50                     |
| RTAP 153.6Kbps   | 22.71    | 22.77  | 22.78  | 23.50                     | 16.66    | 16.63 | 16.31   | 18.00                     | 22.55     | 22.62 | 22.57 | 23.50                     |
| RETAP 4096Bits   | 22.66    | 22.73  | 22.84  | 23.50                     | 16.54    | 16.59 | 16.21   | 18.00                     | 22.54     | 22.55 | 22.49 | 23.50                     |

**<Hotspot Power Mode>**

| Band             | CDMA BC0 |        |        | Tune-up<br>Limit<br>(dBm) | CDMA BC1 |       |         | Tune-up<br>Limit<br>(dBm) | CDMA BC10 |       |       | Tune-up<br>Limit<br>(dBm) |
|------------------|----------|--------|--------|---------------------------|----------|-------|---------|---------------------------|-----------|-------|-------|---------------------------|
| TX Channel       | 1013     | 384    | 777    |                           | 25       | 600   | 1175    |                           | 476       | 580   | 684   |                           |
| Frequency (MHz)  | 824.7    | 836.52 | 848.31 |                           | 1851.25  | 1880  | 1908.75 |                           | 817.9     | 820.5 | 823.1 |                           |
| RC1 SO55         | 22.66    | 22.76  | 22.85  | 23.50                     | 14.76    | 14.55 | 14.60   | 15.50                     | 22.53     | 22.57 | 22.49 | 23.50                     |
| RC3 SO55         | 22.67    | 22.78  | 22.86  | 23.50                     | 14.66    | 14.53 | 14.51   | 15.50                     | 22.50     | 22.58 | 22.44 | 23.50                     |
| RC3 SO32 (F+SCH) | 22.68    | 22.79  | 22.87  | 23.50                     | 14.63    | 14.58 | 14.55   | 15.50                     | 22.60     | 22.67 | 22.64 | 23.50                     |
| RC3 SO32 (+SCH)  | 22.69    | 22.76  | 22.85  | 23.50                     | 14.61    | 14.57 | 14.49   | 15.50                     | 22.52     | 22.59 | 22.47 | 23.50                     |
| RTAP 153.6Kbps   | 22.71    | 22.77  | 22.78  | 23.50                     | 14.65    | 14.65 | 14.63   | 15.50                     | 22.55     | 22.62 | 22.57 | 23.50                     |
| RETAP 4096Bits   | 22.66    | 22.73  | 22.84  | 23.50                     | 14.63    | 14.49 | 14.61   | 15.50                     | 22.54     | 22.55 | 22.49 | 23.50                     |

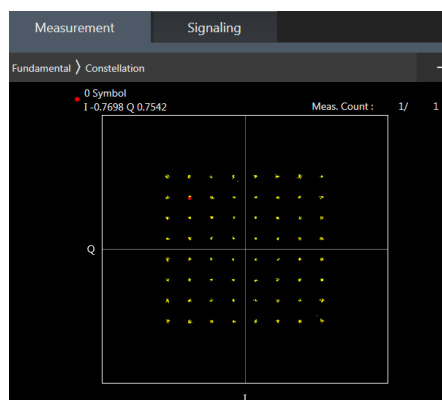
**<Product Specific Power Mode>**

| Band             | CDMA BC1 |       |         | Tune-up<br>Limit<br>(dBm) |
|------------------|----------|-------|---------|---------------------------|
| TX Channel       | 25       | 600   | 1175    |                           |
| Frequency (MHz)  | 1851.25  | 1880  | 1908.75 |                           |
| RC1 SO55         | 21.12    | 21.17 | 21.15   | 23.00                     |
| RC3 SO55         | 21.20    | 21.13 | 21.10   | 23.00                     |
| RC3 SO32 (F+SCH) | 21.18    | 21.14 | 21.16   | 23.00                     |
| RC3 SO32 (+SCH)  | 21.17    | 21.15 | 21.16   | 23.00                     |
| RTAP 153.6Kbps   | 21.22    | 21.17 | 21.19   | 23.00                     |
| RETAP 4096Bits   | 21.19    | 21.16 | 21.18   | 23.00                     |

## <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 / B71 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.
9. LTE band 2 / 4 / 5 / 17 / 38 SAR test was covered by Band 12 / 25 / 26 / 41 / 66; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
  - a. the maximum output power, including tolerance, for the smaller band is  $\leq$  the larger band to qualify for the SAR test exclusion
  - b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band
10. According to 2017 TCB workshop, for 64 QAM and 16 QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >> constellation" mode of the device connect to the MT8821C base station, therefore, the device 64QAM and 16QAM signal modulation are correct.



**64QAM**



**16QAM**

**<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         | 23.25                    | 23.16                       | 22.82                     | 23.5                   | 0           |
| 20              | QPSK       | 1       | 49        | 22.84                    | 22.72                       | 22.73                     |                        |             |
| 20              | QPSK       | 1       | 99        | 23.03                    | 22.91                       | 22.77                     |                        |             |
| 20              | QPSK       | 50      | 0         | 21.97                    | 21.85                       | 21.80                     | 22.5                   | 1           |
| 20              | QPSK       | 50      | 24        | 21.92                    | 21.83                       | 21.82                     |                        |             |
| 20              | QPSK       | 50      | 50        | 21.91                    | 21.82                       | 21.79                     |                        |             |
| 20              | QPSK       | 100     | 0         | 21.96                    | 21.84                       | 21.74                     | 22.5                   | 1           |
| 20              | 16QAM      | 1       | 0         | 22.42                    | 22.41                       | 22.14                     |                        |             |
| 20              | 16QAM      | 1       | 49        | 22.17                    | 22.07                       | 22.11                     |                        |             |
| 20              | 16QAM      | 1       | 99        | 22.40                    | 22.25                       | 22.07                     | 21.5                   | 2           |
| 20              | 16QAM      | 50      | 0         | 21.08                    | 20.97                       | 20.89                     |                        |             |
| 20              | 16QAM      | 50      | 24        | 21.07                    | 20.91                       | 20.92                     |                        |             |
| 20              | 16QAM      | 50      | 50        | 21.05                    | 20.90                       | 20.89                     | 21.5                   | 2           |
| 20              | 16QAM      | 100     | 0         | 21.04                    | 20.95                       | 20.83                     |                        |             |
| 20              | 64QAM      | 1       | 0         | 21.50                    | 21.46                       | 21.04                     |                        |             |
| 20              | 64QAM      | 1       | 49        | 21.11                    | 21.00                       | 21.03                     | 21.5                   | 2           |
| 20              | 64QAM      | 1       | 99        | 21.31                    | 21.17                       | 21.02                     |                        |             |
| 20              | 64QAM      | 50      | 0         | 20.08                    | 19.96                       | 19.91                     | 20.5                   | 3           |
| 20              | 64QAM      | 50      | 24        | 20.09                    | 19.92                       | 19.95                     |                        |             |
| 20              | 64QAM      | 50      | 50        | 20.05                    | 19.91                       | 19.91                     |                        |             |
| 20              | 64QAM      | 100     | 0         | 20.07                    | 19.94                       | 19.86                     |                        |             |
| Channel         |            |         |           | 18675                    | 18900                       | 19125                     | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |            |         |           | 1857.5                   | 1880                        | 1902.5                    |                        |             |
| 15              | QPSK       | 1       | 0         | 23.09                    | 22.90                       | 22.94                     | 23.5                   | 0           |
| 15              | QPSK       | 1       | 37        | 22.95                    | 22.75                       | 22.77                     |                        |             |
| 15              | QPSK       | 1       | 74        | 22.89                    | 22.80                       | 22.83                     |                        |             |
| 15              | QPSK       | 36      | 0         | 22.08                    | 21.87                       | 21.87                     | 22.5                   | 1           |
| 15              | QPSK       | 36      | 20        | 21.97                    | 21.87                       | 21.85                     |                        |             |
| 15              | QPSK       | 36      | 39        | 21.92                    | 21.80                       | 21.84                     |                        |             |
| 15              | QPSK       | 75      | 0         | 21.91                    | 21.86                       | 21.84                     | 22.5                   | 1           |
| 15              | 16QAM      | 1       | 0         | 22.44                    | 22.25                       | 22.26                     |                        |             |
| 15              | 16QAM      | 1       | 37        | 22.30                    | 22.08                       | 22.10                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 22.28                    | 22.16                       | 22.09                     | 21.5                   | 2           |
| 15              | 16QAM      | 36      | 0         | 21.18                    | 20.98                       | 20.97                     |                        |             |
| 15              | 16QAM      | 36      | 20        | 21.07                    | 20.96                       | 20.94                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 21.04                    | 20.91                       | 20.93                     | 21.5                   | 2           |
| 15              | 16QAM      | 75      | 0         | 21.06                    | 20.97                       | 20.94                     |                        |             |
| 15              | 64QAM      | 1       | 0         | 21.39                    | 21.21                       | 21.19                     |                        |             |
| 15              | 64QAM      | 1       | 37        | 21.21                    | 21.03                       | 21.04                     | 21.5                   | 2           |
| 15              | 64QAM      | 1       | 74        | 21.15                    | 21.08                       | 21.06                     |                        |             |
| 15              | 64QAM      | 36      | 0         | 20.20                    | 20.00                       | 20.00                     |                        |             |
| 15              | 64QAM      | 36      | 20        | 20.08                    | 20.01                       | 19.99                     | 20.5                   | 3           |
| 15              | 64QAM      | 36      | 39        | 20.05                    | 19.96                       | 19.96                     |                        |             |
| 15              | 64QAM      | 75      | 0         | 20.03                    | 19.97                       | 19.95                     |                        |             |



| Channel         |       |    |    | 18650  | 18900 | 19150  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1855   | 1880  | 1905   |                        |             |
| 10              | QPSK  | 1  | 0  | 23.23  | 23.05 | 22.83  | 23.5                   | 0           |
| 10              | QPSK  | 1  | 25 | 22.94  | 22.76 | 22.76  |                        |             |
| 10              | QPSK  | 1  | 49 | 23.09  | 23.01 | 22.77  |                        |             |
| 10              | QPSK  | 25 | 0  | 22.03  | 21.87 | 21.83  | 22.5                   | 1           |
| 10              | QPSK  | 25 | 12 | 22.00  | 21.84 | 21.80  |                        |             |
| 10              | QPSK  | 25 | 25 | 21.90  | 21.83 | 21.80  |                        |             |
| 10              | QPSK  | 50 | 0  | 21.92  | 21.85 | 21.85  |                        |             |
| 10              | 16QAM | 1  | 0  | 22.48  | 22.40 | 22.21  | 22.5                   | 1           |
| 10              | 16QAM | 1  | 25 | 22.31  | 22.13 | 22.11  |                        |             |
| 10              | 16QAM | 1  | 49 | 22.44  | 22.35 | 22.06  |                        |             |
| 10              | 16QAM | 25 | 0  | 21.14  | 20.95 | 20.92  | 21.5                   | 2           |
| 10              | 16QAM | 25 | 12 | 21.11  | 20.94 | 20.91  |                        |             |
| 10              | 16QAM | 25 | 25 | 21.00  | 20.93 | 20.90  |                        |             |
| 10              | 16QAM | 50 | 0  | 21.00  | 20.95 | 20.91  |                        |             |
| 10              | 64QAM | 1  | 0  | 21.46  | 21.32 | 21.10  | 21.5                   | 2           |
| 10              | 64QAM | 1  | 25 | 21.21  | 21.03 | 21.02  |                        |             |
| 10              | 64QAM | 1  | 49 | 21.31  | 21.26 | 21.01  |                        |             |
| 10              | 64QAM | 25 | 0  | 20.13  | 19.95 | 19.96  | 20.5                   | 3           |
| 10              | 64QAM | 25 | 12 | 20.12  | 19.95 | 19.95  |                        |             |
| 10              | 64QAM | 25 | 25 | 20.01  | 19.94 | 19.94  |                        |             |
| 10              | 64QAM | 50 | 0  | 20.03  | 19.98 | 19.94  |                        |             |
| Channel         |       |    |    | 18625  | 18900 | 19175  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1852.5 | 1880  | 1907.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 22.99  | 22.80 | 22.77  | 23.5                   | 0           |
| 5               | QPSK  | 1  | 12 | 22.92  | 22.75 | 22.74  |                        |             |
| 5               | QPSK  | 1  | 24 | 22.97  | 22.77 | 22.79  |                        |             |
| 5               | QPSK  | 12 | 0  | 21.97  | 21.80 | 21.81  | 22.5                   | 1           |
| 5               | QPSK  | 12 | 7  | 21.97  | 21.81 | 21.82  |                        |             |
| 5               | QPSK  | 12 | 13 | 21.93  | 21.81 | 21.80  |                        |             |
| 5               | QPSK  | 25 | 0  | 21.93  | 21.77 | 21.77  |                        |             |
| 5               | 16QAM | 1  | 0  | 22.31  | 22.19 | 22.13  | 22.5                   | 1           |
| 5               | 16QAM | 1  | 12 | 22.27  | 22.11 | 22.08  |                        |             |
| 5               | 16QAM | 1  | 24 | 22.31  | 22.13 | 22.12  |                        |             |
| 5               | 16QAM | 12 | 0  | 21.06  | 20.92 | 20.89  | 21.5                   | 2           |
| 5               | 16QAM | 12 | 7  | 21.07  | 20.90 | 20.89  |                        |             |
| 5               | 16QAM | 12 | 13 | 21.06  | 20.91 | 20.86  |                        |             |
| 5               | 16QAM | 25 | 0  | 21.04  | 20.87 | 20.84  |                        |             |
| 5               | 64QAM | 1  | 0  | 21.27  | 21.06 | 21.06  | 21.5                   | 2           |
| 5               | 64QAM | 1  | 12 | 21.18  | 21.01 | 20.98  |                        |             |
| 5               | 64QAM | 1  | 24 | 21.23  | 21.04 | 20.99  |                        |             |
| 5               | 64QAM | 12 | 0  | 20.10  | 19.98 | 19.92  | 20.5                   | 3           |
| 5               | 64QAM | 12 | 7  | 20.10  | 19.93 | 19.95  |                        |             |
| 5               | 64QAM | 12 | 13 | 20.11  | 19.96 | 19.91  |                        |             |
| 5               | 64QAM | 25 | 0  | 20.05  | 19.88 | 19.90  |                        |             |

| Channel         |       |    |    | 18615  | 18900 | 19185  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1851.5 | 1880  | 1908.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 22.95  | 22.78 | 22.78  | 23.5                   | 0           |
| 3               | QPSK  | 1  | 8  | 22.91  | 22.76 | 22.76  |                        |             |
| 3               | QPSK  | 1  | 14 | 22.83  | 22.75 | 22.74  |                        |             |
| 3               | QPSK  | 8  | 0  | 21.87  | 21.82 | 21.77  | 22.5                   | 1           |
| 3               | QPSK  | 8  | 4  | 21.96  | 21.72 | 21.82  |                        |             |
| 3               | QPSK  | 8  | 7  | 21.94  | 21.79 | 21.79  |                        |             |
| 3               | QPSK  | 15 | 0  | 21.95  | 21.78 | 21.78  |                        |             |
| 3               | 16QAM | 1  | 0  | 22.24  | 22.05 | 22.07  | 22.5                   | 1           |
| 3               | 16QAM | 1  | 8  | 22.26  | 22.11 | 22.06  |                        |             |
| 3               | 16QAM | 1  | 14 | 22.23  | 22.08 | 21.97  |                        |             |
| 3               | 16QAM | 8  | 0  | 21.11  | 20.94 | 20.90  | 21.5                   | 2           |
| 3               | 16QAM | 8  | 4  | 21.11  | 20.95 | 20.95  |                        |             |
| 3               | 16QAM | 8  | 7  | 21.01  | 20.75 | 20.93  |                        |             |
| 3               | 16QAM | 15 | 0  | 21.05  | 20.89 | 20.90  |                        |             |
| 3               | 64QAM | 1  | 0  | 21.21  | 21.08 | 21.01  | 21.5                   | 2           |
| 3               | 64QAM | 1  | 8  | 21.18  | 21.04 | 20.99  |                        |             |
| 3               | 64QAM | 1  | 14 | 21.20  | 21.02 | 20.99  |                        |             |
| 3               | 64QAM | 8  | 0  | 20.09  | 19.96 | 19.92  | 20.5                   | 3           |
| 3               | 64QAM | 8  | 4  | 20.11  | 19.96 | 19.92  |                        |             |
| 3               | 64QAM | 8  | 7  | 20.07  | 19.94 | 19.93  |                        |             |
| 3               | 64QAM | 15 | 0  | 20.05  | 19.88 | 19.89  |                        |             |
| Channel         |       |    |    | 18607  | 18900 | 19193  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1850.7 | 1880  | 1909.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 22.86  | 22.68 | 22.68  | 23.5                   | 0           |
| 1.4             | QPSK  | 1  | 3  | 22.91  | 22.75 | 22.75  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 22.85  | 22.67 | 22.67  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 22.88  | 22.73 | 22.68  |                        |             |
| 1.4             | QPSK  | 3  | 1  | 22.92  | 22.76 | 22.74  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 22.89  | 22.73 | 22.71  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 21.87  | 21.71 | 21.69  | 22.5                   | 1           |
| 1.4             | 16QAM | 1  | 0  | 22.18  | 22.03 | 21.95  | 22.5                   | 1           |
| 1.4             | 16QAM | 1  | 3  | 22.24  | 22.10 | 22.02  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 22.16  | 22.01 | 21.94  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 22.00  | 21.84 | 21.78  |                        |             |
| 1.4             | 16QAM | 3  | 1  | 22.01  | 21.87 | 21.79  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 21.96  | 21.82 | 21.76  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 21.05  | 20.88 | 20.83  | 21.5                   | 2           |
| 1.4             | 64QAM | 1  | 0  | 21.14  | 20.98 | 20.91  | 21.5                   | 2           |
| 1.4             | 64QAM | 1  | 3  | 21.15  | 21.01 | 20.96  |                        |             |
| 1.4             | 64QAM | 1  | 5  | 21.10  | 20.93 | 20.90  |                        |             |
| 1.4             | 64QAM | 3  | 0  | 21.11  | 20.95 | 20.89  |                        |             |
| 1.4             | 64QAM | 3  | 1  | 21.16  | 21.01 | 20.95  |                        |             |
| 1.4             | 64QAM | 3  | 3  | 21.11  | 20.95 | 20.90  |                        |             |
| 1.4             | 64QAM | 6  | 0  | 19.97  | 19.81 | 19.80  | 20.5                   | 3           |

**<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         | 22.83                 | 22.84                    | 22.80                  | 23.5                | 0        |
| 20              | QPSK       | 1       | 49        | 22.65                 | 22.59                    | 22.65                  |                     |          |
| 20              | QPSK       | 1       | 99        | 22.65                 | 22.57                    | 22.63                  |                     |          |
| 20              | QPSK       | 50      | 0         | 21.79                 | 21.75                    | 21.71                  | 22.5                | 1        |
| 20              | QPSK       | 50      | 24        | 21.75                 | 21.70                    | 21.62                  |                     |          |
| 20              | QPSK       | 50      | 50        | 21.69                 | 21.60                    | 21.70                  |                     |          |
| 20              | QPSK       | 100     | 0         | 21.75                 | 21.69                    | 21.67                  |                     |          |
| 20              | 16QAM      | 1       | 0         | 22.22                 | 22.19                    | 22.15                  | 22.5                | 1        |
| 20              | 16QAM      | 1       | 49        | 22.00                 | 21.96                    | 22.03                  |                     |          |
| 20              | 16QAM      | 1       | 99        | 22.00                 | 21.95                    | 21.94                  |                     |          |
| 20              | 16QAM      | 50      | 0         | 20.89                 | 20.85                    | 20.79                  | 21.5                | 2        |
| 20              | 16QAM      | 50      | 24        | 20.84                 | 20.79                    | 20.73                  |                     |          |
| 20              | 16QAM      | 50      | 50        | 20.81                 | 20.70                    | 20.80                  |                     |          |
| 20              | 16QAM      | 100     | 0         | 20.83                 | 20.79                    | 20.74                  |                     |          |
| 20              | 64QAM      | 1       | 0         | 21.12                 | 21.08                    | 21.04                  | 21.5                | 2        |
| 20              | 64QAM      | 1       | 49        | 20.89                 | 20.85                    | 20.92                  |                     |          |
| 20              | 64QAM      | 1       | 99        | 20.88                 | 20.83                    | 20.83                  |                     |          |
| 20              | 64QAM      | 50      | 0         | 19.90                 | 19.86                    | 19.83                  | 20.5                | 3        |
| 20              | 64QAM      | 50      | 24        | 19.85                 | 19.79                    | 19.74                  |                     |          |
| 20              | 64QAM      | 50      | 50        | 19.82                 | 19.73                    | 19.80                  |                     |          |
| 20              | 64QAM      | 100     | 0         | 19.87                 | 19.80                    | 19.77                  |                     |          |
| Channel         |            |         |           | 20025                 | 20175                    | 20325                  |                     |          |
| Frequency (MHz) |            |         |           | 1717.5                | 1732.5                   | 1747.5                 |                     |          |
| 15              | QPSK       | 1       | 0         | 22.79                 | 22.83                    | 22.78                  | 23.5                | 0        |
| 15              | QPSK       | 1       | 37        | 22.68                 | 22.63                    | 22.66                  |                     |          |
| 15              | QPSK       | 1       | 74        | 22.76                 | 22.65                    | 22.70                  |                     |          |
| 15              | QPSK       | 36      | 0         | 21.81                 | 21.75                    | 21.68                  | 22.5                | 1        |
| 15              | QPSK       | 36      | 20        | 21.77                 | 21.67                    | 21.78                  |                     |          |
| 15              | QPSK       | 36      | 39        | 21.76                 | 21.64                    | 21.68                  |                     |          |
| 15              | QPSK       | 75      | 0         | 21.77                 | 21.71                    | 21.64                  |                     |          |
| 15              | 16QAM      | 1       | 0         | 22.23                 | 22.16                    | 22.13                  | 22.5                | 1        |
| 15              | 16QAM      | 1       | 37        | 22.01                 | 21.97                    | 21.99                  |                     |          |
| 15              | 16QAM      | 1       | 74        | 22.08                 | 21.99                    | 21.97                  |                     |          |
| 15              | 16QAM      | 36      | 0         | 20.94                 | 20.82                    | 20.80                  | 21.5                | 2        |
| 15              | 16QAM      | 36      | 20        | 20.89                 | 20.84                    | 20.87                  |                     |          |
| 15              | 16QAM      | 36      | 39        | 20.84                 | 20.80                    | 20.81                  |                     |          |
| 15              | 16QAM      | 75      | 0         | 20.88                 | 20.78                    | 20.76                  |                     |          |
| 15              | 64QAM      | 1       | 0         | 21.14                 | 21.10                    | 21.07                  | 21.5                | 2        |
| 15              | 64QAM      | 1       | 37        | 20.97                 | 20.90                    | 20.94                  |                     |          |
| 15              | 64QAM      | 1       | 74        | 21.00                 | 20.91                    | 20.91                  |                     |          |
| 15              | 64QAM      | 36      | 0         | 19.94                 | 19.91                    | 19.86                  | 20.5                | 3        |
| 15              | 64QAM      | 36      | 20        | 19.90                 | 19.86                    | 19.90                  |                     |          |
| 15              | 64QAM      | 36      | 39        | 19.87                 | 19.82                    | 19.84                  |                     |          |
| 15              | 64QAM      | 75      | 0         | 19.89                 | 19.82                    | 19.75                  |                     |          |

| Channel         |       |    |    | 20000  | 20175  | 20350  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|--------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1715   | 1732.5 | 1750   |                        |             |
| 10              | QPSK  | 1  | 0  | 22.81  | 22.73  | 22.78  | 23.5                   | 0           |
| 10              | QPSK  | 1  | 25 | 22.73  | 22.64  | 22.67  |                        |             |
| 10              | QPSK  | 1  | 49 | 22.75  | 22.62  | 22.64  |                        |             |
| 10              | QPSK  | 25 | 0  | 21.83  | 21.71  | 21.79  | 22.5                   | 1           |
| 10              | QPSK  | 25 | 12 | 21.77  | 21.68  | 21.76  |                        |             |
| 10              | QPSK  | 25 | 25 | 21.77  | 21.64  | 21.69  |                        |             |
| 10              | QPSK  | 50 | 0  | 21.77  | 21.69  | 21.72  |                        |             |
| 10              | 16QAM | 1  | 0  | 22.10  | 22.10  | 22.13  | 22.5                   | 1           |
| 10              | 16QAM | 1  | 25 | 22.07  | 21.98  | 21.94  |                        |             |
| 10              | 16QAM | 1  | 49 | 22.10  | 21.96  | 21.99  |                        |             |
| 10              | 16QAM | 25 | 0  | 20.92  | 20.84  | 20.87  | 21.5                   | 2           |
| 10              | 16QAM | 25 | 12 | 20.85  | 20.79  | 20.81  |                        |             |
| 10              | 16QAM | 25 | 25 | 20.86  | 20.78  | 20.78  |                        |             |
| 10              | 16QAM | 50 | 0  | 20.88  | 20.80  | 20.82  |                        |             |
| 10              | 64QAM | 1  | 0  | 21.02  | 21.01  | 21.08  | 21.5                   | 2           |
| 10              | 64QAM | 1  | 25 | 20.94  | 20.91  | 20.90  |                        |             |
| 10              | 64QAM | 1  | 49 | 20.99  | 20.88  | 20.91  |                        |             |
| 10              | 64QAM | 25 | 0  | 19.91  | 19.86  | 19.89  | 20.5                   | 3           |
| 10              | 64QAM | 25 | 12 | 19.87  | 19.82  | 19.82  |                        |             |
| 10              | 64QAM | 25 | 25 | 19.87  | 19.78  | 19.84  |                        |             |
| 10              | 64QAM | 50 | 0  | 19.87  | 19.83  | 19.83  |                        |             |
| Channel         |       |    |    | 19975  | 20175  | 20375  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1712.5 | 1732.5 | 1752.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 22.79  | 22.66  | 22.69  | 23.5                   | 0           |
| 5               | QPSK  | 1  | 12 | 22.71  | 22.61  | 22.62  |                        |             |
| 5               | QPSK  | 1  | 24 | 22.72  | 22.64  | 22.64  |                        |             |
| 5               | QPSK  | 12 | 0  | 21.74  | 21.64  | 21.70  | 22.5                   | 1           |
| 5               | QPSK  | 12 | 7  | 21.75  | 21.65  | 21.69  |                        |             |
| 5               | QPSK  | 12 | 13 | 21.75  | 21.63  | 21.68  |                        |             |
| 5               | QPSK  | 25 | 0  | 21.76  | 21.64  | 21.66  |                        |             |
| 5               | 16QAM | 1  | 0  | 22.04  | 22.02  | 21.94  | 22.5                   | 1           |
| 5               | 16QAM | 1  | 12 | 22.04  | 21.96  | 21.90  |                        |             |
| 5               | 16QAM | 1  | 24 | 22.08  | 21.96  | 21.92  |                        |             |
| 5               | 16QAM | 12 | 0  | 20.86  | 20.77  | 20.79  | 21.5                   | 2           |
| 5               | 16QAM | 12 | 7  | 20.83  | 20.75  | 20.78  |                        |             |
| 5               | 16QAM | 12 | 13 | 20.79  | 20.77  | 20.74  |                        |             |
| 5               | 16QAM | 25 | 0  | 20.86  | 20.76  | 20.75  |                        |             |
| 5               | 64QAM | 1  | 0  | 20.98  | 20.96  | 20.92  | 21.5                   | 2           |
| 5               | 64QAM | 1  | 12 | 20.95  | 20.90  | 20.86  |                        |             |
| 5               | 64QAM | 1  | 24 | 20.94  | 20.89  | 20.86  |                        |             |
| 5               | 64QAM | 12 | 0  | 19.89  | 19.84  | 19.83  | 20.5                   | 3           |
| 5               | 64QAM | 12 | 7  | 19.89  | 19.83  | 19.84  |                        |             |
| 5               | 64QAM | 12 | 13 | 19.85  | 19.78  | 19.81  |                        |             |
| 5               | 64QAM | 25 | 0  | 19.82  | 19.77  | 19.79  |                        |             |



| Channel         |       |    |    | 19965  | 20175  | 20385  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|--------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1711.5 | 1732.5 | 1753.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 22.75  | 22.68  | 22.66  | 23.5                   | 0           |
| 3               | QPSK  | 1  | 8  | 22.71  | 22.62  | 22.54  |                        |             |
| 3               | QPSK  | 1  | 14 | 22.62  | 22.63  | 22.64  |                        |             |
| 3               | QPSK  | 8  | 0  | 21.77  | 21.67  | 21.67  | 22.5                   | 1           |
| 3               | QPSK  | 8  | 4  | 21.78  | 21.68  | 21.70  |                        |             |
| 3               | QPSK  | 8  | 7  | 21.74  | 21.65  | 21.66  |                        |             |
| 3               | QPSK  | 15 | 0  | 21.76  | 21.66  | 21.67  |                        |             |
| 3               | 16QAM | 1  | 0  | 21.97  | 21.99  | 21.93  | 22.5                   | 1           |
| 3               | 16QAM | 1  | 8  | 22.00  | 21.97  | 21.95  |                        |             |
| 3               | 16QAM | 1  | 14 | 21.87  | 21.94  | 21.91  |                        |             |
| 3               | 16QAM | 8  | 0  | 20.89  | 20.79  | 20.79  | 21.5                   | 2           |
| 3               | 16QAM | 8  | 4  | 20.91  | 20.85  | 20.74  |                        |             |
| 3               | 16QAM | 8  | 7  | 20.85  | 20.82  | 20.82  |                        |             |
| 3               | 16QAM | 15 | 0  | 20.85  | 20.78  | 20.77  |                        |             |
| 3               | 64QAM | 1  | 0  | 20.97  | 20.94  | 20.89  | 21.5                   | 2           |
| 3               | 64QAM | 1  | 8  | 20.86  | 20.91  | 20.88  |                        |             |
| 3               | 64QAM | 1  | 14 | 20.85  | 20.89  | 20.78  |                        |             |
| 3               | 64QAM | 8  | 0  | 19.87  | 19.80  | 19.82  | 20.5                   | 3           |
| 3               | 64QAM | 8  | 4  | 19.89  | 19.84  | 19.84  |                        |             |
| 3               | 64QAM | 8  | 7  | 19.86  | 19.81  | 19.78  |                        |             |
| 3               | 64QAM | 15 | 0  | 19.87  | 19.79  | 19.79  |                        |             |
| 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  | 22.65  | 22.59  | 22.56  | 23.5                   | 0           |
| 1.4             | QPSK  | 1  | 3  | 22.71  | 22.64  | 22.64  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 22.63  | 22.54  | 22.55  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 22.69  | 22.63  | 22.61  |                        |             |
| 1.4             | QPSK  | 3  | 1  | 22.72  | 22.64  | 22.65  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 22.68  | 22.60  | 22.62  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 21.68  | 21.57  | 21.61  | 22.5                   | 1           |
| 1.4             | 16QAM | 1  | 0  | 21.90  | 21.88  | 21.86  | 22.5                   | 1           |
| 1.4             | 16QAM | 1  | 3  | 21.98  | 21.96  | 21.91  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 21.90  | 21.88  | 21.85  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 21.73  | 21.68  | 21.68  |                        |             |
| 1.4             | 16QAM | 3  | 1  | 21.73  | 21.72  | 21.71  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 21.70  | 21.68  | 21.67  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 20.82  | 20.76  | 20.76  | 21.5                   | 2           |
| 1.4             | 64QAM | 1  | 0  | 20.88  | 20.85  | 20.80  | 21.5                   | 2           |
| 1.4             | 64QAM | 1  | 3  | 20.93  | 20.90  | 20.87  |                        |             |
| 1.4             | 64QAM | 1  | 5  | 20.84  | 20.81  | 20.81  |                        |             |
| 1.4             | 64QAM | 3  | 0  | 20.88  | 20.83  | 20.81  |                        |             |
| 1.4             | 64QAM | 3  | 1  | 20.92  | 20.86  | 20.84  |                        |             |
| 1.4             | 64QAM | 3  | 3  | 20.86  | 20.83  | 20.84  |                        |             |
| 1.4             | 64QAM | 6  | 0  | 19.78  | 19.69  | 19.72  | 20.5                   | 3           |

**<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                  |                     |          |
| Frequency (MHz) |            |         |           | 829                   | 836.5                    | 844                    |                     |          |
| 10              | QPSK       | 1       | 0         | 22.84                 | 22.83                    | 22.66                  | 24                  | 0        |
| 10              | QPSK       | 1       | 25        | 22.74                 | 22.65                    | 22.60                  |                     |          |
| 10              | QPSK       | 1       | 49        | 22.74                 | 22.63                    | 22.56                  |                     |          |
| 10              | QPSK       | 25      | 0         | 21.82                 | 21.73                    | 21.67                  | 23                  | 1        |
| 10              | QPSK       | 25      | 12        | 21.83                 | 21.72                    | 21.68                  |                     |          |
| 10              | QPSK       | 25      | 25        | 21.79                 | 21.71                    | 21.63                  |                     |          |
| 10              | QPSK       | 50      | 0         | 21.83                 | 21.70                    | 21.65                  |                     |          |
| 10              | 16QAM      | 1       | 0         | 22.15                 | 22.09                    | 22.00                  | 23                  | 1        |
| 10              | 16QAM      | 1       | 25        | 22.10                 | 22.01                    | 21.95                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 22.06                 | 22.01                    | 21.94                  |                     |          |
| 10              | 16QAM      | 25      | 0         | 20.93                 | 20.80                    | 20.75                  | 22                  | 2        |
| 10              | 16QAM      | 25      | 12        | 20.89                 | 20.85                    | 20.78                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.86                 | 20.82                    | 20.72                  |                     |          |
| 10              | 16QAM      | 50      | 0         | 20.90                 | 20.83                    | 20.76                  |                     |          |
| 10              | 64QAM      | 1       | 0         | 21.12                 | 21.00                    | 20.96                  | 22                  | 2        |
| 10              | 64QAM      | 1       | 25        | 21.05                 | 20.96                    | 20.90                  |                     |          |
| 10              | 64QAM      | 1       | 49        | 21.00                 | 20.93                    | 20.84                  |                     |          |
| 10              | 64QAM      | 25      | 0         | 19.95                 | 19.83                    | 19.77                  |                     |          |
| 10              | 64QAM      | 25      | 12        | 19.94                 | 19.85                    | 19.76                  | 21                  | 3        |
| 10              | 64QAM      | 25      | 25        | 19.89                 | 19.81                    | 19.73                  |                     |          |
| 10              | 64QAM      | 50      | 0         | 19.94                 | 19.83                    | 19.76                  |                     |          |
| Channel         |            |         |           | 20425                 | 20525                    | 20625                  |                     |          |
| Frequency (MHz) |            |         |           | 826.5                 | 836.5                    | 846.5                  |                     |          |
| 5               | QPSK       | 1       | 0         | 22.80                 | 22.68                    | 22.62                  | 24                  | 0        |
| 5               | QPSK       | 1       | 12        | 22.75                 | 22.63                    | 22.56                  |                     |          |
| 5               | QPSK       | 1       | 24        | 22.75                 | 22.66                    | 22.55                  |                     |          |
| 5               | QPSK       | 12      | 0         | 21.84                 | 21.70                    | 21.63                  | 23                  | 1        |
| 5               | QPSK       | 12      | 7         | 21.86                 | 21.72                    | 21.64                  |                     |          |
| 5               | QPSK       | 12      | 13        | 21.79                 | 21.70                    | 21.58                  |                     |          |
| 5               | QPSK       | 25      | 0         | 21.80                 | 21.71                    | 21.61                  |                     |          |
| 5               | 16QAM      | 1       | 0         | 22.16                 | 22.04                    | 21.96                  | 23                  | 1        |
| 5               | 16QAM      | 1       | 12        | 22.14                 | 21.99                    | 21.89                  |                     |          |
| 5               | 16QAM      | 1       | 24        | 22.13                 | 21.97                    | 21.89                  |                     |          |
| 5               | 16QAM      | 12      | 0         | 20.91                 | 20.81                    | 20.69                  | 22                  | 2        |
| 5               | 16QAM      | 12      | 7         | 20.94                 | 20.82                    | 20.71                  |                     |          |
| 5               | 16QAM      | 12      | 13        | 20.90                 | 20.82                    | 20.69                  |                     |          |
| 5               | 16QAM      | 25      | 0         | 20.91                 | 20.81                    | 20.69                  |                     |          |
| 5               | 64QAM      | 1       | 0         | 21.11                 | 20.98                    | 20.89                  | 22                  | 2        |
| 5               | 64QAM      | 1       | 12        | 21.03                 | 20.94                    | 20.80                  |                     |          |
| 5               | 64QAM      | 1       | 24        | 21.04                 | 20.91                    | 20.80                  |                     |          |
| 5               | 64QAM      | 12      | 0         | 19.94                 | 19.83                    | 19.76                  | 21                  | 3        |
| 5               | 64QAM      | 12      | 7         | 19.98                 | 19.86                    | 19.78                  |                     |          |
| 5               | 64QAM      | 12      | 13        | 19.93                 | 19.83                    | 19.73                  |                     |          |
| 5               | 64QAM      | 25      | 0         | 19.93                 | 19.80                    | 19.71                  |                     |          |



| Channel         |       |    |    | 20415 | 20525 | 20635 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|-------|-------|-------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 825.5 | 836.5 | 847.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 22.83 | 22.68 | 22.59 | 24                     | 0           |
| 3               | QPSK  | 1  | 8  | 22.69 | 22.64 | 22.54 |                        |             |
| 3               | QPSK  | 1  | 14 | 22.77 | 22.65 | 22.52 |                        |             |
| 3               | QPSK  | 8  | 0  | 21.85 | 21.71 | 21.60 | 23                     | 1           |
| 3               | QPSK  | 8  | 4  | 21.83 | 21.71 | 21.62 |                        |             |
| 3               | QPSK  | 8  | 7  | 21.84 | 21.69 | 21.60 |                        |             |
| 3               | QPSK  | 15 | 0  | 21.81 | 21.69 | 21.58 | 23                     | 1           |
| 3               | 16QAM | 1  | 0  | 22.16 | 22.00 | 21.89 |                        |             |
| 3               | 16QAM | 1  | 8  | 22.13 | 21.99 | 21.90 |                        |             |
| 3               | 16QAM | 1  | 14 | 22.09 | 21.98 | 21.88 | 22                     | 2           |
| 3               | 16QAM | 8  | 0  | 20.95 | 20.84 | 20.73 |                        |             |
| 3               | 16QAM | 8  | 4  | 20.97 | 20.85 | 20.75 |                        |             |
| 3               | 16QAM | 8  | 7  | 20.98 | 20.84 | 20.70 | 22                     | 2           |
| 3               | 16QAM | 15 | 0  | 20.82 | 20.77 | 20.70 |                        |             |
| 3               | 64QAM | 1  | 0  | 21.10 | 20.95 | 20.84 |                        |             |
| 3               | 64QAM | 1  | 8  | 21.06 | 20.92 | 20.82 | 22                     | 2           |
| 3               | 64QAM | 1  | 14 | 20.98 | 20.94 | 20.83 |                        |             |
| 3               | 64QAM | 8  | 0  | 19.98 | 19.83 | 19.71 |                        |             |
| 3               | 64QAM | 8  | 4  | 19.91 | 19.85 | 19.75 | 21                     | 3           |
| 3               | 64QAM | 8  | 7  | 19.98 | 19.83 | 19.70 |                        |             |
| 3               | 64QAM | 15 | 0  | 19.87 | 19.80 | 19.61 |                        |             |
| 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  | 22.73 | 22.60 | 22.47 | 24                     | 0           |
| 1.4             | QPSK  | 1  | 3  | 22.79 | 22.65 | 22.55 |                        |             |
| 1.4             | QPSK  | 1  | 5  | 22.72 | 22.59 | 22.46 |                        |             |
| 1.4             | QPSK  | 3  | 0  | 22.78 | 22.64 | 22.54 |                        |             |
| 1.4             | QPSK  | 3  | 1  | 22.82 | 22.65 | 22.54 |                        |             |
| 1.4             | QPSK  | 3  | 3  | 22.76 | 22.62 | 22.51 |                        |             |
| 1.4             | QPSK  | 6  | 0  | 21.76 | 21.64 | 21.52 | 23                     | 1           |
| 1.4             | 16QAM | 1  | 0  | 22.06 | 21.91 | 21.79 | 23                     | 1           |
| 1.4             | 16QAM | 1  | 3  | 22.14 | 22.00 | 21.89 |                        |             |
| 1.4             | 16QAM | 1  | 5  | 22.05 | 21.93 | 21.80 |                        |             |
| 1.4             | 16QAM | 3  | 0  | 21.89 | 21.74 | 21.61 |                        |             |
| 1.4             | 16QAM | 3  | 1  | 21.92 | 21.76 | 21.64 |                        |             |
| 1.4             | 16QAM | 3  | 3  | 21.87 | 21.74 | 21.61 |                        |             |
| 1.4             | 16QAM | 6  | 0  | 20.94 | 20.78 | 20.67 | 22                     | 2           |
| 1.4             | 64QAM | 1  | 0  | 21.03 | 20.87 | 20.78 | 22                     | 2           |
| 1.4             | 64QAM | 1  | 3  | 21.09 | 20.94 | 20.83 |                        |             |
| 1.4             | 64QAM | 1  | 5  | 20.99 | 20.84 | 20.75 |                        |             |
| 1.4             | 64QAM | 3  | 0  | 20.99 | 20.84 | 20.74 |                        |             |
| 1.4             | 64QAM | 3  | 1  | 21.04 | 20.90 | 20.78 |                        |             |
| 1.4             | 64QAM | 3  | 3  | 20.99 | 20.85 | 20.73 |                        |             |
| 1.4             | 64QAM | 6  | 0  | 19.87 | 19.72 | 19.62 | 21                     | 3           |

**<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         | 22.49                 | 22.50                    | 22.39                  | 24                  | 0        |
| 20              | QPSK       | 1       | 49        | 22.62                 | 22.63                    | 22.67                  |                     |          |
| 20              | QPSK       | 1       | 99        | 22.66                 | 22.70                    | 22.83                  |                     |          |
| 20              | QPSK       | 50      | 0         | 21.54                 | 21.54                    | 21.55                  | 23                  | 1        |
| 20              | QPSK       | 50      | 24        | 21.66                 | 21.69                    | 21.69                  |                     |          |
| 20              | QPSK       | 50      | 50        | 21.63                 | 21.77                    | 21.77                  |                     |          |
| 20              | QPSK       | 100     | 0         | 21.64                 | 21.65                    | 21.65                  | 23                  | 1        |
| 20              | 16QAM      | 1       | 0         | 21.81                 | 21.83                    | 21.70                  |                     |          |
| 20              | 16QAM      | 1       | 49        | 21.96                 | 21.94                    | 21.99                  |                     |          |
| 20              | 16QAM      | 1       | 99        | 22.01                 | 22.02                    | 22.09                  | 22                  | 2        |
| 20              | 16QAM      | 50      | 0         | 20.61                 | 20.65                    | 20.63                  |                     |          |
| 20              | 16QAM      | 50      | 24        | 20.76                 | 20.73                    | 20.75                  |                     |          |
| 20              | 16QAM      | 50      | 50        | 20.72                 | 20.86                    | 20.86                  | 22                  | 2        |
| 20              | 16QAM      | 100     | 0         | 20.69                 | 20.72                    | 20.72                  |                     |          |
| 20              | 64QAM      | 1       | 0         | 20.72                 | 20.72                    | 20.61                  |                     |          |
| 20              | 64QAM      | 1       | 49        | 20.84                 | 20.86                    | 20.89                  | 22                  | 2        |
| 20              | 64QAM      | 1       | 99        | 20.89                 | 20.92                    | 21.00                  |                     |          |
| 20              | 64QAM      | 50      | 0         | 19.62                 | 19.66                    | 19.63                  |                     |          |
| 20              | 64QAM      | 50      | 24        | 19.75                 | 19.75                    | 19.79                  | 21                  | 3        |
| 20              | 64QAM      | 50      | 50        | 19.73                 | 19.84                    | 19.89                  |                     |          |
| 20              | 64QAM      | 100     | 0         | 19.73                 | 19.72                    | 19.74                  |                     |          |
| Channel         |            |         |           | 20825                 | 21100                    | 21375                  |                     |          |
| Frequency (MHz) |            |         |           | 2507.5                | 2535                     | 2562.5                 |                     |          |
| 15              | QPSK       | 1       | 0         | 22.55                 | 22.59                    | 22.53                  | 24                  | 0        |
| 15              | QPSK       | 1       | 37        | 22.62                 | 22.65                    | 22.64                  |                     |          |
| 15              | QPSK       | 1       | 74        | 22.74                 | 22.68                    | 22.78                  |                     |          |
| 15              | QPSK       | 36      | 0         | 21.54                 | 21.55                    | 21.61                  | 23                  | 1        |
| 15              | QPSK       | 36      | 20        | 21.68                 | 21.68                    | 21.76                  |                     |          |
| 15              | QPSK       | 36      | 39        | 21.68                 | 21.75                    | 21.75                  |                     |          |
| 15              | QPSK       | 75      | 0         | 21.64                 | 21.63                    | 21.71                  | 23                  | 1        |
| 15              | 16QAM      | 1       | 0         | 21.89                 | 21.90                    | 21.86                  |                     |          |
| 15              | 16QAM      | 1       | 37        | 21.93                 | 21.97                    | 21.96                  |                     |          |
| 15              | 16QAM      | 1       | 74        | 22.06                 | 22.00                    | 22.10                  | 22                  | 2        |
| 15              | 16QAM      | 36      | 0         | 20.61                 | 20.66                    | 20.68                  |                     |          |
| 15              | 16QAM      | 36      | 20        | 20.73                 | 20.76                    | 20.85                  |                     |          |
| 15              | 16QAM      | 36      | 39        | 20.78                 | 20.79                    | 20.78                  | 22                  | 2        |
| 15              | 16QAM      | 75      | 0         | 20.68                 | 20.75                    | 20.80                  |                     |          |
| 15              | 64QAM      | 1       | 0         | 20.81                 | 20.81                    | 20.77                  |                     |          |
| 15              | 64QAM      | 1       | 37        | 20.86                 | 20.88                    | 20.88                  | 22                  | 2        |
| 15              | 64QAM      | 1       | 74        | 20.95                 | 20.89                    | 21.01                  |                     |          |
| 15              | 64QAM      | 36      | 0         | 19.65                 | 19.69                    | 19.71                  |                     |          |
| 15              | 64QAM      | 36      | 20        | 19.77                 | 19.78                    | 19.87                  | 21                  | 3        |
| 15              | 64QAM      | 36      | 39        | 19.78                 | 19.85                    | 19.81                  |                     |          |
| 15              | 64QAM      | 75      | 0         | 19.73                 | 19.75                    | 19.78                  |                     |          |

| Channel         |       |    |    | 20800  | 21100 | 21400  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 2505   | 2535  | 2565   |                        |             |
| 10              | QPSK  | 1  | 0  | 22.56  | 22.53 | 22.59  | 24                     | 0           |
| 10              | QPSK  | 1  | 25 | 22.67  | 22.62 | 22.64  |                        |             |
| 10              | QPSK  | 1  | 49 | 22.65  | 22.72 | 22.72  |                        |             |
| 10              | QPSK  | 25 | 0  | 21.62  | 21.57 | 21.69  | 23                     | 1           |
| 10              | QPSK  | 25 | 12 | 21.62  | 21.64 | 21.66  |                        |             |
| 10              | QPSK  | 25 | 25 | 21.65  | 21.71 | 21.73  |                        |             |
| 10              | QPSK  | 50 | 0  | 21.57  | 21.64 | 21.77  |                        |             |
| 10              | 16QAM | 1  | 0  | 21.89  | 21.83 | 21.95  | 23                     | 1           |
| 10              | 16QAM | 1  | 25 | 22.01  | 21.96 | 21.97  |                        |             |
| 10              | 16QAM | 1  | 49 | 21.98  | 22.04 | 22.06  |                        |             |
| 10              | 16QAM | 25 | 0  | 20.73  | 20.67 | 20.74  | 22                     | 2           |
| 10              | 16QAM | 25 | 12 | 20.72  | 20.76 | 20.73  |                        |             |
| 10              | 16QAM | 25 | 25 | 20.70  | 20.80 | 20.76  |                        |             |
| 10              | 16QAM | 50 | 0  | 20.71  | 20.71 | 20.84  |                        |             |
| 10              | 64QAM | 1  | 0  | 20.79  | 20.72 | 20.76  | 22                     | 2           |
| 10              | 64QAM | 1  | 25 | 20.85  | 20.85 | 20.84  |                        |             |
| 10              | 64QAM | 1  | 49 | 20.88  | 20.80 | 20.96  |                        |             |
| 10              | 64QAM | 25 | 0  | 19.64  | 19.66 | 19.70  | 21                     | 3           |
| 10              | 64QAM | 25 | 12 | 19.67  | 19.77 | 19.85  |                        |             |
| 10              | 64QAM | 25 | 25 | 19.77  | 19.79 | 19.73  |                        |             |
| 10              | 64QAM | 50 | 0  | 19.67  | 19.67 | 19.76  |                        |             |
| Channel         |       |    |    | 20775  | 21100 | 21425  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 2502.5 | 2535  | 2567.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 22.59  | 22.58 | 22.69  | 24                     | 0           |
| 5               | QPSK  | 1  | 12 | 22.64  | 22.61 | 22.76  |                        |             |
| 5               | QPSK  | 1  | 24 | 22.70  | 22.68 | 22.82  |                        |             |
| 5               | QPSK  | 12 | 0  | 21.66  | 21.59 | 21.74  | 23                     | 1           |
| 5               | QPSK  | 12 | 7  | 21.70  | 21.66 | 21.79  |                        |             |
| 5               | QPSK  | 12 | 13 | 21.68  | 21.67 | 21.81  |                        |             |
| 5               | QPSK  | 25 | 0  | 21.65  | 21.65 | 21.75  |                        |             |
| 5               | 16QAM | 1  | 0  | 21.93  | 21.86 | 22.02  | 23                     | 1           |
| 5               | 16QAM | 1  | 12 | 21.98  | 21.94 | 22.10  |                        |             |
| 5               | 16QAM | 1  | 24 | 22.00  | 21.98 | 22.17  |                        |             |
| 5               | 16QAM | 12 | 0  | 20.72  | 20.67 | 20.80  | 22                     | 2           |
| 5               | 16QAM | 12 | 7  | 20.81  | 20.74 | 20.88  |                        |             |
| 5               | 16QAM | 12 | 13 | 20.78  | 20.77 | 20.88  |                        |             |
| 5               | 16QAM | 25 | 0  | 20.75  | 20.72 | 20.84  |                        |             |
| 5               | 64QAM | 1  | 0  | 20.76  | 20.75 | 20.71  | 22                     | 2           |
| 5               | 64QAM | 1  | 12 | 20.82  | 20.83 | 20.87  |                        |             |
| 5               | 64QAM | 1  | 24 | 20.91  | 20.88 | 20.95  |                        |             |
| 5               | 64QAM | 12 | 0  | 19.60  | 19.59 | 19.69  | 21                     | 3           |
| 5               | 64QAM | 12 | 7  | 19.67  | 19.71 | 19.78  |                        |             |
| 5               | 64QAM | 12 | 13 | 19.77  | 19.85 | 19.76  |                        |             |
| 5               | 64QAM | 25 | 0  | 19.67  | 19.66 | 19.69  |                        |             |

**<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         | 22.64                 | 22.58                    | 22.55                  | 24                  | 0        |
| 10              | QPSK       | 1       | 25        | 22.62                 | 22.57                    | 22.64                  |                     |          |
| 10              | QPSK       | 1       | 49        | 22.64                 | 22.77                    | 22.78                  |                     |          |
| 10              | QPSK       | 25      | 0         | 21.70                 | 21.65                    | 21.55                  | 23                  | 1        |
| 10              | QPSK       | 25      | 12        | 21.69                 | 21.62                    | 21.61                  |                     |          |
| 10              | QPSK       | 25      | 25        | 21.68                 | 21.64                    | 21.70                  |                     |          |
| 10              | QPSK       | 50      | 0         | 21.69                 | 21.64                    | 21.59                  |                     |          |
| 10              | 16QAM      | 1       | 0         | 22.01                 | 21.89                    | 21.89                  | 23                  | 1        |
| 10              | 16QAM      | 1       | 25        | 21.96                 | 21.89                    | 21.90                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 21.96                 | 21.97                    | 22.06                  |                     |          |
| 10              | 16QAM      | 25      | 0         | 20.76                 | 20.72                    | 20.65                  | 22                  | 2        |
| 10              | 16QAM      | 25      | 12        | 20.77                 | 20.72                    | 20.67                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.76                 | 20.71                    | 20.80                  |                     |          |
| 10              | 16QAM      | 50      | 0         | 20.76                 | 20.71                    | 20.65                  |                     |          |
| 10              | 64QAM      | 1       | 0         | 20.90                 | 20.86                    | 20.78                  | 22                  | 2        |
| 10              | 64QAM      | 1       | 25        | 20.91                 | 20.84                    | 20.89                  |                     |          |
| 10              | 64QAM      | 1       | 49        | 20.92                 | 20.97                    | 21.02                  |                     |          |
| 10              | 64QAM      | 25      | 0         | 19.77                 | 19.72                    | 19.68                  |                     |          |
| 10              | 64QAM      | 25      | 12        | 19.81                 | 19.77                    | 19.70                  | 21                  | 3        |
| 10              | 64QAM      | 25      | 25        | 19.76                 | 19.72                    | 19.80                  |                     |          |
| 10              | 64QAM      | 50      | 0         | 19.82                 | 19.74                    | 19.72                  |                     |          |
| Channel         |            |         |           | 23035                 | 23095                    | 23155                  | Tune-up limit (dBm) | MPR (dB) |
| Frequency (MHz) |            |         |           | 701.5                 | 707.5                    | 713.5                  |                     |          |
| 5               | QPSK       | 1       | 0         | 22.67                 | 22.58                    | 22.59                  | 24                  | 0        |
| 5               | QPSK       | 1       | 12        | 22.65                 | 22.57                    | 22.62                  |                     |          |
| 5               | QPSK       | 1       | 24        | 22.68                 | 22.58                    | 22.74                  |                     |          |
| 5               | QPSK       | 12      | 0         | 21.70                 | 21.62                    | 21.63                  | 23                  | 1        |
| 5               | QPSK       | 12      | 7         | 21.74                 | 21.64                    | 21.66                  |                     |          |
| 5               | QPSK       | 12      | 13        | 21.69                 | 21.61                    | 21.63                  |                     |          |
| 5               | QPSK       | 25      | 0         | 21.71                 | 21.58                    | 21.64                  |                     |          |
| 5               | 16QAM      | 1       | 0         | 22.01                 | 21.90                    | 21.96                  | 23                  | 1        |
| 5               | 16QAM      | 1       | 12        | 21.99                 | 21.88                    | 21.91                  |                     |          |
| 5               | 16QAM      | 1       | 24        | 22.00                 | 21.86                    | 22.09                  |                     |          |
| 5               | 16QAM      | 12      | 0         | 20.76                 | 20.68                    | 20.71                  | 22                  | 2        |
| 5               | 16QAM      | 12      | 7         | 20.78                 | 20.70                    | 20.76                  |                     |          |
| 5               | 16QAM      | 12      | 13        | 20.77                 | 20.68                    | 20.75                  |                     |          |
| 5               | 16QAM      | 25      | 0         | 20.79                 | 20.68                    | 20.71                  |                     |          |
| 5               | 64QAM      | 1       | 0         | 20.95                 | 20.80                    | 20.86                  | 22                  | 2        |
| 5               | 64QAM      | 1       | 12        | 20.92                 | 20.81                    | 20.89                  |                     |          |
| 5               | 64QAM      | 1       | 24        | 20.91                 | 20.80                    | 20.99                  |                     |          |
| 5               | 64QAM      | 12      | 0         | 19.83                 | 19.76                    | 19.77                  | 21                  | 3        |
| 5               | 64QAM      | 12      | 7         | 19.85                 | 19.76                    | 19.80                  |                     |          |
| 5               | 64QAM      | 12      | 13        | 19.84                 | 19.75                    | 19.78                  |                     |          |
| 5               | 64QAM      | 25      | 0         | 19.78                 | 19.68                    | 19.75                  |                     |          |

| Channel         |       |    |    | 23025 | 23095 | 23165 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|-------|-------|-------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 700.5 | 707.5 | 714.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 22.69 | 22.57 | 22.61 | 24                     | 0           |
| 3               | QPSK  | 1  | 8  | 22.67 | 22.48 | 22.70 |                        |             |
| 3               | QPSK  | 1  | 14 | 22.66 | 22.60 | 22.72 |                        |             |
| 3               | QPSK  | 8  | 0  | 21.70 | 21.58 | 21.63 | 23                     | 1           |
| 3               | QPSK  | 8  | 4  | 21.73 | 21.66 | 21.75 |                        |             |
| 3               | QPSK  | 8  | 7  | 21.71 | 21.60 | 21.73 |                        |             |
| 3               | QPSK  | 15 | 0  | 21.70 | 21.59 | 21.62 |                        |             |
| 3               | 16QAM | 1  | 0  | 22.02 | 21.88 | 21.88 | 23                     | 1           |
| 3               | 16QAM | 1  | 8  | 22.02 | 21.89 | 21.97 |                        |             |
| 3               | 16QAM | 1  | 14 | 21.95 | 21.85 | 22.04 |                        |             |
| 3               | 16QAM | 8  | 0  | 20.85 | 20.72 | 20.72 | 22                     | 2           |
| 3               | 16QAM | 8  | 4  | 20.87 | 20.73 | 20.81 |                        |             |
| 3               | 16QAM | 8  | 7  | 20.84 | 20.74 | 20.76 |                        |             |
| 3               | 16QAM | 15 | 0  | 20.79 | 20.68 | 20.73 |                        |             |
| 3               | 64QAM | 1  | 0  | 20.95 | 20.83 | 20.83 | 22                     | 2           |
| 3               | 64QAM | 1  | 8  | 20.95 | 20.80 | 20.94 |                        |             |
| 3               | 64QAM | 1  | 14 | 20.92 | 20.82 | 20.98 |                        |             |
| 3               | 64QAM | 8  | 0  | 19.76 | 19.65 | 19.75 | 21                     | 3           |
| 3               | 64QAM | 8  | 4  | 19.86 | 19.67 | 19.90 |                        |             |
| 3               | 64QAM | 8  | 7  | 19.85 | 19.72 | 19.90 |                        |             |
| 3               | 64QAM | 15 | 0  | 19.81 | 19.70 | 19.73 |                        |             |
| 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  | 22.61 | 22.49 | 22.62 | 24                     | 0           |
| 1.4             | QPSK  | 1  | 3  | 22.68 | 22.56 | 22.70 |                        |             |
| 1.4             | QPSK  | 1  | 5  | 22.62 | 22.50 | 22.62 |                        |             |
| 1.4             | QPSK  | 3  | 0  | 22.65 | 22.54 | 22.64 |                        |             |
| 1.4             | QPSK  | 3  | 1  | 22.69 | 22.57 | 22.68 |                        |             |
| 1.4             | QPSK  | 3  | 3  | 22.65 | 22.55 | 22.66 |                        |             |
| 1.4             | QPSK  | 6  | 0  | 21.64 | 21.53 | 21.65 | 23                     | 1           |
| 1.4             | 16QAM | 1  | 0  | 21.95 | 21.81 | 21.87 | 23                     | 1           |
| 1.4             | 16QAM | 1  | 3  | 22.00 | 21.87 | 21.94 |                        |             |
| 1.4             | 16QAM | 1  | 5  | 21.96 | 21.78 | 21.98 |                        |             |
| 1.4             | 16QAM | 3  | 0  | 21.74 | 21.61 | 21.71 |                        |             |
| 1.4             | 16QAM | 3  | 1  | 21.78 | 21.65 | 21.74 |                        |             |
| 1.4             | 16QAM | 3  | 3  | 21.74 | 21.60 | 21.76 |                        |             |
| 1.4             | 16QAM | 6  | 0  | 20.80 | 20.69 | 20.82 | 22                     | 2           |
| 1.4             | 64QAM | 1  | 0  | 20.88 | 20.74 | 20.88 | 22                     | 2           |
| 1.4             | 64QAM | 1  | 3  | 20.94 | 20.81 | 20.95 |                        |             |
| 1.4             | 64QAM | 1  | 5  | 20.90 | 20.73 | 20.88 |                        |             |
| 1.4             | 64QAM | 3  | 0  | 20.86 | 20.71 | 20.86 |                        |             |
| 1.4             | 64QAM | 3  | 1  | 20.91 | 20.78 | 20.89 |                        |             |
| 1.4             | 64QAM | 3  | 3  | 20.87 | 20.71 | 20.86 |                        |             |
| 1.4             | 64QAM | 6  | 0  | 19.73 | 19.64 | 19.76 | 21                     | 3           |

**<LTE Band 13>**

| 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         |            |         |           | 23230                 |                          |                        |                     |          |
| Frequency (MHz) |            |         |           | 782                   |                          |                        |                     |          |
| 10              | QPSK       | 1       | 0         | 22.72                 |                          |                        | 24                  | 0        |
| 10              | QPSK       | 1       | 25        | 22.62                 |                          |                        |                     |          |
| 10              | QPSK       | 1       | 49        | 22.56                 |                          |                        |                     |          |
| 10              | QPSK       | 25      | 0         | 21.73                 |                          |                        | 23                  | 1        |
| 10              | QPSK       | 25      | 12        | 21.68                 |                          |                        |                     |          |
| 10              | QPSK       | 25      | 25        | 21.67                 |                          |                        |                     |          |
| 10              | QPSK       | 50      | 0         | 21.71                 |                          |                        |                     |          |
| 10              | 16QAM      | 1       | 0         | 22.03                 |                          |                        | 23                  | 1        |
| 10              | 16QAM      | 1       | 25        | 21.97                 |                          |                        |                     |          |
| 10              | 16QAM      | 1       | 49        | 21.95                 |                          |                        |                     |          |
| 10              | 16QAM      | 25      | 0         | 20.81                 |                          |                        | 22                  | 2        |
| 10              | 16QAM      | 25      | 12        | 20.78                 |                          |                        |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.71                 |                          |                        |                     |          |
| 10              | 16QAM      | 50      | 0         | 20.77                 |                          |                        |                     |          |
| 10              | 64QAM      | 1       | 0         | 20.97                 |                          |                        | 22                  | 2        |
| 10              | 64QAM      | 1       | 25        | 20.91                 |                          |                        |                     |          |
| 10              | 64QAM      | 1       | 49        | 20.84                 |                          |                        |                     |          |
| 10              | 64QAM      | 25      | 0         | 19.80                 |                          |                        | 21                  | 3        |
| 10              | 64QAM      | 25      | 12        | 19.79                 |                          |                        |                     |          |
| 10              | 64QAM      | 25      | 25        | 19.73                 |                          |                        |                     |          |
| 10              | 64QAM      | 50      | 0         | 19.78                 |                          |                        |                     |          |
| Channel         |            |         |           | 23205                 | 23230                    | 23255                  | Tune-up limit (dBm) | MPR (dB) |
| Frequency (MHz) |            |         |           | 779.5                 | 782                      | 784.5                  |                     |          |
| 5               | QPSK       | 1       | 0         | 22.70                 | 22.64                    | 22.62                  | 24                  | 0        |
| 5               | QPSK       | 1       | 12        | 22.63                 | 22.60                    | 22.59                  |                     |          |
| 5               | QPSK       | 1       | 24        | 22.62                 | 22.57                    | 22.57                  |                     |          |
| 5               | QPSK       | 12      | 0         | 21.72                 | 21.69                    | 21.66                  | 23                  | 1        |
| 5               | QPSK       | 12      | 7         | 21.73                 | 21.69                    | 21.65                  |                     |          |
| 5               | QPSK       | 12      | 13        | 21.66                 | 21.66                    | 21.65                  |                     |          |
| 5               | QPSK       | 25      | 0         | 21.70                 | 21.64                    | 21.61                  | 23                  | 1        |
| 5               | 16QAM      | 1       | 0         | 22.02                 | 21.98                    | 21.96                  |                     |          |
| 5               | 16QAM      | 1       | 12        | 21.99                 | 21.93                    | 21.93                  |                     |          |
| 5               | 16QAM      | 1       | 24        | 21.98                 | 21.92                    | 21.92                  | 22                  | 2        |
| 5               | 16QAM      | 12      | 0         | 20.80                 | 20.76                    | 20.73                  |                     |          |
| 5               | 16QAM      | 12      | 7         | 20.79                 | 20.75                    | 20.75                  |                     |          |
| 5               | 16QAM      | 12      | 13        | 20.78                 | 20.76                    | 20.68                  |                     |          |
| 5               | 16QAM      | 25      | 0         | 20.78                 | 20.74                    | 20.72                  | 22                  | 2        |
| 5               | 64QAM      | 1       | 0         | 20.94                 | 20.91                    | 20.90                  |                     |          |
| 5               | 64QAM      | 1       | 12        | 20.92                 | 20.88                    | 20.86                  |                     |          |
| 5               | 64QAM      | 1       | 24        | 20.87                 | 20.85                    | 20.82                  | 21                  | 3        |
| 5               | 64QAM      | 12      | 0         | 19.85                 | 19.80                    | 19.76                  |                     |          |
| 5               | 64QAM      | 12      | 7         | 19.86                 | 19.82                    | 19.78                  |                     |          |
| 5               | 64QAM      | 12      | 13        | 19.79                 | 19.78                    | 19.74                  |                     |          |
| 5               | 64QAM      | 25      | 0         | 19.76                 | 19.76                    | 19.72                  |                     |          |

**<LTE Band 14>**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up<br>limit<br>(dBm) | MPR<br>(dB) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|---------------------------|-------------|
| Channel         |            |         |           | 23330                    |                             |                           |                           |             |
| Frequency (MHz) |            |         |           | 793                      |                             |                           |                           |             |
| 10              | QPSK       | 1       | 0         | 22.71                    |                             |                           | 24                        | 0           |
| 10              | QPSK       | 1       | 25        | 22.56                    |                             |                           |                           |             |
| 10              | QPSK       | 1       | 49        | 22.47                    |                             |                           |                           |             |
| 10              | QPSK       | 25      | 0         | 21.67                    |                             |                           | 23                        | 1           |
| 10              | QPSK       | 25      | 12        | 21.60                    |                             |                           |                           |             |
| 10              | QPSK       | 25      | 25        | 21.57                    |                             |                           |                           |             |
| 10              | QPSK       | 50      | 0         | 21.60                    |                             |                           | 23                        | 1           |
| 10              | 16QAM      | 1       | 0         | 22.06                    |                             |                           |                           |             |
| 10              | 16QAM      | 1       | 25        | 21.90                    |                             |                           |                           |             |
| 10              | 16QAM      | 1       | 49        | 21.79                    |                             |                           | 22                        | 2           |
| 10              | 16QAM      | 25      | 0         | 20.71                    |                             |                           |                           |             |
| 10              | 16QAM      | 25      | 12        | 20.71                    |                             |                           |                           |             |
| 10              | 16QAM      | 25      | 25        | 20.68                    |                             |                           | 22                        | 2           |
| 10              | 16QAM      | 50      | 0         | 20.71                    |                             |                           |                           |             |
| 10              | 64QAM      | 1       | 0         | 21.01                    |                             |                           |                           |             |
| 10              | 64QAM      | 1       | 25        | 20.83                    |                             |                           | 22                        | 2           |
| 10              | 64QAM      | 1       | 49        | 20.76                    |                             |                           |                           |             |
| 10              | 64QAM      | 25      | 0         | 19.74                    |                             |                           |                           |             |
| 10              | 64QAM      | 25      | 12        | 19.74                    |                             |                           | 21                        | 3           |
| 10              | 64QAM      | 25      | 25        | 19.64                    |                             |                           |                           |             |
| 10              | 64QAM      | 50      | 0         | 19.74                    |                             |                           |                           |             |
| Channel         |            |         |           | 23305                    | 23330                       | 23355                     | Tune-up<br>limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |            |         |           | 790.5                    | 793                         | 795.5                     |                           |             |
| 5               | QPSK       | 1       | 0         | 22.70                    | 22.61                       | 22.55                     | 24                        | 0           |
| 5               | QPSK       | 1       | 12        | 22.56                    | 22.52                       | 22.47                     |                           |             |
| 5               | QPSK       | 1       | 24        | 22.54                    | 22.49                       | 22.44                     |                           |             |
| 5               | QPSK       | 12      | 0         | 21.74                    | 21.61                       | 21.58                     | 23                        | 1           |
| 5               | QPSK       | 12      | 7         | 21.65                    | 21.62                       | 21.54                     |                           |             |
| 5               | QPSK       | 12      | 13        | 21.60                    | 21.53                       | 21.51                     |                           |             |
| 5               | QPSK       | 25      | 0         | 21.58                    | 21.57                       | 21.50                     | 23                        | 1           |
| 5               | 16QAM      | 1       | 0         | 22.00                    | 21.91                       | 21.85                     |                           |             |
| 5               | 16QAM      | 1       | 12        | 21.88                    | 21.85                       | 21.82                     |                           |             |
| 5               | 16QAM      | 1       | 24        | 21.87                    | 21.81                       | 21.74                     | 22                        | 2           |
| 5               | 16QAM      | 12      | 0         | 20.83                    | 20.70                       | 20.69                     |                           |             |
| 5               | 16QAM      | 12      | 7         | 20.75                    | 20.69                       | 20.66                     |                           |             |
| 5               | 16QAM      | 12      | 13        | 20.68                    | 20.67                       | 20.62                     | 22                        | 2           |
| 5               | 16QAM      | 25      | 0         | 20.71                    | 20.67                       | 20.60                     |                           |             |
| 5               | 64QAM      | 1       | 0         | 20.97                    | 20.86                       | 20.80                     |                           |             |
| 5               | 64QAM      | 1       | 12        | 20.81                    | 20.79                       | 20.74                     | 22                        | 2           |
| 5               | 64QAM      | 1       | 24        | 20.80                    | 20.76                       | 20.70                     |                           |             |
| 5               | 64QAM      | 12      | 0         | 19.86                    | 19.76                       | 19.69                     |                           |             |
| 5               | 64QAM      | 12      | 7         | 19.78                    | 19.75                       | 19.71                     | 21                        | 3           |
| 5               | 64QAM      | 12      | 13        | 19.72                    | 19.69                       | 19.63                     |                           |             |
| 5               | 64QAM      | 25      | 0         | 19.72                    | 19.66                       | 19.63                     |                           |             |

**<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         | 22.72                 | 22.73                    | 22.68                  | 24                  | 0        |
| 10              | QPSK       | 1       | 25        | 22.69                 | 22.58                    | 22.56                  |                     |          |
| 10              | QPSK       | 1       | 49        | 22.62                 | 22.60                    | 22.58                  |                     |          |
| 10              | QPSK       | 25      | 0         | 21.71                 | 21.72                    | 21.67                  | 23                  | 1        |
| 10              | QPSK       | 25      | 12        | 21.74                 | 21.73                    | 21.73                  |                     |          |
| 10              | QPSK       | 25      | 25        | 21.73                 | 21.64                    | 21.62                  |                     |          |
| 10              | QPSK       | 50      | 0         | 21.71                 | 21.71                    | 21.68                  | 23                  | 1        |
| 10              | 16QAM      | 1       | 0         | 22.06                 | 22.03                    | 22.01                  |                     |          |
| 10              | 16QAM      | 1       | 25        | 22.02                 | 21.87                    | 21.89                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 21.96                 | 21.93                    | 21.92                  | 22                  | 2        |
| 10              | 16QAM      | 25      | 0         | 20.81                 | 20.79                    | 20.80                  |                     |          |
| 10              | 16QAM      | 25      | 12        | 20.84                 | 20.83                    | 20.80                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.83                 | 20.73                    | 20.68                  | 22                  | 2        |
| 10              | 16QAM      | 50      | 0         | 20.81                 | 20.81                    | 20.80                  |                     |          |
| 10              | 64QAM      | 1       | 0         | 20.96                 | 20.94                    | 20.92                  |                     |          |
| 10              | 64QAM      | 1       | 25        | 20.94                 | 20.81                    | 20.78                  | 22                  | 2        |
| 10              | 64QAM      | 1       | 49        | 20.89                 | 20.87                    | 20.85                  |                     |          |
| 10              | 64QAM      | 25      | 0         | 19.84                 | 19.79                    | 19.79                  |                     |          |
| 10              | 64QAM      | 25      | 12        | 19.85                 | 19.81                    | 19.85                  | 21                  | 3        |
| 10              | 64QAM      | 25      | 25        | 19.84                 | 19.73                    | 19.71                  |                     |          |
| 10              | 64QAM      | 50      | 0         | 19.86                 | 19.81                    | 19.84                  |                     |          |
| Channel         |            |         |           | 23755                 | 23790                    | 23825                  |                     |          |
| Frequency (MHz) |            |         |           | 706.5                 | 710                      | 713.5                  |                     |          |
| 5               | QPSK       | 1       | 0         | 22.69                 | 22.65                    | 22.53                  | 24                  | 0        |
| 5               | QPSK       | 1       | 12        | 22.68                 | 22.53                    | 22.51                  |                     |          |
| 5               | QPSK       | 1       | 24        | 22.71                 | 22.57                    | 22.53                  |                     |          |
| 5               | QPSK       | 12      | 0         | 21.71                 | 21.67                    | 21.55                  | 23                  | 1        |
| 5               | QPSK       | 12      | 7         | 21.74                 | 21.72                    | 21.58                  |                     |          |
| 5               | QPSK       | 12      | 13        | 21.71                 | 21.61                    | 21.57                  |                     |          |
| 5               | QPSK       | 25      | 0         | 21.73                 | 21.69                    | 21.55                  | 23                  | 1        |
| 5               | 16QAM      | 1       | 0         | 22.06                 | 21.97                    | 21.81                  |                     |          |
| 5               | 16QAM      | 1       | 12        | 22.00                 | 21.86                    | 21.85                  |                     |          |
| 5               | 16QAM      | 1       | 24        | 22.03                 | 21.86                    | 21.84                  | 22                  | 2        |
| 5               | 16QAM      | 12      | 0         | 20.80                 | 20.77                    | 20.62                  |                     |          |
| 5               | 16QAM      | 12      | 7         | 20.82                 | 20.79                    | 20.65                  |                     |          |
| 5               | 16QAM      | 12      | 13        | 20.80                 | 20.67                    | 20.63                  | 22                  | 2        |
| 5               | 16QAM      | 25      | 0         | 20.83                 | 20.77                    | 20.63                  |                     |          |
| 5               | 64QAM      | 1       | 0         | 20.94                 | 20.93                    | 20.78                  |                     |          |
| 5               | 64QAM      | 1       | 12        | 20.92                 | 20.78                    | 20.79                  | 22                  | 2        |
| 5               | 64QAM      | 1       | 24        | 20.97                 | 20.81                    | 20.79                  |                     |          |
| 5               | 64QAM      | 12      | 0         | 19.87                 | 19.80                    | 19.69                  |                     |          |
| 5               | 64QAM      | 12      | 7         | 19.89                 | 19.84                    | 19.74                  | 21                  | 3        |
| 5               | 64QAM      | 12      | 13        | 19.87                 | 19.74                    | 19.72                  |                     |          |
| 5               | 64QAM      | 25      | 0         | 19.83                 | 19.76                    | 19.67                  |                     |          |

**<LTE Band 25>**

| 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         |            |         |           | 26140                    | 26340                       | 26590                     |                        |             |
| Frequency (MHz) |            |         |           | 1860                     | 1880                        | 1905                      |                        |             |
| 20              | QPSK       | 1       | 0         | 23.26                    | 23.15                       | 22.99                     | 23.5                   | 0           |
| 20              | QPSK       | 1       | 49        | 22.92                    | 22.84                       | 22.80                     |                        |             |
| 20              | QPSK       | 1       | 99        | 23.02                    | 23.02                       | 22.89                     |                        |             |
| 20              | QPSK       | 50      | 0         | 22.07                    | 21.97                       | 21.97                     | 22.5                   | 1           |
| 20              | QPSK       | 50      | 24        | 21.93                    | 21.90                       | 21.93                     |                        |             |
| 20              | QPSK       | 50      | 50        | 21.93                    | 21.90                       | 21.92                     |                        |             |
| 20              | QPSK       | 100     | 0         | 21.95                    | 21.95                       | 21.96                     |                        |             |
| 20              | 16QAM      | 1       | 0         | 22.48                    | 22.49                       | 22.34                     | 22.5                   | 1           |
| 20              | 16QAM      | 1       | 49        | 22.26                    | 22.18                       | 22.19                     |                        |             |
| 20              | 16QAM      | 1       | 99        | 22.40                    | 22.34                       | 22.21                     |                        |             |
| 20              | 16QAM      | 50      | 0         | 21.21                    | 21.06                       | 21.04                     | 21.5                   | 2           |
| 20              | 16QAM      | 50      | 24        | 21.04                    | 21.02                       | 21.00                     |                        |             |
| 20              | 16QAM      | 50      | 50        | 21.01                    | 21.01                       | 21.00                     |                        |             |
| 20              | 16QAM      | 100     | 0         | 21.04                    | 21.07                       | 21.04                     |                        |             |
| 20              | 64QAM      | 1       | 0         | 21.47                    | 21.36                       | 21.25                     | 21.5                   | 2           |
| 20              | 64QAM      | 1       | 49        | 21.18                    | 21.07                       | 21.07                     |                        |             |
| 20              | 64QAM      | 1       | 99        | 21.27                    | 21.27                       | 21.13                     |                        |             |
| 20              | 64QAM      | 50      | 0         | 20.21                    | 20.10                       | 20.08                     | 20.5                   | 3           |
| 20              | 64QAM      | 50      | 24        | 20.06                    | 20.02                       | 20.05                     |                        |             |
| 20              | 64QAM      | 50      | 50        | 20.03                    | 20.01                       | 20.02                     |                        |             |
| 20              | 64QAM      | 100     | 0         | 20.05                    | 20.08                       | 20.07                     |                        |             |
| Channel         |            |         |           | 26115                    | 26340                       | 26615                     |                        |             |
| Frequency (MHz) |            |         |           | 1857.5                   | 1880                        | 1907.5                    |                        |             |
| 15              | QPSK       | 1       | 0         | 23.07                    | 22.97                       | 22.98                     | 23.5                   | 0           |
| 15              | QPSK       | 1       | 37        | 22.92                    | 22.84                       | 22.81                     |                        |             |
| 15              | QPSK       | 1       | 74        | 22.89                    | 22.90                       | 22.94                     |                        |             |
| 15              | QPSK       | 36      | 0         | 22.05                    | 21.98                       | 21.96                     | 22.5                   | 1           |
| 15              | QPSK       | 36      | 20        | 22.04                    | 21.93                       | 21.94                     |                        |             |
| 15              | QPSK       | 36      | 39        | 21.92                    | 21.94                       | 21.94                     |                        |             |
| 15              | QPSK       | 75      | 0         | 21.92                    | 21.95                       | 21.95                     | 22.5                   | 1           |
| 15              | 16QAM      | 1       | 0         | 22.45                    | 22.36                       | 22.35                     |                        |             |
| 15              | 16QAM      | 1       | 37        | 22.29                    | 22.20                       | 22.13                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 22.28                    | 22.23                       | 22.22                     | 21.5                   | 2           |
| 15              | 16QAM      | 36      | 0         | 21.19                    | 21.08                       | 21.06                     |                        |             |
| 15              | 16QAM      | 36      | 20        | 21.15                    | 21.04                       | 21.03                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 21.06                    | 21.05                       | 21.03                     | 21.5                   | 2           |
| 15              | 16QAM      | 75      | 0         | 21.06                    | 21.06                       | 21.03                     |                        |             |
| 15              | 64QAM      | 1       | 0         | 21.34                    | 21.29                       | 21.28                     |                        |             |
| 15              | 64QAM      | 1       | 37        | 21.19                    | 21.12                       | 21.07                     | 20.5                   | 3           |
| 15              | 64QAM      | 1       | 74        | 21.19                    | 21.16                       | 21.19                     |                        |             |
| 15              | 64QAM      | 36      | 0         | 20.23                    | 20.13                       | 20.10                     |                        |             |
| 15              | 64QAM      | 36      | 20        | 20.19                    | 20.09                       | 20.04                     | 20.5                   | 3           |
| 15              | 64QAM      | 36      | 39        | 20.06                    | 20.07                       | 20.07                     |                        |             |
| 15              | 64QAM      | 75      | 0         | 20.07                    | 20.04                       | 20.05                     |                        |             |

| Channel         |       |    |    | 26090  | 26340 | 26640  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1855   | 1880  | 1910   |                        |             |
| 10              | QPSK  | 1  | 0  | 23.16  | 23.12 | 22.87  | 23.5                   | 0           |
| 10              | QPSK  | 1  | 25 | 22.90  | 22.84 | 22.83  |                        |             |
| 10              | QPSK  | 1  | 49 | 23.12  | 23.08 | 22.88  |                        |             |
| 10              | QPSK  | 25 | 0  | 22.01  | 21.94 | 21.92  | 22.5                   | 1           |
| 10              | QPSK  | 25 | 12 | 21.97  | 21.91 | 21.89  |                        |             |
| 10              | QPSK  | 25 | 25 | 21.97  | 21.91 | 21.91  |                        |             |
| 10              | QPSK  | 50 | 0  | 21.98  | 21.92 | 21.90  |                        |             |
| 10              | 16QAM | 1  | 0  | 22.47  | 22.48 | 22.24  | 22.5                   | 1           |
| 10              | 16QAM | 1  | 25 | 22.27  | 22.21 | 22.17  |                        |             |
| 10              | 16QAM | 1  | 49 | 22.47  | 22.42 | 22.20  |                        |             |
| 10              | 16QAM | 25 | 0  | 21.11  | 21.04 | 21.00  | 21.5                   | 2           |
| 10              | 16QAM | 25 | 12 | 21.08  | 21.01 | 20.99  |                        |             |
| 10              | 16QAM | 25 | 25 | 21.07  | 21.02 | 21.02  |                        |             |
| 10              | 16QAM | 50 | 0  | 21.08  | 21.05 | 21.00  |                        |             |
| 10              | 64QAM | 1  | 0  | 21.43  | 21.40 | 21.12  | 21.5                   | 2           |
| 10              | 64QAM | 1  | 25 | 21.16  | 21.10 | 21.04  |                        |             |
| 10              | 64QAM | 1  | 49 | 21.38  | 21.34 | 21.13  |                        |             |
| 10              | 64QAM | 25 | 0  | 20.11  | 20.04 | 20.04  | 20.5                   | 3           |
| 10              | 64QAM | 25 | 12 | 20.11  | 20.05 | 20.03  |                        |             |
| 10              | 64QAM | 25 | 25 | 20.08  | 20.01 | 20.01  |                        |             |
| 10              | 64QAM | 50 | 0  | 20.10  | 20.02 | 20.02  |                        |             |
| Channel         |       |    |    | 26065  | 26340 | 26665  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1852.5 | 1880  | 1912.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 22.94  | 22.89 | 22.83  | 23.5                   | 0           |
| 5               | QPSK  | 1  | 12 | 22.86  | 22.82 | 22.80  |                        |             |
| 5               | QPSK  | 1  | 24 | 22.90  | 22.84 | 22.85  |                        |             |
| 5               | QPSK  | 12 | 0  | 21.93  | 21.88 | 21.88  | 22.5                   | 1           |
| 5               | QPSK  | 12 | 7  | 21.94  | 21.87 | 21.88  |                        |             |
| 5               | QPSK  | 12 | 13 | 21.90  | 21.86 | 21.87  |                        |             |
| 5               | QPSK  | 25 | 0  | 21.94  | 21.83 | 21.87  |                        |             |
| 5               | 16QAM | 1  | 0  | 22.28  | 22.23 | 22.17  | 22.5                   | 1           |
| 5               | 16QAM | 1  | 12 | 22.21  | 22.17 | 22.17  |                        |             |
| 5               | 16QAM | 1  | 24 | 22.22  | 22.18 | 22.13  |                        |             |
| 5               | 16QAM | 12 | 0  | 21.03  | 21.02 | 20.94  | 21.5                   | 2           |
| 5               | 16QAM | 12 | 7  | 21.04  | 20.97 | 20.97  |                        |             |
| 5               | 16QAM | 12 | 13 | 21.05  | 21.00 | 20.97  |                        |             |
| 5               | 16QAM | 25 | 0  | 21.03  | 20.94 | 20.96  |                        |             |
| 5               | 64QAM | 1  | 0  | 21.22  | 21.17 | 21.08  | 21.5                   | 2           |
| 5               | 64QAM | 1  | 12 | 21.13  | 21.09 | 21.07  |                        |             |
| 5               | 64QAM | 1  | 24 | 21.18  | 21.11 | 21.08  |                        |             |
| 5               | 64QAM | 12 | 0  | 20.10  | 20.01 | 20.02  | 20.5                   | 3           |
| 5               | 64QAM | 12 | 7  | 20.08  | 20.03 | 20.04  |                        |             |
| 5               | 64QAM | 12 | 13 | 20.08  | 20.02 | 20.01  |                        |             |
| 5               | 64QAM | 25 | 0  | 20.04  | 19.98 | 19.97  |                        |             |

| Channel         |       |    |    | 26055  | 26340 | 26675  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1851.5 | 1880  | 1913.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 22.88  | 22.75 | 22.82  | 23.5                   | 0           |
| 3               | QPSK  | 1  | 8  | 22.87  | 22.84 | 22.81  |                        |             |
| 3               | QPSK  | 1  | 14 | 22.87  | 22.84 | 22.83  |                        |             |
| 3               | QPSK  | 8  | 0  | 21.95  | 21.88 | 21.86  | 22.5                   | 1           |
| 3               | QPSK  | 8  | 4  | 21.93  | 21.89 | 21.91  |                        |             |
| 3               | QPSK  | 8  | 7  | 21.93  | 21.87 | 21.88  |                        |             |
| 3               | QPSK  | 15 | 0  | 21.94  | 21.88 | 21.87  |                        |             |
| 3               | 16QAM | 1  | 0  | 22.22  | 22.17 | 22.14  | 22.5                   | 1           |
| 3               | 16QAM | 1  | 8  | 22.21  | 22.18 | 22.11  |                        |             |
| 3               | 16QAM | 1  | 14 | 22.18  | 22.16 | 22.04  |                        |             |
| 3               | 16QAM | 8  | 0  | 21.08  | 21.01 | 20.99  | 21.5                   | 2           |
| 3               | 16QAM | 8  | 4  | 21.11  | 21.06 | 21.04  |                        |             |
| 3               | 16QAM | 8  | 7  | 21.04  | 21.00 | 21.01  |                        |             |
| 3               | 16QAM | 15 | 0  | 21.02  | 20.98 | 20.98  |                        |             |
| 3               | 64QAM | 1  | 0  | 21.15  | 20.97 | 21.08  | 21.5                   | 2           |
| 3               | 64QAM | 1  | 8  | 21.15  | 21.12 | 21.08  |                        |             |
| 3               | 64QAM | 1  | 14 | 21.16  | 21.12 | 21.08  |                        |             |
| 3               | 64QAM | 8  | 0  | 20.06  | 20.03 | 20.01  | 20.5                   | 3           |
| 3               | 64QAM | 8  | 4  | 20.09  | 20.05 | 20.04  |                        |             |
| 3               | 64QAM | 8  | 7  | 20.05  | 19.99 | 20.02  |                        |             |
| 3               | 64QAM | 15 | 0  | 20.03  | 19.99 | 19.97  |                        |             |
| Channel         |       |    |    | 26047  | 26340 | 26683  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1850.7 | 1880  | 1914.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 22.81  | 22.77 | 22.74  | 23.5                   | 0           |
| 1.4             | QPSK  | 1  | 3  | 22.87  | 22.84 | 22.82  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 22.82  | 22.76 | 22.74  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 22.82  | 22.81 | 22.78  |                        |             |
| 1.4             | QPSK  | 3  | 1  | 22.86  | 22.85 | 22.81  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 22.83  | 22.79 | 22.79  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 21.86  | 21.80 | 21.80  | 22.5                   | 1           |
| 1.4             | 16QAM | 1  | 0  | 22.16  | 22.14 | 22.02  | 22.5                   | 1           |
| 1.4             | 16QAM | 1  | 3  | 22.22  | 22.16 | 22.11  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 22.14  | 22.09 | 22.02  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 21.94  | 21.90 | 21.87  |                        |             |
| 1.4             | 16QAM | 3  | 1  | 22.00  | 21.96 | 21.89  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 21.94  | 21.92 | 21.85  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 21.01  | 20.96 | 20.96  | 21.5                   | 2           |
| 1.4             | 64QAM | 1  | 0  | 21.07  | 21.09 | 21.02  | 21.5                   | 2           |
| 1.4             | 64QAM | 1  | 3  | 21.14  | 21.11 | 21.07  |                        |             |
| 1.4             | 64QAM | 1  | 5  | 21.09  | 21.03 | 21.00  |                        |             |
| 1.4             | 64QAM | 3  | 0  | 21.07  | 21.03 | 20.99  |                        |             |
| 1.4             | 64QAM | 3  | 1  | 21.12  | 21.08 | 21.04  |                        |             |
| 1.4             | 64QAM | 3  | 3  | 21.06  | 21.02 | 21.00  |                        |             |
| 1.4             | 64QAM | 6  | 0  | 19.96  | 19.92 | 19.91  | 20.5                   | 3           |

**<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                  |                     |          |
| Frequency (MHz) |            |         |           | 821.5                 | 831.5                    | 841.5                  |                     |          |
| 15              | QPSK       | 1       | 0         | 22.54                 | 22.52                    | 22.53                  | 24                  | 0        |
| 15              | QPSK       | 1       | 37        | 22.67                 | 22.73                    | 22.46                  |                     |          |
| 15              | QPSK       | 1       | 74        | 22.54                 | 22.41                    | 22.33                  |                     |          |
| 15              | QPSK       | 36      | 0         | 21.40                 | 21.64                    | 21.54                  | 23                  | 1        |
| 15              | QPSK       | 36      | 20        | 21.62                 | 21.57                    | 21.50                  |                     |          |
| 15              | QPSK       | 36      | 39        | 21.62                 | 21.50                    | 21.39                  |                     |          |
| 15              | QPSK       | 75      | 0         | 21.54                 | 21.58                    | 21.48                  |                     |          |
| 15              | 16QAM      | 1       | 0         | 21.90                 | 21.87                    | 21.87                  | 23                  | 1        |
| 15              | 16QAM      | 1       | 37        | 21.87                 | 21.88                    | 21.82                  |                     |          |
| 15              | 16QAM      | 1       | 74        | 21.94                 | 21.78                    | 21.69                  |                     |          |
| 15              | 16QAM      | 36      | 0         | 20.70                 | 20.70                    | 20.60                  | 22                  | 2        |
| 15              | 16QAM      | 36      | 20        | 20.71                 | 20.66                    | 20.60                  |                     |          |
| 15              | 16QAM      | 36      | 39        | 20.73                 | 20.57                    | 20.51                  |                     |          |
| 15              | 16QAM      | 75      | 0         | 20.66                 | 20.61                    | 20.56                  |                     |          |
| 15              | 64QAM      | 1       | 0         | 20.83                 | 20.79                    | 20.82                  | 22                  | 2        |
| 15              | 64QAM      | 1       | 37        | 20.82                 | 20.81                    | 20.74                  |                     |          |
| 15              | 64QAM      | 1       | 74        | 20.83                 | 20.70                    | 20.62                  |                     |          |
| 15              | 64QAM      | 36      | 0         | 19.75                 | 19.71                    | 19.63                  | 21                  | 3        |
| 15              | 64QAM      | 36      | 20        | 19.74                 | 19.69                    | 19.63                  |                     |          |
| 15              | 64QAM      | 36      | 39        | 19.75                 | 19.63                    | 19.52                  |                     |          |
| 15              | 64QAM      | 75      | 0         | 19.66                 | 19.65                    | 19.55                  |                     |          |
| Channel         |            |         |           | 26740                 | 26865                    | 26990                  |                     |          |
| Frequency (MHz) |            |         |           | 819                   | 831.5                    | 844                    |                     |          |
| 10              | QPSK       | 1       | 0         | 22.67                 | 22.71                    | 22.66                  | 24                  | 0        |
| 10              | QPSK       | 1       | 25        | 22.65                 | 22.69                    | 22.62                  |                     |          |
| 10              | QPSK       | 1       | 49        | 22.66                 | 22.68                    | 22.56                  |                     |          |
| 10              | QPSK       | 25      | 0         | 21.84                 | 21.77                    | 21.67                  | 23                  | 1        |
| 10              | QPSK       | 25      | 12        | 21.83                 | 21.78                    | 21.63                  |                     |          |
| 10              | QPSK       | 25      | 25        | 21.79                 | 21.72                    | 21.61                  |                     |          |
| 10              | QPSK       | 50      | 0         | 21.82                 | 21.74                    | 21.65                  | 23                  | 1        |
| 10              | 16QAM      | 1       | 0         | 22.10                 | 22.08                    | 22.02                  |                     |          |
| 10              | 16QAM      | 1       | 25        | 22.12                 | 22.09                    | 21.97                  |                     |          |
| 10              | 16QAM      | 1       | 49        | 22.14                 | 22.09                    | 21.94                  | 22                  | 2        |
| 10              | 16QAM      | 25      | 0         | 20.92                 | 20.88                    | 20.79                  |                     |          |
| 10              | 16QAM      | 25      | 12        | 20.93                 | 20.87                    | 20.76                  |                     |          |
| 10              | 16QAM      | 25      | 25        | 20.90                 | 20.84                    | 20.71                  | 22                  | 2        |
| 10              | 16QAM      | 50      | 0         | 20.90                 | 20.89                    | 20.76                  |                     |          |
| 10              | 64QAM      | 1       | 0         | 21.01                 | 20.96                    | 20.94                  |                     |          |
| 10              | 64QAM      | 1       | 25        | 21.01                 | 21.01                    | 20.88                  | 22                  | 2        |
| 10              | 64QAM      | 1       | 49        | 21.03                 | 20.99                    | 20.83                  |                     |          |
| 10              | 64QAM      | 25      | 0         | 19.93                 | 19.88                    | 19.77                  |                     |          |
| 10              | 64QAM      | 25      | 12        | 19.94                 | 19.89                    | 19.78                  | 21                  | 3        |
| 10              | 64QAM      | 25      | 25        | 19.89                 | 19.84                    | 19.72                  |                     |          |
| 10              | 64QAM      | 50      | 0         | 19.91                 | 19.86                    | 19.74                  |                     |          |

| Channel         |       |    |    | 26715 | 26865 | 27015 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|-------|-------|-------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 816.5 | 831.5 | 846.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 22.70 | 22.64 | 22.59 | 24                     | 0           |
| 5               | QPSK  | 1  | 12 | 22.66 | 22.69 | 22.56 |                        |             |
| 5               | QPSK  | 1  | 24 | 22.68 | 22.71 | 22.54 |                        |             |
| 5               | QPSK  | 12 | 0  | 21.72 | 21.74 | 21.58 | 23                     | 1           |
| 5               | QPSK  | 12 | 7  | 21.75 | 21.76 | 21.60 |                        |             |
| 5               | QPSK  | 12 | 13 | 21.81 | 21.70 | 21.55 |                        |             |
| 5               | QPSK  | 25 | 0  | 21.80 | 21.73 | 21.58 | 23                     | 1           |
| 5               | 16QAM | 1  | 0  | 22.06 | 22.08 | 21.91 |                        |             |
| 5               | 16QAM | 1  | 12 | 22.02 | 22.04 | 21.92 |                        |             |
| 5               | 16QAM | 1  | 24 | 22.14 | 22.05 | 21.91 | 22                     | 2           |
| 5               | 16QAM | 12 | 0  | 20.85 | 20.85 | 20.67 |                        |             |
| 5               | 16QAM | 12 | 7  | 20.84 | 20.85 | 20.68 |                        |             |
| 5               | 16QAM | 12 | 13 | 20.88 | 20.81 | 20.66 | 22                     | 2           |
| 5               | 16QAM | 25 | 0  | 20.90 | 20.79 | 20.68 |                        |             |
| 5               | 64QAM | 1  | 0  | 21.00 | 21.01 | 20.87 |                        |             |
| 5               | 64QAM | 1  | 12 | 20.91 | 20.97 | 20.82 | 22                     | 2           |
| 5               | 64QAM | 1  | 24 | 21.05 | 20.96 | 20.80 |                        |             |
| 5               | 64QAM | 12 | 0  | 19.88 | 19.89 | 19.73 |                        |             |
| 5               | 64QAM | 12 | 7  | 19.88 | 19.88 | 19.74 | 21                     | 3           |
| 5               | 64QAM | 12 | 13 | 19.94 | 19.83 | 19.71 |                        |             |
| 5               | 64QAM | 25 | 0  | 19.91 | 19.82 | 19.69 |                        |             |
| Channel         |       |    |    | 26705 | 26865 | 27025 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 815.5 | 831.5 | 847.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 22.72 | 22.71 | 22.59 | 24                     | 0           |
| 3               | QPSK  | 1  | 8  | 22.68 | 22.72 | 22.55 |                        |             |
| 3               | QPSK  | 1  | 14 | 22.68 | 22.71 | 22.54 |                        |             |
| 3               | QPSK  | 8  | 0  | 21.74 | 21.74 | 21.48 | 23                     | 1           |
| 3               | QPSK  | 8  | 4  | 21.76 | 21.74 | 21.59 |                        |             |
| 3               | QPSK  | 8  | 7  | 21.74 | 21.72 | 21.57 |                        |             |
| 3               | QPSK  | 15 | 0  | 21.74 | 21.74 | 21.57 | 23                     | 1           |
| 3               | 16QAM | 1  | 0  | 22.06 | 22.07 | 21.92 |                        |             |
| 3               | 16QAM | 1  | 8  | 22.05 | 22.06 | 21.91 |                        |             |
| 3               | 16QAM | 1  | 14 | 22.02 | 22.05 | 21.90 | 22                     | 2           |
| 3               | 16QAM | 8  | 0  | 20.90 | 20.88 | 20.71 |                        |             |
| 3               | 16QAM | 8  | 4  | 20.91 | 20.91 | 20.73 |                        |             |
| 3               | 16QAM | 8  | 7  | 20.86 | 20.86 | 20.72 | 22                     | 2           |
| 3               | 16QAM | 15 | 0  | 20.84 | 20.84 | 20.67 |                        |             |
| 3               | 64QAM | 1  | 0  | 21.00 | 21.02 | 20.84 |                        |             |
| 3               | 64QAM | 1  | 8  | 20.97 | 20.98 | 20.82 | 22                     | 2           |
| 3               | 64QAM | 1  | 14 | 20.97 | 20.92 | 20.80 |                        |             |
| 3               | 64QAM | 8  | 0  | 19.91 | 19.88 | 19.69 |                        |             |
| 3               | 64QAM | 8  | 4  | 19.89 | 19.91 | 19.66 | 21                     | 3           |
| 3               | 64QAM | 8  | 7  | 19.86 | 19.87 | 19.69 |                        |             |
| 3               | 64QAM | 15 | 0  | 19.85 | 19.76 | 19.67 |                        |             |



# Exhibit 11

Report No. : FA811821

| 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 | 22.65 | 22.67 | 22.51 | 24                     | 0           |
| 1.4             | QPSK  | 1 | 3 | 22.72 | 22.72 | 22.55 |                        |             |
| 1.4             | QPSK  | 1 | 5 | 22.64 | 22.67 | 22.46 |                        |             |
| 1.4             | QPSK  | 3 | 0 | 22.69 | 22.69 | 22.53 |                        |             |
| 1.4             | QPSK  | 3 | 1 | 22.72 | 22.70 | 22.56 |                        |             |
| 1.4             | QPSK  | 3 | 3 | 22.68 | 22.66 | 22.52 |                        |             |
| 1.4             | QPSK  | 6 | 0 | 21.70 | 21.66 | 21.51 | 23                     | 1           |
| 1.4             | 16QAM | 1 | 0 | 21.99 | 22.04 | 21.81 | 23                     | 1           |
| 1.4             | 16QAM | 1 | 3 | 22.05 | 22.08 | 21.92 |                        |             |
| 1.4             | 16QAM | 1 | 5 | 21.97 | 22.02 | 21.81 |                        |             |
| 1.4             | 16QAM | 3 | 0 | 21.80 | 21.81 | 21.62 |                        |             |
| 1.4             | 16QAM | 3 | 1 | 21.82 | 21.84 | 21.65 |                        |             |
| 1.4             | 16QAM | 3 | 3 | 21.78 | 21.77 | 21.61 |                        |             |
| 1.4             | 16QAM | 6 | 0 | 20.85 | 20.82 | 20.66 | 22                     | 2           |
| 1.4             | 64QAM | 1 | 0 | 20.93 | 20.94 | 20.76 | 22                     | 2           |
| 1.4             | 64QAM | 1 | 3 | 21.00 | 20.99 | 20.83 |                        |             |
| 1.4             | 64QAM | 1 | 5 | 20.91 | 20.89 | 20.74 |                        |             |
| 1.4             | 64QAM | 3 | 0 | 20.93 | 20.92 | 20.76 |                        |             |
| 1.4             | 64QAM | 3 | 1 | 20.95 | 20.95 | 20.79 |                        |             |
| 1.4             | 64QAM | 3 | 3 | 20.91 | 20.92 | 20.76 |                        |             |
| 1.4             | 64QAM | 6 | 0 | 19.80 | 19.76 | 19.60 | 21                     | 3           |

**<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         | 22.71                    |                             |                           | 24                     | 0           |
| 10              | QPSK       | 1       | 25        | 22.68                    |                             |                           |                        |             |
| 10              | QPSK       | 1       | 49        | 22.67                    |                             |                           |                        |             |
| 10              | QPSK       | 25      | 0         | 21.77                    |                             |                           | 23                     | 1           |
| 10              | QPSK       | 25      | 12        | 21.75                    |                             |                           |                        |             |
| 10              | QPSK       | 25      | 25        | 21.69                    |                             |                           |                        |             |
| 10              | QPSK       | 50      | 0         | 21.73                    |                             |                           | 23                     | 1           |
| 10              | 16QAM      | 1       | 0         | 22.06                    |                             |                           |                        |             |
| 10              | 16QAM      | 1       | 25        | 21.93                    |                             |                           |                        |             |
| 10              | 16QAM      | 1       | 49        | 21.95                    |                             |                           | 22                     | 2           |
| 10              | 16QAM      | 25      | 0         | 20.77                    |                             |                           |                        |             |
| 10              | 16QAM      | 25      | 12        | 20.85                    |                             |                           |                        |             |
| 10              | 16QAM      | 25      | 25        | 20.85                    |                             |                           | 22                     | 2           |
| 10              | 16QAM      | 50      | 0         | 20.83                    |                             |                           |                        |             |
| 10              | 64QAM      | 1       | 0         | 21.05                    |                             |                           |                        |             |
| 10              | 64QAM      | 1       | 25        | 20.96                    |                             |                           | 22                     | 2           |
| 10              | 64QAM      | 1       | 49        | 20.82                    |                             |                           |                        |             |
| 10              | 64QAM      | 25      | 0         | 19.98                    |                             |                           |                        |             |
| 10              | 64QAM      | 25      | 12        | 19.86                    |                             |                           | 21                     | 3           |
| 10              | 64QAM      | 25      | 25        | 19.88                    |                             |                           |                        |             |
| 10              | 64QAM      | 50      | 0         | 19.91                    |                             |                           |                        |             |
| Channel         |            |         |           | 27685                    | 27710                       | 27735                     | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |            |         |           | 2307.5                   | 2310                        | 2312.5                    |                        |             |
| 5               | QPSK       | 1       | 0         | 22.65                    | 22.65                       | 22.70                     | 24                     | 0           |
| 5               | QPSK       | 1       | 12        | 22.59                    | 22.67                       | 22.65                     |                        |             |
| 5               | QPSK       | 1       | 24        | 22.63                    | 22.64                       | 22.66                     |                        |             |
| 5               | QPSK       | 12      | 0         | 21.72                    | 21.72                       | 21.78                     | 23                     | 1           |
| 5               | QPSK       | 12      | 7         | 21.29                    | 21.74                       | 21.82                     |                        |             |
| 5               | QPSK       | 12      | 13        | 21.73                    | 21.76                       | 21.73                     |                        |             |
| 5               | QPSK       | 25      | 0         | 21.65                    | 21.73                       | 21.80                     | 23                     | 1           |
| 5               | 16QAM      | 1       | 0         | 21.88                    | 21.91                       | 22.00                     |                        |             |
| 5               | 16QAM      | 1       | 12        | 21.91                    | 21.93                       | 21.91                     |                        |             |
| 5               | 16QAM      | 1       | 24        | 21.86                    | 21.90                       | 22.02                     | 22                     | 2           |
| 5               | 16QAM      | 12      | 0         | 20.76                    | 20.79                       | 20.85                     |                        |             |
| 5               | 16QAM      | 12      | 7         | 20.79                    | 20.83                       | 20.87                     |                        |             |
| 5               | 16QAM      | 12      | 13        | 20.78                    | 20.82                       | 20.77                     | 22                     | 2           |
| 5               | 16QAM      | 25      | 0         | 20.69                    | 20.79                       | 20.85                     |                        |             |
| 5               | 64QAM      | 1       | 0         | 21.00                    | 21.18                       | 21.10                     |                        |             |
| 5               | 64QAM      | 1       | 12        | 20.80                    | 20.92                       | 20.89                     | 22                     | 2           |
| 5               | 64QAM      | 1       | 24        | 21.03                    | 20.96                       | 20.97                     |                        |             |
| 5               | 64QAM      | 12      | 0         | 19.90                    | 19.99                       | 19.88                     |                        |             |
| 5               | 64QAM      | 12      | 7         | 19.82                    | 19.91                       | 19.94                     | 21                     | 3           |
| 5               | 64QAM      | 12      | 13        | 19.91                    | 19.91                       | 19.86                     |                        |             |
| 5               | 64QAM      | 25      | 0         | 19.88                    | 19.86                       | 19.84                     |                        |             |

**<LTE Band 66>**

| 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         |            |         |           | 132072                   | 132322                      | 132572                    |                        |             |
| Frequency (MHz) |            |         |           | 1720                     | 1745                        | 1770                      |                        |             |
| 20              | QPSK       | 1       | 0         | 22.83                    | 22.87                       | 22.93                     | 23.5                   | 0           |
| 20              | QPSK       | 1       | 49        | 22.59                    | 22.69                       | 22.69                     |                        |             |
| 20              | QPSK       | 1       | 99        | 22.69                    | 22.67                       | 22.69                     |                        |             |
| 20              | QPSK       | 50      | 0         | 21.76                    | 21.84                       | 21.85                     | 22.5                   | 1           |
| 20              | QPSK       | 50      | 24        | 21.80                    | 21.80                       | 21.79                     |                        |             |
| 20              | QPSK       | 50      | 50        | 21.75                    | 21.78                       | 21.76                     |                        |             |
| 20              | QPSK       | 100     | 0         | 21.82                    | 21.83                       | 21.84                     | 22.5                   | 1           |
| 20              | 16QAM      | 1       | 0         | 21.97                    | 21.94                       | 21.96                     |                        |             |
| 20              | 16QAM      | 1       | 49        | 21.91                    | 21.93                       | 21.95                     |                        |             |
| 20              | 16QAM      | 1       | 99        | 21.98                    | 21.92                       | 21.98                     | 21.5                   | 2           |
| 20              | 16QAM      | 50      | 0         | 20.85                    | 20.99                       | 20.95                     |                        |             |
| 20              | 16QAM      | 50      | 24        | 20.90                    | 20.91                       | 20.90                     |                        |             |
| 20              | 16QAM      | 50      | 50        | 20.84                    | 20.83                       | 20.88                     | 21.5                   | 2           |
| 20              | 16QAM      | 100     | 0         | 20.92                    | 20.91                       | 20.89                     |                        |             |
| 20              | 64QAM      | 1       | 0         | 20.95                    | 20.92                       | 20.93                     |                        |             |
| 20              | 64QAM      | 1       | 49        | 20.82                    | 20.98                       | 20.94                     | 21.5                   | 2           |
| 20              | 64QAM      | 1       | 99        | 20.94                    | 20.92                       | 20.95                     |                        |             |
| 20              | 64QAM      | 50      | 0         | 19.88                    | 19.91                       | 19.98                     |                        |             |
| 20              | 64QAM      | 50      | 24        | 19.91                    | 19.92                       | 19.93                     | 20.5                   | 3           |
| 20              | 64QAM      | 50      | 50        | 19.88                    | 19.88                       | 19.88                     |                        |             |
| 20              | 64QAM      | 100     | 0         | 19.93                    | 19.94                       | 19.91                     |                        |             |
| Channel         |            |         |           | 132047                   | 132322                      | 132597                    |                        |             |
| Frequency (MHz) |            |         |           | 1717.5                   | 1745                        | 1772.5                    |                        |             |
| 15              | QPSK       | 1       | 0         | 22.83                    | 22.92                       | 22.90                     | 23.5                   | 0           |
| 15              | QPSK       | 1       | 37        | 22.64                    | 22.72                       | 22.71                     |                        |             |
| 15              | QPSK       | 1       | 74        | 22.76                    | 22.75                       | 22.74                     |                        |             |
| 15              | QPSK       | 36      | 0         | 21.77                    | 21.85                       | 21.86                     | 22.5                   | 1           |
| 15              | QPSK       | 36      | 20        | 21.71                    | 21.84                       | 21.83                     |                        |             |
| 15              | QPSK       | 36      | 39        | 21.82                    | 21.76                       | 21.78                     |                        |             |
| 15              | QPSK       | 75      | 0         | 21.83                    | 21.83                       | 21.79                     | 22.5                   | 1           |
| 15              | 16QAM      | 1       | 0         | 21.95                    | 21.99                       | 21.86                     |                        |             |
| 15              | 16QAM      | 1       | 37        | 21.94                    | 21.92                       | 21.83                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 21.92                    | 21.94                       | 21.92                     | 21.5                   | 2           |
| 15              | 16QAM      | 36      | 0         | 20.86                    | 20.97                       | 20.96                     |                        |             |
| 15              | 16QAM      | 36      | 20        | 20.83                    | 20.90                       | 20.89                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 20.91                    | 20.85                       | 20.90                     | 21.5                   | 2           |
| 15              | 16QAM      | 75      | 0         | 20.94                    | 20.95                       | 20.90                     |                        |             |
| 15              | 64QAM      | 1       | 0         | 20.98                    | 20.93                       | 20.98                     |                        |             |
| 15              | 64QAM      | 1       | 37        | 20.88                    | 20.94                       | 20.97                     | 21.5                   | 2           |
| 15              | 64QAM      | 1       | 74        | 20.96                    | 20.98                       | 20.98                     |                        |             |
| 15              | 64QAM      | 36      | 0         | 19.92                    | 19.93                       | 19.97                     |                        |             |
| 15              | 64QAM      | 36      | 20        | 19.87                    | 19.94                       | 19.95                     | 20.5                   | 3           |
| 15              | 64QAM      | 36      | 39        | 19.94                    | 19.93                       | 19.92                     |                        |             |
| 15              | 64QAM      | 75      | 0         | 19.93                    | 19.95                       | 19.94                     |                        |             |



| Channel         |       |    |    | 132022 | 132322 | 132622 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|--------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1715   | 1745   | 1775   |                        |             |
| 10              | QPSK  | 1  | 0  | 22.72  | 22.81  | 22.75  | 23.5                   | 0           |
| 10              | QPSK  | 1  | 25 | 22.64  | 22.71  | 22.67  |                        |             |
| 10              | QPSK  | 1  | 49 | 22.62  | 22.70  | 22.69  |                        |             |
| 10              | QPSK  | 25 | 0  | 21.70  | 21.80  | 21.80  | 22.5                   | 1           |
| 10              | QPSK  | 25 | 12 | 21.70  | 21.81  | 21.79  |                        |             |
| 10              | QPSK  | 25 | 25 | 21.68  | 21.73  | 21.71  |                        |             |
| 10              | QPSK  | 50 | 0  | 21.69  | 21.80  | 21.78  | 22.5                   | 1           |
| 10              | 16QAM | 1  | 0  | 21.97  | 21.96  | 21.98  |                        |             |
| 10              | 16QAM | 1  | 25 | 21.95  | 21.95  | 21.95  |                        |             |
| 10              | 16QAM | 1  | 49 | 21.95  | 21.94  | 21.97  | 21.5                   | 2           |
| 10              | 16QAM | 25 | 0  | 20.79  | 20.91  | 20.91  |                        |             |
| 10              | 16QAM | 25 | 12 | 20.77  | 20.89  | 20.85  |                        |             |
| 10              | 16QAM | 25 | 25 | 20.76  | 20.83  | 20.82  | 21.5                   | 2           |
| 10              | 16QAM | 50 | 0  | 20.82  | 20.88  | 20.90  |                        |             |
| 10              | 64QAM | 1  | 0  | 20.96  | 20.98  | 20.95  |                        |             |
| 10              | 64QAM | 1  | 25 | 20.88  | 20.94  | 20.95  | 21.5                   | 2           |
| 10              | 64QAM | 1  | 49 | 20.88  | 20.92  | 20.96  |                        |             |
| 10              | 64QAM | 25 | 0  | 19.80  | 19.93  | 19.87  |                        |             |
| 10              | 64QAM | 25 | 12 | 19.83  | 19.89  | 19.87  | 20.5                   | 3           |
| 10              | 64QAM | 25 | 25 | 19.75  | 19.88  | 19.86  |                        |             |
| 10              | 64QAM | 50 | 0  | 19.81  | 19.89  | 19.85  |                        |             |
| Channel         |       |    |    | 131997 | 132322 | 132647 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1712.5 | 1745   | 1777.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 22.66  | 22.74  | 22.72  | 23.5                   | 0           |
| 5               | QPSK  | 1  | 12 | 22.62  | 22.69  | 22.68  |                        |             |
| 5               | QPSK  | 1  | 24 | 22.62  | 22.70  | 22.70  |                        |             |
| 5               | QPSK  | 12 | 0  | 21.66  | 21.75  | 21.73  | 22.5                   | 1           |
| 5               | QPSK  | 12 | 7  | 21.69  | 21.79  | 21.74  |                        |             |
| 5               | QPSK  | 12 | 13 | 21.65  | 21.71  | 21.75  |                        |             |
| 5               | QPSK  | 25 | 0  | 21.64  | 21.73  | 21.73  | 22.5                   | 1           |
| 5               | 16QAM | 1  | 0  | 21.97  | 21.98  | 21.99  |                        |             |
| 5               | 16QAM | 1  | 12 | 21.92  | 21.99  | 21.96  |                        |             |
| 5               | 16QAM | 1  | 24 | 21.96  | 21.99  | 21.98  | 21.5                   | 2           |
| 5               | 16QAM | 12 | 0  | 20.78  | 20.88  | 20.84  |                        |             |
| 5               | 16QAM | 12 | 7  | 20.75  | 20.86  | 20.85  |                        |             |
| 5               | 16QAM | 12 | 13 | 20.73  | 20.79  | 20.84  | 21.5                   | 2           |
| 5               | 16QAM | 25 | 0  | 20.78  | 20.82  | 20.84  |                        |             |
| 5               | 64QAM | 1  | 0  | 20.92  | 20.95  | 20.98  |                        |             |
| 5               | 64QAM | 1  | 12 | 20.86  | 20.95  | 20.97  | 21.5                   | 2           |
| 5               | 64QAM | 1  | 24 | 20.88  | 20.94  | 20.99  |                        |             |
| 5               | 64QAM | 12 | 0  | 19.79  | 19.91  | 19.93  |                        |             |
| 5               | 64QAM | 12 | 7  | 19.85  | 19.92  | 19.92  | 20.5                   | 3           |
| 5               | 64QAM | 12 | 13 | 19.79  | 19.90  | 19.91  |                        |             |
| 5               | 64QAM | 25 | 0  | 19.78  | 19.86  | 19.88  |                        |             |

| Channel         |       |    |    | 131987 | 132322 | 132657 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|--------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1711.5 | 1745   | 1778.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 22.66  | 22.72  | 22.71  | 23.5                   | 0           |
| 3               | QPSK  | 1  | 8  | 22.61  | 22.68  | 22.67  |                        |             |
| 3               | QPSK  | 1  | 14 | 22.61  | 22.65  | 22.66  |                        |             |
| 3               | QPSK  | 8  | 0  | 21.65  | 21.76  | 21.76  | 22.5                   | 1           |
| 3               | QPSK  | 8  | 4  | 21.67  | 21.75  | 21.74  |                        |             |
| 3               | QPSK  | 8  | 7  | 21.65  | 21.73  | 21.76  |                        |             |
| 3               | QPSK  | 15 | 0  | 21.66  | 21.72  | 21.62  |                        |             |
| 3               | 16QAM | 1  | 0  | 21.95  | 21.95  | 21.98  | 22.5                   | 1           |
| 3               | 16QAM | 1  | 8  | 21.94  | 21.98  | 21.96  |                        |             |
| 3               | 16QAM | 1  | 14 | 21.91  | 21.96  | 22.00  |                        |             |
| 3               | 16QAM | 8  | 0  | 20.79  | 20.85  | 20.89  | 21.5                   | 2           |
| 3               | 16QAM | 8  | 4  | 20.81  | 20.87  | 20.89  |                        |             |
| 3               | 16QAM | 8  | 7  | 20.71  | 20.87  | 20.91  |                        |             |
| 3               | 16QAM | 15 | 0  | 20.77  | 20.84  | 20.83  |                        |             |
| 3               | 64QAM | 1  | 0  | 20.88  | 20.91  | 20.95  | 21.5                   | 2           |
| 3               | 64QAM | 1  | 8  | 20.88  | 20.91  | 20.98  |                        |             |
| 3               | 64QAM | 1  | 14 | 20.86  | 20.92  | 20.97  |                        |             |
| 3               | 64QAM | 8  | 0  | 19.81  | 19.89  | 19.86  | 20.5                   | 3           |
| 3               | 64QAM | 8  | 4  | 19.83  | 19.90  | 19.91  |                        |             |
| 3               | 64QAM | 8  | 7  | 19.79  | 19.87  | 19.85  |                        |             |
| 3               | 64QAM | 15 | 0  | 19.77  | 19.86  | 19.85  |                        |             |
| Channel         |       |    |    | 131979 | 132322 | 132665 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1710.7 | 1745   | 1779.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 22.58  | 22.63  | 22.63  | 23.5                   | 0           |
| 1.4             | QPSK  | 1  | 3  | 22.63  | 22.71  | 22.70  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 22.54  | 22.61  | 22.62  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 22.60  | 22.66  | 22.70  |                        |             |
| 1.4             | QPSK  | 3  | 1  | 22.63  | 22.69  | 22.71  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 22.58  | 22.65  | 22.69  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 21.58  | 21.69  | 21.68  | 22.5                   | 1           |
| 1.4             | 16QAM | 1  | 0  | 21.86  | 21.93  | 21.98  | 22.5                   | 1           |
| 1.4             | 16QAM | 1  | 3  | 21.96  | 21.97  | 21.97  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 21.87  | 21.91  | 22.00  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 21.65  | 21.70  | 21.80  |                        |             |
| 1.4             | 16QAM | 3  | 1  | 21.70  | 21.74  | 21.81  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 21.65  | 21.70  | 21.78  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 20.75  | 20.85  | 20.86  | 21.5                   | 2           |
| 1.4             | 64QAM | 1  | 0  | 20.83  | 20.88  | 20.95  | 21.5                   | 2           |
| 1.4             | 64QAM | 1  | 3  | 20.86  | 20.93  | 21.00  |                        |             |
| 1.4             | 64QAM | 1  | 5  | 20.79  | 20.87  | 20.94  |                        |             |
| 1.4             | 64QAM | 3  | 0  | 20.83  | 20.87  | 20.88  |                        |             |
| 1.4             | 64QAM | 3  | 1  | 20.85  | 20.91  | 20.95  |                        |             |
| 1.4             | 64QAM | 3  | 3  | 20.79  | 20.89  | 20.92  |                        |             |
| 1.4             | 64QAM | 6  | 0  | 19.68  | 19.78  | 19.79  | 20.5                   | 3           |

**<LTE Band 71>**

| 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         |            |         |           | 133222                | 133322                   | 133372                 |                     |          |
| Frequency (MHz) |            |         |           | 673                   | 683                      | 688                    |                     |          |
| 20              | QPSK       | 1       | 0         | 23.10                 | 23.18                    | 23.01                  |                     |          |
| 20              | QPSK       | 1       | 49        | 23.00                 | 22.88                    | 22.91                  | 24                  | 0        |
| 20              | QPSK       | 1       | 99        | 22.82                 | 22.80                    | 22.79                  |                     |          |
| 20              | QPSK       | 50      | 0         | 22.02                 | 22.10                    | 21.97                  |                     |          |
| 20              | QPSK       | 50      | 24        | 22.05                 | 21.95                    | 21.86                  | 23                  | 1        |
| 20              | QPSK       | 50      | 50        | 21.93                 | 21.83                    | 21.87                  |                     |          |
| 20              | QPSK       | 100     | 0         | 21.99                 | 22.01                    | 21.87                  |                     |          |
| 20              | 16QAM      | 1       | 0         | 22.43                 | 22.29                    | 22.31                  | 23                  | 1        |
| 20              | 16QAM      | 1       | 49        | 22.29                 | 22.23                    | 22.22                  |                     |          |
| 20              | 16QAM      | 1       | 99        | 22.18                 | 22.03                    | 22.08                  |                     |          |
| 20              | 16QAM      | 50      | 0         | 21.20                 | 21.09                    | 21.01                  | 22                  | 2        |
| 20              | 16QAM      | 50      | 24        | 21.13                 | 21.04                    | 20.95                  |                     |          |
| 20              | 16QAM      | 50      | 50        | 21.05                 | 20.91                    | 20.96                  |                     |          |
| 20              | 16QAM      | 100     | 0         | 21.09                 | 20.97                    | 20.92                  | 22                  | 2        |
| 20              | 64QAM      | 1       | 0         | 21.39                 | 21.37                    | 21.24                  |                     |          |
| 20              | 64QAM      | 1       | 49        | 21.24                 | 21.14                    | 21.17                  |                     |          |
| 20              | 64QAM      | 1       | 99        | 21.10                 | 21.03                    | 21.04                  | 21                  | 3        |
| 20              | 64QAM      | 50      | 0         | 20.21                 | 20.10                    | 20.06                  |                     |          |
| 20              | 64QAM      | 50      | 24        | 20.15                 | 20.03                    | 19.98                  |                     |          |
| 20              | 64QAM      | 50      | 50        | 20.05                 | 19.89                    | 19.98                  | 21                  | 3        |
| 20              | 64QAM      | 100     | 0         | 20.11                 | 19.99                    | 19.93                  |                     |          |
| Channel         |            |         |           | 133197                | 133297                   | 133397                 | Tune-up limit (dBm) | MPR (dB) |
| Frequency (MHz) |            |         |           | 670.5                 | 680.5                    | 690.5                  |                     |          |
| 15              | QPSK       | 1       | 0         | 23.14                 | 23.06                    | 22.93                  |                     |          |
| 15              | QPSK       | 1       | 37        | 23.02                 | 22.89                    | 22.87                  | 24                  | 0        |
| 15              | QPSK       | 1       | 74        | 22.91                 | 22.89                    | 22.82                  |                     |          |
| 15              | QPSK       | 36      | 0         | 22.09                 | 21.97                    | 21.87                  | 23                  | 1        |
| 15              | QPSK       | 36      | 20        | 22.06                 | 21.96                    | 21.92                  |                     |          |
| 15              | QPSK       | 36      | 39        | 21.97                 | 21.85                    | 21.82                  |                     |          |
| 15              | QPSK       | 75      | 0         | 22.03                 | 21.96                    | 21.91                  | 23                  | 1        |
| 15              | 16QAM      | 1       | 0         | 22.47                 | 22.26                    | 22.23                  |                     |          |
| 15              | 16QAM      | 1       | 37        | 22.23                 | 22.28                    | 22.12                  |                     |          |
| 15              | 16QAM      | 1       | 74        | 22.27                 | 22.18                    | 22.14                  | 22                  | 2        |
| 15              | 16QAM      | 36      | 0         | 21.17                 | 21.05                    | 20.96                  |                     |          |
| 15              | 16QAM      | 36      | 20        | 21.13                 | 21.06                    | 21.01                  |                     |          |
| 15              | 16QAM      | 36      | 39        | 21.08                 | 20.93                    | 20.88                  | 22                  | 2        |
| 15              | 16QAM      | 75      | 0         | 21.15                 | 21.02                    | 20.97                  |                     |          |
| 15              | 64QAM      | 1       | 0         | 21.39                 | 21.30                    | 21.19                  |                     |          |
| 15              | 64QAM      | 1       | 37        | 21.25                 | 21.23                    | 21.09                  | 22                  | 2        |
| 15              | 64QAM      | 1       | 74        | 21.17                 | 21.10                    | 21.09                  |                     |          |
| 15              | 64QAM      | 36      | 0         | 20.25                 | 20.10                    | 19.99                  |                     |          |
| 15              | 64QAM      | 36      | 20        | 20.17                 | 20.05                    | 20.07                  | 21                  | 3        |
| 15              | 64QAM      | 36      | 39        | 20.11                 | 19.97                    | 19.96                  |                     |          |
| 15              | 64QAM      | 75      | 0         | 20.09                 | 20.02                    | 19.99                  |                     |          |

| Channel         |       |    |    | 133172 | 133272 | 133422 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|--------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 668    | 678    | 693    |                        |             |
| 10              | QPSK  | 1  | 0  | 23.16  | 22.99  | 22.95  | 24                     | 0           |
| 10              | QPSK  | 1  | 25 | 23.03  | 22.90  | 22.84  |                        |             |
| 10              | QPSK  | 1  | 49 | 22.92  | 22.92  | 22.81  |                        |             |
| 10              | QPSK  | 25 | 0  | 22.11  | 21.97  | 21.92  | 23                     | 1           |
| 10              | QPSK  | 25 | 12 | 22.11  | 21.95  | 21.88  |                        |             |
| 10              | QPSK  | 25 | 25 | 22.04  | 21.90  | 21.82  |                        |             |
| 10              | QPSK  | 50 | 0  | 22.07  | 21.94  | 21.87  |                        |             |
| 10              | 16QAM | 1  | 0  | 22.49  | 22.30  | 22.22  | 23                     | 1           |
| 10              | 16QAM | 1  | 25 | 22.46  | 22.28  | 22.09  |                        |             |
| 10              | 16QAM | 1  | 49 | 22.24  | 22.22  | 22.08  |                        |             |
| 10              | 16QAM | 25 | 0  | 21.19  | 21.05  | 21.00  | 22                     | 2           |
| 10              | 16QAM | 25 | 12 | 21.16  | 21.03  | 21.00  |                        |             |
| 10              | 16QAM | 25 | 25 | 21.11  | 21.01  | 20.92  |                        |             |
| 10              | 16QAM | 50 | 0  | 21.16  | 21.04  | 20.95  |                        |             |
| 10              | 64QAM | 1  | 0  | 21.40  | 21.26  | 21.10  | 22                     | 2           |
| 10              | 64QAM | 1  | 25 | 21.29  | 21.13  | 21.07  |                        |             |
| 10              | 64QAM | 1  | 49 | 21.20  | 21.11  | 21.02  |                        |             |
| 10              | 64QAM | 25 | 0  | 20.21  | 20.09  | 20.04  | 21                     | 3           |
| 10              | 64QAM | 25 | 12 | 20.21  | 20.05  | 20.00  |                        |             |
| 10              | 64QAM | 25 | 25 | 20.09  | 19.99  | 19.90  |                        |             |
| 10              | 64QAM | 50 | 0  | 20.18  | 20.06  | 20.00  |                        |             |
| Channel         |       |    |    | 133147 | 133247 | 133447 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 665.5  | 675.5  | 695.5  |                        |             |
| 5               | QPSK  | 1  | 0  | 23.12  | 22.98  | 22.87  | 24                     | 0           |
| 5               | QPSK  | 1  | 12 | 23.08  | 22.92  | 22.91  |                        |             |
| 5               | QPSK  | 1  | 24 | 23.01  | 22.85  | 22.85  |                        |             |
| 5               | QPSK  | 12 | 0  | 22.17  | 21.98  | 21.86  | 23                     | 1           |
| 5               | QPSK  | 12 | 7  | 22.15  | 21.99  | 21.97  |                        |             |
| 5               | QPSK  | 12 | 13 | 22.06  | 21.94  | 21.88  |                        |             |
| 5               | QPSK  | 25 | 0  | 22.11  | 21.93  | 21.85  |                        |             |
| 5               | 16QAM | 1  | 0  | 22.46  | 22.32  | 22.11  | 23                     | 1           |
| 5               | 16QAM | 1  | 12 | 22.39  | 22.30  | 22.21  |                        |             |
| 5               | 16QAM | 1  | 24 | 22.39  | 22.18  | 22.11  |                        |             |
| 5               | 16QAM | 12 | 0  | 21.21  | 21.08  | 20.98  | 22                     | 2           |
| 5               | 16QAM | 12 | 7  | 21.26  | 21.06  | 21.07  |                        |             |
| 5               | 16QAM | 12 | 13 | 21.17  | 21.00  | 20.99  |                        |             |
| 5               | 16QAM | 25 | 0  | 21.18  | 21.04  | 20.94  |                        |             |
| 5               | 64QAM | 1  | 0  | 21.41  | 21.23  | 21.07  | 22                     | 2           |
| 5               | 64QAM | 1  | 12 | 21.31  | 21.19  | 21.13  |                        |             |
| 5               | 64QAM | 1  | 24 | 21.26  | 21.14  | 21.10  |                        |             |
| 5               | 64QAM | 12 | 0  | 20.29  | 20.12  | 19.99  | 21                     | 3           |
| 5               | 64QAM | 12 | 7  | 20.27  | 20.13  | 20.12  |                        |             |
| 5               | 64QAM | 12 | 13 | 20.24  | 20.06  | 20.04  |                        |             |
| 5               | 64QAM | 25 | 0  | 20.23  | 20.08  | 19.94  |                        |             |

**<Near-Body 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         | 15.85                    | 15.67                       | 15.39                     | 16.5                   | 0           |
| 20              | QPSK       | 1       | 49        | 15.68                    | 15.48                       | 15.37                     |                        |             |
| 20              | QPSK       | 1       | 99        | 15.60                    | 15.43                       | 15.37                     |                        |             |
| 20              | QPSK       | 50      | 0         | 15.22                    | 15.11                       | 15.04                     | 16.5                   | 0           |
| 20              | QPSK       | 50      | 24        | 15.17                    | 15.07                       | 15.02                     |                        |             |
| 20              | QPSK       | 50      | 50        | 15.15                    | 15.06                       | 14.96                     |                        |             |
| 20              | QPSK       | 100     | 0         | 15.19                    | 15.04                       | 14.95                     | 16.5                   | 0           |
| 20              | 16QAM      | 1       | 0         | 15.24                    | 15.11                       | 14.79                     |                        |             |
| 20              | 16QAM      | 1       | 49        | 14.87                    | 14.74                       | 14.81                     |                        |             |
| 20              | 16QAM      | 1       | 99        | 15.03                    | 14.88                       | 14.82                     | 15.5                   | 1           |
| 20              | 16QAM      | 50      | 0         | 14.96                    | 14.82                       | 14.73                     |                        |             |
| 20              | 16QAM      | 50      | 24        | 14.91                    | 14.80                       | 14.77                     |                        |             |
| 20              | 16QAM      | 50      | 50        | 14.88                    | 14.77                       | 14.74                     | 15.5                   | 1           |
| 20              | 16QAM      | 100     | 0         | 14.93                    | 14.82                       | 14.71                     |                        |             |
| 20              | 64QAM      | 1       | 0         | 15.14                    | 15.01                       | 14.69                     |                        |             |
| 20              | 64QAM      | 1       | 49        | 14.77                    | 14.64                       | 14.67                     | 15.5                   | 1           |
| 20              | 64QAM      | 1       | 99        | 14.93                    | 14.78                       | 14.66                     |                        |             |
| 20              | 64QAM      | 50      | 0         | 14.86                    | 14.72                       | 14.63                     |                        |             |
| 20              | 64QAM      | 50      | 24        | 14.81                    | 14.70                       | 14.67                     | 15.5                   | 1           |
| 20              | 64QAM      | 50      | 50        | 14.78                    | 14.67                       | 14.64                     |                        |             |
| 20              | 64QAM      | 100     | 0         | 14.83                    | 14.72                       | 14.61                     |                        |             |
| Channel         |            |         |           | 18675                    | 18900                       | 19125                     | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |            |         |           | 1857.5                   | 1880                        | 1902.5                    |                        |             |
| 15              | QPSK       | 1       | 0         | 15.65                    | 15.39                       | 15.39                     | 16.5                   | 0           |
| 15              | QPSK       | 1       | 37        | 15.48                    | 15.32                       | 15.35                     |                        |             |
| 15              | QPSK       | 1       | 74        | 15.42                    | 15.31                       | 15.25                     |                        |             |
| 15              | QPSK       | 36      | 0         | 15.35                    | 15.10                       | 15.05                     | 16.5                   | 0           |
| 15              | QPSK       | 36      | 20        | 15.22                    | 15.08                       | 15.04                     |                        |             |
| 15              | QPSK       | 36      | 39        | 15.16                    | 15.04                       | 15.02                     |                        |             |
| 15              | QPSK       | 75      | 0         | 15.21                    | 15.09                       | 15.03                     | 16.5                   | 0           |
| 15              | 16QAM      | 1       | 0         | 15.19                    | 14.96                       | 14.95                     |                        |             |
| 15              | 16QAM      | 1       | 37        | 15.07                    | 14.89                       | 14.88                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 14.97                    | 14.86                       | 14.86                     | 15.5                   | 1           |
| 15              | 16QAM      | 36      | 0         | 15.18                    | 14.94                       | 14.91                     |                        |             |
| 15              | 16QAM      | 36      | 20        | 15.03                    | 14.92                       | 14.88                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 15.02                    | 14.87                       | 14.85                     | 15.5                   | 1           |
| 15              | 16QAM      | 75      | 0         | 15.03                    | 14.90                       | 14.84                     |                        |             |
| 15              | 64QAM      | 1       | 0         | 15.05                    | 14.82                       | 14.81                     |                        |             |
| 15              | 64QAM      | 1       | 37        | 14.93                    | 14.75                       | 14.74                     | 15.5                   | 1           |
| 15              | 64QAM      | 1       | 74        | 14.83                    | 14.72                       | 14.72                     |                        |             |
| 15              | 64QAM      | 36      | 0         | 15.04                    | 14.80                       | 14.77                     |                        |             |
| 15              | 64QAM      | 36      | 20        | 14.89                    | 14.78                       | 14.74                     | 15.5                   | 1           |
| 15              | 64QAM      | 36      | 39        | 14.88                    | 14.73                       | 14.71                     |                        |             |
| 15              | 64QAM      | 75      | 0         | 14.89                    | 14.76                       | 14.70                     |                        |             |

| Channel         |       |    |    | 18650  | 18900 | 19150  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1855   | 1880  | 1905   |                        |             |
| 10              | QPSK  | 1  | 0  | 15.46  | 15.45 | 15.33  | 16.5                   | 0           |
| 10              | QPSK  | 1  | 25 | 15.44  | 15.27 | 15.20  |                        |             |
| 10              | QPSK  | 1  | 49 | 15.37  | 15.40 | 15.28  |                        |             |
| 10              | QPSK  | 25 | 0  | 15.33  | 15.09 | 15.02  | 16.5                   | 0           |
| 10              | QPSK  | 25 | 12 | 15.25  | 15.07 | 14.99  |                        |             |
| 10              | QPSK  | 25 | 25 | 15.20  | 15.04 | 14.99  |                        |             |
| 10              | QPSK  | 50 | 0  | 15.15  | 15.04 | 14.98  |                        |             |
| 10              | 16QAM | 1  | 0  | 15.27  | 15.09 | 14.88  | 16.5                   | 0           |
| 10              | 16QAM | 1  | 25 | 15.07  | 14.83 | 14.80  |                        |             |
| 10              | 16QAM | 1  | 49 | 15.18  | 15.04 | 14.79  |                        |             |
| 10              | 16QAM | 25 | 0  | 15.12  | 14.88 | 14.84  | 15.5                   | 1           |
| 10              | 16QAM | 25 | 12 | 15.09  | 14.86 | 14.86  |                        |             |
| 10              | 16QAM | 25 | 25 | 14.96  | 14.85 | 14.82  |                        |             |
| 10              | 16QAM | 50 | 0  | 15.00  | 14.88 | 14.83  |                        |             |
| 10              | 64QAM | 1  | 0  | 15.20  | 15.07 | 14.86  | 15.5                   | 1           |
| 10              | 64QAM | 1  | 25 | 15.05  | 14.81 | 14.78  |                        |             |
| 10              | 64QAM | 1  | 49 | 15.16  | 15.02 | 14.77  |                        |             |
| 10              | 64QAM | 25 | 0  | 15.10  | 14.86 | 14.82  | 15.5                   | 1           |
| 10              | 64QAM | 25 | 12 | 15.07  | 14.84 | 14.84  |                        |             |
| 10              | 64QAM | 25 | 25 | 14.94  | 14.83 | 14.80  |                        |             |
| 10              | 64QAM | 50 | 0  | 14.98  | 14.86 | 14.81  |                        |             |
| Channel         |       |    |    | 18625  | 18900 | 19175  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1852.5 | 1880  | 1907.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 15.46  | 15.37 | 15.23  | 16.5                   | 0           |
| 5               | QPSK  | 1  | 12 | 15.42  | 15.34 | 15.22  |                        |             |
| 5               | QPSK  | 1  | 24 | 15.41  | 15.33 | 15.26  |                        |             |
| 5               | QPSK  | 12 | 0  | 15.30  | 15.07 | 15.02  | 16.5                   | 0           |
| 5               | QPSK  | 12 | 7  | 15.27  | 15.06 | 15.05  |                        |             |
| 5               | QPSK  | 12 | 13 | 15.28  | 15.04 | 15.04  |                        |             |
| 5               | QPSK  | 25 | 0  | 15.22  | 15.01 | 14.99  |                        |             |
| 5               | 16QAM | 1  | 0  | 15.13  | 14.88 | 14.82  | 16.5                   | 0           |
| 5               | 16QAM | 1  | 12 | 15.09  | 14.84 | 14.80  |                        |             |
| 5               | 16QAM | 1  | 24 | 15.10  | 14.87 | 14.79  |                        |             |
| 5               | 16QAM | 12 | 0  | 15.10  | 14.87 | 14.85  | 15.5                   | 1           |
| 5               | 16QAM | 12 | 7  | 15.09  | 14.90 | 14.86  |                        |             |
| 5               | 16QAM | 12 | 13 | 15.09  | 14.86 | 14.82  |                        |             |
| 5               | 16QAM | 25 | 0  | 15.07  | 14.84 | 14.81  |                        |             |
| 5               | 64QAM | 1  | 0  | 15.10  | 14.85 | 14.79  | 15.5                   | 1           |
| 5               | 64QAM | 1  | 12 | 15.06  | 14.81 | 14.77  |                        |             |
| 5               | 64QAM | 1  | 24 | 15.07  | 14.84 | 14.76  |                        |             |
| 5               | 64QAM | 12 | 0  | 15.07  | 14.84 | 14.82  | 15.5                   | 1           |
| 5               | 64QAM | 12 | 7  | 15.06  | 14.87 | 14.83  |                        |             |
| 5               | 64QAM | 12 | 13 | 15.06  | 14.83 | 14.79  |                        |             |
| 5               | 64QAM | 25 | 0  | 15.04  | 14.81 | 14.78  |                        |             |

| Channel         |       |    |    | 18615  | 18900 | 19185  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1851.5 | 1880  | 1908.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 15.50  | 15.26 | 15.25  | 16.5                   | 0           |
| 3               | QPSK  | 1  | 8  | 15.52  | 15.31 | 15.21  |                        |             |
| 3               | QPSK  | 1  | 14 | 15.41  | 15.21 | 15.21  |                        |             |
| 3               | QPSK  | 8  | 0  | 15.30  | 15.06 | 15.05  | 16.5                   | 0           |
| 3               | QPSK  | 8  | 4  | 15.35  | 15.14 | 15.07  |                        |             |
| 3               | QPSK  | 8  | 7  | 15.31  | 15.08 | 15.03  |                        |             |
| 3               | QPSK  | 15 | 0  | 15.22  | 14.97 | 14.94  |                        |             |
| 3               | 16QAM | 1  | 0  | 15.04  | 14.85 | 14.82  | 16.5                   | 0           |
| 3               | 16QAM | 1  | 8  | 15.06  | 14.83 | 14.75  |                        |             |
| 3               | 16QAM | 1  | 14 | 15.02  | 14.83 | 14.77  |                        |             |
| 3               | 16QAM | 8  | 0  | 15.07  | 14.85 | 14.79  | 15.5                   | 1           |
| 3               | 16QAM | 8  | 4  | 15.11  | 14.88 | 14.85  |                        |             |
| 3               | 16QAM | 8  | 7  | 15.08  | 14.82 | 14.78  |                        |             |
| 3               | 16QAM | 15 | 0  | 15.04  | 14.83 | 14.76  |                        |             |
| 3               | 64QAM | 1  | 0  | 15.02  | 14.83 | 14.80  | 15.5                   | 1           |
| 3               | 64QAM | 1  | 8  | 15.04  | 14.81 | 14.73  |                        |             |
| 3               | 64QAM | 1  | 14 | 15.00  | 14.81 | 14.75  |                        |             |
| 3               | 64QAM | 8  | 0  | 15.05  | 14.83 | 14.77  | 15.5                   | 1           |
| 3               | 64QAM | 8  | 4  | 15.09  | 14.86 | 14.83  |                        |             |
| 3               | 64QAM | 8  | 7  | 15.06  | 14.80 | 14.76  |                        |             |
| 3               | 64QAM | 15 | 0  | 15.02  | 14.81 | 14.74  |                        |             |
| Channel         |       |    |    | 18607  | 18900 | 19193  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1850.7 | 1880  | 1909.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 15.34  | 15.30 | 15.24  | 16.5                   | 0           |
| 1.4             | QPSK  | 1  | 3  | 15.39  | 15.21 | 15.19  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 15.36  | 15.21 | 15.11  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 15.26  | 15.06 | 14.99  |                        |             |
| 1.4             | QPSK  | 3  | 1  | 15.24  | 14.99 | 14.95  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 15.21  | 14.94 | 14.88  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 15.25  | 15.03 | 14.98  | 16.5                   | 0           |
| 1.4             | 16QAM | 1  | 0  | 15.02  | 14.75 | 14.71  | 16.5                   | 0           |
| 1.4             | 16QAM | 1  | 3  | 15.04  | 14.77 | 14.79  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 14.94  | 14.67 | 14.70  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 15.01  | 14.76 | 14.74  |                        |             |
| 1.4             | 16QAM | 3  | 1  | 15.02  | 14.83 | 14.78  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 15.01  | 14.79 | 14.73  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 14.98  | 14.75 | 14.68  | 15.5                   | 1           |
| 1.4             | 64QAM | 1  | 0  | 14.99  | 14.72 | 14.68  | 15.5                   | 1           |
| 1.4             | 64QAM | 1  | 3  | 15.01  | 14.74 | 14.76  |                        |             |
| 1.4             | 64QAM | 1  | 5  | 14.91  | 14.64 | 14.67  |                        |             |
| 1.4             | 64QAM | 3  | 0  | 14.98  | 14.73 | 14.71  |                        |             |
| 1.4             | 64QAM | 3  | 1  | 14.99  | 14.80 | 14.75  |                        |             |
| 1.4             | 64QAM | 3  | 3  | 14.98  | 14.76 | 14.70  |                        |             |
| 1.4             | 64QAM | 6  | 0  | 14.95  | 14.72 | 14.65  | 15.5                   | 1           |

**<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         | 15.72                    | 15.65                       | 15.45                     | 17                     | 0           |
| 20              | QPSK       | 1       | 49        | 15.54                    | 15.39                       | 15.46                     |                        |             |
| 20              | QPSK       | 1       | 99        | 15.43                    | 15.41                       | 15.49                     |                        |             |
| 20              | QPSK       | 50      | 0         | 15.40                    | 15.32                       | 15.25                     | 17                     | 0           |
| 20              | QPSK       | 50      | 24        | 15.35                    | 15.24                       | 15.19                     |                        |             |
| 20              | QPSK       | 50      | 50        | 15.29                    | 15.17                       | 15.23                     |                        |             |
| 20              | QPSK       | 100     | 0         | 15.34                    | 15.20                       | 15.20                     |                        |             |
| 20              | 16QAM      | 1       | 0         | 15.30                    | 15.26                       | 15.16                     | 17                     | 0           |
| 20              | 16QAM      | 1       | 49        | 15.14                    | 15.05                       | 15.07                     |                        |             |
| 20              | 16QAM      | 1       | 99        | 15.11                    | 15.01                       | 15.08                     |                        |             |
| 20              | 16QAM      | 50      | 0         | 15.26                    | 15.18                       | 15.14                     | 17                     | 0           |
| 20              | 16QAM      | 50      | 24        | 15.20                    | 15.14                       | 15.05                     |                        |             |
| 20              | 16QAM      | 50      | 50        | 15.18                    | 15.10                       | 15.11                     |                        |             |
| 20              | 16QAM      | 100     | 0         | 15.20                    | 15.15                       | 15.10                     |                        |             |
| 20              | 64QAM      | 1       | 0         | 15.46                    | 15.58                       | 15.44                     | 17                     | 0           |
| 20              | 64QAM      | 1       | 49        | 15.52                    | 15.38                       | 15.43                     |                        |             |
| 20              | 64QAM      | 1       | 99        | 15.42                    | 15.30                       | 15.41                     |                        |             |
| 20              | 64QAM      | 50      | 0         | 15.42                    | 15.36                       | 15.24                     | 17                     | 0           |
| 20              | 64QAM      | 50      | 24        | 15.37                    | 15.29                       | 15.22                     |                        |             |
| 20              | 64QAM      | 50      | 50        | 15.32                    | 15.24                       | 15.27                     |                        |             |
| 20              | 64QAM      | 100     | 0         | 15.35                    | 15.30                       | 15.21                     |                        |             |
| Channel         |            |         |           | 20025                    | 20175                       | 20325                     |                        |             |
| Frequency (MHz) |            |         |           | 1717.5                   | 1732.5                      | 1747.5                    |                        |             |
| 15              | QPSK       | 1       | 0         | 15.70                    | 15.61                       | 15.45                     | 17                     | 0           |
| 15              | QPSK       | 1       | 37        | 15.62                    | 15.34                       | 15.43                     |                        |             |
| 15              | QPSK       | 1       | 74        | 15.52                    | 15.43                       | 15.49                     |                        |             |
| 15              | QPSK       | 36      | 0         | 15.41                    | 15.28                       | 15.17                     | 17                     | 0           |
| 15              | QPSK       | 36      | 20        | 15.38                    | 15.23                       | 15.25                     |                        |             |
| 15              | QPSK       | 36      | 39        | 15.34                    | 15.14                       | 15.23                     |                        |             |
| 15              | QPSK       | 75      | 0         | 15.36                    | 15.20                       | 15.17                     | 17                     | 0           |
| 15              | 16QAM      | 1       | 0         | 15.28                    | 15.25                       | 15.14                     |                        |             |
| 15              | 16QAM      | 1       | 37        | 15.15                    | 15.02                       | 15.08                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 15.17                    | 15.06                       | 15.08                     | 17                     | 0           |
| 15              | 16QAM      | 36      | 0         | 15.25                    | 15.19                       | 15.07                     |                        |             |
| 15              | 16QAM      | 36      | 20        | 15.22                    | 15.12                       | 15.17                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 15.18                    | 15.08                       | 15.09                     | 17                     | 0           |
| 15              | 16QAM      | 75      | 0         | 15.23                    | 15.13                       | 15.03                     |                        |             |
| 15              | 64QAM      | 1       | 0         | 15.52                    | 15.63                       | 15.44                     |                        |             |
| 15              | 64QAM      | 1       | 37        | 15.52                    | 15.34                       | 15.40                     | 17                     | 0           |
| 15              | 64QAM      | 1       | 74        | 15.52                    | 15.34                       | 15.43                     |                        |             |
| 15              | 64QAM      | 36      | 0         | 15.44                    | 15.34                       | 15.27                     |                        |             |
| 15              | 64QAM      | 36      | 20        | 15.40                    | 15.27                       | 15.31                     | 17                     | 0           |
| 15              | 64QAM      | 36      | 39        | 15.39                    | 15.25                       | 15.27                     |                        |             |
| 15              | 64QAM      | 75      | 0         | 15.40                    | 15.29                       | 15.19                     |                        |             |

| Channel         |       |    |    | 20000  | 20175  | 20350  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|--------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1715   | 1732.5 | 1750   |                        |             |
| 10              | QPSK  | 1  | 0  | 15.63  | 15.52  | 15.49  | 17                     | 0           |
| 10              | QPSK  | 1  | 25 | 15.57  | 15.39  | 15.41  |                        |             |
| 10              | QPSK  | 1  | 49 | 15.59  | 15.30  | 15.41  |                        |             |
| 10              | QPSK  | 25 | 0  | 15.37  | 15.22  | 15.24  | 17                     | 0           |
| 10              | QPSK  | 25 | 12 | 15.35  | 15.17  | 15.23  |                        |             |
| 10              | QPSK  | 25 | 25 | 15.34  | 15.17  | 15.20  |                        |             |
| 10              | QPSK  | 50 | 0  | 15.32  | 15.22  | 15.24  |                        |             |
| 10              | 16QAM | 1  | 0  | 15.21  | 15.12  | 15.14  | 17                     | 0           |
| 10              | 16QAM | 1  | 25 | 15.19  | 15.05  | 15.08  |                        |             |
| 10              | 16QAM | 1  | 49 | 15.14  | 15.01  | 15.02  |                        |             |
| 10              | 16QAM | 25 | 0  | 15.19  | 15.15  | 15.11  | 17                     | 0           |
| 10              | 16QAM | 25 | 12 | 15.19  | 15.12  | 15.13  |                        |             |
| 10              | 16QAM | 25 | 25 | 15.16  | 15.10  | 15.09  |                        |             |
| 10              | 16QAM | 50 | 0  | 15.20  | 15.11  | 15.11  |                        |             |
| 10              | 64QAM | 1  | 0  | 15.53  | 15.44  | 15.44  | 17                     | 0           |
| 10              | 64QAM | 1  | 25 | 15.52  | 15.34  | 15.36  |                        |             |
| 10              | 64QAM | 1  | 49 | 15.51  | 15.34  | 15.35  |                        |             |
| 10              | 64QAM | 25 | 0  | 15.35  | 15.29  | 15.28  | 17                     | 0           |
| 10              | 64QAM | 25 | 12 | 15.36  | 15.24  | 15.28  |                        |             |
| 10              | 64QAM | 25 | 25 | 15.32  | 15.21  | 15.24  |                        |             |
| 10              | 64QAM | 50 | 0  | 15.34  | 15.26  | 15.24  |                        |             |
| Channel         |       |    |    | 19975  | 20175  | 20375  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1712.5 | 1732.5 | 1752.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 15.60  | 15.38  | 15.48  | 17                     | 0           |
| 5               | QPSK  | 1  | 12 | 15.57  | 15.32  | 15.49  |                        |             |
| 5               | QPSK  | 1  | 24 | 15.61  | 15.36  | 15.46  |                        |             |
| 5               | QPSK  | 12 | 0  | 15.39  | 15.20  | 15.20  | 17                     | 0           |
| 5               | QPSK  | 12 | 7  | 15.38  | 15.18  | 15.25  |                        |             |
| 5               | QPSK  | 12 | 13 | 15.36  | 15.12  | 15.19  |                        |             |
| 5               | QPSK  | 25 | 0  | 15.33  | 15.19  | 15.20  |                        |             |
| 5               | 16QAM | 1  | 0  | 15.21  | 15.07  | 15.10  | 17                     | 0           |
| 5               | 16QAM | 1  | 12 | 15.14  | 15.04  | 15.04  |                        |             |
| 5               | 16QAM | 1  | 24 | 15.16  | 15.07  | 15.06  |                        |             |
| 5               | 16QAM | 12 | 0  | 15.21  | 15.08  | 15.09  | 17                     | 0           |
| 5               | 16QAM | 12 | 7  | 15.22  | 15.09  | 15.12  |                        |             |
| 5               | 16QAM | 12 | 13 | 15.19  | 15.09  | 15.06  |                        |             |
| 5               | 16QAM | 25 | 0  | 15.17  | 15.07  | 15.06  |                        |             |
| 5               | 64QAM | 1  | 0  | 15.56  | 15.34  | 15.39  | 17                     | 0           |
| 5               | 64QAM | 1  | 12 | 15.52  | 15.36  | 15.40  |                        |             |
| 5               | 64QAM | 1  | 24 | 15.53  | 15.22  | 15.36  |                        |             |
| 5               | 64QAM | 12 | 0  | 15.41  | 15.23  | 15.29  | 17                     | 0           |
| 5               | 64QAM | 12 | 7  | 15.39  | 15.21  | 15.31  |                        |             |
| 5               | 64QAM | 12 | 13 | 15.40  | 15.17  | 15.27  |                        |             |
| 5               | 64QAM | 25 | 0  | 15.34  | 15.20  | 15.22  |                        |             |

| Channel         |       |    |    | 19965  | 20175  | 20385  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|--------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1711.5 | 1732.5 | 1753.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 15.53  | 15.30  | 15.44  | 17                     | 0           |
| 3               | QPSK  | 1  | 8  | 15.53  | 15.27  | 15.39  |                        |             |
| 3               | QPSK  | 1  | 14 | 15.58  | 15.23  | 15.38  |                        |             |
| 3               | QPSK  | 8  | 0  | 15.38  | 15.12  | 15.23  | 17                     | 0           |
| 3               | QPSK  | 8  | 4  | 15.42  | 15.22  | 15.26  |                        |             |
| 3               | QPSK  | 8  | 7  | 15.35  | 15.20  | 15.22  |                        |             |
| 3               | QPSK  | 15 | 0  | 15.30  | 15.18  | 15.18  |                        |             |
| 3               | 16QAM | 1  | 0  | 15.16  | 15.03  | 15.05  | 17                     | 0           |
| 3               | 16QAM | 1  | 8  | 15.15  | 15.03  | 15.01  |                        |             |
| 3               | 16QAM | 1  | 14 | 15.14  | 15.02  | 15.01  |                        |             |
| 3               | 16QAM | 8  | 0  | 15.19  | 15.06  | 15.05  | 17                     | 0           |
| 3               | 16QAM | 8  | 4  | 15.21  | 15.08  | 15.07  |                        |             |
| 3               | 16QAM | 8  | 7  | 15.16  | 15.06  | 15.03  |                        |             |
| 3               | 16QAM | 15 | 0  | 15.17  | 15.07  | 15.05  |                        |             |
| 3               | 64QAM | 1  | 0  | 15.50  | 15.28  | 15.37  | 17                     | 0           |
| 3               | 64QAM | 1  | 8  | 15.51  | 15.25  | 15.37  |                        |             |
| 3               | 64QAM | 1  | 14 | 15.50  | 15.24  | 15.32  |                        |             |
| 3               | 64QAM | 8  | 0  | 15.39  | 15.17  | 15.23  | 17                     | 0           |
| 3               | 64QAM | 8  | 4  | 15.40  | 15.23  | 15.27  |                        |             |
| 3               | 64QAM | 8  | 7  | 15.38  | 15.16  | 15.24  |                        |             |
| 3               | 64QAM | 15 | 0  | 15.30  | 15.19  | 15.18  |                        |             |
| 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  | 15.52  | 15.28  | 15.31  | 17                     | 0           |
| 1.4             | QPSK  | 1  | 3  | 15.57  | 15.39  | 15.41  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 15.45  | 15.28  | 15.26  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 15.29  | 15.09  | 15.11  |                        |             |
| 1.4             | QPSK  | 3  | 1  | 15.32  | 15.16  | 15.12  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 15.26  | 15.07  | 15.10  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 15.33  | 15.20  | 15.18  | 17                     | 0           |
| 1.4             | 16QAM | 1  | 0  | 15.06  | 15.06  | 15.07  | 17                     | 0           |
| 1.4             | 16QAM | 1  | 3  | 15.16  | 15.01  | 15.04  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 15.03  | 15.04  | 15.04  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 15.12  | 15.00  | 15.07  |                        |             |
| 1.4             | 16QAM | 3  | 1  | 15.14  | 15.03  | 15.01  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 15.10  | 15.01  | 15.08  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 15.12  | 15.08  | 15.07  | 17                     | 0           |
| 1.4             | 64QAM | 1  | 0  | 15.43  | 15.25  | 15.27  | 17                     | 0           |
| 1.4             | 64QAM | 1  | 3  | 15.48  | 15.30  | 15.39  |                        |             |
| 1.4             | 64QAM | 1  | 5  | 15.40  | 15.18  | 15.31  |                        |             |
| 1.4             | 64QAM | 3  | 0  | 15.40  | 15.18  | 15.24  |                        |             |
| 1.4             | 64QAM | 3  | 1  | 15.42  | 15.21  | 15.33  |                        |             |
| 1.4             | 64QAM | 3  | 3  | 15.33  | 15.21  | 15.26  |                        |             |
| 1.4             | 64QAM | 6  | 0  | 15.27  | 15.10  | 15.16  | 17                     | 0           |

**<LTE Band 5>**

| 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         |            |         |           | 20450                    | 20525                       | 20600                     |                        |             |
| Frequency (MHz) |            |         |           | 829                      | 836.5                       | 844                       |                        |             |
| 10              | QPSK       | 1       | 0         | 21.97                    | 22.04                       | 21.86                     | 23.5                   | 0           |
| 10              | QPSK       | 1       | 25        | 21.87                    | 21.82                       | 21.75                     |                        |             |
| 10              | QPSK       | 1       | 49        | 21.80                    | 21.73                       | 21.66                     |                        |             |
| 10              | QPSK       | 25      | 0         | 21.91                    | 21.93                       | 21.79                     | 23.5                   | 0           |
| 10              | QPSK       | 25      | 12        | 21.89                    | 21.85                       | 21.77                     |                        |             |
| 10              | QPSK       | 25      | 25        | 21.86                    | 21.83                       | 21.73                     |                        |             |
| 10              | QPSK       | 50      | 0         | 21.90                    | 21.86                       | 21.78                     | 23.5                   | 0           |
| 10              | 16QAM      | 1       | 0         | 21.86                    | 21.78                       | 21.66                     |                        |             |
| 10              | 16QAM      | 1       | 25        | 21.72                    | 21.69                       | 21.64                     |                        |             |
| 10              | 16QAM      | 1       | 49        | 21.69                    | 21.57                       | 21.54                     | 22.5                   | 1           |
| 10              | 16QAM      | 25      | 0         | 20.56                    | 20.50                       | 20.51                     |                        |             |
| 10              | 16QAM      | 25      | 12        | 20.58                    | 20.51                       | 20.52                     |                        |             |
| 10              | 16QAM      | 25      | 25        | 20.50                    | 20.52                       | 20.53                     | 22.5                   | 1           |
| 10              | 16QAM      | 50      | 0         | 21.01                    | 20.94                       | 20.87                     |                        |             |
| 10              | 64QAM      | 1       | 0         | 21.12                    | 21.00                       | 20.96                     |                        |             |
| 10              | 64QAM      | 1       | 25        | 21.05                    | 20.96                       | 20.90                     | 22.5                   | 1           |
| 10              | 64QAM      | 1       | 49        | 21.00                    | 20.93                       | 20.84                     |                        |             |
| 10              | 64QAM      | 25      | 0         | 20.96                    | 20.84                       | 20.80                     |                        |             |
| 10              | 64QAM      | 25      | 12        | 20.89                    | 20.80                       | 20.74                     | 22.5                   | 1           |
| 10              | 64QAM      | 25      | 25        | 20.84                    | 20.77                       | 20.68                     |                        |             |
| 10              | 64QAM      | 50      | 0         | 20.80                    | 20.68                       | 20.64                     |                        |             |
| Channel         |            |         |           | 20425                    | 20525                       | 20625                     | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |            |         |           | 826.5                    | 836.5                       | 846.5                     |                        |             |
| 5               | QPSK       | 1       | 0         | 21.99                    | 21.85                       | 21.76                     | 23.5                   | 0           |
| 5               | QPSK       | 1       | 12        | 21.92                    | 21.80                       | 21.72                     |                        |             |
| 5               | QPSK       | 1       | 24        | 21.87                    | 21.75                       | 21.69                     |                        |             |
| 5               | QPSK       | 12      | 0         | 21.95                    | 21.84                       | 21.78                     | 23.5                   | 0           |
| 5               | QPSK       | 12      | 7         | 21.97                    | 21.85                       | 21.78                     |                        |             |
| 5               | QPSK       | 12      | 13        | 21.91                    | 21.80                       | 21.72                     |                        |             |
| 5               | QPSK       | 25      | 0         | 21.96                    | 21.86                       | 21.72                     | 23.5                   | 0           |
| 5               | 16QAM      | 1       | 0         | 21.68                    | 21.54                       | 21.58                     |                        |             |
| 5               | 16QAM      | 1       | 12        | 21.76                    | 21.59                       | 21.55                     |                        |             |
| 5               | 16QAM      | 1       | 24        | 21.65                    | 21.60                       | 21.52                     | 22.5                   | 1           |
| 5               | 16QAM      | 12      | 0         | 21.68                    | 21.60                       | 21.51                     |                        |             |
| 5               | 16QAM      | 12      | 7         | 21.52                    | 21.57                       | 21.55                     |                        |             |
| 5               | 16QAM      | 12      | 13        | 21.55                    | 21.52                       | 21.53                     | 22.5                   | 1           |
| 5               | 16QAM      | 25      | 0         | 20.55                    | 20.45                       | 20.32                     |                        |             |
| 5               | 64QAM      | 1       | 0         | 21.10                    | 20.98                       | 20.94                     |                        |             |
| 5               | 64QAM      | 1       | 12        | 21.03                    | 20.94                       | 20.88                     | 22.5                   | 1           |
| 5               | 64QAM      | 1       | 24        | 20.98                    | 20.91                       | 20.82                     |                        |             |
| 5               | 64QAM      | 12      | 0         | 20.94                    | 20.82                       | 20.78                     |                        |             |
| 5               | 64QAM      | 12      | 7         | 20.87                    | 20.78                       | 20.72                     | 22.5                   | 1           |
| 5               | 64QAM      | 12      | 13        | 20.82                    | 20.75                       | 20.66                     |                        |             |
| 5               | 64QAM      | 25      | 0         | 20.78                    | 20.66                       | 20.62                     |                        |             |

| Channel         |       |    |    | 20415 | 20525 | 20635 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|-------|-------|-------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 825.5 | 836.5 | 847.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 21.96 | 21.80 | 21.74 | 23.5                   | 0           |
| 3               | QPSK  | 1  | 8  | 21.93 | 21.78 | 21.69 |                        |             |
| 3               | QPSK  | 1  | 14 | 21.91 | 21.76 | 21.68 |                        |             |
| 3               | QPSK  | 8  | 0  | 21.95 | 21.83 | 21.70 | 23.5                   | 0           |
| 3               | QPSK  | 8  | 4  | 21.96 | 21.87 | 21.75 |                        |             |
| 3               | QPSK  | 8  | 7  | 21.96 | 21.80 | 21.71 |                        |             |
| 3               | QPSK  | 15 | 0  | 21.95 | 21.80 | 21.72 |                        |             |
| 3               | 16QAM | 1  | 0  | 21.83 | 21.67 | 21.59 | 23.5                   | 0           |
| 3               | 16QAM | 1  | 8  | 21.76 | 21.69 | 21.53 |                        |             |
| 3               | 16QAM | 1  | 14 | 21.79 | 21.60 | 21.57 |                        |             |
| 3               | 16QAM | 8  | 0  | 20.63 | 20.50 | 20.50 | 22.5                   | 1           |
| 3               | 16QAM | 8  | 4  | 20.63 | 20.50 | 20.50 |                        |             |
| 3               | 16QAM | 8  | 7  | 20.58 | 20.50 | 20.51 |                        |             |
| 3               | 16QAM | 15 | 0  | 20.59 | 20.54 | 20.50 |                        |             |
| 3               | 64QAM | 1  | 0  | 21.16 | 21.04 | 21.00 | 22.5                   | 1           |
| 3               | 64QAM | 1  | 8  | 21.09 | 21.00 | 20.94 |                        |             |
| 3               | 64QAM | 1  | 14 | 21.04 | 20.97 | 20.88 |                        |             |
| 3               | 64QAM | 8  | 0  | 21.00 | 20.88 | 20.84 | 22.5                   | 1           |
| 3               | 64QAM | 8  | 4  | 20.93 | 20.84 | 20.78 |                        |             |
| 3               | 64QAM | 8  | 7  | 20.88 | 20.81 | 20.72 |                        |             |
| 3               | 64QAM | 15 | 0  | 20.84 | 20.72 | 20.68 |                        |             |
| 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  | 21.83 | 21.73 | 21.62 | 23.5                   | 0           |
| 1.4             | QPSK  | 1  | 3  | 21.91 | 21.79 | 21.67 |                        |             |
| 1.4             | QPSK  | 1  | 5  | 21.83 | 21.69 | 21.60 |                        |             |
| 1.4             | QPSK  | 3  | 0  | 21.89 | 21.74 | 21.67 |                        |             |
| 1.4             | QPSK  | 3  | 1  | 21.91 | 21.77 | 21.66 |                        |             |
| 1.4             | QPSK  | 3  | 3  | 21.89 | 21.73 | 21.62 |                        |             |
| 1.4             | QPSK  | 6  | 0  | 21.89 | 21.75 | 21.64 | 23.5                   | 0           |
| 1.4             | 16QAM | 1  | 0  | 21.79 | 21.65 | 21.59 | 23.5                   | 0           |
| 1.4             | 16QAM | 1  | 3  | 21.87 | 21.70 | 21.56 |                        |             |
| 1.4             | 16QAM | 1  | 5  | 21.76 | 21.71 | 21.53 |                        |             |
| 1.4             | 16QAM | 3  | 0  | 21.59 | 21.51 | 21.52 |                        |             |
| 1.4             | 16QAM | 3  | 1  | 21.63 | 21.50 | 21.56 |                        |             |
| 1.4             | 16QAM | 3  | 3  | 21.56 | 21.53 | 21.54 |                        |             |
| 1.4             | 16QAM | 6  | 0  | 21.05 | 20.95 | 20.82 | 22.5                   | 1           |
| 1.4             | 64QAM | 1  | 0  | 21.14 | 21.02 | 20.98 | 22.5                   | 1           |
| 1.4             | 64QAM | 1  | 3  | 21.07 | 20.98 | 20.92 |                        |             |
| 1.4             | 64QAM | 1  | 5  | 21.02 | 20.95 | 20.86 |                        |             |
| 1.4             | 64QAM | 3  | 0  | 20.98 | 20.86 | 20.82 |                        |             |
| 1.4             | 64QAM | 3  | 1  | 20.91 | 20.82 | 20.76 |                        |             |
| 1.4             | 64QAM | 3  | 3  | 20.86 | 20.79 | 20.70 |                        |             |
| 1.4             | 64QAM | 6  | 0  | 20.82 | 20.70 | 20.66 | 22.5                   | 1           |

**<LTE Band 7>**

| 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         |            |         |           | 20850                    | 21100                       | 21350                     |                        |             |
| Frequency (MHz) |            |         |           | 2510                     | 2535                        | 2560                      |                        |             |
| 20              | QPSK       | 1       | 0         | 16.58                    | 16.59                       | 16.61                     | 18                     | 0           |
| 20              | QPSK       | 1       | 49        | 16.81                    | 16.83                       | 16.85                     |                        |             |
| 20              | QPSK       | 1       | 99        | 16.57                    | 16.60                       | 16.70                     |                        |             |
| 20              | QPSK       | 50      | 0         | 16.54                    | 16.57                       | 16.61                     | 18                     | 0           |
| 20              | QPSK       | 50      | 24        | 16.60                    | 16.68                       | 16.75                     |                        |             |
| 20              | QPSK       | 50      | 50        | 16.66                    | 16.73                       | 16.82                     |                        |             |
| 20              | QPSK       | 100     | 0         | 16.61                    | 16.63                       | 16.71                     |                        |             |
| 20              | 16QAM      | 1       | 0         | 16.77                    | 16.71                       | 16.75                     | 18                     | 0           |
| 20              | 16QAM      | 1       | 49        | 16.50                    | 16.50                       | 16.70                     |                        |             |
| 20              | 16QAM      | 1       | 99        | 16.83                    | 16.57                       | 16.55                     |                        |             |
| 20              | 16QAM      | 50      | 0         | 16.63                    | 16.62                       | 16.69                     | 18                     | 0           |
| 20              | 16QAM      | 50      | 24        | 16.73                    | 16.77                       | 16.55                     |                        |             |
| 20              | 16QAM      | 50      | 50        | 16.68                    | 16.77                       | 16.50                     |                        |             |
| 20              | 16QAM      | 100     | 0         | 16.70                    | 16.70                       | 16.77                     |                        |             |
| 20              | 64QAM      | 1       | 0         | 16.66                    | 16.66                       | 16.64                     | 18                     | 0           |
| 20              | 64QAM      | 1       | 49        | 16.83                    | 16.83                       | 16.54                     |                        |             |
| 20              | 64QAM      | 1       | 99        | 16.80                    | 16.78                       | 16.66                     |                        |             |
| 20              | 64QAM      | 50      | 0         | 16.65                    | 16.60                       | 16.67                     | 18                     | 0           |
| 20              | 64QAM      | 50      | 24        | 16.78                    | 16.74                       | 16.82                     |                        |             |
| 20              | 64QAM      | 50      | 50        | 16.67                    | 16.78                       | 16.58                     |                        |             |
| 20              | 64QAM      | 100     | 0         | 16.73                    | 16.71                       | 16.76                     |                        |             |
| Channel         |            |         |           | 20825                    | 21100                       | 21375                     |                        |             |
| Frequency (MHz) |            |         |           | 2507.5                   | 2535                        | 2562.5                    |                        |             |
| 15              | QPSK       | 1       | 0         | 16.55                    | 16.55                       | 16.55                     | 18                     | 0           |
| 15              | QPSK       | 1       | 37        | 16.60                    | 16.62                       | 16.67                     |                        |             |
| 15              | QPSK       | 1       | 74        | 16.63                    | 16.58                       | 16.76                     |                        |             |
| 15              | QPSK       | 36      | 0         | 16.57                    | 16.56                       | 16.68                     | 18                     | 0           |
| 15              | QPSK       | 36      | 20        | 16.65                    | 16.67                       | 16.79                     |                        |             |
| 15              | QPSK       | 36      | 39        | 16.66                    | 16.71                       | 16.76                     |                        |             |
| 15              | QPSK       | 75      | 0         | 16.59                    | 16.66                       | 16.77                     | 18                     | 0           |
| 15              | 16QAM      | 1       | 0         | 16.82                    | 16.83                       | 16.55                     |                        |             |
| 15              | 16QAM      | 1       | 37        | 16.59                    | 16.59                       | 16.67                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 16.65                    | 16.56                       | 16.57                     | 18                     | 0           |
| 15              | 16QAM      | 36      | 0         | 16.63                    | 16.67                       | 16.76                     |                        |             |
| 15              | 16QAM      | 36      | 20        | 16.73                    | 16.78                       | 16.59                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 16.73                    | 16.79                       | 16.79                     | 18                     | 0           |
| 15              | 16QAM      | 75      | 0         | 16.74                    | 16.71                       | 16.82                     |                        |             |
| 15              | 64QAM      | 1       | 0         | 16.77                    | 16.76                       | 16.76                     |                        |             |
| 15              | 64QAM      | 1       | 37        | 16.80                    | 16.81                       | 16.83                     | 18                     | 0           |
| 15              | 64QAM      | 1       | 74        | 16.55                    | 16.79                       | 16.65                     |                        |             |
| 15              | 64QAM      | 36      | 0         | 16.63                    | 16.67                       | 16.74                     |                        |             |
| 15              | 64QAM      | 36      | 20        | 16.73                    | 16.77                       | 16.56                     | 18                     | 0           |
| 15              | 64QAM      | 36      | 39        | 16.73                    | 16.79                       | 16.79                     |                        |             |
| 15              | 64QAM      | 75      | 0         | 16.74                    | 16.69                       | 16.83                     |                        |             |



| Channel         |       |    |    | 20800  | 21100 | 21400  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 2505   | 2535  | 2565   |                        |             |
| 10              | QPSK  | 1  | 0  | 16.58  | 16.52 | 16.66  | 18                     | 0           |
| 10              | QPSK  | 1  | 25 | 16.67  | 16.61 | 16.68  |                        |             |
| 10              | QPSK  | 1  | 49 | 16.59  | 16.64 | 16.75  |                        |             |
| 10              | QPSK  | 25 | 0  | 16.62  | 16.58 | 16.74  | 18                     | 0           |
| 10              | QPSK  | 25 | 12 | 16.60  | 16.65 | 16.72  |                        |             |
| 10              | QPSK  | 25 | 25 | 16.63  | 16.65 | 16.74  |                        |             |
| 10              | QPSK  | 50 | 0  | 16.55  | 16.60 | 16.82  |                        |             |
| 10              | 16QAM | 1  | 0  | 16.83  | 16.77 | 16.67  | 18                     | 0           |
| 10              | 16QAM | 1  | 25 | 16.65  | 16.59 | 16.70  |                        |             |
| 10              | 16QAM | 1  | 49 | 16.50  | 16.51 | 16.54  |                        |             |
| 10              | 16QAM | 25 | 0  | 16.77  | 16.65 | 16.81  | 18                     | 0           |
| 10              | 16QAM | 25 | 12 | 16.69  | 16.73 | 16.81  |                        |             |
| 10              | 16QAM | 25 | 25 | 16.71  | 16.72 | 16.81  |                        |             |
| 10              | 16QAM | 50 | 0  | 16.71  | 16.71 | 16.57  |                        |             |
| 10              | 64QAM | 1  | 0  | 16.72  | 16.68 | 16.55  | 18                     | 0           |
| 10              | 64QAM | 1  | 25 | 16.56  | 16.80 | 16.52  |                        |             |
| 10              | 64QAM | 1  | 49 | 16.82  | 16.56 | 16.67  |                        |             |
| 10              | 64QAM | 25 | 0  | 16.77  | 16.64 | 16.81  | 18                     | 0           |
| 10              | 64QAM | 25 | 12 | 16.68  | 16.72 | 16.80  |                        |             |
| 10              | 64QAM | 25 | 25 | 16.71  | 16.73 | 16.81  |                        |             |
| 10              | 64QAM | 50 | 0  | 16.70  | 16.69 | 16.56  |                        |             |
| Channel         |       |    |    | 20775  | 21100 | 21425  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 2502.5 | 2535  | 2567.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 16.59  | 16.56 | 16.67  | 18                     | 0           |
| 5               | QPSK  | 1  | 12 | 16.64  | 16.59 | 16.72  |                        |             |
| 5               | QPSK  | 1  | 24 | 16.70  | 16.65 | 16.77  |                        |             |
| 5               | QPSK  | 12 | 0  | 16.65  | 16.58 | 16.72  | 18                     | 0           |
| 5               | QPSK  | 12 | 7  | 16.74  | 16.65 | 16.81  |                        |             |
| 5               | QPSK  | 12 | 13 | 16.72  | 16.66 | 16.82  |                        |             |
| 5               | QPSK  | 25 | 0  | 16.66  | 16.62 | 16.76  |                        |             |
| 5               | 16QAM | 1  | 0  | 16.83  | 16.55 | 16.69  | 18                     | 0           |
| 5               | 16QAM | 1  | 12 | 16.52  | 16.59 | 16.54  |                        |             |
| 5               | 16QAM | 1  | 24 | 16.65  | 16.65 | 16.56  |                        |             |
| 5               | 16QAM | 12 | 0  | 16.72  | 16.67 | 16.80  | 18                     | 0           |
| 5               | 16QAM | 12 | 7  | 16.79  | 16.73 | 16.57  |                        |             |
| 5               | 16QAM | 12 | 13 | 16.82  | 16.72 | 16.83  |                        |             |
| 5               | 16QAM | 25 | 0  | 16.80  | 16.71 | 16.54  |                        |             |
| 5               | 64QAM | 1  | 0  | 16.80  | 16.77 | 16.59  | 18                     | 0           |
| 5               | 64QAM | 1  | 12 | 16.83  | 16.80 | 16.64  |                        |             |
| 5               | 64QAM | 1  | 24 | 16.57  | 16.83 | 16.68  |                        |             |
| 5               | 64QAM | 12 | 0  | 16.71  | 16.65 | 16.78  | 18                     | 0           |
| 5               | 64QAM | 12 | 7  | 16.77  | 16.71 | 16.56  |                        |             |
| 5               | 64QAM | 12 | 13 | 16.79  | 16.71 | 16.82  |                        |             |
| 5               | 64QAM | 25 | 0  | 16.77  | 16.69 | 16.83  |                        |             |

**<LTE Band 14>**

| 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         |            |         |           | 23330                    |                             |                           |                        |             |
| Frequency (MHz) |            |         |           | 793                      |                             |                           |                        |             |
| 10              | QPSK       | 1       | 0         | 22.34                    |                             |                           | 23.5                   | 0           |
| 10              | QPSK       | 1       | 25        | 22.13                    |                             |                           |                        |             |
| 10              | QPSK       | 1       | 49        | 22.02                    |                             |                           |                        |             |
| 10              | QPSK       | 25      | 0         | 21.74                    |                             |                           | 23.5                   | 0           |
| 10              | QPSK       | 25      | 12        | 21.70                    |                             |                           |                        |             |
| 10              | QPSK       | 25      | 25        | 21.65                    |                             |                           |                        |             |
| 10              | QPSK       | 50      | 0         | 21.66                    |                             |                           | 23.5                   | 0           |
| 10              | 16QAM      | 1       | 0         | 22.18                    |                             |                           |                        |             |
| 10              | 16QAM      | 1       | 25        | 21.95                    |                             |                           |                        |             |
| 10              | 16QAM      | 1       | 49        | 21.87                    |                             |                           | 22.5                   | 1           |
| 10              | 16QAM      | 25      | 0         | 20.84                    |                             |                           |                        |             |
| 10              | 16QAM      | 25      | 12        | 20.83                    |                             |                           |                        |             |
| 10              | 16QAM      | 25      | 25        | 20.74                    |                             |                           | 22.5                   | 1           |
| 10              | 16QAM      | 50      | 0         | 20.77                    |                             |                           |                        |             |
| 10              | 64QAM      | 1       | 0         | 20.83                    |                             |                           |                        |             |
| 10              | 64QAM      | 1       | 25        | 20.82                    |                             |                           | 22.5                   | 1           |
| 10              | 64QAM      | 1       | 49        | 20.73                    |                             |                           |                        |             |
| 10              | 64QAM      | 25      | 0         | 20.76                    |                             |                           |                        |             |
| 10              | 64QAM      | 25      | 12        | 20.82                    |                             |                           | 22.5                   | 1           |
| 10              | 64QAM      | 25      | 25        | 20.81                    |                             |                           |                        |             |
| 10              | 64QAM      | 50      | 0         | 20.72                    |                             |                           |                        |             |
| Channel         |            |         |           | 23305                    | 23330                       | 23355                     | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |            |         |           | 790.5                    | 793                         | 795.5                     |                        |             |
| 5               | QPSK       | 1       | 0         | 22.33                    | 22.17                       | 22.18                     | 23.5                   | 0           |
| 5               | QPSK       | 1       | 12        | 22.19                    | 22.14                       | 22.10                     |                        |             |
| 5               | QPSK       | 1       | 24        | 22.14                    | 22.12                       | 22.08                     |                        |             |
| 5               | QPSK       | 12      | 0         | 21.86                    | 21.73                       | 21.65                     | 23.5                   | 0           |
| 5               | QPSK       | 12      | 7         | 21.76                    | 21.68                       | 21.66                     |                        |             |
| 5               | QPSK       | 12      | 13        | 21.71                    | 21.64                       | 21.60                     |                        |             |
| 5               | QPSK       | 25      | 0         | 21.71                    | 21.64                       | 21.67                     | 23.5                   | 0           |
| 5               | 16QAM      | 1       | 0         | 22.05                    | 21.99                       | 22.06                     |                        |             |
| 5               | 16QAM      | 1       | 12        | 21.97                    | 21.96                       | 21.90                     |                        |             |
| 5               | 16QAM      | 1       | 24        | 21.97                    | 21.91                       | 21.85                     | 22.5                   | 1           |
| 5               | 16QAM      | 12      | 0         | 20.96                    | 20.82                       | 20.80                     |                        |             |
| 5               | 16QAM      | 12      | 7         | 20.84                    | 20.79                       | 20.80                     |                        |             |
| 5               | 16QAM      | 12      | 13        | 20.81                    | 20.75                       | 20.75                     | 22.5                   | 1           |
| 5               | 16QAM      | 25      | 0         | 20.82                    | 20.76                       | 20.74                     |                        |             |
| 5               | 64QAM      | 1       | 0         | 20.97                    | 20.86                       | 20.80                     |                        |             |
| 5               | 64QAM      | 1       | 12        | 20.81                    | 20.79                       | 20.74                     | 22.5                   | 1           |
| 5               | 64QAM      | 1       | 24        | 20.80                    | 20.76                       | 20.70                     |                        |             |
| 5               | 64QAM      | 12      | 0         | 20.75                    | 20.61                       | 20.59                     |                        |             |
| 5               | 64QAM      | 12      | 7         | 20.63                    | 20.58                       | 20.59                     | 22.5                   | 1           |
| 5               | 64QAM      | 12      | 13        | 20.60                    | 20.54                       | 20.54                     |                        |             |
| 5               | 64QAM      | 25      | 0         | 20.61                    | 20.55                       | 20.53                     |                        |             |

**<LTE Band 25>**

| 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         |            |         |           | 26140                    | 26340                       | 26590                     |                        |             |
| Frequency (MHz) |            |         |           | 1860                     | 1880                        | 1905                      |                        |             |
| 20              | QPSK       | 1       | 0         | 16.05                    | 15.87                       | 15.71                     | 16.5                   | 0           |
| 20              | QPSK       | 1       | 49        | 15.73                    | 15.62                       | 15.62                     |                        |             |
| 20              | QPSK       | 1       | 99        | 15.79                    | 15.62                       | 15.61                     |                        |             |
| 20              | QPSK       | 50      | 0         | 15.75                    | 15.58                       | 15.60                     | 16.5                   | 0           |
| 20              | QPSK       | 50      | 24        | 15.57                    | 15.56                       | 15.51                     |                        |             |
| 20              | QPSK       | 50      | 50        | 15.55                    | 15.52                       | 15.45                     |                        |             |
| 20              | QPSK       | 100     | 0         | 15.56                    | 15.53                       | 15.50                     |                        |             |
| 20              | 16QAM      | 1       | 0         | 15.80                    | 15.68                       | 15.52                     | 16.5                   | 0           |
| 20              | 16QAM      | 1       | 49        | 15.51                    | 15.37                       | 15.37                     |                        |             |
| 20              | 16QAM      | 1       | 99        | 15.60                    | 15.51                       | 15.38                     |                        |             |
| 20              | 16QAM      | 50      | 0         | 15.68                    | 15.56                       | 15.56                     | 16.5                   | 0           |
| 20              | 16QAM      | 50      | 24        | 15.56                    | 15.52                       | 15.48                     |                        |             |
| 20              | 16QAM      | 50      | 50        | 15.54                    | 15.54                       | 15.48                     |                        |             |
| 20              | 16QAM      | 100     | 0         | 15.59                    | 15.54                       | 15.52                     |                        |             |
| 20              | 64QAM      | 1       | 0         | 15.67                    | 15.55                       | 15.39                     | 16.5                   | 0           |
| 20              | 64QAM      | 1       | 49        | 15.38                    | 15.24                       | 15.24                     |                        |             |
| 20              | 64QAM      | 1       | 99        | 15.47                    | 15.38                       | 15.25                     |                        |             |
| 20              | 64QAM      | 50      | 0         | 15.55                    | 15.43                       | 15.43                     | 16.5                   | 0           |
| 20              | 64QAM      | 50      | 24        | 15.43                    | 15.39                       | 15.35                     |                        |             |
| 20              | 64QAM      | 50      | 50        | 15.41                    | 15.41                       | 15.35                     |                        |             |
| 20              | 64QAM      | 100     | 0         | 15.46                    | 15.41                       | 15.39                     |                        |             |
| Channel         |            |         |           | 26115                    | 26340                       | 26615                     |                        |             |
| Frequency (MHz) |            |         |           | 1857.5                   | 1880                        | 1907.5                    |                        |             |
| 15              | QPSK       | 1       | 0         | 15.92                    | 15.74                       | 15.79                     | 16.5                   | 0           |
| 15              | QPSK       | 1       | 37        | 15.80                    | 15.67                       | 15.48                     |                        |             |
| 15              | QPSK       | 1       | 74        | 15.67                    | 15.58                       | 15.58                     |                        |             |
| 15              | QPSK       | 36      | 0         | 15.67                    | 15.53                       | 15.45                     | 16.5                   | 0           |
| 15              | QPSK       | 36      | 20        | 15.64                    | 15.52                       | 15.44                     |                        |             |
| 15              | QPSK       | 36      | 39        | 15.53                    | 15.43                       | 15.36                     |                        |             |
| 15              | QPSK       | 75      | 0         | 15.53                    | 15.50                       | 15.40                     | 16.5                   | 0           |
| 15              | 16QAM      | 1       | 0         | 15.64                    | 15.53                       | 15.49                     |                        |             |
| 15              | 16QAM      | 1       | 37        | 15.51                    | 15.39                       | 15.35                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 15.49                    | 15.37                       | 15.42                     | 16.5                   | 0           |
| 15              | 16QAM      | 36      | 0         | 15.64                    | 15.50                       | 15.48                     |                        |             |
| 15              | 16QAM      | 36      | 20        | 15.64                    | 15.46                       | 15.42                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 15.49                    | 15.46                       | 15.42                     | 16.5                   | 0           |
| 15              | 16QAM      | 75      | 0         | 15.52                    | 15.49                       | 15.42                     |                        |             |
| 15              | 64QAM      | 1       | 0         | 15.53                    | 15.42                       | 15.38                     |                        |             |
| 15              | 64QAM      | 1       | 37        | 15.40                    | 15.28                       | 15.24                     | 16.5                   | 0           |
| 15              | 64QAM      | 1       | 74        | 15.38                    | 15.26                       | 15.31                     |                        |             |
| 15              | 64QAM      | 36      | 0         | 15.53                    | 15.39                       | 15.37                     |                        |             |
| 15              | 64QAM      | 36      | 20        | 15.53                    | 15.35                       | 15.31                     | 16.5                   | 0           |
| 15              | 64QAM      | 36      | 39        | 15.38                    | 15.35                       | 15.31                     |                        |             |
| 15              | 64QAM      | 75      | 0         | 15.41                    | 15.38                       | 15.31                     |                        |             |

| Channel         |       |    |    | 26090  | 26340 | 26640  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1855   | 1880  | 1910   |                        |             |
| 10              | QPSK  | 1  | 0  | 15.95  | 15.89 | 15.56  | 16.5                   | 0           |
| 10              | QPSK  | 1  | 25 | 15.77  | 15.66 | 15.50  |                        |             |
| 10              | QPSK  | 1  | 49 | 15.92  | 15.80 | 15.52  |                        |             |
| 10              | QPSK  | 25 | 0  | 15.69  | 15.59 | 15.48  | 16.5                   | 0           |
| 10              | QPSK  | 25 | 12 | 15.68  | 15.57 | 15.44  |                        |             |
| 10              | QPSK  | 25 | 25 | 15.65  | 15.52 | 15.43  |                        |             |
| 10              | QPSK  | 50 | 0  | 15.71  | 15.54 | 15.45  |                        |             |
| 10              | 16QAM | 1  | 0  | 15.79  | 15.70 | 15.44  | 16.5                   | 0           |
| 10              | 16QAM | 1  | 25 | 15.56  | 15.45 | 15.42  |                        |             |
| 10              | 16QAM | 1  | 49 | 15.77  | 15.62 | 15.42  |                        |             |
| 10              | 16QAM | 25 | 0  | 15.67  | 15.54 | 15.51  | 16.5                   | 0           |
| 10              | 16QAM | 25 | 12 | 15.64  | 15.54 | 15.52  |                        |             |
| 10              | 16QAM | 25 | 25 | 15.64  | 15.55 | 15.50  |                        |             |
| 10              | 16QAM | 50 | 0  | 15.63  | 15.50 | 15.50  |                        |             |
| 10              | 64QAM | 1  | 0  | 15.77  | 15.68 | 15.42  | 16.5                   | 0           |
| 10              | 64QAM | 1  | 25 | 15.54  | 15.43 | 15.40  |                        |             |
| 10              | 64QAM | 1  | 49 | 15.75  | 15.60 | 15.40  |                        |             |
| 10              | 64QAM | 25 | 0  | 15.65  | 15.52 | 15.49  | 16.5                   | 0           |
| 10              | 64QAM | 25 | 12 | 15.62  | 15.52 | 15.50  |                        |             |
| 10              | 64QAM | 25 | 25 | 15.62  | 15.53 | 15.48  |                        |             |
| 10              | 64QAM | 50 | 0  | 15.61  | 15.48 | 15.48  |                        |             |
| Channel         |       |    |    | 26065  | 26340 | 26665  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1852.5 | 1880  | 1912.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 15.81  | 15.70 | 15.51  | 16.5                   | 0           |
| 5               | QPSK  | 1  | 12 | 15.77  | 15.60 | 15.45  |                        |             |
| 5               | QPSK  | 1  | 24 | 15.81  | 15.60 | 15.54  |                        |             |
| 5               | QPSK  | 12 | 0  | 15.67  | 15.49 | 15.32  | 16.5                   | 0           |
| 5               | QPSK  | 12 | 7  | 15.64  | 15.53 | 15.39  |                        |             |
| 5               | QPSK  | 12 | 13 | 15.61  | 15.47 | 15.42  |                        |             |
| 5               | QPSK  | 25 | 0  | 15.64  | 15.50 | 15.44  |                        |             |
| 5               | 16QAM | 1  | 0  | 15.58  | 15.51 | 15.40  | 16.5                   | 0           |
| 5               | 16QAM | 1  | 12 | 15.53  | 15.45 | 15.40  |                        |             |
| 5               | 16QAM | 1  | 24 | 15.58  | 15.43 | 15.41  |                        |             |
| 5               | 16QAM | 12 | 0  | 15.58  | 15.45 | 15.44  | 16.5                   | 0           |
| 5               | 16QAM | 12 | 7  | 15.60  | 15.50 | 15.43  |                        |             |
| 5               | 16QAM | 12 | 13 | 15.57  | 15.47 | 15.49  |                        |             |
| 5               | 16QAM | 25 | 0  | 15.64  | 15.55 | 15.49  |                        |             |
| 5               | 64QAM | 1  | 0  | 15.55  | 15.48 | 15.37  | 16.5                   | 0           |
| 5               | 64QAM | 1  | 12 | 15.50  | 15.42 | 15.37  |                        |             |
| 5               | 64QAM | 1  | 24 | 15.55  | 15.40 | 15.38  |                        |             |
| 5               | 64QAM | 12 | 0  | 15.55  | 15.42 | 15.41  | 16.5                   | 0           |
| 5               | 64QAM | 12 | 7  | 15.57  | 15.47 | 15.40  |                        |             |
| 5               | 64QAM | 12 | 13 | 15.54  | 15.44 | 15.46  |                        |             |
| 5               | 64QAM | 25 | 0  | 15.61  | 15.52 | 15.46  |                        |             |

| Channel         |       |    |    | 26055  | 26340 | 26675  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1851.5 | 1880  | 1913.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 15.79  | 15.65 | 15.49  | 16.5                   | 0           |
| 3               | QPSK  | 1  | 8  | 15.82  | 15.62 | 15.42  |                        |             |
| 3               | QPSK  | 1  | 14 | 15.78  | 15.61 | 15.49  |                        |             |
| 3               | QPSK  | 8  | 0  | 15.65  | 15.51 | 15.30  | 16.5                   | 0           |
| 3               | QPSK  | 8  | 4  | 15.65  | 15.53 | 15.41  |                        |             |
| 3               | QPSK  | 8  | 7  | 15.64  | 15.46 | 15.45  |                        |             |
| 3               | QPSK  | 15 | 0  | 15.68  | 15.51 | 15.50  |                        |             |
| 3               | 16QAM | 1  | 0  | 15.55  | 15.43 | 15.43  | 16.5                   | 0           |
| 3               | 16QAM | 1  | 8  | 15.53  | 15.45 | 15.39  |                        |             |
| 3               | 16QAM | 1  | 14 | 15.56  | 15.40 | 15.41  |                        |             |
| 3               | 16QAM | 8  | 0  | 15.55  | 15.42 | 15.44  | 16.5                   | 0           |
| 3               | 16QAM | 8  | 4  | 15.58  | 15.46 | 15.45  |                        |             |
| 3               | 16QAM | 8  | 7  | 15.57  | 15.44 | 15.43  |                        |             |
| 3               | 16QAM | 15 | 0  | 15.61  | 15.47 | 15.46  |                        |             |
| 3               | 64QAM | 1  | 0  | 15.45  | 15.33 | 15.33  | 16.5                   | 0           |
| 3               | 64QAM | 1  | 8  | 15.43  | 15.35 | 15.29  |                        |             |
| 3               | 64QAM | 1  | 14 | 15.46  | 15.30 | 15.31  |                        |             |
| 3               | 64QAM | 8  | 0  | 15.45  | 15.32 | 15.34  | 16.5                   | 0           |
| 3               | 64QAM | 8  | 4  | 15.48  | 15.36 | 15.35  |                        |             |
| 3               | 64QAM | 8  | 7  | 15.47  | 15.34 | 15.33  |                        |             |
| 3               | 64QAM | 15 | 0  | 15.51  | 15.37 | 15.36  |                        |             |
| Channel         |       |    |    | 26047  | 26340 | 26683  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1850.7 | 1880  | 1914.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 15.89  | 15.71 | 15.54  | 16.5                   | 0           |
| 1.4             | QPSK  | 1  | 3  | 15.82  | 15.65 | 15.47  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 15.69  | 15.49 | 15.49  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 15.58  | 15.44 | 15.48  |                        |             |
| 1.4             | QPSK  | 3  | 1  | 15.52  | 15.37 | 15.40  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 15.50  | 15.34 | 15.34  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 15.63  | 15.49 | 15.40  | 16.5                   | 0           |
| 1.4             | 16QAM | 1  | 0  | 15.48  | 15.37 | 15.32  | 16.5                   | 0           |
| 1.4             | 16QAM | 1  | 3  | 15.54  | 15.38 | 15.37  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 15.44  | 15.39 | 15.31  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 15.48  | 15.36 | 15.37  |                        |             |
| 1.4             | 16QAM | 3  | 1  | 15.52  | 15.43 | 15.43  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 15.49  | 15.37 | 15.39  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 15.53  | 15.43 | 15.38  | 16.5                   | 0           |
| 1.4             | 64QAM | 1  | 0  | 15.46  | 15.35 | 15.30  | 16.5                   | 0           |
| 1.4             | 64QAM | 1  | 3  | 15.52  | 15.36 | 15.35  |                        |             |
| 1.4             | 64QAM | 1  | 5  | 15.42  | 15.37 | 15.29  |                        |             |
| 1.4             | 64QAM | 3  | 0  | 15.46  | 15.34 | 15.35  |                        |             |
| 1.4             | 64QAM | 3  | 1  | 15.50  | 15.41 | 15.41  |                        |             |
| 1.4             | 64QAM | 3  | 3  | 15.47  | 15.35 | 15.37  |                        |             |
| 1.4             | 64QAM | 6  | 0  | 15.51  | 15.41 | 15.36  | 16.5                   | 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         | 21.92                    | 21.99                       | 21.87                     | 23.5                   | 0           |
| 15              | QPSK       | 1       | 37        | 21.90                    | 21.86                       | 21.80                     |                        |             |
| 15              | QPSK       | 1       | 74        | 21.86                    | 21.77                       | 21.68                     |                        |             |
| 15              | QPSK       | 36      | 0         | 21.97                    | 21.98                       | 21.87                     | 23.5                   | 0           |
| 15              | QPSK       | 36      | 20        | 21.97                    | 21.92                       | 21.86                     |                        |             |
| 15              | QPSK       | 36      | 39        | 21.97                    | 21.87                       | 21.77                     |                        |             |
| 15              | QPSK       | 75      | 0         | 21.91                    | 21.92                       | 21.84                     | 22.5                   | 1           |
| 15              | 16QAM      | 1       | 0         | 21.79                    | 21.73                       | 21.69                     |                        |             |
| 15              | 16QAM      | 1       | 37        | 21.66                    | 21.74                       | 21.67                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 21.73                    | 21.60                       | 21.52                     | 22.5                   | 1           |
| 15              | 16QAM      | 36      | 0         | 21.41                    | 21.40                       | 21.26                     |                        |             |
| 15              | 16QAM      | 36      | 20        | 21.44                    | 21.45                       | 21.32                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 21.38                    | 21.39                       | 21.28                     | 22.5                   | 1           |
| 15              | 16QAM      | 75      | 0         | 21.01                    | 21.11                       | 21.09                     |                        |             |
| 15              | 64QAM      | 1       | 0         | 21.39                    | 21.38                       | 21.24                     |                        |             |
| 15              | 64QAM      | 1       | 37        | 21.38                    | 21.34                       | 21.28                     | 22.5                   | 1           |
| 15              | 64QAM      | 1       | 74        | 21.34                    | 21.25                       | 21.16                     |                        |             |
| 15              | 64QAM      | 36      | 0         | 21.47                    | 21.46                       | 21.34                     |                        |             |
| 15              | 64QAM      | 36      | 20        | 21.45                    | 21.40                       | 21.34                     | 22.5                   | 1           |
| 15              | 64QAM      | 36      | 39        | 21.45                    | 21.35                       | 21.25                     |                        |             |
| 15              | 64QAM      | 75      | 0         | 21.39                    | 21.37                       | 21.32                     |                        |             |
| Channel         |            |         |           | 26740                    | 26865                       | 26990                     |                        |             |
| Frequency (MHz) |            |         |           | 819                      | 831.5                       | 844                       |                        |             |
| 10              | QPSK       | 1       | 0         | 21.88                    | 21.83                       | 21.79                     | 23.5                   | 0           |
| 10              | QPSK       | 1       | 25        | 21.89                    | 21.86                       | 21.74                     |                        |             |
| 10              | QPSK       | 1       | 49        | 21.78                    | 21.77                       | 21.66                     |                        |             |
| 10              | QPSK       | 25      | 0         | 21.95                    | 21.93                       | 21.81                     | 23.5                   | 0           |
| 10              | QPSK       | 25      | 12        | 21.95                    | 21.91                       | 21.78                     |                        |             |
| 10              | QPSK       | 25      | 25        | 21.88                    | 21.86                       | 21.73                     |                        |             |
| 10              | QPSK       | 50      | 0         | 21.95                    | 21.91                       | 21.79                     | 22.5                   | 1           |
| 10              | 16QAM      | 1       | 0         | 21.64                    | 21.70                       | 21.65                     |                        |             |
| 10              | 16QAM      | 1       | 25        | 21.70                    | 21.69                       | 21.56                     |                        |             |
| 10              | 16QAM      | 1       | 49        | 21.65                    | 21.58                       | 21.53                     | 22.5                   | 1           |
| 10              | 16QAM      | 25      | 0         | 21.42                    | 21.40                       | 21.29                     |                        |             |
| 10              | 16QAM      | 25      | 12        | 21.44                    | 21.45                       | 21.32                     |                        |             |
| 10              | 16QAM      | 25      | 25        | 21.38                    | 21.39                       | 21.28                     | 22.5                   | 1           |
| 10              | 16QAM      | 50      | 0         | 21.01                    | 21.11                       | 21.19                     |                        |             |
| 10              | 64QAM      | 1       | 0         | 21.38                    | 21.34                       | 21.33                     |                        |             |
| 10              | 64QAM      | 1       | 25        | 21.36                    | 21.32                       | 21.26                     | 22.5                   | 1           |
| 10              | 64QAM      | 1       | 49        | 21.32                    | 21.23                       | 21.14                     |                        |             |
| 10              | 64QAM      | 25      | 0         | 21.45                    | 21.44                       | 21.32                     |                        |             |
| 10              | 64QAM      | 25      | 12        | 21.43                    | 21.38                       | 21.32                     | 22.5                   | 1           |
| 10              | 64QAM      | 25      | 25        | 21.43                    | 21.33                       | 21.23                     |                        |             |
| 10              | 64QAM      | 50      | 0         | 21.37                    | 21.35                       | 21.30                     |                        |             |

| Channel         |       |    |    | 26715 | 26865 | 27015 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|-------|-------|-------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 816.5 | 831.5 | 846.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 21.92 | 21.92 | 21.77 | 23.5                   | 0           |
| 5               | QPSK  | 1  | 12 | 21.83 | 21.83 | 21.73 |                        |             |
| 5               | QPSK  | 1  | 24 | 21.90 | 21.84 | 21.69 |                        |             |
| 5               | QPSK  | 12 | 0  | 21.91 | 21.92 | 21.76 | 23.5                   | 0           |
| 5               | QPSK  | 12 | 7  | 21.91 | 21.88 | 21.77 |                        |             |
| 5               | QPSK  | 12 | 13 | 21.95 | 21.87 | 21.71 |                        |             |
| 5               | QPSK  | 25 | 0  | 21.97 | 21.91 | 21.73 |                        |             |
| 5               | 16QAM | 1  | 0  | 21.74 | 21.74 | 21.65 | 22.5                   | 1           |
| 5               | 16QAM | 1  | 12 | 21.67 | 21.70 | 21.61 |                        |             |
| 5               | 16QAM | 1  | 24 | 21.77 | 21.70 | 21.54 |                        |             |
| 5               | 16QAM | 12 | 0  | 21.46 | 21.45 | 21.31 | 22.5                   | 1           |
| 5               | 16QAM | 12 | 7  | 21.49 | 21.50 | 21.37 |                        |             |
| 5               | 16QAM | 12 | 13 | 21.43 | 21.44 | 21.33 |                        |             |
| 5               | 16QAM | 25 | 0  | 21.06 | 21.01 | 21.04 |                        |             |
| 5               | 64QAM | 1  | 0  | 21.41 | 21.37 | 21.36 | 22.5                   | 1           |
| 5               | 64QAM | 1  | 12 | 21.39 | 21.35 | 21.29 |                        |             |
| 5               | 64QAM | 1  | 24 | 21.35 | 21.26 | 21.17 |                        |             |
| 5               | 64QAM | 12 | 0  | 21.48 | 21.47 | 21.35 | 22.5                   | 1           |
| 5               | 64QAM | 12 | 7  | 21.46 | 21.41 | 21.35 |                        |             |
| 5               | 64QAM | 12 | 13 | 21.46 | 21.36 | 21.26 |                        |             |
| 5               | 64QAM | 25 | 0  | 21.40 | 21.38 | 21.33 |                        |             |
| Channel         |       |    |    | 26705 | 26865 | 27025 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 815.5 | 831.5 | 847.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 21.90 | 21.85 | 21.74 | 23.5                   | 0           |
| 3               | QPSK  | 1  | 8  | 21.86 | 21.83 | 21.68 |                        |             |
| 3               | QPSK  | 1  | 14 | 21.83 | 21.86 | 21.69 |                        |             |
| 3               | QPSK  | 8  | 0  | 21.92 | 21.90 | 21.70 | 23.5                   | 0           |
| 3               | QPSK  | 8  | 4  | 21.90 | 21.91 | 21.75 |                        |             |
| 3               | QPSK  | 8  | 7  | 21.86 | 21.88 | 21.73 |                        |             |
| 3               | QPSK  | 15 | 0  | 21.88 | 21.87 | 21.72 |                        |             |
| 3               | 16QAM | 1  | 0  | 21.74 | 21.76 | 21.60 | 22.5                   | 1           |
| 3               | 16QAM | 1  | 8  | 21.65 | 21.72 | 21.58 |                        |             |
| 3               | 16QAM | 1  | 14 | 21.61 | 21.67 | 21.52 |                        |             |
| 3               | 16QAM | 8  | 0  | 21.44 | 21.41 | 21.29 | 22.5                   | 1           |
| 3               | 16QAM | 8  | 4  | 21.49 | 21.50 | 21.37 |                        |             |
| 3               | 16QAM | 8  | 7  | 21.43 | 21.44 | 21.33 |                        |             |
| 3               | 16QAM | 15 | 0  | 21.06 | 21.01 | 21.13 |                        |             |
| 3               | 64QAM | 1  | 0  | 21.37 | 21.33 | 21.32 | 22.5                   | 1           |
| 3               | 64QAM | 1  | 8  | 21.35 | 21.31 | 21.25 |                        |             |
| 3               | 64QAM | 1  | 14 | 21.31 | 21.22 | 21.13 |                        |             |
| 3               | 64QAM | 8  | 0  | 21.44 | 21.43 | 21.31 | 22.5                   | 1           |
| 3               | 64QAM | 8  | 4  | 21.42 | 21.37 | 21.31 |                        |             |
| 3               | 64QAM | 8  | 7  | 21.42 | 21.32 | 21.22 |                        |             |
| 3               | 64QAM | 15 | 0  | 21.36 | 21.34 | 21.29 |                        |             |

| 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 | 21.78 | 21.75 | 21.63 | 23.5                   | 0           |
| 1.4             | QPSK  | 1 | 3 | 21.87 | 21.86 | 21.66 |                        |             |
| 1.4             | QPSK  | 1 | 5 | 21.77 | 21.75 | 21.59 |                        |             |
| 1.4             | QPSK  | 3 | 0 | 21.86 | 21.83 | 21.64 |                        |             |
| 1.4             | QPSK  | 3 | 1 | 21.88 | 21.86 | 21.67 |                        |             |
| 1.4             | QPSK  | 3 | 3 | 21.84 | 21.83 | 21.66 |                        |             |
| 1.4             | QPSK  | 6 | 0 | 21.80 | 21.82 | 21.66 | 23.5                   | 0           |
| 1.4             | 16QAM | 1 | 0 | 21.64 | 21.67 | 21.49 | 22.5                   | 1           |
| 1.4             | 16QAM | 1 | 3 | 21.71 | 21.69 | 21.51 |                        |             |
| 1.4             | 16QAM | 1 | 5 | 21.59 | 21.61 | 21.51 |                        |             |
| 1.4             | 16QAM | 3 | 0 | 21.43 | 21.42 | 21.28 |                        |             |
| 1.4             | 16QAM | 3 | 1 | 21.46 | 21.47 | 21.34 |                        |             |
| 1.4             | 16QAM | 3 | 3 | 21.40 | 21.41 | 21.30 |                        |             |
| 1.4             | 16QAM | 6 | 0 | 21.03 | 21.08 | 21.01 | 22.5                   | 1           |
| 1.4             | 64QAM | 1 | 0 | 21.36 | 21.32 | 21.31 | 22.5                   | 1           |
| 1.4             | 64QAM | 1 | 3 | 21.34 | 21.30 | 21.24 |                        |             |
| 1.4             | 64QAM | 1 | 5 | 21.30 | 21.21 | 21.12 |                        |             |
| 1.4             | 64QAM | 3 | 0 | 21.43 | 21.42 | 21.30 |                        |             |
| 1.4             | 64QAM | 3 | 1 | 21.41 | 21.36 | 21.30 |                        |             |
| 1.4             | 64QAM | 3 | 3 | 21.41 | 21.31 | 21.21 |                        |             |
| 1.4             | 64QAM | 6 | 0 | 21.35 | 21.33 | 21.28 | 22.5                   | 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                    |                             |                           | 21                     | 0           |
| Frequency (MHz) |            |         |           | 2310                     |                             |                           |                        |             |
| 10              | QPSK       | 1       | 0         | 20.33                    |                             |                           | 21                     | 0           |
| 10              | QPSK       | 1       | 25        | 20.15                    |                             |                           |                        |             |
| 10              | QPSK       | 1       | 49        | 20.14                    |                             |                           |                        |             |
| 10              | QPSK       | 25      | 0         | 20.11                    |                             |                           | 21                     | 0           |
| 10              | QPSK       | 25      | 12        | 20.00                    |                             |                           |                        |             |
| 10              | QPSK       | 25      | 25        | 20.00                    |                             |                           |                        |             |
| 10              | QPSK       | 50      | 0         | 20.03                    |                             |                           | 21                     | 0           |
| 10              | 16QAM      | 1       | 0         | 20.26                    |                             |                           |                        |             |
| 10              | 16QAM      | 1       | 25        | 20.23                    |                             |                           |                        |             |
| 10              | 16QAM      | 1       | 49        | 20.21                    |                             |                           | 21                     | 0           |
| 10              | 16QAM      | 25      | 0         | 20.09                    |                             |                           |                        |             |
| 10              | 16QAM      | 25      | 12        | 20.13                    |                             |                           |                        |             |
| 10              | 16QAM      | 25      | 25        | 20.15                    |                             |                           | 21                     | 0           |
| 10              | 16QAM      | 50      | 0         | 20.14                    |                             |                           |                        |             |
| 10              | 64QAM      | 1       | 0         | 19.89                    |                             |                           |                        |             |
| 10              | 64QAM      | 1       | 25        | 19.80                    |                             |                           | 21                     | 0           |
| 10              | 64QAM      | 1       | 49        | 19.80                    |                             |                           |                        |             |
| 10              | 64QAM      | 25      | 0         | 19.73                    |                             |                           |                        |             |
| 10              | 64QAM      | 25      | 12        | 19.75                    |                             |                           | 21                     | 0           |
| 10              | 64QAM      | 25      | 25        | 19.81                    |                             |                           |                        |             |
| 10              | 64QAM      | 50      | 0         | 19.79                    |                             |                           |                        |             |
| Channel         |            |         |           | 27685                    | 27710                       | 27735                     | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |            |         |           | 2307.5                   | 2310                        | 2312.5                    | 21                     | 0           |
| 5               | QPSK       | 1       | 0         | 20.01                    | 19.97                       | 19.93                     |                        |             |
| 5               | QPSK       | 1       | 12        | 19.93                    | 19.89                       | 19.94                     |                        |             |
| 5               | QPSK       | 1       | 24        | 19.99                    | 19.90                       | 19.96                     | 21                     | 0           |
| 5               | QPSK       | 12      | 0         | 19.92                    | 19.94                       | 19.95                     |                        |             |
| 5               | QPSK       | 12      | 7         | 19.93                    | 19.95                       | 20.03                     |                        |             |
| 5               | QPSK       | 12      | 13        | 20.02                    | 20.02                       | 20.03                     | 21                     | 0           |
| 5               | QPSK       | 25      | 0         | 19.93                    | 20.00                       | 19.98                     |                        |             |
| 5               | 16QAM      | 1       | 0         | 20.30                    | 20.26                       | 20.25                     |                        |             |
| 5               | 16QAM      | 1       | 12        | 20.19                    | 20.15                       | 20.17                     | 21                     | 0           |
| 5               | 16QAM      | 1       | 24        | 20.19                    | 20.25                       | 20.22                     |                        |             |
| 5               | 16QAM      | 12      | 0         | 20.00                    | 20.09                       | 20.09                     |                        |             |
| 5               | 16QAM      | 12      | 7         | 20.04                    | 20.09                       | 20.12                     | 21                     | 0           |
| 5               | 16QAM      | 12      | 13        | 20.14                    | 20.06                       | 20.06                     |                        |             |
| 5               | 16QAM      | 25      | 0         | 20.06                    | 20.09                       | 20.08                     |                        |             |
| 5               | 64QAM      | 1       | 0         | 19.81                    | 19.81                       | 19.89                     | 21                     | 0           |
| 5               | 64QAM      | 1       | 12        | 19.75                    | 19.70                       | 19.77                     |                        |             |
| 5               | 64QAM      | 1       | 24        | 19.80                    | 19.73                       | 19.76                     |                        |             |
| 5               | 64QAM      | 12      | 0         | 19.63                    | 19.63                       | 19.73                     | 21                     | 0           |
| 5               | 64QAM      | 12      | 7         | 19.66                    | 19.67                       | 19.67                     |                        |             |
| 5               | 64QAM      | 12      | 13        | 19.80                    | 19.76                       | 19.72                     |                        |             |
| 5               | 64QAM      | 25      | 0         | 19.79                    | 19.71                       | 19.70                     |                        |             |

**<LTE Band 66>**

| 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         |            |         |           | 132072                   | 132322                      | 132572                    |                        |             |
| Frequency (MHz) |            |         |           | 1720                     | 1745                        | 1770                      |                        |             |
| 20              | QPSK       | 1       | 0         | 15.58                    | 15.69                       | 15.70                     | 17                     | 0           |
| 20              | QPSK       | 1       | 49        | 15.52                    | 15.55                       | 15.65                     |                        |             |
| 20              | QPSK       | 1       | 99        | 15.54                    | 15.46                       | 15.55                     |                        |             |
| 20              | QPSK       | 50      | 0         | 15.32                    | 15.39                       | 15.40                     | 17                     | 0           |
| 20              | QPSK       | 50      | 24        | 15.38                    | 15.32                       | 15.37                     |                        |             |
| 20              | QPSK       | 50      | 50        | 15.33                    | 15.29                       | 15.35                     |                        |             |
| 20              | QPSK       | 100     | 0         | 15.37                    | 15.33                       | 15.36                     | 17                     | 0           |
| 20              | 16QAM      | 1       | 0         | 15.23                    | 15.23                       | 15.31                     |                        |             |
| 20              | 16QAM      | 1       | 49        | 15.08                    | 15.14                       | 15.17                     |                        |             |
| 20              | 16QAM      | 1       | 99        | 15.16                    | 15.12                       | 15.21                     | 17                     | 0           |
| 20              | 16QAM      | 50      | 0         | 15.18                    | 15.25                       | 15.25                     |                        |             |
| 20              | 16QAM      | 50      | 24        | 15.21                    | 15.21                       | 15.22                     |                        |             |
| 20              | 16QAM      | 50      | 50        | 15.18                    | 15.14                       | 15.20                     | 17                     | 0           |
| 20              | 16QAM      | 100     | 0         | 15.23                    | 15.20                       | 15.24                     |                        |             |
| 20              | 64QAM      | 1       | 0         | 15.48                    | 15.56                       | 15.61                     |                        |             |
| 20              | 64QAM      | 1       | 49        | 15.44                    | 15.41                       | 15.51                     | 17                     | 0           |
| 20              | 64QAM      | 1       | 99        | 15.46                    | 15.46                       | 15.52                     |                        |             |
| 20              | 64QAM      | 50      | 0         | 15.36                    | 15.43                       | 15.42                     |                        |             |
| 20              | 64QAM      | 50      | 24        | 15.40                    | 15.35                       | 15.36                     | 17                     | 0           |
| 20              | 64QAM      | 50      | 50        | 15.35                    | 15.30                       | 15.36                     |                        |             |
| 20              | 64QAM      | 100     | 0         | 15.40                    | 15.36                       | 15.36                     |                        |             |
| Channel         |            |         |           | 132047                   | 132322                      | 132597                    | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |            |         |           | 1717.5                   | 1745                        | 1772.5                    |                        |             |
| 15              | QPSK       | 1       | 0         | 15.69                    | 15.67                       | 15.68                     | 17                     | 0           |
| 15              | QPSK       | 1       | 37        | 15.50                    | 15.53                       | 15.61                     |                        |             |
| 15              | QPSK       | 1       | 74        | 15.60                    | 15.56                       | 15.60                     |                        |             |
| 15              | QPSK       | 36      | 0         | 15.31                    | 15.38                       | 15.40                     | 17                     | 0           |
| 15              | QPSK       | 36      | 20        | 15.31                    | 15.35                       | 15.40                     |                        |             |
| 15              | QPSK       | 36      | 39        | 15.36                    | 15.31                       | 15.32                     |                        |             |
| 15              | QPSK       | 75      | 0         | 15.39                    | 15.33                       | 15.40                     | 17                     | 0           |
| 15              | 16QAM      | 1       | 0         | 15.21                    | 15.28                       | 15.29                     |                        |             |
| 15              | 16QAM      | 1       | 37        | 15.09                    | 15.12                       | 15.13                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 15.21                    | 15.14                       | 15.22                     | 17                     | 0           |
| 15              | 16QAM      | 36      | 0         | 15.20                    | 15.24                       | 15.24                     |                        |             |
| 15              | 16QAM      | 36      | 20        | 15.15                    | 15.20                       | 15.24                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 15.21                    | 15.18                       | 15.24                     | 17                     | 0           |
| 15              | 16QAM      | 75      | 0         | 15.27                    | 15.22                       | 15.24                     |                        |             |
| 15              | 64QAM      | 1       | 0         | 15.52                    | 15.66                       | 15.65                     |                        |             |
| 15              | 64QAM      | 1       | 37        | 15.43                    | 15.46                       | 15.45                     | 17                     | 0           |
| 15              | 64QAM      | 1       | 74        | 15.56                    | 15.52                       | 15.52                     |                        |             |
| 15              | 64QAM      | 36      | 0         | 15.37                    | 15.43                       | 15.44                     |                        |             |
| 15              | 64QAM      | 36      | 20        | 15.33                    | 15.39                       | 15.42                     | 17                     | 0           |
| 15              | 64QAM      | 36      | 39        | 15.39                    | 15.33                       | 15.40                     |                        |             |
| 15              | 64QAM      | 75      | 0         | 15.42                    | 15.36                       | 15.39                     |                        |             |



# Exhibit 11

Report No. : FA811821

| Channel         |       |    |    | 132022 | 132322 | 132622 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|--------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1715   | 1745   | 1775   |                        |             |
| 10              | QPSK  | 1  | 0  | 15.60  | 15.64  | 15.62  | 17                     | 0           |
| 10              | QPSK  | 1  | 25 | 15.51  | 15.50  | 15.61  |                        |             |
| 10              | QPSK  | 1  | 49 | 15.52  | 15.48  | 15.54  |                        |             |
| 10              | QPSK  | 25 | 0  | 15.29  | 15.32  | 15.34  | 17                     | 0           |
| 10              | QPSK  | 25 | 12 | 15.27  | 15.31  | 15.36  |                        |             |
| 10              | QPSK  | 25 | 25 | 15.24  | 15.26  | 15.35  |                        |             |
| 10              | QPSK  | 50 | 0  | 15.27  | 15.30  | 15.35  |                        |             |
| 10              | 16QAM | 1  | 0  | 15.16  | 15.22  | 15.22  | 17                     | 0           |
| 10              | 16QAM | 1  | 25 | 15.11  | 15.11  | 15.18  |                        |             |
| 10              | 16QAM | 1  | 49 | 15.06  | 15.08  | 15.15  |                        |             |
| 10              | 16QAM | 25 | 0  | 15.14  | 15.19  | 15.20  | 17                     | 0           |
| 10              | 16QAM | 25 | 12 | 15.11  | 15.18  | 15.20  |                        |             |
| 10              | 16QAM | 25 | 25 | 15.11  | 15.15  | 15.20  |                        |             |
| 10              | 16QAM | 50 | 0  | 15.12  | 15.19  | 15.20  |                        |             |
| 10              | 64QAM | 1  | 0  | 15.51  | 15.55  | 15.52  | 17                     | 0           |
| 10              | 64QAM | 1  | 25 | 15.42  | 15.44  | 15.49  |                        |             |
| 10              | 64QAM | 1  | 49 | 15.41  | 15.46  | 15.51  |                        |             |
| 10              | 64QAM | 25 | 0  | 15.30  | 15.36  | 15.39  | 17                     | 0           |
| 10              | 64QAM | 25 | 12 | 15.32  | 15.32  | 15.36  |                        |             |
| 10              | 64QAM | 25 | 25 | 15.28  | 15.30  | 15.35  |                        |             |
| 10              | 64QAM | 50 | 0  | 15.29  | 15.32  | 15.35  |                        |             |
| Channel         |       |    |    | 131997 | 132322 | 132647 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1712.5 | 1745   | 1777.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 15.59  | 15.55  | 15.68  | 17                     | 0           |
| 5               | QPSK  | 1  | 12 | 15.52  | 15.58  | 15.55  |                        |             |
| 5               | QPSK  | 1  | 24 | 15.49  | 15.58  | 15.64  |                        |             |
| 5               | QPSK  | 12 | 0  | 15.31  | 15.31  | 15.36  | 17                     | 0           |
| 5               | QPSK  | 12 | 7  | 15.28  | 15.32  | 15.33  |                        |             |
| 5               | QPSK  | 12 | 13 | 15.30  | 15.30  | 15.36  |                        |             |
| 5               | QPSK  | 25 | 0  | 15.25  | 15.28  | 15.33  |                        |             |
| 5               | 16QAM | 1  | 0  | 15.14  | 15.15  | 15.16  | 17                     | 0           |
| 5               | 16QAM | 1  | 12 | 15.12  | 15.10  | 15.14  |                        |             |
| 5               | 16QAM | 1  | 24 | 15.12  | 15.12  | 15.18  |                        |             |
| 5               | 16QAM | 12 | 0  | 15.16  | 15.17  | 15.23  | 17                     | 0           |
| 5               | 16QAM | 12 | 7  | 15.16  | 15.20  | 15.18  |                        |             |
| 5               | 16QAM | 12 | 13 | 15.13  | 15.13  | 15.20  |                        |             |
| 5               | 16QAM | 25 | 0  | 15.12  | 15.12  | 15.19  |                        |             |
| 5               | 64QAM | 1  | 0  | 15.47  | 15.55  | 15.56  | 17                     | 0           |
| 5               | 64QAM | 1  | 12 | 15.46  | 15.45  | 15.48  |                        |             |
| 5               | 64QAM | 1  | 24 | 15.50  | 15.46  | 15.53  |                        |             |
| 5               | 64QAM | 12 | 0  | 15.36  | 15.38  | 15.38  | 17                     | 0           |
| 5               | 64QAM | 12 | 7  | 15.35  | 15.38  | 15.42  |                        |             |
| 5               | 64QAM | 12 | 13 | 15.36  | 15.35  | 15.38  |                        |             |
| 5               | 64QAM | 25 | 0  | 15.27  | 15.30  | 15.31  |                        |             |

| Channel         |       |    |    | 131987 | 132322 | 132657 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|--------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1711.5 | 1745   | 1778.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 15.53  | 15.51  | 15.50  | 17                     | 0           |
| 3               | QPSK  | 1  | 8  | 15.46  | 15.54  | 15.57  |                        |             |
| 3               | QPSK  | 1  | 14 | 15.49  | 15.48  | 15.55  |                        |             |
| 3               | QPSK  | 8  | 0  | 15.28  | 15.34  | 15.38  | 17                     | 0           |
| 3               | QPSK  | 8  | 4  | 15.33  | 15.34  | 15.36  |                        |             |
| 3               | QPSK  | 8  | 7  | 15.31  | 15.31  | 15.35  |                        |             |
| 3               | QPSK  | 15 | 0  | 15.23  | 15.27  | 15.28  |                        |             |
| 3               | 16QAM | 1  | 0  | 15.09  | 15.10  | 15.17  | 17                     | 0           |
| 3               | 16QAM | 1  | 8  | 15.08  | 15.10  | 15.12  |                        |             |
| 3               | 16QAM | 1  | 14 | 15.06  | 15.09  | 15.10  |                        |             |
| 3               | 16QAM | 8  | 0  | 15.14  | 15.11  | 15.17  | 17                     | 0           |
| 3               | 16QAM | 8  | 4  | 15.13  | 15.17  | 15.17  |                        |             |
| 3               | 16QAM | 8  | 7  | 15.13  | 15.14  | 15.17  |                        |             |
| 3               | 16QAM | 15 | 0  | 15.06  | 15.12  | 15.15  |                        |             |
| 3               | 64QAM | 1  | 0  | 15.49  | 15.44  | 15.47  | 17                     | 0           |
| 3               | 64QAM | 1  | 8  | 15.44  | 15.45  | 15.48  |                        |             |
| 3               | 64QAM | 1  | 14 | 15.43  | 15.46  | 15.44  |                        |             |
| 3               | 64QAM | 8  | 0  | 15.31  | 15.33  | 15.38  | 17                     | 0           |
| 3               | 64QAM | 8  | 4  | 15.34  | 15.36  | 15.39  |                        |             |
| 3               | 64QAM | 8  | 7  | 15.28  | 15.33  | 15.35  |                        |             |
| 3               | 64QAM | 15 | 0  | 15.26  | 15.27  | 15.29  |                        |             |
| Channel         |       |    |    | 131979 | 132322 | 132665 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1710.7 | 1745   | 1779.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 15.44  | 15.41  | 15.48  | 17                     | 0           |
| 1.4             | QPSK  | 1  | 3  | 15.54  | 15.50  | 15.61  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 15.36  | 15.39  | 15.46  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 15.19  | 15.21  | 15.21  |                        |             |
| 1.4             | QPSK  | 3  | 1  | 15.22  | 15.23  | 15.31  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 15.20  | 15.20  | 15.22  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 15.24  | 15.29  | 15.32  | 17                     | 0           |
| 1.4             | 16QAM | 1  | 0  | 15.02  | 15.02  | 15.02  | 17                     | 0           |
| 1.4             | 16QAM | 1  | 3  | 15.10  | 15.11  | 15.14  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 15.04  | 15.02  | 15.04  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 15.05  | 15.08  | 15.12  |                        |             |
| 1.4             | 16QAM | 3  | 1  | 15.06  | 15.09  | 15.12  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 15.06  | 15.10  | 15.11  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 15.04  | 15.06  | 15.07  | 17                     | 0           |
| 1.4             | 64QAM | 1  | 0  | 15.33  | 15.36  | 15.42  | 17                     | 0           |
| 1.4             | 64QAM | 1  | 3  | 15.39  | 15.46  | 15.42  |                        |             |
| 1.4             | 64QAM | 1  | 5  | 15.33  | 15.39  | 15.38  |                        |             |
| 1.4             | 64QAM | 3  | 0  | 15.32  | 15.37  | 15.36  |                        |             |
| 1.4             | 64QAM | 3  | 1  | 15.40  | 15.39  | 15.41  |                        |             |
| 1.4             | 64QAM | 3  | 3  | 15.35  | 15.31  | 15.35  |                        |             |
| 1.4             | 64QAM | 6  | 0  | 15.20  | 15.22  | 15.23  | 17                     | 0           |

**<Hotspot 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         | 15.85                    | 15.67                       | 15.39                     | 16.5                   | 0           |
| 20              | QPSK       | 1       | 49        | 15.68                    | 15.48                       | 15.37                     |                        |             |
| 20              | QPSK       | 1       | 99        | 15.60                    | 15.43                       | 15.37                     |                        |             |
| 20              | QPSK       | 50      | 0         | 15.22                    | 15.11                       | 15.04                     | 16.5                   | 0           |
| 20              | QPSK       | 50      | 24        | 15.17                    | 15.07                       | 15.02                     |                        |             |
| 20              | QPSK       | 50      | 50        | 15.15                    | 15.06                       | 14.96                     |                        |             |
| 20              | QPSK       | 100     | 0         | 15.19                    | 15.04                       | 14.95                     | 16.5                   | 0           |
| 20              | 16QAM      | 1       | 0         | 15.24                    | 15.11                       | 14.79                     |                        |             |
| 20              | 16QAM      | 1       | 49        | 14.87                    | 14.74                       | 14.81                     |                        |             |
| 20              | 16QAM      | 1       | 99        | 15.03                    | 14.88                       | 14.82                     | 16.5                   | 0           |
| 20              | 16QAM      | 50      | 0         | 14.96                    | 14.82                       | 14.73                     |                        |             |
| 20              | 16QAM      | 50      | 24        | 14.91                    | 14.80                       | 14.77                     |                        |             |
| 20              | 16QAM      | 50      | 50        | 14.88                    | 14.77                       | 14.74                     | 16.5                   | 0           |
| 20              | 16QAM      | 100     | 0         | 14.93                    | 14.82                       | 14.71                     |                        |             |
| 20              | 64QAM      | 1       | 0         | 15.14                    | 15.01                       | 14.69                     |                        |             |
| 20              | 64QAM      | 1       | 49        | 14.77                    | 14.64                       | 14.67                     | 16.5                   | 0           |
| 20              | 64QAM      | 1       | 99        | 14.93                    | 14.78                       | 14.66                     |                        |             |
| 20              | 64QAM      | 50      | 0         | 14.86                    | 14.72                       | 14.63                     |                        |             |
| 20              | 64QAM      | 50      | 24        | 14.81                    | 14.70                       | 14.67                     | 16.5                   | 0           |
| 20              | 64QAM      | 50      | 50        | 14.78                    | 14.67                       | 14.64                     |                        |             |
| 20              | 64QAM      | 100     | 0         | 14.83                    | 14.72                       | 14.61                     |                        |             |
| Channel         |            |         |           | 18675                    | 18900                       | 19125                     | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |            |         |           | 1857.5                   | 1880                        | 1902.5                    |                        |             |
| 15              | QPSK       | 1       | 0         | 15.65                    | 15.39                       | 15.39                     | 16.5                   | 0           |
| 15              | QPSK       | 1       | 37        | 15.48                    | 15.32                       | 15.35                     |                        |             |
| 15              | QPSK       | 1       | 74        | 15.42                    | 15.31                       | 15.25                     |                        |             |
| 15              | QPSK       | 36      | 0         | 15.35                    | 15.10                       | 15.05                     | 16.5                   | 0           |
| 15              | QPSK       | 36      | 20        | 15.22                    | 15.08                       | 15.04                     |                        |             |
| 15              | QPSK       | 36      | 39        | 15.16                    | 15.04                       | 15.02                     |                        |             |
| 15              | QPSK       | 75      | 0         | 15.21                    | 15.09                       | 15.03                     | 16.5                   | 0           |
| 15              | 16QAM      | 1       | 0         | 15.19                    | 14.96                       | 14.95                     |                        |             |
| 15              | 16QAM      | 1       | 37        | 15.07                    | 14.89                       | 14.88                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 14.97                    | 14.86                       | 14.86                     | 16.5                   | 0           |
| 15              | 16QAM      | 36      | 0         | 15.18                    | 14.94                       | 14.91                     |                        |             |
| 15              | 16QAM      | 36      | 20        | 15.03                    | 14.92                       | 14.88                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 15.02                    | 14.87                       | 14.85                     | 16.5                   | 0           |
| 15              | 16QAM      | 75      | 0         | 15.03                    | 14.90                       | 14.84                     |                        |             |
| 15              | 64QAM      | 1       | 0         | 15.05                    | 14.82                       | 14.81                     |                        |             |
| 15              | 64QAM      | 1       | 37        | 14.93                    | 14.75                       | 14.74                     | 16.5                   | 0           |
| 15              | 64QAM      | 1       | 74        | 14.83                    | 14.72                       | 14.72                     |                        |             |
| 15              | 64QAM      | 36      | 0         | 15.04                    | 14.80                       | 14.77                     |                        |             |
| 15              | 64QAM      | 36      | 20        | 14.89                    | 14.78                       | 14.74                     | 16.5                   | 0           |
| 15              | 64QAM      | 36      | 39        | 14.88                    | 14.73                       | 14.71                     |                        |             |
| 15              | 64QAM      | 75      | 0         | 14.89                    | 14.76                       | 14.70                     |                        |             |



| Channel         |       |    |    | 18650  | 18900 | 19150  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1855   | 1880  | 1905   |                        |             |
| 10              | QPSK  | 1  | 0  | 15.46  | 15.45 | 15.33  | 16.5                   | 0           |
| 10              | QPSK  | 1  | 25 | 15.44  | 15.27 | 15.20  |                        |             |
| 10              | QPSK  | 1  | 49 | 15.37  | 15.40 | 15.28  |                        |             |
| 10              | QPSK  | 25 | 0  | 15.33  | 15.09 | 15.02  | 16.5                   | 0           |
| 10              | QPSK  | 25 | 12 | 15.25  | 15.07 | 14.99  |                        |             |
| 10              | QPSK  | 25 | 25 | 15.20  | 15.04 | 14.99  |                        |             |
| 10              | QPSK  | 50 | 0  | 15.15  | 15.04 | 14.98  |                        |             |
| 10              | 16QAM | 1  | 0  | 15.27  | 15.09 | 14.88  | 16.5                   | 0           |
| 10              | 16QAM | 1  | 25 | 15.07  | 14.83 | 14.80  |                        |             |
| 10              | 16QAM | 1  | 49 | 15.18  | 15.04 | 14.79  |                        |             |
| 10              | 16QAM | 25 | 0  | 15.12  | 14.88 | 14.84  | 16.5                   | 0           |
| 10              | 16QAM | 25 | 12 | 15.09  | 14.86 | 14.86  |                        |             |
| 10              | 16QAM | 25 | 25 | 14.96  | 14.85 | 14.82  |                        |             |
| 10              | 16QAM | 50 | 0  | 15.00  | 14.88 | 14.83  |                        |             |
| 10              | 64QAM | 1  | 0  | 15.20  | 15.07 | 14.86  | 16.5                   | 0           |
| 10              | 64QAM | 1  | 25 | 15.05  | 14.81 | 14.78  |                        |             |
| 10              | 64QAM | 1  | 49 | 15.16  | 15.02 | 14.77  |                        |             |
| 10              | 64QAM | 25 | 0  | 15.10  | 14.86 | 14.82  | 16.5                   | 0           |
| 10              | 64QAM | 25 | 12 | 15.07  | 14.84 | 14.84  |                        |             |
| 10              | 64QAM | 25 | 25 | 14.94  | 14.83 | 14.80  |                        |             |
| 10              | 64QAM | 50 | 0  | 14.98  | 14.86 | 14.81  |                        |             |
| Channel         |       |    |    | 18625  | 18900 | 19175  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1852.5 | 1880  | 1907.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 15.46  | 15.37 | 15.23  | 16.5                   | 0           |
| 5               | QPSK  | 1  | 12 | 15.42  | 15.34 | 15.22  |                        |             |
| 5               | QPSK  | 1  | 24 | 15.41  | 15.33 | 15.26  |                        |             |
| 5               | QPSK  | 12 | 0  | 15.30  | 15.07 | 15.02  | 16.5                   | 0           |
| 5               | QPSK  | 12 | 7  | 15.27  | 15.06 | 15.05  |                        |             |
| 5               | QPSK  | 12 | 13 | 15.28  | 15.04 | 15.04  |                        |             |
| 5               | QPSK  | 25 | 0  | 15.22  | 15.01 | 14.99  |                        |             |
| 5               | 16QAM | 1  | 0  | 15.13  | 14.88 | 14.82  | 16.5                   | 0           |
| 5               | 16QAM | 1  | 12 | 15.09  | 14.84 | 14.80  |                        |             |
| 5               | 16QAM | 1  | 24 | 15.10  | 14.87 | 14.79  |                        |             |
| 5               | 16QAM | 12 | 0  | 15.10  | 14.87 | 14.85  | 16.5                   | 0           |
| 5               | 16QAM | 12 | 7  | 15.09  | 14.90 | 14.86  |                        |             |
| 5               | 16QAM | 12 | 13 | 15.09  | 14.86 | 14.82  |                        |             |
| 5               | 16QAM | 25 | 0  | 15.07  | 14.84 | 14.81  |                        |             |
| 5               | 64QAM | 1  | 0  | 15.10  | 14.85 | 14.79  | 16.5                   | 0           |
| 5               | 64QAM | 1  | 12 | 15.06  | 14.81 | 14.77  |                        |             |
| 5               | 64QAM | 1  | 24 | 15.07  | 14.84 | 14.76  |                        |             |
| 5               | 64QAM | 12 | 0  | 15.07  | 14.84 | 14.82  | 16.5                   | 0           |
| 5               | 64QAM | 12 | 7  | 15.06  | 14.87 | 14.83  |                        |             |
| 5               | 64QAM | 12 | 13 | 15.06  | 14.83 | 14.79  |                        |             |
| 5               | 64QAM | 25 | 0  | 15.04  | 14.81 | 14.78  |                        |             |

| Channel         |       |    |    | 18615  | 18900 | 19185  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1851.5 | 1880  | 1908.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 15.50  | 15.26 | 15.25  | 16.5                   | 0           |
| 3               | QPSK  | 1  | 8  | 15.52  | 15.31 | 15.21  |                        |             |
| 3               | QPSK  | 1  | 14 | 15.41  | 15.21 | 15.21  |                        |             |
| 3               | QPSK  | 8  | 0  | 15.30  | 15.06 | 15.05  | 16.5                   | 0           |
| 3               | QPSK  | 8  | 4  | 15.35  | 15.14 | 15.07  |                        |             |
| 3               | QPSK  | 8  | 7  | 15.31  | 15.08 | 15.03  |                        |             |
| 3               | QPSK  | 15 | 0  | 15.22  | 14.97 | 14.94  |                        |             |
| 3               | 16QAM | 1  | 0  | 15.04  | 14.85 | 14.82  | 16.5                   | 0           |
| 3               | 16QAM | 1  | 8  | 15.06  | 14.83 | 14.75  |                        |             |
| 3               | 16QAM | 1  | 14 | 15.02  | 14.83 | 14.77  |                        |             |
| 3               | 16QAM | 8  | 0  | 15.07  | 14.85 | 14.79  | 16.5                   | 0           |
| 3               | 16QAM | 8  | 4  | 15.11  | 14.88 | 14.85  |                        |             |
| 3               | 16QAM | 8  | 7  | 15.08  | 14.82 | 14.78  |                        |             |
| 3               | 16QAM | 15 | 0  | 15.04  | 14.83 | 14.76  |                        |             |
| 3               | 64QAM | 1  | 0  | 15.02  | 14.83 | 14.80  | 16.5                   | 0           |
| 3               | 64QAM | 1  | 8  | 15.04  | 14.81 | 14.73  |                        |             |
| 3               | 64QAM | 1  | 14 | 15.00  | 14.81 | 14.75  |                        |             |
| 3               | 64QAM | 8  | 0  | 15.05  | 14.83 | 14.77  | 16.5                   | 0           |
| 3               | 64QAM | 8  | 4  | 15.09  | 14.86 | 14.83  |                        |             |
| 3               | 64QAM | 8  | 7  | 15.06  | 14.80 | 14.76  |                        |             |
| 3               | 64QAM | 15 | 0  | 15.02  | 14.81 | 14.74  |                        |             |
| Channel         |       |    |    | 18607  | 18900 | 19193  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1850.7 | 1880  | 1909.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 15.34  | 15.30 | 15.24  | 16.5                   | 0           |
| 1.4             | QPSK  | 1  | 3  | 15.39  | 15.21 | 15.19  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 15.36  | 15.21 | 15.11  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 15.26  | 15.06 | 14.99  |                        |             |
| 1.4             | QPSK  | 3  | 1  | 15.24  | 14.99 | 14.95  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 15.21  | 14.94 | 14.88  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 15.25  | 15.03 | 14.98  | 16.5                   | 0           |
| 1.4             | 16QAM | 1  | 0  | 15.02  | 14.75 | 14.71  | 16.5                   | 0           |
| 1.4             | 16QAM | 1  | 3  | 15.04  | 14.77 | 14.79  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 14.94  | 14.67 | 14.70  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 15.01  | 14.76 | 14.74  |                        |             |
| 1.4             | 16QAM | 3  | 1  | 15.02  | 14.83 | 14.78  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 15.01  | 14.79 | 14.73  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 14.98  | 14.75 | 14.68  | 16.5                   | 0           |
| 1.4             | 64QAM | 1  | 0  | 14.99  | 14.72 | 14.68  | 16.5                   | 0           |
| 1.4             | 64QAM | 1  | 3  | 15.01  | 14.74 | 14.76  |                        |             |
| 1.4             | 64QAM | 1  | 5  | 14.91  | 14.64 | 14.67  |                        |             |
| 1.4             | 64QAM | 3  | 0  | 14.98  | 14.73 | 14.71  |                        |             |
| 1.4             | 64QAM | 3  | 1  | 14.99  | 14.80 | 14.75  |                        |             |
| 1.4             | 64QAM | 3  | 3  | 14.98  | 14.76 | 14.70  |                        |             |
| 1.4             | 64QAM | 6  | 0  | 14.95  | 14.72 | 14.65  | 16.5                   | 0           |

**<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         | 15.72                    | 15.65                       | 15.45                     | 16.5                   | 0           |
| 20              | QPSK       | 1       | 49        | 15.54                    | 15.39                       | 15.46                     |                        |             |
| 20              | QPSK       | 1       | 99        | 15.43                    | 15.41                       | 15.49                     |                        |             |
| 20              | QPSK       | 50      | 0         | 15.40                    | 15.32                       | 15.25                     | 16.5                   | 0           |
| 20              | QPSK       | 50      | 24        | 15.35                    | 15.24                       | 15.19                     |                        |             |
| 20              | QPSK       | 50      | 50        | 15.29                    | 15.17                       | 15.23                     |                        |             |
| 20              | QPSK       | 100     | 0         | 15.34                    | 15.20                       | 15.20                     |                        |             |
| 20              | 16QAM      | 1       | 0         | 15.30                    | 15.26                       | 15.16                     | 16.5                   | 0           |
| 20              | 16QAM      | 1       | 49        | 15.14                    | 15.05                       | 15.07                     |                        |             |
| 20              | 16QAM      | 1       | 99        | 15.11                    | 15.01                       | 15.08                     |                        |             |
| 20              | 16QAM      | 50      | 0         | 15.26                    | 15.18                       | 15.14                     | 16.5                   | 0           |
| 20              | 16QAM      | 50      | 24        | 15.20                    | 15.14                       | 15.05                     |                        |             |
| 20              | 16QAM      | 50      | 50        | 15.18                    | 15.10                       | 15.11                     |                        |             |
| 20              | 16QAM      | 100     | 0         | 15.20                    | 15.15                       | 15.10                     |                        |             |
| 20              | 64QAM      | 1       | 0         | 15.46                    | 15.58                       | 15.44                     | 16.5                   | 0           |
| 20              | 64QAM      | 1       | 49        | 15.52                    | 15.38                       | 15.43                     |                        |             |
| 20              | 64QAM      | 1       | 99        | 15.42                    | 15.30                       | 15.41                     |                        |             |
| 20              | 64QAM      | 50      | 0         | 15.42                    | 15.36                       | 15.24                     | 16.5                   | 0           |
| 20              | 64QAM      | 50      | 24        | 15.37                    | 15.29                       | 15.22                     |                        |             |
| 20              | 64QAM      | 50      | 50        | 15.32                    | 15.24                       | 15.27                     |                        |             |
| 20              | 64QAM      | 100     | 0         | 15.35                    | 15.30                       | 15.21                     |                        |             |
| Channel         |            |         |           | 20025                    | 20175                       | 20325                     |                        |             |
| Frequency (MHz) |            |         |           | 1717.5                   | 1732.5                      | 1747.5                    |                        |             |
| 15              | QPSK       | 1       | 0         | 15.70                    | 15.61                       | 15.45                     | 16.5                   | 0           |
| 15              | QPSK       | 1       | 37        | 15.62                    | 15.34                       | 15.43                     |                        |             |
| 15              | QPSK       | 1       | 74        | 15.52                    | 15.43                       | 15.49                     |                        |             |
| 15              | QPSK       | 36      | 0         | 15.41                    | 15.28                       | 15.17                     | 16.5                   | 0           |
| 15              | QPSK       | 36      | 20        | 15.38                    | 15.23                       | 15.25                     |                        |             |
| 15              | QPSK       | 36      | 39        | 15.34                    | 15.14                       | 15.23                     |                        |             |
| 15              | QPSK       | 75      | 0         | 15.36                    | 15.20                       | 15.17                     | 16.5                   | 0           |
| 15              | 16QAM      | 1       | 0         | 15.28                    | 15.25                       | 15.14                     |                        |             |
| 15              | 16QAM      | 1       | 37        | 15.15                    | 15.02                       | 15.08                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 15.17                    | 15.06                       | 15.08                     | 16.5                   | 0           |
| 15              | 16QAM      | 36      | 0         | 15.25                    | 15.19                       | 15.07                     |                        |             |
| 15              | 16QAM      | 36      | 20        | 15.22                    | 15.12                       | 15.17                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 15.18                    | 15.08                       | 15.09                     |                        |             |
| 15              | 16QAM      | 75      | 0         | 15.23                    | 15.13                       | 15.03                     | 16.5                   | 0           |
| 15              | 64QAM      | 1       | 0         | 15.52                    | 15.63                       | 15.44                     |                        |             |
| 15              | 64QAM      | 1       | 37        | 15.52                    | 15.34                       | 15.40                     |                        |             |
| 15              | 64QAM      | 1       | 74        | 15.52                    | 15.34                       | 15.43                     | 16.5                   | 0           |
| 15              | 64QAM      | 36      | 0         | 15.44                    | 15.34                       | 15.27                     |                        |             |
| 15              | 64QAM      | 36      | 20        | 15.40                    | 15.27                       | 15.31                     |                        |             |
| 15              | 64QAM      | 36      | 39        | 15.39                    | 15.25                       | 15.27                     |                        |             |
| 15              | 64QAM      | 75      | 0         | 15.40                    | 15.29                       | 15.19                     |                        |             |

| Channel         |       |    |    | 20000  | 20175  | 20350  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|--------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1715   | 1732.5 | 1750   |                        |             |
| 10              | QPSK  | 1  | 0  | 15.63  | 15.52  | 15.49  | 16.5                   | 0           |
| 10              | QPSK  | 1  | 25 | 15.57  | 15.39  | 15.41  |                        |             |
| 10              | QPSK  | 1  | 49 | 15.59  | 15.30  | 15.41  |                        |             |
| 10              | QPSK  | 25 | 0  | 15.37  | 15.22  | 15.24  | 16.5                   | 0           |
| 10              | QPSK  | 25 | 12 | 15.35  | 15.17  | 15.23  |                        |             |
| 10              | QPSK  | 25 | 25 | 15.34  | 15.17  | 15.20  |                        |             |
| 10              | QPSK  | 50 | 0  | 15.32  | 15.22  | 15.24  |                        |             |
| 10              | 16QAM | 1  | 0  | 15.21  | 15.12  | 15.14  | 16.5                   | 0           |
| 10              | 16QAM | 1  | 25 | 15.19  | 15.05  | 15.08  |                        |             |
| 10              | 16QAM | 1  | 49 | 15.14  | 15.01  | 15.02  |                        |             |
| 10              | 16QAM | 25 | 0  | 15.19  | 15.15  | 15.11  | 16.5                   | 0           |
| 10              | 16QAM | 25 | 12 | 15.19  | 15.12  | 15.13  |                        |             |
| 10              | 16QAM | 25 | 25 | 15.16  | 15.10  | 15.09  |                        |             |
| 10              | 16QAM | 50 | 0  | 15.20  | 15.11  | 15.11  |                        |             |
| 10              | 64QAM | 1  | 0  | 15.53  | 15.44  | 15.44  | 16.5                   | 0           |
| 10              | 64QAM | 1  | 25 | 15.52  | 15.34  | 15.36  |                        |             |
| 10              | 64QAM | 1  | 49 | 15.51  | 15.34  | 15.35  |                        |             |
| 10              | 64QAM | 25 | 0  | 15.35  | 15.29  | 15.28  | 16.5                   | 0           |
| 10              | 64QAM | 25 | 12 | 15.36  | 15.24  | 15.28  |                        |             |
| 10              | 64QAM | 25 | 25 | 15.32  | 15.21  | 15.24  |                        |             |
| 10              | 64QAM | 50 | 0  | 15.34  | 15.26  | 15.24  |                        |             |
| Channel         |       |    |    | 19975  | 20175  | 20375  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1712.5 | 1732.5 | 1752.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 15.60  | 15.38  | 15.48  | 16.5                   | 0           |
| 5               | QPSK  | 1  | 12 | 15.57  | 15.32  | 15.49  |                        |             |
| 5               | QPSK  | 1  | 24 | 15.61  | 15.36  | 15.46  |                        |             |
| 5               | QPSK  | 12 | 0  | 15.39  | 15.20  | 15.20  | 16.5                   | 0           |
| 5               | QPSK  | 12 | 7  | 15.38  | 15.18  | 15.25  |                        |             |
| 5               | QPSK  | 12 | 13 | 15.36  | 15.12  | 15.19  |                        |             |
| 5               | QPSK  | 25 | 0  | 15.33  | 15.19  | 15.20  |                        |             |
| 5               | 16QAM | 1  | 0  | 15.21  | 15.07  | 15.10  | 16.5                   | 0           |
| 5               | 16QAM | 1  | 12 | 15.14  | 15.04  | 15.04  |                        |             |
| 5               | 16QAM | 1  | 24 | 15.16  | 15.07  | 15.06  |                        |             |
| 5               | 16QAM | 12 | 0  | 15.21  | 15.08  | 15.09  | 16.5                   | 0           |
| 5               | 16QAM | 12 | 7  | 15.22  | 15.09  | 15.12  |                        |             |
| 5               | 16QAM | 12 | 13 | 15.19  | 15.09  | 15.06  |                        |             |
| 5               | 16QAM | 25 | 0  | 15.17  | 15.07  | 15.06  |                        |             |
| 5               | 64QAM | 1  | 0  | 15.56  | 15.34  | 15.39  | 16.5                   | 0           |
| 5               | 64QAM | 1  | 12 | 15.52  | 15.36  | 15.40  |                        |             |
| 5               | 64QAM | 1  | 24 | 15.53  | 15.22  | 15.36  |                        |             |
| 5               | 64QAM | 12 | 0  | 15.41  | 15.23  | 15.29  | 16.5                   | 0           |
| 5               | 64QAM | 12 | 7  | 15.39  | 15.21  | 15.31  |                        |             |
| 5               | 64QAM | 12 | 13 | 15.40  | 15.17  | 15.27  |                        |             |
| 5               | 64QAM | 25 | 0  | 15.34  | 15.20  | 15.22  |                        |             |

| Channel         |       |    |    | 19965  | 20175  | 20385  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|--------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1711.5 | 1732.5 | 1753.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 15.53  | 15.30  | 15.44  | 16.5                   | 0           |
| 3               | QPSK  | 1  | 8  | 15.53  | 15.27  | 15.39  |                        |             |
| 3               | QPSK  | 1  | 14 | 15.58  | 15.23  | 15.38  |                        |             |
| 3               | QPSK  | 8  | 0  | 15.38  | 15.12  | 15.23  | 16.5                   | 0           |
| 3               | QPSK  | 8  | 4  | 15.42  | 15.22  | 15.26  |                        |             |
| 3               | QPSK  | 8  | 7  | 15.35  | 15.20  | 15.22  |                        |             |
| 3               | QPSK  | 15 | 0  | 15.30  | 15.18  | 15.18  |                        |             |
| 3               | 16QAM | 1  | 0  | 15.16  | 15.03  | 15.05  | 16.5                   | 0           |
| 3               | 16QAM | 1  | 8  | 15.15  | 15.03  | 15.01  |                        |             |
| 3               | 16QAM | 1  | 14 | 15.14  | 15.02  | 15.01  |                        |             |
| 3               | 16QAM | 8  | 0  | 15.19  | 15.06  | 15.05  | 16.5                   | 0           |
| 3               | 16QAM | 8  | 4  | 15.21  | 15.08  | 15.07  |                        |             |
| 3               | 16QAM | 8  | 7  | 15.16  | 15.06  | 15.03  |                        |             |
| 3               | 16QAM | 15 | 0  | 15.17  | 15.07  | 15.05  |                        |             |
| 3               | 64QAM | 1  | 0  | 15.50  | 15.28  | 15.37  | 16.5                   | 0           |
| 3               | 64QAM | 1  | 8  | 15.51  | 15.25  | 15.37  |                        |             |
| 3               | 64QAM | 1  | 14 | 15.50  | 15.24  | 15.32  |                        |             |
| 3               | 64QAM | 8  | 0  | 15.39  | 15.17  | 15.23  | 16.5                   | 0           |
| 3               | 64QAM | 8  | 4  | 15.40  | 15.23  | 15.27  |                        |             |
| 3               | 64QAM | 8  | 7  | 15.38  | 15.16  | 15.24  |                        |             |
| 3               | 64QAM | 15 | 0  | 15.30  | 15.19  | 15.18  |                        |             |
| 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  | 15.52  | 15.28  | 15.31  | 16.5                   | 0           |
| 1.4             | QPSK  | 1  | 3  | 15.57  | 15.39  | 15.41  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 15.45  | 15.28  | 15.26  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 15.29  | 15.09  | 15.11  |                        |             |
| 1.4             | QPSK  | 3  | 1  | 15.32  | 15.16  | 15.12  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 15.26  | 15.07  | 15.10  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 15.33  | 15.20  | 15.18  | 16.5                   | 0           |
| 1.4             | 16QAM | 1  | 0  | 15.06  | 15.06  | 15.07  | 16.5                   | 0           |
| 1.4             | 16QAM | 1  | 3  | 15.16  | 15.01  | 15.04  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 15.03  | 15.04  | 15.04  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 15.12  | 15.00  | 15.07  |                        |             |
| 1.4             | 16QAM | 3  | 1  | 15.14  | 15.03  | 15.01  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 15.10  | 15.01  | 15.08  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 15.12  | 15.08  | 15.07  | 16.5                   | 0           |
| 1.4             | 64QAM | 1  | 0  | 15.43  | 15.25  | 15.27  | 16.5                   | 0           |
| 1.4             | 64QAM | 1  | 3  | 15.48  | 15.30  | 15.39  |                        |             |
| 1.4             | 64QAM | 1  | 5  | 15.40  | 15.18  | 15.31  |                        |             |
| 1.4             | 64QAM | 3  | 0  | 15.40  | 15.18  | 15.24  |                        |             |
| 1.4             | 64QAM | 3  | 1  | 15.42  | 15.21  | 15.33  |                        |             |
| 1.4             | 64QAM | 3  | 3  | 15.33  | 15.21  | 15.26  |                        |             |
| 1.4             | 64QAM | 6  | 0  | 15.27  | 15.10  | 15.16  | 16.5                   | 0           |

**<LTE Band 5>**

| 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         |            |         |           | 20450                    | 20525                       | 20600                     |                        |             |
| Frequency (MHz) |            |         |           | 829                      | 836.5                       | 844                       |                        |             |
| 10              | QPSK       | 1       | 0         | 21.97                    | 22.04                       | 21.86                     | 23.5                   | 0           |
| 10              | QPSK       | 1       | 25        | 21.87                    | 21.82                       | 21.75                     |                        |             |
| 10              | QPSK       | 1       | 49        | 21.80                    | 21.73                       | 21.66                     |                        |             |
| 10              | QPSK       | 25      | 0         | 21.91                    | 21.93                       | 21.79                     | 23.5                   | 0           |
| 10              | QPSK       | 25      | 12        | 21.89                    | 21.85                       | 21.77                     |                        |             |
| 10              | QPSK       | 25      | 25        | 21.86                    | 21.83                       | 21.73                     |                        |             |
| 10              | QPSK       | 50      | 0         | 21.90                    | 21.86                       | 21.78                     | 23.5                   | 0           |
| 10              | 16QAM      | 1       | 0         | 21.86                    | 21.78                       | 21.66                     |                        |             |
| 10              | 16QAM      | 1       | 25        | 21.72                    | 21.69                       | 21.64                     |                        |             |
| 10              | 16QAM      | 1       | 49        | 21.69                    | 21.57                       | 21.54                     | 22.5                   | 1           |
| 10              | 16QAM      | 25      | 0         | 20.56                    | 20.50                       | 20.51                     |                        |             |
| 10              | 16QAM      | 25      | 12        | 20.58                    | 20.51                       | 20.52                     |                        |             |
| 10              | 16QAM      | 25      | 25        | 20.50                    | 20.52                       | 20.53                     | 22.5                   | 1           |
| 10              | 16QAM      | 50      | 0         | 21.01                    | 20.94                       | 20.87                     |                        |             |
| 10              | 64QAM      | 1       | 0         | 21.12                    | 21.00                       | 20.96                     |                        |             |
| 10              | 64QAM      | 1       | 25        | 21.05                    | 20.96                       | 20.90                     | 22.5                   | 1           |
| 10              | 64QAM      | 1       | 49        | 21.00                    | 20.93                       | 20.84                     |                        |             |
| 10              | 64QAM      | 25      | 0         | 20.96                    | 20.84                       | 20.80                     |                        |             |
| 10              | 64QAM      | 25      | 12        | 20.89                    | 20.80                       | 20.74                     | 22.5                   | 1           |
| 10              | 64QAM      | 25      | 25        | 20.84                    | 20.77                       | 20.68                     |                        |             |
| 10              | 64QAM      | 50      | 0         | 20.80                    | 20.68                       | 20.64                     |                        |             |
| Channel         |            |         |           | 20425                    | 20525                       | 20625                     | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |            |         |           | 826.5                    | 836.5                       | 846.5                     |                        |             |
| 5               | QPSK       | 1       | 0         | 21.99                    | 21.85                       | 21.76                     | 23.5                   | 0           |
| 5               | QPSK       | 1       | 12        | 21.92                    | 21.80                       | 21.72                     |                        |             |
| 5               | QPSK       | 1       | 24        | 21.87                    | 21.75                       | 21.69                     |                        |             |
| 5               | QPSK       | 12      | 0         | 21.95                    | 21.84                       | 21.78                     | 23.5                   | 0           |
| 5               | QPSK       | 12      | 7         | 21.97                    | 21.85                       | 21.78                     |                        |             |
| 5               | QPSK       | 12      | 13        | 21.91                    | 21.80                       | 21.72                     |                        |             |
| 5               | QPSK       | 25      | 0         | 21.96                    | 21.86                       | 21.72                     | 23.5                   | 0           |
| 5               | 16QAM      | 1       | 0         | 21.68                    | 21.54                       | 21.58                     |                        |             |
| 5               | 16QAM      | 1       | 12        | 21.76                    | 21.59                       | 21.55                     |                        |             |
| 5               | 16QAM      | 1       | 24        | 21.65                    | 21.60                       | 21.52                     | 22.5                   | 1           |
| 5               | 16QAM      | 12      | 0         | 21.68                    | 21.60                       | 21.51                     |                        |             |
| 5               | 16QAM      | 12      | 7         | 21.52                    | 21.57                       | 21.55                     |                        |             |
| 5               | 16QAM      | 12      | 13        | 21.55                    | 21.52                       | 21.53                     | 22.5                   | 1           |
| 5               | 16QAM      | 25      | 0         | 20.55                    | 20.45                       | 20.32                     |                        |             |
| 5               | 64QAM      | 1       | 0         | 21.10                    | 20.98                       | 20.94                     |                        |             |
| 5               | 64QAM      | 1       | 12        | 21.03                    | 20.94                       | 20.88                     | 22.5                   | 1           |
| 5               | 64QAM      | 1       | 24        | 20.98                    | 20.91                       | 20.82                     |                        |             |
| 5               | 64QAM      | 12      | 0         | 20.94                    | 20.82                       | 20.78                     |                        |             |
| 5               | 64QAM      | 12      | 7         | 20.87                    | 20.78                       | 20.72                     | 22.5                   | 1           |
| 5               | 64QAM      | 12      | 13        | 20.82                    | 20.75                       | 20.66                     |                        |             |
| 5               | 64QAM      | 25      | 0         | 20.78                    | 20.66                       | 20.62                     |                        |             |

| Channel         |       |    |    | 20415 | 20525 | 20635 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|-------|-------|-------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 825.5 | 836.5 | 847.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 21.96 | 21.80 | 21.74 | 23.5                   | 0           |
| 3               | QPSK  | 1  | 8  | 21.93 | 21.78 | 21.69 |                        |             |
| 3               | QPSK  | 1  | 14 | 21.91 | 21.76 | 21.68 |                        |             |
| 3               | QPSK  | 8  | 0  | 21.95 | 21.83 | 21.70 | 23.5                   | 0           |
| 3               | QPSK  | 8  | 4  | 21.96 | 21.87 | 21.75 |                        |             |
| 3               | QPSK  | 8  | 7  | 21.96 | 21.80 | 21.71 |                        |             |
| 3               | QPSK  | 15 | 0  | 21.95 | 21.80 | 21.72 |                        |             |
| 3               | 16QAM | 1  | 0  | 21.83 | 21.67 | 21.59 | 23.5                   | 0           |
| 3               | 16QAM | 1  | 8  | 21.76 | 21.69 | 21.53 |                        |             |
| 3               | 16QAM | 1  | 14 | 21.79 | 21.60 | 21.57 |                        |             |
| 3               | 16QAM | 8  | 0  | 20.63 | 20.50 | 20.50 | 22.5                   | 1           |
| 3               | 16QAM | 8  | 4  | 20.63 | 20.50 | 20.50 |                        |             |
| 3               | 16QAM | 8  | 7  | 20.58 | 20.50 | 20.51 |                        |             |
| 3               | 16QAM | 15 | 0  | 20.59 | 20.54 | 20.50 |                        |             |
| 3               | 64QAM | 1  | 0  | 21.16 | 21.04 | 21.00 | 22.5                   | 1           |
| 3               | 64QAM | 1  | 8  | 21.09 | 21.00 | 20.94 |                        |             |
| 3               | 64QAM | 1  | 14 | 21.04 | 20.97 | 20.88 |                        |             |
| 3               | 64QAM | 8  | 0  | 21.00 | 20.88 | 20.84 | 22.5                   | 1           |
| 3               | 64QAM | 8  | 4  | 20.93 | 20.84 | 20.78 |                        |             |
| 3               | 64QAM | 8  | 7  | 20.88 | 20.81 | 20.72 |                        |             |
| 3               | 64QAM | 15 | 0  | 20.84 | 20.72 | 20.68 |                        |             |
| 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  | 21.83 | 21.73 | 21.62 | 23.5                   | 0           |
| 1.4             | QPSK  | 1  | 3  | 21.91 | 21.79 | 21.67 |                        |             |
| 1.4             | QPSK  | 1  | 5  | 21.83 | 21.69 | 21.60 |                        |             |
| 1.4             | QPSK  | 3  | 0  | 21.89 | 21.74 | 21.67 |                        |             |
| 1.4             | QPSK  | 3  | 1  | 21.91 | 21.77 | 21.66 |                        |             |
| 1.4             | QPSK  | 3  | 3  | 21.89 | 21.73 | 21.62 |                        |             |
| 1.4             | QPSK  | 6  | 0  | 21.89 | 21.75 | 21.64 | 23.5                   | 0           |
| 1.4             | 16QAM | 1  | 0  | 21.79 | 21.65 | 21.59 | 23.5                   | 0           |
| 1.4             | 16QAM | 1  | 3  | 21.87 | 21.70 | 21.56 |                        |             |
| 1.4             | 16QAM | 1  | 5  | 21.76 | 21.71 | 21.53 |                        |             |
| 1.4             | 16QAM | 3  | 0  | 21.59 | 21.51 | 21.52 |                        |             |
| 1.4             | 16QAM | 3  | 1  | 21.63 | 21.50 | 21.56 |                        |             |
| 1.4             | 16QAM | 3  | 3  | 21.56 | 21.53 | 21.54 |                        |             |
| 1.4             | 16QAM | 6  | 0  | 21.05 | 20.95 | 20.82 | 22.5                   | 1           |
| 1.4             | 64QAM | 1  | 0  | 21.14 | 21.02 | 20.98 | 22.5                   | 1           |
| 1.4             | 64QAM | 1  | 3  | 21.07 | 20.98 | 20.92 |                        |             |
| 1.4             | 64QAM | 1  | 5  | 21.02 | 20.95 | 20.86 |                        |             |
| 1.4             | 64QAM | 3  | 0  | 20.98 | 20.86 | 20.82 |                        |             |
| 1.4             | 64QAM | 3  | 1  | 20.91 | 20.82 | 20.76 |                        |             |
| 1.4             | 64QAM | 3  | 3  | 20.86 | 20.79 | 20.70 |                        |             |
| 1.4             | 64QAM | 6  | 0  | 20.82 | 20.70 | 20.66 | 22.5                   | 1           |

**<LTE Band 7>**

| 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         |            |         |           | 20850                    | 21100                       | 21350                     |                        |             |
| Frequency (MHz) |            |         |           | 2510                     | 2535                        | 2560                      |                        |             |
| 20              | QPSK       | 1       | 0         | 16.58                    | 16.59                       | 16.61                     | 18                     | 0           |
| 20              | QPSK       | 1       | 49        | 16.81                    | 16.83                       | 16.85                     |                        |             |
| 20              | QPSK       | 1       | 99        | 16.57                    | 16.60                       | 16.70                     |                        |             |
| 20              | QPSK       | 50      | 0         | 16.54                    | 16.57                       | 16.61                     | 18                     | 0           |
| 20              | QPSK       | 50      | 24        | 16.60                    | 16.68                       | 16.75                     |                        |             |
| 20              | QPSK       | 50      | 50        | 16.66                    | 16.81                       | 16.82                     |                        |             |
| 20              | QPSK       | 100     | 0         | 16.61                    | 16.63                       | 16.71                     |                        |             |
| 20              | 16QAM      | 1       | 0         | 16.77                    | 16.71                       | 16.75                     | 18                     | 0           |
| 20              | 16QAM      | 1       | 49        | 16.50                    | 16.50                       | 16.70                     |                        |             |
| 20              | 16QAM      | 1       | 99        | 16.83                    | 16.57                       | 16.55                     |                        |             |
| 20              | 16QAM      | 50      | 0         | 16.63                    | 16.62                       | 16.69                     | 18                     | 0           |
| 20              | 16QAM      | 50      | 24        | 16.73                    | 16.77                       | 16.55                     |                        |             |
| 20              | 16QAM      | 50      | 50        | 16.68                    | 16.77                       | 16.50                     |                        |             |
| 20              | 16QAM      | 100     | 0         | 16.70                    | 16.70                       | 16.77                     |                        |             |
| 20              | 64QAM      | 1       | 0         | 16.66                    | 16.66                       | 16.64                     | 18                     | 0           |
| 20              | 64QAM      | 1       | 49        | 16.83                    | 16.83                       | 16.54                     |                        |             |
| 20              | 64QAM      | 1       | 99        | 16.80                    | 16.78                       | 16.66                     |                        |             |
| 20              | 64QAM      | 50      | 0         | 16.65                    | 16.60                       | 16.67                     | 18                     | 0           |
| 20              | 64QAM      | 50      | 24        | 16.78                    | 16.74                       | 16.82                     |                        |             |
| 20              | 64QAM      | 50      | 50        | 16.67                    | 16.78                       | 16.58                     |                        |             |
| 20              | 64QAM      | 100     | 0         | 16.73                    | 16.71                       | 16.76                     |                        |             |
| Channel         |            |         |           | 20825                    | 21100                       | 21375                     |                        |             |
| Frequency (MHz) |            |         |           | 2507.5                   | 2535                        | 2562.5                    |                        |             |
| 15              | QPSK       | 1       | 0         | 16.55                    | 16.55                       | 16.55                     | 18                     | 0           |
| 15              | QPSK       | 1       | 37        | 16.60                    | 16.62                       | 16.67                     |                        |             |
| 15              | QPSK       | 1       | 74        | 16.63                    | 16.58                       | 16.76                     |                        |             |
| 15              | QPSK       | 36      | 0         | 16.57                    | 16.56                       | 16.68                     | 18                     | 0           |
| 15              | QPSK       | 36      | 20        | 16.65                    | 16.67                       | 16.79                     |                        |             |
| 15              | QPSK       | 36      | 39        | 16.66                    | 16.71                       | 16.76                     |                        |             |
| 15              | QPSK       | 75      | 0         | 16.59                    | 16.66                       | 16.77                     |                        |             |
| 15              | 16QAM      | 1       | 0         | 16.82                    | 16.83                       | 16.55                     | 18                     | 0           |
| 15              | 16QAM      | 1       | 37        | 16.59                    | 16.59                       | 16.67                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 16.65                    | 16.56                       | 16.57                     |                        |             |
| 15              | 16QAM      | 36      | 0         | 16.63                    | 16.67                       | 16.76                     | 18                     | 0           |
| 15              | 16QAM      | 36      | 20        | 16.73                    | 16.78                       | 16.59                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 16.73                    | 16.79                       | 16.79                     |                        |             |
| 15              | 16QAM      | 75      | 0         | 16.74                    | 16.71                       | 16.82                     |                        |             |
| 15              | 64QAM      | 1       | 0         | 16.77                    | 16.76                       | 16.76                     | 18                     | 0           |
| 15              | 64QAM      | 1       | 37        | 16.80                    | 16.81                       | 16.83                     |                        |             |
| 15              | 64QAM      | 1       | 74        | 16.55                    | 16.79                       | 16.65                     |                        |             |
| 15              | 64QAM      | 36      | 0         | 16.63                    | 16.67                       | 16.74                     | 18                     | 0           |
| 15              | 64QAM      | 36      | 20        | 16.73                    | 16.77                       | 16.56                     |                        |             |
| 15              | 64QAM      | 36      | 39        | 16.73                    | 16.79                       | 16.79                     |                        |             |
| 15              | 64QAM      | 75      | 0         | 16.74                    | 16.69                       | 16.83                     |                        |             |

| Channel         |       |    |    | 20800  | 21100 | 21400  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 2505   | 2535  | 2565   |                        |             |
| 10              | QPSK  | 1  | 0  | 16.58  | 16.52 | 16.66  | 18                     | 0           |
| 10              | QPSK  | 1  | 25 | 16.67  | 16.61 | 16.68  |                        |             |
| 10              | QPSK  | 1  | 49 | 16.59  | 16.64 | 16.75  |                        |             |
| 10              | QPSK  | 25 | 0  | 16.62  | 16.58 | 16.74  | 18                     | 0           |
| 10              | QPSK  | 25 | 12 | 16.60  | 16.65 | 16.72  |                        |             |
| 10              | QPSK  | 25 | 25 | 16.63  | 16.65 | 16.74  |                        |             |
| 10              | QPSK  | 50 | 0  | 16.55  | 16.60 | 16.82  |                        |             |
| 10              | 16QAM | 1  | 0  | 16.83  | 16.77 | 16.67  | 18                     | 0           |
| 10              | 16QAM | 1  | 25 | 16.65  | 16.59 | 16.70  |                        |             |
| 10              | 16QAM | 1  | 49 | 16.50  | 16.51 | 16.54  |                        |             |
| 10              | 16QAM | 25 | 0  | 16.77  | 16.65 | 16.81  | 18                     | 0           |
| 10              | 16QAM | 25 | 12 | 16.69  | 16.73 | 16.81  |                        |             |
| 10              | 16QAM | 25 | 25 | 16.71  | 16.72 | 16.81  |                        |             |
| 10              | 16QAM | 50 | 0  | 16.71  | 16.71 | 16.57  |                        |             |
| 10              | 64QAM | 1  | 0  | 16.72  | 16.68 | 16.55  | 18                     | 0           |
| 10              | 64QAM | 1  | 25 | 16.56  | 16.80 | 16.52  |                        |             |
| 10              | 64QAM | 1  | 49 | 16.82  | 16.56 | 16.67  |                        |             |
| 10              | 64QAM | 25 | 0  | 16.77  | 16.64 | 16.81  | 18                     | 0           |
| 10              | 64QAM | 25 | 12 | 16.68  | 16.72 | 16.80  |                        |             |
| 10              | 64QAM | 25 | 25 | 16.71  | 16.73 | 16.81  |                        |             |
| 10              | 64QAM | 50 | 0  | 16.70  | 16.69 | 16.56  |                        |             |
| Channel         |       |    |    | 20775  | 21100 | 21425  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 2502.5 | 2535  | 2567.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 16.59  | 16.56 | 16.67  | 18                     | 0           |
| 5               | QPSK  | 1  | 12 | 16.64  | 16.59 | 16.72  |                        |             |
| 5               | QPSK  | 1  | 24 | 16.70  | 16.65 | 16.77  |                        |             |
| 5               | QPSK  | 12 | 0  | 16.65  | 16.58 | 16.72  | 18                     | 0           |
| 5               | QPSK  | 12 | 7  | 16.74  | 16.65 | 16.81  |                        |             |
| 5               | QPSK  | 12 | 13 | 16.72  | 16.66 | 16.82  |                        |             |
| 5               | QPSK  | 25 | 0  | 16.66  | 16.62 | 16.76  |                        |             |
| 5               | 16QAM | 1  | 0  | 16.83  | 16.55 | 16.69  | 18                     | 0           |
| 5               | 16QAM | 1  | 12 | 16.52  | 16.59 | 16.54  |                        |             |
| 5               | 16QAM | 1  | 24 | 16.65  | 16.65 | 16.56  |                        |             |
| 5               | 16QAM | 12 | 0  | 16.72  | 16.67 | 16.80  | 18                     | 0           |
| 5               | 16QAM | 12 | 7  | 16.79  | 16.73 | 16.57  |                        |             |
| 5               | 16QAM | 12 | 13 | 16.82  | 16.72 | 16.83  |                        |             |
| 5               | 16QAM | 25 | 0  | 16.80  | 16.71 | 16.54  |                        |             |
| 5               | 64QAM | 1  | 0  | 16.80  | 16.77 | 16.59  | 18                     | 0           |
| 5               | 64QAM | 1  | 12 | 16.83  | 16.80 | 16.64  |                        |             |
| 5               | 64QAM | 1  | 24 | 16.57  | 16.83 | 16.68  |                        |             |
| 5               | 64QAM | 12 | 0  | 16.71  | 16.65 | 16.78  | 18                     | 0           |
| 5               | 64QAM | 12 | 7  | 16.77  | 16.71 | 16.56  |                        |             |
| 5               | 64QAM | 12 | 13 | 16.79  | 16.71 | 16.82  |                        |             |
| 5               | 64QAM | 25 | 0  | 16.77  | 16.69 | 16.83  |                        |             |

**<LTE Band 14>**

| 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         |            |         |           | 23330                    |                             |                           |                        |             |
| Frequency (MHz) |            |         |           | 793                      |                             |                           |                        |             |
| 10              | QPSK       | 1       | 0         | 22.34                    |                             |                           | 23.5                   | 0           |
| 10              | QPSK       | 1       | 25        | 22.13                    |                             |                           |                        |             |
| 10              | QPSK       | 1       | 49        | 22.02                    |                             |                           |                        |             |
| 10              | QPSK       | 25      | 0         | 21.74                    |                             |                           | 23.5                   | 0           |
| 10              | QPSK       | 25      | 12        | 21.70                    |                             |                           |                        |             |
| 10              | QPSK       | 25      | 25        | 21.65                    |                             |                           |                        |             |
| 10              | QPSK       | 50      | 0         | 21.66                    |                             |                           | 23.5                   | 0           |
| 10              | 16QAM      | 1       | 0         | 22.18                    |                             |                           |                        |             |
| 10              | 16QAM      | 1       | 25        | 21.95                    |                             |                           |                        |             |
| 10              | 16QAM      | 1       | 49        | 21.87                    |                             |                           | 22.5                   | 1           |
| 10              | 16QAM      | 25      | 0         | 20.84                    |                             |                           |                        |             |
| 10              | 16QAM      | 25      | 12        | 20.83                    |                             |                           |                        |             |
| 10              | 16QAM      | 25      | 25        | 20.74                    |                             |                           | 22.5                   | 1           |
| 10              | 16QAM      | 50      | 0         | 20.77                    |                             |                           |                        |             |
| 10              | 64QAM      | 1       | 0         | 20.83                    |                             |                           |                        |             |
| 10              | 64QAM      | 1       | 25        | 20.82                    |                             |                           | 22.5                   | 1           |
| 10              | 64QAM      | 1       | 49        | 20.73                    |                             |                           |                        |             |
| 10              | 64QAM      | 25      | 0         | 20.76                    |                             |                           |                        |             |
| 10              | 64QAM      | 25      | 12        | 20.82                    |                             |                           | 22.5                   | 1           |
| 10              | 64QAM      | 25      | 25        | 20.81                    |                             |                           |                        |             |
| 10              | 64QAM      | 50      | 0         | 20.72                    |                             |                           |                        |             |
| Channel         |            |         |           | 23305                    | 23330                       | 23355                     | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |            |         |           | 790.5                    | 793                         | 795.5                     |                        |             |
| 5               | QPSK       | 1       | 0         | 22.33                    | 22.17                       | 22.18                     | 23.5                   | 0           |
| 5               | QPSK       | 1       | 12        | 22.19                    | 22.14                       | 22.10                     |                        |             |
| 5               | QPSK       | 1       | 24        | 22.14                    | 22.12                       | 22.08                     |                        |             |
| 5               | QPSK       | 12      | 0         | 21.86                    | 21.73                       | 21.65                     | 23.5                   | 0           |
| 5               | QPSK       | 12      | 7         | 21.76                    | 21.68                       | 21.66                     |                        |             |
| 5               | QPSK       | 12      | 13        | 21.71                    | 21.64                       | 21.60                     |                        |             |
| 5               | QPSK       | 25      | 0         | 21.71                    | 21.64                       | 21.67                     | 23.5                   | 0           |
| 5               | 16QAM      | 1       | 0         | 22.05                    | 21.99                       | 22.06                     |                        |             |
| 5               | 16QAM      | 1       | 12        | 21.97                    | 21.96                       | 21.90                     |                        |             |
| 5               | 16QAM      | 1       | 24        | 21.97                    | 21.91                       | 21.85                     | 22.5                   | 1           |
| 5               | 16QAM      | 12      | 0         | 20.96                    | 20.82                       | 20.80                     |                        |             |
| 5               | 16QAM      | 12      | 7         | 20.84                    | 20.79                       | 20.80                     |                        |             |
| 5               | 16QAM      | 12      | 13        | 20.81                    | 20.75                       | 20.75                     | 22.5                   | 1           |
| 5               | 16QAM      | 25      | 0         | 20.82                    | 20.76                       | 20.74                     |                        |             |
| 5               | 64QAM      | 1       | 0         | 20.97                    | 20.86                       | 20.80                     |                        |             |
| 5               | 64QAM      | 1       | 12        | 20.81                    | 20.79                       | 20.74                     | 22.5                   | 1           |
| 5               | 64QAM      | 1       | 24        | 20.80                    | 20.76                       | 20.70                     |                        |             |
| 5               | 64QAM      | 12      | 0         | 20.75                    | 20.61                       | 20.59                     |                        |             |
| 5               | 64QAM      | 12      | 7         | 20.63                    | 20.58                       | 20.59                     | 22.5                   | 1           |
| 5               | 64QAM      | 12      | 13        | 20.60                    | 20.54                       | 20.54                     |                        |             |
| 5               | 64QAM      | 25      | 0         | 20.61                    | 20.55                       | 20.53                     |                        |             |

**<LTE Band 25>**

| 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         |            |         |           | 26140                    | 26340                       | 26590                     |                        |             |
| Frequency (MHz) |            |         |           | 1860                     | 1880                        | 1905                      |                        |             |
| 20              | QPSK       | 1       | 0         | 16.05                    | 15.87                       | 15.71                     | 16.5                   | 0           |
| 20              | QPSK       | 1       | 49        | 15.73                    | 15.62                       | 15.62                     |                        |             |
| 20              | QPSK       | 1       | 99        | 15.79                    | 15.62                       | 15.61                     |                        |             |
| 20              | QPSK       | 50      | 0         | 15.75                    | 15.58                       | 15.60                     | 16.5                   | 0           |
| 20              | QPSK       | 50      | 24        | 15.57                    | 15.56                       | 15.51                     |                        |             |
| 20              | QPSK       | 50      | 50        | 15.55                    | 15.52                       | 15.45                     |                        |             |
| 20              | QPSK       | 100     | 0         | 15.56                    | 15.53                       | 15.50                     |                        |             |
| 20              | 16QAM      | 1       | 0         | 15.80                    | 15.68                       | 15.52                     | 16.5                   | 0           |
| 20              | 16QAM      | 1       | 49        | 15.51                    | 15.37                       | 15.37                     |                        |             |
| 20              | 16QAM      | 1       | 99        | 15.60                    | 15.51                       | 15.38                     |                        |             |
| 20              | 16QAM      | 50      | 0         | 15.68                    | 15.56                       | 15.56                     | 16.5                   | 0           |
| 20              | 16QAM      | 50      | 24        | 15.56                    | 15.52                       | 15.48                     |                        |             |
| 20              | 16QAM      | 50      | 50        | 15.54                    | 15.54                       | 15.48                     |                        |             |
| 20              | 16QAM      | 100     | 0         | 15.59                    | 15.54                       | 15.52                     |                        |             |
| 20              | 64QAM      | 1       | 0         | 15.67                    | 15.55                       | 15.39                     | 16.5                   | 0           |
| 20              | 64QAM      | 1       | 49        | 15.38                    | 15.24                       | 15.24                     |                        |             |
| 20              | 64QAM      | 1       | 99        | 15.47                    | 15.38                       | 15.25                     |                        |             |
| 20              | 64QAM      | 50      | 0         | 15.55                    | 15.43                       | 15.43                     | 16.5                   | 0           |
| 20              | 64QAM      | 50      | 24        | 15.43                    | 15.39                       | 15.35                     |                        |             |
| 20              | 64QAM      | 50      | 50        | 15.41                    | 15.41                       | 15.35                     |                        |             |
| 20              | 64QAM      | 100     | 0         | 15.46                    | 15.41                       | 15.39                     |                        |             |
| Channel         |            |         |           | 26115                    | 26340                       | 26615                     |                        |             |
| Frequency (MHz) |            |         |           | 1857.5                   | 1880                        | 1907.5                    |                        |             |
| 15              | QPSK       | 1       | 0         | 15.92                    | 15.74                       | 15.79                     | 16.5                   | 0           |
| 15              | QPSK       | 1       | 37        | 15.80                    | 15.67                       | 15.48                     |                        |             |
| 15              | QPSK       | 1       | 74        | 15.67                    | 15.58                       | 15.58                     |                        |             |
| 15              | QPSK       | 36      | 0         | 15.67                    | 15.53                       | 15.45                     | 16.5                   | 0           |
| 15              | QPSK       | 36      | 20        | 15.64                    | 15.52                       | 15.44                     |                        |             |
| 15              | QPSK       | 36      | 39        | 15.53                    | 15.43                       | 15.36                     |                        |             |
| 15              | QPSK       | 75      | 0         | 15.53                    | 15.50                       | 15.40                     | 16.5                   | 0           |
| 15              | 16QAM      | 1       | 0         | 15.64                    | 15.53                       | 15.49                     |                        |             |
| 15              | 16QAM      | 1       | 37        | 15.51                    | 15.39                       | 15.35                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 15.49                    | 15.37                       | 15.42                     | 16.5                   | 0           |
| 15              | 16QAM      | 36      | 0         | 15.64                    | 15.50                       | 15.48                     |                        |             |
| 15              | 16QAM      | 36      | 20        | 15.64                    | 15.46                       | 15.42                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 15.49                    | 15.46                       | 15.42                     | 16.5                   | 0           |
| 15              | 16QAM      | 75      | 0         | 15.52                    | 15.49                       | 15.42                     |                        |             |
| 15              | 64QAM      | 1       | 0         | 15.53                    | 15.42                       | 15.38                     |                        |             |
| 15              | 64QAM      | 1       | 37        | 15.40                    | 15.28                       | 15.24                     | 16.5                   | 0           |
| 15              | 64QAM      | 1       | 74        | 15.38                    | 15.26                       | 15.31                     |                        |             |
| 15              | 64QAM      | 36      | 0         | 15.53                    | 15.39                       | 15.37                     |                        |             |
| 15              | 64QAM      | 36      | 20        | 15.53                    | 15.35                       | 15.31                     | 16.5                   | 0           |
| 15              | 64QAM      | 36      | 39        | 15.38                    | 15.35                       | 15.31                     |                        |             |
| 15              | 64QAM      | 75      | 0         | 15.41                    | 15.38                       | 15.31                     |                        |             |

| Channel         |       |    |    | 26090  | 26340 | 26640  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1855   | 1880  | 1910   |                        |             |
| 10              | QPSK  | 1  | 0  | 15.95  | 15.89 | 15.56  | 16.5                   | 0           |
| 10              | QPSK  | 1  | 25 | 15.77  | 15.66 | 15.50  |                        |             |
| 10              | QPSK  | 1  | 49 | 15.92  | 15.80 | 15.52  |                        |             |
| 10              | QPSK  | 25 | 0  | 15.69  | 15.59 | 15.48  | 16.5                   | 0           |
| 10              | QPSK  | 25 | 12 | 15.68  | 15.57 | 15.44  |                        |             |
| 10              | QPSK  | 25 | 25 | 15.65  | 15.52 | 15.43  |                        |             |
| 10              | QPSK  | 50 | 0  | 15.71  | 15.54 | 15.45  |                        |             |
| 10              | 16QAM | 1  | 0  | 15.79  | 15.70 | 15.44  | 16.5                   | 0           |
| 10              | 16QAM | 1  | 25 | 15.56  | 15.45 | 15.42  |                        |             |
| 10              | 16QAM | 1  | 49 | 15.77  | 15.62 | 15.42  |                        |             |
| 10              | 16QAM | 25 | 0  | 15.67  | 15.54 | 15.51  | 16.5                   | 0           |
| 10              | 16QAM | 25 | 12 | 15.64  | 15.54 | 15.52  |                        |             |
| 10              | 16QAM | 25 | 25 | 15.64  | 15.55 | 15.50  |                        |             |
| 10              | 16QAM | 50 | 0  | 15.63  | 15.50 | 15.50  |                        |             |
| 10              | 64QAM | 1  | 0  | 15.77  | 15.68 | 15.42  | 16.5                   | 0           |
| 10              | 64QAM | 1  | 25 | 15.54  | 15.43 | 15.40  |                        |             |
| 10              | 64QAM | 1  | 49 | 15.75  | 15.60 | 15.40  |                        |             |
| 10              | 64QAM | 25 | 0  | 15.65  | 15.52 | 15.49  | 16.5                   | 0           |
| 10              | 64QAM | 25 | 12 | 15.62  | 15.52 | 15.50  |                        |             |
| 10              | 64QAM | 25 | 25 | 15.62  | 15.53 | 15.48  |                        |             |
| 10              | 64QAM | 50 | 0  | 15.61  | 15.48 | 15.48  |                        |             |
| Channel         |       |    |    | 26065  | 26340 | 26665  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1852.5 | 1880  | 1912.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 15.81  | 15.70 | 15.51  | 16.5                   | 0           |
| 5               | QPSK  | 1  | 12 | 15.77  | 15.60 | 15.45  |                        |             |
| 5               | QPSK  | 1  | 24 | 15.81  | 15.60 | 15.54  |                        |             |
| 5               | QPSK  | 12 | 0  | 15.67  | 15.49 | 15.32  | 16.5                   | 0           |
| 5               | QPSK  | 12 | 7  | 15.64  | 15.53 | 15.39  |                        |             |
| 5               | QPSK  | 12 | 13 | 15.61  | 15.47 | 15.42  |                        |             |
| 5               | QPSK  | 25 | 0  | 15.64  | 15.50 | 15.44  |                        |             |
| 5               | 16QAM | 1  | 0  | 15.58  | 15.51 | 15.40  | 16.5                   | 0           |
| 5               | 16QAM | 1  | 12 | 15.53  | 15.45 | 15.40  |                        |             |
| 5               | 16QAM | 1  | 24 | 15.58  | 15.43 | 15.41  |                        |             |
| 5               | 16QAM | 12 | 0  | 15.58  | 15.45 | 15.44  | 16.5                   | 0           |
| 5               | 16QAM | 12 | 7  | 15.60  | 15.50 | 15.43  |                        |             |
| 5               | 16QAM | 12 | 13 | 15.57  | 15.47 | 15.49  |                        |             |
| 5               | 16QAM | 25 | 0  | 15.64  | 15.55 | 15.49  |                        |             |
| 5               | 64QAM | 1  | 0  | 15.55  | 15.48 | 15.37  | 16.5                   | 0           |
| 5               | 64QAM | 1  | 12 | 15.50  | 15.42 | 15.37  |                        |             |
| 5               | 64QAM | 1  | 24 | 15.55  | 15.40 | 15.38  |                        |             |
| 5               | 64QAM | 12 | 0  | 15.55  | 15.42 | 15.41  | 16.5                   | 0           |
| 5               | 64QAM | 12 | 7  | 15.57  | 15.47 | 15.40  |                        |             |
| 5               | 64QAM | 12 | 13 | 15.54  | 15.44 | 15.46  |                        |             |
| 5               | 64QAM | 25 | 0  | 15.61  | 15.52 | 15.46  |                        |             |

| Channel         |       |    |    | 26055  | 26340 | 26675  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|-------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1851.5 | 1880  | 1913.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 15.79  | 15.65 | 15.49  | 16.5                   | 0           |
| 3               | QPSK  | 1  | 8  | 15.82  | 15.62 | 15.42  |                        |             |
| 3               | QPSK  | 1  | 14 | 15.78  | 15.61 | 15.49  |                        |             |
| 3               | QPSK  | 8  | 0  | 15.65  | 15.51 | 15.30  | 16.5                   | 0           |
| 3               | QPSK  | 8  | 4  | 15.65  | 15.53 | 15.41  |                        |             |
| 3               | QPSK  | 8  | 7  | 15.64  | 15.46 | 15.45  |                        |             |
| 3               | QPSK  | 15 | 0  | 15.68  | 15.51 | 15.50  |                        |             |
| 3               | 16QAM | 1  | 0  | 15.55  | 15.43 | 15.43  | 16.5                   | 0           |
| 3               | 16QAM | 1  | 8  | 15.53  | 15.45 | 15.39  |                        |             |
| 3               | 16QAM | 1  | 14 | 15.56  | 15.40 | 15.41  |                        |             |
| 3               | 16QAM | 8  | 0  | 15.55  | 15.42 | 15.44  | 16.5                   | 0           |
| 3               | 16QAM | 8  | 4  | 15.58  | 15.46 | 15.45  |                        |             |
| 3               | 16QAM | 8  | 7  | 15.57  | 15.44 | 15.43  |                        |             |
| 3               | 16QAM | 15 | 0  | 15.61  | 15.47 | 15.46  |                        |             |
| 3               | 64QAM | 1  | 0  | 15.45  | 15.33 | 15.33  | 16.5                   | 0           |
| 3               | 64QAM | 1  | 8  | 15.43  | 15.35 | 15.29  |                        |             |
| 3               | 64QAM | 1  | 14 | 15.46  | 15.30 | 15.31  |                        |             |
| 3               | 64QAM | 8  | 0  | 15.45  | 15.32 | 15.34  | 16.5                   | 0           |
| 3               | 64QAM | 8  | 4  | 15.48  | 15.36 | 15.35  |                        |             |
| 3               | 64QAM | 8  | 7  | 15.47  | 15.34 | 15.33  |                        |             |
| 3               | 64QAM | 15 | 0  | 15.51  | 15.37 | 15.36  |                        |             |
| Channel         |       |    |    | 26047  | 26340 | 26683  | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1850.7 | 1880  | 1914.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 15.89  | 15.71 | 15.54  | 16.5                   | 0           |
| 1.4             | QPSK  | 1  | 3  | 15.82  | 15.65 | 15.47  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 15.69  | 15.49 | 15.49  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 15.58  | 15.44 | 15.48  |                        |             |
| 1.4             | QPSK  | 3  | 1  | 15.52  | 15.37 | 15.40  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 15.50  | 15.34 | 15.34  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 15.63  | 15.49 | 15.40  | 16.5                   | 0           |
| 1.4             | 16QAM | 1  | 0  | 15.48  | 15.37 | 15.32  | 16.5                   | 0           |
| 1.4             | 16QAM | 1  | 3  | 15.54  | 15.38 | 15.37  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 15.44  | 15.39 | 15.31  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 15.48  | 15.36 | 15.37  |                        |             |
| 1.4             | 16QAM | 3  | 1  | 15.52  | 15.43 | 15.43  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 15.49  | 15.37 | 15.39  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 15.53  | 15.43 | 15.38  | 16.5                   | 0           |
| 1.4             | 64QAM | 1  | 0  | 15.46  | 15.35 | 15.30  | 16.5                   | 0           |
| 1.4             | 64QAM | 1  | 3  | 15.52  | 15.36 | 15.35  |                        |             |
| 1.4             | 64QAM | 1  | 5  | 15.42  | 15.37 | 15.29  |                        |             |
| 1.4             | 64QAM | 3  | 0  | 15.46  | 15.34 | 15.35  |                        |             |
| 1.4             | 64QAM | 3  | 1  | 15.50  | 15.41 | 15.41  |                        |             |
| 1.4             | 64QAM | 3  | 3  | 15.47  | 15.35 | 15.37  |                        |             |
| 1.4             | 64QAM | 6  | 0  | 15.51  | 15.41 | 15.36  | 16.5                   | 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         | 21.92                    | 21.99                       | 21.87                     | 23.5                   | 0           |
| 15              | QPSK       | 1       | 37        | 21.90                    | 21.86                       | 21.80                     |                        |             |
| 15              | QPSK       | 1       | 74        | 21.86                    | 21.77                       | 21.68                     |                        |             |
| 15              | QPSK       | 36      | 0         | 21.97                    | 21.98                       | 21.87                     | 23.5                   | 0           |
| 15              | QPSK       | 36      | 20        | 21.97                    | 21.92                       | 21.86                     |                        |             |
| 15              | QPSK       | 36      | 39        | 21.97                    | 21.87                       | 21.77                     |                        |             |
| 15              | QPSK       | 75      | 0         | 21.91                    | 21.92                       | 21.84                     | 22.5                   | 1           |
| 15              | 16QAM      | 1       | 0         | 21.79                    | 21.73                       | 21.69                     |                        |             |
| 15              | 16QAM      | 1       | 37        | 21.66                    | 21.74                       | 21.67                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 21.73                    | 21.60                       | 21.52                     | 22.5                   | 1           |
| 15              | 16QAM      | 36      | 0         | 21.41                    | 21.40                       | 21.26                     |                        |             |
| 15              | 16QAM      | 36      | 20        | 21.44                    | 21.45                       | 21.32                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 21.38                    | 21.39                       | 21.28                     | 22.5                   | 1           |
| 15              | 16QAM      | 75      | 0         | 21.01                    | 21.11                       | 21.09                     |                        |             |
| 15              | 64QAM      | 1       | 0         | 21.39                    | 21.38                       | 21.24                     |                        |             |
| 15              | 64QAM      | 1       | 37        | 21.38                    | 21.34                       | 21.28                     | 22.5                   | 1           |
| 15              | 64QAM      | 1       | 74        | 21.34                    | 21.25                       | 21.16                     |                        |             |
| 15              | 64QAM      | 36      | 0         | 21.47                    | 21.46                       | 21.34                     |                        |             |
| 15              | 64QAM      | 36      | 20        | 21.45                    | 21.40                       | 21.34                     | 22.5                   | 1           |
| 15              | 64QAM      | 36      | 39        | 21.45                    | 21.35                       | 21.25                     |                        |             |
| 15              | 64QAM      | 75      | 0         | 21.39                    | 21.37                       | 21.32                     |                        |             |
| Channel         |            |         |           | 26740                    | 26865                       | 26990                     |                        |             |
| Frequency (MHz) |            |         |           | 819                      | 831.5                       | 844                       |                        |             |
| 10              | QPSK       | 1       | 0         | 21.88                    | 21.83                       | 21.79                     | 23.5                   | 0           |
| 10              | QPSK       | 1       | 25        | 21.89                    | 21.86                       | 21.74                     |                        |             |
| 10              | QPSK       | 1       | 49        | 21.78                    | 21.77                       | 21.66                     |                        |             |
| 10              | QPSK       | 25      | 0         | 21.95                    | 21.93                       | 21.81                     | 23.5                   | 0           |
| 10              | QPSK       | 25      | 12        | 21.95                    | 21.91                       | 21.78                     |                        |             |
| 10              | QPSK       | 25      | 25        | 21.88                    | 21.86                       | 21.73                     |                        |             |
| 10              | QPSK       | 50      | 0         | 21.95                    | 21.91                       | 21.79                     | 22.5                   | 1           |
| 10              | 16QAM      | 1       | 0         | 21.64                    | 21.70                       | 21.65                     |                        |             |
| 10              | 16QAM      | 1       | 25        | 21.70                    | 21.69                       | 21.56                     |                        |             |
| 10              | 16QAM      | 1       | 49        | 21.65                    | 21.58                       | 21.53                     | 22.5                   | 1           |
| 10              | 16QAM      | 25      | 0         | 21.42                    | 21.40                       | 21.29                     |                        |             |
| 10              | 16QAM      | 25      | 12        | 21.44                    | 21.45                       | 21.32                     |                        |             |
| 10              | 16QAM      | 25      | 25        | 21.38                    | 21.39                       | 21.28                     | 22.5                   | 1           |
| 10              | 16QAM      | 50      | 0         | 21.01                    | 21.11                       | 21.19                     |                        |             |
| 10              | 64QAM      | 1       | 0         | 21.38                    | 21.34                       | 21.33                     |                        |             |
| 10              | 64QAM      | 1       | 25        | 21.36                    | 21.32                       | 21.26                     | 22.5                   | 1           |
| 10              | 64QAM      | 1       | 49        | 21.32                    | 21.23                       | 21.14                     |                        |             |
| 10              | 64QAM      | 25      | 0         | 21.45                    | 21.44                       | 21.32                     |                        |             |
| 10              | 64QAM      | 25      | 12        | 21.43                    | 21.38                       | 21.32                     | 22.5                   | 1           |
| 10              | 64QAM      | 25      | 25        | 21.43                    | 21.33                       | 21.23                     |                        |             |
| 10              | 64QAM      | 50      | 0         | 21.37                    | 21.35                       | 21.30                     |                        |             |

| Channel         |       |    |    | 26715 | 26865 | 27015 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|-------|-------|-------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 816.5 | 831.5 | 846.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 21.92 | 21.92 | 21.77 | 23.5                   | 0           |
| 5               | QPSK  | 1  | 12 | 21.83 | 21.83 | 21.73 |                        |             |
| 5               | QPSK  | 1  | 24 | 21.90 | 21.84 | 21.69 |                        |             |
| 5               | QPSK  | 12 | 0  | 21.91 | 21.92 | 21.76 | 23.5                   | 0           |
| 5               | QPSK  | 12 | 7  | 21.91 | 21.88 | 21.77 |                        |             |
| 5               | QPSK  | 12 | 13 | 21.95 | 21.87 | 21.71 |                        |             |
| 5               | QPSK  | 25 | 0  | 21.97 | 21.91 | 21.73 |                        |             |
| 5               | 16QAM | 1  | 0  | 21.74 | 21.74 | 21.65 | 22.5                   | 1           |
| 5               | 16QAM | 1  | 12 | 21.67 | 21.70 | 21.61 |                        |             |
| 5               | 16QAM | 1  | 24 | 21.77 | 21.70 | 21.54 |                        |             |
| 5               | 16QAM | 12 | 0  | 21.46 | 21.45 | 21.31 | 22.5                   | 1           |
| 5               | 16QAM | 12 | 7  | 21.49 | 21.50 | 21.37 |                        |             |
| 5               | 16QAM | 12 | 13 | 21.43 | 21.44 | 21.33 |                        |             |
| 5               | 16QAM | 25 | 0  | 21.06 | 21.01 | 21.04 |                        |             |
| 5               | 64QAM | 1  | 0  | 21.41 | 21.37 | 21.36 | 22.5                   | 1           |
| 5               | 64QAM | 1  | 12 | 21.39 | 21.35 | 21.29 |                        |             |
| 5               | 64QAM | 1  | 24 | 21.35 | 21.26 | 21.17 |                        |             |
| 5               | 64QAM | 12 | 0  | 21.48 | 21.47 | 21.35 | 22.5                   | 1           |
| 5               | 64QAM | 12 | 7  | 21.46 | 21.41 | 21.35 |                        |             |
| 5               | 64QAM | 12 | 13 | 21.46 | 21.36 | 21.26 |                        |             |
| 5               | 64QAM | 25 | 0  | 21.40 | 21.38 | 21.33 |                        |             |
| Channel         |       |    |    | 26705 | 26865 | 27025 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 815.5 | 831.5 | 847.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 21.90 | 21.85 | 21.74 | 23.5                   | 0           |
| 3               | QPSK  | 1  | 8  | 21.86 | 21.83 | 21.68 |                        |             |
| 3               | QPSK  | 1  | 14 | 21.83 | 21.86 | 21.69 |                        |             |
| 3               | QPSK  | 8  | 0  | 21.92 | 21.90 | 21.70 | 23.5                   | 0           |
| 3               | QPSK  | 8  | 4  | 21.90 | 21.91 | 21.75 |                        |             |
| 3               | QPSK  | 8  | 7  | 21.86 | 21.88 | 21.73 |                        |             |
| 3               | QPSK  | 15 | 0  | 21.88 | 21.87 | 21.72 |                        |             |
| 3               | 16QAM | 1  | 0  | 21.74 | 21.76 | 21.60 | 22.5                   | 1           |
| 3               | 16QAM | 1  | 8  | 21.65 | 21.72 | 21.58 |                        |             |
| 3               | 16QAM | 1  | 14 | 21.61 | 21.67 | 21.52 |                        |             |
| 3               | 16QAM | 8  | 0  | 21.44 | 21.41 | 21.29 | 22.5                   | 1           |
| 3               | 16QAM | 8  | 4  | 21.49 | 21.50 | 21.37 |                        |             |
| 3               | 16QAM | 8  | 7  | 21.43 | 21.44 | 21.33 |                        |             |
| 3               | 16QAM | 15 | 0  | 21.06 | 21.01 | 21.13 |                        |             |
| 3               | 64QAM | 1  | 0  | 21.37 | 21.33 | 21.32 | 22.5                   | 1           |
| 3               | 64QAM | 1  | 8  | 21.35 | 21.31 | 21.25 |                        |             |
| 3               | 64QAM | 1  | 14 | 21.31 | 21.22 | 21.13 |                        |             |
| 3               | 64QAM | 8  | 0  | 21.44 | 21.43 | 21.31 | 22.5                   | 1           |
| 3               | 64QAM | 8  | 4  | 21.42 | 21.37 | 21.31 |                        |             |
| 3               | 64QAM | 8  | 7  | 21.42 | 21.32 | 21.22 |                        |             |
| 3               | 64QAM | 15 | 0  | 21.36 | 21.34 | 21.29 |                        |             |



# Exhibit 11

Report No. : FA811821

| 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 | 21.78 | 21.75 | 21.63 | 23.5                   | 0           |
| 1.4             | QPSK  | 1 | 3 | 21.87 | 21.86 | 21.66 |                        |             |
| 1.4             | QPSK  | 1 | 5 | 21.77 | 21.75 | 21.59 |                        |             |
| 1.4             | QPSK  | 3 | 0 | 21.86 | 21.83 | 21.64 |                        |             |
| 1.4             | QPSK  | 3 | 1 | 21.88 | 21.86 | 21.67 |                        |             |
| 1.4             | QPSK  | 3 | 3 | 21.84 | 21.83 | 21.66 |                        |             |
| 1.4             | QPSK  | 6 | 0 | 21.80 | 21.82 | 21.66 | 23.5                   | 0           |
| 1.4             | 16QAM | 1 | 0 | 21.64 | 21.67 | 21.49 | 22.5                   | 1           |
| 1.4             | 16QAM | 1 | 3 | 21.71 | 21.69 | 21.51 |                        |             |
| 1.4             | 16QAM | 1 | 5 | 21.59 | 21.61 | 21.51 |                        |             |
| 1.4             | 16QAM | 3 | 0 | 21.43 | 21.42 | 21.28 |                        |             |
| 1.4             | 16QAM | 3 | 1 | 21.46 | 21.47 | 21.34 |                        |             |
| 1.4             | 16QAM | 3 | 3 | 21.40 | 21.41 | 21.30 |                        |             |
| 1.4             | 16QAM | 6 | 0 | 21.03 | 21.08 | 21.01 | 22.5                   | 1           |
| 1.4             | 64QAM | 1 | 0 | 21.36 | 21.32 | 21.31 | 22.5                   | 1           |
| 1.4             | 64QAM | 1 | 3 | 21.34 | 21.30 | 21.24 |                        |             |
| 1.4             | 64QAM | 1 | 5 | 21.30 | 21.21 | 21.12 |                        |             |
| 1.4             | 64QAM | 3 | 0 | 21.43 | 21.42 | 21.30 |                        |             |
| 1.4             | 64QAM | 3 | 1 | 21.41 | 21.36 | 21.30 |                        |             |
| 1.4             | 64QAM | 3 | 3 | 21.41 | 21.31 | 21.21 |                        |             |
| 1.4             | 64QAM | 6 | 0 | 21.35 | 21.33 | 21.28 | 22.5                   | 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                    |                             |                           | 21                     | 0           |
| Frequency (MHz) |            |         |           | 2310                     |                             |                           |                        |             |
| 10              | QPSK       | 1       | 0         | 20.33                    |                             |                           | 21                     | 0           |
| 10              | QPSK       | 1       | 25        | 20.15                    |                             |                           |                        |             |
| 10              | QPSK       | 1       | 49        | 20.14                    |                             |                           |                        |             |
| 10              | QPSK       | 25      | 0         | 20.11                    |                             |                           | 21                     | 0           |
| 10              | QPSK       | 25      | 12        | 20.00                    |                             |                           |                        |             |
| 10              | QPSK       | 25      | 25        | 20.00                    |                             |                           |                        |             |
| 10              | QPSK       | 50      | 0         | 20.03                    |                             |                           | 21                     | 0           |
| 10              | 16QAM      | 1       | 0         | 20.26                    |                             |                           |                        |             |
| 10              | 16QAM      | 1       | 25        | 20.23                    |                             |                           |                        |             |
| 10              | 16QAM      | 1       | 49        | 20.21                    |                             |                           | 21                     | 0           |
| 10              | 16QAM      | 25      | 0         | 20.09                    |                             |                           |                        |             |
| 10              | 16QAM      | 25      | 12        | 20.13                    |                             |                           |                        |             |
| 10              | 16QAM      | 25      | 25        | 20.15                    |                             |                           | 21                     | 0           |
| 10              | 16QAM      | 50      | 0         | 20.14                    |                             |                           |                        |             |
| 10              | 64QAM      | 1       | 0         | 19.89                    |                             |                           |                        |             |
| 10              | 64QAM      | 1       | 25        | 19.80                    |                             |                           | 21                     | 0           |
| 10              | 64QAM      | 1       | 49        | 19.80                    |                             |                           |                        |             |
| 10              | 64QAM      | 25      | 0         | 19.73                    |                             |                           |                        |             |
| 10              | 64QAM      | 25      | 12        | 19.75                    |                             |                           | 21                     | 0           |
| 10              | 64QAM      | 25      | 25        | 19.81                    |                             |                           |                        |             |
| 10              | 64QAM      | 50      | 0         | 19.79                    |                             |                           |                        |             |
| Channel         |            |         |           | 27685                    | 27710                       | 27735                     | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |            |         |           | 2307.5                   | 2310                        | 2312.5                    | 21                     | 0           |
| 5               | QPSK       | 1       | 0         | 20.01                    | 19.97                       | 19.93                     |                        |             |
| 5               | QPSK       | 1       | 12        | 19.93                    | 19.89                       | 19.94                     |                        |             |
| 5               | QPSK       | 1       | 24        | 19.99                    | 19.90                       | 19.96                     | 21                     | 0           |
| 5               | QPSK       | 12      | 0         | 19.92                    | 19.94                       | 19.95                     |                        |             |
| 5               | QPSK       | 12      | 7         | 19.93                    | 19.95                       | 20.03                     |                        |             |
| 5               | QPSK       | 12      | 13        | 20.02                    | 20.02                       | 20.03                     | 21                     | 0           |
| 5               | QPSK       | 25      | 0         | 19.93                    | 20.00                       | 19.98                     |                        |             |
| 5               | 16QAM      | 1       | 0         | 20.30                    | 20.26                       | 20.25                     |                        |             |
| 5               | 16QAM      | 1       | 12        | 20.19                    | 20.15                       | 20.17                     | 21                     | 0           |
| 5               | 16QAM      | 1       | 24        | 20.19                    | 20.25                       | 20.22                     |                        |             |
| 5               | 16QAM      | 12      | 0         | 20.00                    | 20.09                       | 20.09                     |                        |             |
| 5               | 16QAM      | 12      | 7         | 20.04                    | 20.09                       | 20.12                     | 21                     | 0           |
| 5               | 16QAM      | 12      | 13        | 20.14                    | 20.06                       | 20.06                     |                        |             |
| 5               | 16QAM      | 25      | 0         | 20.06                    | 20.09                       | 20.08                     |                        |             |
| 5               | 64QAM      | 1       | 0         | 19.81                    | 19.81                       | 19.89                     | 21                     | 0           |
| 5               | 64QAM      | 1       | 12        | 19.75                    | 19.70                       | 19.77                     |                        |             |
| 5               | 64QAM      | 1       | 24        | 19.80                    | 19.73                       | 19.76                     |                        |             |
| 5               | 64QAM      | 12      | 0         | 19.63                    | 19.63                       | 19.73                     | 21                     | 0           |
| 5               | 64QAM      | 12      | 7         | 19.66                    | 19.67                       | 19.67                     |                        |             |
| 5               | 64QAM      | 12      | 13        | 19.80                    | 19.76                       | 19.72                     |                        |             |
| 5               | 64QAM      | 25      | 0         | 19.79                    | 19.71                       | 19.70                     | 21                     | 0           |

**<LTE Band 66>**

| 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         |            |         |           | 132072                   | 132322                      | 132572                    |                        |             |
| Frequency (MHz) |            |         |           | 1720                     | 1745                        | 1770                      |                        |             |
| 20              | QPSK       | 1       | 0         | 15.58                    | 15.69                       | 15.70                     | 16.5                   | 0           |
| 20              | QPSK       | 1       | 49        | 15.52                    | 15.55                       | 15.65                     |                        |             |
| 20              | QPSK       | 1       | 99        | 15.54                    | 15.46                       | 15.55                     |                        |             |
| 20              | QPSK       | 50      | 0         | 15.38                    | 15.39                       | 15.40                     | 16.5                   | 0           |
| 20              | QPSK       | 50      | 24        | 15.32                    | 15.32                       | 15.37                     |                        |             |
| 20              | QPSK       | 50      | 50        | 15.33                    | 15.29                       | 15.35                     |                        |             |
| 20              | QPSK       | 100     | 0         | 15.36                    | 15.33                       | 15.37                     | 16.5                   | 0           |
| 20              | 16QAM      | 1       | 0         | 15.23                    | 15.23                       | 15.31                     |                        |             |
| 20              | 16QAM      | 1       | 49        | 15.08                    | 15.14                       | 15.17                     |                        |             |
| 20              | 16QAM      | 1       | 99        | 15.16                    | 15.12                       | 15.21                     | 16.5                   | 0           |
| 20              | 16QAM      | 50      | 0         | 15.18                    | 15.25                       | 15.25                     |                        |             |
| 20              | 16QAM      | 50      | 24        | 15.21                    | 15.21                       | 15.22                     |                        |             |
| 20              | 16QAM      | 50      | 50        | 15.18                    | 15.14                       | 15.20                     | 16.5                   | 0           |
| 20              | 16QAM      | 100     | 0         | 15.23                    | 15.20                       | 15.24                     |                        |             |
| 20              | 64QAM      | 1       | 0         | 15.48                    | 15.56                       | 15.61                     |                        |             |
| 20              | 64QAM      | 1       | 49        | 15.44                    | 15.41                       | 15.51                     | 16.5                   | 0           |
| 20              | 64QAM      | 1       | 99        | 15.46                    | 15.46                       | 15.52                     |                        |             |
| 20              | 64QAM      | 50      | 0         | 15.36                    | 15.43                       | 15.42                     |                        |             |
| 20              | 64QAM      | 50      | 24        | 15.40                    | 15.35                       | 15.36                     | 16.5                   | 0           |
| 20              | 64QAM      | 50      | 50        | 15.35                    | 15.30                       | 15.36                     |                        |             |
| 20              | 64QAM      | 100     | 0         | 15.40                    | 15.36                       | 15.36                     |                        |             |
| Channel         |            |         |           | 132047                   | 132322                      | 132597                    | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |            |         |           | 1717.5                   | 1745                        | 1772.5                    |                        |             |
| 15              | QPSK       | 1       | 0         | 15.69                    | 15.67                       | 15.68                     | 16.5                   | 0           |
| 15              | QPSK       | 1       | 37        | 15.50                    | 15.53                       | 15.61                     |                        |             |
| 15              | QPSK       | 1       | 74        | 15.60                    | 15.56                       | 15.60                     |                        |             |
| 15              | QPSK       | 36      | 0         | 15.31                    | 15.38                       | 15.40                     | 16.5                   | 0           |
| 15              | QPSK       | 36      | 20        | 15.31                    | 15.35                       | 15.40                     |                        |             |
| 15              | QPSK       | 36      | 39        | 15.36                    | 15.31                       | 15.32                     |                        |             |
| 15              | QPSK       | 75      | 0         | 15.39                    | 15.33                       | 15.40                     | 16.5                   | 0           |
| 15              | 16QAM      | 1       | 0         | 15.21                    | 15.28                       | 15.29                     |                        |             |
| 15              | 16QAM      | 1       | 37        | 15.09                    | 15.12                       | 15.13                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 15.21                    | 15.14                       | 15.22                     | 16.5                   | 0           |
| 15              | 16QAM      | 36      | 0         | 15.20                    | 15.24                       | 15.24                     |                        |             |
| 15              | 16QAM      | 36      | 20        | 15.15                    | 15.20                       | 15.24                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 15.21                    | 15.18                       | 15.24                     | 16.5                   | 0           |
| 15              | 16QAM      | 75      | 0         | 15.27                    | 15.22                       | 15.24                     |                        |             |
| 15              | 64QAM      | 1       | 0         | 15.52                    | 15.66                       | 15.65                     |                        |             |
| 15              | 64QAM      | 1       | 37        | 15.43                    | 15.46                       | 15.45                     | 16.5                   | 0           |
| 15              | 64QAM      | 1       | 74        | 15.56                    | 15.52                       | 15.52                     |                        |             |
| 15              | 64QAM      | 36      | 0         | 15.37                    | 15.43                       | 15.44                     |                        |             |
| 15              | 64QAM      | 36      | 20        | 15.33                    | 15.39                       | 15.42                     | 16.5                   | 0           |
| 15              | 64QAM      | 36      | 39        | 15.39                    | 15.33                       | 15.40                     |                        |             |
| 15              | 64QAM      | 75      | 0         | 15.42                    | 15.36                       | 15.39                     |                        |             |

| Channel         |       |    |    | 132022 | 132322 | 132622 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|--------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1715   | 1745   | 1775   |                        |             |
| 10              | QPSK  | 1  | 0  | 15.60  | 15.64  | 15.62  | 16.5                   | 0           |
| 10              | QPSK  | 1  | 25 | 15.51  | 15.50  | 15.61  |                        |             |
| 10              | QPSK  | 1  | 49 | 15.52  | 15.48  | 15.54  |                        |             |
| 10              | QPSK  | 25 | 0  | 15.29  | 15.32  | 15.34  | 16.5                   | 0           |
| 10              | QPSK  | 25 | 12 | 15.27  | 15.31  | 15.36  |                        |             |
| 10              | QPSK  | 25 | 25 | 15.24  | 15.26  | 15.35  |                        |             |
| 10              | QPSK  | 50 | 0  | 15.27  | 15.30  | 15.35  |                        |             |
| 10              | 16QAM | 1  | 0  | 15.16  | 15.22  | 15.22  | 16.5                   | 0           |
| 10              | 16QAM | 1  | 25 | 15.11  | 15.11  | 15.18  |                        |             |
| 10              | 16QAM | 1  | 49 | 15.06  | 15.08  | 15.15  |                        |             |
| 10              | 16QAM | 25 | 0  | 15.14  | 15.19  | 15.20  | 16.5                   | 0           |
| 10              | 16QAM | 25 | 12 | 15.11  | 15.18  | 15.20  |                        |             |
| 10              | 16QAM | 25 | 25 | 15.11  | 15.15  | 15.20  |                        |             |
| 10              | 16QAM | 50 | 0  | 15.12  | 15.19  | 15.20  |                        |             |
| 10              | 64QAM | 1  | 0  | 15.51  | 15.55  | 15.52  | 16.5                   | 0           |
| 10              | 64QAM | 1  | 25 | 15.42  | 15.44  | 15.49  |                        |             |
| 10              | 64QAM | 1  | 49 | 15.41  | 15.46  | 15.51  |                        |             |
| 10              | 64QAM | 25 | 0  | 15.30  | 15.36  | 15.39  | 16.5                   | 0           |
| 10              | 64QAM | 25 | 12 | 15.32  | 15.32  | 15.36  |                        |             |
| 10              | 64QAM | 25 | 25 | 15.28  | 15.30  | 15.35  |                        |             |
| 10              | 64QAM | 50 | 0  | 15.29  | 15.32  | 15.35  |                        |             |
| Channel         |       |    |    | 131997 | 132322 | 132647 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1712.5 | 1745   | 1777.5 |                        |             |
| 5               | QPSK  | 1  | 0  | 15.59  | 15.55  | 15.68  | 16.5                   | 0           |
| 5               | QPSK  | 1  | 12 | 15.52  | 15.58  | 15.55  |                        |             |
| 5               | QPSK  | 1  | 24 | 15.49  | 15.58  | 15.64  |                        |             |
| 5               | QPSK  | 12 | 0  | 15.31  | 15.31  | 15.36  | 16.5                   | 0           |
| 5               | QPSK  | 12 | 7  | 15.28  | 15.32  | 15.33  |                        |             |
| 5               | QPSK  | 12 | 13 | 15.30  | 15.30  | 15.36  |                        |             |
| 5               | QPSK  | 25 | 0  | 15.25  | 15.28  | 15.33  |                        |             |
| 5               | 16QAM | 1  | 0  | 15.14  | 15.15  | 15.16  | 16.5                   | 0           |
| 5               | 16QAM | 1  | 12 | 15.12  | 15.10  | 15.14  |                        |             |
| 5               | 16QAM | 1  | 24 | 15.12  | 15.12  | 15.18  |                        |             |
| 5               | 16QAM | 12 | 0  | 15.16  | 15.17  | 15.23  | 16.5                   | 0           |
| 5               | 16QAM | 12 | 7  | 15.16  | 15.20  | 15.18  |                        |             |
| 5               | 16QAM | 12 | 13 | 15.13  | 15.13  | 15.20  |                        |             |
| 5               | 16QAM | 25 | 0  | 15.12  | 15.12  | 15.19  |                        |             |
| 5               | 64QAM | 1  | 0  | 15.47  | 15.55  | 15.56  | 16.5                   | 0           |
| 5               | 64QAM | 1  | 12 | 15.46  | 15.45  | 15.48  |                        |             |
| 5               | 64QAM | 1  | 24 | 15.50  | 15.46  | 15.53  |                        |             |
| 5               | 64QAM | 12 | 0  | 15.36  | 15.38  | 15.38  | 16.5                   | 0           |
| 5               | 64QAM | 12 | 7  | 15.35  | 15.38  | 15.42  |                        |             |
| 5               | 64QAM | 12 | 13 | 15.36  | 15.35  | 15.38  |                        |             |
| 5               | 64QAM | 25 | 0  | 15.27  | 15.30  | 15.31  |                        |             |

| Channel         |       |    |    | 131987 | 132322 | 132657 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
|-----------------|-------|----|----|--------|--------|--------|------------------------|-------------|
| Frequency (MHz) |       |    |    | 1711.5 | 1745   | 1778.5 |                        |             |
| 3               | QPSK  | 1  | 0  | 15.53  | 15.51  | 15.50  | 16.5                   | 0           |
| 3               | QPSK  | 1  | 8  | 15.46  | 15.54  | 15.57  |                        |             |
| 3               | QPSK  | 1  | 14 | 15.49  | 15.48  | 15.55  |                        |             |
| 3               | QPSK  | 8  | 0  | 15.28  | 15.34  | 15.38  | 16.5                   | 0           |
| 3               | QPSK  | 8  | 4  | 15.33  | 15.34  | 15.36  |                        |             |
| 3               | QPSK  | 8  | 7  | 15.31  | 15.31  | 15.35  |                        |             |
| 3               | QPSK  | 15 | 0  | 15.23  | 15.27  | 15.28  |                        |             |
| 3               | 16QAM | 1  | 0  | 15.09  | 15.10  | 15.17  | 16.5                   | 0           |
| 3               | 16QAM | 1  | 8  | 15.08  | 15.10  | 15.12  |                        |             |
| 3               | 16QAM | 1  | 14 | 15.06  | 15.09  | 15.10  |                        |             |
| 3               | 16QAM | 8  | 0  | 15.14  | 15.11  | 15.17  | 16.5                   | 0           |
| 3               | 16QAM | 8  | 4  | 15.13  | 15.17  | 15.17  |                        |             |
| 3               | 16QAM | 8  | 7  | 15.13  | 15.14  | 15.17  |                        |             |
| 3               | 16QAM | 15 | 0  | 15.06  | 15.12  | 15.15  |                        |             |
| 3               | 64QAM | 1  | 0  | 15.49  | 15.44  | 15.47  | 16.5                   | 0           |
| 3               | 64QAM | 1  | 8  | 15.44  | 15.45  | 15.48  |                        |             |
| 3               | 64QAM | 1  | 14 | 15.43  | 15.46  | 15.44  |                        |             |
| 3               | 64QAM | 8  | 0  | 15.31  | 15.33  | 15.38  | 16.5                   | 0           |
| 3               | 64QAM | 8  | 4  | 15.34  | 15.36  | 15.39  |                        |             |
| 3               | 64QAM | 8  | 7  | 15.28  | 15.33  | 15.35  |                        |             |
| 3               | 64QAM | 15 | 0  | 15.26  | 15.27  | 15.29  |                        |             |
| Channel         |       |    |    | 131979 | 132322 | 132665 | Tune-up limit<br>(dBm) | MPR<br>(dB) |
| Frequency (MHz) |       |    |    | 1710.7 | 1745   | 1779.3 |                        |             |
| 1.4             | QPSK  | 1  | 0  | 15.44  | 15.41  | 15.48  | 16.5                   | 0           |
| 1.4             | QPSK  | 1  | 3  | 15.54  | 15.50  | 15.61  |                        |             |
| 1.4             | QPSK  | 1  | 5  | 15.36  | 15.39  | 15.46  |                        |             |
| 1.4             | QPSK  | 3  | 0  | 15.19  | 15.21  | 15.21  |                        |             |
| 1.4             | QPSK  | 3  | 1  | 15.22  | 15.23  | 15.31  |                        |             |
| 1.4             | QPSK  | 3  | 3  | 15.20  | 15.20  | 15.22  |                        |             |
| 1.4             | QPSK  | 6  | 0  | 15.24  | 15.29  | 15.32  | 16.5                   | 0           |
| 1.4             | 16QAM | 1  | 0  | 15.02  | 15.02  | 15.02  | 16.5                   | 0           |
| 1.4             | 16QAM | 1  | 3  | 15.10  | 15.11  | 15.14  |                        |             |
| 1.4             | 16QAM | 1  | 5  | 15.04  | 15.02  | 15.04  |                        |             |
| 1.4             | 16QAM | 3  | 0  | 15.05  | 15.08  | 15.12  |                        |             |
| 1.4             | 16QAM | 3  | 1  | 15.06  | 15.09  | 15.12  |                        |             |
| 1.4             | 16QAM | 3  | 3  | 15.06  | 15.10  | 15.11  |                        |             |
| 1.4             | 16QAM | 6  | 0  | 15.04  | 15.06  | 15.07  | 16.5                   | 0           |
| 1.4             | 64QAM | 1  | 0  | 15.33  | 15.36  | 15.42  | 16.5                   | 0           |
| 1.4             | 64QAM | 1  | 3  | 15.39  | 15.46  | 15.42  |                        |             |
| 1.4             | 64QAM | 1  | 5  | 15.33  | 15.39  | 15.38  |                        |             |
| 1.4             | 64QAM | 3  | 0  | 15.32  | 15.37  | 15.36  |                        |             |
| 1.4             | 64QAM | 3  | 1  | 15.40  | 15.39  | 15.41  |                        |             |
| 1.4             | 64QAM | 3  | 3  | 15.35  | 15.31  | 15.35  |                        |             |
| 1.4             | 64QAM | 6  | 0  | 15.20  | 15.22  | 15.23  | 16.5                   | 0           |

**<Product Specific 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         | 20.87                    | 20.79                       | 20.48                     | 22.5                   | 0           |
| 20              | QPSK       | 1       | 49        | 20.45                    | 20.38                       | 20.38                     |                        |             |
| 20              | QPSK       | 1       | 99        | 20.58                    | 20.47                       | 20.35                     |                        |             |
| 20              | QPSK       | 50      | 0         | 20.61                    | 20.51                       | 20.47                     | 22.5                   | 0           |
| 20              | QPSK       | 50      | 24        | 20.55                    | 20.46                       | 20.44                     |                        |             |
| 20              | QPSK       | 50      | 50        | 20.48                    | 20.40                       | 20.40                     |                        |             |
| 20              | QPSK       | 100     | 0         | 20.54                    | 20.49                       | 20.38                     | 22.5                   | 0           |
| 20              | 16QAM      | 1       | 0         | 20.77                    | 20.73                       | 20.85                     |                        |             |
| 20              | 16QAM      | 1       | 49        | 20.76                    | 20.74                       | 20.74                     |                        |             |
| 20              | 16QAM      | 1       | 99        | 20.69                    | 20.84                       | 20.72                     | 22.5                   | 0           |
| 20              | 16QAM      | 50      | 0         | 20.64                    | 20.57                       | 20.47                     |                        |             |
| 20              | 16QAM      | 50      | 24        | 20.55                    | 20.49                       | 20.48                     |                        |             |
| 20              | 16QAM      | 50      | 50        | 20.55                    | 20.43                       | 20.45                     | 22.5                   | 0           |
| 20              | 16QAM      | 100     | 0         | 20.57                    | 20.48                       | 20.38                     |                        |             |
| 20              | 64QAM      | 1       | 0         | 20.76                    | 20.68                       | 20.77                     |                        |             |
| 20              | 64QAM      | 1       | 49        | 20.67                    | 20.65                       | 20.68                     | 22.5                   | 0           |
| 20              | 64QAM      | 1       | 99        | 20.83                    | 20.75                       | 20.60                     |                        |             |
| 20              | 64QAM      | 50      | 0         | 20.64                    | 20.56                       | 20.45                     |                        |             |
| 20              | 64QAM      | 50      | 24        | 20.54                    | 20.48                       | 20.48                     | 22.5                   | 0           |
| 20              | 64QAM      | 50      | 50        | 20.53                    | 20.42                       | 20.43                     |                        |             |
| 20              | 64QAM      | 100     | 0         | 20.57                    | 20.50                       | 20.39                     |                        |             |
| Channel         |            |         |           | 18675                    | 18900                       | 19125                     |                        |             |
| Frequency (MHz) |            |         |           | 1857.5                   | 1880                        | 1902.5                    |                        |             |
| 15              | QPSK       | 1       | 0         | 20.76                    | 20.58                       | 20.57                     | 22.5                   | 0           |
| 15              | QPSK       | 1       | 37        | 20.56                    | 20.41                       | 20.38                     |                        |             |
| 15              | QPSK       | 1       | 74        | 20.43                    | 20.39                       | 20.39                     |                        |             |
| 15              | QPSK       | 36      | 0         | 20.71                    | 20.53                       | 20.52                     | 22.5                   | 0           |
| 15              | QPSK       | 36      | 20        | 20.58                    | 20.52                       | 20.45                     |                        |             |
| 15              | QPSK       | 36      | 39        | 20.51                    | 20.43                       | 20.44                     |                        |             |
| 15              | QPSK       | 75      | 0         | 20.53                    | 20.48                       | 20.45                     | 22.5                   | 0           |
| 15              | 16QAM      | 1       | 0         | 20.74                    | 20.69                       | 20.71                     |                        |             |
| 15              | 16QAM      | 1       | 37        | 20.68                    | 20.74                       | 20.72                     |                        |             |
| 15              | 16QAM      | 1       | 74        | 20.68                    | 20.66                       | 20.73                     | 22.5                   | 0           |
| 15              | 16QAM      | 36      | 0         | 20.72                    | 20.55                       | 20.53                     |                        |             |
| 15              | 16QAM      | 36      | 20        | 20.58                    | 20.52                       | 20.47                     |                        |             |
| 15              | 16QAM      | 36      | 39        | 20.52                    | 20.46                       | 20.43                     | 22.5                   | 0           |
| 15              | 16QAM      | 75      | 0         | 20.57                    | 20.50                       | 20.49                     |                        |             |
| 15              | 64QAM      | 1       | 0         | 20.62                    | 20.74                       | 20.73                     |                        |             |
| 15              | 64QAM      | 1       | 37        | 20.75                    | 20.59                       | 20.61                     | 22.5                   | 0           |
| 15              | 64QAM      | 1       | 74        | 20.66                    | 20.57                       | 20.53                     |                        |             |
| 15              | 64QAM      | 36      | 0         | 19.74                    | 19.57                       | 19.56                     |                        |             |
| 15              | 64QAM      | 36      | 20        | 19.61                    | 19.52                       | 19.52                     | 22.5                   | 0           |
| 15              | 64QAM      | 36      | 39        | 19.57                    | 19.48                       | 19.46                     |                        |             |
| 15              | 64QAM      | 75      | 0         | 19.56                    | 19.50                       | 19.50                     |                        |             |