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# TEST REPORT

FCC SAR Test for certification of A3LSMR825

APPLICANT

SAMSUNG Electronics Co., Ltd.

REPORT NO.

HCT-SR-1907-FI005-R1

DATE OF ISSUE

Aug. 12, 2019

HCT Co., Ltd.

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|           |                                                                                                           |
|-----------|-----------------------------------------------------------------------------------------------------------|
| Applicant | SAMSUNG Electronics Co., Ltd<br>129, Samsung-ro, Yeongtong-gu, Suwon-Si, Gyeonggi-do, 16677 Rep. of Korea |
|-----------|-----------------------------------------------------------------------------------------------------------|

|                    |             |
|--------------------|-------------|
| Equipment Type     | Smart watch |
| Model Name         | SM-R825U    |
| Variant Model Name | SM-R825F    |

|        |           |
|--------|-----------|
| FCC ID | A3LSMR825 |
|--------|-----------|

|              |                               |
|--------------|-------------------------------|
| Date of Test | Jul. 11, 2019 ~ Jul. 25, 2019 |
|--------------|-------------------------------|

|                  |             |
|------------------|-------------|
| FCC Rule Part(s) | CFR 52.1093 |
|------------------|-------------|

This device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in FCC KDB procedures and had been tested in accordance with the measurement procedures specified in FCC KDB procedures.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.

Tested by  
Min Young Kim

Technical Manager  
Yun Jeang Heo

## REVISION HISTORY

The revision history for this test report is shown in table.

| Revision No. | Date of Issue | Description          |
|--------------|---------------|----------------------|
| 0            | Jul. 29, 2019 | Initial Release      |
| 1            | Aug. 12, 2019 | Revised page 70, 89. |

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## 1. Test Regulations

The tests were performed according to the following regulations:

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Standard</b> | IEEE Standard 1528-2013 & KDB procedures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Test Method</b>   | <ul style="list-style-type: none"><li>- FCC KDB Publication 941225 D01 3G SAR Procedures v03r01</li><li>- FCC KDB Publication 941225 D05 SAR for LTE Devices v02r05</li><li>- FCC KDB Publication 941225 D05A LTE Rel.10 KDB Inquiry sheet v01r02</li><li>- FCC KDB Publication 248227 D01 802.11 Wi-Fi SAR v02r02</li><li>- FCC KDB Publication 447498 D01 General SAR Guidance v06</li><li>- FCC KDB Publication 690783 D01 SAR Listings on Grants v01r03</li><li>- FCC KDB Publication 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04</li><li>- FCC KDB Publication 865664 D02 SAR Reporting v01r02</li><li>- April 2015 TCB Workshop Notes (Simultaneous transmission summation clarified)</li></ul> |

## 2. Test Location

### 2.1 Test Laboratory

|              |                                                                                    |
|--------------|------------------------------------------------------------------------------------|
| Company Name | HCT Co., Ltd.                                                                      |
| Address      | 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si,<br>Gyeonggi-do, 17383 KOREA |
| Telephone    | 031-645-6300                                                                       |
| Fax.         | 031-645-6401                                                                       |

## 3. Information of the EUT

### 3.1 General Information of the EUT

|                    |                               |
|--------------------|-------------------------------|
| Model Name         | SM-R825U                      |
| Variant Model Name | SM-R825F                      |
| Equipment Type     | Smart watch                   |
| FCC ID             | A3LSMR825                     |
| Applicant          | SAMSUNG Electronics Co., Ltd. |

### 3.2 Attestation of test result of device under test

| The Highest Reported SAR (W/Kg)           |                               |                 |                         |                      |
|-------------------------------------------|-------------------------------|-----------------|-------------------------|----------------------|
| Band                                      | Tx. Frequency                 | Equipment Class | Reported SAR (W/kg)     |                      |
|                                           |                               |                 | Next-to-Mouth<br>1g SAR | Extremity<br>10g SAR |
| UMTS 850                                  | 826.4 MHz ~ 846.6 MHz         | PCB             | <0.10                   | 0.27                 |
| UMTS 1700                                 | 1 712.4 MHz ~ 1 752.6 MHz     | PCB             | 0.44                    | 2.19                 |
| UMTS 1900                                 | 1 852.4 MHz ~ 1 907.6 MHz     | PCB             | 0.50                    | 1.76                 |
| LTE Band 2 (PCS)                          | 1 850.7 MHz ~ 1 909.3 MHz     | PCB             | 0.52                    | 1.66                 |
| LTE Band 4 (AWS)                          | 1 710.7 MHz ~ 1 754.3 MHz     | PCB             | 0.56                    | 1.80                 |
| LTE Band 12                               | 699.7 MHz ~ 715.3 MHz         | PCB             | <0.10                   | 0.22                 |
| LTE Band 13                               | 779.5 MHz ~ 784.5 MHz         | PCB             | <0.10                   | 0.24                 |
| LTE Band 25 (PCS)                         | 1 850.7 MHz ~ 1 914.3 MHz     | PCB             | 0.57                    | 1.17                 |
| LTE Band 26 (Cell)                        | 814.7 MHz ~ 848.3 MHz         | PCB             | 0.64                    | 0.30                 |
| LTE Band 66 (AWS)                         | 1 710.7 MHz ~ 1 779.3 MHz     | PCB             | 0.40                    | 1.32                 |
| 802.11b                                   | 2 412 MHz ~ 2 472 MHz         | DTS             | 0.14                    | 0.24                 |
| Bluetooth                                 | 2 402 MHz ~ 2 480 MHz         | DSS             | 0.14                    | 0.21                 |
| Simultaneous SAR per KDB 690783 D01v01r03 |                               |                 | 0.79                    | 2.43                 |
| Date(s) of Tests:                         | Jul. 11, 2019 ~ Jul. 25, 2019 |                 |                         |                      |

## 4. Device Under Test Description

### 4.1 DUT specification

| Device Wireless specification overview |                |                         |
|----------------------------------------|----------------|-------------------------|
| Band & Mode                            | Operating Mode | Tx Frequency            |
| UMTS 850                               | Voice / Data   | 826.4 MHz ~ 846.6 MHz   |
| UMTS 1700                              | Voice / Data   | 1712.4 MHz ~ 1752.6 MHz |
| UMTS 1900                              | Voice / Data   | 1852.4 MHz ~ 1907.6 MHz |
| LTE Band 2 (PCS)                       | Voice / Data   | 1850.7 MHz ~ 1909.3 MHz |
| LTE Band 4 (AWS)                       | Voice / Data   | 1710.7 MHz ~ 1754.3 MHz |
| LTE Band 5 (Cell)                      | Voice / Data   | 824.7 MHz ~ 848.3 MHz   |
| LTE Band 12                            | Voice / Data   | 699.7 MHz ~ 715.3 MHz   |
| LTE Band 13                            | Voice / Data   | 779.5 MHz ~ 784.5 MHz   |
| LTE Band 25 (PCS)                      | Voice / Data   | 1850.7 MHz ~ 1914.3 MHz |
| LTE Band 26 (Cell)                     | Voice / Data   | 814.7 MHz ~ 848.3 MHz   |
| LTE Band 66 (AWS)                      | Voice / Data   | 1710.7 MHz ~ 1779.3 MHz |
| 2.4 GHz WLAN                           | Data           | 2 412 MHz ~ 2 472 MHz   |
| Bluetooth / LE 5.0                     | Data           | 2 402 MHz ~ 2 480 MHz   |
| NFC                                    | Data           | 13.56 MHz               |

| Device Description    |                                                                                                                                                                                        |               |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Device Dimension      | Diagonal dimension of LCD: 34.5 mm                                                                                                                                                     |               |
| Battery Information   | Battery Model Name: EB-BR820ABY                                                                                                                                                        |               |
| HW version            | REV1.0                                                                                                                                                                                 |               |
| SW version            | R825U.001                                                                                                                                                                              |               |
| Device Serial Numbers | Mode                                                                                                                                                                                   | Serial Number |
|                       | LTE Bnd 2 / LET Band 66 / LTE Band 12 Head<br>LTE Band 26 / UMTS 1700 / LTE Band 13 Body<br>2.4 GHz WLAN / Bluetooth Body                                                              | R3AM6009K5T   |
|                       | LET Band 4 / LET Band 13 Head / UMTS 850<br>LET Band 25 Head / UMTS 1900 Body<br>Bluetooth Head                                                                                        | R3AM6009JSN   |
|                       | LTE Band 25 Head / LTE Band 12 Body<br>UMTS 1900 Head                                                                                                                                  | R3AM6009JXB   |
|                       | The manufacturer has confirmed that the devices tested have the same physical, mechanical and thermal characteristics are within operational tolerances expected for production units. |               |

## 4.2 Nominal and Maximum Output Power Specifications

This device operates using the following maximum output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB publication 447498 D01v06.

### 4.2.1 Maximum Output Power

| Mode / Band               |         | Modulated Average (dBm) |            |            |               |
|---------------------------|---------|-------------------------|------------|------------|---------------|
|                           |         | 3GPP WCDMA              | 3GPP HSDPA | 3GPP HSUPA | 3GPP DC-HSDPA |
| UMTS Band 5<br>(850 MHz)  | Maximum | 24.0                    | 22.5       | 21.0       | 23.0          |
|                           | Nominal | 23.0                    | 21.5       | 20.0       | 22.0          |
| UMTS Band 4<br>(1700 MHz) | Maximum | 24.0                    | 23.5       | 21.5       | 23.5          |
|                           | Nominal | 23.0                    | 22.5       | 20.5       | 22.5          |
| UMTS Band 2<br>(1900 MHz) | Maximum | 24.0                    | 23.5       | 21.5       | 23.5          |
|                           | Nominal | 23.0                    | 22.5       | 20.5       | 22.5          |

| Mode / Band        |         | Modulated Average (dBm) |
|--------------------|---------|-------------------------|
| LTE Band 2 (PCS)   | Maximum | 23.8                    |
|                    | Nominal | 22.8                    |
| LTE Band 4 (AWS)   | Maximum | 23.8                    |
|                    | Nominal | 22.8                    |
| LTE Band 5 (Cell)  | Maximum | 23.8                    |
|                    | Nominal | 22.8                    |
| LTE Band 12        | Maximum | 23.8                    |
|                    | Nominal | 22.8                    |
| LTE Band 13        | Maximum | 23.8                    |
|                    | Nominal | 22.8                    |
| LTE Band 25 (PCS)  | Maximum | 23.4                    |
|                    | Nominal | 22.4                    |
| LTE Band 26 (Cell) | Maximum | 23.8                    |
|                    | Nominal | 22.8                    |
| LTE Band 66 (AWS)  | Maximum | 23.5                    |
|                    | Nominal | 22.5                    |

#### 4.2.2 Maximum WLAN Power

| Mode / Band  |              | Modulated Average (dBm) |         |         |         |
|--------------|--------------|-------------------------|---------|---------|---------|
| Mode         | Channel      |                         | 802.11b | 802.11g | 802.11n |
| 2.4 GHz WIFI | Ch.1 ~ Ch.11 | Maximum                 | 18      | 16.5    | 15      |
|              |              | Nominal                 | 17      | 15.5    | 14      |
|              | Ch.12        | Maximum                 | 13      | 13      | 13      |
|              |              | Nominal                 | 12      | 12      | 12      |
|              | Ch.13        | Maximum                 | 7.5     | 7.5     | 7.5     |
|              |              | Nominal                 | 6.5     | 6.5     | 6.5     |

#### 4.2.3 Bluetooth Power

| Mode / Band      |         | Modulated Average (dBm) |
|------------------|---------|-------------------------|
| Bluetooth BR     | Maximum | 16.5                    |
|                  | Nominal | 15.5                    |
| Bluetooth LE EDR | Maximum | 10.3                    |
|                  | Nominal | 9.3                     |
| Bluetooth LE     | Maximum | 9.3                     |
|                  | Nominal | 8.3                     |

### 4.3 LTE Information

| Item.              |                    | Description                                   |
|--------------------|--------------------|-----------------------------------------------|
| Frequency Range    | LTE Band 2 (PCS)   | 1 850.7 MHz ~ 1 909.3 MHz                     |
|                    | LTE Band 4 (AWS)   | 1 710.7 MHz ~ 1 754.3 MHz                     |
|                    | LTE Band 5 (Cell)  | 824.7 MHz ~ 848.3 MHz                         |
|                    | LTE Band 12        | 699.7 MHz ~ 715.3 MHz                         |
|                    | LTE Band 13        | 779.5 MHz ~ 784.5 MHz                         |
|                    | LTE Band 25 (PCS)  | 1850.7 MHz ~ 1914.3 MHz                       |
|                    | LTE Band 26 (Cell) | 814.7 MHz ~ 848.3 MHz                         |
|                    | LTE Band 66 (AWS)  | 1 710.7 MHz ~ 1 779.3 MHz                     |
| Channel Bandwidths | LTE Band 2 (PCS)   | 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz |
|                    | LTE Band 4 (AWS)   | 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz |
|                    | LTE Band 5 (Cell)  | 1.4 MHz, 3 MHz, 5 MHz, 10 MHz                 |
|                    | LTE Band 12        | 1.4 MHz, 3 MHz, 5 MHz, 10 MHz                 |
|                    | LTE Band 13        | 5 MHz, 10 MHz                                 |
|                    | LTE Band 25 (PCS)  | 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz |
|                    | LTE Band 26 (Cell) | 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz         |
|                    | LTE Band 66 (AWS)  | 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz |

| Ch. No.& Freq.(MHz) |         | Low             | Mid             | High            |
|---------------------|---------|-----------------|-----------------|-----------------|
| LTE Band 2          | 1.4 MHz | 1 850.7 (18607) | 1 880.0 (18900) | 1 909.3 (19193) |
|                     | 3 MHz   | 1 851.5 (18615) | 1 880.0 (18900) | 1 908.5 (19185) |
|                     | 5 MHz   | 1 852.5 (18625) | 1 880.0 (18900) | 1 907.5 (19175) |
|                     | 10 MHz  | 1 855.0 (18650) | 1 880.0 (18900) | 1 905.0 (19150) |
|                     | 15 MHz  | 1 857.5 (18675) | 1 880.0 (18900) | 1 902.5 (19125) |
|                     | 20 MHz  | 1 860.0 (18700) | 1 880.0 (18900) | 1 900.0 (19100) |
| LTE Band 4          | 1.4 MHz | 1 710.7 (19957) | 1 732.5 (20175) | 1 754.3 (20393) |
|                     | 3 MHz   | 1 711.5 (19965) | 1 732.5 (20175) | 1 753.5 (20385) |
|                     | 5 MHz   | 1 712.5 (19975) | 1 732.5 (20175) | 1 752.5 (20375) |
|                     | 10 MHz  | 1 715.0 (20000) | 1 732.5 (20175) | 1 750.0 (20350) |
|                     | 15 MHz  | 1 717.5 (20025) | 1 732.5 (20175) | 1 747.5 (20325) |
|                     | 20 MHz  | 1 720.0 (20050) | 1 732.5 (20175) | 1 745.0 (20300) |
| LTE Band 5          | 1.4 MHz | 824.7 (20407)   | 836.5 (20525)   | 848.3 (20643)   |
|                     | 3 MHz   | 825.5 (20415)   | 836.5 (20525)   | 847.5 (20635)   |
|                     | 5 MHz   | 826.5 (20425)   | 836.5 (20525)   | 846.5 (20625)   |
|                     | 10 MHz  | 829.0 (20450)   | 836.5 (20525)   | 844.0 (20600)   |

| Ch. No.& Freq.(MHz)                                              |         | Low              | Mid                                                                                                                                                                                                                                                                              | High                                                                        |
|------------------------------------------------------------------|---------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| LTE Band 12                                                      | 1.4 MHz | 699.7 (23017)    | 707.5 (23095)                                                                                                                                                                                                                                                                    | 715.3 (23173)                                                               |
|                                                                  | 3 MHz   | 700.5 (23025)    | 707.5 (23095)                                                                                                                                                                                                                                                                    | 714.5 (23165)                                                               |
|                                                                  | 5 MHz   | 701.5 (23035)    | 707.5 (23095)                                                                                                                                                                                                                                                                    | 713.5 (23155)                                                               |
|                                                                  | 10 MHz  | 704.0 (23060)    | 707.5 (23095)                                                                                                                                                                                                                                                                    | 711.0 (23130)                                                               |
| LTE Band 13                                                      | 5 MHz   | 779.5 (23205)    | 782 (23230)                                                                                                                                                                                                                                                                      | 784.5 (23255)                                                               |
|                                                                  | 10 MHz  |                  | 782 (23230)                                                                                                                                                                                                                                                                      |                                                                             |
| LTE Band 25                                                      | 1.4 MHz | 1850.7 (26047)   | 1882.5 (26365)                                                                                                                                                                                                                                                                   | 1914.3 (26683)                                                              |
|                                                                  | 3 MHz   | 1851.5 (26055)   | 1882.5 (26365)                                                                                                                                                                                                                                                                   | 1913.5 (26675)                                                              |
|                                                                  | 5 MHz   | 1852.5 (26065)   | 1882.5 (26365)                                                                                                                                                                                                                                                                   | 1912.5 (26665)                                                              |
|                                                                  | 10 MHz  | 1855 (26090)     | 1882.5 (26365)                                                                                                                                                                                                                                                                   | 1910 (26640)                                                                |
|                                                                  | 15 MHz  | 1857.5 (26115)   | 1882.5 (26365)                                                                                                                                                                                                                                                                   | 1907.5 (26615)                                                              |
|                                                                  | 20 MHz  | 1860 (26140)     | 1882.5 (26365)                                                                                                                                                                                                                                                                   | 1905 (26590)                                                                |
| LTE Band 26                                                      | 1.4 MHz | 814.7 (26697)    | 831.5 (26865)                                                                                                                                                                                                                                                                    | 848.3 (27033)                                                               |
|                                                                  | 3 MHz   | 815.5 (26705)    | 831.5 (26865)                                                                                                                                                                                                                                                                    | 847.5 (27025)                                                               |
|                                                                  | 5 MHz   | 816.5 (26715)    | 831.5 (26865)                                                                                                                                                                                                                                                                    | 846.5 (27015)                                                               |
|                                                                  | 10 MHz  | 819.0 (26740)    | 831.5 (26865)                                                                                                                                                                                                                                                                    | 844.0 (26990)                                                               |
|                                                                  | 15 MHz  | 821.5 (26765)    | 831.5 (26865)                                                                                                                                                                                                                                                                    | 841.5 (26965)                                                               |
| LTE Band 66<br>(AWS)                                             | 1.4 MHz | 1 710.7 (131979) | 1 745 (132322)                                                                                                                                                                                                                                                                   | 1 779.3 (132665)                                                            |
|                                                                  | 3 MHz   | 1 711.5 (131987) | 1 745 (132322)                                                                                                                                                                                                                                                                   | 1 778.5 (132657)                                                            |
|                                                                  | 5 MHz   | 1 712.5 (131997) | 1 745 (132322)                                                                                                                                                                                                                                                                   | 1 777.5 (132647)                                                            |
|                                                                  | 10 MHz  | 1 715.0 (132022) | 1 745 (132322)                                                                                                                                                                                                                                                                   | 1 775.0 (132622)                                                            |
|                                                                  | 15 MHz  | 1 717.5 (132047) | 1 745 (132322)                                                                                                                                                                                                                                                                   | 1 772.5 (132597)                                                            |
|                                                                  | 20 MHz  | 1 720.0 (132072) | 1 745 (132322)                                                                                                                                                                                                                                                                   | 1 770.0 (132572)                                                            |
| UE Category                                                      |         |                  | LTE Rel. 10, Category 4                                                                                                                                                                                                                                                          |                                                                             |
| Modulations Supported in UL                                      |         |                  | QPSK, 16 QAM                                                                                                                                                                                                                                                                     |                                                                             |
| LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3 |         |                  | Yes                                                                                                                                                                                                                                                                              |                                                                             |
| A-MPR disabled for SAR Testing.                                  |         |                  | Yes                                                                                                                                                                                                                                                                              |                                                                             |
| LTE Carrier Aggregation                                          |         |                  | DL-Link CA<br>& Up-Link CA                                                                                                                                                                                                                                                       | This device dose not supports Up-Link/ Down-Link Carrier aggregation.in US. |
| LTE Release 10 information                                       |         |                  | This device does not support full CA features on 3GPP Release 10. The following LTE Release 10 features are not supported. Uplink and Downlink Carrier aggregations, Relay, HetNet, Enhanced MIMO, eICI, WiFi offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA |                                                                             |

#### 4.4 DUT Antenna Locations

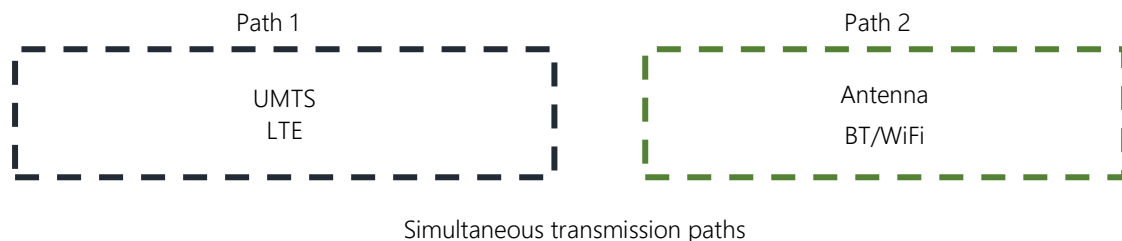
A diagram showing the location of the DUT antenna can be found in SAR\_Setup\_Photos.

#### 4.5 Near Field Communications (NFC) Antenna

This EUT has NFC operations. The NFC antenna is integrated into the device for this model. Therefore, all SAR tests were performed with the device which already incorporates the NFC antenna. A diagram showing the location of the NFC antenna can be found in SAR\_Setup\_photos.

#### 4.6 SAR Summation Scenario

According to FCC KDB 447498 D01v06, transmitters are considered to be transmitting simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds. Possible transmission paths for the EUT are shown below paths and are mode in same rectangle to indicate communication modes which share the same path. Modes which share the same transmission path cannot transmit simultaneously with one another.



This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis according to FCC KDB 447498 D01v06.

| Simultaneous Transmission Scenarios |      |
|-------------------------------------|------|
| Applicable Combination              | Body |
| UMTS + 2.4 GHz WiFi Antenna         | Yes  |
| UMTS + 2.4 GHz Bluetooth            | Yes  |
| LTE + 2.4 GHz WiFi Antenna          | Yes  |
| LTE + 2.4 GHz Bluetooth             | Yes  |

## 4.7 SAR Test Considerations

### 4.7.1 Bluetooth LE

Per FCC KDB 447498 D01v06, The SAR exclusion threshold for distance < 50mm is defined by the following equation:

$$\frac{\text{MaxPowerofChannel(mW)}}{\text{TestSeparationDistance(mm)}} * \sqrt{\text{Frequency(GHz)}} \leq 3.0(1\text{g SAR}), 7.5(10\text{g SAR})$$

| Mode         |               | Frequency | Maximum Allowed Power | Separation Distance | ≤ 3.0   | ≤ 7.5    |
|--------------|---------------|-----------|-----------------------|---------------------|---------|----------|
|              |               | [MHz]     | [mW]                  | [mm]                | 1-g SAR | 10-g SAR |
| Bluetooth LE | Head SAR      | 2 480     | 9                     | 10                  | 1.4     |          |
|              | Extremity SAR |           |                       | 5                   |         | 2.8      |

Based on the maximum conducted power of Bluetooth LE and antenna to use separation distance, Bluetooth LE SAR was not required  $[(9/10)*\sqrt{2.480}] = 1.4 \leq 3.0$  for 1-g SAR,  $[(9/5)*\sqrt{2.480}] = 2.8 \leq 7.5$  for 10-g SAR.

The Reported SAR for WLAN and Bluetooth

The Reported SAR = The Measured SAR \*  $\frac{\text{Maximum tune-up (mW)}}{\text{Measured Conducted Power(mW)}}$  \* Duty factor

#### 4.7.2 Licensed Transmitter(s)

LTE SAR for the higher modulations and lower bandwidths were not tested since the maximum average output power of all required channels and configurations was not more than 0.5 dB higher than the highest bandwidth; and the reported LTE SAR for the highest bandwidth was less than 1.45 W/kg for all configurations according to FCC KDB 941225 D05v02r05.

This DUT supports LTE capabilities with overlapping transmission frequency ranges. When the supported frequency range of an LTE band falls completely within an LTE band with a larger transmission frequency range, both LTE bands have the same maximum target power. and both LTE bands share the same transmission path and signal characteristics, SAR was only assessed for the band with the larger transmission frequency range

LTE Band 5 (824.7 ~ 848.3 MHz) is covered by LTE Band 26 (814.7 ~ 848.3 MHz) and both LTE bands have the same maximum target power

This device is only capable of QPSK HSUPA in the uplink. Therefore, no additional SAR tests are required beyond that described for devices with HSUPA in KDB 941225 D01v03r01.

Per FCC KDB 941225 D01v03r01, 12.2 kbps RMC is the primary mode and HSPA (HSUPA/HSDPA with RMC) is the secondary mode.

Per FCC KDB 941225 D01v03r01, The SAR test exclusion is applied to the secondary mode by the following equation.

$$\text{Adjusted SAR} = \text{Highest Reported SAR} * \frac{\text{Secondary Max tune-up (mW)}}{\text{Primary Max tune-up (mW)}} \leq 1.2 \text{ W/kg.}$$

Based on the highest Reported SAR, the secondary mode is not required.

Per FCC KDB 690783 1 D01 SAR Listings on Grants v01r03 and KDB 447498 D01 General RF Exposure Guidance v06 The SAR numbers listed must be consistent with the highest reported test results required by the published RF exposure KDB procedures. When the measured SAR is not at the maximum tune-up tolerance limit or maximum output power allowed for production units, the measured results are scaled to the maximum conditions to determine compliance; the scaled results are referred to as the reported SAR.

$$\text{The Reported SAR} = \text{The Measured SAR} * \frac{\text{Maximum tune-up (mW)}}{\text{Measured Conducted Power(mW)}}$$

## 5. Introduction

The FCC has adopted the guidelines for evaluating the environmental effects of radio frequency radiation in ET Docket 93-62 on Aug. 6, 1996 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices.

The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz. 1992 by the Institute of Electrical and Electronics Engineers, Inc., New York 10017. The measurement procedure described in IEEE/ANSI C95.3-1992 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave is used for guidance in measuring SAR due to the RF radiation exposure from the Equipment Under Test (EUT). These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in Biological Effects and Exposure Criteria for Radio Frequency Electromagnetic Fields," NCRP Report No. 86 NCRP, 1986, Bethesda, MD 20814. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards.

### SAR Definition

Specific Absorption Rate (SAR) is defined as the time derivative of the incremental electromagnetic energy ( $dW$ ) absorbed by (dissipated in) an incremental mass ( $dm$ ) contained in a volume element ( $dV$ ) of a given density ( $\rho$ ). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body.

$$SAR = \frac{d}{dt} \left( \frac{dU}{dm} \right)$$

Figure 1. SAR Mathematical Equation  
SAR is expressed in units of Watts per Kilogram (W/kg)

$$SAR = \sigma E^2 / \rho$$

Where:

$\sigma$  = conductivity of the tissue-simulant material (S/m)

$\rho$  = mass density of the tissue-simulant material (kg/m<sup>3</sup>)

$E$  = Total RMS electric field strength (V/m)

NOTE: The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relations to the dimensions and geometry of the irradiated organism, the orientation of the organism in relation to the polarity of field vectors, the presence of reflecting surfaces, and whether conductive contact is made by the organism with a ground plane.

## 6. Description of test equipment

### 6.1 SAR MEASUREMENT SETUP

These measurements are performed using the DASY4 automated dosimetric assessment system. It is made by Schmid & Partner Engineering AG (SPEAG) in Zurich, Switzerland. It consists of high precision robotics system (Staubli), robot controller, Pentium III computer, near-field probe, probe alignment sensor, and the generic twin phantom containing the brain equivalent material. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF) (see Figure.2).

A cell controller system contains the power supply, robot controller, teach pendant (Joystick), and remote control, is used to drive the robot motors. The PC with Windows XP or Windows 7 is working with SAR Measurement system DASY4 & DASY5, A/D interface card, monitor, mouse, and keyboard. The Staubli Robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC plug-in card.

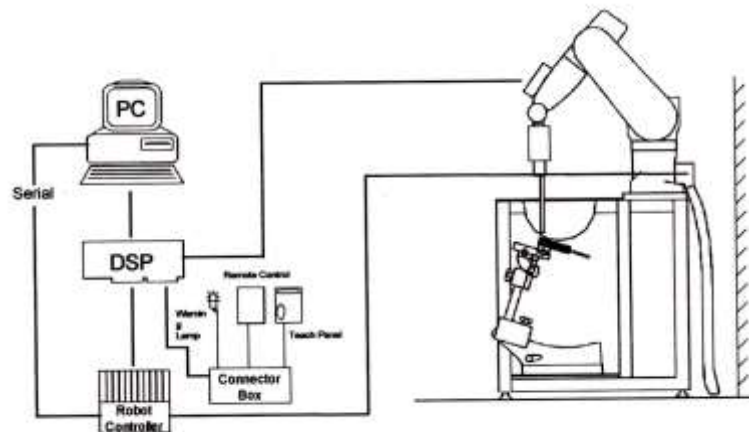


Figure 2. HCT SAR Lab. Test Measurement Set-up

The 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 PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer. The system is described in detail in.

## 7. SAR Measurement Procedure

The evaluation was performed using the following procedure compliant to FCC KDB Publication 865664 D01v01r04 and IEEE 1528-2013

1. The SAR distribution at the exposed side of the head or body was measured at a distance no more than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the DUT's head and body area and the horizontal grid resolution was depending on the FCC KDB 865664 D01v01r04 table 4-1 & IEEE 1528-2013.
2. Based on step, the area of the maximum absorption was determined by sophisticated interpolations routines implemented in DASY software. When an Area Scan has measured all reachable point. DASY system computes the field maximal found in the scanned are, within a range of the maximum. SAR at this fixed point was measured and used as a reference value.
3. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB 865664 D01v01r04 table 4-1 and IEEE 1528-2013. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (reference from the DASY manual.)
  - a. The data at the surface were extrapolated, since the center of the dipoles is no more than 2.7 mm away from the tip of the probe (it is different from the probe type) and the distance between the surface and the lowest measuring point is 1.2 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.
  - b. The maximum interpolated value was searched with a straight-forward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g or 10 g) were computed using the 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the "Not a knot" condition (in x, y, and z directions. The volume was integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the average.
  - c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan. If the value changed by more than 5 %, the SAR evaluation and drift measurements were repeated.

Area scan and zoom scan resolution setting follow KDB 865664 D01v01r04 quoted below.

|                                                                                                                                                                                                                                                                           |                                      |                                                                                       | ≤ 3 GHz                                                                                                                                                                                                                                                           | > 3 GHz                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface                                                                                                                                                                    |                                      |                                                                                       | 5±1 mm                                                                                                                                                                                                                                                            | 1/2·δ·ln(2)±0.5 mm                                    |
| Maximum probe angle from probe axis to phantom surface normal at the measurement location                                                                                                                                                                                 |                                      |                                                                                       | 30°±1°                                                                                                                                                                                                                                                            | 20°±1°                                                |
| Maximum area scan Spatial resolution: Δx <sub>Area</sub> , Δy <sub>Area</sub>                                                                                                                                                                                             |                                      |                                                                                       | ≤ 2 GHz: ≤15 mm<br>2-3 GHz: ≤12 mm                                                                                                                                                                                                                                | 3-4 GHz: ≤12 mm<br>4-6 GHz: ≤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 ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device. |                                                       |
| Maximum zoom scan Spatial resolution: Δx <sub>zoom</sub> , Δy <sub>zoom</sub>                                                                                                                                                                                             |                                      |                                                                                       | ≤ 2 GHz: ≤8mm<br>2-3 GHz: ≤5mm*                                                                                                                                                                                                                                   | 3-4 GHz: ≤5 mm*<br>4-6 GHz: ≤4 mm*                    |
| Maximum zoom scan Spatial resolution normal to phantom surface                                                                                                                                                                                                            | uniform grid: Δz <sub>zoom</sub> (n) |                                                                                       | ≤ 5 mm                                                                                                                                                                                                                                                            | 3-4 GHz: ≤4 mm<br>4-5 GHz: ≤3 mm<br>5-6 GHz: ≤2 mm    |
|                                                                                                                                                                                                                                                                           | graded grid                          | Δz <sub>zoom</sub> (1): between 1 <sup>st</sup> two Points closest to phantom surface | ≤ 4 mm                                                                                                                                                                                                                                                            | 3-4 GHz: ≤3 mm<br>4-5 GHz: ≤2.5 mm<br>5-6 GHz: ≤2 mm  |
|                                                                                                                                                                                                                                                                           |                                      | Δz <sub>zoom</sub> (n>1): between subsequent Points                                   | ≤1.5·Δz <sub>zoom</sub> (n-1)                                                                                                                                                                                                                                     |                                                       |
| Minimum zoom scan volume                                                                                                                                                                                                                                                  | x, y, z                              |                                                                                       | ≥ 30 mm                                                                                                                                                                                                                                                           | 3-4 GHz: ≥28 mm<br>4-5 GHz: ≥25 mm<br>5-6 GHz: ≥22 mm |
| Note: δ 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 reported SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 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. Description of Test Position

### 8.1 Wrist watch and wrist-worn transmitters

#### 8.1.1 Device Holder

The device holder is made out of low-loss POM material having the following dielectric parameters: relative permittivity  $\epsilon$  and loss tangent  $\delta=0.02$

#### 8.1.2 Positioning for Head

Devices that are designed to be worn on the wrist may operate in speaker mode for voice communication, with the device worn on the wrist and positioned next to the mouth. When next-to-mouth SAR evaluation is required, the device is positioned at 10mm from a flat phantom filled with head tissue-equivalent medium. The device is evaluated with wrist bands strapped together to represent normal use conditions. The 1-g head SAR Exclusion Threshold in KDB Publication 447498D01v06 should be applied to determine SAR test requirements.

#### 8.1.3 Extremity Exposure Configurations

Devices that are designed or intended for use on extremities or mainly operated in extremity only exposure conditions; i.e., hand, wrist, feet and ankles, may require extremity SAR evaluation. When the device also operates in close proximity to the user's body, SAR compliance for the body is also required. When extremity SAR evaluation is required, the device is evaluated with the back of the device touching the flat phantom, which is filled with body tissue-equivalent medium. The device is evaluated with wrist band unstrapped and touching the phantom; the space between the device and phantom must represent actual use conditions. The 10g extremity SAR exclusion Thresholds found in KDB Publication 447498 D01v06 should be applied to determine SAR test requirements.

## 9. RF Exposure Limits

| HUMAN EXPOSURE                                         | UNCONTROLLED ENVIRONMENT<br>General Population<br>(W/kg) or (mW/g) | CONTROLLED ENVIRONMENT<br>Occupational<br>(W/kg) or (mW/g) |
|--------------------------------------------------------|--------------------------------------------------------------------|------------------------------------------------------------|
| SPATIAL PEAK SAR *<br>(Brain)                          | 1.60                                                               | 8.00                                                       |
| SPATIAL AVERAGE SAR **<br>(Whole Body)                 | 0.08                                                               | 0.40                                                       |
| SPATIAL PEAK SAR ***<br>(Hands / Feet / Ankle / Wrist) | 4.00                                                               | 20.00                                                      |

### NOTES:

\* The Spatial Peak value of the SAR averaged over any 1 g of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

\*\* The Spatial Average value of the SAR averaged over the whole-body.

\*\*\* The Spatial Peak value of the SAR averaged over any 10 g of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

**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.

**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. This 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.

## 10. FCC SAR General Measurement Procedures

Power Measurements for licensed transmitters are performed using a base simulator under digital average power.

### 10.1 Measured and Reported SAR

Per FCC KDB Publication 447498 D01v06, when SAR is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance. For simultaneous transmission, the measured aggregate SAR must be scaled according to the sum of the differences between the maximum tune-up tolerance and actual power used to test each transmitter. When SAR is measured at or scaled to the maximum tune-up tolerance limit, the results are referred to as Reported SAR. The highest reported SAR results are identified on the grant of equipment authorization according to procedures in KDB 690783 D01v01r03.

### 10.2 Procedures Used to Establish RF Signal for SAR

The following procedures are according to FCC KDB 941225 D01v03r01-3G SAR Measurement Procedures. The handset was placed into a simulated call using a base station simulator in a shielded chamber. Such test signals offer a consistent means for testing SAR and are recommended for evaluation SAR measurements were taken with a fully charged battery. In order to verify that the device was tested and maintained at full power, this was configured with the base station simulator. The SAR measurement Software calculates a reference point at the start and end of the test to Check for power drifts. If conducted Power deviations of more than 5 % occurred, the tests were repeated.

### 10.3 SAR Measurement Conditions for UMTS

#### 10.3.1 Output Power Verification

Maximum output power is verified on the High, Middle and Low channels according to the general descriptions in sec. 5.2 of 3GPP TS 34.121, using the appropriate RMC with TPC (transmit power control) set to all "1s" or applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HS-DPCCH etc) are tabulated in this test report. All configurations that are not supported by the DUT or cannot be measured due to technical or equipment limitations are identified.

#### 10.3.2 Body SAR measurements

SAR for body exposure configurations is measured using the 12.2kbps RMC with the TPC bits all "1s". the 3G SAR test reduction procedure is applied to other spreading codes and multiple DPDCHn configurations supported by the handset with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured using and applicable RMC configuration with the corresponding spreading code or DPDCHn, for the highest reported SAR configuration in 12.2kbps RMC.

#### 10.3.3 SAR Measurements with Rel. 5 HSDPA

The 3G SAR test reduction procedure is applied to HSDPA body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSDPA is measured using and FRC with H-SET 1 in Sub-test and a 12.2 kbps RMC without HSDPA. Handsets with both HSDPA and HSUPA are tested according to release 6 HSPA test procedures. 8.4.5 SAR Measurement with Rel.6 HSUPA The 3G SAR test Reduction Procedure is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode.

Otherwise, Body SAR for HSPA is measured with E-DCH Sub-test 5, Using H-Set 1 and QPSK for FRC and a 12.2kbps RMC configured in Test Loop Mode 1 and Power Control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA. When VOIP applies to head exposure, the 3G SAR test reduction procedure is applied with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body SAR measurements are applied to head exposure testing.

#### 10.3.4 SAR Measurements with Rel. 6 HSUPA

The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 and power control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA.

#### 10.3.5 DC-HSDPA

SAR is required for Rel.8 DC-HSDPA when SAR is required for Rel.5 HSDPA; otherwise, the 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in table C.8.1.12 of 3GPP TS34.121-1 to determine SAR test reduction. Primary and secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.

##### DC-HSDPA Configurations

- ◆ 3GPP specification TS 34.121-1 Release 8. was used for used for DC-HSDPA guidance.
- ◆ H-set 12(QPSK)was conformed to be used during DC-HSDPA measurements.



## 10.4 SAR Measurement Conditions for LTE

LTE modes are tested according to FCC KDB 941225 D05v02r05 publication. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluation SAR [4]. The R&S CMW500 or Anritsu MT8820C simulators are used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

### 10.4.1 Spectrum Plots for RB Configurations

A properly configured base station simulator was used for SAR tests and power measurements. Therefore, spectrum plots for RB configurations were not required to be included in this report.

### 10.4.2 MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36. 101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

### 10.4.3 A-MPR

A-MPR (Additional MPR) has been disabled for all SAR tests by setting NS=01 on the base station simulator.

### 10.4.4 Required RB Size and RB offsets for SAR testing

According to FCC KDB 941225 D05v02r05

- a. Per sec 4.2.1, SAR is required for QPSK 1 RB Allocation for the largest bandwidth
  - i. The required channel and offset combination with the highest maximum output power is required for SAR.
  - ii. When the reported SAR is  $\leq 0.8$  W/Kg, testing of the remaining RB offset configurations and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the RB offset configuration with highest output power for that channel.
  - iii. When the reported SAR for a required test channel is  $> 1.45$  W/kg, SAR is required for all RB offset configurations for that channel.
- b. Per Sec 4.2.2, SAR is required for 50% RB allocation using the largest bandwidth following the same procedures outlined in Sec 4.2.1.
- c. Per Sec. 4.2.3, QPSK SAR is not required for the 100% allocation when the highest maximum output power for the 100% allocation is less than the highest maximum output power of the 1 RB and 50% RB allocations and the reported SAR for the 1 RB and 50% RB allocations is  $< 0.8$  W/kg.
- d. Per Sec. 4.2.4 and 4.3, SAR test for higher order modulations and lower bandwidths configurations are not required when the conducted power of the required test configurations determined by Sec. 4.2.1 through 4.2.3 is less than or equal to 1/2 dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is  $< 1.45$  W/Kg.

## 10.5 SAR Testing with 802.11 Transmitters

The normal network operating configurations of 802.11 transmitters are not suitable for SAR measurements. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset based test mode software to ensure the results are consistent and reliable. See KDB Publication 248227 D01v02r02 for more details.

### 10.5.1 General Device Setup

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters.

A periodic duty factor is required for current generation SAR system to measure SAR. When 802.11 frame gaps are accounted for in the transmission, a maximum transmission duty factor of 92-96% is typically achievable in most test mode configurations. A minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. The reported SAR is scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

### 10.5.2 2.4 GHz SAR test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either the fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:

- 1) When the reported SAR of the highest measured maximum output power channel for the exposure configuration is  $\leq 0.8$  W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.
- 2) When the reported SAR is  $> 0.8$  W/kg, SAR is required for that position using the next highest measured output power channel. When any reported SAR is  $> 1.2$  W/kg, SAR is required for the third channel; i.e., all channels require testing.

2.4 GHz 802.11 g/n OFDM are additionally evaluated for SAR if the highest reported SAR for 802.11b, adjusted by the ratio of the OFDM to DSSS specified maximum output power, is  $> 1.2$  W/kg. When SAR is required for OFDM modes in 2.4 GHz band, the Initial Test Configuration Procedures should be followed.

### 10.5.3 OFDM Transmission Mode and SAR Test Channel Selection

For the 2.4 GHz, when the same maximum output power was specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration with the largest channel bandwidth, lowest order modulation and lowest data rate and lowest order 802.11 g/n mode. When the maximum output power of a channel is the same for equivalent OFDM configurations; for example, 802.11g and 802.11n with the same channel bandwidth, modulation and data rate etc., the lower order 802.11 mode i.e., 802.11g then 802.11n, is used for SAR measurement. When the maximum output power are the same for multiple test channels, either according to the default or additional power measurement requirements, SAR is measured using the channel closest to the middle of the frequency band or aggregated band. When there are multiple channels with the same maximum output power, SAR is measured using the higher number channel.

## 11. Output Power Specifications

### Licensed bands

| Test Description       | Test Procedure Used                                                                                                                                 |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Conducted Output Power | <ul style="list-style-type: none"> <li>- KDB 971168 D01 v03r01 - Section 5.2.4</li> <li>- ANSI C63.26-2015 - Section 5.2.1 &amp; 5.2.4.2</li> </ul> |

### Test Overview

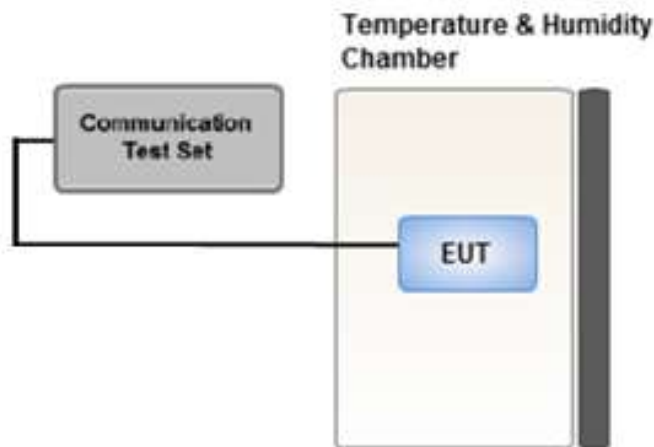
According to ANSI C63.26-2015 Section 5.2.1 when measuring the maximum RF output power from such devices, control over the EUT must be provided either through special test software (provided by manufacturer specifically for compliance testing, but not accessible by an end user) or through use of a base station emulator, communications test set, call box, or similar instrumentation that is capable of establishing a communications link with the EUT to enable control over variable parameters (e.g., output power, OBW, etc.).

In some cases, these instruments also include basic digital spectrum analyzer and/or power meter capabilities that can be utilized to measure the RF output power if the specified detectors and requirements can be realized and the measurement functions have been calibrated.

### Test Procedure

1. The RF port of the EUT was connected to the Communication Tester via an RF cable.
2. Conducted average power was measured using a calibrated Radio Communication Tester.

### Test setup



## 11.1 UMTS Maximum Conducted Output Power

### HSPA+

This DUT is only capable of QPSK HSPA+ in uplink. Therefore, the RF conducted power is not measured according to 941225 D01 3G SAR.

## 11.1.1 UMTS Maximum Conducted Output Power

### WCDMA Band 2

| 3GPP Release Version | Mode     | 3GPP 34.121   | WCDMA Band 2 [dBm] |                    |                    | 3GPP MPR |
|----------------------|----------|---------------|--------------------|--------------------|--------------------|----------|
|                      |          | Subtest       | UL 9262<br>DL 9662 | UL 9400<br>DL 9800 | UL 9538<br>DL 9938 |          |
| 99                   | WCDMA    | 12.2 kbps RMC | 23.20              | 23.33              | 23.34              | -        |
| 99                   | WCDMA    | 12.2 kbps AMR | 23.24              | 23.34              | 23.36              | -        |
| 5                    | HSDPA    | Subtest 1     | 23.12              | 23.27              | 23.33              | 0        |
| 5                    |          | Subtest 2     | 22.16              | 22.31              | 22.40              | 0        |
| 5                    |          | Subtest 3     | 22.19              | 22.34              | 22.42              | 0.5      |
| 5                    |          | Subtest 4     | 21.27              | 21.36              | 21.43              | 0.5      |
| 6                    | HSUPA    | Subtest 1     | 19.73              | 19.83              | 19.87              | 0        |
| 6                    |          | Subtest 2     | 17.68              | 17.87              | 17.88              | 2        |
| 6                    |          | Subtest 3     | 18.63              | 18.73              | 18.85              | 1        |
| 6                    |          | Subtest 4     | 17.71              | 17.87              | 17.90              | 2        |
| 6                    |          | Subtest 5     | 21.24              | 21.36              | 21.44              | 0        |
| 8                    | DC-HSDPA | Subtest 1     | 23.43              | 23.50              | 23.31              | 0        |
| 8                    |          | Subtest 2     | 22.52              | 22.75              | 22.40              | 0        |
| 8                    |          | Subtest 3     | 21.73              | 21.93              | 21.77              | 0.5      |
| 8                    |          | Subtest 4     | 21.72              | 21.92              | 21.82              | 0.5      |

WCDMA Average Conducted output powers

### WCDMA Band 4

| 3GPP Release Version | Mode     | 3GPP 34.121   | WCDMA Band 4 [dBm] |                    |                    | 3GPP MPR |
|----------------------|----------|---------------|--------------------|--------------------|--------------------|----------|
|                      |          | Subtest       | UL 1312<br>DL 1537 | UL 1412<br>DL 1637 | UL 1513<br>DL 1738 |          |
| 99                   | WCDMA    | 12.2 kbps RMC | 23.26              | 23.24              | 23.32              | -        |
| 99                   | WCDMA    | 12.2 kbps AMR | 23.34              | 23.29              | 23.37              | -        |
| 5                    | HSDPA    | Subtest 1     | 23.11              | 23.10              | 23.20              | 0        |
| 5                    |          | Subtest 2     | 22.29              | 22.28              | 22.37              | 0        |
| 5                    |          | Subtest 3     | 22.32              | 22.31              | 22.30              | 0.5      |
| 5                    |          | Subtest 4     | 21.26              | 21.25              | 21.32              | 0.5      |
| 6                    | HSUPA    | Subtest 1     | 19.79              | 19.81              | 19.89              | 0        |
| 6                    |          | Subtest 2     | 17.70              | 17.61              | 17.67              | 2        |
| 6                    |          | Subtest 3     | 18.75              | 18.68              | 18.75              | 1        |
| 6                    |          | Subtest 4     | 17.68              | 17.63              | 17.72              | 2        |
| 6                    |          | Subtest 5     | 21.18              | 21.21              | 21.29              | 0        |
| 8                    | DC-HSDPA | Subtest 1     | 23.19              | 22.96              | 23.34              | 0        |
| 8                    |          | Subtest 2     | 21.89              | 21.14              | 22.30              | 0        |
| 8                    |          | Subtest 3     | 21.13              | 21.39              | 21.74              | 0.5      |
| 8                    |          | Subtest 4     | 21.21              | 21.43              | 21.56              | 0.5      |

WCDMA Average Conducted output powers

### WCDMA Band 5

| 3GPP Release Version | Mode     | 3GPP 34.121   | WCDMA Band 5 [dBm] |                    |                    | 3GPP MPR |
|----------------------|----------|---------------|--------------------|--------------------|--------------------|----------|
|                      |          | Subtest       | UL 4132<br>DL 4357 | UL 4183<br>DL 4408 | UL 4233<br>DL 4458 |          |
| 99                   | WCDMA    | 12.2 kbps RMC | 22.97              | 22.94              | 22.79              | -        |
| 99                   | WCDMA    | 12.2 kbps AMR | 22.96              | 20.96              | 22.81              | -        |
| 5                    | HSDPA    | Subtest 1     | 21.73              | 21.72              | 21.57              | 0        |
| 5                    |          | Subtest 2     | 20.86              | 20.84              | 20.70              | 0        |
| 5                    |          | Subtest 3     | 20.88              | 20.84              | 20.75              | 0.5      |
| 5                    |          | Subtest 4     | 19.91              | 19.88              | 19.73              | 0.5      |
| 6                    | HSUPA    | Subtest 1     | 19.45              | 19.36              | 19.26              | 0        |
| 6                    |          | Subtest 2     | 17.41              | 17.40              | 17.31              | 2        |
| 6                    |          | Subtest 3     | 18.37              | 18.33              | 18.33              | 1        |
| 6                    |          | Subtest 4     | 17.37              | 17.37              | 17.22              | 2        |
| 6                    |          | Subtest 5     | 19.92              | 19.88              | 19.77              | 0        |
| 8                    | DC-HSDPA | Subtest 1     | 22.70              | 22.47              | 22.66              | 0        |
| 8                    |          | Subtest 2     | 21.26              | 21.14              | 21.76              | 0        |
| 8                    |          | Subtest 3     | 20.98              | 20.95              | 20.86              | 0.5      |
| 8                    |          | Subtest 4     | 21.00              | 20.94              | 20.84              | 0.5      |

WCDMA Average Conducted output powers

## 11.2 LTE Maximum Output Power

### 11.2.1 LTE Maximum Conducted Output Power

[ LTE Band 2 Conducted Power ]

LTE Band 2 \_ 1.4 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                    |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|--------------------|----------------------|---------------------------|----------|
|           |            |         |           | 18607 Ch. 1850.7 MHz     | 18900 Ch. 1880 MHz | 19193 Ch. 1909.3 MHz |                           |          |
| 1.4 MHz   | QPSK       | 1       | 0         | 22.89                    | 23.13              | 22.94                | 0                         | 0        |
|           |            | 1       | 3         | 22.82                    | 23.11              | 22.71                | 0                         | 0        |
|           |            | 1       | 5         | 22.82                    | 23.12              | 22.59                | 0                         | 0        |
|           |            | 3       | 0         | 22.86                    | 23.18              | 22.70                | 0                         | 0        |
|           |            | 3       | 1         | 22.82                    | 23.11              | 22.60                | 0                         | 0        |
|           |            | 3       | 3         | 22.80                    | 23.15              | 22.50                | 0                         | 0        |
|           |            | 6       | 0         | 20.86                    | 21.15              | 20.83                | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.54                    | 20.81              | 20.76                | 0-1                       | 1        |
|           |            | 1       | 3         | 20.43                    | 20.71              | 20.56                | 0-1                       | 1        |
|           |            | 1       | 5         | 20.44                    | 20.72              | 20.62                | 0-1                       | 1        |
|           |            | 3       | 0         | 20.71                    | 20.94              | 20.93                | 0-1                       | 1        |
|           |            | 3       | 1         | 20.71                    | 20.97              | 20.91                | 0-1                       | 1        |
|           |            | 3       | 3         | 20.75                    | 20.90              | 20.90                | 0-1                       | 1        |
|           |            | 6       | 0         | 19.77                    | 19.94              | 19.85                | 0-2                       | 2        |

## LTE Band 2 \_ 3 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                    |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|--------------------|----------------------|---------------------------|----------|
|           |            |         |           | 18615 Ch. 1851.5 MHz     | 18900 Ch. 1880 MHz | 19185 Ch. 1908.5 MHz |                           |          |
| 3 MHz     | QPSK       | 1       | 0         | 22.77                    | 23.23              | 23.09                | 0                         | 0        |
|           |            | 1       | 7         | 22.71                    | 23.20              | 23.10                | 0                         | 0        |
|           |            | 1       | 14        | 22.76                    | 23.28              | 23.14                | 0                         | 0        |
|           |            | 8       | 0         | 20.86                    | 21.10              | 20.99                | 0-1                       | 1        |
|           |            | 8       | 3         | 20.82                    | 21.10              | 21.06                | 0-1                       | 1        |
|           |            | 8       | 7         | 20.84                    | 21.11              | 21.04                | 0-1                       | 1        |
|           |            | 15      | 0         | 20.83                    | 21.08              | 21.04                | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.60                    | 20.96              | 20.74                | 0-1                       | 1        |
|           |            | 1       | 7         | 20.57                    | 20.91              | 20.72                | 0-1                       | 1        |
|           |            | 1       | 14        | 20.63                    | 20.82              | 20.79                | 0-1                       | 1        |
|           |            | 8       | 0         | 19.74                    | 19.97              | 19.81                | 0-2                       | 2        |
|           |            | 8       | 3         | 19.70                    | 19.93              | 19.86                | 0-2                       | 2        |
|           |            | 8       | 7         | 19.71                    | 19.93              | 19.94                | 0-2                       | 2        |
|           |            | 15      | 0         | 19.74                    | 20.00              | 19.88                | 0-2                       | 2        |

## LTE Band 2 \_ 5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                   |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|-------------------|----------------------|---------------------------|----------|
|           |            |         |           | 18625 Ch. 1852.5 MHz     | 18900Ch. 1880 MHz | 19175 Ch. 1907.5 MHz |                           |          |
| 5 MHz     | QPSK       | 1       | 0         | 22.81                    | 23.15             | 23.06                | 0                         | 0        |
|           |            | 1       | 12        | 22.75                    | 23.08             | 22.96                | 0                         | 0        |
|           |            | 1       | 24        | 22.84                    | 23.06             | 23.03                | 0                         | 0        |
|           |            | 12      | 0         | 20.79                    | 21.04             | 21.03                | 0-1                       | 1        |
|           |            | 12      | 6         | 20.79                    | 21.03             | 20.99                | 0-1                       | 1        |
|           |            | 12      | 11        | 20.75                    | 21.06             | 21.01                | 0-1                       | 1        |
|           |            | 25      | 0         | 20.82                    | 21.08             | 21.00                | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.85                    | 21.13             | 20.96                | 0-1                       | 1        |
|           |            | 1       | 12        | 20.82                    | 21.15             | 21.11                | 0-1                       | 1        |
|           |            | 1       | 24        | 20.83                    | 21.18             | 21.14                | 0-1                       | 1        |
|           |            | 12      | 0         | 19.75                    | 20.14             | 19.93                | 0-2                       | 2        |
|           |            | 12      | 6         | 19.78                    | 20.03             | 19.88                | 0-2                       | 2        |
|           |            | 12      | 11        | 19.75                    | 20.00             | 19.93                | 0-2                       | 2        |
|           |            | 25      | 0         | 19.72                    | 20.01             | 19.92                | 0-2                       | 2        |

## LTE Band 2 \_ 10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                    |                    | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|--------------------|--------------------|---------------------------|----------|
|           |            |         |           | 18650 Ch. 1855 MHz       | 18900 Ch. 1880 MHz | 19150 Ch. 1905 MHz |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | 22.87                    | 23.14              | 23.08              | 0                         | 0        |
|           |            | 1       | 24        | 22.78                    | 23.11              | 23.07              | 0                         | 0        |
|           |            | 1       | 49        | 22.85                    | 23.13              | 22.86              | 0                         | 0        |
|           |            | 25      | 0         | 20.72                    | 21.09              | 21.08              | 0-1                       | 1        |
|           |            | 25      | 12        | 20.74                    | 21.05              | 21.01              | 0-1                       | 1        |
|           |            | 25      | 24        | 20.72                    | 21.09              | 21.01              | 0-1                       | 1        |
|           |            | 50      | 0         | 20.74                    | 21.08              | 21.06              | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.43                    | 21.13              | 21.15              | 0-1                       | 1        |
|           |            | 1       | 24        | 20.77                    | 21.21              | 21.15              | 0-1                       | 1        |
|           |            | 1       | 49        | 20.75                    | 21.13              | 21.12              | 0-1                       | 1        |
|           |            | 25      | 0         | 19.66                    | 20.06              | 19.94              | 0-2                       | 2        |
|           |            | 25      | 12        | 19.61                    | 19.96              | 19.92              | 0-2                       | 2        |
|           |            | 25      | 24        | 19.69                    | 19.95              | 20.01              | 0-2                       | 2        |
|           |            | 50      | 0         | 19.73                    | 20.05              | 19.96              | 0-2                       | 2        |

## LTE Band 2 \_ 15 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                    |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|--------------------|----------------------|---------------------------|----------|
|           |            |         |           | 18675 Ch. 1857.5 MHz     | 18900 Ch. 1880 MHz | 19125 Ch. 1902.5 MHz |                           |          |
| 15 MHz    | QPSK       | 1       | 0         | 22.98                    | 23.15              | 22.95                | 0                         | 0        |
|           |            | 1       | 36        | 22.90                    | 23.26              | 23.14                | 0                         | 0        |
|           |            | 1       | 74        | 22.88                    | 23.29              | 23.15                | 0                         | 0        |
|           |            | 36      | 0         | 20.86                    | 21.14              | 21.01                | 0-1                       | 1        |
|           |            | 36      | 18        | 20.89                    | 21.10              | 20.99                | 0-1                       | 1        |
|           |            | 36      | 39        | 20.87                    | 21.10              | 20.98                | 0-1                       | 1        |
|           |            | 75      | 0         | 20.82                    | 21.14              | 21.02                | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.61                    | 20.94              | 20.67                | 0-1                       | 1        |
|           |            | 1       | 36        | 20.49                    | 20.86              | 20.77                | 0-1                       | 1        |
|           |            | 1       | 74        | 20.61                    | 20.91              | 20.88                | 0-1                       | 1        |
|           |            | 36      | 0         | 19.73                    | 20.05              | 19.87                | 0-2                       | 2        |
|           |            | 36      | 18        | 19.69                    | 19.99              | 19.87                | 0-2                       | 2        |
|           |            | 36      | 39        | 19.72                    | 20.06              | 19.89                | 0-2                       | 2        |
|           |            | 75      | 0         | 19.81                    | 20.07              | 19.95                | 0-2                       | 2        |

## LTE Band 2 \_ 20 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                    |                    | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|--------------------|--------------------|---------------------------|----------|
|           |            |         |           | 18700 Ch. 1860 MHz       | 18900 Ch. 1880 MHz | 19100 Ch. 1900 MHz |                           |          |
| 20 MHz    | QPSK       | 1       | 0         | 22.94                    | 22.77              | 23.01              | 0                         | 0        |
|           |            | 1       | 49        | 22.91                    | 23.13              | 23.05              | 0                         | 0        |
|           |            | 1       | 99        | 22.99                    | <b>23.16</b>       | 22.78              | 0                         | 0        |
|           |            | 50      | 0         | 20.90                    | 21.08              | 21.05              | 0-1                       | 1        |
|           |            | 50      | 25        | 20.88                    | <b>21.09</b>       | 21.04              | 0-1                       | 1        |
|           |            | 50      | 49        | 20.89                    | 21.07              | 21.05              | 0-1                       | 1        |
|           |            | 100     | 0         | 20.90                    | 21.14              | 20.99              | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.65                    | 21.06              | 20.97              | 0-1                       | 1        |
|           |            | 1       | 49        | 20.92                    | 21.20              | 21.11              | 0-1                       | 1        |
|           |            | 1       | 99        | 21.13                    | 21.22              | 21.09              | 0-1                       | 1        |
|           |            | 50      | 0         | 19.82                    | 20.07              | 19.94              | 0-2                       | 2        |
|           |            | 50      | 25        | 19.87                    | 19.99              | 19.92              | 0-2                       | 2        |
|           |            | 50      | 49        | 19.91                    | 20.03              | 19.94              | 0-2                       | 2        |
|           |            | 100     | 0         | 19.90                    | 20.02              | 19.92              | 0-2                       | 2        |

[ LTE Band 4 Conducted Power ]

LTE Band 4 \_ 1.4 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                      |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|----------------------|----------------------|---------------------------|----------|
|           |            |         |           | 19957 Ch. 1710.7 MHz     | 20175 Ch. 1732.5 MHz | 20393 Ch. 1754.3 MHz |                           |          |
| 1.4 MHz   | QPSK       | 1       | 0         | 23.35                    | 23.34                | 23.37                | 0                         | 0        |
|           |            | 1       | 3         | 23.36                    | 23.21                | 23.53                | 0                         | 0        |
|           |            | 1       | 5         | 23.38                    | 23.23                | 23.55                | 0                         | 0        |
|           |            | 3       | 0         | 23.37                    | 23.17                | 23.37                | 0                         | 0        |
|           |            | 3       | 1         | 23.33                    | 23.14                | 23.43                | 0                         | 0        |
|           |            | 3       | 3         | 23.33                    | 23.12                | 23.37                | 0                         | 0        |
|           |            | 6       | 0         | 21.31                    | 21.15                | 21.24                | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.95                    | 20.77                | 20.94                | 0-1                       | 1        |
|           |            | 1       | 3         | 21.12                    | 20.77                | 20.99                | 0-1                       | 1        |
|           |            | 1       | 5         | 21.13                    | 20.81                | 21.00                | 0-1                       | 1        |
|           |            | 3       | 0         | 21.16                    | 20.97                | 21.13                | 0-1                       | 1        |
|           |            | 3       | 1         | 21.16                    | 20.97                | 21.15                | 0-1                       | 1        |
|           |            | 3       | 3         | 21.14                    | 21.02                | 21.19                | 0-1                       | 1        |
|           |            | 6       | 0         | 20.22                    | 20.14                | 20.22                | 0-2                       | 2        |

## LTE Band 4\_3 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                      |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|----------------------|----------------------|---------------------------|----------|
|           |            |         |           | 19965 Ch. 1711.5 MHz     | 20175 Ch. 1732.5 MHz | 20385 Ch. 1753.5 MHz |                           |          |
| 3 MHz     | QPSK       | 1       | 0         | 23.19                    | 23.13                | 23.36                | 0                         | 0        |
|           |            | 1       | 7         | 23.18                    | 23.22                | 23.36                | 0                         | 0        |
|           |            | 1       | 14        | 23.15                    | 23.14                | 23.39                | 0                         | 0        |
|           |            | 8       | 0         | 21.28                    | 21.10                | 21.30                | 0-1                       | 1        |
|           |            | 8       | 3         | 21.27                    | 21.19                | 21.28                | 0-1                       | 1        |
|           |            | 8       | 7         | 21.24                    | 21.16                | 21.29                | 0-1                       | 1        |
|           |            | 15      | 0         | 21.24                    | 21.17                | 21.31                | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.22                    | 21.20                | 21.22                | 0-1                       | 1        |
|           |            | 1       | 7         | 21.27                    | 21.35                | 21.39                | 0-1                       | 1        |
|           |            | 1       | 14        | 21.32                    | 21.19                | 21.38                | 0-1                       | 1        |
|           |            | 8       | 0         | 20.16                    | 20.11                | 20.32                | 0-2                       | 2        |
|           |            | 8       | 3         | 20.20                    | 20.05                | 20.25                | 0-2                       | 2        |
|           |            | 8       | 7         | 20.25                    | 20.09                | 20.27                | 0-2                       | 2        |
|           |            | 15      | 0         | 20.22                    | 20.19                | 20.28                | 0-2                       | 2        |

## LTE Band 4\_5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                      |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|----------------------|----------------------|---------------------------|----------|
|           |            |         |           | 19975 Ch. 1712.5 MHz     | 20175 Ch. 1732.5 MHz | 20375 Ch. 1752.5 MHz |                           |          |
| 5 MHz     | QPSK       | 1       | 0         | 23.19                    | 23.23                | 23.37                | 0                         | 0        |
|           |            | 1       | 12        | 23.19                    | 23.17                | 23.34                | 0                         | 0        |
|           |            | 1       | 24        | 23.27                    | 23.07                | 23.41                | 0                         | 0        |
|           |            | 12      | 0         | 21.21                    | 21.19                | 21.29                | 0-1                       | 1        |
|           |            | 12      | 6         | 21.27                    | 21.18                | 21.37                | 0-1                       | 1        |
|           |            | 12      | 11        | 21.29                    | 21.10                | 21.33                | 0-1                       | 1        |
|           |            | 25      | 0         | 21.29                    | 21.14                | 21.28                | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.30                    | 21.12                | 21.49                | 0-1                       | 1        |
|           |            | 1       | 12        | 21.39                    | 21.09                | 21.32                | 0-1                       | 1        |
|           |            | 1       | 24        | 21.36                    | 21.27                | 21.35                | 0-1                       | 1        |
|           |            | 12      | 0         | 20.13                    | 20.07                | 20.24                | 0-2                       | 2        |
|           |            | 12      | 6         | 20.26                    | 20.11                | 20.28                | 0-2                       | 2        |
|           |            | 12      | 11        | 20.26                    | 20.13                | 20.31                | 0-2                       | 2        |
|           |            | 25      | 0         | 20.24                    | 20.13                | 20.23                | 0-2                       | 2        |

## LTE Band 4\_ 10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                      |                    | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|----------------------|--------------------|---------------------------|----------|
|           |            |         |           | 20000 Ch. 1715 MHz       | 20175 Ch. 1732.5 MHz | 20350 Ch. 1750 MHz |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | 22.95                    | 22.93                | 23.08              | 0                         | 0        |
|           |            | 1       | 24        | 23.19                    | 23.14                | 23.31              | 0                         | 0        |
|           |            | 1       | 49        | 23.36                    | 22.75                | 23.16              | 0                         | 0        |
|           |            | 25      | 0         | 21.22                    | 21.12                | 21.26              | 0-1                       | 1        |
|           |            | 25      | 12        | 21.23                    | 21.14                | 21.25              | 0-1                       | 1        |
|           |            | 25      | 24        | 21.24                    | 21.16                | 21.23              | 0-1                       | 1        |
|           |            | 50      | 0         | 21.26                    | 21.11                | 21.25              | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.09                    | 21.25                | 21.33              | 0-1                       | 1        |
|           |            | 1       | 24        | 21.33                    | 21.21                | 21.44              | 0-1                       | 1        |
|           |            | 1       | 49        | 21.33                    | 21.14                | 21.42              | 0-1                       | 1        |
|           |            | 25      | 0         | 20.13                    | 20.08                | 20.18              | 0-2                       | 2        |
|           |            | 25      | 12        | 20.12                    | 20.07                | 20.21              | 0-2                       | 2        |
|           |            | 25      | 24        | 20.17                    | 20.13                | 20.27              | 0-2                       | 2        |
|           |            | 50      | 0         | 20.17                    | 20.10                | 20.28              | 0-2                       | 2        |

## LTE Band 4 \_ 15 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                      |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|----------------------|----------------------|---------------------------|----------|
|           |            |         |           | 20025 Ch. 1717.5 MHz     | 20175 Ch. 1732.5 MHz | 20325 Ch. 1747.5 MHz |                           |          |
| 15 MHz    | QPSK       | 1       | 0         | 22.31                    | 23.04                | 23.19                | 0                         | 0        |
|           |            | 1       | 36        | 23.29                    | 23.14                | 23.33                | 0                         | 0        |
|           |            | 1       | 74        | 23.27                    | 22.86                | 23.29                | 0                         | 0        |
|           |            | 36      | 0         | 21.22                    | 21.12                | 21.28                | 0-1                       | 1        |
|           |            | 36      | 18        | 21.22                    | 21.14                | 21.24                | 0-1                       | 1        |
|           |            | 36      | 39        | 21.25                    | 21.11                | 21.27                | 0-1                       | 1        |
|           |            | 75      | 0         | 21.23                    | 21.12                | 21.23                | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.28                    | 20.80                | 21.30                | 0-1                       | 1        |
|           |            | 1       | 36        | 21.33                    | 21.32                | 21.32                | 0-1                       | 1        |
|           |            | 1       | 74        | 21.20                    | 21.34                | 21.27                | 0-1                       | 1        |
|           |            | 36      | 0         | 20.16                    | 20.17                | 20.20                | 0-2                       | 2        |
|           |            | 36      | 18        | 20.20                    | 20.13                | 20.17                | 0-2                       | 2        |
|           |            | 36      | 39        | 20.15                    | 20.15                | 20.19                | 0-2                       | 2        |
|           |            | 75      | 0         | 20.13                    | 20.23                | 20.23                | 0-2                       | 2        |

## LTE Band 4 \_ 20 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------------|----------|
|           |            |         |           | 20175 Ch.<br>1732.5 MHz  |                           |          |
| 20 MHz    | QPSK       | 1       | 0         | <b>23.16</b>             | 0                         | 0        |
|           |            | 1       | 49        | 23.14                    | 0                         | 0        |
|           |            | 1       | 99        | 22.99                    | 0                         | 0        |
|           |            | 50      | 0         | 21.10                    | 0-1                       | 1        |
|           |            | 50      | 25        | 21.12                    | 0-1                       | 1        |
|           |            | 50      | 49        | <b>21.17</b>             | 0-1                       | 1        |
|           |            | 100     | 0         | 21.12                    | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.10                    | 0-1                       | 1        |
|           |            | 1       | 49        | 21.32                    | 0-1                       | 1        |
|           |            | 1       | 99        | 21.18                    | 0-1                       | 1        |
|           |            | 50      | 0         | 20.11                    | 0-2                       | 2        |
|           |            | 50      | 25        | 20.12                    | 0-2                       | 2        |
|           |            | 50      | 49        | 20.15                    | 0-2                       | 2        |
|           |            | 100     | 0         | 20.09                    | 0-2                       | 2        |

**Note:** LTE Band 4 (AWS) at 20 MHz 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 mid channel of the group of overlapping channels should be selected for testing.

[ LTE Band 5 Conducted Power ]

LTE Band 5 \_ 1.4 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                     |                     | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------|---------------------|---------------------------|----------|
|           |            |         |           | 20407 Ch. 824.7 MHz      | 20525 Ch. 836.5 MHz | 20643 Ch. 848.3 MHz |                           |          |
| 1.4 MHz   | QPSK       | 1       | 0         | 22.85                    | 22.87               | 22.79               | 0                         | 0        |
|           |            | 1       | 3         | 22.87                    | 22.86               | 22.77               | 0                         | 0        |
|           |            | 1       | 5         | 22.85                    | 22.85               | 22.76               | 0                         | 0        |
|           |            | 3       | 0         | 22.83                    | 22.86               | 22.76               | 0                         | 0        |
|           |            | 3       | 1         | 22.82                    | 22.86               | 22.77               | 0                         | 0        |
|           |            | 3       | 3         | 22.85                    | 22.91               | 22.77               | 0                         | 0        |
|           |            | 6       | 0         | 20.78                    | 20.80               | 20.69               | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.44                    | 20.65               | 20.71               | 0-1                       | 1        |
|           |            | 1       | 3         | 20.45                    | 20.35               | 20.57               | 0-1                       | 1        |
|           |            | 1       | 5         | 20.54                    | 20.35               | 20.50               | 0-1                       | 1        |
|           |            | 3       | 0         | 20.69                    | 20.67               | 20.64               | 0-1                       | 1        |
|           |            | 3       | 1         | 20.60                    | 20.68               | 20.67               | 0-1                       | 1        |
|           |            | 3       | 3         | 20.72                    | 20.70               | 20.71               | 0-1                       | 1        |
|           |            | 6       | 0         | 19.88                    | 19.77               | 19.73               | 0-2                       | 2        |

## LTE Band 5 \_ 3 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                     |                     | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------|---------------------|---------------------------|----------|
|           |            |         |           | 20415 Ch. 825.5 MHz      | 20525 Ch. 836.5 MHz | 20635 Ch. 847.5 MHz |                           |          |
| 3 MHz     | QPSK       | 1       | 0         | 22.83                    | 22.83               | 22.82               | 0                         | 0        |
|           |            | 1       | 7         | 22.79                    | 22.85               | 22.69               | 0                         | 0        |
|           |            | 1       | 14        | 22.77                    | 22.79               | 22.71               | 0                         | 0        |
|           |            | 8       | 0         | 20.71                    | 20.83               | 20.77               | 0-1                       | 1        |
|           |            | 8       | 3         | 20.75                    | 20.76               | 20.73               | 0-1                       | 1        |
|           |            | 8       | 7         | 20.74                    | 20.76               | 20.72               | 0-1                       | 1        |
|           |            | 15      | 0         | 20.80                    | 20.80               | 20.72               | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.73                    | 20.97               | 20.60               | 0-1                       | 1        |
|           |            | 1       | 7         | 20.35                    | 20.83               | 20.72               | 0-1                       | 1        |
|           |            | 1       | 14        | 20.35                    | 20.78               | 20.46               | 0-1                       | 1        |
|           |            | 8       | 0         | 19.89                    | 19.81               | 19.70               | 0-2                       | 2        |
|           |            | 8       | 3         | 19.79                    | 19.85               | 19.79               | 0-2                       | 2        |
|           |            | 8       | 7         | 19.73                    | 19.77               | 19.87               | 0-2                       | 2        |
|           |            | 15      | 0         | 19.80                    | 19.81               | 19.69               | 0-2                       | 2        |

## LTE Band 5 \_ 5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                     |                     | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------|---------------------|---------------------------|----------|
|           |            |         |           | 20425 Ch. 826.5 MHz      | 20525 Ch. 836.5 MHz | 20625 Ch. 846.5 MHz |                           |          |
| 5 MHz     | QPSK       | 1       | 0         | 22.92                    | 22.87               | 22.89               | 0                         | 0        |
|           |            | 1       | 12        | 22.90                    | 22.87               | 22.84               | 0                         | 0        |
|           |            | 1       | 24        | 22.91                    | 22.86               | 22.84               | 0                         | 0        |
|           |            | 12      | 0         | 20.83                    | 20.74               | 20.80               | 0-1                       | 1        |
|           |            | 12      | 6         | 20.82                    | 20.75               | 20.81               | 0-1                       | 1        |
|           |            | 12      | 11        | 20.80                    | 20.77               | 20.80               | 0-1                       | 1        |
|           |            | 25      | 0         | 20.81                    | 20.74               | 20.80               | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.53                    | 20.31               | 20.52               | 0-1                       | 1        |
|           |            | 1       | 12        | 20.48                    | 20.54               | 20.63               | 0-1                       | 1        |
|           |            | 1       | 24        | 20.56                    | 20.51               | 20.52               | 0-1                       | 1        |
|           |            | 12      | 0         | 19.76                    | 19.75               | 19.78               | 0-2                       | 2        |
|           |            | 12      | 6         | 19.70                    | 19.80               | 19.77               | 0-2                       | 2        |
|           |            | 12      | 11        | 19.78                    | 19.78               | 19.76               | 0-2                       | 2        |
|           |            | 25      | 0         | 19.84                    | 19.78               | 19.84               | 0-2                       | 2        |

## LTE Band 5 \_ 10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------------|----------|
|           |            |         |           | 20525 Ch. 836.5 MHz      |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | <b>22.94</b>             | 0                         | 0        |
|           |            | 1       | 24        | 22.83                    | 0                         | 0        |
|           |            | 1       | 49        | 22.88                    | 0                         | 0        |
|           |            | 25      | 0         | 20.73                    | 0-1                       | 1        |
|           |            | 25      | 12        | 20.75                    | 0-1                       | 1        |
|           |            | 25      | 24        | <b>20.81</b>             | 0-1                       | 1        |
|           |            | 50      | 0         | 20.77                    | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.59                    | 0-1                       | 1        |
|           |            | 1       | 24        | 20.37                    | 0-1                       | 1        |
|           |            | 1       | 49        | 20.49                    | 0-1                       | 1        |
|           |            | 25      | 0         | 19.71                    | 0-2                       | 2        |
|           |            | 25      | 12        | 19.88                    | 0-2                       | 2        |
|           |            | 25      | 24        | 19.80                    | 0-2                       | 2        |
|           |            | 50      | 0         | 19.82                    | 0-2                       | 2        |

**Note:** LTE Band 5 at 10 MHz 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 mid channel of the group of overlapping channels should be selected for testing.

[LTE Band 12 Conducted Power ]

LTE Band 12 \_ 1.4 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                     |                     | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------|---------------------|---------------------------|----------|
|           |            |         |           | 23017 Ch. 699.7 MHz      | 23095 Ch. 707.5 MHz | 23173 Ch. 715.3 MHz |                           |          |
| 1.4 MHz   | QPSK       | 1       | 0         | 23.03                    | 23.18               | 22.98               | 0                         | 0        |
|           |            | 1       | 3         | 22.99                    | 23.22               | 22.95               | 0                         | 0        |
|           |            | 1       | 5         | 23.00                    | 23.17               | 23.02               | 0                         | 0        |
|           |            | 3       | 0         | 23.08                    | 23.11               | 22.93               | 0                         | 0        |
|           |            | 3       | 1         | 23.03                    | 23.13               | 22.91               | 0                         | 0        |
|           |            | 3       | 3         | 23.02                    | 23.12               | 22.99               | 0                         | 0        |
|           |            | 6       | 0         | 20.98                    | 21.03               | 20.92               | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.59                    | 20.86               | 20.57               | 0-1                       | 1        |
|           |            | 1       | 3         | 20.60                    | 20.59               | 20.40               | 0-1                       | 1        |
|           |            | 1       | 5         | 20.67                    | 20.68               | 20.51               | 0-1                       | 1        |
|           |            | 3       | 0         | 20.95                    | 20.98               | 20.70               | 0-1                       | 1        |
|           |            | 3       | 1         | 20.81                    | 20.94               | 20.83               | 0-1                       | 1        |
|           |            | 3       | 3         | 20.81                    | 20.89               | 20.72               | 0-1                       | 1        |
|           |            | 6       | 0         | 19.72                    | 19.90               | 19.70               | 0-2                       | 2        |

LTE Band 12 \_ 3 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                     |                     | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------|---------------------|---------------------------|----------|
|           |            |         |           | 23025 Ch. 700.5 MHz      | 23095 Ch. 707.5 MHz | 23165 Ch. 714.5 MHz |                           |          |
| 3 MHz     | QPSK       | 1       | 0         | 22.96                    | 23.08               | 22.92               | 0                         | 0        |
|           |            | 1       | 7         | 22.82                    | 23.10               | 22.82               | 0                         | 0        |
|           |            | 1       | 14        | 22.86                    | 23.11               | 22.87               | 0                         | 0        |
|           |            | 8       | 0         | 20.99                    | 21.18               | 20.93               | 0-1                       | 1        |
|           |            | 8       | 3         | 20.96                    | 21.19               | 20.90               | 0-1                       | 1        |
|           |            | 8       | 7         | 21.00                    | 21.16               | 20.91               | 0-1                       | 1        |
|           |            | 15      | 0         | 20.95                    | 21.14               | 20.96               | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.57                    | 20.89               | 20.57               | 0-1                       | 1        |
|           |            | 1       | 7         | 20.62                    | 20.81               | 20.60               | 0-1                       | 1        |
|           |            | 1       | 14        | 20.58                    | 20.79               | 20.65               | 0-1                       | 1        |
|           |            | 8       | 0         | 19.80                    | 20.04               | 19.67               | 0-2                       | 2        |
|           |            | 8       | 3         | 19.75                    | 19.97               | 19.67               | 0-2                       | 2        |
|           |            | 8       | 7         | 19.72                    | 19.97               | 19.63               | 0-2                       | 2        |
|           |            | 15      | 0         | 19.73                    | 19.92               | 19.78               | 0-2                       | 2        |

LTE Band 12 \_ 5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                     |                     | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------|---------------------|---------------------------|----------|
|           |            |         |           | 23035 Ch. 701.5 MHz      | 23095 Ch. 707.5 MHz | 23155 Ch. 713.5 MHz |                           |          |
| 5 MHz     | QPSK       | 1       | 0         | 22.95                    | 23.22               | 23.00               | 0                         | 0        |
|           |            | 1       | 12        | 22.94                    | 23.13               | 22.90               | 0                         | 0        |
|           |            | 1       | 24        | 22.91                    | 23.09               | 22.87               | 0                         | 0        |
|           |            | 12      | 0         | 20.96                    | 21.18               | 20.93               | 0-1                       | 1        |
|           |            | 12      | 6         | 20.95                    | 21.14               | 20.95               | 0-1                       | 1        |
|           |            | 12      | 11        | 20.87                    | 21.10               | 20.93               | 0-1                       | 1        |
|           |            | 25      | 0         | 20.91                    | 21.21               | 20.95               | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.78                    | 20.78               | 20.72               | 0-1                       | 1        |
|           |            | 1       | 12        | 20.74                    | 20.76               | 20.81               | 0-1                       | 1        |
|           |            | 1       | 24        | 20.67                    | 20.77               | 20.68               | 0-1                       | 1        |
|           |            | 12      | 0         | 19.70                    | 19.89               | 19.68               | 0-2                       | 2        |
|           |            | 12      | 6         | 19.63                    | 19.86               | 19.65               | 0-2                       | 2        |
|           |            | 12      | 11        | 19.67                    | 19.86               | 19.67               | 0-2                       | 2        |
|           |            | 25      | 0         | 19.70                    | 20.01               | 19.74               | 0-2                       | 2        |

LTE Band 12 \_ 10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------------|----------|
|           |            |         |           | 23095 Ch. 707.5 MHz      |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | <b>23.27</b>             | 0                         | 0        |
|           |            | 1       | 24        | 23.19                    | 0                         | 0        |
|           |            | 1       | 49        | 23.12                    | 0                         | 0        |
|           |            | 25      | 0         | <b>21.14</b>             | 0-1                       | 1        |
|           |            | 25      | 12        | 21.11                    | 0-1                       | 1        |
|           |            | 25      | 24        | 21.09                    | 0-1                       | 1        |
|           |            | 50      | 0         | 21.14                    | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.03                    | 0-1                       | 1        |
|           |            | 1       | 24        | 20.86                    | 0-1                       | 1        |
|           |            | 1       | 49        | 21.13                    | 0-1                       | 1        |
|           |            | 25      | 0         | 19.97                    | 0-2                       | 2        |
|           |            | 25      | 12        | 19.89                    | 0-2                       | 2        |
|           |            | 25      | 24        | 19.90                    | 0-2                       | 2        |
|           |            | 50      | 0         | 19.95                    | 0-2                       | 2        |

Note: LTE Band 12 at 10 MHz 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 mid channel of the group of overlapping channels should be selected for testing.

[LTE Band 13 Conducted Power ]

LTE Band 13 \_ 5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                   |                     | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|-------------------|---------------------|---------------------------|----------|
|           |            |         |           | 23205 Ch. 779.5 MHz      | 23230 Ch. 782 MHz | 23255 Ch. 784.5 MHz |                           |          |
| 5 MHz     | QPSK       | 1       | 0         | 23.02                    | 23.09             | 22.85               | 0                         | 0        |
|           |            | 1       | 12        | 22.86                    | 23.06             | 22.77               | 0                         | 0        |
|           |            | 1       | 24        | 22.74                    | 22.97             | 22.85               | 0                         | 0        |
|           |            | 12      | 0         | 20.95                    | 21.02             | 20.82               | 0-1                       | 1        |
|           |            | 12      | 6         | 20.85                    | 21.01             | 20.79               | 0-1                       | 1        |
|           |            | 12      | 11        | 20.82                    | 21.02             | 20.76               | 0-1                       | 1        |
|           |            | 25      | 0         | 20.84                    | 20.99             | 20.81               | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.74                    | 20.79             | 20.47               | 0-1                       | 1        |
|           |            | 1       | 12        | 20.74                    | 20.66             | 20.47               | 0-1                       | 1        |
|           |            | 1       | 24        | 20.55                    | 20.67             | 20.52               | 0-1                       | 1        |
|           |            | 12      | 0         | 19.75                    | 19.84             | 19.65               | 0-2                       | 2        |
|           |            | 12      | 6         | 19.71                    | 19.91             | 19.62               | 0-2                       | 2        |
|           |            | 12      | 11        | 19.60                    | 19.79             | 19.71               | 0-2                       | 2        |
|           |            | 25      | 0         | 19.76                    | 19.88             | 19.70               | 0-2                       | 2        |

LTE Band 13 \_ 10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------------|----------|
|           |            |         |           | 23230 Ch. 782 MHz        |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | <b>23.16</b>             | 0                         | 0        |
|           |            | 1       | 24        | 23.04                    | 0                         | 0        |
|           |            | 1       | 49        | 23.04                    | 0                         | 0        |
|           |            | 25      | 0         | <b>21.07</b>             | 0-1                       | 1        |
|           |            | 25      | 12        | 20.98                    | 0-1                       | 1        |
|           |            | 25      | 24        | 20.93                    | 0-1                       | 1        |
|           |            | 50      | 0         | 20.96                    | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.95                    | 0-1                       | 1        |
|           |            | 1       | 24        | 20.77                    | 0-1                       | 1        |
|           |            | 1       | 49        | 20.56                    | 0-1                       | 1        |
|           |            | 25      | 0         | 19.97                    | 0-2                       | 2        |
|           |            | 25      | 12        | 19.90                    | 0-2                       | 2        |
|           |            | 25      | 24        | 19.84                    | 0-2                       | 2        |
|           |            | 50      | 0         | 19.87                    | 0-2                       | 2        |

Note: LTE Band 13 at 10 MHz 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 mid channel of the group of overlapping channels should be selected for testing.

[ LTE Band 25 Conducted Power ]

LTE Band 25 \_ 1.4 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                         |                         | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|-------------------------|-------------------------|---------------------------|----------|
|           |            |         |           | 26047 Ch.<br>1850.7 MHz  | 26365 Ch.<br>1882.5 MHz | 26683 Ch.<br>1914.3 MHz |                           |          |
| 1.4 MHz   | QPSK       | 1       | 0         | 22.88                    | 23.10                   | 21.98                   | 0                         | 0        |
|           |            | 1       | 3         | 22.81                    | 23.05                   | 21.96                   | 0                         | 0        |
|           |            | 1       | 5         | 22.78                    | 23.07                   | 21.97                   | 0                         | 0        |
|           |            | 3       | 0         | 22.86                    | 23.11                   | 21.96                   | 0                         | 0        |
|           |            | 3       | 1         | 22.87                    | 23.04                   | 22.02                   | 0                         | 0        |
|           |            | 3       | 3         | 22.79                    | 23.07                   | 21.97                   | 0                         | 0        |
|           |            | 6       | 0         | 21.17                    | 21.34                   | 20.25                   | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.83                    | 20.86                   | 19.98                   | 0-1                       | 1        |
|           |            | 1       | 3         | 20.93                    | 21.06                   | 20.40                   | 0-1                       | 1        |
|           |            | 1       | 5         | 20.77                    | 20.93                   | 20.62                   | 0-1                       | 1        |
|           |            | 3       | 0         | 21.02                    | 21.19                   | 20.08                   | 0-1                       | 1        |
|           |            | 3       | 1         | 21.02                    | 21.19                   | 20.10                   | 0-1                       | 1        |
|           |            | 3       | 3         | 20.99                    | 21.22                   | 20.03                   | 0-1                       | 1        |
|           |            | 6       | 0         | 20.18                    | 20.23                   | 19.13                   | 0-2                       | 2        |

## LTE Band 25\_3 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                      |                     | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|----------------------|---------------------|---------------------------|----------|
|           |            |         |           | 26055 Ch. 1851.5 MHz     | 26365 Ch. 1882.5 MHz | 26675Ch. 1913.5 MHz |                           |          |
| 3 MHz     | QPSK       | 1       | 0         | 22.81                    | 22.96                | 21.96               | 0                         | 0        |
|           |            | 1       | 7         | 22.76                    | 23.03                | 21.94               | 0                         | 0        |
|           |            | 1       | 14        | 22.70                    | 23.03                | 21.87               | 0                         | 0        |
|           |            | 8       | 0         | 21.12                    | 21.35                | 20.24               | 0-1                       | 1        |
|           |            | 8       | 3         | 21.08                    | 21.27                | 20.26               | 0-1                       | 1        |
|           |            | 8       | 7         | 21.16                    | 21.32                | 20.22               | 0-1                       | 1        |
|           |            | 15      | 0         | 21.06                    | 21.31                | 20.28               | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.82                    | 21.31                | 19.99               | 0-1                       | 1        |
|           |            | 1       | 7         | 20.82                    | 21.12                | 20.03               | 0-1                       | 1        |
|           |            | 1       | 14        | 21.20                    | 21.24                | 20.20               | 0-1                       | 1        |
|           |            | 8       | 0         | 20.06                    | 20.31                | 19.23               | 0-2                       | 2        |
|           |            | 8       | 3         | 20.08                    | 20.20                | 19.22               | 0-2                       | 2        |
|           |            | 8       | 7         | 20.10                    | 20.34                | 19.23               | 0-2                       | 2        |
|           |            | 15      | 0         | 20.08                    | 20.31                | 19.30               | 0-2                       | 2        |

## LTE Band 25 \_ 5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                      |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|----------------------|----------------------|---------------------------|----------|
|           |            |         |           | 26065 Ch. 1852.5 MHz     | 26365 Ch. 1882.5 MHz | 26665 Ch. 1912.5 MHz |                           |          |
| 5 MHz     | QPSK       | 1       | 0         | 22.85                    | 23.14                | 22.02                | 0                         | 0        |
|           |            | 1       | 12        | 22.78                    | 23.13                | 22.01                | 0                         | 0        |
|           |            | 1       | 24        | 22.83                    | 23.18                | 22.06                | 0                         | 0        |
|           |            | 12      | 0         | 21.12                    | 21.34                | 20.26                | 0-1                       | 1        |
|           |            | 12      | 6         | 21.11                    | 21.32                | 20.30                | 0-1                       | 1        |
|           |            | 12      | 11        | 21.06                    | 21.36                | 20.29                | 0-1                       | 1        |
|           |            | 25      | 0         | 21.09                    | 21.32                | 20.29                | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.92                    | 21.40                | 20.27                | 0-1                       | 1        |
|           |            | 1       | 12        | 21.12                    | 21.33                | 20.16                | 0-1                       | 1        |
|           |            | 1       | 24        | 20.92                    | 21.35                | 20.05                | 0-1                       | 1        |
|           |            | 12      | 0         | 20.03                    | 20.28                | 19.22                | 0-2                       | 2        |
|           |            | 12      | 6         | 20.04                    | 20.29                | 19.24                | 0-2                       | 2        |
|           |            | 12      | 11        | 20.00                    | 20.28                | 19.16                | 0-2                       | 2        |
|           |            | 25      | 0         | 20.08                    | 20.30                | 19.21                | 0-2                       | 2        |

## LTE Band 25 \_10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                      |                    | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|----------------------|--------------------|---------------------------|----------|
|           |            |         |           | 26090 Ch. 1855 MHz       | 26365 Ch. 1882.5 MHz | 26640 Ch. 1910 MHz |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | 22.84                    | 23.09                | 22.10              | 0                         | 0        |
|           |            | 1       | 24        | 22.83                    | 23.04                | 22.06              | 0                         | 0        |
|           |            | 1       | 49        | 22.78                    | 23.11                | 21.60              | 0                         | 0        |
|           |            | 25      | 0         | 21.10                    | 21.31                | 20.28              | 0-1                       | 1        |
|           |            | 25      | 12        | 21.14                    | 21.29                | 20.23              | 0-1                       | 1        |
|           |            | 25      | 24        | 21.13                    | 21.37                | 20.25              | 0-1                       | 1        |
|           |            | 50      | 0         | 21.11                    | 21.31                | 20.27              | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.84                    | 21.05                | 20.00              | 0-1                       | 1        |
|           |            | 1       | 24        | 20.80                    | 21.11                | 20.03              | 0-1                       | 1        |
|           |            | 1       | 49        | 20.91                    | 21.12                | 19.91              | 0-1                       | 1        |
|           |            | 25      | 0         | 20.08                    | 20.37                | 19.31              | 0-2                       | 2        |
|           |            | 25      | 12        | 20.08                    | 20.30                | 19.30              | 0-2                       | 2        |
|           |            | 25      | 24        | 20.04                    | 20.32                | 19.32              | 0-2                       | 2        |
|           |            | 50      | 0         | 20.11                    | 20.38                | 19.32              | 0-2                       | 2        |

## LTE Band 25 \_15 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                      |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|----------------------|----------------------|---------------------------|----------|
|           |            |         |           | 26115 Ch. 1857.5 MHz     | 26365 Ch. 1882.5 MHz | 26615 Ch. 1907.5 MHz |                           |          |
| 15 MHz    | QPSK       | 1       | 0         | 22.89                    | 23.11                | 22.06                | 0                         | 0        |
|           |            | 1       | 36        | 22.94                    | 23.04                | 22.04                | 0                         | 0        |
|           |            | 1       | 74        | 22.96                    | 23.09                | 20.96                | 0                         | 0        |
|           |            | 36      | 0         | 21.21                    | 21.38                | 20.32                | 0-1                       | 1        |
|           |            | 36      | 18        | 21.18                    | 21.40                | 20.32                | 0-1                       | 1        |
|           |            | 36      | 39        | 21.22                    | 21.38                | 20.29                | 0-1                       | 1        |
|           |            | 75      | 0         | 21.15                    | 21.37                | 20.37                | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.05                    | 21.45                | 20.30                | 0-1                       | 1        |
|           |            | 1       | 36        | 21.12                    | 21.27                | 20.27                | 0-1                       | 1        |
|           |            | 1       | 74        | 21.31                    | 21.34                | 21.22                | 0-1                       | 1        |
|           |            | 36      | 0         | 20.07                    | 20.29                | 19.26                | 0-2                       | 2        |
|           |            | 36      | 18        | 20.03                    | 20.29                | 19.27                | 0-2                       | 2        |
|           |            | 36      | 39        | 20.08                    | 20.32                | 19.30                | 0-2                       | 2        |
|           |            | 75      | 0         | 20.11                    | 20.33                | 19.37                | 0-2                       | 2        |

## LTE Band 25 \_ 20 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                      |                    | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|----------------------|--------------------|---------------------------|----------|
|           |            |         |           | 26140 Ch. 1860 MHz       | 26365 Ch. 1882.5 MHz | 26590 Ch. 1905 MHz |                           |          |
| 20 MHz    | QPSK       | 1       | 0         | 22.86                    | 22.77                | 22.14              | 0                         | 0        |
|           |            | 1       | 49        | 22.87                    | <b>23.19</b>         | 22.12              | 0                         | 0        |
|           |            | 1       | 99        | 22.94                    | 22.83                | 21.22              | 0                         | 0        |
|           |            | 50      | 0         | 21.21                    | 21.37                | 20.32              | 0-1                       | 1        |
|           |            | 50      | 25        | 21.19                    | 21.37                | 20.36              | 0-1                       | 1        |
|           |            | 50      | 49        | 21.14                    | <b>21.43</b>         | 20.35              | 0-1                       | 1        |
|           |            | 100     | 0         | 21.15                    | 21.34                | 20.43              | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.94                    | 21.27                | 20.32              | 0-1                       | 1        |
|           |            | 1       | 49        | 20.92                    | 21.13                | 20.13              | 0-1                       | 1        |
|           |            | 1       | 99        | 20.99                    | 21.28                | 20.02              | 0-1                       | 1        |
|           |            | 50      | 0         | 20.12                    | 20.35                | 19.38              | 0-2                       | 2        |
|           |            | 50      | 25        | 20.16                    | 20.33                | 19.38              | 0-2                       | 2        |
|           |            | 50      | 49        | 20.12                    | 20.36                | 19.39              | 0-2                       | 2        |
|           |            | 100     | 0         | 20.10                    | 20.31                | 19.26              | 0-2                       | 2        |

[ LTE Band 26 Conducted Power ]

LTE Band 26 \_ 1.4 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                     |                     | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------|---------------------|---------------------------|----------|
|           |            |         |           | 26697 Ch. 814.7 MHz      | 26865 Ch. 831.5 MHz | 27033 Ch. 848.3 MHz |                           |          |
| 1.4 MHz   | QPSK       | 1       | 0         | 22.87                    | 22.98               | 22.98               | 0                         | 0        |
|           |            | 1       | 3         | 22.96                    | 22.95               | 22.94               | 0                         | 0        |
|           |            | 1       | 5         | 22.94                    | 22.92               | 22.93               | 0                         | 0        |
|           |            | 3       | 0         | 22.91                    | 22.95               | 22.93               | 0                         | 0        |
|           |            | 3       | 1         | 22.92                    | 22.94               | 22.90               | 0                         | 0        |
|           |            | 3       | 3         | 22.92                    | 22.91               | 22.93               | 0                         | 0        |
|           |            | 6       | 0         | 20.84                    | 20.81               | 20.79               | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.47                    | 20.47               | 20.51               | 0-1                       | 1        |
|           |            | 1       | 3         | 20.57                    | 20.48               | 20.50               | 0-1                       | 1        |
|           |            | 1       | 5         | 20.58                    | 20.43               | 20.46               | 0-1                       | 1        |
|           |            | 3       | 0         | 20.71                    | 20.75               | 20.69               | 0-1                       | 1        |
|           |            | 3       | 1         | 20.75                    | 20.69               | 20.66               | 0-1                       | 1        |
|           |            | 3       | 3         | 20.75                    | 20.74               | 20.63               | 0-1                       | 1        |
|           |            | 6       | 0         | 19.84                    | 19.75               | 19.83               | 0-2                       | 2        |

## LTE Band 26\_3 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                     |                     | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------|---------------------|---------------------------|----------|
|           |            |         |           | 26705 Ch. 815.5 MHz      | 26865 Ch. 831.5 MHz | 27025 Ch. 847.5 MHz |                           |          |
| 3 MHz     | QPSK       | 1       | 0         | 22.86                    | 22.86               | 22.92               | 0                         | 0        |
|           |            | 1       | 7         | 22.80                    | 22.85               | 22.83               | 0                         | 0        |
|           |            | 1       | 14        | 22.87                    | 22.84               | 22.89               | 0                         | 0        |
|           |            | 8       | 0         | 20.78                    | 20.82               | 20.83               | 0-1                       | 1        |
|           |            | 8       | 3         | 20.77                    | 20.86               | 20.85               | 0-1                       | 1        |
|           |            | 8       | 7         | 20.79                    | 20.79               | 20.80               | 0-1                       | 1        |
|           |            | 15      | 0         | 20.78                    | 20.83               | 20.83               | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.72                    | 20.61               | 20.56               | 0-1                       | 1        |
|           |            | 1       | 7         | 20.54                    | 20.60               | 20.58               | 0-1                       | 1        |
|           |            | 1       | 14        | 20.47                    | 20.52               | 20.45               | 0-1                       | 1        |
|           |            | 8       | 0         | 19.72                    | 19.80               | 19.78               | 0-2                       | 2        |
|           |            | 8       | 3         | 19.77                    | 19.82               | 19.79               | 0-2                       | 2        |
|           |            | 8       | 7         | 19.80                    | 19.82               | 19.73               | 0-2                       | 2        |
|           |            | 15      | 0         | 19.82                    | 19.79               | 19.80               | 0-2                       | 2        |

## LTE Band 26\_5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                     |                     | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------|---------------------|---------------------------|----------|
|           |            |         |           | 26715 Ch. 816.5 MHz      | 26865 Ch. 831.5 MHz | 27015 Ch. 846.5 MHz |                           |          |
| 5 MHz     | QPSK       | 1       | 0         | 22.89                    | 22.94               | 23.01               | 0                         | 0        |
|           |            | 1       | 12        | 22.89                    | 22.93               | 22.92               | 0                         | 0        |
|           |            | 1       | 24        | 22.86                    | 22.94               | 22.91               | 0                         | 0        |
|           |            | 12      | 0         | 20.79                    | 20.86               | 20.87               | 0-1                       | 1        |
|           |            | 12      | 6         | 20.86                    | 20.82               | 20.86               | 0-1                       | 1        |
|           |            | 12      | 11        | 20.76                    | 20.85               | 20.82               | 0-1                       | 1        |
|           |            | 25      | 0         | 20.84                    | 20.83               | 20.84               | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.39                    | 20.61               | 20.61               | 0-1                       | 1        |
|           |            | 1       | 12        | 20.52                    | 20.51               | 20.52               | 0-1                       | 1        |
|           |            | 1       | 24        | 20.49                    | 20.44               | 20.61               | 0-1                       | 1        |
|           |            | 12      | 0         | 19.81                    | 19.74               | 19.78               | 0-2                       | 2        |
|           |            | 12      | 6         | 19.74                    | 19.79               | 19.84               | 0-2                       | 2        |
|           |            | 12      | 11        | 19.78                    | 19.73               | 19.71               | 0-2                       | 2        |
|           |            | 25      | 0         | 19.80                    | 19.85               | 19.84               | 0-2                       | 2        |

## LTE Band 26 \_10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                     |                   | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------|-------------------|---------------------------|----------|
|           |            |         |           | 26740 Ch. 819 MHz        | 26865 Ch. 831.5 MHz | 26990 Ch. 844 MHz |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | 23.04                    | 22.96               | 22.97             | 0                         | 0        |
|           |            | 1       | 24        | 22.97                    | 22.91               | 22.90             | 0                         | 0        |
|           |            | 1       | 49        | 22.96                    | 22.89               | 22.88             | 0                         | 0        |
|           |            | 25      | 0         | 20.88                    | 20.81               | 20.80             | 0-1                       | 1        |
|           |            | 25      | 12        | 20.87                    | 20.77               | 20.82             | 0-1                       | 1        |
|           |            | 25      | 24        | 20.80                    | 20.84               | 20.76             | 0-1                       | 1        |
|           |            | 50      | 0         | 20.81                    | 20.79               | 20.86             | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.65                    | 20.55               | 20.66             | 0-1                       | 1        |
|           |            | 1       | 24        | 20.56                    | 20.41               | 20.60             | 0-1                       | 1        |
|           |            | 1       | 49        | 20.57                    | 20.60               | 20.47             | 0-1                       | 1        |
|           |            | 25      | 0         | 19.86                    | 19.87               | 19.77             | 0-2                       | 2        |
|           |            | 25      | 12        | 19.85                    | 19.80               | 19.73             | 0-2                       | 2        |
|           |            | 25      | 24        | 19.85                    | 19.76               | 19.75             | 0-2                       | 2        |
|           |            | 50      | 0         | 19.83                    | 19.80               | 19.79             | 0-2                       | 2        |

## LTE Band 26 \_15 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                     |                     | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------|---------------------|---------------------------|----------|
|           |            |         |           | 26765 Ch. 821.5 MHz      | 26865 Ch. 831.5 MHz | 26965 Ch. 841.5 MHz |                           |          |
| 15 MHz    | QPSK       | 1       | 0         | <b>23.08</b>             | 23.00               | 23.01               | 0                         | 0        |
|           |            | 1       | 36        | 23.04                    | 22.93               | 22.92               | 0                         | 0        |
|           |            | 1       | 74        | 22.95                    | 23.00               | 23.01               | 0                         | 0        |
|           |            | 36      | 0         | <b>20.90</b>             | 20.82               | 20.88               | 0-1                       | 1        |
|           |            | 36      | 18        | 20.84                    | 20.84               | 20.87               | 0-1                       | 1        |
|           |            | 36      | 39        | 20.87                    | 20.80               | 20.87               | 0-1                       | 1        |
|           |            | 75      | 0         | 20.89                    | 20.79               | 20.90               | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.76                    | 20.69               | 20.56               | 0-1                       | 1        |
|           |            | 1       | 36        | 20.62                    | 20.59               | 20.57               | 0-1                       | 1        |
|           |            | 1       | 74        | 20.57                    | 20.48               | 20.66               | 0-1                       | 1        |
|           |            | 36      | 0         | 19.83                    | 19.75               | 19.82               | 0-2                       | 2        |
|           |            | 36      | 18        | 19.82                    | 19.83               | 19.81               | 0-2                       | 2        |
|           |            | 36      | 39        | 19.78                    | 19.77               | 19.82               | 0-2                       | 2        |
|           |            | 75      | 0         | 19.81                    | 19.81               | 19.90               | 0-2                       | 2        |

[LTE Band 66 ]

LTE Band 66 \_ 1.4 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                        |                          | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|------------------------|--------------------------|---------------------------|----------|
|           |            |         |           | 131979Ch.<br>1710.7 MHz  | 132322 Ch.<br>1745 MHz | 132665 Ch.<br>1779.3 MHz |                           |          |
| 1.4 MHz   | QPSK       | 1       | 0         | 23.21                    | 23.33                  | 22.70                    | 0                         | 0        |
|           |            | 1       | 3         | 23.24                    | 23.33                  | 22.73                    | 0                         | 0        |
|           |            | 1       | 5         | 23.30                    | 23.32                  | 22.75                    | 0                         | 0        |
|           |            | 3       | 0         | 23.20                    | 23.27                  | 22.73                    | 0                         | 0        |
|           |            | 3       | 1         | 23.21                    | 23.31                  | 22.73                    | 0                         | 0        |
|           |            | 3       | 3         | 23.24                    | 23.24                  | 22.73                    | 0                         | 0        |
|           |            | 6       | 0         | 21.21                    | 21.28                  | 20.67                    | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.88                    | 20.89                  | 20.26                    | 0-1                       | 1        |
|           |            | 1       | 3         | 20.77                    | 20.88                  | 20.40                    | 0-1                       | 1        |
|           |            | 1       | 5         | 20.78                    | 20.91                  | 20.36                    | 0-1                       | 1        |
|           |            | 3       | 0         | 21.05                    | 21.07                  | 20.43                    | 0-1                       | 1        |
|           |            | 3       | 1         | 21.09                    | 21.07                  | 20.55                    | 0-1                       | 1        |
|           |            | 3       | 3         | 21.02                    | 21.01                  | 20.56                    | 0-1                       | 1        |
|           |            | 6       | 0         | 20.15                    | 20.14                  | 19.61                    | 0-2                       | 2        |

## LTE Band 66\_ 3 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                     |                       | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------|-----------------------|---------------------------|----------|
|           |            |         |           | 131987 Ch. 1711.5 MHz    | 132322 Ch. 1745 MHz | 132657 Ch. 1778.5 MHz |                           |          |
| 3 MHz     | QPSK       | 1       | 0         | 23.17                    | 23.18               | 22.57                 | 0                         | 0        |
|           |            | 1       | 7         | 23.13                    | 23.18               | 22.60                 | 0                         | 0        |
|           |            | 1       | 14        | 23.12                    | 23.29               | 22.62                 | 0                         | 0        |
|           |            | 8       | 0         | 21.17                    | 21.22               | 20.66                 | 0-1                       | 1        |
|           |            | 8       | 3         | 21.19                    | 21.21               | 20.63                 | 0-1                       | 1        |
|           |            | 8       | 7         | 21.20                    | 21.24               | 20.67                 | 0-1                       | 1        |
|           |            | 15      | 0         | 21.22                    | 21.22               | 20.67                 | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.02                    | 21.19               | 20.35                 | 0-1                       | 1        |
|           |            | 1       | 7         | 20.91                    | 21.25               | 20.26                 | 0-1                       | 1        |
|           |            | 1       | 14        | 21.16                    | 21.18               | 20.67                 | 0-1                       | 1        |
|           |            | 8       | 0         | 20.12                    | 20.15               | 19.54                 | 0-2                       | 2        |
|           |            | 8       | 3         | 20.12                    | 20.11               | 19.58                 | 0-2                       | 2        |
|           |            | 8       | 7         | 20.16                    | 20.13               | 19.53                 | 0-2                       | 2        |
|           |            | 15      | 0         | 20.17                    | 20.13               | 19.56                 | 0-2                       | 2        |

## LTE Band 66 \_ 5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                    |                       | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|--------------------|-----------------------|---------------------------|----------|
|           |            |         |           | 131997 Ch. 1712.5 MHz    | 132322Ch. 1745 MHz | 132647 Ch. 1777.5 MHz |                           |          |
| 5 MHz     | QPSK       | 1       | 0         | 23.15                    | 23.23              | 22.78                 | 0                         | 0        |
|           |            | 1       | 12        | 23.20                    | 23.20              | 22.72                 | 0                         | 0        |
|           |            | 1       | 24        | 23.25                    | 23.17              | 22.67                 | 0                         | 0        |
|           |            | 12      | 0         | 21.14                    | 21.18              | 20.60                 | 0-1                       | 1        |
|           |            | 12      | 6         | 21.19                    | 21.26              | 20.67                 | 0-1                       | 1        |
|           |            | 12      | 11        | 21.14                    | 21.28              | 20.67                 | 0-1                       | 1        |
|           |            | 25      | 0         | 21.15                    | 21.21              | 20.64                 | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.16                    | 21.25              | 20.75                 | 0-1                       | 1        |
|           |            | 1       | 12        | 21.20                    | 21.29              | 20.68                 | 0-1                       | 1        |
|           |            | 1       | 24        | 21.13                    | 21.45              | 20.68                 | 0-1                       | 1        |
|           |            | 12      | 0         | 20.18                    | 20.14              | 19.56                 | 0-2                       | 2        |
|           |            | 12      | 6         | 20.13                    | 20.17              | 19.62                 | 0-2                       | 2        |
|           |            | 12      | 11        | 20.16                    | 20.18              | 19.55                 | 0-2                       | 2        |
|           |            | 25      | 0         | 20.08                    | 20.21              | 19.62                 | 0-2                       | 2        |

## LTE Band 66\_ 10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                     |                     | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------|---------------------|---------------------------|----------|
|           |            |         |           | 132022 Ch. 1715 MHz      | 132322 Ch. 1745 MHz | 132622 Ch. 1775 MHz |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | 23.18                    | 22.84               | 22.70               | 0                         | 0        |
|           |            | 1       | 24        | 23.19                    | 23.24               | 22.90               | 0                         | 0        |
|           |            | 1       | 49        | 23.26                    | 22.90               | 22.87               | 0                         | 0        |
|           |            | 25      | 0         | 21.19                    | 21.19               | 20.73               | 0-1                       | 1        |
|           |            | 25      | 12        | 21.18                    | 21.28               | 20.70               | 0-1                       | 1        |
|           |            | 25      | 24        | 21.20                    | 21.22               | 20.67               | 0-1                       | 1        |
|           |            | 50      | 0         | 21.19                    | 21.27               | 20.73               | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.09                    | 21.12               | 20.38               | 0-1                       | 1        |
|           |            | 1       | 24        | 21.09                    | 21.17               | 20.53               | 0-1                       | 1        |
|           |            | 1       | 49        | 21.12                    | 21.11               | 20.64               | 0-1                       | 1        |
|           |            | 25      | 0         | 20.15                    | 20.22               | 19.64               | 0-2                       | 2        |
|           |            | 25      | 12        | 20.13                    | 20.21               | 19.66               | 0-2                       | 2        |
|           |            | 25      | 24        | 20.24                    | 20.18               | 19.68               | 0-2                       | 2        |
|           |            | 50      | 0         | 20.19                    | 20.18               | 19.64               | 0-2                       | 2        |

## LTE Band 66\_ 15 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                     |                       | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------|-----------------------|---------------------------|----------|
|           |            |         |           | 132047 Ch. 1717.5 MHz    | 132322 Ch. 1745 MHz | 132597 Ch. 1772.5 MHz |                           |          |
| 15 MHz    | QPSK       | 1       | 0         | 23.12                    | 22.95               | 22.83                 | 0                         | 0        |
|           |            | 1       | 36        | 23.30                    | 23.16               | 22.82                 | 0                         | 0        |
|           |            | 1       | 74        | 23.25                    | 23.01               | 22.88                 | 0                         | 0        |
|           |            | 36      | 0         | 21.23                    | 21.23               | 20.71                 | 0-1                       | 1        |
|           |            | 36      | 18        | 21.22                    | 21.30               | 20.67                 | 0-1                       | 1        |
|           |            | 36      | 39        | 21.24                    | 21.26               | 20.71                 | 0-1                       | 1        |
|           |            | 75      | 0         | 21.20                    | 21.21               | 20.71                 | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.91                    | 21.02               | 20.49                 | 0-1                       | 1        |
|           |            | 1       | 36        | 21.06                    | 21.16               | 20.46                 | 0-1                       | 1        |
|           |            | 1       | 74        | 21.00                    | 21.12               | 20.52                 | 0-1                       | 1        |
|           |            | 36      | 0         | 20.16                    | 20.17               | 19.66                 | 0-2                       | 2        |
|           |            | 36      | 18        | 20.19                    | 20.20               | 19.65                 | 0-2                       | 2        |
|           |            | 36      | 39        | 20.19                    | 20.20               | 19.60                 | 0-2                       | 2        |
|           |            | 75      | 0         | 20.15                    | 20.22               | 19.69                 | 0-2                       | 2        |

## LTE Band 66 \_ 20 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                     |                     | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------|---------------------|---------------------------|----------|
|           |            |         |           | 132072 Ch. 1720 MHz      | 132322 Ch. 1745 MHz | 132572 Ch. 1770 MHz |                           |          |
| 20 MHz    | QPSK       | 1       | 0         | 22.93                    | 22.83               | 22.79               | 0                         | 0        |
|           |            | 1       | 49        | 23.07                    | <b>23.27</b>        | 22.72               | 0                         | 0        |
|           |            | 1       | 99        | 23.24                    | 22.97               | 22.71               | 0                         | 0        |
|           |            | 50      | 0         | 21.11                    | 21.23               | 20.71               | 0-1                       | 1        |
|           |            | 50      | 25        | 21.15                    | 21.23               | 20.73               | 0-1                       | 1        |
|           |            | 50      | 49        | 21.16                    | <b>21.32</b>        | 20.72               | 0-1                       | 1        |
|           |            | 100     | 0         | 21.14                    | 21.27               | 20.73               | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 20.87                    | 20.93               | 20.35               | 0-1                       | 1        |
|           |            | 1       | 49        | 20.85                    | 21.15               | 20.48               | 0-1                       | 1        |
|           |            | 1       | 99        | 20.82                    | 21.21               | 20.47               | 0-1                       | 1        |
|           |            | 50      | 0         | 20.12                    | 20.21               | 19.69               | 0-2                       | 2        |
|           |            | 50      | 25        | 20.13                    | 20.24               | 19.69               | 0-2                       | 2        |
|           |            | 50      | 49        | 20.12                    | 20.28               | 19.67               | 0-2                       | 2        |
|           |            | 100     | 0         | 20.10                    | 20.17               | 19.67               | 0-2                       | 2        |

## 11.2 WIFI Conducted Power measurement method

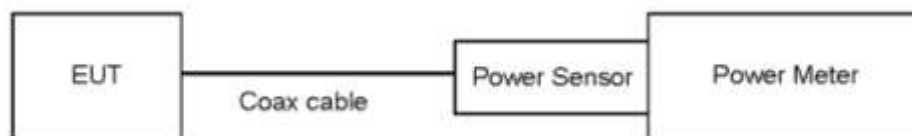
Un-Licensed bands (DTS Band)

| Test Description       | Test Procedure Used                                                                                                                   |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Conducted Output Power | <ul style="list-style-type: none"> <li>- KDB 558074 v05r02 - Section 8.3.2.3</li> <li>- ANSI 63.10-2013 - Section 11.9.2.3</li> </ul> |

### Test Procedure

1. Measure the duty cycle.
2. Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
3. Add  $10 \log (1/x)$ , where  $x$  is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

### Test setup



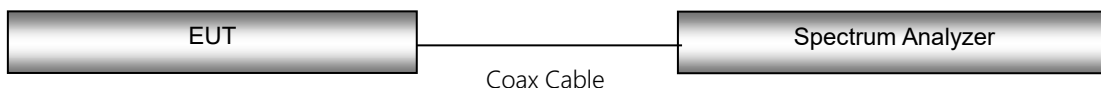
### 11.2.1 IEEE 802.11 (2.4 GHz) Maximum Conducted Power

| Mode           | Frequency [MHz] | Channel | IEEE 802.11 (2.4 GHz) Average RF Conducted Power [dBm] |
|----------------|-----------------|---------|--------------------------------------------------------|
| 802.11b        | 2 412           | 1       | 16.92                                                  |
|                | 2 437           | 6       | 16.94                                                  |
|                | 2 462           | 11      | 17.04                                                  |
|                | 2 467           | 12      | 11.16                                                  |
|                | 2 472           | 13      | 5.84                                                   |
| 802.11g        | 2 412           | 1       | 14.05                                                  |
|                | 2 437           | 6       | 14.21                                                  |
|                | 2 462           | 11      | 14.03                                                  |
|                | 2 467           | 12      | 11.59                                                  |
|                | 2 472           | 13      | 6.68                                                   |
| 802.11n (HT20) | 2 412           | 1       | 12.79                                                  |
|                | 2 437           | 6       | 13.01                                                  |
|                | 2 462           | 11      | 12.89                                                  |
|                | 2 467           | 12      | 11.44                                                  |
|                | 2 472           | 13      | 6.71                                                   |

Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02:

- Power measurements were performed for the transmission mode configuration with the highest maximum output power specified for production units.
- For transmission mode with the same maximum output power specification, powers were measured for the largest channel bandwidth, lowest order modulation and lowest data rate.
- For transmission modes with identical maximum specified output power, channel bandwidth, modulation and data rates, power measurements were required for all identical configurations.
- For each transmission mode configuration, powers were measured for the highest and lowest channels; and at the mid-band channel(s) when there were at least 3 channels supported. For configurations with multiple mid-band channels, due to an even number of channels, both channels were measured.

#### Test Configuration



### 11.3 Bluetooth Conducted Power

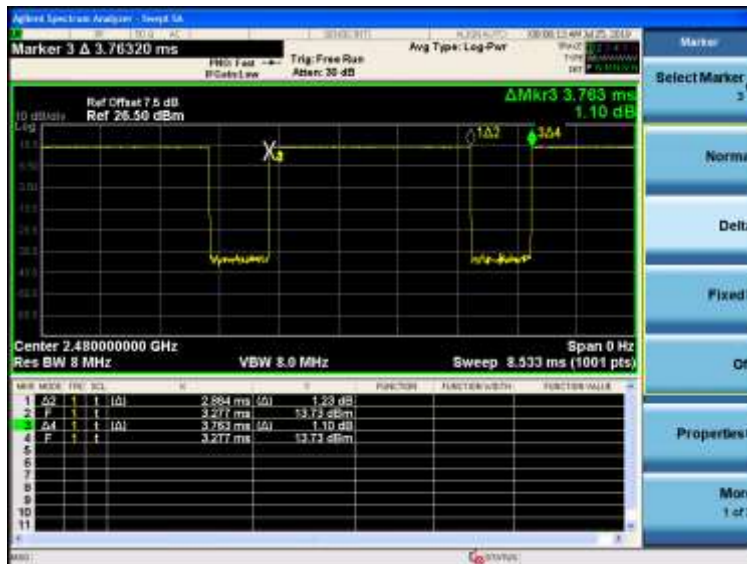
The Burst averaged-conducted power

| Mode  | Channel | Bluetooth Power [dBm] |
|-------|---------|-----------------------|
| DH5   | 0       | 14.94                 |
|       | 39      | 15.74                 |
|       | 78      | 15.32                 |
| 2-DH5 | 0       | 8.58                  |
|       | 39      | 8.04                  |
|       | 78      | 7.88                  |
| 3-DH5 | 0       | 8.57                  |
|       | 39      | 8.05                  |
|       | 78      | 7.87                  |

Per October 2016 TCB Workshop Notes:

When call box and Bluetooth protocol are used for Bluetooth SAR measurement, time-domain plot is required to identify duty factor for supporting the test setup and result.

Bluetooth duty cycle was measured using Bluetooth tester equipment (CBT / R&S) with Bluetooth protocol. DH5 mode is the highest duty cycle and conducted power. SAR test were performed at DH5 mode.



Duty Cycle

$$= (\text{BT-On time} / \text{BT-Full time}) = (2.884 / 3.763) = 0.766 \text{ (DH5)}$$

Duty factor = 1/Duty cycle : 1.305

## 12. System Verification

### 12.1 Tissue Verification

The Head /body simulating material is calibrated by HCT using the DAKS 3.5 to determine the conductivity and permittivity.

| Table for Head Tissue Verification |                   |             |             |                                      |                                          |                                    |                                        |                |                  |
|------------------------------------|-------------------|-------------|-------------|--------------------------------------|------------------------------------------|------------------------------------|----------------------------------------|----------------|------------------|
| Date of Tests                      | Tissue Temp. (°C) | Tissue Type | Freq. (MHz) | Measured Conductivity $\sigma$ (S/m) | Measured Dielectric Constant, $\epsilon$ | Target Conductivity $\sigma$ (S/m) | Target Dielectric Constant, $\epsilon$ | % dev $\sigma$ | % dev $\epsilon$ |
| 07/17/2019                         | 19.3              | 750H        | 700         | 0.854                                | 42.050                                   | 0.889                              | 42.200                                 | -3.94%         | -0.36%           |
|                                    |                   |             | 750         | 0.875                                | 41.908                                   | 0.893                              | 41.940                                 | -2.02%         | -0.08%           |
|                                    |                   |             | 785         | 0.924                                | 41.430                                   | 0.896                              | 41.758                                 | 3.13%          | -0.79%           |
| 07/16/2019                         | 18.5              | 835H        | 820         | 0.894                                | 40.511                                   | 0.899                              | 41.577                                 | -0.56%         | -2.56%           |
|                                    |                   |             | 835         | 0.909                                | 40.296                                   | 0.900                              | 41.500                                 | 1.00%          | -2.90%           |
|                                    |                   |             | 850         | 0.925                                | 40.075                                   | 0.916                              | 41.500                                 | 0.98%          | -3.43%           |
| 07/15/2019                         | 20.7              | 1800H       | 1710        | 1.313                                | 41.127                                   | 1.348                              | 40.142                                 | -2.60%         | 2.45%            |
|                                    |                   |             | 1750        | 1.355                                | 41.071                                   | 1.371                              | 40.079                                 | -1.17%         | 2.48%            |
|                                    |                   |             | 1800        | 1.407                                | 41.026                                   | 1.400                              | 40.000                                 | 0.50%          | 2.57%            |
| 07/12/2019                         | 18.0              | 1900H       | 1850        | 1.382                                | 38.862                                   | 1.400                              | 40.000                                 | -1.29%         | -2.85%           |
|                                    |                   |             | 1900        | 1.440                                | 38.722                                   | 1.400                              | 40.000                                 | 2.86%          | -3.20%           |
|                                    |                   |             | 1910        | 1.447                                | 38.718                                   | 1.400                              | 40.000                                 | 3.36%          | -3.20%           |
| 07/25/2019                         | 21.1              | 2450H       | 2400        | 1.736                                | 38.531                                   | 1.756                              | 39.290                                 | -1.14%         | -1.93%           |
|                                    |                   |             | 2450        | 1.802                                | 38.398                                   | 1.800                              | 39.200                                 | 0.11%          | -2.05%           |
|                                    |                   |             | 2500        | 1.852                                | 38.208                                   | 1.855                              | 39.140                                 | -0.16%         | -2.38%           |

| Table for Body Tissue Verification |                   |             |             |                                      |                                          |                                    |                                        |                |                  |
|------------------------------------|-------------------|-------------|-------------|--------------------------------------|------------------------------------------|------------------------------------|----------------------------------------|----------------|------------------|
| Date of Tests                      | Tissue Temp. (°C) | Tissue Type | Freq. (MHz) | Measured Conductivity $\sigma$ (S/m) | Measured Dielectric Constant, $\epsilon$ | Target Conductivity $\sigma$ (S/m) | Target Dielectric Constant, $\epsilon$ | % dev $\sigma$ | % dev $\epsilon$ |
| 07/18/2019                         | 19.4              | 750B        | 700         | 0.912                                | 56.879                                   | 0.959                              | 55.730                                 | -4.90%         | 2.06%            |
|                                    |                   |             | 750         | 0.962                                | 56.383                                   | 0.963                              | 55.530                                 | -0.10%         | 1.54%            |
|                                    |                   |             | 785         | 0.998                                | 55.996                                   | 0.966                              | 55.397                                 | 3.31%          | 1.08%            |
| 07/19/2019                         | 19.7              | 835B        | 820         | 0.944                                | 56.610                                   | 0.969                              | 55.260                                 | -2.58%         | 2.44%            |
|                                    |                   |             | 835         | 0.959                                | 56.412                                   | 0.970                              | 55.200                                 | -1.13%         | 2.20%            |
|                                    |                   |             | 850         | 0.971                                | 56.253                                   | 0.988                              | 55.150                                 | -1.72%         | 2.00%            |
| 07/22/2019                         | 18.6              | 1800B       | 1710        | 1.398                                | 54.325                                   | 1.463                              | 53.534                                 | -4.44%         | 1.48%            |
|                                    |                   |             | 1750        | 1.439                                | 54.283                                   | 1.488                              | 53.430                                 | -3.29%         | 1.60%            |
|                                    |                   |             | 1800        | 1.489                                | 54.065                                   | 1.520                              | 53.300                                 | -2.04%         | 1.44%            |
| 07/23/2019                         | 19.9              | 1900B       | 1850        | 1.529                                | 53.658                                   | 1.520                              | 53.300                                 | 0.59%          | 0.67%            |
|                                    |                   |             | 1900        | 1.579                                | 53.529                                   | 1.520                              | 53.300                                 | 3.88%          | 0.43%            |
|                                    |                   |             | 1910        | 1.571                                | 53.571                                   | 1.520                              | 53.300                                 | 3.36%          | 0.51%            |
| 07/25/2019                         | 21.1              | 2450B       | 2400        | 1.871                                | 53.671                                   | 1.902                              | 52.770                                 | -1.63%         | 1.71%            |
|                                    |                   |             | 2450        | 1.946                                | 53.619                                   | 1.950                              | 52.700                                 | -0.21%         | 1.74%            |
|                                    |                   |             | 2500        | 2.002                                | 53.503                                   | 2.021                              | 52.640                                 | -0.94%         | 1.64%            |

## 12.2 System Verification

### System Verification Results – 1g SAR

\* Input Power: 50 mW

| Freq.<br>[MHz] | Date       | Probe<br>(S/N) | Dipole<br>(S/N) | Liquid | Amb.<br>Temp.<br>[°C] | Liquid<br>Temp.<br>[°C] | 1 W Target<br>SAR <sub>1g</sub><br>(SPEAG)<br>[W/kg] | 50mW<br>Measured<br>SAR <sub>1g</sub><br>[W/kg] | 1 W<br>Normalized<br>SAR <sub>1g</sub><br>[W/kg] | Deviation<br>[%] | Limit<br>[%] |
|----------------|------------|----------------|-----------------|--------|-----------------------|-------------------------|------------------------------------------------------|-------------------------------------------------|--------------------------------------------------|------------------|--------------|
| 750            | 07/17/2019 | 3903           | 1014            | Head   | 19.6                  | 19.3                    | 8.25                                                 | 0.404                                           | 8.08                                             | - 2.06           | ± 10         |
| 835            | 07/16/2019 | 3903           | 4d165           | Head   | 18.8                  | 18.5                    | 9.41                                                 | 0.469                                           | 9.38                                             | - 0.32           | ± 10         |
| 1 800          | 07/15/2019 | 3903           | 2d007           | Head   | 21.0                  | 20.7                    | 39.1                                                 | 2.05                                            | 41.0                                             | + 4.86           | ± 10         |
| 1 900          | 07/12/2019 | 3903           | 5d032           | Head   | 18.3                  | 18.0                    | 40.0                                                 | 2.01                                            | 40.2                                             | + 0.50           | ± 10         |
| 2 450          | 07/25/2019 | 3968           | 743             | Head   | 21.4                  | 21.1                    | 51.8                                                 | 2.84                                            | 56.8                                             | + 9.65           | ± 10         |

### System Verification Results – 10g SAR

\* Input Power: 50 mW

| Freq.<br>[MHz] | Date       | Probe<br>(S/N) | Dipole<br>(S/N) | Liquid | Amb.<br>Temp.<br>[°C] | Liquid<br>Temp.<br>[°C] | 1 W Target<br>SAR <sub>10g</sub><br>(SPEAG)<br>[W/kg] | 50mW<br>Measured<br>SAR <sub>10g</sub><br>[W/kg] | 1 W<br>Normalized<br>SAR <sub>10g</sub><br>[W/kg] | Deviation<br>[%] | Limit<br>[%] |
|----------------|------------|----------------|-----------------|--------|-----------------------|-------------------------|-------------------------------------------------------|--------------------------------------------------|---------------------------------------------------|------------------|--------------|
| 750            | 07/18/2019 | 3903           | 1014            | Body   | 19.7                  | 19.4                    | 5.60                                                  | 0.266                                            | 5.32                                              | - 5.00           | ± 10         |
| 835            | 07/19/2019 | 3903           | 4d165           | Body   | 20.0                  | 19.7                    | 6.21                                                  | 0.296                                            | 5.92                                              | - 4.67           | ± 10         |
| 1 800          | 07/22/2019 | 3903           | 2d007           | Body   | 18.9                  | 18.6                    | 20.0                                                  | 0.994                                            | 19.88                                             | - 0.60           | ± 10         |
| 1 900          | 07/23/2019 | 3903           | 5d032           | Body   | 20.2                  | 19.9                    | 20.8                                                  | 0.970                                            | 19.4                                              | - 6.73           | ± 10         |
| 2 450          | 07/25/2019 | 3968           | 743             | Body   | 21.4                  | 21.1                    | 23.4                                                  | 1.17                                             | 23.4                                              | + 0.00           | ± 10         |

### 12.3 System Verification Procedure

SAR measurement was prior to assessment, the system is verified to the  $\pm 10\%$  of the specifications at each frequency band by using the system verification kit. (Graphic Plots Attached)

- Cabling the system, using the verification kit equipment.
- Generate about 50 mW Input level from the signal generator to the Dipole Antenna.
- Dipole antenna was placed below the flat phantom.
- The measured one-gram SAR at the surface of the phantom above the dipole feed-point should be within 10 % of the target reference value.
- The results are normalized to 1 W input power.

Note;

SAR Verification was performed according to the FCC KDB 865664 D01v01r04.

### 13. SAR Test Data Summary

#### 13.1 Standalone Face SAR Results (Stainless material)

| UMTS 850 Head SAR (Next-to-Mouth)                                                                   |      |      |                    |                  |                  |                      |            |                                          |                  |                |                     |          |
|-----------------------------------------------------------------------------------------------------|------|------|--------------------|------------------|------------------|----------------------|------------|------------------------------------------|------------------|----------------|---------------------|----------|
| Frequency                                                                                           |      | Mode | Tune-Up Limit (dB) | Meas. Power (dB) | Power Drift (dB) | Test Position Sensor | Duty Cycle | Distance (mm)                            | Meas. SAR (W/kg) | Scaling Factor | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                 | Ch.  |      |                    |                  |                  |                      |            |                                          |                  |                |                     |          |
| 836.6                                                                                               | 4183 | RMC  | 24.0               | 22.94            | -0.16            | Front                | 1:1        | 10                                       | 0.011            | 1.276          | 0.014               | 1        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |      |      |                    |                  |                  |                      |            | Head<br>1.6 W/kg<br>Averaged over 1 gram |                  |                |                     |          |

| UMTS 1700 Head SAR (Next-to-Mouth)                                                                  |      |      |                    |                  |                  |                      |            |                                          |                  |                |                     |          |
|-----------------------------------------------------------------------------------------------------|------|------|--------------------|------------------|------------------|----------------------|------------|------------------------------------------|------------------|----------------|---------------------|----------|
| Frequency                                                                                           |      | Mode | Tune-Up Limit (dB) | Meas. Power (dB) | Power Drift (dB) | Test Position Sensor | Duty Cycle | Distance (mm)                            | Meas. SAR (W/kg) | Scaling Factor | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                 | Ch.  |      |                    |                  |                  |                      |            |                                          |                  |                |                     |          |
| 1 732.4                                                                                             | 1412 | RMC  | 24.0               | 23.24            | -0.10            | Front                | 1:1        | 10                                       | 0.368            | 1.191          | 0.438               | 2        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |      |      |                    |                  |                  |                      |            | Head<br>1.6 W/kg<br>Averaged over 1 gram |                  |                |                     |          |

| UMTS 1900 Head SAR (Next-to-Mouth)                                                                  |      |      |                    |                  |                  |                      |            |                                          |                  |                |                     |          |
|-----------------------------------------------------------------------------------------------------|------|------|--------------------|------------------|------------------|----------------------|------------|------------------------------------------|------------------|----------------|---------------------|----------|
| Frequency                                                                                           |      | Mode | Tune-Up Limit (dB) | Meas. Power (dB) | Power Drift (dB) | Test Position Sensor | Duty Cycle | Distance (mm)                            | Meas. SAR (W/kg) | Scaling Factor | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                 | Ch.  |      |                    |                  |                  |                      |            |                                          |                  |                |                     |          |
| 1 880                                                                                               | 9400 | RMC  | 24.0               | 23.33            | -0.16            | Front                | 1:1        | 10                                       | 0.431            | 1.167          | 0.503               | 3        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |      |      |                    |                  |                  |                      |            | Head<br>1.6 W/kg<br>Averaged over 1 gram |                  |                |                     |          |

| LTE Band 2 Head SAR (Next-to-Mouth)                                                                 |       |      |    |                    |                  |                  |               |                                          |         |           |            |               |                  |                |                     |          |
|-----------------------------------------------------------------------------------------------------|-------|------|----|--------------------|------------------|------------------|---------------|------------------------------------------|---------|-----------|------------|---------------|------------------|----------------|---------------------|----------|
| Frequency                                                                                           |       | Mode | BW | Tune-Up Limit (dB) | Meas. Power (dB) | Power Drift (dB) | Test Position | MPR (dB)                                 | RB Size | RB Offset | Duty Cycle | Distance (mm) | Meas. SAR (W/kg) | Scaling Factor | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                 | Ch.   |      |    |                    |                  |                  |               |                                          |         |           |            |               |                  |                |                     |          |
| 1 880                                                                                               | 18900 | QPSK | 20 | 23.8               | 23.16            | -0.02            | Front         | 0                                        | 1       | 99        | 1:1        | 10            | 0.320            | 1.159          | 0.371               | -        |
| 1 880                                                                                               | 18900 | QPSK | 20 | 22.8               | 21.09            | -0.18            | Front         | 1                                        | 50      | 25        | 1:1        | 10            | 0.352            | 1.483          | <b>0.522</b>        | 4        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |       |      |    |                    |                  |                  |               | Head<br>1.6 W/kg<br>Averaged over 1 gram |         |           |            |               |                  |                |                     |          |

| LTE Band 4 Head SAR (Next-to-Mouth)                                                                 |       |      |    |                    |                  |                  |               |                                          |         |           |            |               |                  |                |                     |          |
|-----------------------------------------------------------------------------------------------------|-------|------|----|--------------------|------------------|------------------|---------------|------------------------------------------|---------|-----------|------------|---------------|------------------|----------------|---------------------|----------|
| Frequency                                                                                           |       | Mode | BW | Tune-Up Limit (dB) | Meas. Power (dB) | Power Drift (dB) | Test Position | MPR (dB)                                 | RB Size | RB Offset | Duty Cycle | Distance (mm) | Meas. SAR (W/kg) | Scaling Factor | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                 | Ch.   |      |    |                    |                  |                  |               |                                          |         |           |            |               |                  |                |                     |          |
| 1 732.5                                                                                             | 20175 | QPSK | 20 | 23.8               | 23.16            | -0.14            | Front         | 0                                        | 1       | 0         | 1:1        | 10            | 0.229            | 1.159          | 0.265               | -        |
| 1 732.5                                                                                             | 20175 | QPSK | 20 | 22.8               | 21.17            | -0.14            | Front         | 1                                        | 50      | 49        | 1:1        | 10            | 0.384            | 1.455          | <b>0.559</b>        | 5        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |       |      |    |                    |                  |                  |               | Head<br>1.6 W/kg<br>Averaged over 1 gram |         |           |            |               |                  |                |                     |          |

| LTE Band 12 Head SAR (Next-to-Mouth)                                                                |       |      |    |                    |                  |                  |               |                                          |         |           |            |               |                  |                |                     |          |
|-----------------------------------------------------------------------------------------------------|-------|------|----|--------------------|------------------|------------------|---------------|------------------------------------------|---------|-----------|------------|---------------|------------------|----------------|---------------------|----------|
| Frequency                                                                                           |       | Mode | BW | Tune-Up Limit (dB) | Meas. Power (dB) | Power Drift (dB) | Test Position | MPR (dB)                                 | RB Size | RB Offset | Duty Cycle | Distance (mm) | Meas. SAR (W/kg) | Scaling Factor | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                 | Ch.   |      |    |                    |                  |                  |               |                                          |         |           |            |               |                  |                |                     |          |
| 707.5                                                                                               | 23095 | QPSK | 10 | 23.8               | 23.27            | 0.10             | Front         | 0                                        | 1       | 0         | 1:1        | 10            | 0.00325          | 1.130          | <b>0.004</b>        | 6        |
| 707.5                                                                                               | 23095 | QPSK | 10 | 22.8               | 21.14            | -0.11            | Front         | 1                                        | 25      | 0         | 1:1        | 10            | 0.00236          | 1.466          | 0.003               | -        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |       |      |    |                    |                  |                  |               | Head<br>1.6 W/kg<br>Averaged over 1 gram |         |           |            |               |                  |                |                     |          |

| LTE Band 13 Head SAR (Next-to-Mouth)                                                                |       |      |    |                    |                  |                  |               |                                          |         |           |            |               |                  |                |                     |          |
|-----------------------------------------------------------------------------------------------------|-------|------|----|--------------------|------------------|------------------|---------------|------------------------------------------|---------|-----------|------------|---------------|------------------|----------------|---------------------|----------|
| Frequency                                                                                           |       | Mode | BW | Tune-Up Limit (dB) | Meas. Power (dB) | Power Drift (dB) | Test Position | MPR (dB)                                 | RB Size | RB Offset | Duty Cycle | Distance (mm) | Meas. SAR (W/kg) | Scaling Factor | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                 | Ch.   |      |    |                    |                  |                  |               |                                          |         |           |            |               |                  |                |                     |          |
| 782                                                                                                 | 23230 | QPSK | 10 | 23.8               | 23.16            | -0.13            | Front         | 0                                        | 1       | 0         | 1:1        | 10            | 0.00734          | 1.159          | <b>0.009</b>        | 7        |
| 782                                                                                                 | 23230 | QPSK | 10 | 22.8               | 21.07            | 0.01             | Front         | 1                                        | 25      | 0         | 1:1        | 10            | 0.0043           | 1.489          | 0.006               | -        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |       |      |    |                    |                  |                  |               | Head<br>1.6 W/kg<br>Averaged over 1 gram |         |           |            |               |                  |                |                     |          |

| LTE Band 25 Head SAR (Next-to-Mouth)                                                                |       |      |    |                    |                  |                  |               |                                          |         |           |            |               |                  |                |                     |          |
|-----------------------------------------------------------------------------------------------------|-------|------|----|--------------------|------------------|------------------|---------------|------------------------------------------|---------|-----------|------------|---------------|------------------|----------------|---------------------|----------|
| Frequency                                                                                           |       | Mode | BW | Tune-Up Limit (dB) | Meas. Power (dB) | Power Drift (dB) | Test Position | MPR (dB)                                 | RB Size | RB Offset | Duty Cycle | Distance (mm) | Meas. SAR (W/kg) | Scaling Factor | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                 | Ch.   |      |    |                    |                  |                  |               |                                          |         |           |            |               |                  |                |                     |          |
| 1 882.5                                                                                             | 26365 | QPSK | 20 | 23.4               | 23.19            | 0.17             | Front         | 0                                        | 1       | 49        | 1:1        | 10            | 0.543            | 1.050          | <b>0.570</b>        | 8        |
| 1 882.5                                                                                             | 26365 | QPSK | 20 | 22.4               | 21.43            | -0.19            | Front         | 1                                        | 50      | 49        | 1:1        | 10            | 0.349            | 1.250          | 0.436               | -        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |       |      |    |                    |                  |                  |               | Head<br>1.6 W/kg<br>Averaged over 1 gram |         |           |            |               |                  |                |                     |          |

| LTE Band 26 Head SAR (Next-to-Mouth)                                                                |       |      |    |                    |                  |                  |               |                                          |         |           |            |               |                  |                |                     |          |
|-----------------------------------------------------------------------------------------------------|-------|------|----|--------------------|------------------|------------------|---------------|------------------------------------------|---------|-----------|------------|---------------|------------------|----------------|---------------------|----------|
| Frequency                                                                                           |       | Mode | BW | Tune-Up Limit (dB) | Meas. Power (dB) | Power Drift (dB) | Test Position | MPR (dB)                                 | RB Size | RB Offset | Duty Cycle | Distance (mm) | Meas. SAR (W/kg) | Scaling Factor | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                 | Ch.   |      |    |                    |                  |                  |               |                                          |         |           |            |               |                  |                |                     |          |
| 821.5                                                                                               | 26765 | QPSK | 15 | 23.8               | 23.08            | 0.10             | Front         | 0                                        | 1       | 0         | 1:1        | 10            | 0.544            | 1.180          | <b>0.642</b>        | 9        |
| 821.5                                                                                               | 26765 | QPSK | 15 | 22.8               | 20.90            | 0.12             | Front         | 1                                        | 36      | 0         | 1:1        | 10            | 0.399            | 1.549          | 0.618               | -        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |       |      |    |                    |                  |                  |               | Head<br>1.6 W/kg<br>Averaged over 1 gram |         |           |            |               |                  |                |                     |          |

| LTE Band 66 Head SAR (Next-to-Mouth)                                                                |        |      |    |                    |                  |                  |               |                                          |         |           |            |               |                  |                |                     |          |
|-----------------------------------------------------------------------------------------------------|--------|------|----|--------------------|------------------|------------------|---------------|------------------------------------------|---------|-----------|------------|---------------|------------------|----------------|---------------------|----------|
| Frequency                                                                                           |        | Mode | BW | Tune-Up Limit (dB) | Meas. Power (dB) | Power Drift (dB) | Test Position | MPR (dB)                                 | RB Size | RB Offset | Duty Cycle | Distance (mm) | Meas. SAR (W/kg) | Scaling Factor | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                 | Ch.    |      |    |                    |                  |                  |               |                                          |         |           |            |               |                  |                |                     |          |
| 1 745                                                                                               | 132322 | QPSK | 20 | 23.5               | 23.27            | -0.05            | Front         | 0                                        | 1       | 49        | 1:1        | 10            | 0.379            | 1.054          | <b>0.399</b>        | 10       |
| 1 745                                                                                               | 132322 | QPSK | 20 | 22.5               | 21.32            | -0.17            | Front         | 1                                        | 50      | 49        | 1:1        | 10            | 0.275            | 1.312          | 0.361               | -        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |        |      |    |                    |                  |                  |               | Head<br>1.6 W/kg<br>Averaged over 1 gram |         |           |            |               |                  |                |                     |          |

| 2.4 GHz WLAN Head SAR (Next-to-Mouth)                                                               |     |         |                  |                  |                     |                   |                  |               |            |                                          |                     |                |                       |                     |          |
|-----------------------------------------------------------------------------------------------------|-----|---------|------------------|------------------|---------------------|-------------------|------------------|---------------|------------|------------------------------------------|---------------------|----------------|-----------------------|---------------------|----------|
| Frequency                                                                                           |     | Mode    | Band width (MHz) | Data Rate (Mbps) | Tune-Up Limit (dBm) | Meas. Power (dBm) | Power Drift (dB) | Test Position | Duty Cycle | Distance (mm)                            | Meas. 1g SAR (W/kg) | Scaling Factor | Scaling Factor (Duty) | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                 | Ch. |         |                  |                  |                     |                   |                  |               |            |                                          |                     |                |                       |                     |          |
| 2 462                                                                                               | 11  | 802.11b | 22               | 1                | 18.0                | 17.04             | -0.13            | Front         | 98.8       | 10                                       | 0.113               | 1.247          | 1.012                 | 0.143               | 11       |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |     |         |                  |                  |                     |                   |                  |               |            | Head<br>1.6 W/kg<br>Averaged over 1 gram |                     |                |                       |                     |          |

| DSS Tethering SAR (Next-to-Mouth)                                                                   |     |               |                     |                   |                  |               |                                          |                  |                |                       |                     |          |
|-----------------------------------------------------------------------------------------------------|-----|---------------|---------------------|-------------------|------------------|---------------|------------------------------------------|------------------|----------------|-----------------------|---------------------|----------|
| Frequency                                                                                           |     | Mode          | Tune-Up Limit (dBm) | Meas. Power (dBm) | Power Drift (dB) | Test Position | Distance (mm)                            | Meas. SAR (W/kg) | Scaling Factor | Scaling Factor (Duty) | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                 | Ch. |               |                     |                   |                  |               |                                          |                  |                |                       |                     |          |
| 2 441                                                                                               | 39  | Bluetooth DH5 | 16.5                | 15.74             | 0.01             | Front         | 10                                       | 0.088            | 1.191          | 1.305                 | 0.137               | 12       |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |     |               |                     |                   |                  |               | Body<br>1.6 W/kg<br>Averaged over 1 gram |                  |                |                       |                     |          |

### 13.2 Standalone Extremity SAR Results (Stainless material)

| UMTS 850 Extremity SAR                                                                                                            |      |      |                    |                  |                  |                      |                                                    |               |                  |                |                     |          |
|-----------------------------------------------------------------------------------------------------------------------------------|------|------|--------------------|------------------|------------------|----------------------|----------------------------------------------------|---------------|------------------|----------------|---------------------|----------|
| Frequency                                                                                                                         |      | Mode | Tune-Up Limit (dB) | Meas. Power (dB) | Power Drift (dB) | Test Position Sensor | Duty Cycle                                         | Distance (mm) | Meas. SAR (W/kg) | Scaling Factor | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                                               | Ch.  |      |                    |                  |                  |                      |                                                    |               |                  |                |                     |          |
| 836.6                                                                                                                             | 4183 | RMC  | 24.0               | 22.94            | -0.18            | Rear                 | 1:1                                                | 0             | 0.208            | 1.276          | 0.265               | 13       |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak(Hands / Feet / Ankle / Wrist)<br>Uncontrolled Exposure/ General Population |      |      |                    |                  |                  |                      | Extremity SAR<br>4.0 W/kg<br>Averaged over 10 gram |               |                  |                |                     |          |

| UMTS 1700 Extremity SAR                                                                                                           |      |      |                    |                  |                  |                      |                                                    |               |                  |                |                     |          |
|-----------------------------------------------------------------------------------------------------------------------------------|------|------|--------------------|------------------|------------------|----------------------|----------------------------------------------------|---------------|------------------|----------------|---------------------|----------|
| Frequency                                                                                                                         |      | Mode | Tune-Up Limit (dB) | Meas. Power (dB) | Power Drift (dB) | Test Position Sensor | Duty Cycle                                         | Distance (mm) | Meas. SAR (W/kg) | Scaling Factor | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                                               | Ch.  |      |                    |                  |                  |                      |                                                    |               |                  |                |                     |          |
| 1 712.4                                                                                                                           | 1312 | RMC  | 24.0               | 23.26            | -0.14            | Rear                 | 1:1                                                | 0             | 1.32             | 1.186          | 1.566               | -        |
| 1 732.4                                                                                                                           | 1412 | RMC  | 24.0               | 23.24            | 0.03             | Rear                 | 1:1                                                | 0             | 1.84             | 1.191          | <b>2.191</b>        | 14       |
| 1 752.6                                                                                                                           | 1513 | RMC  | 24.0               | 23.32            | -0.02            | Rear                 | 1:1                                                | 0             | 1.23             | 1.169          | 1.438               | -        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak(Hands / Feet / Ankle / Wrist)<br>Uncontrolled Exposure/ General Population |      |      |                    |                  |                  |                      | Extremity SAR<br>4.0 W/kg<br>Averaged over 10 gram |               |                  |                |                     |          |

| UMTS 1900 Extremity SAR                                                                                                           |      |      |                    |                  |                  |                      |                                                    |               |                  |                |                     |          |
|-----------------------------------------------------------------------------------------------------------------------------------|------|------|--------------------|------------------|------------------|----------------------|----------------------------------------------------|---------------|------------------|----------------|---------------------|----------|
| Frequency                                                                                                                         |      | Mode | Tune-Up Limit (dB) | Meas. Power (dB) | Power Drift (dB) | Test Position Sensor | Duty Cycle                                         | Distance (mm) | Meas. SAR (W/kg) | Scaling Factor | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                                               | Ch.  |      |                    |                  |                  |                      |                                                    |               |                  |                |                     |          |
| 1 880                                                                                                                             | 9400 | RMC  | 24.0               | 23.33            | 0.15             | Rear                 | 1:1                                                | 0             | 1.51             | 1.167          | 1.762               | 15       |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak(Hands / Feet / Ankle / Wrist)<br>Uncontrolled Exposure/ General Population |      |      |                    |                  |                  |                      | Extremity SAR<br>4.0 W/kg<br>Averaged over 10 gram |               |                  |                |                     |          |

| LTE Band 2 Extremity SAR                                                                                                          |       |      |    |                    |                  |                  |               |                                                    |         |           |            |               |                  |                |                     |          |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|------|----|--------------------|------------------|------------------|---------------|----------------------------------------------------|---------|-----------|------------|---------------|------------------|----------------|---------------------|----------|
| Frequency                                                                                                                         |       | Mode | BW | Tune-Up Limit (dB) | Meas. Power (dB) | Power Drift (dB) | Test Position | MPR (dB)                                           | RB Size | RB Offset | Duty Cycle | Distance (mm) | Meas. SAR (W/kg) | Scaling Factor | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                                               | Ch.   |      |    |                    |                  |                  |               |                                                    |         |           |            |               |                  |                |                     |          |
| 1 880                                                                                                                             | 18900 | QPSK | 20 | 23.8               | 23.16            | 0.16             | Rear          | 0                                                  | 1       | 99        | 1:1        | 0             | 1.43             | 1.159          | <b>1.657</b>        | 16       |
| 1 880                                                                                                                             | 18900 | QPSK | 20 | 22.8               | 21.09            | 0.08             | Rear          | 1                                                  | 50      | 25        | 1:1        | 0             | 0.696            | 1.483          | 1.032               | -        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak(Hands / Feet / Ankle / Wrist)<br>Uncontrolled Exposure/ General Population |       |      |    |                    |                  |                  |               | Extremity SAR<br>4.0 W/kg<br>Averaged over 10 gram |         |           |            |               |                  |                |                     |          |

| LTE Band 4 Extremity SAR                                                                                                          |       |      |    |                    |                  |                  |               |                                                    |         |           |            |               |                  |                |                     |          |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|------|----|--------------------|------------------|------------------|---------------|----------------------------------------------------|---------|-----------|------------|---------------|------------------|----------------|---------------------|----------|
| Frequency                                                                                                                         |       | Mode | BW | Tune-Up Limit (dB) | Meas. Power (dB) | Power Drift (dB) | Test Position | MPR (dB)                                           | RB Size | RB Offset | Duty Cycle | Distance (mm) | Meas. SAR (W/kg) | Scaling Factor | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                                               | Ch.   |      |    |                    |                  |                  |               |                                                    |         |           |            |               |                  |                |                     |          |
| 1 732.5                                                                                                                           | 20175 | QPSK | 20 | 23.8               | 23.16            | -0.12            | Rear          | 0                                                  | 1       | 0         | 1:1        | 0             | 1.5              | 1.159          | 1.739               | 17-      |
| 1 732.5                                                                                                                           | 20175 | QPSK | 20 | 22.8               | 21.17            | 0.04             | Rear          | 1                                                  | 50      | 49        | 1:1        | 0             | 1.24             | 1.455          | 1.804               |          |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak(Hands / Feet / Ankle / Wrist)<br>Uncontrolled Exposure/ General Population |       |      |    |                    |                  |                  |               | Extremity SAR<br>4.0 W/kg<br>Averaged over 10 gram |         |           |            |               |                  |                |                     |          |

| LTE Band 12 Extremity SAR                                                                                                         |       |      |    |                    |                  |                  |               |                                                    |         |           |            |               |                  |                |                     |          |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|------|----|--------------------|------------------|------------------|---------------|----------------------------------------------------|---------|-----------|------------|---------------|------------------|----------------|---------------------|----------|
| Frequency                                                                                                                         |       | Mode | BW | Tune-Up Limit (dB) | Meas. Power (dB) | Power Drift (dB) | Test Position | MPR (dB)                                           | RB Size | RB Offset | Duty Cycle | Distance (mm) | Meas. SAR (W/kg) | Scaling Factor | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                                               | Ch.   |      |    |                    |                  |                  |               |                                                    |         |           |            |               |                  |                |                     |          |
| 707.5                                                                                                                             | 23095 | QPSK | 10 | 23.8               | 23.27            | 0.18             | Rear          | 0                                                  | 1       | 0         | 1:1        | 0             | 0.195            | 1.130          | <b>0.220</b>        | 18       |
| 707.5                                                                                                                             | 23095 | QPSK | 10 | 22.8               | 21.14            | -0.12            | Rear          | 1                                                  | 25      | 0         | 1:1        | 0             | 0.138            | 1.466          | 0.202               | -        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak(Hands / Feet / Ankle / Wrist)<br>Uncontrolled Exposure/ General Population |       |      |    |                    |                  |                  |               | Extremity SAR<br>4.0 W/kg<br>Averaged over 10 gram |         |           |            |               |                  |                |                     |          |

| LTE Band 13 Extremity SAR                                                                                                         |       |      |    |                    |                  |                  |               |                                                    |         |           |            |               |                  |                |                     |          |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|------|----|--------------------|------------------|------------------|---------------|----------------------------------------------------|---------|-----------|------------|---------------|------------------|----------------|---------------------|----------|
| Frequency                                                                                                                         |       | Mode | BW | Tune-Up Limit (dB) | Meas. Power (dB) | Power Drift (dB) | Test Position | MPR (dB)                                           | RB Size | RB Offset | Duty Cycle | Distance (mm) | Meas. SAR (W/kg) | Scaling Factor | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                                               | Ch.   |      |    |                    |                  |                  |               |                                                    |         |           |            |               |                  |                |                     |          |
| 782                                                                                                                               | 23230 | QPSK | 10 | 23.8               | 23.16            | -0.08            | Rear          | 0                                                  | 1       | 0         | 1:1        | 0             | 0.207            | 1.159          | <b>0.240</b>        | 19       |
| 782                                                                                                                               | 23230 | QPSK | 10 | 22.8               | 21.07            | 0.13             | Rear          | 1                                                  | 25      | 0         | 1:1        | 0             | 0.150            | 1.489          | 0.223               | -        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak(Hands / Feet / Ankle / Wrist)<br>Uncontrolled Exposure/ General Population |       |      |    |                    |                  |                  |               | Extremity SAR<br>4.0 W/kg<br>Averaged over 10 gram |         |           |            |               |                  |                |                     |          |

| LTE Band 25 Extremity SAR                                                                                                         |       |      |    |                    |                  |                  |               |                                                    |         |           |            |               |                  |                |                     |          |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|------|----|--------------------|------------------|------------------|---------------|----------------------------------------------------|---------|-----------|------------|---------------|------------------|----------------|---------------------|----------|
| Frequency                                                                                                                         |       | Mode | BW | Tune-Up Limit (dB) | Meas. Power (dB) | Power Drift (dB) | Test Position | MPR (dB)                                           | RB Size | RB Offset | Duty Cycle | Distance (mm) | Meas. SAR (W/kg) | Scaling Factor | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                                               | Ch.   |      |    |                    |                  |                  |               |                                                    |         |           |            |               |                  |                |                     |          |
| 1 882.5                                                                                                                           | 26365 | QPSK | 20 | 23.4               | 23.19            | -0.19            | Rear          | 0                                                  | 1       | 49        | 1:1        | 0             | 1.11             | 1.050          | <b>1.166</b>        | 20       |
| 1 882.5                                                                                                                           | 26365 | QPSK | 20 | 22.4               | 21.43            | 0.10             | Rear          | 1                                                  | 50      | 49        | 1:1        | 0             | 0.832            | 1.250          | 1.040               | -        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak(Hands / Feet / Ankle / Wrist)<br>Uncontrolled Exposure/ General Population |       |      |    |                    |                  |                  |               | Extremity SAR<br>4.0 W/kg<br>Averaged over 10 gram |         |           |            |               |                  |                |                     |          |

| LTE Band 26 Extremity SAR                                                                                                         |       |      |    |                    |                  |                  |               |                                                    |         |           |            |               |                  |                |                     |          |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|------|----|--------------------|------------------|------------------|---------------|----------------------------------------------------|---------|-----------|------------|---------------|------------------|----------------|---------------------|----------|
| Frequency                                                                                                                         |       | Mode | BW | Tune-Up Limit (dB) | Meas. Power (dB) | Power Drift (dB) | Test Position | MPR (dB)                                           | RB Size | RB Offset | Duty Cycle | Distance (mm) | Meas. SAR (W/kg) | Scaling Factor | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                                               | Ch.   |      |    |                    |                  |                  |               |                                                    |         |           |            |               |                  |                |                     |          |
| 821.5                                                                                                                             | 26765 | QPSK | 15 | 23.8               | 23.08            | 0.10             | Rear          | 0                                                  | 1       | 0         | 1:1        | 0             | 0.250            | 1.180          | <b>0.295</b>        | 21       |
| 821.5                                                                                                                             | 26765 | QPSK | 15 | 22.8               | 20.90            | 0.12             | Rear          | 1                                                  | 36      | 0         | 1:1        | 0             | 0.183            | 1.549          | 0.283               | -        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak(Hands / Feet / Ankle / Wrist)<br>Uncontrolled Exposure/ General Population |       |      |    |                    |                  |                  |               | Extremity SAR<br>4.0 W/kg<br>Averaged over 10 gram |         |           |            |               |                  |                |                     |          |

| LTE Band 66 Extremity SAR                                                                                                         |        |      |    |                    |                  |                  |               |                                                    |         |           |            |               |                  |                |                     |          |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|------|----|--------------------|------------------|------------------|---------------|----------------------------------------------------|---------|-----------|------------|---------------|------------------|----------------|---------------------|----------|
| Frequency                                                                                                                         |        | Mode | BW | Tune-Up Limit (dB) | Meas. Power (dB) | Power Drift (dB) | Test Position | MPR (dB)                                           | RB Size | RB Offset | Duty Cycle | Distance (mm) | Meas. SAR (W/kg) | Scaling Factor | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                                               | Ch.    |      |    |                    |                  |                  |               |                                                    |         |           |            |               |                  |                |                     |          |
| 1 745                                                                                                                             | 132322 | QPSK | 20 | 23.5               | 23.27            | -0.14            | Rear          | 0                                                  | 1       | 49        | 1:1        | 0             | 1.25             | 1.054          | <b>1.318</b>        | 22       |
| 1 745                                                                                                                             | 132322 | QPSK | 20 | 22.5               | 21.32            | -0.14            | Rear          | 1                                                  | 50      | 49        | 1:1        | 0             | 0.796            | 1.312          | 1.044               | -        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak(Hands / Feet / Ankle / Wrist)<br>Uncontrolled Exposure/ General Population |        |      |    |                    |                  |                  |               | Extremity SAR<br>4.0 W/kg<br>Averaged over 10 gram |         |           |            |               |                  |                |                     |          |

| 2.4 GHz WLAN Extremity SAR                                                                                                        |     |         |                  |                  |                     |                   |                  |               |            |                                                    |                      |                |                       |                     |          |
|-----------------------------------------------------------------------------------------------------------------------------------|-----|---------|------------------|------------------|---------------------|-------------------|------------------|---------------|------------|----------------------------------------------------|----------------------|----------------|-----------------------|---------------------|----------|
| Frequency                                                                                                                         |     | Mode    | Band width (MHz) | Data Rate (Mbps) | Tune-Up Limit (dBm) | Meas. Power (dBm) | Power Drift (dB) | Test Position | Duty Cycle | Distance (mm)                                      | Meas. 10g SAR (W/kg) | Scaling Factor | Scaling Factor (Duty) | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                                               | Ch. |         |                  |                  |                     |                   |                  |               |            |                                                    |                      |                |                       |                     |          |
| 2 462                                                                                                                             | 11  | 802.11b | 22               | 1                | 18.0                | 17.04             | -0.13            | Rear          | 98.8       | 0                                                  | 0.190                | 1.247          | 1.012                 | 0.240               | 23       |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak(Hands / Feet / Ankle / Wrist)<br>Uncontrolled Exposure/ General Population |     |         |                  |                  |                     |                   |                  |               |            | Extremity SAR<br>4.0 W/kg<br>Averaged over 10 gram |                      |                |                       |                     |          |

| DSS Extremity SAR                                                                                                                 |     |               |                     |                   |                  |               |                                                    |                      |                |                       |                     |          |
|-----------------------------------------------------------------------------------------------------------------------------------|-----|---------------|---------------------|-------------------|------------------|---------------|----------------------------------------------------|----------------------|----------------|-----------------------|---------------------|----------|
| Frequency                                                                                                                         |     | Mode          | Tune-Up Limit (dBm) | Meas. Power (dBm) | Power Drift (dB) | Test Position | Distance (mm)                                      | Meas. 10g SAR (W/kg) | Scaling Factor | Scaling Factor (Duty) | Reported SAR (W/kg) | Plot No. |
| MHz                                                                                                                               | Ch. |               |                     |                   |                  |               |                                                    |                      |                |                       |                     |          |
| 2 441                                                                                                                             | 39  | Bluetooth DH5 | 16.5                | 15.74             | 0.18             | Rear          | 0                                                  | 0.136                | 1.191          | 1.305                 | 0.211               | 24       |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak(Hands / Feet / Ankle / Wrist)<br>Uncontrolled Exposure/ General Population |     |               |                     |                   |                  |               | Extremity SAR<br>4.0 W/kg<br>Averaged over 10 gram |                      |                |                       |                     |          |

### 13.3 SAR Test Notes

#### General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in FCC KDB Publication.
2. Batteries are fully charged at the beginning of the SAR measurements. A standard battery was used for all SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB 447498 D01v06.
6. Per FCC KDB 865664 D01v01r04, variability SAR measurement were not performed when the measured SAR results for a frequency band were greater than or equal to 0.8 W/kg for 1g SAR and  $>2$  for 10g SAR Please see Section 14 for variability analysis. the maximum tune-up tolerance limit.
7. Per FCC KDB 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is  $\leq 0.8$  W/kg for 1g SAR/  $\leq 2$ W/kg for 10g SAR then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is 1/2 dB, instead of the middle channel, the highest output power channel must be used.

#### UMTS Notes:

1. The 12.2 kbps RMC mode is the primary mode per KDB 941225 D01v03r01.
2. UMTS SAR was tested under RMC 12.2 kbps with HSPA inactive per KDB publication 941225 D01v03r01. AMR and HSPA SAR was not required per the 3G Test Reduction Procedure in KDB Publication 941225 D01v03r01.
3. Per FCC KDB 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is  $\leq 0.8$  W/kg then testing at the other channels is not required for such test configuration(s). When the Maximum output power variation across the channel highest output power channel was used.

#### LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Consideration for LTE Devices in FCC KDB 941225 D05v02r05.
2. According to FCC KDB 941225 D05v02r05:  
When the reported SAR is  $\leq 0.8$  W/kg, testing of the 100% RB allocation and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the 1RB, 50%RB and 100%RB allocation with highest output power for that channel.  
Only one channel, and as reported SAR values for 1RB allocation and 50%RB allocation were less than 1.45W/Kg only the highest power RB offset for each allocation was required.
3. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to target MPR is indicated alongside the SAR results.
4. A-MPR was disabled for all SAR tests by setting NS=01 on the base station simulator.
5. SAR test reduction is applied using the following criteria:  
Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB, and 50% RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is  $>0.8$  W/kg, testing for other Channels is performed at the highest output power level for 1RB, and 50% RB configuration for that channel. Testing for 100% RB

configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High Channel when the highest reported SAR for 1 RB and 50% RB are  $>0.8$  W/kg, testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation  $<1.45$  W/kg. Testing for 16-QAM modulation is not required because the reported SAR for QPSK is  $<1.45$  W/kg and its output power is not more than 0.5 dB higher than that a QPSK. Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is  $<1.45$  W/kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.

#### WLAN Notes:

1. Per KDB 2482227 D01v02r02 justification for test configurations of 2.4 GHz WiFi Single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11 g/n) was not required due to the maximum allowed powers and the highest reported DSSS SAR.
2. When the maximum reported 1g averaged SAR is  $\leq 0.8$  W/kg, SAR testing on additional channels was not required. Otherwise, SAR for the next highest output power channel was required until the reported SAR result was  $\leq 1.20$  W/kg or all test channels were measured.
3. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools. The reported SAR was scaled to the 100% transmission duty factor to determine compliance. Procedures used to measure the duty factor are identical to that in the associated WLAN test reports.

#### Bluetooth Notes:

1. Bluetooth SAR was measured with the device connected to a call box with hopping disabled with DH5 operation and Tx Tests mode type. Per October 2016 TCBC Workshop Notes, the reported SAR was scaled to 100% transmission duty factor to determine compliance. Please see sec.11.2. for the time-domain plot and calculation for duty factor of the device.

## 14. Simultaneous SAR Analysis

### 14.1 Simultaneous Transmission Scenario with 2.4 GHz WLAN & Bluetooth

| Configurations       | Band        | 1      | 2       | 3         | 1 + 2          | 1 + 3          | SPLSR<br>(Yes/No) |
|----------------------|-------------|--------|---------|-----------|----------------|----------------|-------------------|
|                      |             | WWAN   | 2.4 GHz | Bluetooth | $\sum$ 1-g SAR | $\sum$ 1-g SAR |                   |
|                      |             | (W/kg) | (W/kg)  | (W/kg)    | (W/kg)         | (W/kg)         |                   |
| Next-to-Mouth<br>SAR | UMTS850     | 0.014  | 0.143   | 0.137     | 0.157          | 0.151          | No                |
|                      | UMTS 1700   | 0.438  | 0.143   | 0.137     | 0.581          | 0.575          | No                |
|                      | UMTS 1900   | 0.503  | 0.143   | 0.137     | 0.646          | 0.64           | No                |
|                      | LTE Band 2  | 0.522  | 0.143   | 0.137     | 0.665          | 0.659          | No                |
|                      | LTE Band 4  | 0.559  | 0.143   | 0.137     | 0.702          | 0.696          | No                |
|                      | LTE Band 12 | 0.004  | 0.143   | 0.137     | 0.147          | 0.141          | No                |
|                      | LTE Band 13 | 0.009  | 0.143   | 0.137     | 0.152          | 0.146          | No                |
|                      | LTE Band 25 | 0.570  | 0.143   | 0.137     | 0.713          | 0.707          | No                |
|                      | LTE Band 26 | 0.642  | 0.143   | 0.137     | <b>0.785</b>   | 0.779          | No                |
|                      | LTE Band 66 | 0.399  | 0.143   | 0.137     | 0.542          | 0.536          | No                |

| Configurations | Band        | 1      | 2       | 3         | 1 + 2           | 1 + 3           | SPLSR<br>(Yes/No) |
|----------------|-------------|--------|---------|-----------|-----------------|-----------------|-------------------|
|                |             | WWAN   | 2.4 GHz | Bluetooth | $\sum$ 10-g SAR | $\sum$ 10-g SAR |                   |
|                |             | (W/kg) | (W/kg)  | (W/kg)    | (W/kg)          | (W/kg)          |                   |
| Extremity SAR  | UMTS850     | 0.265  | 0.240   | 0.211     | 0.505           | 0.476           | No                |
|                | UMTS 1700   | 2.191  | 0.240   | 0.211     | <b>2.431</b>    | 2.402           | No                |
|                | UMTS 1900   | 1.762  | 0.240   | 0.211     | 2.002           | 1.973           | No                |
|                | LTE Band 2  | 1.657  | 0.240   | 0.211     | 1.897           | 1.868           | No                |
|                | LTE Band 4  | 1.804  | 0.240   | 0.211     | 2.044           | 2.015           | No                |
|                | LTE Band 12 | 0.220  | 0.240   | 0.211     | 0.46            | 0.431           | No                |
|                | LTE Band 13 | 0.240  | 0.240   | 0.211     | 0.48            | 0.451           | No                |
|                | LTE Band 25 | 1.166  | 0.240   | 0.211     | 1.406           | 1.377           | No                |
|                | LTE Band 26 | 0.295  | 0.240   | 0.211     | 0.535           | 0.506           | No                |
|                | LTE Band 66 | 1.318  | 0.240   | 0.211     | 1.558           | 1.529           | No                |

#### 14.2 Simultaneous Transmission Conclusion

The above numerical summed SAR Results are sufficient to determine that simultaneous transmission cases will not exceed the SAR Limit and therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v06 and IEEE1528-2013.

## 15. SAR Measurement Variability and Uncertainty

In accordance with KDB procedure 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz, SAR additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR Measurement variability was assessed using the following procedures for each frequency band:

1) Repeated measurement is not required when the original highest measured SAR is  $< 0.80$  W/kg for 1g SAR or  $< 2.0$  W/kg for 10g SAR; steps 2) through 4) do not apply.

2) When the original highest measured 1g SAR is  $\geq 0.80$  W/kg or 10g SAR  $\geq 2.0$  W/kg, repeat that measurement once.

3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is  $> 1.20$  or when the original or repeated measurement is  $\geq 1.45$  W/kg for 1g SAR or  $\geq 3.625$  W/kg for 10g SAR (~ 10% from the 1-g SAR limit).

4) Perform a third repeated measurement only if the original, first or second repeated measurement is  $\geq 1.5$  W/kg for 1g SAR or  $\geq 3.75$  W/kg for 10g SAR and the ratio of largest to smallest SAR for the original, first and second repeated measurements is  $> 1.20$ .

## 15. Measurement Uncertainty

The measured SAR was  $<1.5$  W/Kg for 1g SAR and  $<3.75$  W/Kg For 10g SAR for all frequency bands. Therefore, per KDB Publication 865664 D01v01r04, the extended measurement uncertainty analysis per IEEE1528-2013 was not required.

## 16. SAR Test Equipment

| Manufacturer | Type / Model                  | S/N                | Calib. Date | Calib.Interval | Calib.Due  |
|--------------|-------------------------------|--------------------|-------------|----------------|------------|
| SPEAG        | Triple Modular Phantom        | -                  | N/A         | N/A            | N/A        |
| SPEAG        | SAM Phantom                   | -                  | N/A         | N/A            | N/A        |
| HP           | SAR System Control PC         | -                  | N/A         | N/A            | N/A        |
| Staubli      | CS8Cspeag-TX90                | F12/ 5K9GA1/ C/ 01 | N/A         | N/A            | N/A        |
| Staubli      | CS8Cspeag-TX90                | F11/5K3RA1/C/01    | N/A         | N/A            | N/A        |
| Staubli      | TX90 XLspeag                  | F12/ 5K9GA1/ A/ 01 | N/A         | N/A            | N/A        |
| Staubli      | TX90 XLspeag                  | F11/5K3RA1/A/01    | N/A         | N/A            | N/A        |
| Staubli      | Teach Pendant (Joystick)      | S-1206 0513        | N/A         | N/A            | N/A        |
| Staubli      | Teach Pendant (Joystick)      | S-1203 0309        | N/A         | N/A            | N/A        |
| SPEAG        | DAE3                          | 466                | 08/22/2018  | Annual         | 08/22/2019 |
| SPEAG        | DAE4                          | 869                | 09/19/2018  | Annual         | 09/19/2019 |
| SPEAG        | E-Field Probe EX3DV4          | 3968               | 09/25/2018  | Annual         | 09/25/2019 |
| SPEAG        | E-Field Probe EX3DV4          | 3903               | 09/24/2018  | Annual         | 09/24/2019 |
| SPEAG        | Dipole D750V3                 | 1014               | 08/14/2018  | Annual         | 08/14/2019 |
| SPEAG        | Dipole D835V2                 | 4d165              | 09/18/2018  | Annual         | 09/18/2019 |
| SPEAG        | Dipole D1800V2                | 2d007              | 11/19/2018  | Annual         | 11/19/2019 |
| SPEAG        | Dipole D1900V2                | 5d032              | 02/21/2019  | Annual         | 02/21/2020 |
| SPEAG        | Dipole D2450V2                | 743                | 01/28/2019  | Annual         | 01/28/2020 |
| Agilent      | Power Meter E4419B            | MY41291386         | 10/11/2018  | Annual         | 10/11/2019 |
| Agilent      | Power Meter N1911A            | MY45101406         | 09/06/2018  | Annual         | 09/06/2019 |
| Agilent      | Power Sensor 8481A            | SG1091286          | 10/11/2018  | Annual         | 10/11/2019 |
| Agilent      | Power Sensor 8481A            | MY41090873         | 10/11/2018  | Annual         | 10/11/2019 |
| Agilent      | Power Sensor N1921A           | MY55220026         | 09/06/2018  | Annual         | 09/06/2019 |
| SPEAG        | DAKS 3.5                      | 1031               | 04/16/2019  | Annual         | 04/16/2020 |
| SPEAG        | VNA-R140                      | 0050813            | 03/11/2019  | Annual         | 03/11/2020 |
| Agilent      | WIRELESS COMMUNICATION E5515C | MY48361100         | 10/02/2018  | Annual         | 10/02/2019 |
| Agilent      | Signal Generator N5182A       | MY47070230         | 05/08/2019  | Annual         | 05/08/2020 |
| Agilent      | 11636B/Power Divider          | 58698              | 02/28/2019  | Annual         | 03/06/2020 |

| Manufacturer | Type / Model                       | S/N         | Calib. Date | Calib.Interval | Calib.Due  |
|--------------|------------------------------------|-------------|-------------|----------------|------------|
| TESTO        | 175-H1/Thermometer                 | 40331939309 | 01/29/2019  | Annual         | 01/29/2020 |
| TESTO        | 175-H1/Thermometer                 | 40331949309 | 01/29/2019  | Annual         | 01/29/2020 |
| EMPOWER      | RF Power Amplifier                 | 1084        | 07/31/2019  | Annual         | 07/31/2020 |
| MICRO LAB    | LP Filter / LA-15N                 | 10453       | 10/11/2018  | Annual         | 10/11/2019 |
| MICRO LAB    | LP Filter / LA-30N                 | -           | 10/11/2018  | Annual         | 10/11/2019 |
| Apitech      | Attenuator (3dB) 18B-03            | 1           | 06/04/2019  | Annual         | 06/04/2020 |
| Agilent      | Attenuator (20dB) 33340C           | 1642        | 05/08/2019  | Annual         | 05/08/2020 |
| Agilent      | Directional Bridge                 | 3140A03878  | 06/12/2019  | Annual         | 06/12/2020 |
| Agilent      | MXA Signal Analyzer N9020A         | MY50510407  | 10/31/2018  | Annual         | 10/31/2019 |
| HP           | Dual Directional Coupler           | 16072       | 10/11/2018  | Annual         | 10/11/2019 |
| Anritsu      | Radio Communication Tester MT8820C | 6201074225  | 03/05/2019  | Annual         | 03/05/2020 |
| Anritsu      | Radio Communication Tester MT8821C | 6201502997  | 08/13/2018  | Annual         | 08/13/2019 |
| R&S          | Bluetooth CBT                      | 100272      | 03/04/2019  | Annual         | 03/04/2020 |

1. The E-field probe was calibrated by SPEAG, by the waveguide technique procedure. Dipole Verification measurement is performed by HCT Lab. before each test. The brain/body simulating material is calibrated by HCT using the DAKS 3.5 to determine the conductivity and permittivity (dielectric constant) of the brain/body-equivalent material.

## 17. Conclusion

The SAR measurement indicates that the EUT complies with the RF radiation exposure limits of the ANSI/ IEEE C95.1 - 2005.

These measurements were taken to simulate the RF effects exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The results and statements relate only to the item(s) tested.

Please note that the absorption and distribution of electromagnetic energy in the body are very complex phenomena that depend on the mass, shape, and size of the body, the orientation of the body with respect to the field vectors, and the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease). Because various factors may interact with one another to vary the specific biological outcome of an exposure to electromagnetic fields, any protection guide should consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables.

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## Attachment 1. – SAR Test Plots

Test Laboratory: HCT CO., LTD  
 EUT Type: Smart watch  
 Liquid Temperature: 18.5 °C  
 Ambient Temperature: 18.8 °C  
 Test Date: 07/16/2019  
 Plot No.: 1

## DUT: SM-R825U

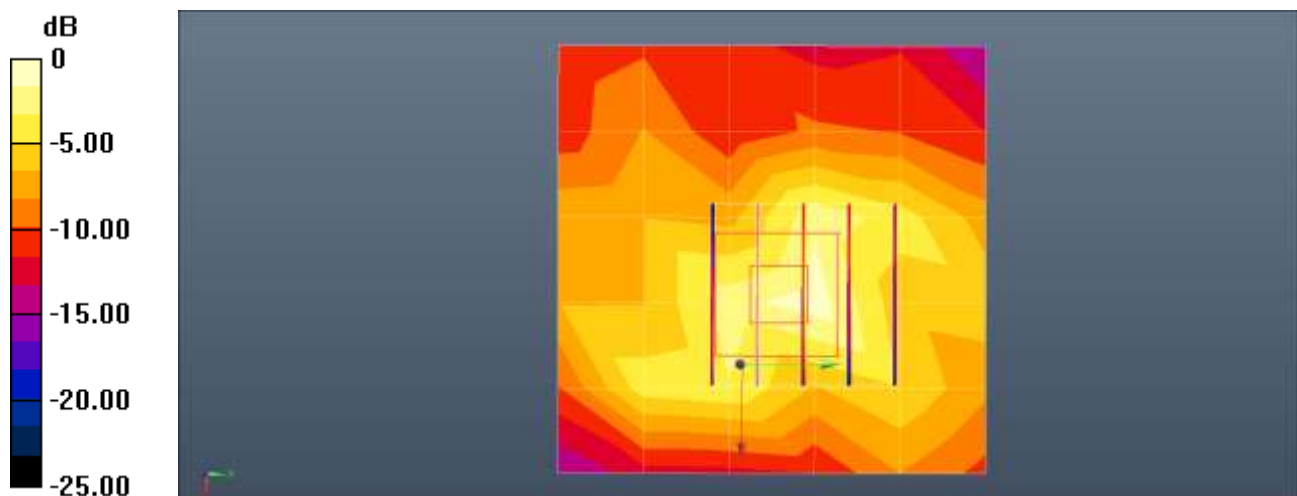
Communication System: UID 0, WCDMA850 (0); Frequency: 836.6 MHz; Duty Cycle: 1:1  
 Medium parameters used (interpolated):  $f = 836.6$  MHz;  $\sigma = 0.911$  S/m;  $\epsilon_r = 40.275$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section

### DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(10.25, 10.25, 10.25); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: SAM with CRP v5.0
- Measurement SW: DASY52, Version 52.8 (8);

**WCDMA850 Next-to-Mouth 4183ch/Area Scan (6x6x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (measured) = 0.0138 W/kg

**WCDMA850 Next-to-Mouth 4183ch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
 Reference Value = 4.375 V/m; Power Drift = -0.16 dB  
 Peak SAR (extrapolated) = 0.0270 W/kg  
**SAR(1 g) = 0.011 W/kg; SAR(10 g) = 0.00455 W/kg**  
 Maximum value of SAR (measured) = 0.0160 W/kg



0 dB = 0.0160 W/kg = -17.96 dBW/kg

Test Laboratory: HCT CO., LTD  
 EUT Type: Smart watch  
 Liquid Temperature: 20.7 °C  
 Ambient Temperature: 21.0 °C  
 Test Date: 07/15/2019  
 Plot No.: 2

## DUT: SM-R825U

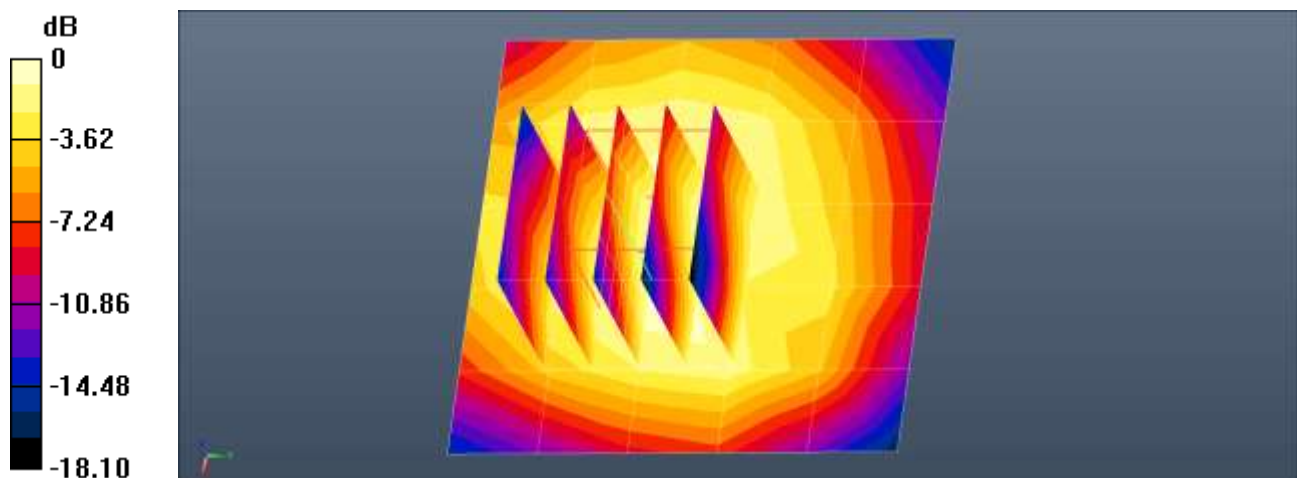
Communication System: UID 0, WCDMA IV (0); Frequency: 1732.4 MHz; Duty Cycle: 1:1  
 Medium parameters used (interpolated):  $f = 1732.4$  MHz;  $\sigma = 1.34$  S/m;  $\epsilon_r = 41.099$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section

### DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(8.64, 8.64, 8.64); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: SAM with CRP v5.0\_Front
- Measurement SW: DASY52, Version 52.8 (8);

**WCDMA1700 Next-to-Mouth 1412ch/Area Scan (6x6x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (measured) = 0.434 W/kg

**WCDMA1700 Next-to-Mouth 1412ch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
 Reference Value = 20.20 V/m; Power Drift = -0.10 dB  
 Peak SAR (extrapolated) = 0.475 W/kg  
**SAR(1 g) = 0.368 W/kg; SAR(10 g) = 0.236 W/kg**  
 Maximum value of SAR (measured) = 0.436 W/kg



0 dB = 0.436 W/kg = -3.61 dBW/kg

Test Laboratory: HCT CO., LTD  
 EUT Type: Smart watch  
 Liquid Temperature: 18.0 °C  
 Ambient Temperature: 18.3 °C  
 Test Date: 07/12/2019  
 Plot No.: 3

## DUT: SM-R825U

Communication System: UID 0, WCDMA1900 (0); Frequency: 1880 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.418$  S/m;  $\epsilon_r = 38.788$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section

## DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(8.34, 8.34, 8.34); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: SAM with CRP v5.0\_Front
- Measurement SW: DASY52, Version 52.8 (8);

**WCDMA1900 Next-to-Mouth 9400ch/Area Scan (6x6x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (measured) = 0.528 W/kg

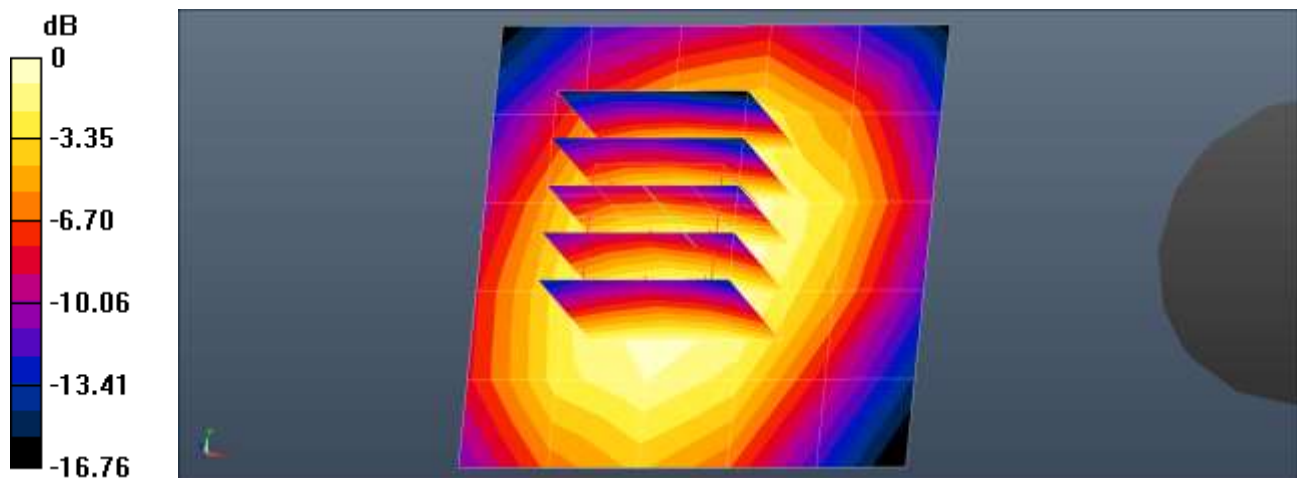
**WCDMA1900 Next-to-Mouth 9400ch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.64 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 0.591 W/kg

**SAR(1 g) = 0.431 W/kg; SAR(10 g) = 0.278 W/kg**

Maximum value of SAR (measured) = 0.534 W/kg



0 dB = 0.534 W/kg = -2.72 dBW/kg

Test Laboratory: HCT CO., LTD  
 EUT Type: Smart watch  
 Liquid Temperature: 18.0 °C  
 Ambient Temperature: 18.3 °C  
 Test Date: 07/12/2019  
 Plot No.: 4

## DUT: SM-R825U

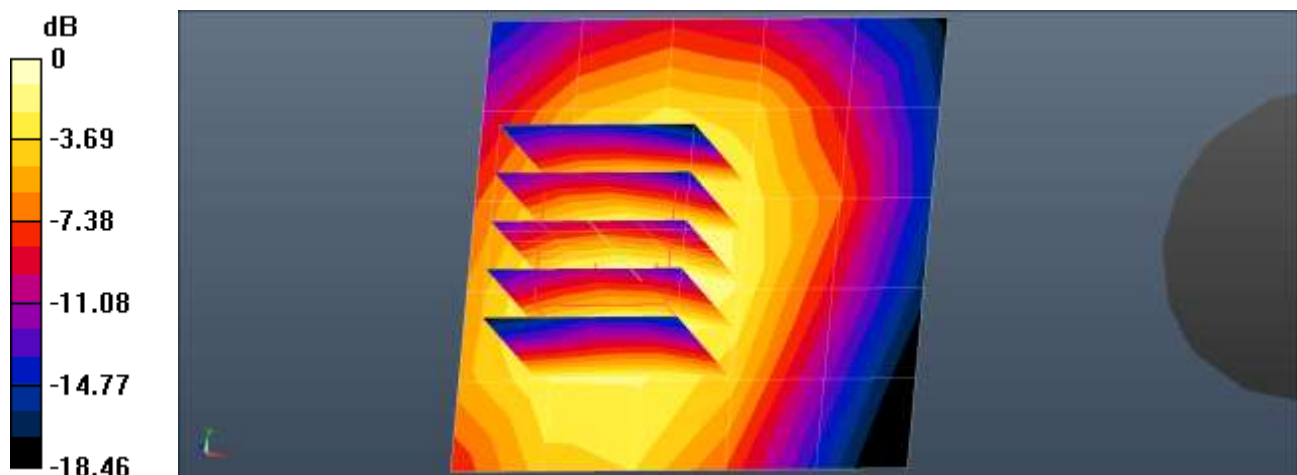
Communication System: UID 0, LTE Band 2 (0); Frequency: 1880 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.418$  S/m;  $\epsilon_r = 38.788$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section

### DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(8.34, 8.34, 8.34); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: SAM with CRP v5.0\_Front
- Measurement SW: DASY52, Version 52.8 (8);

**LTE Band 2 Next-to-Mouth QPSK 20MHz 50RB 25offset 18900ch 10mm/Area Scan (6x6x1):** Measurement  
 grid: dx=15mm, dy=15mm  
 Maximum value of SAR (measured) = 0.452 W/kg

**LTE Band 2 Next-to-Mouth QPSK 20MHz 50RB 25offset 18900ch 10mm/Zoom Scan (5x5x7)/Cube 0:**  
 Measurement grid: dx=8mm, dy=8mm, dz=5mm  
 Reference Value = 16.66 V/m; Power Drift = -0.18 dB  
 Peak SAR (extrapolated) = 0.492 W/kg  
**SAR(1 g) = 0.352 W/kg; SAR(10 g) = 0.214 W/kg**  
 Maximum value of SAR (measured) = 0.445 W/kg



0 dB = 0.445 W/kg = -3.52 dBW/kg

Test Laboratory: HCT CO., LTD  
 EUT Type: Smart watch  
 Liquid Temperature: 20.7 °C  
 Ambient Temperature: 21.0 °C  
 Test Date: 07/15/2019  
 Plot No.: 5

## DUT: SM-R825U

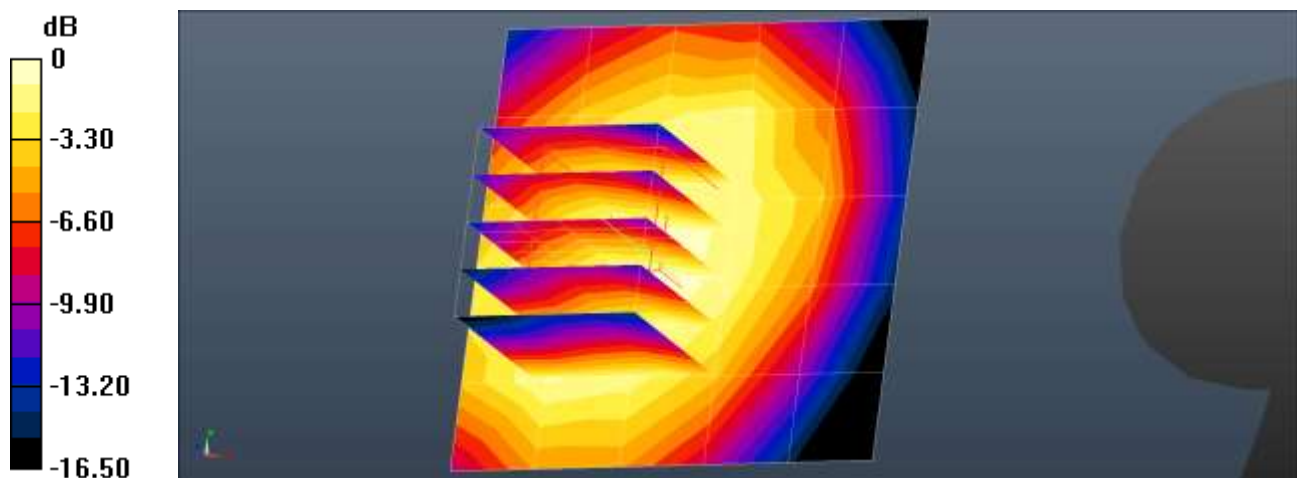
Communication System: UID 0, LTE Band 4 (0); Frequency: 1732.5 MHz; Duty Cycle: 1:1  
 Medium parameters used (interpolated):  $f = 1732.5$  MHz;  $\sigma = 1.34$  S/m;  $\epsilon_r = 41.099$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section

## DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(8.64, 8.64, 8.64); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: SAM with CRP v5.0\_Front
- Measurement SW: DASY52, Version 52.8 (8);

**LTE Band 4 Next-to-Mouth QPSK 20MHz 50RB 49offset 20175ch 10mm/Area Scan (6x6x1):** Measurement  
 grid: dx=15mm, dy=15mm  
 Maximum value of SAR (measured) = 0.433 W/kg

**LTE Band 4 Next-to-Mouth QPSK 20MHz 50RB 49offset 20175ch 10mm/Zoom Scan (5x5x7)/Cube 0:**  
 Measurement grid: dx=8mm, dy=8mm, dz=5mm  
 Reference Value = 18.34 V/m; Power Drift = -0.14 dB  
 Peak SAR (extrapolated) = 0.502 W/kg  
**SAR(1 g) = 0.384 W/kg; SAR(10 g) = 0.250 W/kg**  
 Maximum value of SAR (measured) = 0.456 W/kg



0 dB = 0.456 W/kg = -3.41 dBW/kg

Test Laboratory: HCT CO., LTD  
 EUT Type: Smart watch  
 Liquid Temperature: 19.3 °C  
 Ambient Temperature: 19.6 °C  
 Test Date: 07/17/2019  
 Plot No.: 6

## DUT: SM-R825U

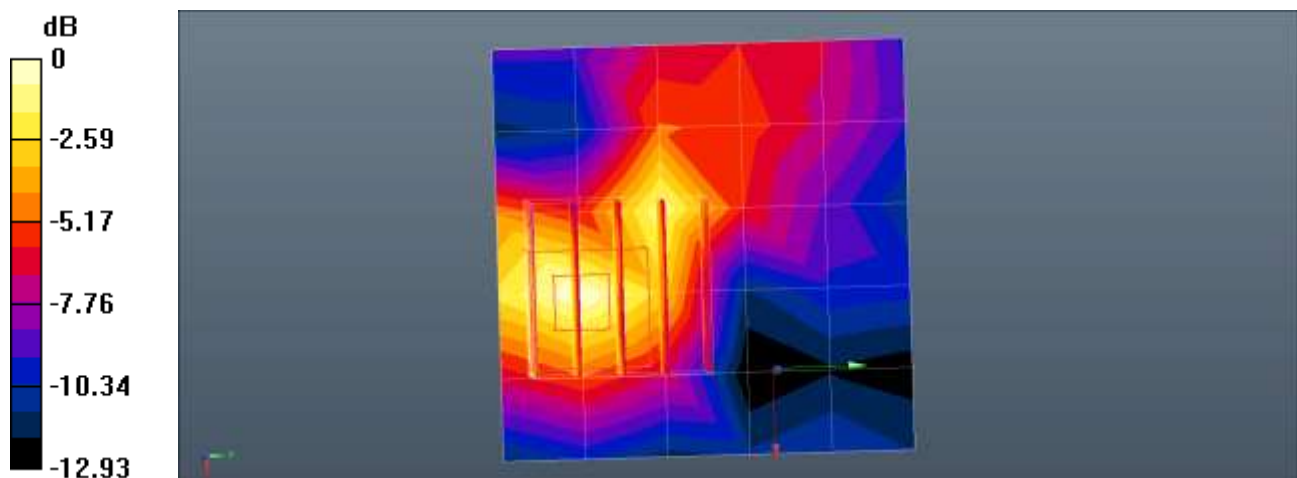
Communication System: UID 0, LTE Band 12 (0); Frequency: 707.5 MHz; Duty Cycle: 1:1  
 Medium parameters used (interpolated):  $f = 707.5$  MHz;  $\sigma = 0.862$  S/m;  $\epsilon_r = 41.941$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section

## DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(10.83, 10.83, 10.83); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: SAM with CRP v5.0
- Measurement SW: DASY52, Version 52.8 (8);

**LTE Band 12 Next-to-Mouth QPSK 10MHz 1RB 0offset 23095ch 10mm/Area Scan (6x6x1):** Measurement grid:  
 $dx=15$ mm,  $dy=15$ mm  
 Maximum value of SAR (measured) = 0.00599 W/kg

**LTE Band 12 Next-to-Mouth QPSK 10MHz 1RB 0offset 23095ch 10mm/Zoom Scan (5x5x7)/Cube 0:**  
 Measurement grid:  $dx=8$ mm,  $dy=8$ mm,  $dz=5$ mm  
 Reference Value = 1.401 V/m; Power Drift = 0.10 dB  
 Peak SAR (extrapolated) = 0.00816 W/kg  
**SAR(1 g) = 0.00325 W/kg; SAR(10 g) = 0.00162 W/kg**  
 Maximum value of SAR (measured) = 0.00582 W/kg



0 dB = 0.00599 W/kg = -22.23 dBW/kg

Test Laboratory: HCT CO., LTD  
 EUT Type: Smart watch  
 Liquid Temperature: 19.3 °C  
 Ambient Temperature: 19.6 °C  
 Test Date: 07/17/2019  
 Plot No.: 7

## DUT: SM-R825U

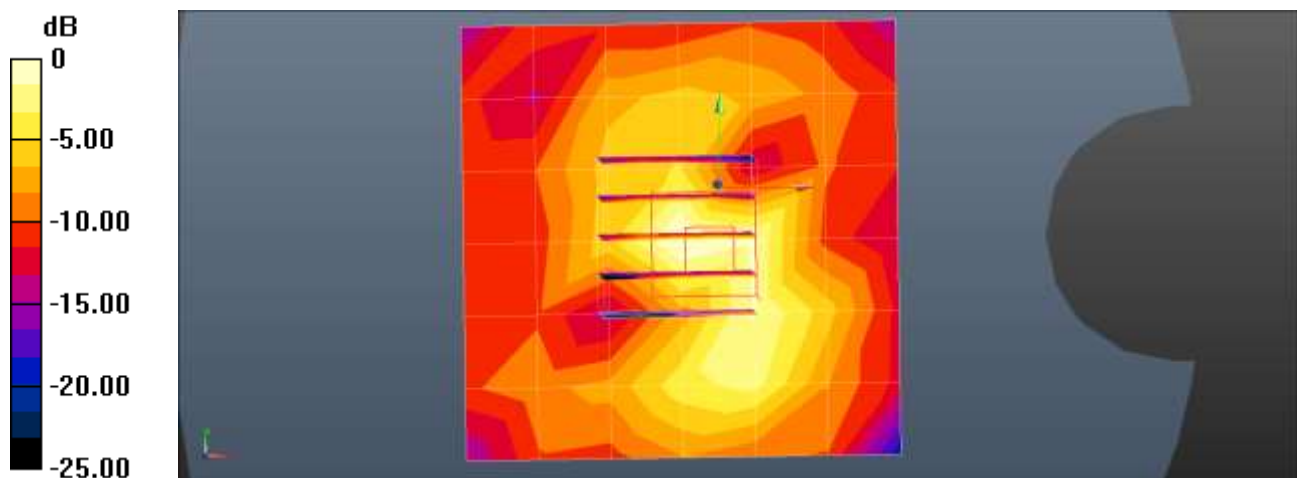
Communication System: UID 0, LTE Band 13 (0); Frequency: 782 MHz; Duty Cycle: 1:1  
 Medium parameters used (interpolated):  $f = 782 \text{ MHz}$ ;  $\sigma = 0.922 \text{ S/m}$ ;  $\epsilon_r = 41.474$ ;  $\rho = 1000 \text{ kg/m}^3$   
 Phantom section: Flat Section

## DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(10.83, 10.83, 10.83); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: SAM with CRP v5.0
- Measurement SW: DASY52, Version 52.8 (8);

**LTE Band 13 Next-to-Mouth QPSK 10MHz 1RB 0offset 23230ch 10mm/Area Scan (7x7x1):** Measurement grid:  
 $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
 Maximum value of SAR (measured) = 0.0120 W/kg

**LTE Band 13 Next-to-Mouth QPSK 10MHz 1RB 0offset 23230ch 10mm/Zoom Scan (5x5x7)/Cube 0:**  
 Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$   
 Reference Value = 3.428 V/m; Power Drift = -0.13 dB  
 Peak SAR (extrapolated) = 0.0180 W/kg  
**SAR(1 g) = 0.00734 W/kg; SAR(10 g) = 0.00322 W/kg**  
 Maximum value of SAR (measured) = 0.0105 W/kg



0 dB = 0.0105 W/kg = -19.79 dBW/kg

Test Laboratory: HCT CO., LTD  
 EUT Type: Smart watch  
 Liquid Temperature: 18.0 °C  
 Ambient Temperature: 18.3 °C  
 Test Date: 07/12/2019  
 Plot No.: 8

## DUT: SM-R825U

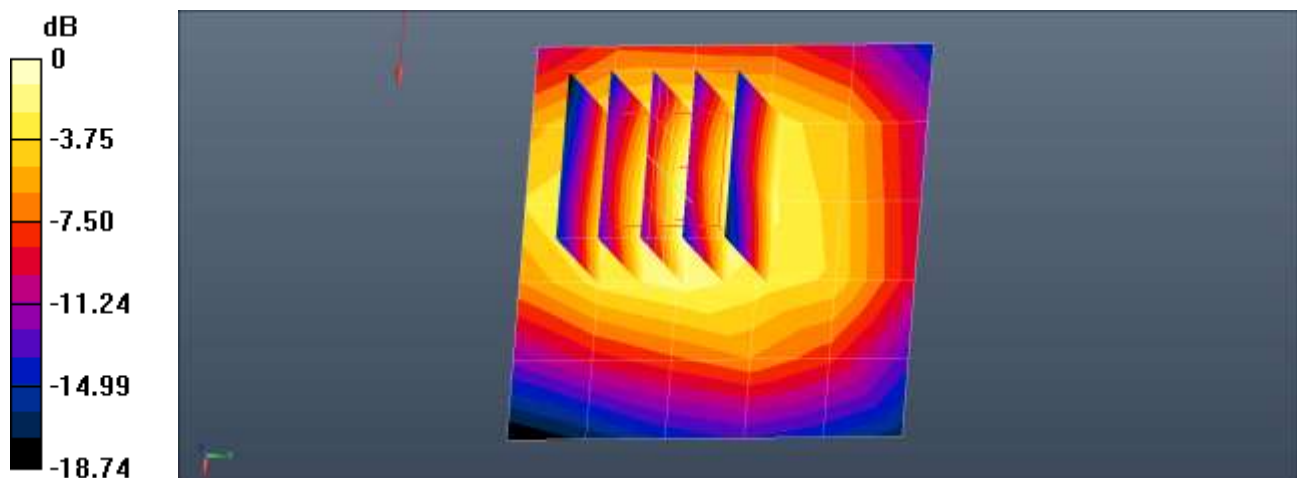
Communication System: UID 0, LTE Band 25 (0); Frequency: 1882.5 MHz; Duty Cycle: 1:1  
 Medium parameters used (interpolated):  $f = 1882.5$  MHz;  $\sigma = 1.423$  S/m;  $\epsilon_r = 38.779$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section

## DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(8.34, 8.34, 8.34); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: SAM with CRP v5.0\_Front
- Measurement SW: DASY52, Version 52.8 (8);

**LTE Band 25 Next-to-Mouth QPSK 20MHz 1RB 49offset 26365ch 10mm/Area Scan (6x6x1):** Measurement  
 grid: dx=15mm, dy=15mm  
 Maximum value of SAR (measured) = 0.568 W/kg

**LTE Band 25 Next-to-Mouth QPSK 20MHz 1RB 49offset 26365ch 10mm/Zoom Scan (5x5x7)/Cube 0:**  
 Measurement grid: dx=8mm, dy=8mm, dz=5mm  
 Reference Value = 20.37 V/m; Power Drift = 0.17 dB  
 Peak SAR (extrapolated) = 0.771 W/kg  
**SAR(1 g) = 0.543 W/kg; SAR(10 g) = 0.325 W/kg**  
 Maximum value of SAR (measured) = 0.697 W/kg



0 dB = 0.697 W/kg = -1.57 dBW/kg

Test Laboratory: HCT CO., LTD  
 EUT Type: Smart watch  
 Liquid Temperature: 18.5 °C  
 Ambient Temperature: 18.8 °C  
 Test Date: 07/16/2019  
 Plot No.: 9

## DUT: SM-R825U

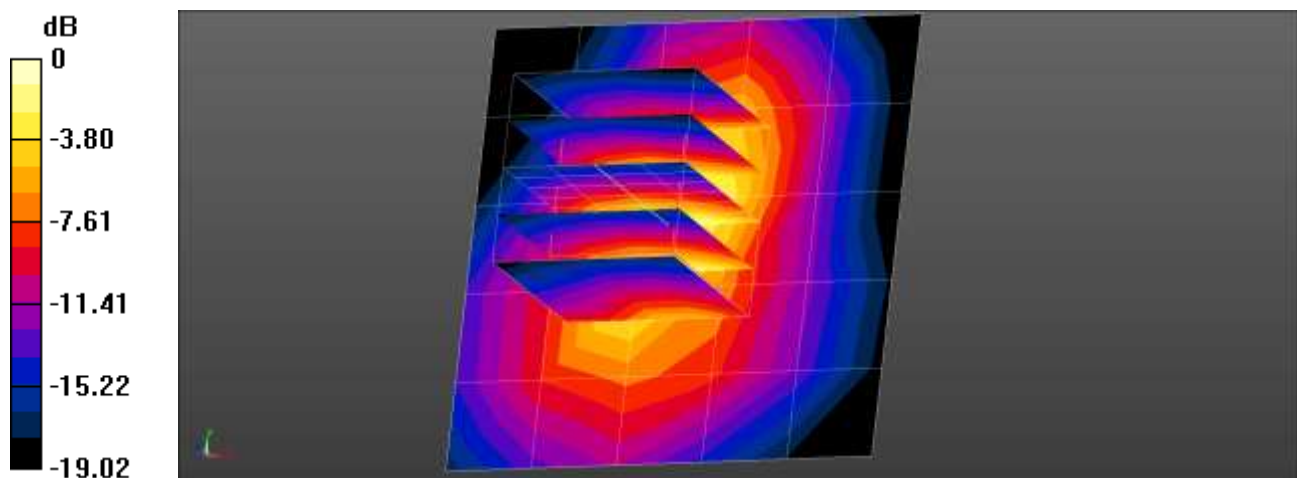
Communication System: UID 0, LTE Band 26 (0); Frequency: 821.5 MHz; Duty Cycle: 1:1  
 Medium parameters used (interpolated):  $f = 821.5$  MHz;  $\sigma = 0.946$  S/m;  $\epsilon_r = 56.585$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Center Section

## DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(10, 10, 10); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

**LTE Band 26 Next-to-Mouth QPSK 15MHz 1RB 0offset 26765ch 10mm/Area Scan (6x6x1):** Measurement grid:  
 $dx=15$ mm,  $dy=15$ mm  
 Maximum value of SAR (measured) = 0.509 W/kg

**LTE Band 26 Next-to-Mouth QPSK 15MHz 1RB 0offset 26765ch 10mm/Zoom Scan (5x5x7)/Cube 0:**  
 Measurement grid:  $dx=8$ mm,  $dy=8$ mm,  $dz=5$ mm  
 Reference Value = 23.95 V/m; Power Drift = 0.10 dB  
 Peak SAR (extrapolated) = 1.23 W/kg  
**SAR(1 g) = 0.544 W/kg; SAR(10 g) = 0.250 W/kg**  
 Maximum value of SAR (measured) = 0.795 W/kg



0 dB = 0.795 W/kg = -1.00 dBW/kg

Test Laboratory: HCT CO., LTD  
 EUT Type: Smart watch  
 Liquid Temperature: 20.7 °C  
 Ambient Temperature: 21.0 °C  
 Test Date: 07/15/2019  
 Plot No.: 10

## DUT: SM-R825U

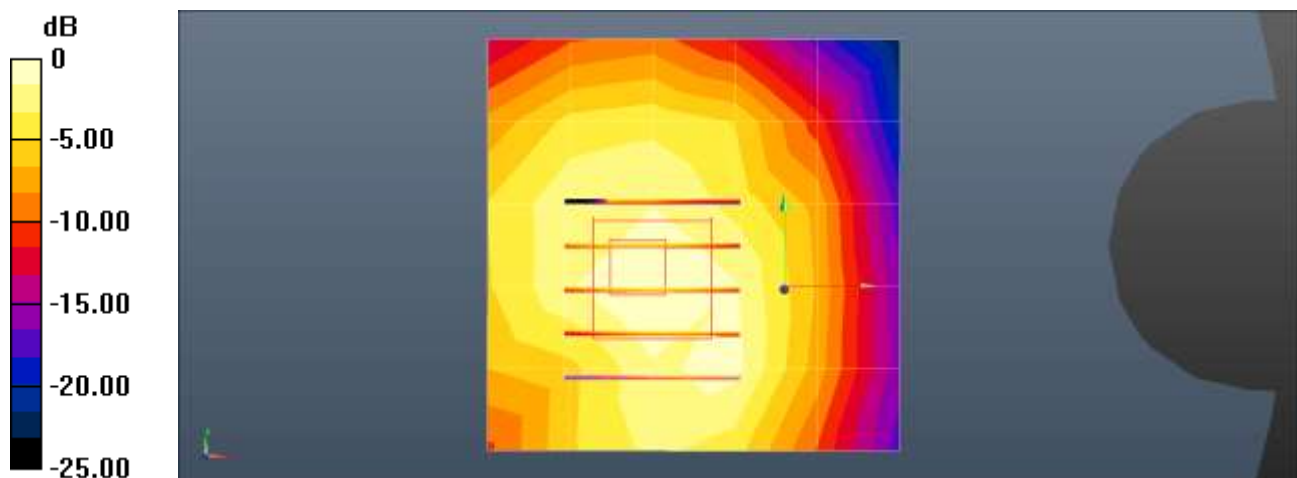
Communication System: UID 0, LTE Band 66 (0); Frequency: 1745 MHz; Duty Cycle: 1:1  
 Medium parameters used (interpolated):  $f = 1745 \text{ MHz}$ ;  $\sigma = 1.352 \text{ S/m}$ ;  $\epsilon_r = 41.076$ ;  $\rho = 1000 \text{ kg/m}^3$   
 Phantom section: Flat Section

## DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(8.64, 8.64, 8.64); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: SAM with CRP v5.0\_Front
- Measurement SW: DASY52, Version 52.8 (8);

**LTE Band 66 Next-to-Mouth QPSK 20MHz 1RB 49offset 132322ch 10mm/Area Scan (6x6x1):** Measurement  
 grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
 Maximum value of SAR (measured) = 0.592 W/kg

**LTE Band 66 Next-to-Mouth QPSK 20MHz 1RB 49offset 132322ch 10mm/Zoom Scan (5x5x7)/Cube 0:**  
 Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$   
 Reference Value = 20.90 V/m; Power Drift = -0.05 dB  
 Peak SAR (extrapolated) = 0.580 W/kg  
**SAR(1 g) = 0.379 W/kg; SAR(10 g) = 0.229 W/kg**  
 Maximum value of SAR (measured) = 0.491 W/kg



0 dB = 0.491 W/kg = -3.09 dBW/kg

Test Laboratory: HCT CO., LTD  
 EUT Type: Smart watch  
 Liquid Temperature: 21.1 °C  
 Ambient Temperature: 21.4 °C  
 Test Date: 07/25/2019  
 Plot No.: 11

## DUT: SM-R825U

Communication System: UID 0, 2450MHz FCC (0); Frequency: 2462 MHz; Duty Cycle: 1:1  
 Medium parameters used (interpolated):  $f = 2462$  MHz;  $\sigma = 1.811$  S/m;  $\epsilon_r = 38.307$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section

### DASY Configuration:

- Probe: EX3DV4 - SN3968; ConvF(7.52, 7.52, 7.52); Calibrated: 2018-09-25;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2018-08-22
- Phantom: SAM with CRP v5.0
- Measurement SW: DASY52, Version 52.8 (8);

**802.11b Next-to-Mouth 1Mbps 11ch/Area Scan (7x7x1):** Measurement grid: dx=12mm, dy=12mm  
 Maximum value of SAR (measured) = 0.169 W/kg

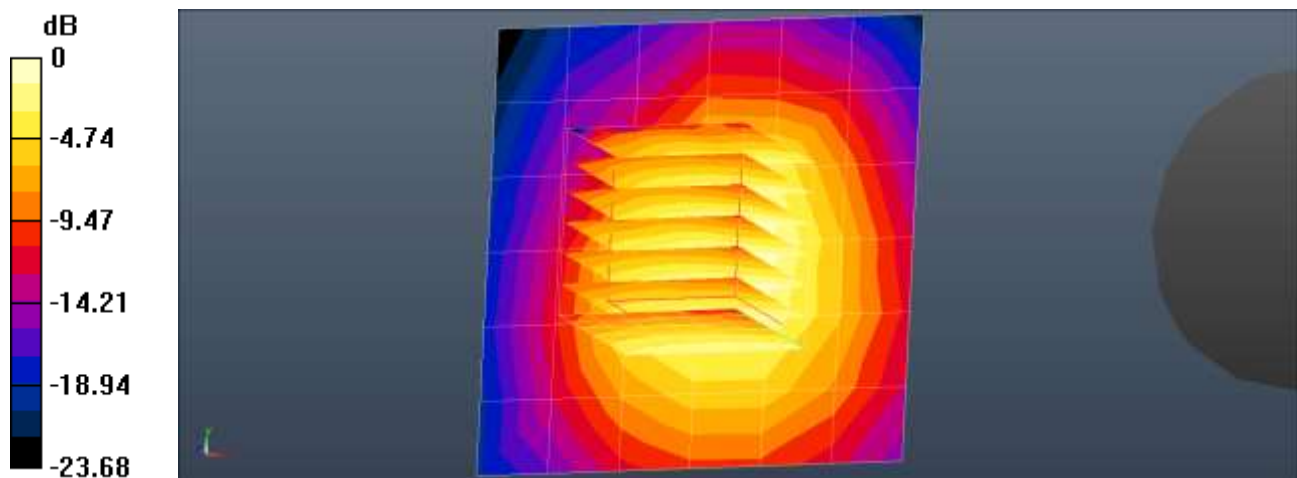
**802.11b Next-to-Mouth 1Mbps 11ch/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.18 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 0.211 W/kg

**SAR(1 g) = 0.113 W/kg; SAR(10 g) = 0.058 W/kg**

Maximum value of SAR (measured) = 0.175 W/kg



0 dB = 0.169 W/kg = -7.72 dBW/kg

Test Laboratory: HCT CO., LTD  
 EUT Type: Smart watch  
 Liquid Temperature: 21.1 °C  
 Ambient Temperature: 21.4 °C  
 Test Date: 07/25/2019  
 Plot No.: 12

## DUT: SM-R825U

Communication System: UID 0, Bluetooth (0); Frequency: 2441 MHz; Duty Cycle: 1:1.305  
 Medium parameters used (interpolated):  $f = 2441 \text{ MHz}$ ;  $\sigma = 1.794 \text{ S/m}$ ;  $\epsilon_r = 38.454$ ;  $\rho = 1000 \text{ kg/m}^3$   
 Phantom section: Flat Section

### DASY Configuration:

- Probe: EX3DV4 - SN3968; ConvF(7.52, 7.52, 7.52); Calibrated: 2018-09-25;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2018-08-22
- Phantom: SAM with CRP v5.0
- Measurement SW: DASY52, Version 52.8 (8);

**Bluetooth Next-to-Mouth DH5 39ch/Area Scan (7x7x1):** Measurement grid:  $dx=12\text{mm}$ ,  $dy=12\text{mm}$   
 Maximum value of SAR (measured) = 0.151 W/kg

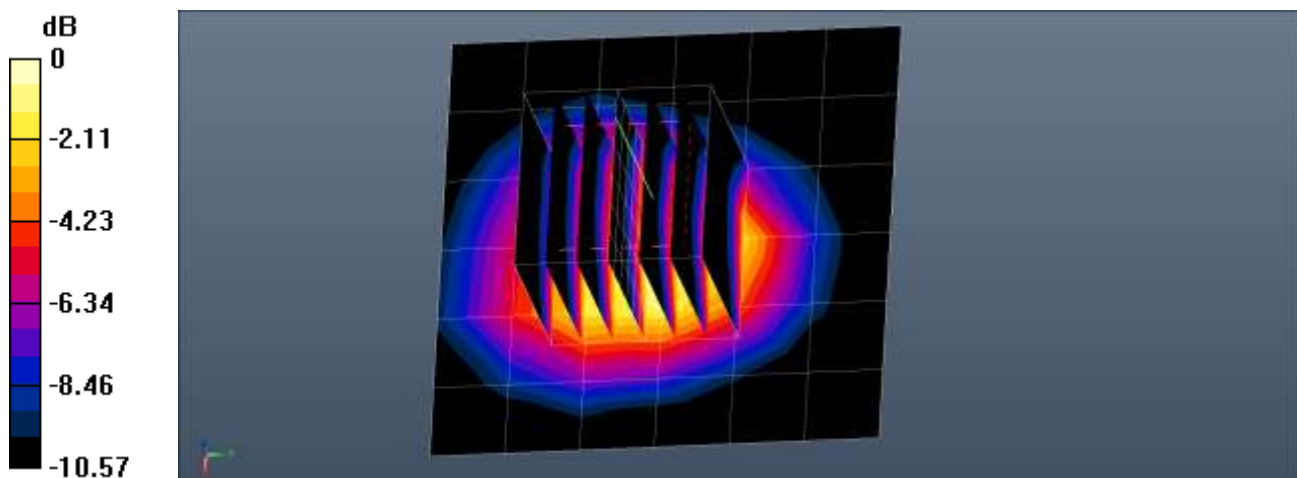
**Bluetooth Next-to-Mouth DH5 39ch/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 9.959 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.166 W/kg

**SAR(1 g) = 0.088 W/kg; SAR(10 g) = 0.047 W/kg**

Maximum value of SAR (measured) = 0.133 W/kg



0 dB = 0.133 W/kg = -8.76 dBW/kg

Test Laboratory: HCT CO., LTD  
 EUT Type: Smart watch  
 Liquid Temperature: 19.7 °C  
 Ambient Temperature: 20.0 °C  
 Test Date: 07/19/2019  
 Plot No.: 13

## DUT: SM-R825U

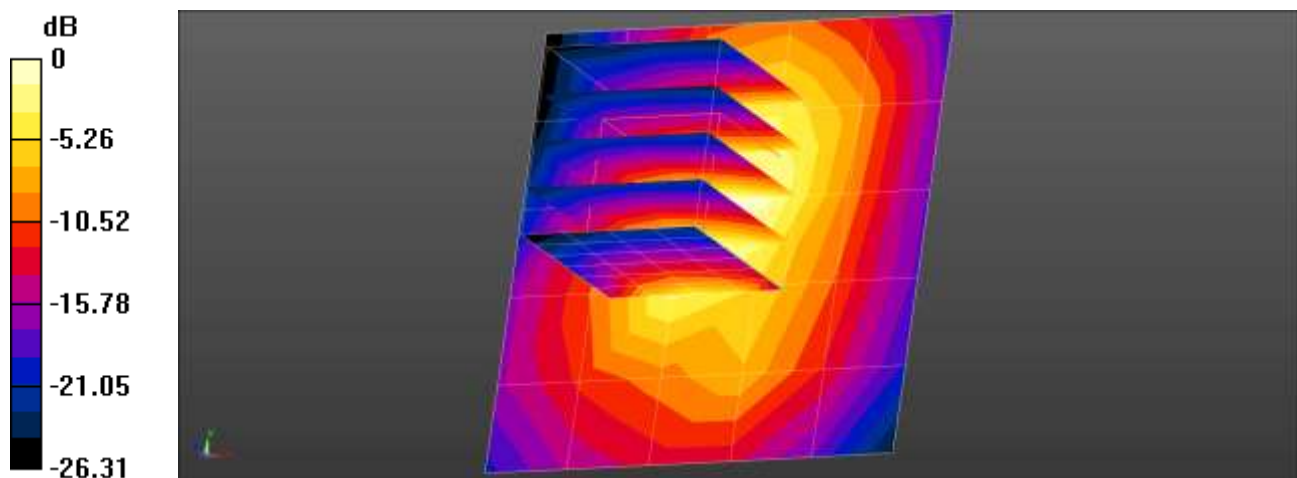
Communication System: UID 0, WCDMA850 (0); Frequency: 836.6 MHz; Duty Cycle: 1:1  
 Medium parameters used (interpolated):  $f = 836.6$  MHz;  $\sigma = 0.961$  S/m;  $\epsilon_r = 56.401$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Center Section

### DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(10, 10, 10); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

**WCDMA850 Extremity 4183ch/Area Scan (6x6x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (measured) = 0.725 W/kg

**WCDMA850 Extremity 4183ch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
 Reference Value = 26.68 V/m; Power Drift = -0.18 dB  
 Peak SAR (extrapolated) = 1.10 W/kg  
**SAR(1 g) = 0.464 W/kg; SAR(10 g) = 0.208 W/kg**  
 Maximum value of SAR (measured) = 0.764 W/kg



0 dB = 0.725 W/kg = -1.40 dBW/kg

Test Laboratory: HCT CO., LTD  
 EUT Type: Smart watch  
 Liquid Temperature: 18.6 °C  
 Ambient Temperature: 18.9 °C  
 Test Date: 07/22/2019  
 Plot No.: 14

## DUT: SM-R825U

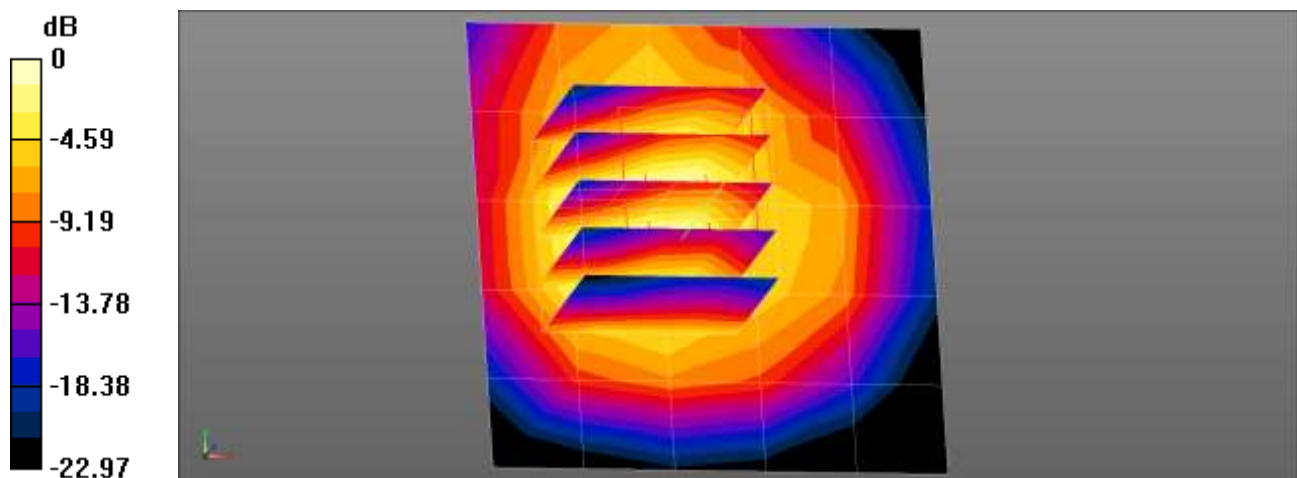
Communication System: UID 0, WCDMA 1700 (0); Frequency: 1732.4 MHz; Duty Cycle: 1:1  
 Medium parameters used (interpolated):  $f = 1732.4$  MHz;  $\sigma = 1.422$  S/m;  $\epsilon_r = 54.297$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Center Section

### DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(8.34, 8.34, 8.34); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

**WCDMA1700 Extremity 1412ch/Area Scan (6x6x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (measured) = 3.78 W/kg

**WCDMA1700 Extremity 1412ch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
 Reference Value = 48.36 V/m; Power Drift = 0.03 dB  
 Peak SAR (extrapolated) = 4.60 W/kg  
**SAR(1 g) = 3.31 W/kg; SAR(10 g) = 1.84 W/kg**  
 Maximum value of SAR (measured) = 4.07 W/kg



0 dB = 4.07 W/kg = 6.10 dBW/kg

Test Laboratory: HCT CO., LTD  
 EUT Type: Smart watch  
 Liquid Temperature: 19.9 °C  
 Ambient Temperature: 20.2 °C  
 Test Date: 07/23/2019  
 Plot No.: 15

## DUT: SM-R825U

Communication System: UID 0, WCDMA1900 (0); Frequency: 1880 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.568$  S/m;  $\epsilon_r = 53.59$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Center Section

## DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(7.92, 7.92, 7.92); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

**WCDMA1900 Extremity 9400ch/Area Scan (6x6x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (measured) = 2.91 W/kg

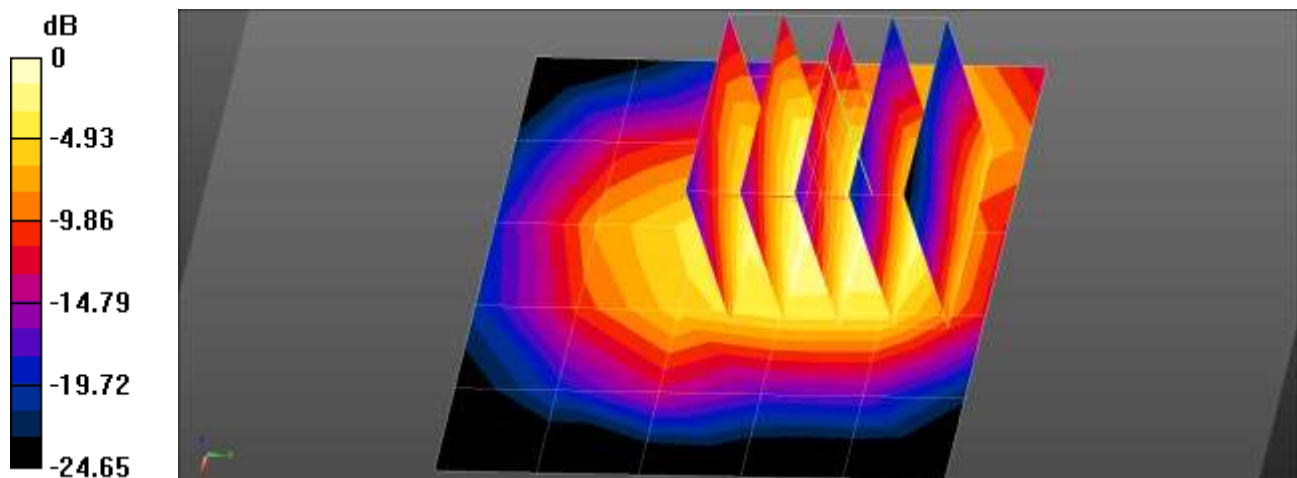
**WCDMA1900 Extremity 9400ch/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 36.98 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 4.08 W/kg

**SAR(1 g) = 2.6 W/kg; SAR(10 g) = 1.51 W/kg**

Maximum value of SAR (measured) = 3.50 W/kg



0 dB = 3.50 W/kg = 5.44 dBW/kg

Test Laboratory: HCT CO., LTD  
 EUT Type: Smart watch  
 Liquid Temperature: 19.9 °C  
 Ambient Temperature: 20.2 °C  
 Test Date: 07/23/2019  
 Plot No.: 16

## DUT: SM-R825U

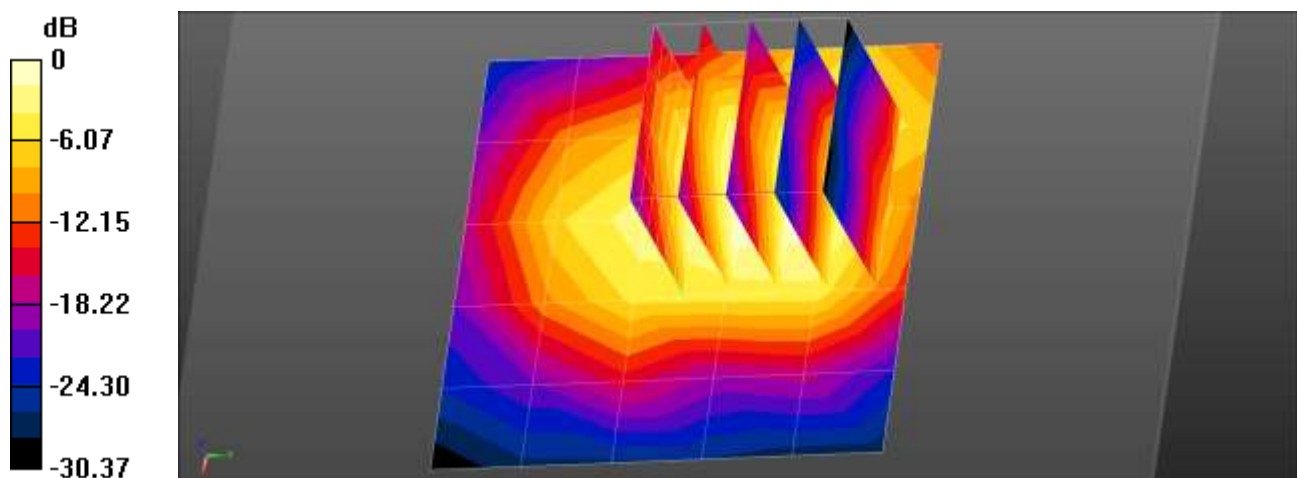
Communication System: UID 0, LTE Band 2 (0); Frequency: 1880 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.568$  S/m;  $\epsilon_r = 53.59$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Center Section

## DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(7.92, 7.92, 7.92); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

**LTE Band 2 Extremity QPSK 20MHz 1RB 99offset 18900ch 0mm/Area Scan (6x6x1):** Measurement grid:  
 $dx=15$ mm,  $dy=15$ mm  
 Maximum value of SAR (measured) = 2.73 W/kg

**LTE Band 2 Extremity QPSK 20MHz 1RB 99offset 18900ch 0mm/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8$ mm,  $dy=8$ mm,  $dz=5$ mm  
 Reference Value = 29.72 V/m; Power Drift = 0.16 dB  
 Peak SAR (extrapolated) = 3.75 W/kg  
**SAR(1 g) = 2.61 W/kg; SAR(10 g) = 1.43 W/kg**  
 Maximum value of SAR (measured) = 2.99 W/kg



0 dB = 2.73 W/kg = 4.37 dBW/kg

Test Laboratory: HCT CO., LTD  
 EUT Type: Smart watch  
 Liquid Temperature: 18.6 °C  
 Ambient Temperature: 18.9 °C  
 Test Date: 07/22/2019  
 Plot No.: 17

## DUT: SM-R825U

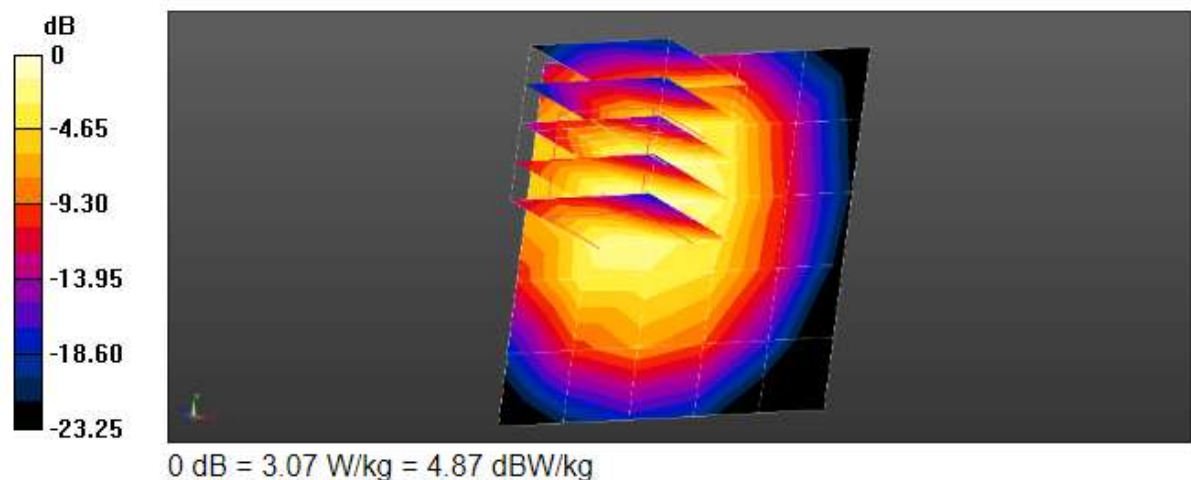
Communication System: UID 0, LTE Band 4 (0); Frequency: 1732.5 MHz; Duty Cycle: 1:1  
 Medium parameters used (interpolated):  $f = 1732.5$  MHz;  $\sigma = 1.422$  S/m;  $\epsilon_r = 54.297$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Center Section

## DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(8.34, 8.34, 8.34); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

**LTE Band 4 Extremity QPSK 20MHz 1RB 0offset 20175ch 0mm/Area Scan (6x6x1):** Measurement grid:  
 $dx=15$ mm,  $dy=15$ mm  
 Maximum value of SAR (measured) = 2.58 W/kg

**LTE Band 4 Extremity QPSK 20MHz 1RB 0offset 20175ch 0mm/Zoom Scan (5x5x7)/Cube 0:** Measurement  
 grid:  $dx=8$ mm,  $dy=8$ mm,  $dz=5$ mm  
 Reference Value = 38.90 V/m; Power Drift = -0.12 dB  
 Peak SAR (extrapolated) = 3.52 W/kg  
**SAR(1 g) = 2.69 W/kg; SAR(10 g) = 1.5 W/kg**  
 Maximum value of SAR (measured) = 3.07 W/kg



Test Laboratory: HCT CO., LTD  
 EUT Type: Smart watch  
 Liquid Temperature: 19.4 °C  
 Ambient Temperature: 19.7 °C  
 Test Date: 07/18/2019  
 Plot No.: 18

## DUT: SM-R825U

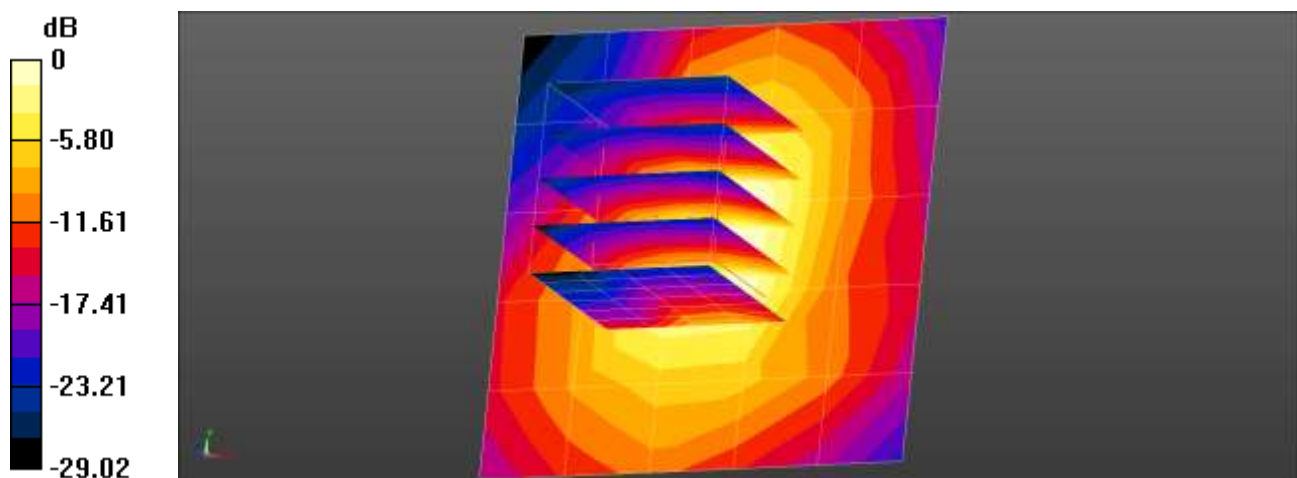
Communication System: UID 0, LTE Band 12 (0); Frequency: 707.5 MHz; Duty Cycle: 1:1  
 Medium parameters used (interpolated):  $f = 707.5$  MHz;  $\sigma = 0.921$  S/m;  $\epsilon_r = 56.84$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Center Section

## DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(10.42, 10.42, 10.42); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

**LTE Band 12 Extremity QPSK 10MHz 1RB 0offset 23095ch 0mm/Area Scan (6x6x1):** Measurement grid:  
 $dx=15$ mm,  $dy=15$ mm  
 Maximum value of SAR (measured) = 0.552 W/kg

**LTE Band 12 Extremity QPSK 10MHz 1RB 0offset 23095ch 0mm/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8$ mm,  $dy=8$ mm,  $dz=5$ mm  
 Reference Value = 24.80 V/m; Power Drift = 0.18 dB  
 Peak SAR (extrapolated) = 1.06 W/kg  
**SAR(1 g) = 0.435 W/kg; SAR(10 g) = 0.195 W/kg**  
 Maximum value of SAR (measured) = 0.637 W/kg



0 dB = 0.552 W/kg = -2.58 dBW/kg

Test Laboratory: HCT CO., LTD  
 EUT Type: Smart watch  
 Liquid Temperature: 19.4 °C  
 Ambient Temperature: 19.7 °C  
 Test Date: 07/18/2019  
 Plot No.: 19

## DUT: SM-R825U

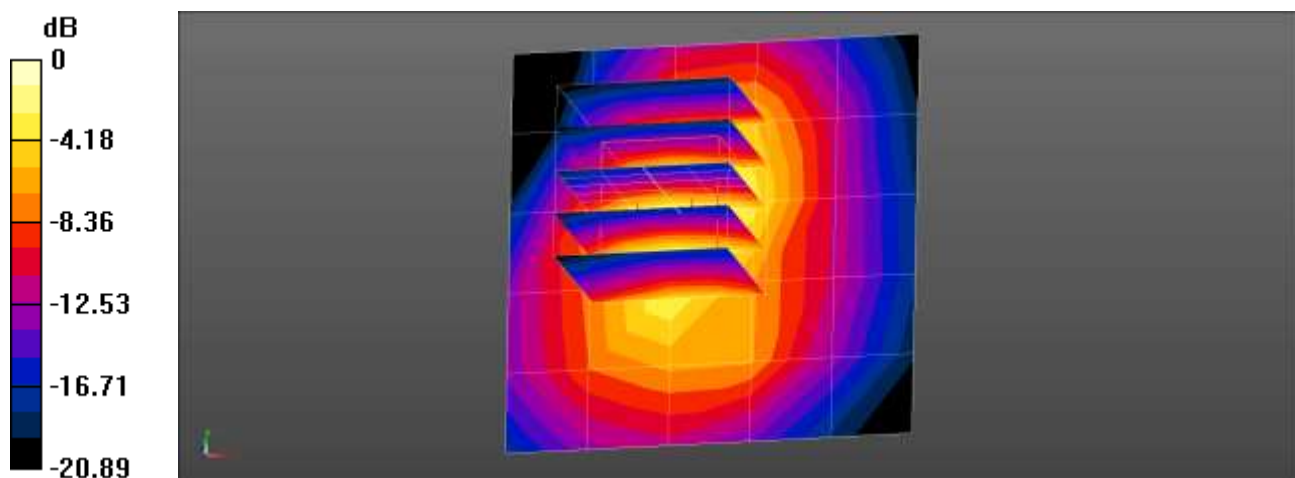
Communication System: UID 0, LTE Band 13 (0); Frequency: 782 MHz; Duty Cycle: 1:1  
 Medium parameters used (interpolated):  $f = 782 \text{ MHz}$ ;  $\sigma = 0.998 \text{ S/m}$ ;  $\epsilon_r = 56.032$ ;  $\rho = 1000 \text{ kg/m}^3$   
 Phantom section: Center Section

### DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(10.42, 10.42, 10.42); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

**LTE Band 13 Extremity QPSK 10MHz 1RB 0offset 23230ch 0mm/Area Scan (6x6x1):** Measurement grid:  
 $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
 Maximum value of SAR (measured) = 0.786 W/kg

**LTE Band 13 Extremity QPSK 10MHz 1RB 0offset 23230ch 0mm/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$   
 Reference Value = 25.84 V/m; Power Drift = -0.08 dB  
 Peak SAR (extrapolated) = 1.13 W/kg  
**SAR(1 g) = 0.470 W/kg; SAR(10 g) = 0.207 W/kg**  
 Maximum value of SAR (measured) = 0.742 W/kg



0 dB = 0.742 W/kg = -1.30 dBW/kg

Test Laboratory: HCT CO., LTD  
 EUT Type: Smart watch  
 Liquid Temperature: 19.9 °C  
 Ambient Temperature: 20.2 °C  
 Test Date: 07/23/2019  
 Plot No.: 20

## DUT: SM-R825U

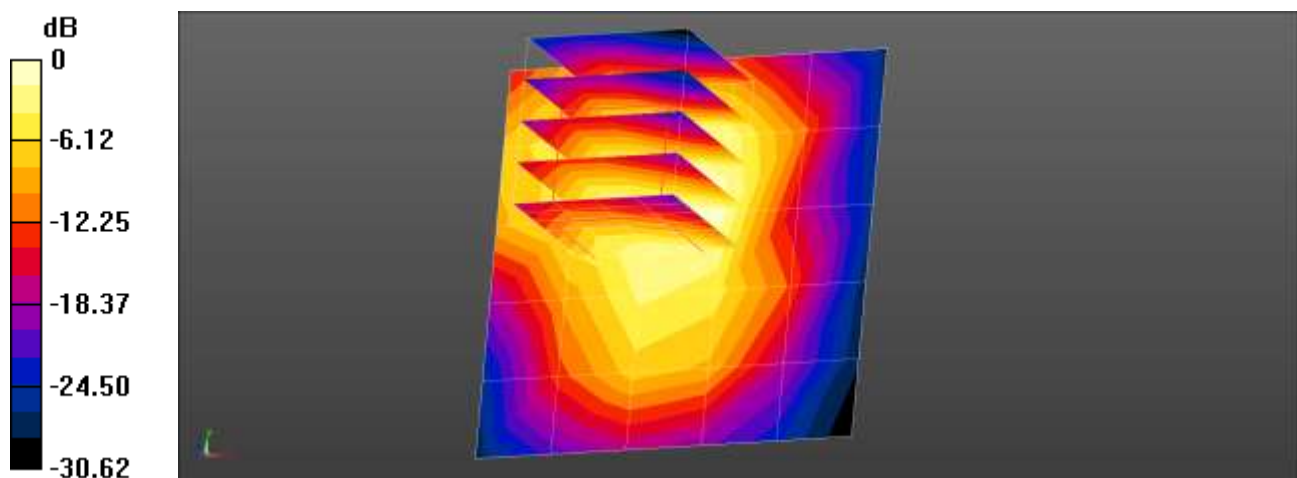
Communication System: UID 0, LTE Band 25 (0); Frequency: 1882.5 MHz; Duty Cycle: 1:1  
 Medium parameters used (interpolated):  $f = 1882.5$  MHz;  $\sigma = 1.569$  S/m;  $\epsilon_r = 53.574$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Center Section

### DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(7.92, 7.92, 7.92); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

**LTE Band 25 Extremity QPSK 20MHz 1RB 49offset 26365ch 0mm/Area Scan (6x6x1):** Measurement grid:  
 $dx=15$ mm,  $dy=15$ mm  
 Maximum value of SAR (measured) = 2.55 W/kg

**LTE Band 25 Extremity QPSK 20MHz 1RB 49offset 26365ch 0mm/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8$ mm,  $dy=8$ mm,  $dz=5$ mm  
 Reference Value = 38.88 V/m; Power Drift = -0.19 dB  
 Peak SAR (extrapolated) = 3.09 W/kg  
**SAR(1 g) = 1.89 W/kg; SAR(10 g) = 1.11 W/kg**  
 Maximum value of SAR (measured) = 2.67 W/kg



0 dB = 2.55 W/kg = 4.06 dBW/kg

Test Laboratory: HCT CO., LTD  
 EUT Type: Smart watch  
 Liquid Temperature: 19.7 °C  
 Ambient Temperature: 20.0 °C  
 Test Date: 07/19/2019  
 Plot No.: 21

## DUT: SM-R825U

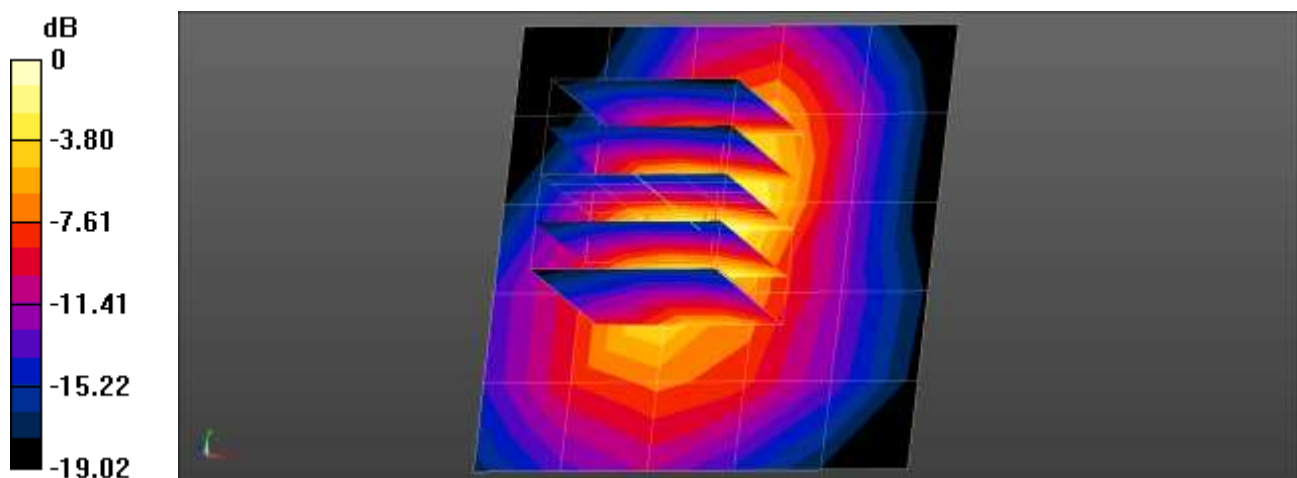
Communication System: UID 0, LTE Band 26 (0); Frequency: 821.5 MHz; Duty Cycle: 1:1  
 Medium parameters used (interpolated):  $f = 821.5$  MHz;  $\sigma = 0.946$  S/m;  $\epsilon_r = 56.585$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Center Section

## DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(10, 10, 10); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

**LTE Band 26 Extremity QPSK 15MHz 1RB 0offset 26765ch 0mm/Area Scan (6x6x1):** Measurement grid:  
 $dx=15$ mm,  $dy=15$ mm  
 Maximum value of SAR (measured) = 0.509 W/kg

**LTE Band 26 Extremity QPSK 15MHz 1RB 0offset 26765ch 0mm/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8$ mm,  $dy=8$ mm,  $dz=5$ mm  
 Reference Value = 23.95 V/m; Power Drift = 0.10 dB  
 Peak SAR (extrapolated) = 1.23 W/kg  
**SAR(1 g) = 0.544 W/kg; SAR(10 g) = 0.250 W/kg**  
 Maximum value of SAR (measured) = 0.795 W/kg



0 dB = 0.795 W/kg = -1.00 dBW/kg

Test Laboratory: HCT CO., LTD  
 EUT Type: Smart watch  
 Liquid Temperature: 18.6 °C  
 Ambient Temperature: 18.9 °C  
 Test Date: 07/22/2019  
 Plot No.: 22

## DUT: SM-R825U

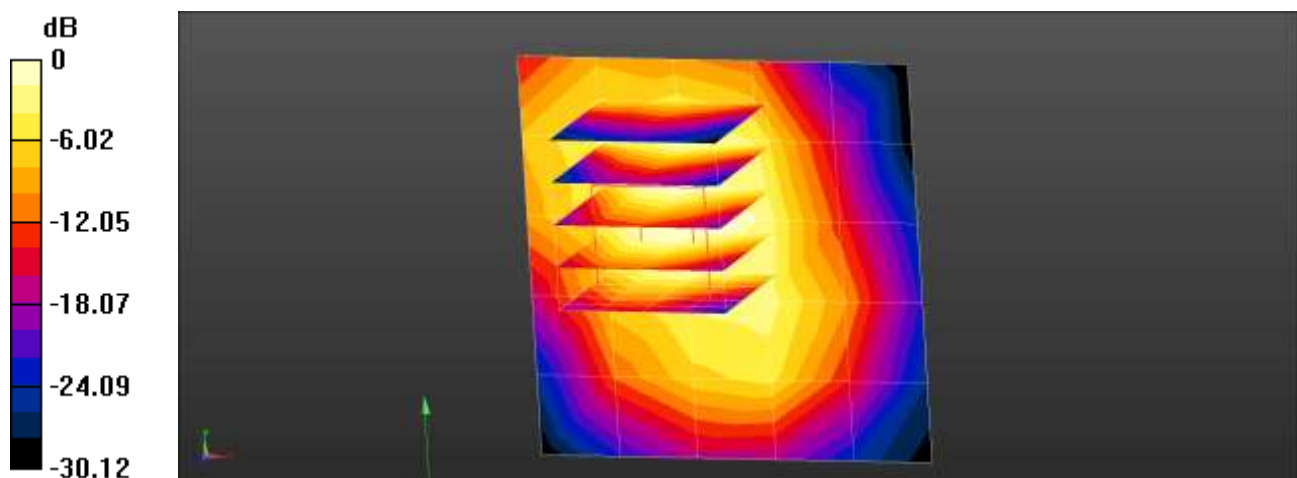
Communication System: UID 0, LTE Band 66(20MHz FCC) (0); Frequency: 1745 MHz;Duty Cycle: 1:1  
 Medium parameters used (interpolated):  $f = 1745$  MHz;  $\sigma = 1.436$  S/m;  $\epsilon_r = 54.293$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Center Section

## DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(8.34, 8.34, 8.34); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

**LTE Band 66 Extremity QPSK 20MHz 1RB 49offset 132322ch 0mm/Area Scan (6x6x1):** Measurement grid:  
 $dx=15$ mm,  $dy=15$ mm  
 Maximum value of SAR (measured) = 2.99 W/kg

**LTE Band 66 Extremity QPSK 20MHz 1RB 49offset 132322ch 0mm/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8$ mm,  $dy=8$ mm,  $dz=5$ mm  
 Reference Value = 39.80 V/m; Power Drift = -0.14 dB  
 Peak SAR (extrapolated) = 2.80 W/kg  
**SAR(1 g) = 2.21 W/kg; SAR(10 g) = 1.25 W/kg**  
 Maximum value of SAR (measured) = 2.43 W/kg



0 dB = 2.99 W/kg = 4.76 dBW/kg

Test Laboratory: HCT CO., LTD  
 EUT Type: Smart watch  
 Liquid Temperature: 21.1 °C  
 Ambient Temperature: 21.4 °C  
 Test Date: 07/25/2019  
 Plot No.: 23

## DUT: SM-R825U

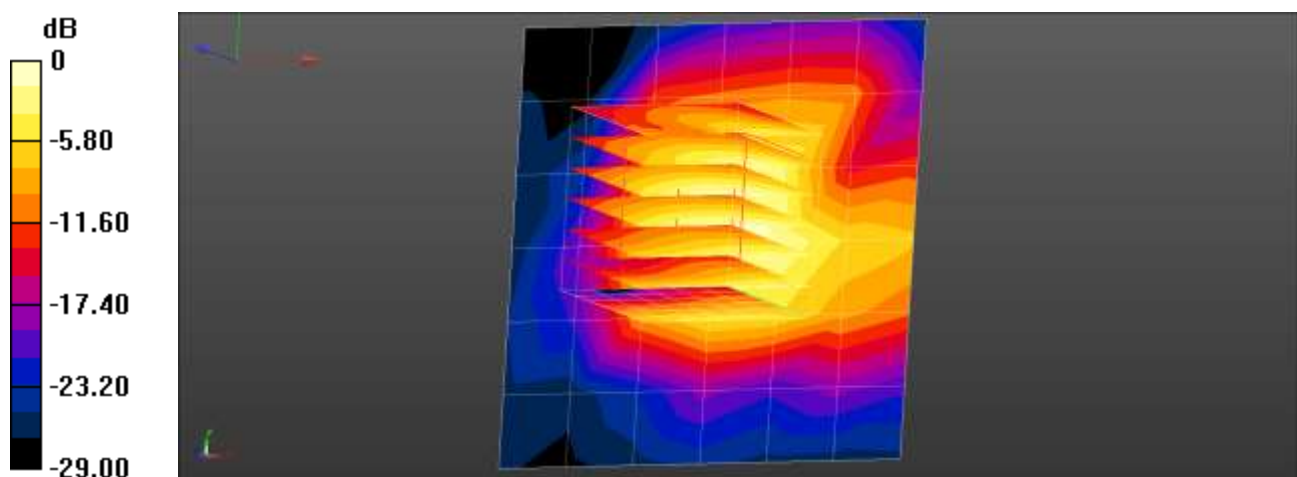
Communication System: UID 0, 2450MHz FCC (0); Frequency: 2462 MHz; Duty Cycle: 1:1  
 Medium parameters used (interpolated):  $f = 2462 \text{ MHz}$ ;  $\sigma = 1.96 \text{ S/m}$ ;  $\epsilon_r = 53.566$ ;  $\rho = 1000 \text{ kg/m}^3$   
 Phantom section: Center Section

### DASY Configuration:

- Probe: EX3DV4 - SN3968; ConvF(7.54, 7.54, 7.54); Calibrated: 2018-09-25;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2018-08-22
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

**802.11b Extremity 1Mbps 11ch/Area Scan (7x7x1):** Measurement grid:  $dx=12\text{mm}$ ,  $dy=12\text{mm}$   
 Maximum value of SAR (measured) = 0.644 W/kg

**802.11b Extremity 1Mbps 11ch/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$   
 Reference Value = 18.76 V/m; Power Drift = -0.13 dB  
 Peak SAR (extrapolated) = 1.18 W/kg  
**SAR(1 g) = 0.511 W/kg; SAR(10 g) = 0.190 W/kg**  
 Maximum value of SAR (measured) = 0.832 W/kg



0 dB = 0.644 W/kg = -1.91 dBW/kg

Test Laboratory: HCT CO., LTD

EUT Type: Smart watch  
 Liquid Temperature: 21.1 °C  
 Ambient Temperature: 21.4 °C  
 Test Date: 07/25/2019  
 Plot No.: 24

## DUT: SM-R825U

Communication System: UID 0, Bluetooth (0); Frequency: 2441 MHz; Duty Cycle: 1: Cycle: 1:1.305  
 Medium parameters used (interpolated):  $f = 2441$  MHz;  $\sigma = 1.936$  S/m;  $\epsilon_r = 53.671$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Center Section

## DASY Configuration:

- Probe: EX3DV4 - SN3968; ConvF(7.54, 7.54, 7.54); Calibrated: 2018-09-25;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2018-08-22
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

**Bluetooth Extremity DH5 39ch/Area Scan (7x7x1):** Measurement grid: dx=12mm, dy=12mm  
 Maximum value of SAR (measured) = 0.389 W/kg

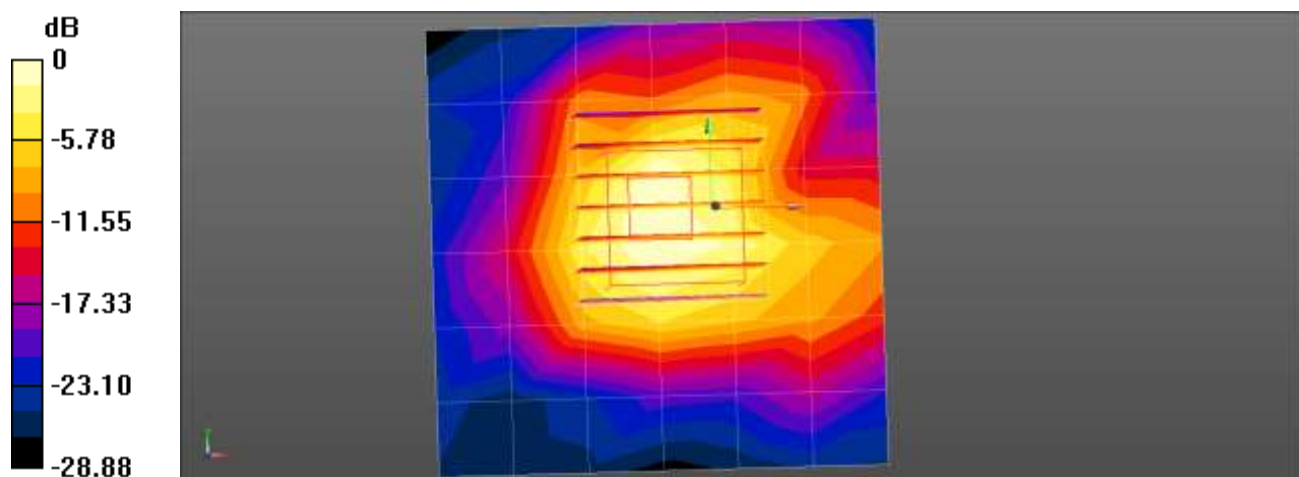
**Bluetooth Extremity DH5 39ch/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 14.65 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 0.863 W/kg

**SAR(1 g) = 0.372 W/kg; SAR(10 g) = 0.136 W/kg**

Maximum value of SAR (measured) = 0.641 W/kg



0 dB = 0.389 W/kg = -4.10 dBW/kg

## Attachment 2. – Dipole Verification Plots

## ■ Verification Data (750 MHz Head)

Test Laboratory: HCT CO., LTD  
 Input Power: 0.05 W  
 Liquid Temp: 19.3 °C  
 Test Date: 07/17/2019

DUT: Dipole ; Type: D750V3

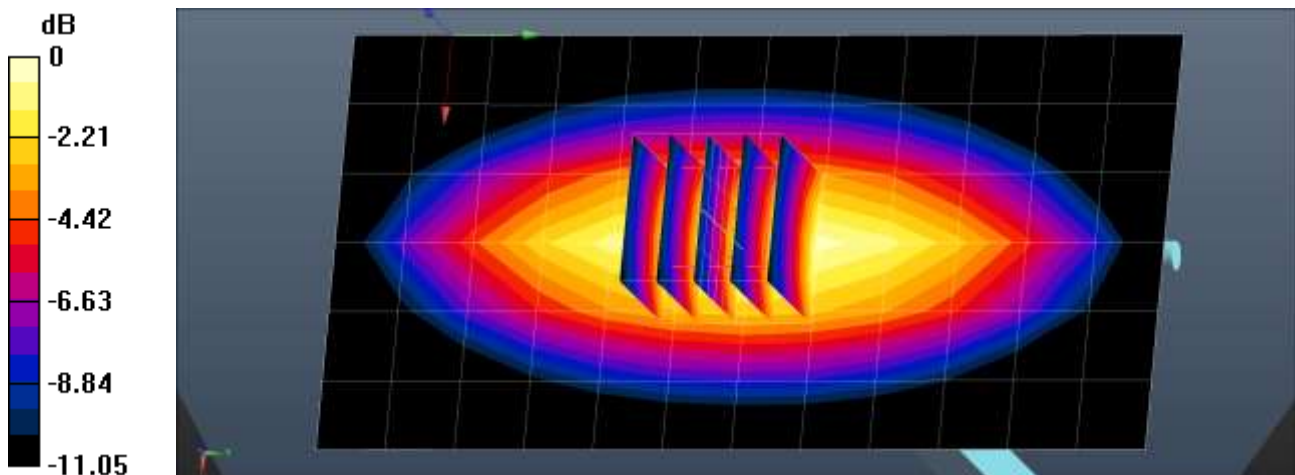
Communication System: UID 0, CW (0); Frequency: 750 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 750 \text{ MHz}$ ;  $\sigma = 0.875 \text{ S/m}$ ;  $\epsilon_r = 41.908$ ;  $\rho = 1000 \text{ kg/m}^3$   
 Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(10.83, 10.83, 10.83); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: SAM with CRP v5.0
- Measurement SW: DASY52, Version 52.8 (8);

750MHz Head Verification/Area Scan (7x13x1): Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
 Maximum value of SAR (measured) = 0.560 W/kg

750MHz Head Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$   
 Reference Value = 26.33 V/m; Power Drift = 0.01 dB  
 Peak SAR (extrapolated) = 0.649 W/kg  
**SAR(1 g) = 0.404 W/kg; SAR(10 g) = 0.260 W/kg**  
 Maximum value of SAR (measured) = 0.561 W/kg



0 dB = 0.561 W/kg = -2.51 dBW/kg

## ■ Verification Data (835 MHz Head)

Test Laboratory: HCT CO., LTD  
 Input Power 0.05 W  
 Liquid Temp: 18.5°C  
 Test Date: 07/16/2019

DUT: Dipole ; Type: D835V2

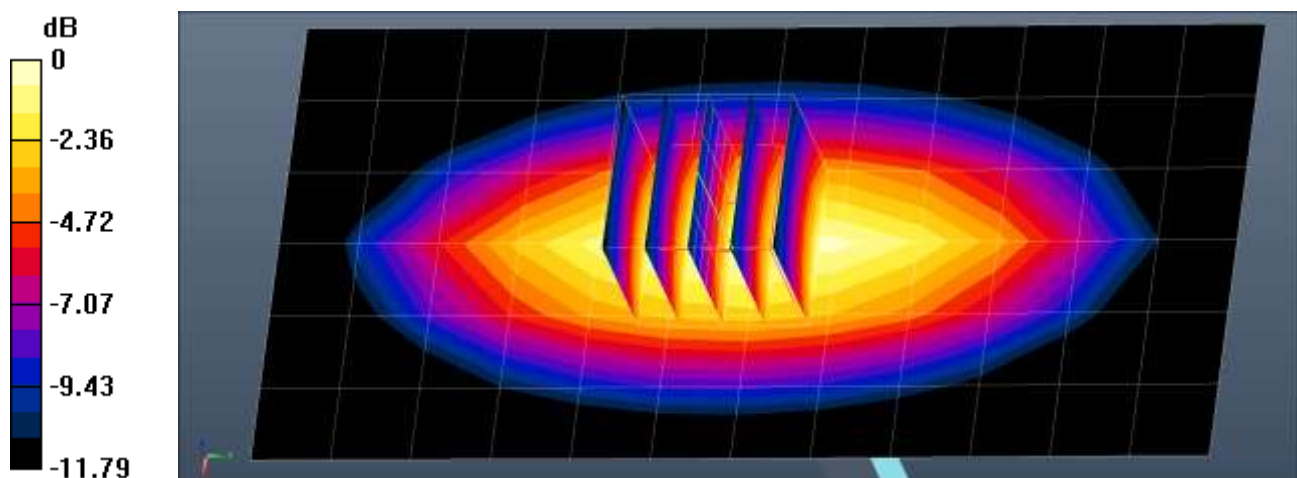
Communication System: UID 0, CW (0); Frequency: 835 MHz; Duty Cycle: 1:1  
 Medium parameters used (interpolated):  $f = 835$  MHz;  $\sigma = 0.909$  S/m;  $\epsilon_r = 40.296$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(10.25, 10.25, 10.25); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: SAM with CRP v5.0
- Measurement SW: DASY52, Version 52.8 (8);

**835MHz Head Verification/Area Scan (7x13x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (measured) = 0.649 W/kg

**835MHz Head Verification/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
 Reference Value = 27.88 V/m; Power Drift = 0.01 dB  
 Peak SAR (extrapolated) = 0.763 W/kg  
**SAR(1 g) = 0.469 W/kg; SAR(10 g) = 0.297 W/kg**  
 Maximum value of SAR (measured) = 0.655 W/kg



0 dB = 0.655 W/kg = -1.84 dBW/kg

## ■ Verification Data (1 800 MHz Head)

Test Laboratory: HCT CO., LTD  
 Input Power 0.05 W  
 Liquid Temp: 20.7 °C  
 Test Date: 07/15/2019

**DUT: Dipole ; Type: D1800V2**

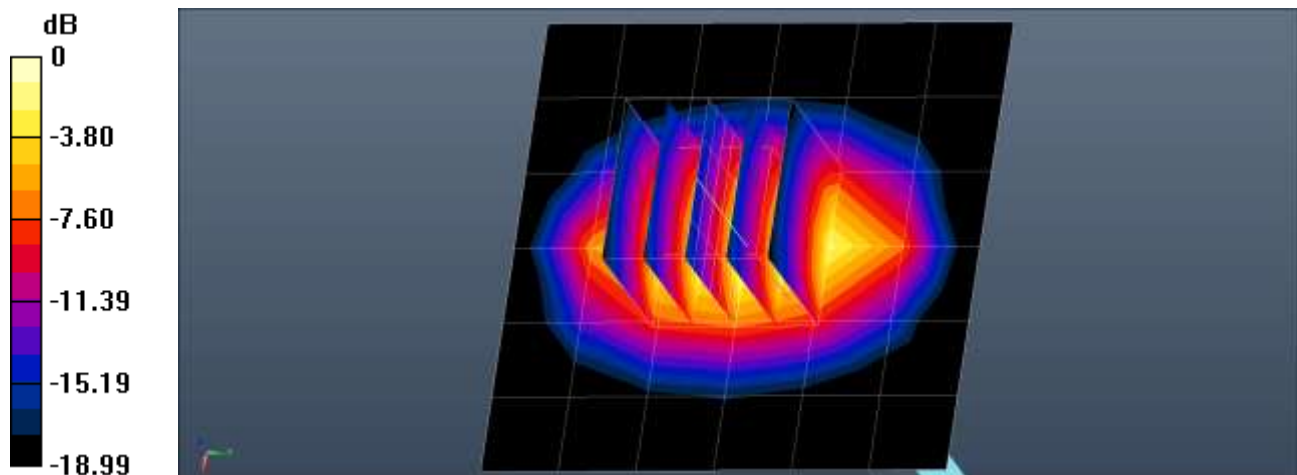
Communication System: UID 0, CW; Frequency: 1800 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 1800 \text{ MHz}$ ;  $\sigma = 1.407 \text{ S/m}$ ;  $\epsilon_r = 41.026$ ;  $\rho = 1000 \text{ kg/m}^3$   
 Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(8.64, 8.64, 8.64); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: SAM with CRP v5.0
- Measurement SW: DASY52, Version 52.8 (8);

**Dipole/1800MHz Head Verification/Area Scan (7x7x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
 Maximum value of SAR (measured) = 3.41 W/kg

**Dipole/1800MHz Head Verification/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$   
 Reference Value = 51.00 V/m; Power Drift = -0.01 dB  
 Peak SAR (extrapolated) = 4.16 W/kg  
**SAR(1 g) = 2.05 W/kg; SAR(10 g) = 1.02 W/kg**



0 dB = 3.41 W/kg = 5.33 dBW/kg

## ■ Verification Data (1 900 MHz Head)

Test Laboratory: HCT CO., LTD  
 Input Power 0.05 W  
 Liquid Temp: 18.0 °C  
 Test Date: 07/12/2019

**DUT: Dipole ; Type: D1900V2**

Communication System: UID 0, CW (0); Frequency: 1900 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 1900 \text{ MHz}$ ;  $\sigma = 1.44 \text{ S/m}$ ;  $\epsilon_r = 38.722$ ;  $\rho = 1000 \text{ kg/m}^3$   
 Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(8.34, 8.34, 8.34); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: SAM with CRP v5.0
- Measurement SW: DASY52, Version 52.8 (8);

**Dipole/1900MHz Head Verification/Area Scan (7x7x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
 Maximum value of SAR (measured) = 3.29 W/kg

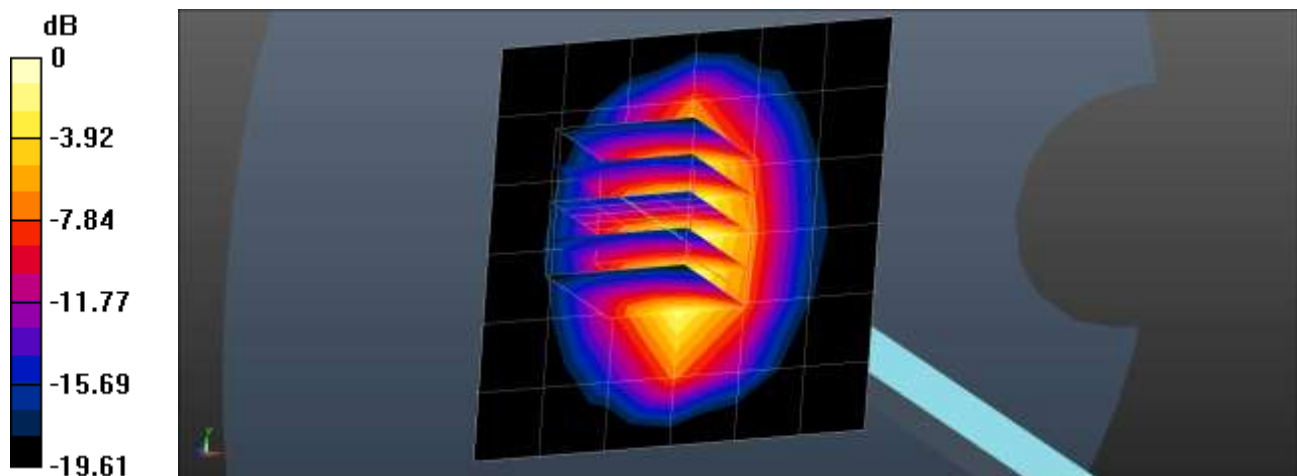
**Dipole/1900MHz Head Verification/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 49.70 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 4.07 W/kg

**SAR(1 g) = 2.01 W/kg; SAR(10 g) = 0.989 W/kg**

Maximum value of SAR (measured) = 3.31 W/kg



0 dB = 3.31 W/kg = 5.20 dBW/kg

## ■ Verification Data (2 450 MHz Head)

Test Laboratory: HCT CO., LTD  
 Input Power 0.05 W  
 Liquid Temp: 21.1 °C  
 Test Date: 07/25/2019

**DUT: Dipole 2450 MHz ; Type: D2450V2**

Communication System: UID 0, CW (0); Frequency: 2450 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.802$  S/m;  $\epsilon_r = 38.398$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3968; ConvF(7.52, 7.52, 7.52); Calibrated: 2018-09-25;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2018-08-22
- Phantom: SAM with CRP v5.0
- Measurement SW: DASY52, Version 52.8 (8);

**Dipole/2 450 MHz Head Verification/Area Scan (8x8x1):** Measurement grid: dx=12mm, dy=12mm  
 Maximum value of SAR (measured) = 3.50 W/kg

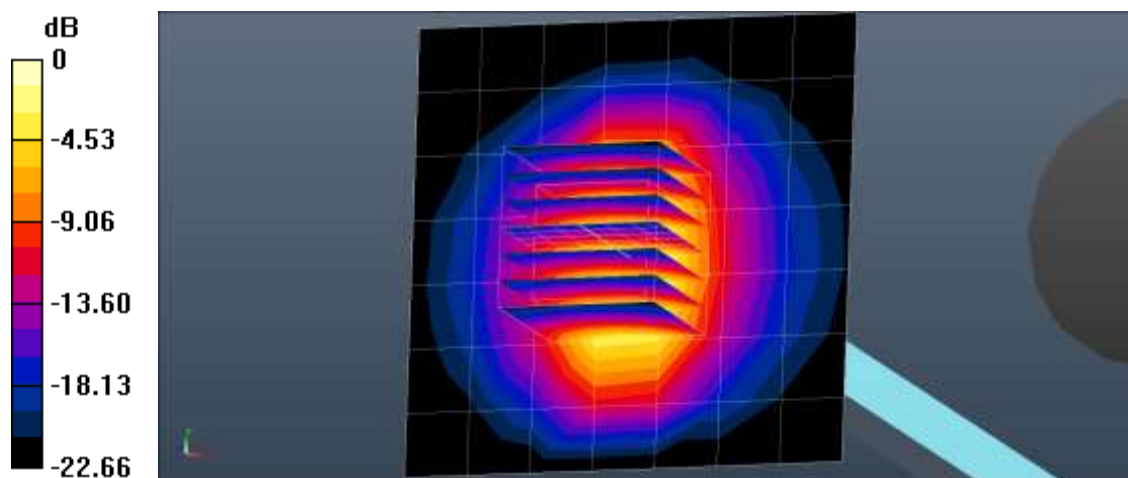
**Dipole/2 450 MHz Head Verification/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 54.24 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 6.53 W/kg

**SAR(1 g) = 2.84 W/kg; SAR(10 g) = 1.26 W/kg**

Maximum value of SAR (measured) = 5.06 W/kg



0 dB = 5.06 W/kg = 7.04 dBW/kg

## ■ Verification Data (750 MHz Body)

Test Laboratory: HCT CO., LTD  
 Input Power 0.05 W  
 Liquid Temp: 19.4 °C  
 Test Date: 07/18/2019

**DUT: Dipole ; Type: D750V3**

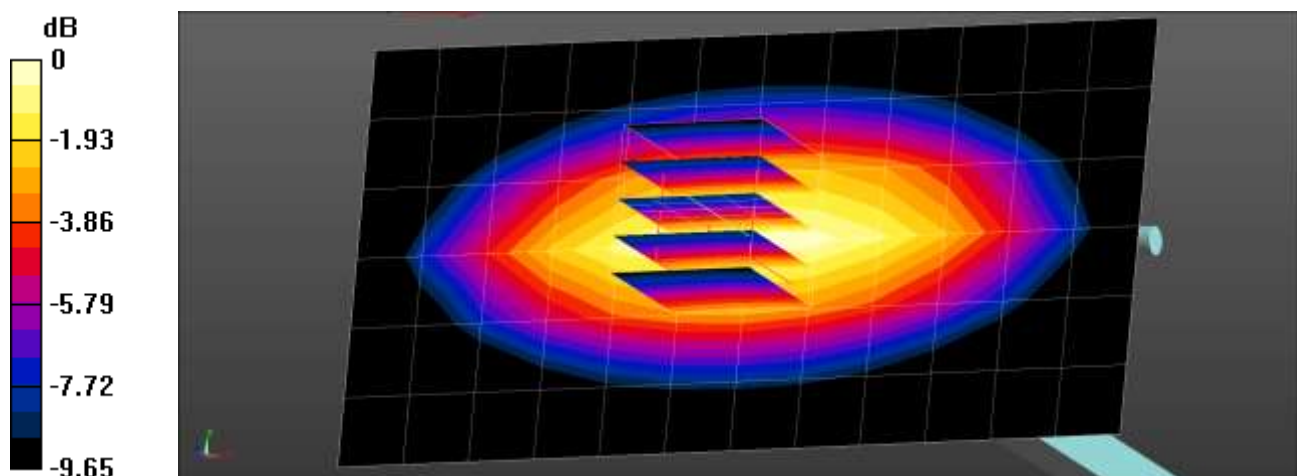
Communication System: UID 0, CW (0); Frequency: 750 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 750 \text{ MHz}$ ;  $\sigma = 0.962 \text{ S/m}$ ;  $\epsilon_r = 56.383$ ;  $\rho = 1000 \text{ kg/m}^3$   
 Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(10.42, 10.42, 10.42); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

**750MHz Body Verification/Area Scan (13x7x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
 Maximum value of SAR (measured) = 0.523 W/kg

**750MHz Body Verification/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$   
 Reference Value = 24.34 V/m; Power Drift = -0.01 dB  
 Peak SAR (extrapolated) = 0.592 W/kg  
**SAR(1 g) = 0.396 W/kg; SAR(10 g) = 0.266 W/kg**  
 Maximum value of SAR (measured) = 0.526 W/kg



0 dB = 0.526 W/kg = -2.79 dBW/kg

## ■ Verification Data (835 MHz Body)

Test Laboratory: HCT CO., LTD  
 Input Power 0.05 W  
 Liquid Temp: 19.7 °C  
 Test Date: 07/19/2019

**DUT: Dipole; Type: D835V2**

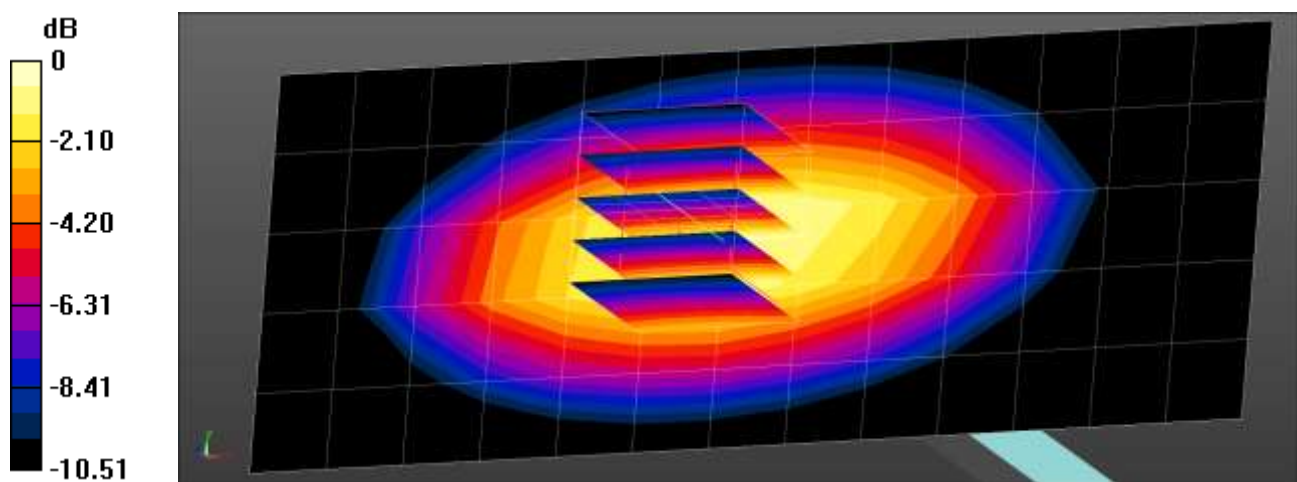
Communication System: UID 0, CW (0); Frequency: 835 MHz; Duty Cycle: 1:1  
 Medium parameters used (interpolated):  $f = 835 \text{ MHz}$ ;  $\sigma = 0.959 \text{ S/m}$ ;  $\epsilon_r = 56.412$ ;  $\rho = 1000 \text{ kg/m}^3$   
 Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(10, 10, 10); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

**835MHz Body Verification/Area Scan (14x6x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
 Maximum value of SAR (measured) = 0.522 W/kg

**835MHz Body Verification/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$   
 Reference Value = 26.45 V/m; Power Drift = -0.05 dB  
 Peak SAR (extrapolated) = 0.676 W/kg  
**SAR(1 g) = 0.450 W/kg; SAR(10 g) = 0.296 W/kg**  
 Maximum value of SAR (measured) = 0.601 W/kg



0 dB = 0.601 W/kg = -2.21 dBW/kg

## ■ Verification Data (1 800 MHz Body)

Test Laboratory: HCT CO., LTD  
 Input Power 0.05 W  
 Liquid Temp: 18.6 °C  
 Test Date: 07/22/2019

**DUT: Dipole ; Type: D1800V2**

Communication System: UID 0, CW; Frequency: 1800 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 1800$  MHz;  $\sigma = 1.489$  S/m;  $\epsilon_r = 54.065$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(8.34, 8.34, 8.34); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

**Dipole/1800MHz Body Verification/Area Scan (7x7x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (measured) = 2.96 W/kg

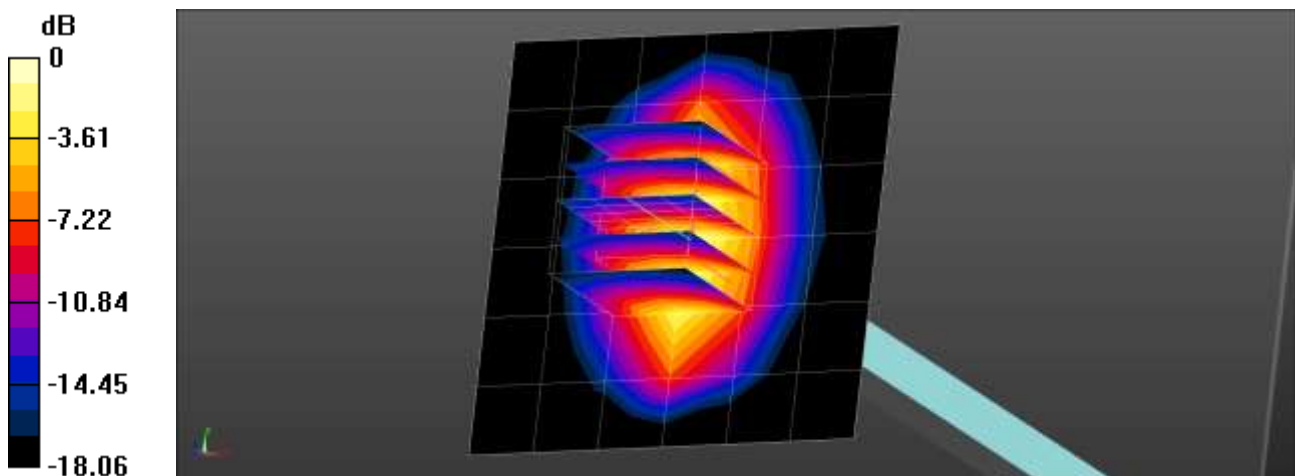
**Dipole/1800MHz Body Verification/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 46.79 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 3.60 W/kg

**SAR(1 g) = 1.93 W/kg; SAR(10 g) = 0.994 W/kg**

Maximum value of SAR (measured) = 3.04 W/kg



0 dB = 3.04 W/kg = 4.83 dBW/kg

## ■ Verification Data (1 900 MHz Body)

Test Laboratory: HCT CO., LTD  
 Input Power 0.05 W  
 Liquid Temp: 19.9 °C  
 Test Date: 07/23/2019

**DUT: Dipole ; Type: D1900V2**

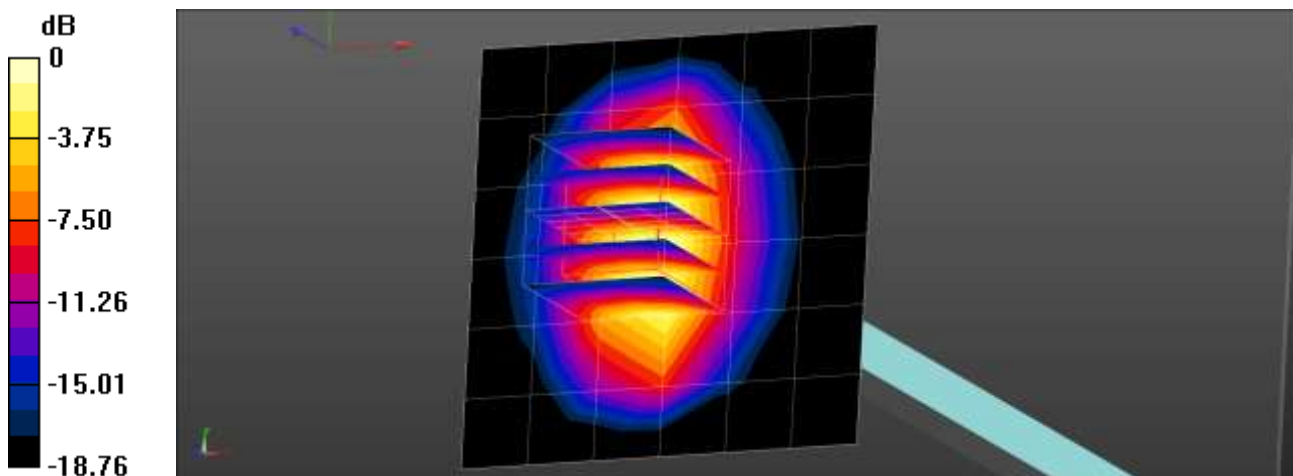
Communication System: UID 0, CW (0); Frequency: 1900 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.579$  S/m;  $\epsilon_r = 53.529$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3903; ConvF(7.92, 7.92, 7.92); Calibrated: 2018-09-24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2018-09-19
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

**Dipole/1900MHz Body Verification/Area Scan (7x7x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (measured) = 2.64 W/kg

**Dipole/1900MHz Body Verification/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
 Reference Value = 42.99 V/m; Power Drift = 0.14 dB  
 Peak SAR (extrapolated) = 3.51 W/kg  
**SAR(1 g) = 1.9 W/kg; SAR(10 g) = 0.970 W/kg**  
 Maximum value of SAR (measured) = 2.98 W/kg



0 dB = 2.98 W/kg = 4.74 dBW/kg

## ■ Verification Data (2 450 MHz Body)

Test Laboratory: HCT CO., LTD  
Input Power 0.05 W  
Liquid Temp: 21.1 °C  
Test Date: 07/25/2019

**DUT: Dipole 2450 MHz ; Type: D2450V2**

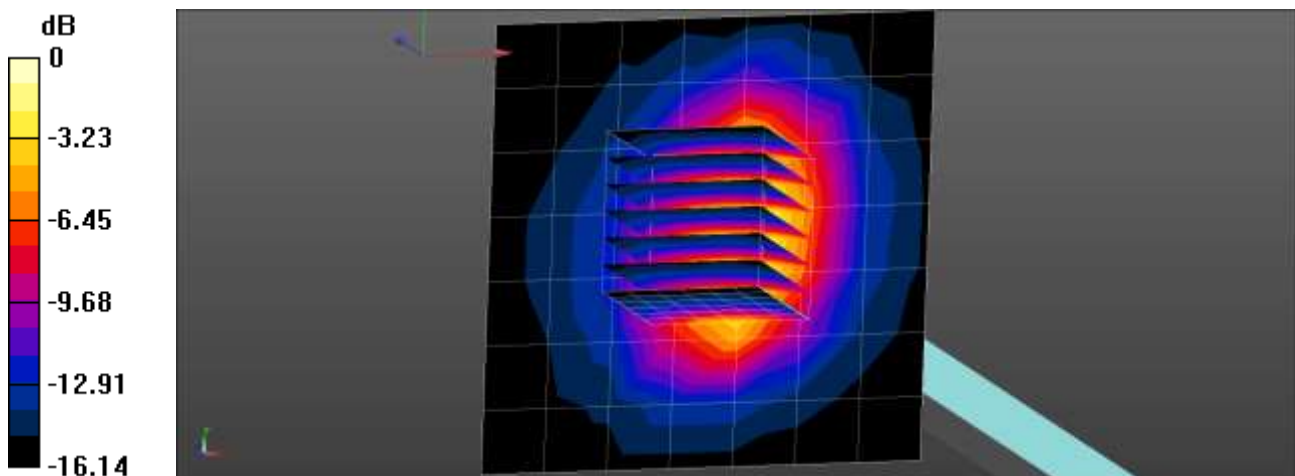
Communication System: UID 0, CW (0); Frequency: 2450 MHz; Duty Cycle: 1:1  
Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.946$  S/m;  $\epsilon_r = 53.619$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3968; ConvF(7.54, 7.54, 7.54); Calibrated: 2018-09-25;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2018-08-22
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

**Dipole/2450MHz Body Verification/Area Scan (8x8x1):** Measurement grid: dx=12mm, dy=12mm  
Maximum value of SAR (measured) = 3.31 W/kg

**Dipole/2450MHz Body Verification/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm  
Reference Value = 37.84 V/m; Power Drift = -0.10 dB  
Peak SAR (extrapolated) = 5.44 W/kg  
**SAR(1 g) = 2.57 W/kg; SAR(10 g) = 1.17 W/kg**  
Maximum value of SAR (measured) = 3.38 W/kg



0 dB = 3.31 W/kg = 5.20 dBW/kg

### Attachment 3. – SAR Tissue Characterization

The brain and muscle mixtures consist of a viscous gel using hydrox-ethyl cellulose (HEC) gelling agent and saline solution (see Table 3.1). Preservation with a bactericide is added and visual inspection is made to make sure air bubbles are not trapped during the mixing process. The mixture is calibrated to obtain proper dielectric constant (permittivity) and conductivity of the desired tissue. The mixture characterizations used for the brain and muscle tissue simulating liquids are according to the data by C. Gabriel and G. Harts grove.

| Ingredients<br>(% by weight)  | Frequency (MHz) |      |       |       |       |      |       |       |               |      |
|-------------------------------|-----------------|------|-------|-------|-------|------|-------|-------|---------------|------|
|                               | 750             |      | 835   |       | 1 750 |      | 1 900 |       | 2 450 – 2 700 |      |
| Tissue Type                   | Head            | Body | Head  | Body  | Head  | Body | Head  | Body  | Head          | Body |
| Water                         | 41.1            | 51.7 | 40.45 | 53.06 | 52.6  | 68.8 | 54.9  | 70.17 | 71.88         | 73.2 |
| Salt (NaCl)                   | 1.4             | 0.9  | 1.45  | 0.94  | 0.4   | 0.2  | 0.18  | 0.39  | 0.16          | 0.1  |
| Sugar                         | 57.0            | 47.2 | 57.0  | 44.9  | 0.0   | 0.0  | 0.0   | 0     | 0.0           | 0.0  |
| HEC                           | 0.2             | 0    | 1.0   | 1.0   | 0.0   | 0.0  | 0.0   | 0     | 0.0           | 0.0  |
| Bactericide                   | 0.2             | 0.1  | 0.1   | 0.1   | 0.0   | 0.0  | 0.0   | 0     | 0.0           | 0.0  |
| Triton X-100                  | 0.0             | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  | 0.0   | 0.0   | 19.97         | 0.0  |
| DGBE                          | 0.0             | 0.0  | 0.0   | 0.0   | 47    | 31   | 44.92 | 29.44 | 7.99          | 26.7 |
| Diethylene glycol hexyl ether | -               | -    | -     | -     | -     | -    | -     | -     | -             | -    |

|                           |                                                                    |        |                        |
|---------------------------|--------------------------------------------------------------------|--------|------------------------|
| Salt:                     | 99 % Pure Sodium Chloride                                          | Sugar: | 98 % Pure Sucrose      |
| Water:                    | De-ionized, 16M resistivity                                        | HEC:   | Hydroxyethyl Cellulose |
| DGBE:                     | 99 % Di(ethylene glycol) butyl ether,[2-(2-butoxyethoxy) ethanol]  |        |                        |
| Triton X-100(ultra-pure): | Polyethylene glycol mono[4-(1,1,3,3-tetramethylbutyl)phenyl] ether |        |                        |

Composition of the Tissue Equivalent Matter

## Attachment 4. – SAR System Validation

Per FCC KCB 865664 D02v01r02, SAR system validation status should be document to confirm measurement accuracy. The SAR systems (including SAR probes, system components and software versions) used for this device were validated against its performance specifications prior to the SAR measurements. Reference dipoles were used with the required tissue- equivalent media for system validation, according to the procedures outlined in IEEE 1528-2013 and FCC KDB 865664 D01v01r04. Since SAR probe calibrations are frequency dependent, each probe calibration point was validated at a frequency within the valid frequency range of the probe calibration point, using the system that normally operates with the probe for routine SAR measurements and according to the required tissue-equivalent media.

A tabulated summary of the system validation status including the validation date(s), measurement frequencies, SAR probes and tissue dielectric parameters has been included.

| SAR System No. | Probe | Probe Type | Probe Calibration Point |      | Dipole | Date       | Dielectric Parameters |                       | CW Validation |                 |                | Modulation Validation |             |      |
|----------------|-------|------------|-------------------------|------|--------|------------|-----------------------|-----------------------|---------------|-----------------|----------------|-----------------------|-------------|------|
|                |       |            |                         |      |        |            | Measured Permittivity | Measured Conductivity | Sensitivity   | Probe Linearity | Probe Isotropy | MOD. Type             | Duty Factor | PAR  |
| 5              | 3903  | EX3DV4     | Head                    | 750  | 1014   | 2019-06-10 | 41.7                  | 0.87                  | PASS          | PASS            | PASS           | N/A                   | N/A         | N/A  |
| 5              | 3903  | EX3DV4     | Head                    | 835  | 4d165  | 2018-10-04 | 41.5                  | 0.89                  | PASS          | PASS            | PASS           | N/A                   | N/A         | N/A  |
| 5              | 3903  | EX3DV4     | Head                    | 835  | 4d165  | 2018-10-04 | 41.5                  | 0.89                  | PASS          | PASS            | PASS           | GMSK                  | PASS        | N/A  |
| 5              | 3903  | EX3DV4     | Head                    | 1750 | 2d007  | 2018-12-03 | 40.1                  | 1.39                  | PASS          | PASS            | PASS           | N/A                   | N/A         | N/A  |
| 5              | 3903  | EX3DV4     | Head                    | 1900 | 5d032  | 2019-03-04 | 40.1                  | 1.42                  | PASS          | PASS            | PASS           | N/A                   | N/A         | N/A  |
| 5              | 3903  | EX3DV4     | Head                    | 1900 | 5d032  | 2019-03-04 | 40.1                  | 1.41                  | PASS          | PASS            | PASS           | GMSK                  | PASS        | N/A  |
| 9              | 3968  | EX3DV4     | Head                    | 2450 | 743    | 2019-02-12 | 39.4                  | 1.81                  | PASS          | PASS            | PASS           | OFDM                  | N/A         | PASS |

SAR System Validation Summary 1g

| SAR System No. | Probe | Probe Type | Probe Calibration Point |      | Dipole | Date       | Dielectric Parameters |                       | CW Validation |                 |                | Modulation Validation |             |      |
|----------------|-------|------------|-------------------------|------|--------|------------|-----------------------|-----------------------|---------------|-----------------|----------------|-----------------------|-------------|------|
|                |       |            |                         |      |        |            | Measured Permittivity | Measured Conductivity | Sensitivity   | Probe Linearity | Probe Isotropy | MOD. Type             | Duty Factor | PAR  |
| 5              | 3903  | EX3DV4     | Body                    | 750  | 1014   | 2018-10-03 | 55.6                  | 0.98                  | PASS          | PASS            | PASS           | N/A                   | N/A         | N/A  |
| 5              | 3903  | EX3DV4     | Body                    | 835  | 4d165  | 2018-10-03 | 55.4                  | 0.98                  | PASS          | PASS            | PASS           | N/A                   | N/A         | N/A  |
| 5              | 3903  | EX3DV4     | Body                    | 835  | 4d165  | 2018-10-03 | 55.4                  | 0.98                  | PASS          | PASS            | PASS           | GMSK                  | PASS        | N/A  |
| 5              | 3903  | EX3DV4     | Body                    | 1750 | 2d007  | 2018-12-03 | 53.5                  | 1.52                  | PASS          | PASS            | PASS           | N/A                   | N/A         | N/A  |
| 5              | 3903  | EX3DV4     | Body                    | 1900 | 5d032  | 2019-03-04 | 53.3                  | 1.53                  | PASS          | PASS            | PASS           | N/A                   | N/A         | N/A  |
| 5              | 3903  | EX3DV4     | Body                    | 1900 | 5d032  | 2019-03-04 | 53.3                  | 1.53                  | PASS          | PASS            | PASS           | GMSK                  | PASS        | N/A  |
| 9              | 3968  | EX3DV4     | Body                    | 2450 | 743    | 2019-02-11 | 52.8                  | 1.94                  | PASS          | PASS            | PASS           | OFDM                  | N/A         | PASS |

SAR System Validation Summary – Extremity SAR Considerations

### Note;

All measurement were performed using probes calibrated for CW signal only. Modulations in the table above represent test configurations for which the measurement system has been validated per FCC KDB Publication 865664 D01v01r04. SAR system were validated for modulated signals with a periodic duty cycle, such as GMSK, or with a high peak to average ratio (>5 dB), such as OFDM according to KDB 865664 D01v01r04.

## Attachment 5. – Probe Calibration Data

**Calibration Laboratory of  
Schmid & Partner  
Engineering AG**  
Zeughausstrasse 43, 8004 Zurich, Switzerland



**S** Schweizerischer Kalibrierdienst  
**C** Service suisse d'étalonnage  
**S** Servizio svizzero di taratura  
**S** Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)  
The Swiss Accreditation Service is one of the signatories to the EA  
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **HCT (Dymstec)**

Certificate No: **EX3-3903\_Sep18**

## CALIBRATION CERTIFICATE

| 결    | 담당자                | 확인자          |
|------|--------------------|--------------|
| 제    |                    |              |
| 작위/명 | SW 17500-45 / 2484 |              |
| 일 자  | 2018 / 10.05       | 2018 / 10.05 |

Object **EX3DV4 - SN:3903**

Calibration procedure(s) **QA CAL-01.v9, QA CAL-12.v9, QA CAL-14.v4, QA CAL-23.v5,  
QA CAL-25.v6  
Calibration procedure for dosimetric E-field probes**

Calibration date: **September 24, 2018**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards          | ID               | Cal Date (Certificate No.)        | Scheduled Calibration  |
|----------------------------|------------------|-----------------------------------|------------------------|
| Power meter NRP            | SN: 104778       | 04-Apr-18 (No. 217-02672/02673)   | Apr-19                 |
| Power sensor NRP-Z91       | SN: 103244       | 04-Apr-18 (No. 217-02672)         | Apr-19                 |
| Power sensor NRP-Z91       | SN: 103245       | 04-Apr-18 (No. 217-02673)         | Apr-19                 |
| Reference 20 dB Attenuator | SN: S5277 (20x)  | 04-Apr-18 (No. 217-02682)         | Apr-19                 |
| Reference Probe ES3DV2     | SN: 3013         | 30-Dec-17 (No. ES3-3013 Dec17)    | Dec-18                 |
| DAE4                       | SN: 660          | 21-Dec-17 (No. DAE4-660 Dec17)    | Dec-18                 |
| Secondary Standards        | ID               | Check Date (in house)             | Scheduled Check        |
| Power meter E4419B         | SN: GB41293874   | 06-Apr-16 (in house check Jun-18) | In house check: Jun-20 |
| Power sensor E4412A        | SN: MY41498087   | 06-Apr-16 (in house check Jun-18) | In house check: Jun-20 |
| Power sensor E4412A        | SN: 090110210    | 06-Apr-16 (in house check Jun-18) | In house check: Jun-20 |
| RF generator HP 8648C      | SN: US3642U01700 | 04-Aug-99 (in house check Jun-18) | In house check: Jun-20 |
| Network Analyzer E8358A    | SN: US41080477   | 31-Mar-14 (in house check Oct-17) | In house check: Oct-18 |

|                                                                                                                 | Name          | Function              | Signature |
|-----------------------------------------------------------------------------------------------------------------|---------------|-----------------------|-----------|
| Calibrated by:                                                                                                  | Michael Weber | Laboratory Technician |           |
| Approved by:                                                                                                    | Katja Pokovic | Technical Manager     |           |
| This calibration certificate shall not be reproduced except in full without written approval of the laboratory. |               |                       |           |

Issued: September 27, 2018

Certificate No: EX3-3903\_Sep18

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**Calibration Laboratory of  
Schmid & Partner  
Engineering AG**  
Zeughausstrasse 43, 8004 Zurich, Switzerland



**S** Schweizerischer Kalibrierdienst  
**C** Service suisse d'étalonnage  
**S** Servizio svizzero di taratura  
**S** Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)  
The Swiss Accreditation Service is one of the signatories to the EA  
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

## Glossary:

|                        |                                                                                                                                                   |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| TSL                    | tissue simulating liquid                                                                                                                          |
| NORM <sub>x,y,z</sub>  | sensitivity in free space                                                                                                                         |
| ConvF                  | sensitivity in TSL / NORM <sub>x,y,z</sub>                                                                                                        |
| DCP                    | diode compression point                                                                                                                           |
| CF                     | crest factor (1/duty_cycle) of the RF signal                                                                                                      |
| A, B, C, D             | modulation dependent linearization parameters                                                                                                     |
| Polarization $\varphi$ | $\varphi$ rotation around probe axis                                                                                                              |
| Polarization $\theta$  | $\theta$ rotation around an axis that is in the plane normal to probe axis (at measurement center),<br>i.e., $\theta = 0$ is normal to probe axis |
| Connector Angle        | information used in DASY system to align probe sensor X to the robot coordinate system                                                            |

## Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

## Methods Applied and Interpretation of Parameters:

- NORM<sub>x,y,z</sub>**: Assessed for E-field polarization  $\theta = 0$  ( $f \leq 900$  MHz in TEM-cell;  $f > 1800$  MHz: R22 waveguide). NORM<sub>x,y,z</sub> are only intermediate values, i.e., the uncertainties of NORM<sub>x,y,z</sub> does not affect the  $E^2$ -field uncertainty inside TSL (see below ConvF).
- NORM(f)<sub>x,y,z</sub>** = NORM<sub>x,y,z</sub> \* frequency\_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCPx,y,z**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- A<sub>x,y,z</sub>, B<sub>x,y,z</sub>, C<sub>x,y,z</sub>, D<sub>x,y,z</sub>, VR<sub>x,y,z</sub>**: A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for  $f \leq 800$  MHz) and inside waveguide using analytical field distributions based on power measurements for  $f > 800$  MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM<sub>x,y,z</sub> \* ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from  $\pm 50$  MHz to  $\pm 100$  MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle**: The angle is assessed using the information gained by determining the NORM<sub>x</sub> (no uncertainty required).

EX3DV4 – SN:3903

September 24, 2018

# Probe EX3DV4

## SN:3903

Manufactured: September 4, 2012  
Calibrated: September 24, 2018

Calibrated for DASY/EASY Systems  
(Note: non-compatible with DASY2 system!)

EX3DV4– SN:3903

September 24, 2018

## DASY/EASY - Parameters of Probe: EX3DV4 - SN:3903

### Basic Calibration Parameters

|                                                               | Sensor X | Sensor Y | Sensor Z | Unc (k=2)     |
|---------------------------------------------------------------|----------|----------|----------|---------------|
| Norm ( $\mu\text{V}/(\text{V}/\text{m})^{2/3}$ ) <sup>A</sup> | 0.40     | 0.36     | 0.54     | $\pm 10.1 \%$ |
| DCP (mV) <sup>B</sup>                                         | 101.0    | 107.4    | 100.6    |               |

### Modulation Calibration Parameters

| UID | Communication System Name |   | A<br>dB | B<br>dB $\sqrt{\mu\text{V}}$ | C   | D<br>dB | VR<br>mV | Unc <sup>E</sup><br>(k=2) |
|-----|---------------------------|---|---------|------------------------------|-----|---------|----------|---------------------------|
| 0   | CW                        | X | 0.0     | 0.0                          | 1.0 | 0.00    | 169.1    | $\pm 2.2 \%$              |
|     |                           | Y | 0.0     | 0.0                          | 1.0 |         | 164.6    |                           |
|     |                           | Z | 0.0     | 0.0                          | 1.0 |         | 170.5    |                           |

Note: For details on UID parameters see Appendix.

### Sensor Model Parameters

|   | C1<br>fF | C2<br>fF | $\alpha$<br>$\text{V}^{-1}$ | T1<br>$\text{ms.V}^{-2}$ | T2<br>$\text{ms.V}^{-1}$ | T3<br>ms | T4<br>$\text{V}^{-2}$ | T5<br>$\text{V}^{-1}$ | T6    |
|---|----------|----------|-----------------------------|--------------------------|--------------------------|----------|-----------------------|-----------------------|-------|
| X | 49.23    | 373.5    | 36.55                       | 15.46                    | 1.065                    | 5.041    | 0.195                 | 0.605                 | 1.008 |
| Y | 41.86    | 298.5    | 32.94                       | 13.32                    | 0.970                    | 4.978    | 1.750                 | 0.150                 | 1.004 |
| Z | 54.91    | 423.0    | 37.50                       | 22.92                    | 1.282                    | 5.100    | 0.000                 | 0.728                 | 1.011 |

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%.

<sup>A</sup> The uncertainties of Norm X,Y,Z do not affect the  $E^2$ -field uncertainty inside TSL (see Pages 5 and 6).

<sup>B</sup> Numerical linearization parameter: uncertainty not required.

<sup>E</sup> Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

EX3DV4– SN:3903

September 24, 2018

## DASY/EASY - Parameters of Probe: EX3DV4 - SN:3903

### Calibration Parameter Determined in Head Tissue Simulating Media

| f (MHz) <sup>c</sup> | Relative Permittivity <sup>f</sup> | Conductivity (S/m) <sup>g</sup> | ConvF X | ConvF Y | ConvF Z | Alpha <sup>h</sup> | Depth <sup>h</sup> (mm) | Unc (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|--------------------|-------------------------|-----------|
| 600                  | 42.7                               | 0.88                            | 11.05   | 11.05   | 11.05   | 0.10               | 1.20                    | ± 13.3 %  |
| 750                  | 41.9                               | 0.89                            | 10.83   | 10.83   | 10.83   | 0.47               | 0.80                    | ± 12.0 %  |
| 835                  | 41.5                               | 0.90                            | 10.25   | 10.25   | 10.25   | 0.36               | 0.99                    | ± 12.0 %  |
| 900                  | 41.5                               | 0.97                            | 10.11   | 10.11   | 10.11   | 0.39               | 0.91                    | ± 12.0 %  |
| 1450                 | 40.5                               | 1.20                            | 8.74    | 8.74    | 8.74    | 0.39               | 0.80                    | ± 12.0 %  |
| 1750                 | 40.1                               | 1.37                            | 8.64    | 8.64    | 8.64    | 0.39               | 0.80                    | ± 12.0 %  |
| 1900                 | 40.0                               | 1.40                            | 8.34    | 8.34    | 8.34    | 0.35               | 0.84                    | ± 12.0 %  |
| 2450                 | 39.2                               | 1.80                            | 7.46    | 7.46    | 7.46    | 0.42               | 0.84                    | ± 12.0 %  |
| 2600                 | 39.0                               | 1.96                            | 7.22    | 7.22    | 7.22    | 0.41               | 0.84                    | ± 12.0 %  |
| 5250                 | 35.9                               | 4.71                            | 5.33    | 5.33    | 5.33    | 0.40               | 1.80                    | ± 13.1 %  |
| 5600                 | 35.5                               | 5.07                            | 4.81    | 4.81    | 4.81    | 0.40               | 1.80                    | ± 13.1 %  |
| 5750                 | 35.4                               | 5.22                            | 4.98    | 4.98    | 4.98    | 0.40               | 1.80                    | ± 13.1 %  |

<sup>c</sup> Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

<sup>f</sup> At frequencies below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

<sup>h</sup> Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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## DASY/EASY - Parameters of Probe: EX3DV4 - SN:3903

### Calibration Parameter Determined in Body Tissue Simulating Media

| f (MHz) <sup>C</sup> | Relative Permittivity <sup>F</sup> | Conductivity (S/m) <sup>F</sup> | ConvF X | ConvF Y | ConvF Z | Alpha <sup>G</sup> | Depth <sup>G</sup> (mm) | Unc (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|--------------------|-------------------------|-----------|
| 600                  | 56.1                               | 0.95                            | 10.72   | 10.72   | 10.72   | 0.10               | 1.20                    | ± 13.3 %  |
| 750                  | 55.5                               | 0.96                            | 10.42   | 10.42   | 10.42   | 0.44               | 0.80                    | ± 12.0 %  |
| 835                  | 55.2                               | 0.97                            | 10.00   | 10.00   | 10.00   | 0.53               | 0.84                    | ± 12.0 %  |
| 1750                 | 53.4                               | 1.49                            | 8.34    | 8.34    | 8.34    | 0.42               | 0.90                    | ± 12.0 %  |
| 1900                 | 53.3                               | 1.52                            | 7.92    | 7.92    | 7.92    | 0.46               | 0.90                    | ± 12.0 %  |
| 2450                 | 52.7                               | 1.95                            | 7.51    | 7.51    | 7.51    | 0.34               | 0.90                    | ± 12.0 %  |
| 2600                 | 52.5                               | 2.16                            | 7.38    | 7.38    | 7.38    | 0.34               | 0.89                    | ± 12.0 %  |
| 5250                 | 48.9                               | 5.36                            | 4.59    | 4.59    | 4.59    | 0.50               | 1.90                    | ± 13.1 %  |
| 5600                 | 48.5                               | 5.77                            | 4.02    | 4.02    | 4.02    | 0.50               | 1.90                    | ± 13.1 %  |
| 5750                 | 48.3                               | 5.94                            | 4.36    | 4.36    | 4.36    | 0.50               | 1.90                    | ± 13.1 %  |

<sup>C</sup> Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

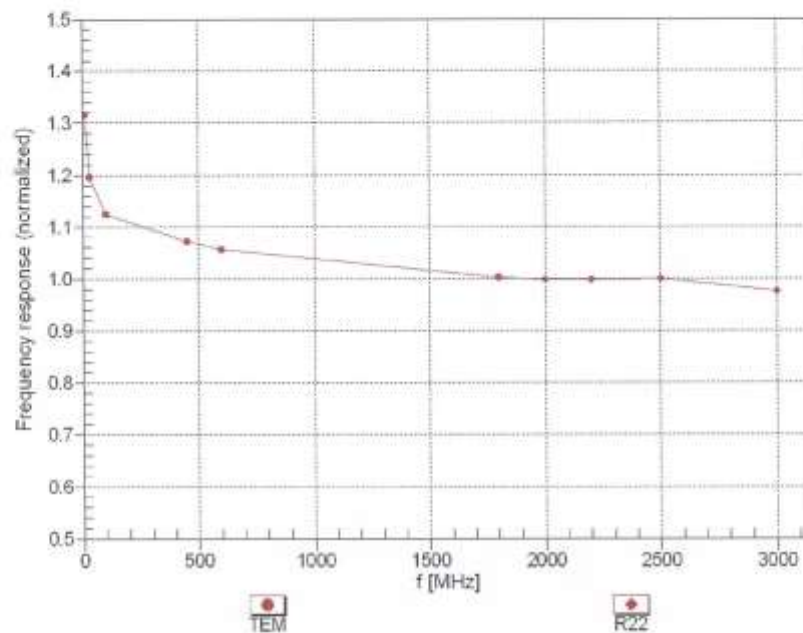
<sup>F</sup> At frequencies below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

<sup>G</sup> Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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### Frequency Response of E-Field (TEM-Cell:ifi110 EXX, Waveguide: R22)



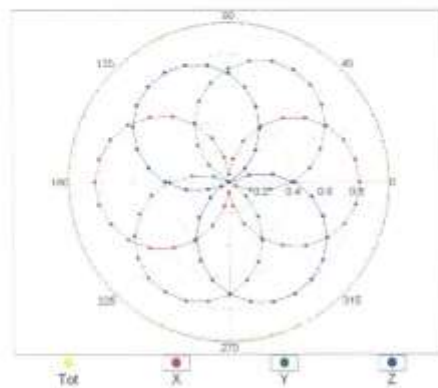
Uncertainty of Frequency Response of E-field:  $\pm 6.3\%$  ( $k=2$ )

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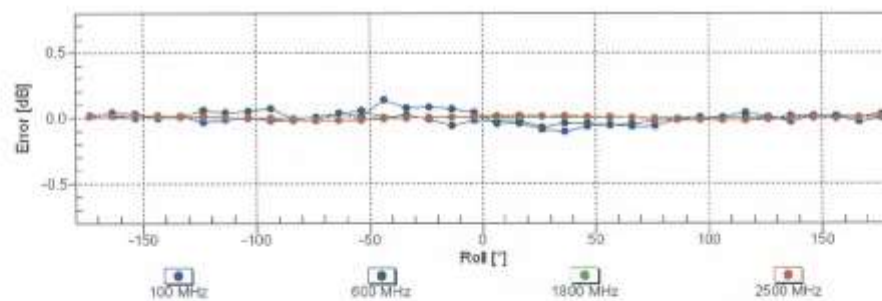
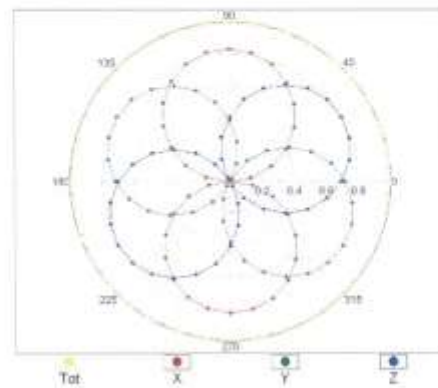
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## Receiving Pattern ( $\phi$ ), $\theta = 0^\circ$

f=600 MHz,TEM



f=1800 MHz,R22

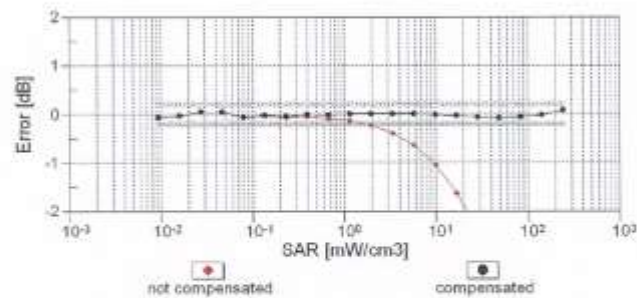
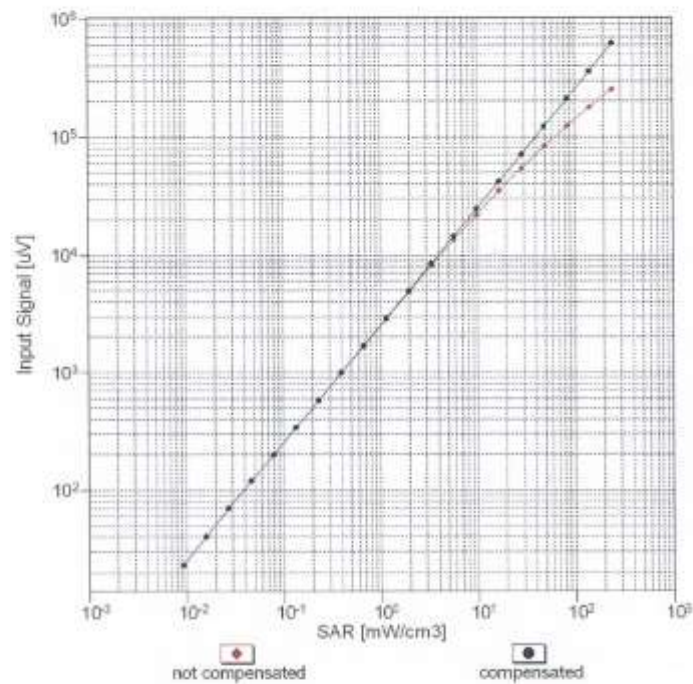


Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  ( $k=2$ )

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## Dynamic Range f(SAR<sub>head</sub>) (TEM cell , f<sub>eval</sub>= 1900 MHz)

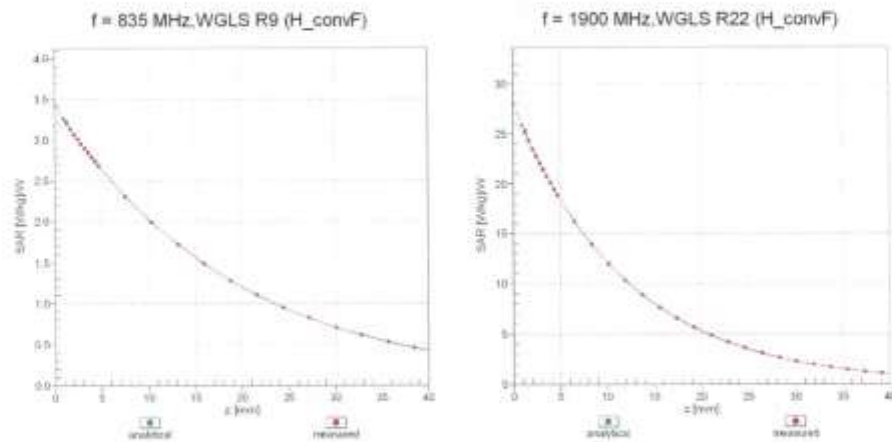


Uncertainty of Linearity Assessment:  $\pm 0.6\%$  (k=2)

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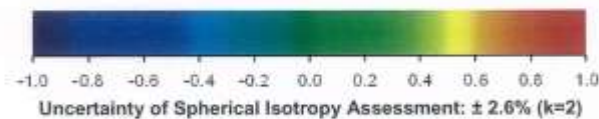
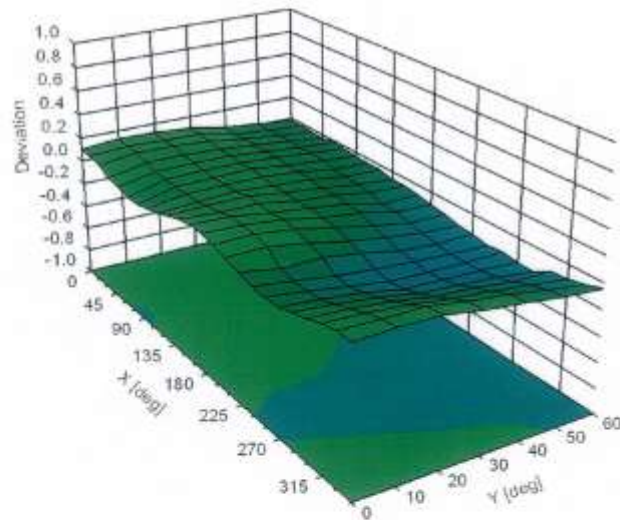
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## Conversion Factor Assessment



## Deviation from Isotropy in Liquid

Error ( $\phi$ ,  $\theta$ ), f = 900 MHz



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## DASY/EASY - Parameters of Probe: EX3DV4 - SN:3903

### Other Probe Parameters

|                                               |            |
|-----------------------------------------------|------------|
| Sensor Arrangement                            | Triangular |
| Connector Angle (°)                           | -33.6      |
| Mechanical Surface Detection Mode             | enabled    |
| Optical Surface Detection Mode                | disabled   |
| Probe Overall Length                          | 337 mm     |
| Probe Body Diameter                           | 10 mm      |
| Tip Length                                    | 9 mm       |
| Tip Diameter                                  | 2,5 mm     |
| Probe Tip to Sensor X Calibration Point       | 1 mm       |
| Probe Tip to Sensor Y Calibration Point       | 1 mm       |
| Probe Tip to Sensor Z Calibration Point       | 1 mm       |
| Recommended Measurement Distance from Surface | 1,4 mm     |

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### Appendix: Modulation Calibration Parameters

| UID           | Communication System Name                     |   | A<br>dB | B<br>dB $\mu$ V | C     | D<br>dB | VR<br>mV | Max<br>Unc <sup>E</sup><br>(k=2) |
|---------------|-----------------------------------------------|---|---------|-----------------|-------|---------|----------|----------------------------------|
| 0             | CW                                            | X | 0.00    | 0.00            | 1.00  | 0.00    | 169.1    | $\pm 2.2\%$                      |
|               |                                               | Y | 0.00    | 0.00            | 1.00  |         | 164.6    |                                  |
|               |                                               | Z | 0.00    | 0.00            | 1.00  |         | 170.5    |                                  |
| 10010-<br>CAA | SAR Validation (Square, 100ms, 10ms)          | X | 2.54    | 65.82           | 10.61 | 10.00   | 20.0     | $\pm 9.6\%$                      |
|               |                                               | Y | 2.66    | 66.16           | 10.72 |         | 20.0     |                                  |
|               |                                               | Z | 4.66    | 72.84           | 14.57 |         | 20.0     |                                  |
| 10011-<br>CAB | UMTS-FDD (WCDMA)                              | X | 0.87    | 65.41           | 13.66 | 0.00    | 150.0    | $\pm 9.6\%$                      |
|               |                                               | Y | 1.07    | 69.01           | 16.16 |         | 150.0    |                                  |
|               |                                               | Z | 0.89    | 65.14           | 13.56 |         | 150.0    |                                  |
| 10012-<br>CAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)      | X | 1.09    | 63.14           | 14.48 | 0.41    | 150.0    | $\pm 9.6\%$                      |
|               |                                               | Y | 1.18    | 64.45           | 15.44 |         | 150.0    |                                  |
|               |                                               | Z | 1.14    | 63.42           | 14.71 |         | 150.0    |                                  |
| 10013-<br>CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps) | X | 4.81    | 66.43           | 16.86 | 1.46    | 150.0    | $\pm 9.6\%$                      |
|               |                                               | Y | 4.75    | 66.74           | 16.83 |         | 150.0    |                                  |
|               |                                               | Z | 4.95    | 66.57           | 17.09 |         | 150.0    |                                  |
| 10021-<br>DAC | GSM-FDD (TDMA, GMSK)                          | X | 60.85   | 106.27          | 25.54 | 9.39    | 50.0     | $\pm 9.6\%$                      |
|               |                                               | Y | 13.48   | 86.14           | 19.57 |         | 50.0     |                                  |
|               |                                               | Z | 100.00  | 117.81          | 30.10 |         | 50.0     |                                  |
| 10023-<br>DAC | GPRS-FDD (TDMA, GMSK, TN 0)                   | X | 29.73   | 97.09           | 23.20 | 9.57    | 50.0     | $\pm 9.6\%$                      |
|               |                                               | Y | 10.31   | 82.66           | 18.48 |         | 50.0     |                                  |
|               |                                               | Z | 100.00  | 117.74          | 30.12 |         | 50.0     |                                  |
| 10024-<br>DAC | GPRS-FDD (TDMA, GMSK, TN 0-1)                 | X | 100.00  | 109.00          | 24.34 | 6.56    | 60.0     | $\pm 9.6\%$                      |
|               |                                               | Y | 58.23   | 101.87          | 22.30 |         | 60.0     |                                  |
|               |                                               | Z | 100.00  | 114.47          | 27.50 |         | 60.0     |                                  |
| 10025-<br>DAC | EDGE-FDD (TDMA, 8PSK, TN 0)                   | X | 4.11    | 67.75           | 23.87 | 12.57   | 50.0     | $\pm 9.6\%$                      |
|               |                                               | Y | 5.59    | 76.64           | 28.14 |         | 50.0     |                                  |
|               |                                               | Z | 5.69    | 76.15           | 28.67 |         | 50.0     |                                  |
| 10026-<br>DAC | EDGE-FDD (TDMA, 8PSK, TN 0-1)                 | X | 9.98    | 91.62           | 31.66 | 9.56    | 60.0     | $\pm 9.6\%$                      |
|               |                                               | Y | 9.71    | 91.11           | 31.21 |         | 60.0     |                                  |
|               |                                               | Z | 15.49   | 101.38          | 35.45 |         | 60.0     |                                  |
| 10027-<br>DAC | GPRS-FDD (TDMA, GMSK, TN 0-1-2)               | X | 100.00  | 107.08          | 22.72 | 4.80    | 80.0     | $\pm 9.6\%$                      |
|               |                                               | Y | 100.00  | 106.75          | 22.51 |         | 80.0     |                                  |
|               |                                               | Z | 100.00  | 113.02          | 26.04 |         | 80.0     |                                  |
| 10028-<br>DAC | GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)             | X | 100.00  | 105.63          | 21.42 | 3.55    | 100.0    | $\pm 9.6\%$                      |
|               |                                               | Y | 100.00  | 107.26          | 22.10 |         | 100.0    |                                  |
|               |                                               | Z | 100.00  | 112.26          | 24.96 |         | 100.0    |                                  |
| 10029-<br>DAC | EDGE-FDD (TDMA, 8PSK, TN 0-1-2)               | X | 6.56    | 82.63           | 27.17 | 7.80    | 80.0     | $\pm 9.6\%$                      |
|               |                                               | Y | 6.18    | 81.52           | 26.49 |         | 80.0     |                                  |
|               |                                               | Z | 9.49    | 89.98           | 30.23 |         | 80.0     |                                  |
| 10030-<br>CAA | IEEE 802.15.1 Bluetooth (GFSK, DH1)           | X | 100.00  | 106.63          | 22.81 | 5.30    | 70.0     | $\pm 9.6\%$                      |
|               |                                               | Y | 32.08   | 94.55           | 19.72 |         | 70.0     |                                  |
|               |                                               | Z | 100.00  | 112.45          | 26.09 |         | 70.0     |                                  |
| 10031-<br>CAA | IEEE 802.15.1 Bluetooth (GFSK, DH3)           | X | 12.47   | 83.87           | 13.90 | 1.88    | 100.0    | $\pm 9.6\%$                      |
|               |                                               | Y | 100.00  | 106.13          | 20.43 |         | 100.0    |                                  |
|               |                                               | Z | 100.00  | 107.26          | 21.44 |         | 100.0    |                                  |

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|           |                                                     |   |        |        |       |       |       |         |
|-----------|-----------------------------------------------------|---|--------|--------|-------|-------|-------|---------|
| 10032-CAA | IEEE 802.15.1 Bluetooth (GFSK, DH5)                 | X | 0.31   | 61.44  | 5.58  | 1.17  | 100.0 | ± 9.6 % |
|           |                                                     | Y | 100.00 | 112.50 | 22.19 |       | 100.0 |         |
|           |                                                     | Z | 100.00 | 103.53 | 18.97 |       | 100.0 |         |
| 10033-CAA | IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)           | X | 8.93   | 87.77  | 22.60 | 5.30  | 70.0  | ± 9.6 % |
|           |                                                     | Y | 6.24   | 81.56  | 19.83 |       | 70.0  |         |
|           |                                                     | Z | 34.10  | 109.22 | 29.82 |       | 70.0  |         |
| 10034-CAA | IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)           | X | 2.58   | 73.82  | 16.27 | 1.88  | 100.0 | ± 9.6 % |
|           |                                                     | Y | 2.88   | 75.19  | 16.50 |       | 100.0 |         |
|           |                                                     | Z | 4.63   | 81.44  | 19.78 |       | 100.0 |         |
| 10035-CAA | IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)           | X | 1.74   | 70.10  | 14.51 | 1.17  | 100.0 | ± 9.6 % |
|           |                                                     | Y | 2.15   | 73.13  | 15.64 |       | 100.0 |         |
|           |                                                     | Z | 2.47   | 74.12  | 16.76 |       | 100.0 |         |
| 10036-CAA | IEEE 802.15.1 Bluetooth (8-DPSK, DH1)               | X | 11.79  | 92.11  | 24.03 | 5.30  | 70.0  | ± 9.6 % |
|           |                                                     | Y | 7.50   | 84.36  | 20.85 |       | 70.0  |         |
|           |                                                     | Z | 60.11  | 118.50 | 32.26 |       | 70.0  |         |
| 10037-CAA | IEEE 802.15.1 Bluetooth (8-DPSK, DH3)               | X | 2.44   | 73.19  | 15.99 | 1.88  | 100.0 | ± 9.6 % |
|           |                                                     | Y | 2.63   | 74.23  | 16.11 |       | 100.0 |         |
|           |                                                     | Z | 4.36   | 80.67  | 19.47 |       | 100.0 |         |
| 10038-CAA | IEEE 802.15.1 Bluetooth (8-DPSK, DH5)               | X | 1.76   | 70.48  | 14.78 | 1.17  | 100.0 | ± 9.6 % |
|           |                                                     | Y | 2.18   | 73.56  | 15.93 |       | 100.0 |         |
|           |                                                     | Z | 2.53   | 74.67  | 17.07 |       | 100.0 |         |
| 10039-CAB | CDMA2000 (1xRTT, RC1)                               | X | 1.39   | 68.25  | 13.47 | 0.00  | 150.0 | ± 9.6 % |
|           |                                                     | Y | 2.51   | 77.26  | 17.44 |       | 150.0 |         |
|           |                                                     | Z | 1.45   | 68.11  | 13.78 |       | 150.0 |         |
| 10042-CAB | IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate) | X | 18.94  | 89.46  | 19.42 | 7.78  | 50.0  | ± 9.6 % |
|           |                                                     | Y | 10.39  | 82.47  | 17.14 |       | 50.0  |         |
|           |                                                     | Z | 100.00 | 112.84 | 26.85 |       | 50.0  |         |
| 10044-CAA | IS-91/EIA/TIA-553 FDD (FDMA, FM)                    | X | 0.11   | 121.46 | 12.61 | 0.00  | 150.0 | ± 9.6 % |
|           |                                                     | Y | 0.00   | 103.60 | 3.33  |       | 150.0 |         |
|           |                                                     | Z | 0.07   | 121.32 | 6.93  |       | 150.0 |         |
| 10048-CAA | DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)           | X | 9.59   | 80.51  | 19.70 | 13.80 | 25.0  | ± 9.6 % |
|           |                                                     | Y | 6.62   | 74.21  | 16.94 |       | 25.0  |         |
|           |                                                     | Z | 57.68  | 111.08 | 30.35 |       | 25.0  |         |
| 10049-CAA | DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)         | X | 10.86  | 83.57  | 19.50 | 10.79 | 40.0  | ± 9.6 % |
|           |                                                     | Y | 7.12   | 77.11  | 16.82 |       | 40.0  |         |
|           |                                                     | Z | 100.00 | 118.18 | 30.66 |       | 40.0  |         |
| 10056-CAA | UMTS-TDD (TD-SCDMA, 1.28 Mcps)                      | X | 11.73  | 87.48  | 22.93 | 9.03  | 50.0  | ± 9.6 % |
|           |                                                     | Y | 9.16   | 82.66  | 20.62 |       | 50.0  |         |
|           |                                                     | Z | 24.42  | 100.64 | 28.16 |       | 50.0  |         |
| 10058-DAC | EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)                   | X | 5.03   | 77.72  | 24.47 | 6.55  | 100.0 | ± 9.6 % |
|           |                                                     | Y | 4.75   | 76.74  | 23.86 |       | 100.0 |         |
|           |                                                     | Z | 6.88   | 83.44  | 26.89 |       | 100.0 |         |
| 10059-CAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)            | X | 1.14   | 64.30  | 15.08 | 0.61  | 110.0 | ± 9.6 % |
|           |                                                     | Y | 1.22   | 65.55  | 15.94 |       | 110.0 |         |
|           |                                                     | Z | 1.23   | 65.01  | 15.56 |       | 110.0 |         |
| 10060-CAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)          | X | 7.59   | 94.98  | 23.55 | 1.30  | 110.0 | ± 9.6 % |
|           |                                                     | Y | 14.24  | 106.02 | 27.35 |       | 110.0 |         |
|           |                                                     | Z | 67.47  | 124.04 | 31.09 |       | 110.0 |         |

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|           |                                                |   |      |       |       |      |       |         |
|-----------|------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10061-CAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)      | X | 3.01 | 79.54 | 21.02 | 2.04 | 110.0 | ± 9.6 % |
|           |                                                | Y | 2.92 | 79.24 | 20.92 |      | 110.0 |         |
|           |                                                | Z | 5.85 | 89.35 | 24.75 |      | 110.0 |         |
| 10062-CAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)       | X | 4.60 | 66.38 | 16.28 | 0.49 | 100.0 | ± 9.6 % |
|           |                                                | Y | 4.57 | 66.82 | 16.38 |      | 100.0 |         |
|           |                                                | Z | 4.71 | 66.41 | 16.41 |      | 100.0 |         |
| 10063-CAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)       | X | 4.62 | 66.48 | 16.38 | 0.72 | 100.0 | ± 9.6 % |
|           |                                                | Y | 4.58 | 66.88 | 16.44 |      | 100.0 |         |
|           |                                                | Z | 4.74 | 66.54 | 16.53 |      | 100.0 |         |
| 10064-CAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)      | X | 4.92 | 66.77 | 16.62 | 0.86 | 100.0 | ± 9.6 % |
|           |                                                | Y | 4.84 | 67.08 | 16.63 |      | 100.0 |         |
|           |                                                | Z | 5.06 | 66.88 | 16.81 |      | 100.0 |         |
| 10065-CAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)      | X | 4.79 | 66.67 | 16.71 | 1.21 | 100.0 | ± 9.6 % |
|           |                                                | Y | 4.71 | 66.95 | 16.69 |      | 100.0 |         |
|           |                                                | Z | 4.94 | 66.85 | 16.95 |      | 100.0 |         |
| 10066-CAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)      | X | 4.81 | 66.71 | 16.88 | 1.46 | 100.0 | ± 9.6 % |
|           |                                                | Y | 4.72 | 66.94 | 16.81 |      | 100.0 |         |
|           |                                                | Z | 4.97 | 66.93 | 17.15 |      | 100.0 |         |
| 10067-CAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)      | X | 5.11 | 66.87 | 17.32 | 2.04 | 100.0 | ± 9.6 % |
|           |                                                | Y | 5.01 | 67.11 | 17.21 |      | 100.0 |         |
|           |                                                | Z | 5.28 | 67.09 | 17.62 |      | 100.0 |         |
| 10068-CAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)      | X | 5.17 | 66.98 | 17.56 | 2.55 | 100.0 | ± 9.6 % |
|           |                                                | Y | 5.04 | 67.07 | 17.37 |      | 100.0 |         |
|           |                                                | Z | 5.37 | 67.33 | 17.94 |      | 100.0 |         |
| 10069-CAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)      | X | 5.25 | 66.97 | 17.75 | 2.67 | 100.0 | ± 9.6 % |
|           |                                                | Y | 5.12 | 67.08 | 17.55 |      | 100.0 |         |
|           |                                                | Z | 5.45 | 67.28 | 18.11 |      | 100.0 |         |
| 10071-CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)  | X | 4.92 | 66.54 | 17.17 | 1.99 | 100.0 | ± 9.6 % |
|           |                                                | Y | 4.84 | 66.78 | 17.08 |      | 100.0 |         |
|           |                                                | Z | 5.07 | 66.74 | 17.45 |      | 100.0 |         |
| 10072-CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps) | X | 4.91 | 66.88 | 17.38 | 2.30 | 100.0 | ± 9.6 % |
|           |                                                | Y | 4.81 | 67.07 | 17.25 |      | 100.0 |         |
|           |                                                | Z | 5.08 | 67.18 | 17.72 |      | 100.0 |         |
| 10073-CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps) | X | 4.98 | 67.06 | 17.70 | 2.83 | 100.0 | ± 9.6 % |
|           |                                                | Y | 4.88 | 67.23 | 17.54 |      | 100.0 |         |
|           |                                                | Z | 5.17 | 67.43 | 18.10 |      | 100.0 |         |
| 10074-CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps) | X | 4.97 | 66.98 | 17.86 | 3.30 | 100.0 | ± 9.6 % |
|           |                                                | Y | 4.88 | 67.15 | 17.67 |      | 100.0 |         |
|           |                                                | Z | 5.17 | 67.39 | 18.30 |      | 100.0 |         |
| 10075-CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps) | X | 5.02 | 67.15 | 18.19 | 3.82 | 90.0  | ± 9.6 % |
|           |                                                | Y | 4.92 | 67.25 | 17.94 |      | 90.0  |         |
|           |                                                | Z | 5.26 | 67.70 | 18.72 |      | 90.0  |         |
| 10076-CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps) | X | 5.03 | 66.94 | 18.30 | 4.15 | 90.0  | ± 9.6 % |
|           |                                                | Y | 4.95 | 67.10 | 18.08 |      | 90.0  |         |
|           |                                                | Z | 5.26 | 67.45 | 18.82 |      | 90.0  |         |
| 10077-CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps) | X | 5.06 | 67.01 | 18.39 | 4.30 | 90.0  | ± 9.6 % |
|           |                                                | Y | 4.98 | 67.18 | 18.18 |      | 90.0  |         |
|           |                                                | Z | 5.29 | 67.52 | 18.92 |      | 90.0  |         |

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|           |                                                    |   |        |        |       |      |       |         |
|-----------|----------------------------------------------------|---|--------|--------|-------|------|-------|---------|
| 10081-CAB | CDMA2000 (1xRTT, RC3)                              | X | 0.66   | 63.45  | 10.49 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 0.90   | 68.08  | 13.29 |      | 150.0 |         |
|           |                                                    | Z | 0.71   | 63.55  | 10.94 |      | 150.0 |         |
| 10082-CAB | IS-54 / IS-136 FDD (TDMA/FDM, Pi/4-QPSK, Fullrate) | X | 0.85   | 60.00  | 4.73  | 4.77 | 80.0  | ± 9.6 % |
|           |                                                    | Y | 0.83   | 60.00  | 4.73  |      | 80.0  |         |
|           |                                                    | Z | 1.07   | 60.00  | 5.42  |      | 80.0  |         |
| 10090-DAC | GPRS-FDD (TDMA, GMSK, TN 0-4)                      | X | 100.00 | 109.09 | 24.40 | 6.56 | 60.0  | ± 9.6 % |
|           |                                                    | Y | 53.10  | 100.91 | 22.09 |      | 60.0  |         |
|           |                                                    | Z | 100.00 | 114.57 | 27.56 |      | 60.0  |         |
| 10097-CAB | UMTS-FDD (HSDPA)                                   | X | 1.66   | 66.43  | 14.74 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 1.90   | 69.17  | 16.32 |      | 150.0 |         |
|           |                                                    | Z | 1.68   | 66.07  | 14.67 |      | 150.0 |         |
| 10098-CAB | UMTS-FDD (HSUPA, Subtest 2)                        | X | 1.63   | 66.36  | 14.69 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 1.86   | 69.12  | 16.29 |      | 150.0 |         |
|           |                                                    | Z | 1.64   | 66.01  | 14.62 |      | 150.0 |         |
| 10099-DAC | EDGE-FDD (TDMA, 8PSK, TN 0-4)                      | X | 10.03  | 91.70  | 31.68 | 9.56 | 60.0  | ± 9.6 % |
|           |                                                    | Y | 9.76   | 91.17  | 31.22 |      | 60.0  |         |
|           |                                                    | Z | 15.56  | 101.44 | 35.46 |      | 60.0  |         |
| 10100-CAE | LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)           | X | 2.93   | 69.26  | 15.95 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 3.18   | 71.32  | 17.16 |      | 150.0 |         |
|           |                                                    | Z | 2.97   | 69.09  | 15.86 |      | 150.0 |         |
| 10101-CAE | LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)         | X | 3.12   | 66.93  | 15.47 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 3.21   | 67.98  | 16.10 |      | 150.0 |         |
|           |                                                    | Z | 3.17   | 66.87  | 15.47 |      | 150.0 |         |
| 10102-CAE | LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)         | X | 3.23   | 66.95  | 15.60 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 3.31   | 67.96  | 16.19 |      | 150.0 |         |
|           |                                                    | Z | 3.28   | 66.87  | 15.59 |      | 150.0 |         |
| 10103-CAG | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)           | X | 6.45   | 75.40  | 20.03 | 3.98 | 65.0  | ± 9.6 % |
|           |                                                    | Y | 6.28   | 75.20  | 19.71 |      | 65.0  |         |
|           |                                                    | Z | 7.78   | 77.95  | 21.27 |      | 65.0  |         |
| 10104-CAG | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)         | X | 6.38   | 73.48  | 20.06 | 3.98 | 65.0  | ± 9.6 % |
|           |                                                    | Y | 6.24   | 73.34  | 19.73 |      | 65.0  |         |
|           |                                                    | Z | 7.39   | 75.53  | 21.15 |      | 65.0  |         |
| 10105-CAG | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)         | X | 6.15   | 72.69  | 20.04 | 3.98 | 65.0  | ± 9.6 % |
|           |                                                    | Y | 6.00   | 72.52  | 19.68 |      | 65.0  |         |
|           |                                                    | Z | 7.20   | 75.01  | 21.24 |      | 65.0  |         |
| 10108-CAG | LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)           | X | 2.55   | 68.50  | 15.76 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 2.75   | 70.52  | 16.97 |      | 150.0 |         |
|           |                                                    | Z | 2.60   | 68.34  | 15.68 |      | 150.0 |         |
| 10109-CAG | LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)         | X | 2.77   | 66.72  | 15.33 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 2.87   | 67.95  | 16.05 |      | 150.0 |         |
|           |                                                    | Z | 2.83   | 66.62  | 15.33 |      | 150.0 |         |
| 10110-CAG | LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)            | X | 2.05   | 67.51  | 15.28 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 2.23   | 69.69  | 16.59 |      | 150.0 |         |
|           |                                                    | Z | 2.11   | 67.34  | 15.23 |      | 150.0 |         |
| 10111-CAG | LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)          | X | 2.47   | 67.37  | 15.52 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 2.65   | 69.37  | 16.57 |      | 150.0 |         |
|           |                                                    | Z | 2.52   | 67.08  | 15.47 |      | 150.0 |         |

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|-----------|------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10112-CAG | LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)     | X | 2.90 | 66.76 | 15.42 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 2.99 | 67.96 | 16.11 |      | 150.0 |         |
|           |                                                | Z | 2.96 | 66.64 | 15.41 |      | 150.0 |         |
| 10113-CAG | LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)      | X | 2.63 | 67.57 | 15.69 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 2.81 | 69.51 | 16.70 |      | 150.0 |         |
|           |                                                | Z | 2.67 | 67.26 | 15.64 |      | 150.0 |         |
| 10114-CAC | IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)  | X | 5.05 | 66.93 | 16.23 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 5.03 | 67.39 | 16.41 |      | 150.0 |         |
|           |                                                | Z | 5.11 | 66.83 | 16.22 |      | 150.0 |         |
| 10115-CAC | IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)  | X | 5.35 | 67.10 | 16.33 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 5.28 | 67.44 | 16.44 |      | 150.0 |         |
|           |                                                | Z | 5.46 | 67.16 | 16.40 |      | 150.0 |         |
| 10116-CAC | IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM) | X | 5.15 | 67.14 | 16.26 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 5.11 | 67.56 | 16.43 |      | 150.0 |         |
|           |                                                | Z | 5.23 | 67.09 | 16.28 |      | 150.0 |         |
| 10117-CAC | IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)       | X | 5.02 | 66.80 | 16.18 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 5.00 | 67.28 | 16.38 |      | 150.0 |         |
|           |                                                | Z | 5.09 | 66.77 | 16.21 |      | 150.0 |         |
| 10118-CAC | IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)       | X | 5.44 | 67.32 | 16.45 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 5.35 | 67.58 | 16.52 |      | 150.0 |         |
|           |                                                | Z | 5.55 | 67.36 | 16.51 |      | 150.0 |         |
| 10119-CAC | IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)      | X | 5.13 | 67.08 | 16.24 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 5.09 | 67.51 | 16.42 |      | 150.0 |         |
|           |                                                | Z | 5.20 | 67.03 | 16.26 |      | 150.0 |         |
| 10140-CAE | LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)     | X | 3.26 | 66.95 | 15.52 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 3.34 | 67.97 | 16.10 |      | 150.0 |         |
|           |                                                | Z | 3.32 | 66.87 | 15.51 |      | 150.0 |         |
| 10141-CAE | LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)     | X | 3.39 | 67.08 | 15.72 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 3.47 | 68.10 | 16.29 |      | 150.0 |         |
|           |                                                | Z | 3.45 | 66.98 | 15.70 |      | 150.0 |         |
| 10142-CAE | LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)        | X | 1.81 | 67.29 | 14.80 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 2.03 | 70.03 | 16.34 |      | 150.0 |         |
|           |                                                | Z | 1.87 | 67.08 | 14.82 |      | 150.0 |         |
| 10143-CAE | LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)      | X | 2.29 | 67.79 | 15.04 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 2.60 | 70.68 | 16.43 |      | 150.0 |         |
|           |                                                | Z | 2.34 | 67.45 | 15.07 |      | 150.0 |         |
| 10144-CAE | LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)      | X | 2.10 | 65.67 | 13.49 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 2.21 | 67.35 | 14.31 |      | 150.0 |         |
|           |                                                | Z | 2.18 | 65.63 | 13.71 |      | 150.0 |         |
| 10145-CAF | LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)      | X | 1.05 | 63.40 | 10.46 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 1.16 | 65.51 | 11.53 |      | 150.0 |         |
|           |                                                | Z | 1.16 | 63.98 | 11.28 |      | 150.0 |         |
| 10146-CAF | LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)    | X | 1.80 | 65.14 | 11.03 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 1.83 | 64.62 | 9.93  |      | 150.0 |         |
|           |                                                | Z | 2.37 | 68.19 | 13.30 |      | 150.0 |         |
| 10147-CAF | LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)    | X | 2.05 | 66.72 | 11.95 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 1.90 | 66.25 | 10.85 |      | 150.0 |         |
|           |                                                | Z | 2.90 | 70.86 | 14.66 |      | 150.0 |         |

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|-----------|--------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10149-CAE | LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)  | X | 2.78 | 66.79 | 15.38 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.88 | 68.03 | 16.10 |      | 150.0 |         |
|           |                                            | Z | 2.84 | 66.68 | 15.37 |      | 150.0 |         |
| 10150-CAE | LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)  | X | 2.91 | 66.81 | 15.47 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 3.00 | 68.03 | 16.15 |      | 150.0 |         |
|           |                                            | Z | 2.97 | 66.69 | 15.45 |      | 150.0 |         |
| 10151-CAG | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)    | X | 6.67 | 77.42 | 20.89 | 3.98 | 65.0  | ± 9.6 % |
|           |                                            | Y | 6.53 | 77.30 | 20.58 |      | 65.0  |         |
|           |                                            | Z | 8.19 | 80.26 | 22.26 |      | 65.0  |         |
| 10152-CAG | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)  | X | 5.89 | 73.34 | 19.69 | 3.98 | 65.0  | ± 9.6 % |
|           |                                            | Y | 5.74 | 73.13 | 19.28 |      | 65.0  |         |
|           |                                            | Z | 6.96 | 75.64 | 20.93 |      | 65.0  |         |
| 10153-CAG | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)  | X | 6.30 | 74.40 | 20.54 | 3.98 | 65.0  | ± 9.6 % |
|           |                                            | Y | 6.16 | 74.26 | 20.14 |      | 65.0  |         |
|           |                                            | Z | 7.37 | 76.59 | 21.71 |      | 65.0  |         |
| 10154-CAG | LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)    | X | 2.10 | 67.93 | 15.55 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.29 | 70.22 | 16.90 |      | 150.0 |         |
|           |                                            | Z | 2.15 | 67.74 | 15.49 |      | 150.0 |         |
| 10155-CAG | LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)  | X | 2.47 | 67.39 | 15.53 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.66 | 69.39 | 16.60 |      | 150.0 |         |
|           |                                            | Z | 2.52 | 67.09 | 15.48 |      | 150.0 |         |
| 10156-CAG | LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)     | X | 1.65 | 67.18 | 14.47 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 1.90 | 70.37 | 16.21 |      | 150.0 |         |
|           |                                            | Z | 1.71 | 67.01 | 14.55 |      | 150.0 |         |
| 10157-CAG | LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)   | X | 1.91 | 65.98 | 13.37 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.09 | 68.23 | 14.46 |      | 150.0 |         |
|           |                                            | Z | 1.99 | 65.94 | 13.63 |      | 150.0 |         |
| 10158-CAG | LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)  | X | 2.64 | 67.64 | 15.74 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.82 | 69.60 | 16.76 |      | 150.0 |         |
|           |                                            | Z | 2.68 | 67.31 | 15.68 |      | 150.0 |         |
| 10159-CAG | LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)   | X | 2.01 | 66.42 | 13.66 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.22 | 68.85 | 14.81 |      | 150.0 |         |
|           |                                            | Z | 2.09 | 66.36 | 13.91 |      | 150.0 |         |
| 10160-CAE | LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)    | X | 2.59 | 67.79 | 15.66 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.72 | 69.34 | 16.60 |      | 150.0 |         |
|           |                                            | Z | 2.65 | 67.63 | 15.62 |      | 150.0 |         |
| 10161-CAE | LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)  | X | 2.80 | 66.73 | 15.38 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.90 | 68.03 | 16.10 |      | 150.0 |         |
|           |                                            | Z | 2.86 | 66.58 | 15.37 |      | 150.0 |         |
| 10162-CAE | LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)  | X | 2.91 | 66.89 | 15.50 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 3.02 | 68.21 | 16.22 |      | 150.0 |         |
|           |                                            | Z | 2.97 | 66.71 | 15.48 |      | 150.0 |         |
| 10166-CAF | LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)   | X | 3.56 | 69.27 | 18.83 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 3.55 | 70.42 | 19.34 |      | 150.0 |         |
|           |                                            | Z | 3.75 | 69.55 | 19.14 |      | 150.0 |         |
| 10167-CAF | LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM) | X | 4.37 | 71.91 | 19.15 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 4.65 | 74.57 | 20.22 |      | 150.0 |         |
|           |                                            | Z | 4.67 | 72.28 | 19.51 |      | 150.0 |         |

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|-----------|--------------------------------------------|---|-------|--------|-------|------|-------|---------|
| 10168-CAF | LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM) | X | 4.92  | 74.43  | 20.62 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 5.50  | 78.09  | 22.07 |      | 150.0 |         |
|           |                                            | Z | 5.17  | 74.48  | 20.81 |      | 150.0 |         |
| 10169-CAE | LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)      | X | 3.00  | 68.86  | 18.61 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 3.02  | 70.39  | 19.34 |      | 150.0 |         |
|           |                                            | Z | 3.27  | 69.74  | 19.19 |      | 150.0 |         |
| 10170-CAE | LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)    | X | 4.19  | 74.72  | 20.90 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 5.14  | 80.44  | 23.18 |      | 150.0 |         |
|           |                                            | Z | 4.59  | 75.50  | 21.37 |      | 150.0 |         |
| 10171-AAE | LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)    | X | 3.37  | 70.18  | 17.92 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 3.67  | 73.50  | 19.28 |      | 150.0 |         |
|           |                                            | Z | 3.75  | 71.24  | 18.59 |      | 150.0 |         |
| 10172-CAG | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)      | X | 9.18  | 90.67  | 27.62 | 6.02 | 65.0  | ± 9.6 % |
|           |                                            | Y | 8.14  | 89.55  | 26.80 |      | 65.0  |         |
|           |                                            | Z | 20.19 | 105.22 | 32.78 |      | 65.0  |         |
| 10173-CAG | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)    | X | 13.43 | 93.39  | 26.66 | 6.02 | 65.0  | ± 9.6 % |
|           |                                            | Y | 15.33 | 97.03  | 26.94 |      | 65.0  |         |
|           |                                            | Z | 27.89 | 106.05 | 31.18 |      | 65.0  |         |
| 10174-CAG | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)    | X | 8.77  | 85.33  | 23.54 | 6.02 | 65.0  | ± 9.6 % |
|           |                                            | Y | 10.80 | 89.32  | 24.02 |      | 65.0  |         |
|           |                                            | Z | 21.76 | 100.18 | 28.92 |      | 65.0  |         |
| 10175-CAG | LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)      | X | 2.96  | 68.50  | 18.34 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.97  | 69.98  | 19.04 |      | 150.0 |         |
|           |                                            | Z | 3.22  | 69.39  | 18.92 |      | 150.0 |         |
| 10176-CAG | LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)    | X | 4.20  | 74.75  | 20.92 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 5.15  | 80.47  | 23.20 |      | 150.0 |         |
|           |                                            | Z | 4.60  | 75.53  | 21.38 |      | 150.0 |         |
| 10177-CAI | LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)       | X | 2.99  | 68.68  | 18.45 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 3.00  | 70.17  | 19.15 |      | 150.0 |         |
|           |                                            | Z | 3.25  | 69.57  | 19.03 |      | 150.0 |         |
| 10178-CAG | LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)     | X | 4.15  | 74.48  | 20.78 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 5.06  | 80.12  | 23.04 |      | 150.0 |         |
|           |                                            | Z | 4.54  | 75.26  | 21.24 |      | 150.0 |         |
| 10179-CAG | LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)    | X | 3.72  | 72.22  | 19.23 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 4.29  | 76.64  | 21.02 |      | 150.0 |         |
|           |                                            | Z | 4.12  | 73.19  | 19.82 |      | 150.0 |         |
| 10180-CAG | LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)     | X | 3.36  | 70.10  | 17.87 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 3.66  | 73.39  | 19.22 |      | 150.0 |         |
|           |                                            | Z | 3.74  | 71.15  | 18.54 |      | 150.0 |         |
| 10181-CAE | LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)      | X | 2.98  | 68.66  | 18.44 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 3.00  | 70.14  | 19.14 |      | 150.0 |         |
|           |                                            | Z | 3.25  | 69.55  | 19.02 |      | 150.0 |         |
| 10182-CAE | LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)    | X | 4.14  | 74.46  | 20.76 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 5.05  | 80.09  | 23.02 |      | 150.0 |         |
|           |                                            | Z | 4.53  | 75.24  | 21.23 |      | 150.0 |         |
| 10183-AAD | LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)    | X | 3.35  | 70.08  | 17.86 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 3.65  | 73.36  | 19.21 |      | 150.0 |         |
|           |                                            | Z | 3.73  | 71.13  | 18.53 |      | 150.0 |         |

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|-----------|-----------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10184-CAE | LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)          | X | 3.00 | 68.70 | 18.46 | 3.01 | 150.0 | ± 9.6 % |
|           |                                               | Y | 3.01 | 70.20 | 19.17 |      | 150.0 |         |
|           |                                               | Z | 3.26 | 69.59 | 19.04 |      | 150.0 |         |
| 10185-CAE | LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)        | X | 4.16 | 74.53 | 20.80 | 3.01 | 150.0 | ± 9.6 % |
|           |                                               | Y | 5.08 | 80.20 | 23.07 |      | 150.0 |         |
|           |                                               | Z | 4.56 | 75.31 | 21.26 |      | 150.0 |         |
| 10186-AAE | LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)        | X | 3.37 | 70.14 | 17.89 | 3.01 | 150.0 | ± 9.6 % |
|           |                                               | Y | 3.67 | 73.45 | 19.25 |      | 150.0 |         |
|           |                                               | Z | 3.75 | 71.19 | 18.56 |      | 150.0 |         |
| 10187-CAF | LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)        | X | 3.00 | 68.76 | 18.52 | 3.01 | 150.0 | ± 9.6 % |
|           |                                               | Y | 3.02 | 70.28 | 19.25 |      | 150.0 |         |
|           |                                               | Z | 3.27 | 69.84 | 19.10 |      | 150.0 |         |
| 10188-CAF | LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)      | X | 4.32 | 75.30 | 21.23 | 3.01 | 150.0 | ± 9.6 % |
|           |                                               | Y | 5.37 | 81.34 | 23.62 |      | 150.0 |         |
|           |                                               | Z | 4.72 | 76.03 | 21.66 |      | 150.0 |         |
| 10189-AAF | LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)      | X | 3.45 | 70.58 | 18.18 | 3.01 | 150.0 | ± 9.6 % |
|           |                                               | Y | 3.79 | 74.09 | 19.61 |      | 150.0 |         |
|           |                                               | Z | 3.84 | 71.63 | 18.84 |      | 150.0 |         |
| 10193-CAC | IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)  | X | 4.44 | 66.31 | 15.91 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.44 | 66.95 | 16.16 |      | 150.0 |         |
|           |                                               | Z | 4.51 | 66.20 | 15.93 |      | 150.0 |         |
| 10194-CAC | IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM) | X | 4.61 | 66.63 | 16.04 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.60 | 67.23 | 16.29 |      | 150.0 |         |
|           |                                               | Z | 4.69 | 66.55 | 16.05 |      | 150.0 |         |
| 10195-CAC | IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM) | X | 4.66 | 66.66 | 16.06 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.64 | 67.25 | 16.30 |      | 150.0 |         |
|           |                                               | Z | 4.74 | 66.57 | 16.07 |      | 150.0 |         |
| 10196-CAC | IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)       | X | 4.45 | 66.37 | 15.93 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.44 | 66.98 | 16.17 |      | 150.0 |         |
|           |                                               | Z | 4.52 | 66.28 | 15.96 |      | 150.0 |         |
| 10197-CAC | IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)      | X | 4.63 | 66.65 | 16.05 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.61 | 67.24 | 16.29 |      | 150.0 |         |
|           |                                               | Z | 4.71 | 66.57 | 16.06 |      | 150.0 |         |
| 10198-CAC | IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)      | X | 4.66 | 66.68 | 16.07 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.64 | 67.26 | 16.31 |      | 150.0 |         |
|           |                                               | Z | 4.74 | 66.59 | 16.08 |      | 150.0 |         |
| 10219-CAC | IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)       | X | 4.39 | 66.38 | 15.89 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.39 | 67.01 | 16.14 |      | 150.0 |         |
|           |                                               | Z | 4.47 | 66.29 | 15.91 |      | 150.0 |         |
| 10220-CAC | IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)    | X | 4.62 | 66.62 | 16.04 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.61 | 67.20 | 16.28 |      | 150.0 |         |
|           |                                               | Z | 4.70 | 66.55 | 16.06 |      | 150.0 |         |
| 10221-CAC | IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)    | X | 4.67 | 66.61 | 16.06 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.65 | 67.19 | 16.29 |      | 150.0 |         |
|           |                                               | Z | 4.75 | 66.53 | 16.07 |      | 150.0 |         |
| 10222-CAC | IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)        | X | 4.99 | 66.81 | 16.18 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.98 | 67.29 | 16.37 |      | 150.0 |         |
|           |                                               | Z | 5.07 | 66.78 | 16.20 |      | 150.0 |         |

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| 10223-CAC | IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)  | X | 5.30  | 67.03  | 16.32 | 0.00 | 150.0 | ± 9.6 % |
|           |                                           | Y | 5.26  | 67.45  | 16.47 |      | 150.0 |         |
|           |                                           | Z | 5.39  | 67.02  | 16.35 |      | 150.0 |         |
| 10224-CAC | IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM) | X | 5.04  | 66.91  | 16.16 | 0.00 | 150.0 | ± 9.6 % |
|           |                                           | Y | 5.02  | 67.40  | 16.36 |      | 150.0 |         |
|           |                                           | Z | 5.11  | 66.87  | 16.18 |      | 150.0 |         |
| 10225-CAB | UMTS-FDD (HSPA+)                          | X | 2.69  | 65.58  | 14.89 | 0.00 | 150.0 | ± 9.6 % |
|           |                                           | Y | 2.76  | 66.72  | 15.43 |      | 150.0 |         |
|           |                                           | Z | 2.75  | 65.43  | 14.95 |      | 150.0 |         |
| 10226-CAA | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)  | X | 14.47 | 94.81  | 27.20 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 18.21 | 98.98  | 27.61 |      | 65.0  |         |
|           |                                           | Z | 30.39 | 107.77 | 31.76 |      | 65.0  |         |
| 10227-CAA | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)  | X | 13.07 | 91.75  | 25.66 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 15.31 | 94.53  | 25.62 |      | 65.0  |         |
|           |                                           | Z | 25.51 | 103.07 | 29.85 |      | 65.0  |         |
| 10228-CAA | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)    | X | 10.53 | 93.71  | 28.73 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 9.50  | 92.52  | 27.83 |      | 65.0  |         |
|           |                                           | Z | 22.70 | 108.15 | 33.78 |      | 65.0  |         |
| 10229-CAC | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)    | X | 13.53 | 93.50  | 26.70 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 16.50 | 97.19  | 26.99 |      | 65.0  |         |
|           |                                           | Z | 28.03 | 106.13 | 31.21 |      | 65.0  |         |
| 10230-CAC | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)    | X | 12.25 | 90.57  | 25.20 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 13.95 | 92.97  | 25.06 |      | 65.0  |         |
|           |                                           | Z | 23.75 | 101.70 | 29.37 |      | 65.0  |         |
| 10231-CAC | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)      | X | 9.96  | 92.55  | 28.26 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 8.97  | 91.35  | 27.36 |      | 65.0  |         |
|           |                                           | Z | 21.17 | 106.63 | 33.25 |      | 65.0  |         |
| 10232-CAF | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)    | X | 13.51 | 93.48  | 26.70 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 16.48 | 97.17  | 26.99 |      | 65.0  |         |
|           |                                           | Z | 28.01 | 106.13 | 31.20 |      | 65.0  |         |
| 10233-CAF | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)    | X | 12.23 | 90.55  | 25.20 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 13.92 | 92.95  | 25.06 |      | 65.0  |         |
|           |                                           | Z | 23.72 | 101.69 | 29.37 |      | 65.0  |         |
| 10234-CAF | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)      | X | 9.49  | 91.47  | 27.79 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 8.52  | 90.25  | 26.87 |      | 65.0  |         |
|           |                                           | Z | 19.87 | 105.16 | 32.70 |      | 65.0  |         |
| 10235-CAF | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)   | X | 13.52 | 93.52  | 26.71 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 16.50 | 97.21  | 27.00 |      | 65.0  |         |
|           |                                           | Z | 28.09 | 106.19 | 31.22 |      | 65.0  |         |
| 10236-CAF | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)   | X | 12.34 | 90.68  | 25.23 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 14.08 | 93.09  | 25.09 |      | 65.0  |         |
|           |                                           | Z | 23.99 | 101.86 | 29.42 |      | 65.0  |         |
| 10237-CAF | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)     | X | 9.98  | 92.62  | 28.29 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 8.98  | 91.41  | 27.38 |      | 65.0  |         |
|           |                                           | Z | 21.31 | 106.80 | 33.30 |      | 65.0  |         |
| 10238-CAF | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)   | X | 13.48 | 93.46  | 26.69 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 16.43 | 97.14  | 26.97 |      | 65.0  |         |
|           |                                           | Z | 27.99 | 106.13 | 31.20 |      | 65.0  |         |

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|-----------|--------------------------------------------|---|-------|--------|-------|------|------|---------|
| 10239-CAF | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)    | X | 12.20 | 90.53  | 25.19 | 6.02 | 65.0 | ± 9.6 % |
|           |                                            | Y | 13.87 | 92.91  | 25.04 |      | 65.0 |         |
|           |                                            | Z | 23.69 | 101.69 | 29.37 |      | 65.0 |         |
| 10240-CAF | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)      | X | 9.95  | 92.57  | 28.27 | 6.02 | 65.0 | ± 9.6 % |
|           |                                            | Y | 8.96  | 91.37  | 27.37 |      | 65.0 |         |
|           |                                            | Z | 21.23 | 106.73 | 33.28 |      | 65.0 |         |
| 10241-CAA | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM) | X | 8.32  | 80.56  | 24.79 | 6.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 8.49  | 82.24  | 25.04 |      | 65.0 |         |
|           |                                            | Z | 10.03 | 83.64  | 26.45 |      | 65.0 |         |
| 10242-CAA | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM) | X | 7.77  | 79.16  | 24.14 | 6.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 7.66  | 80.23  | 24.18 |      | 65.0 |         |
|           |                                            | Z | 9.64  | 82.78  | 26.03 |      | 65.0 |         |
| 10243-CAA | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)   | X | 6.35  | 76.29  | 23.62 | 6.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 6.12  | 76.64  | 23.62 |      | 65.0 |         |
|           |                                            | Z | 7.78  | 79.86  | 25.76 |      | 65.0 |         |
| 10244-CAC | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)   | X | 5.82  | 74.60  | 17.80 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 4.88  | 71.84  | 15.65 |      | 65.0 |         |
|           |                                            | Z | 8.63  | 80.62  | 21.03 |      | 65.0 |         |
| 10245-CAC | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)   | X | 5.70  | 74.03  | 17.52 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 4.76  | 71.29  | 15.36 |      | 65.0 |         |
|           |                                            | Z | 8.39  | 79.88  | 20.70 |      | 65.0 |         |
| 10246-CAC | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)     | X | 5.26  | 76.44  | 18.61 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 4.58  | 74.28  | 17.14 |      | 65.0 |         |
|           |                                            | Z | 8.18  | 82.79  | 21.65 |      | 65.0 |         |
| 10247-CAF | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)   | X | 5.02  | 73.05  | 17.95 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 4.67  | 71.99  | 16.90 |      | 65.0 |         |
|           |                                            | Z | 6.44  | 76.50  | 19.93 |      | 65.0 |         |
| 10248-CAF | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)   | X | 5.01  | 72.55  | 17.72 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 4.65  | 71.49  | 16.67 |      | 65.0 |         |
|           |                                            | Z | 6.38  | 75.83  | 19.64 |      | 65.0 |         |
| 10249-CAF | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)     | X | 6.50  | 79.92  | 20.86 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 5.98  | 78.54  | 19.84 |      | 65.0 |         |
|           |                                            | Z | 9.43  | 85.42  | 23.37 |      | 65.0 |         |
| 10250-CAF | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)  | X | 6.00  | 75.79  | 20.73 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 5.82  | 75.40  | 20.14 |      | 65.0 |         |
|           |                                            | Z | 7.31  | 78.59  | 22.19 |      | 65.0 |         |
| 10251-CAF | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)  | X | 5.69  | 73.59  | 19.44 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 5.49  | 73.22  | 18.86 |      | 65.0 |         |
|           |                                            | Z | 6.83  | 76.09  | 20.84 |      | 65.0 |         |
| 10252-CAF | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)    | X | 6.84  | 80.01  | 21.85 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 6.61  | 79.55  | 21.32 |      | 65.0 |         |
|           |                                            | Z | 9.00  | 83.99  | 23.66 |      | 65.0 |         |
| 10253-CAF | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)  | X | 5.77  | 72.82  | 19.47 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 5.64  | 72.70  | 19.06 |      | 65.0 |         |
|           |                                            | Z | 6.76  | 74.99  | 20.69 |      | 65.0 |         |
| 10254-CAF | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)  | X | 6.14  | 73.79  | 20.22 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 6.02  | 73.70  | 19.81 |      | 65.0 |         |
|           |                                            | Z | 7.16  | 75.91  | 21.39 |      | 65.0 |         |

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|-----------|---------------------------------------------|---|------|-------|-------|------|------|---------|
| 10255-CAF | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)     | X | 6.37 | 76.83 | 20.88 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 6.26 | 76.75 | 20.55 |      | 65.0 |         |
|           |                                             | Z | 7.79 | 79.60 | 22.25 |      | 65.0 |         |
| 10256-CAA | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM) | X | 4.48 | 70.56 | 15.04 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 3.56 | 67.44 | 12.56 |      | 65.0 |         |
|           |                                             | Z | 7.19 | 77.32 | 18.84 |      | 65.0 |         |
| 10257-CAA | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM) | X | 4.37 | 69.90 | 14.66 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 3.49 | 66.92 | 12.23 |      | 65.0 |         |
|           |                                             | Z | 6.89 | 76.29 | 18.33 |      | 65.0 |         |
| 10258-CAA | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)   | X | 3.94 | 71.85 | 15.88 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 3.31 | 69.35 | 14.10 |      | 65.0 |         |
|           |                                             | Z | 6.38 | 78.44 | 19.31 |      | 65.0 |         |
| 10259-CAC | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)   | X | 5.40 | 74.08 | 18.96 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 5.12 | 73.30 | 18.09 |      | 65.0 |         |
|           |                                             | Z | 6.78 | 77.23 | 20.72 |      | 65.0 |         |
| 10260-CAC | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)   | X | 5.44 | 73.84 | 18.87 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 5.15 | 73.06 | 18.00 |      | 65.0 |         |
|           |                                             | Z | 6.78 | 76.91 | 20.61 |      | 65.0 |         |
| 10261-CAC | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)     | X | 6.31 | 79.15 | 20.99 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 5.96 | 78.24 | 20.18 |      | 65.0 |         |
|           |                                             | Z | 8.69 | 83.83 | 23.17 |      | 65.0 |         |
| 10262-CAF | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)   | X | 5.99 | 75.73 | 20.68 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 5.80 | 75.33 | 20.08 |      | 65.0 |         |
|           |                                             | Z | 7.30 | 78.53 | 22.15 |      | 65.0 |         |
| 10263-CAF | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)   | X | 5.68 | 73.57 | 19.43 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 5.48 | 73.20 | 18.85 |      | 65.0 |         |
|           |                                             | Z | 6.82 | 76.07 | 20.84 |      | 65.0 |         |
| 10264-CAF | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)     | X | 6.77 | 79.81 | 21.75 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 6.54 | 79.34 | 21.22 |      | 65.0 |         |
|           |                                             | Z | 8.91 | 83.77 | 23.56 |      | 65.0 |         |
| 10265-CAF | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)  | X | 5.89 | 73.34 | 19.70 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 5.74 | 73.13 | 19.29 |      | 65.0 |         |
|           |                                             | Z | 6.96 | 75.64 | 20.94 |      | 65.0 |         |
| 10266-CAF | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)  | X | 6.29 | 74.38 | 20.53 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 6.15 | 74.24 | 20.13 |      | 65.0 |         |
|           |                                             | Z | 7.37 | 76.58 | 21.70 |      | 65.0 |         |
| 10267-CAF | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)    | X | 6.65 | 77.37 | 20.88 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 6.52 | 77.26 | 20.56 |      | 65.0 |         |
|           |                                             | Z | 8.17 | 80.21 | 22.24 |      | 65.0 |         |
| 10268-CAF | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)  | X | 6.53 | 73.36 | 20.14 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 6.40 | 73.28 | 19.82 |      | 65.0 |         |
|           |                                             | Z | 7.49 | 75.26 | 21.16 |      | 65.0 |         |
| 10269-CAF | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)  | X | 6.51 | 72.97 | 20.03 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 6.39 | 72.93 | 19.72 |      | 65.0 |         |
|           |                                             | Z | 7.42 | 74.79 | 21.03 |      | 65.0 |         |
| 10270-CAF | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)    | X | 6.54 | 75.01 | 20.10 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 6.45 | 75.03 | 19.86 |      | 65.0 |         |
|           |                                             | Z | 7.66 | 77.11 | 21.18 |      | 65.0 |         |

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|           |                                                                    |   |       |        |       |      |       |         |
|-----------|--------------------------------------------------------------------|---|-------|--------|-------|------|-------|---------|
| 10274-CAB | UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)                          | X | 2.46  | 65.79  | 14.69 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 2.58  | 67.27  | 15.46 |      | 150.0 |         |
|           |                                                                    | Z | 2.49  | 65.56  | 14.71 |      | 150.0 |         |
| 10275-CAB | UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)                           | X | 1.44  | 66.40  | 14.41 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 1.66  | 69.27  | 16.19 |      | 150.0 |         |
|           |                                                                    | Z | 1.46  | 66.15  | 14.35 |      | 150.0 |         |
| 10277-CAA | PHS (QPSK)                                                         | X | 2.51  | 62.17  | 7.90  | 9.03 | 50.0  | ± 9.6 % |
|           |                                                                    | Y | 2.38  | 61.67  | 7.26  |      | 50.0  |         |
|           |                                                                    | Z | 3.27  | 64.51  | 10.00 |      | 50.0  |         |
| 10278-CAA | PHS (QPSK, BW 884MHz, Rolloff 0.5)                                 | X | 4.62  | 71.07  | 14.99 | 9.03 | 50.0  | ± 9.6 % |
|           |                                                                    | Y | 3.85  | 68.04  | 12.94 |      | 50.0  |         |
|           |                                                                    | Z | 8.15  | 79.79  | 19.65 |      | 50.0  |         |
| 10279-CAA | PHS (QPSK, BW 884MHz, Rolloff 0.38)                                | X | 4.75  | 71.35  | 15.16 | 9.03 | 50.0  | ± 9.6 % |
|           |                                                                    | Y | 3.94  | 68.26  | 13.09 |      | 50.0  |         |
|           |                                                                    | Z | 8.33  | 80.02  | 19.77 |      | 50.0  |         |
| 10290-AAB | CDMA2000, RC1, SO55, Full Rate                                     | X | 1.16  | 65.91  | 12.08 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 1.58  | 70.94  | 14.61 |      | 150.0 |         |
|           |                                                                    | Z | 1.24  | 66.05  | 12.53 |      | 150.0 |         |
| 10291-AAB | CDMA2000, RC3, SO55, Full Rate                                     | X | 0.65  | 63.29  | 10.39 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 0.88  | 67.73  | 13.10 |      | 150.0 |         |
|           |                                                                    | Z | 0.70  | 63.39  | 10.83 |      | 150.0 |         |
| 10292-AAB | CDMA2000, RC3, SO32, Full Rate                                     | X | 0.76  | 65.85  | 12.07 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 1.70  | 77.44  | 17.62 |      | 150.0 |         |
|           |                                                                    | Z | 0.79  | 65.62  | 12.35 |      | 150.0 |         |
| 10293-AAB | CDMA2000, RC3, SO3, Full Rate                                      | X | 1.06  | 70.13  | 14.56 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 9.85  | 102.23 | 25.91 |      | 150.0 |         |
|           |                                                                    | Z | 1.02  | 68.99  | 14.44 |      | 150.0 |         |
| 10295-AAB | CDMA2000, RC1, SO3, 1/8th Rate 25 fr.                              | X | 8.04  | 81.06  | 21.93 | 9.03 | 50.0  | ± 9.6 % |
|           |                                                                    | Y | 7.29  | 78.67  | 20.25 |      | 50.0  |         |
|           |                                                                    | Z | 10.35 | 86.02  | 24.73 |      | 50.0  |         |
| 10297-AAD | LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)                            | X | 2.56  | 68.60  | 15.83 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 2.77  | 70.65  | 17.06 |      | 150.0 |         |
|           |                                                                    | Z | 2.62  | 68.43  | 15.75 |      | 150.0 |         |
| 10298-AAD | LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)                             | X | 1.35  | 65.77  | 12.74 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 1.59  | 69.04  | 14.43 |      | 150.0 |         |
|           |                                                                    | Z | 1.44  | 65.90  | 13.13 |      | 150.0 |         |
| 10299-AAD | LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)                           | X | 2.43  | 68.36  | 13.57 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 2.61  | 69.77  | 13.49 |      | 150.0 |         |
|           |                                                                    | Z | 2.97  | 70.69  | 15.30 |      | 150.0 |         |
| 10300-AAD | LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)                           | X | 1.88  | 64.42  | 10.94 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 1.75  | 64.34  | 10.21 |      | 150.0 |         |
|           |                                                                    | Z | 2.24  | 66.02  | 12.40 |      | 150.0 |         |
| 10301-AAA | IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)                 | X | 4.73  | 65.33  | 17.26 | 4.17 | 50.0  | ± 9.6 % |
|           |                                                                    | Y | 4.52  | 65.28  | 17.16 |      | 50.0  |         |
|           |                                                                    | Z | 5.11  | 66.26  | 17.83 |      | 50.0  |         |
| 10302-AAA | IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3 CTRL symbols) | X | 5.22  | 65.94  | 17.96 | 4.96 | 50.0  | ± 9.6 % |
|           |                                                                    | Y | 5.07  | 66.20  | 18.02 |      | 50.0  |         |
|           |                                                                    | Z | 5.54  | 66.57  | 18.36 |      | 50.0  |         |

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|-----------|---------------------------------------------------------------------|---|------|-------|-------|-------|-------|---------|
| 10303-AAA | IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)                 | X | 4.98 | 65.64 | 17.81 | 4.96  | 50.0  | ± 9.6 % |
|           |                                                                     | Y | 4.83 | 65.88 | 17.86 |       | 50.0  |         |
|           |                                                                     | Z | 5.32 | 66.37 | 18.28 |       | 50.0  |         |
| 10304-AAA | IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)                 | X | 4.77 | 65.42 | 17.27 | 4.17  | 50.0  | ± 9.6 % |
|           |                                                                     | Y | 4.64 | 65.77 | 17.38 |       | 50.0  |         |
|           |                                                                     | Z | 5.07 | 66.01 | 17.65 |       | 50.0  |         |
| 10305-AAA | IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)    | X | 4.69 | 68.66 | 19.95 | 6.02  | 35.0  | ± 9.6 % |
|           |                                                                     | Y | 4.49 | 68.50 | 19.69 |       | 35.0  |         |
|           |                                                                     | Z | 5.36 | 70.97 | 21.31 |       | 35.0  |         |
| 10306-AAA | IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)    | X | 4.88 | 67.12 | 19.31 | 6.02  | 35.0  | ± 9.6 % |
|           |                                                                     | Y | 4.69 | 67.04 | 19.11 |       | 35.0  |         |
|           |                                                                     | Z | 5.35 | 68.62 | 20.28 |       | 35.0  |         |
| 10307-AAA | IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC, 18 symbols)     | X | 4.81 | 67.43 | 19.33 | 6.02  | 35.0  | ± 9.6 % |
|           |                                                                     | Y | 4.61 | 67.26 | 19.10 |       | 35.0  |         |
|           |                                                                     | Z | 5.33 | 69.14 | 20.39 |       | 35.0  |         |
| 10308-AAA | IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)                | X | 4.79 | 67.67 | 19.49 | 6.02  | 35.0  | ± 9.6 % |
|           |                                                                     | Y | 4.60 | 67.53 | 19.27 |       | 35.0  |         |
|           |                                                                     | Z | 5.33 | 69.43 | 20.56 |       | 35.0  |         |
| 10309-AAA | IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols) | X | 4.94 | 67.35 | 19.45 | 6.02  | 35.0  | ± 9.6 % |
|           |                                                                     | Y | 4.73 | 67.18 | 19.22 |       | 35.0  |         |
|           |                                                                     | Z | 5.44 | 68.92 | 20.45 |       | 35.0  |         |
| 10310-AAA | IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)  | X | 4.84 | 67.24 | 19.31 | 6.02  | 35.0  | ± 9.6 % |
|           |                                                                     | Y | 4.65 | 67.15 | 19.11 |       | 35.0  |         |
|           |                                                                     | Z | 5.32 | 68.80 | 20.30 |       | 35.0  |         |
| 10311-AAD | LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)                            | X | 2.91 | 67.94 | 15.55 | 0.00  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 3.15 | 69.92 | 16.68 |       | 150.0 |         |
|           |                                                                     | Z | 2.96 | 67.78 | 15.47 |       | 150.0 |         |
| 10313-AAA | iDEN 1:3                                                            | X | 3.29 | 70.42 | 14.53 | 6.99  | 70.0  | ± 9.6 % |
|           |                                                                     | Y | 3.25 | 70.48 | 14.53 |       | 70.0  |         |
|           |                                                                     | Z | 5.49 | 76.09 | 17.25 |       | 70.0  |         |
| 10314-AAA | iDEN 1:6                                                            | X | 4.50 | 76.48 | 19.66 | 10.00 | 30.0  | ± 9.6 % |
|           |                                                                     | Y | 4.50 | 76.41 | 19.55 |       | 30.0  |         |
|           |                                                                     | Z | 8.40 | 85.50 | 23.36 |       | 30.0  |         |
| 10315-AAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)           | X | 0.99 | 62.91 | 14.33 | 0.17  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 1.09 | 64.48 | 15.50 |       | 150.0 |         |
|           |                                                                     | Z | 1.02 | 63.00 | 14.42 |       | 150.0 |         |
| 10316-AAB | IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)       | X | 4.50 | 66.36 | 16.04 | 0.17  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.47 | 66.85 | 16.19 |       | 150.0 |         |
|           |                                                                     | Z | 4.59 | 66.36 | 16.13 |       | 150.0 |         |
| 10317-AAC | IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)             | X | 4.50 | 66.36 | 16.04 | 0.17  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.47 | 66.85 | 16.19 |       | 150.0 |         |
|           |                                                                     | Z | 4.59 | 66.36 | 16.13 |       | 150.0 |         |
| 10400-AAD | IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)                 | X | 4.60 | 66.67 | 16.02 | 0.00  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.58 | 67.24 | 16.26 |       | 150.0 |         |
|           |                                                                     | Z | 4.69 | 66.60 | 16.04 |       | 150.0 |         |
| 10401-AAD | IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)                 | X | 5.32 | 66.93 | 16.24 | 0.00  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 5.23 | 67.14 | 16.28 |       | 150.0 |         |
|           |                                                                     | Z | 5.38 | 66.83 | 16.24 |       | 150.0 |         |

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|-----------|---------------------------------------------------------------------------------|---|--------|--------|-------|------|-------|---------|
| 10402-AAD | IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle)                             | X | 5.56   | 67.22  | 16.25 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                 | Y | 5.53   | 67.64  | 16.40 |      | 150.0 |         |
|           |                                                                                 | Z | 5.65   | 67.23  | 16.29 |      | 150.0 |         |
| 10403-AAB | CDMA2000 (1xEV-DO, Rev. 0)                                                      | X | 1.16   | 65.91  | 12.08 | 0.00 | 115.0 | ± 9.6 % |
|           |                                                                                 | Y | 1.58   | 70.94  | 14.61 |      | 115.0 |         |
|           |                                                                                 | Z | 1.24   | 66.05  | 12.53 |      | 115.0 |         |
| 10404-AAB | CDMA2000 (1xEV-DO, Rev. A)                                                      | X | 1.16   | 65.91  | 12.08 | 0.00 | 115.0 | ± 9.6 % |
|           |                                                                                 | Y | 1.58   | 70.94  | 14.61 |      | 115.0 |         |
|           |                                                                                 | Z | 1.24   | 66.05  | 12.53 |      | 115.0 |         |
| 10406-AAB | CDMA2000, RC3, SQ32, SCH0, Full Rate                                            | X | 20.49  | 99.76  | 25.05 | 0.00 | 100.0 | ± 9.6 % |
|           |                                                                                 | Y | 100.00 | 114.51 | 26.66 |      | 100.0 |         |
|           |                                                                                 | Z | 18.28  | 99.16  | 25.69 |      | 100.0 |         |
| 10410-AAF | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9, Subframe Conf=4) | X | 33.60  | 104.90 | 25.70 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                                 | Y | 21.20  | 96.90  | 22.42 |      | 80.0  |         |
|           |                                                                                 | Z | 100.00 | 122.01 | 31.03 |      | 80.0  |         |
| 10415-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)                       | X | 0.91   | 62.07  | 13.76 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                 | Y | 1.01   | 63.73  | 15.07 |      | 150.0 |         |
|           |                                                                                 | Z | 0.92   | 61.89  | 13.67 |      | 150.0 |         |
| 10416-AAA | IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)                   | X | 4.44   | 66.35  | 15.98 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                 | Y | 4.44   | 66.96  | 16.23 |      | 150.0 |         |
|           |                                                                                 | Z | 4.51   | 66.25  | 15.99 |      | 150.0 |         |
| 10417-AAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)                       | X | 4.44   | 66.35  | 15.98 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                 | Y | 4.44   | 66.96  | 16.23 |      | 150.0 |         |
|           |                                                                                 | Z | 4.51   | 66.25  | 15.99 |      | 150.0 |         |
| 10418-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preamble)   | X | 4.43   | 66.50  | 15.99 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                 | Y | 4.44   | 67.15  | 16.27 |      | 150.0 |         |
|           |                                                                                 | Z | 4.50   | 66.38  | 15.99 |      | 150.0 |         |
| 10419-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preamble)  | X | 4.45   | 66.45  | 16.00 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                 | Y | 4.46   | 67.09  | 16.26 |      | 150.0 |         |
|           |                                                                                 | Z | 4.52   | 66.34  | 16.00 |      | 150.0 |         |
| 10422-AAB | IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)                                    | X | 4.57   | 66.46  | 16.02 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                 | Y | 4.57   | 67.06  | 16.26 |      | 150.0 |         |
|           |                                                                                 | Z | 4.65   | 66.36  | 16.03 |      | 150.0 |         |
| 10423-AAB | IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)                                 | X | 4.74   | 66.78  | 16.14 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                 | Y | 4.71   | 67.35  | 16.36 |      | 150.0 |         |
|           |                                                                                 | Z | 4.83   | 66.71  | 16.15 |      | 150.0 |         |
| 10424-AAB | IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)                                 | X | 4.66   | 66.72  | 16.10 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                 | Y | 4.64   | 67.31  | 16.34 |      | 150.0 |         |
|           |                                                                                 | Z | 4.74   | 66.64  | 16.12 |      | 150.0 |         |
| 10425-AAB | IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)                                     | X | 5.27   | 67.08  | 16.32 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                 | Y | 5.21   | 67.45  | 16.44 |      | 150.0 |         |
|           |                                                                                 | Z | 5.35   | 67.06  | 16.35 |      | 150.0 |         |
| 10426-AAB | IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)                                   | X | 5.27   | 67.11  | 16.33 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                 | Y | 5.22   | 67.48  | 16.45 |      | 150.0 |         |
|           |                                                                                 | Z | 5.35   | 67.06  | 16.35 |      | 150.0 |         |

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|-----------|----------------------------------------------------------------|---|--------|--------|-------|------|-------|---------|
| 10427-AAB | IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)                 | X | 5.29   | 67.08  | 16.31 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 5.23   | 67.44  | 16.43 |      | 150.0 |         |
|           |                                                                | Z | 5.36   | 67.04  | 16.33 |      | 150.0 |         |
| 10430-AAD | LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)                               | X | 4.19   | 70.69  | 18.03 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.46   | 72.73  | 18.88 |      | 150.0 |         |
|           |                                                                | Z | 4.17   | 69.91  | 17.78 |      | 150.0 |         |
| 10431-AAD | LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)                              | X | 4.11   | 66.84  | 15.92 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.11   | 67.60  | 16.24 |      | 150.0 |         |
|           |                                                                | Z | 4.20   | 66.72  | 15.96 |      | 150.0 |         |
| 10432-AAC | LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)                              | X | 4.42   | 66.75  | 16.03 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.41   | 67.41  | 16.31 |      | 150.0 |         |
|           |                                                                | Z | 4.51   | 66.65  | 16.05 |      | 150.0 |         |
| 10433-AAC | LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)                              | X | 4.67   | 66.76  | 16.13 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.66   | 67.34  | 16.37 |      | 150.0 |         |
|           |                                                                | Z | 4.76   | 66.68  | 16.14 |      | 150.0 |         |
| 10434-AAA | W-CDMA (BS Test Model 1, 64 DPCH)                              | X | 4.29   | 71.49  | 17.95 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.70   | 74.07  | 18.99 |      | 150.0 |         |
|           |                                                                | Z | 4.24   | 70.59  | 17.70 |      | 150.0 |         |
| 10435-AAF | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | X | 30.06  | 103.30 | 25.25 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                | Y | 18.61  | 95.21  | 21.92 |      | 80.0  |         |
|           |                                                                | Z | 100.00 | 121.83 | 30.95 |      | 80.0  |         |
| 10447-AAD | LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)                 | X | 3.38   | 66.68  | 15.12 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 3.42   | 67.74  | 15.54 |      | 150.0 |         |
|           |                                                                | Z | 3.48   | 66.57  | 15.24 |      | 150.0 |         |
| 10448-AAD | LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)                | X | 3.95   | 66.60  | 15.77 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 3.97   | 67.40  | 16.12 |      | 150.0 |         |
|           |                                                                | Z | 4.03   | 66.48  | 15.80 |      | 150.0 |         |
| 10449-AAC | LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)                | X | 4.23   | 66.57  | 15.92 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.24   | 67.26  | 16.22 |      | 150.0 |         |
|           |                                                                | Z | 4.31   | 66.46  | 15.93 |      | 150.0 |         |
| 10450-AAC | LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)                | X | 4.43   | 66.51  | 15.97 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.44   | 67.14  | 16.24 |      | 150.0 |         |
|           |                                                                | Z | 4.50   | 66.42  | 15.98 |      | 150.0 |         |
| 10451-AAA | W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)                | X | 3.26   | 66.76  | 14.67 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 3.29   | 67.87  | 15.08 |      | 150.0 |         |
|           |                                                                | Z | 3.37   | 66.70  | 14.86 |      | 150.0 |         |
| 10456-AAB | IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc duty cycle)           | X | 6.13   | 67.65  | 16.49 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 6.10   | 68.01  | 16.60 |      | 150.0 |         |
|           |                                                                | Z | 6.21   | 67.65  | 16.53 |      | 150.0 |         |
| 10457-AAA | UMTS-FDD (DC-HSDPA)                                            | X | 3.70   | 64.99  | 15.68 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 3.74   | 65.64  | 15.95 |      | 150.0 |         |
|           |                                                                | Z | 3.74   | 64.87  | 15.69 |      | 150.0 |         |
| 10458-AAA | CDMA2000 (1xEV-DO, Rev. B, 2 carriers)                         | X | 3.88   | 70.50  | 17.20 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.25   | 73.02  | 18.16 |      | 150.0 |         |
|           |                                                                | Z | 3.85   | 69.68  | 17.05 |      | 150.0 |         |
| 10459-AAA | CDMA2000 (1xEV-DO, Rev. B, 3 carriers)                         | X | 5.08   | 68.52  | 18.19 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 5.16   | 69.72  | 18.53 |      | 150.0 |         |
|           |                                                                | Z | 5.09   | 67.83  | 17.99 |      | 150.0 |         |

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| 10460-AAA | UMTS-FDD (WCDMA, AMR)                                             | X | 0.73   | 65.77  | 14.19 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                   | Y | 0.97   | 70.48  | 17.39 |      | 150.0 |         |
|           |                                                                   | Z | 0.74   | 65.33  | 13.98 |      | 150.0 |         |
| 10461-AAA | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)   | X | 41.74  | 110.10 | 27.72 | 3.29 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 8.04   | 88.28  | 21.11 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 125.80 | 32.85 |      | 80.0  |         |
| 10462-AAA | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | X | 1.70   | 64.70  | 10.75 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 0.89   | 60.00  | 7.25  |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 109.16 | 25.07 |      | 80.0  |         |
| 10463-AAA | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | X | 1.25   | 61.45  | 8.78  | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 0.91   | 60.00  | 6.74  |      | 80.0  |         |
|           |                                                                   | Z | 16.92  | 87.62  | 19.12 |      | 80.0  |         |
| 10464-AAB | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)     | X | 21.60  | 99.74  | 24.45 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 4.66   | 80.69  | 18.13 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 123.58 | 31.66 |      | 80.0  |         |
| 10465-AAB | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)   | X | 1.55   | 63.77  | 10.27 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 0.89   | 60.00  | 7.18  |      | 80.0  |         |
|           |                                                                   | Z | 83.79  | 106.68 | 24.37 |      | 80.0  |         |
| 10466-AAB | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 1.20   | 61.02  | 8.52  | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 0.92   | 60.00  | 6.70  |      | 80.0  |         |
|           |                                                                   | Z | 8.77   | 80.60  | 17.05 |      | 80.0  |         |
| 10467-AAE | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)     | X | 26.95  | 102.65 | 25.21 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 5.22   | 82.10  | 18.61 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 123.82 | 31.77 |      | 80.0  |         |
| 10468-AAE | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)   | X | 1.58   | 64.00  | 10.39 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 0.89   | 60.00  | 7.20  |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 108.76 | 24.86 |      | 80.0  |         |
| 10469-AAE | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 1.20   | 61.02  | 8.52  | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 0.92   | 60.00  | 6.69  |      | 80.0  |         |
|           |                                                                   | Z | 8.94   | 80.81  | 17.11 |      | 80.0  |         |
| 10470-AAE | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)    | X | 27.15  | 102.75 | 25.23 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 5.21   | 82.11  | 18.60 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 123.85 | 31.77 |      | 80.0  |         |
| 10471-AAE | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)  | X | 1.57   | 63.95  | 10.36 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 0.89   | 60.00  | 7.18  |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 108.70 | 24.83 |      | 80.0  |         |
| 10472-AAE | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)  | X | 1.19   | 60.99  | 8.49  | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 0.91   | 60.00  | 6.68  |      | 80.0  |         |
|           |                                                                   | Z | 8.86   | 80.71  | 17.06 |      | 80.0  |         |
| 10473-AAE | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)    | X | 26.88  | 102.61 | 25.19 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 5.18   | 82.02  | 18.57 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 123.82 | 31.76 |      | 80.0  |         |
| 10474-AAE | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)  | X | 1.56   | 63.92  | 10.34 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 0.88   | 60.00  | 7.18  |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 108.71 | 24.83 |      | 80.0  |         |
| 10475-AAE | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)  | X | 1.19   | 60.97  | 8.48  | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 0.91   | 60.00  | 6.68  |      | 80.0  |         |
|           |                                                                   | Z | 8.73   | 80.57  | 17.02 |      | 80.0  |         |

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| 10477-AAF | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)    | X | 1.54  | 63.72  | 10.23 | 3.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 0.89  | 60.00  | 7.16  |      | 80.0 |         |
|           |                                                                     | Z | 89.93 | 107.39 | 24.50 |      | 80.0 |         |
| 10478-AAF | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)    | X | 1.19  | 60.94  | 8.46  | 3.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 0.92  | 60.00  | 6.67  |      | 80.0 |         |
|           |                                                                     | Z | 8.57  | 80.34  | 16.95 |      | 80.0 |         |
| 10479-AAA | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)   | X | 6.61  | 83.03  | 21.62 | 3.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 5.80  | 81.37  | 20.32 |      | 80.0 |         |
|           |                                                                     | Z | 14.64 | 95.43  | 26.40 |      | 80.0 |         |
| 10480-AAA | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | X | 5.45  | 75.90  | 17.43 | 3.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 3.96  | 72.24  | 15.07 |      | 80.0 |         |
|           |                                                                     | Z | 14.70 | 89.62  | 22.90 |      | 80.0 |         |
| 10481-AAA | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | X | 4.41  | 72.66  | 15.88 | 3.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 3.00  | 68.62  | 13.29 |      | 80.0 |         |
|           |                                                                     | Z | 11.76 | 85.72  | 21.34 |      | 80.0 |         |
| 10482-AAB | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)     | X | 2.43  | 68.59  | 14.91 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 2.27  | 68.17  | 14.33 |      | 80.0 |         |
|           |                                                                     | Z | 3.81  | 74.09  | 17.74 |      | 80.0 |         |
| 10483-AAB | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)   | X | 3.79  | 70.92  | 15.60 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 2.71  | 67.01  | 13.08 |      | 80.0 |         |
|           |                                                                     | Z | 6.00  | 81.16  | 20.31 |      | 80.0 |         |
| 10484-AAB | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 3.61  | 70.05  | 15.26 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 2.62  | 66.37  | 12.80 |      | 80.0 |         |
|           |                                                                     | Z | 7.17  | 79.40  | 19.70 |      | 80.0 |         |
| 10485-AAE | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)     | X | 2.90  | 70.80  | 16.81 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 2.85  | 71.01  | 16.62 |      | 80.0 |         |
|           |                                                                     | Z | 4.15  | 75.35  | 19.07 |      | 80.0 |         |
| 10486-AAE | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)   | X | 2.89  | 67.56  | 15.00 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 2.78  | 67.53  | 14.57 |      | 80.0 |         |
|           |                                                                     | Z | 3.72  | 70.53  | 16.78 |      | 80.0 |         |
| 10487-AAE | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 2.90  | 67.27  | 14.86 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 2.78  | 67.19  | 14.41 |      | 80.0 |         |
|           |                                                                     | Z | 3.70  | 70.12  | 16.61 |      | 80.0 |         |
| 10488-AAE | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)    | X | 3.33  | 70.90  | 17.61 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 3.27  | 71.14  | 17.57 |      | 80.0 |         |
|           |                                                                     | Z | 4.32  | 74.20  | 19.23 |      | 80.0 |         |
| 10489-AAE | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)  | X | 3.33  | 68.05  | 16.50 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 3.29  | 68.37  | 16.40 |      | 80.0 |         |
|           |                                                                     | Z | 3.93  | 70.00  | 17.66 |      | 80.0 |         |
| 10490-AAE | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)  | X | 3.43  | 67.94  | 16.48 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 3.37  | 68.25  | 16.36 |      | 80.0 |         |
|           |                                                                     | Z | 4.01  | 69.77  | 17.59 |      | 80.0 |         |
| 10491-AAE | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)    | X | 3.62  | 69.85  | 17.36 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 3.55  | 70.10  | 17.34 |      | 80.0 |         |
|           |                                                                     | Z | 4.40  | 72.28  | 18.60 |      | 80.0 |         |
| 10492-AAE | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)  | X | 3.71  | 67.60  | 16.66 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 3.66  | 67.88  | 16.57 |      | 80.0 |         |
|           |                                                                     | Z | 4.24  | 69.13  | 17.58 |      | 80.0 |         |

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| 10493-AAE | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 3.79 | 67.51 | 16.64 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 3.72 | 67.77 | 16.54 |      | 80.0 |         |
|           |                                                                      | Z | 4.30 | 68.97 | 17.53 |      | 80.0 |         |
| 10494-AAF | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)     | X | 3.88 | 71.13 | 17.72 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 3.81 | 71.36 | 17.73 |      | 80.0 |         |
|           |                                                                      | Z | 4.84 | 73.97 | 19.09 |      | 80.0 |         |
| 10495-AAF | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)   | X | 3.74 | 67.96 | 16.84 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 3.68 | 68.19 | 16.76 |      | 80.0 |         |
|           |                                                                      | Z | 4.29 | 69.60 | 17.78 |      | 80.0 |         |
| 10496-AAF | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 3.83 | 67.76 | 16.80 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 3.77 | 67.99 | 16.71 |      | 80.0 |         |
|           |                                                                      | Z | 4.36 | 69.27 | 17.69 |      | 80.0 |         |
| 10497-AAA | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)   | X | 1.71 | 64.34 | 12.00 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 1.51 | 63.37 | 11.02 |      | 80.0 |         |
|           |                                                                      | Z | 2.78 | 69.79 | 15.16 |      | 80.0 |         |
| 10498-AAA | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | X | 1.49 | 60.62 | 9.16  | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 1.31 | 60.00 | 8.23  |      | 80.0 |         |
|           |                                                                      | Z | 2.15 | 64.01 | 11.64 |      | 80.0 |         |
| 10499-AAA | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | X | 1.46 | 60.25 | 8.83  | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 1.33 | 60.00 | 8.09  |      | 80.0 |         |
|           |                                                                      | Z | 2.10 | 63.46 | 11.24 |      | 80.0 |         |
| 10500-AAB | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)     | X | 3.04 | 70.63 | 17.07 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 2.99 | 70.93 | 16.97 |      | 80.0 |         |
|           |                                                                      | Z | 4.11 | 74.43 | 18.99 |      | 80.0 |         |
| 10501-AAB | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)   | X | 3.09 | 67.86 | 15.63 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 3.03 | 68.06 | 15.36 |      | 80.0 |         |
|           |                                                                      | Z | 3.81 | 70.30 | 17.11 |      | 80.0 |         |
| 10502-AAB | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 3.15 | 67.75 | 15.53 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 3.07 | 67.92 | 15.24 |      | 80.0 |         |
|           |                                                                      | Z | 3.86 | 70.12 | 16.99 |      | 80.0 |         |
| 10503-AAE | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)     | X | 3.29 | 70.71 | 17.52 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 3.22 | 70.95 | 17.47 |      | 80.0 |         |
|           |                                                                      | Z | 4.26 | 73.98 | 19.13 |      | 80.0 |         |
| 10504-AAE | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)   | X | 3.31 | 67.95 | 16.44 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 3.27 | 68.27 | 16.33 |      | 80.0 |         |
|           |                                                                      | Z | 3.91 | 69.90 | 17.60 |      | 80.0 |         |
| 10505-AAE | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 3.41 | 67.85 | 16.43 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 3.35 | 68.15 | 16.30 |      | 80.0 |         |
|           |                                                                      | Z | 3.99 | 69.68 | 17.53 |      | 80.0 |         |
| 10506-AAE | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)    | X | 3.85 | 70.99 | 17.65 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 3.78 | 71.21 | 17.65 |      | 80.0 |         |
|           |                                                                      | Z | 4.80 | 73.81 | 19.01 |      | 80.0 |         |
| 10507-AAE | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)  | X | 3.73 | 67.90 | 16.80 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 3.67 | 68.13 | 16.72 |      | 80.0 |         |
|           |                                                                      | Z | 4.27 | 69.54 | 17.74 |      | 80.0 |         |

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| 10508-AAE | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | X | 3.62 | 67.69 | 16.75 | 2.23 | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 3.75 | 67.92 | 16.67 |      | 80.0  |         |
|           |                                                                     | Z | 4.34 | 69.20 | 17.64 |      | 80.0  |         |
| 10509-AAE | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)   | X | 4.23 | 70.08 | 17.33 | 2.23 | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 4.18 | 70.38 | 17.36 |      | 80.0  |         |
|           |                                                                     | Z | 5.00 | 72.17 | 18.39 |      | 80.0  |         |
| 10510-AAE | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | X | 4.23 | 67.80 | 16.89 | 2.23 | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 4.16 | 67.99 | 16.81 |      | 80.0  |         |
|           |                                                                     | Z | 4.75 | 69.17 | 17.68 |      | 80.0  |         |
| 10511-AAE | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | X | 4.29 | 67.59 | 16.85 | 2.23 | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 4.22 | 67.80 | 16.78 |      | 80.0  |         |
|           |                                                                     | Z | 4.78 | 68.88 | 17.61 |      | 80.0  |         |
| 10512-AAF | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)   | X | 4.36 | 71.34 | 17.68 | 2.23 | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 4.30 | 71.61 | 17.71 |      | 80.0  |         |
|           |                                                                     | Z | 5.33 | 73.94 | 18.92 |      | 80.0  |         |
| 10513-AAF | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | X | 4.11 | 68.01 | 16.96 | 2.23 | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 4.04 | 68.17 | 16.88 |      | 80.0  |         |
|           |                                                                     | Z | 4.65 | 69.54 | 17.82 |      | 80.0  |         |
| 10514-AAF | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | X | 4.14 | 67.66 | 16.88 | 2.23 | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 4.08 | 67.83 | 16.79 |      | 80.0  |         |
|           |                                                                     | Z | 4.64 | 69.05 | 17.68 |      | 80.0  |         |
| 10515-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle)           | X | 0.87 | 62.19 | 13.76 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 0.98 | 63.95 | 15.17 |      | 150.0 |         |
|           |                                                                     | Z | 0.88 | 62.01 | 13.66 |      | 150.0 |         |
| 10516-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle)         | X | 0.43 | 66.66 | 14.13 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 0.69 | 74.11 | 19.46 |      | 150.0 |         |
|           |                                                                     | Z | 0.43 | 65.90 | 13.69 |      | 150.0 |         |
| 10517-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle)          | X | 0.70 | 63.54 | 13.92 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 0.84 | 66.25 | 16.08 |      | 150.0 |         |
|           |                                                                     | Z | 0.71 | 63.29 | 13.76 |      | 150.0 |         |
| 10518-AAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle)           | X | 4.44 | 66.42 | 15.95 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.44 | 67.05 | 16.22 |      | 150.0 |         |
|           |                                                                     | Z | 4.51 | 66.31 | 15.96 |      | 150.0 |         |
| 10519-AAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)          | X | 4.62 | 66.66 | 16.08 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.60 | 67.24 | 16.31 |      | 150.0 |         |
|           |                                                                     | Z | 4.71 | 66.58 | 16.10 |      | 150.0 |         |
| 10520-AAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle)          | X | 4.47 | 66.61 | 15.99 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.46 | 67.20 | 16.24 |      | 150.0 |         |
|           |                                                                     | Z | 4.56 | 66.54 | 16.01 |      | 150.0 |         |
| 10521-AAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)          | X | 4.40 | 66.59 | 15.97 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.39 | 67.20 | 16.23 |      | 150.0 |         |
|           |                                                                     | Z | 4.49 | 66.53 | 15.99 |      | 150.0 |         |
| 10522-AAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc duty cycle)          | X | 4.46 | 66.69 | 16.06 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.45 | 67.31 | 16.32 |      | 150.0 |         |
|           |                                                                     | Z | 4.54 | 66.58 | 16.06 |      | 150.0 |         |

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|-----------|------------------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10523-AAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc duty cycle) | X | 4.34 | 66.55 | 15.90 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.35 | 67.25 | 16.21 |      | 150.0 |         |
|           |                                                            | Z | 4.41 | 66.43 | 15.89 |      | 150.0 |         |
| 10524-AAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc duty cycle) | X | 4.41 | 66.60 | 16.02 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.39 | 67.23 | 16.30 |      | 150.0 |         |
|           |                                                            | Z | 4.49 | 66.51 | 16.03 |      | 150.0 |         |
| 10525-AAB | IEEE 802.11ac WiFi (20MHz, MCS0, 99pc duty cycle)          | X | 4.39 | 65.65 | 15.62 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.41 | 66.34 | 15.92 |      | 150.0 |         |
|           |                                                            | Z | 4.46 | 65.54 | 15.62 |      | 150.0 |         |
| 10526-AAB | IEEE 802.11ac WiFi (20MHz, MCS1, 99pc duty cycle)          | X | 4.56 | 66.01 | 15.76 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.55 | 66.66 | 16.04 |      | 150.0 |         |
|           |                                                            | Z | 4.64 | 65.92 | 15.76 |      | 150.0 |         |
| 10527-AAB | IEEE 802.11ac WiFi (20MHz, MCS2, 99pc duty cycle)          | X | 4.48 | 65.96 | 15.70 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.48 | 66.64 | 15.99 |      | 150.0 |         |
|           |                                                            | Z | 4.56 | 65.87 | 15.70 |      | 150.0 |         |
| 10528-AAB | IEEE 802.11ac WiFi (20MHz, MCS3, 99pc duty cycle)          | X | 4.50 | 65.98 | 15.73 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.49 | 66.65 | 16.02 |      | 150.0 |         |
|           |                                                            | Z | 4.57 | 65.89 | 15.74 |      | 150.0 |         |
| 10529-AAB | IEEE 802.11ac WiFi (20MHz, MCS4, 99pc duty cycle)          | X | 4.50 | 65.98 | 15.73 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.49 | 66.65 | 16.02 |      | 150.0 |         |
|           |                                                            | Z | 4.57 | 65.89 | 15.74 |      | 150.0 |         |
| 10531-AAB | IEEE 802.11ac WiFi (20MHz, MCS6, 99pc duty cycle)          | X | 4.48 | 66.08 | 15.74 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.47 | 66.72 | 16.02 |      | 150.0 |         |
|           |                                                            | Z | 4.57 | 66.01 | 15.75 |      | 150.0 |         |
| 10532-AAB | IEEE 802.11ac WiFi (20MHz, MCS7, 99pc duty cycle)          | X | 4.35 | 65.93 | 15.67 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.35 | 66.59 | 15.96 |      | 150.0 |         |
|           |                                                            | Z | 4.43 | 65.85 | 15.68 |      | 150.0 |         |
| 10533-AAB | IEEE 802.11ac WiFi (20MHz, MCS8, 99pc duty cycle)          | X | 4.50 | 66.03 | 15.72 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.51 | 66.72 | 16.02 |      | 150.0 |         |
|           |                                                            | Z | 4.58 | 65.93 | 15.72 |      | 150.0 |         |
| 10534-AAB | IEEE 802.11ac WiFi (40MHz, MCS0, 99pc duty cycle)          | X | 5.04 | 66.13 | 15.83 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 5.02 | 66.65 | 16.04 |      | 150.0 |         |
|           |                                                            | Z | 5.11 | 66.08 | 15.84 |      | 150.0 |         |
| 10535-AAB | IEEE 802.11ac WiFi (40MHz, MCS1, 99pc duty cycle)          | X | 5.10 | 66.31 | 15.91 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 5.08 | 66.80 | 16.11 |      | 150.0 |         |
|           |                                                            | Z | 5.18 | 66.24 | 15.91 |      | 150.0 |         |
| 10536-AAB | IEEE 802.11ac WiFi (40MHz, MCS2, 99pc duty cycle)          | X | 4.97 | 66.24 | 15.85 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.96 | 66.79 | 16.09 |      | 150.0 |         |
|           |                                                            | Z | 5.04 | 66.19 | 15.86 |      | 150.0 |         |
| 10537-AAB | IEEE 802.11ac WiFi (40MHz, MCS3, 99pc duty cycle)          | X | 5.03 | 66.22 | 15.84 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 5.01 | 66.74 | 16.06 |      | 150.0 |         |
|           |                                                            | Z | 5.10 | 66.17 | 15.86 |      | 150.0 |         |
| 10538-AAB | IEEE 802.11ac WiFi (40MHz, MCS4, 99pc duty cycle)          | X | 5.12 | 66.25 | 15.90 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 5.09 | 66.73 | 16.09 |      | 150.0 |         |
|           |                                                            | Z | 5.21 | 66.23 | 15.93 |      | 150.0 |         |
| 10540-AAB | IEEE 802.11ac WiFi (40MHz, MCS6, 99pc duty cycle)          | X | 5.05 | 66.27 | 15.92 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 5.02 | 66.71 | 16.10 |      | 150.0 |         |
|           |                                                            | Z | 5.13 | 66.20 | 15.93 |      | 150.0 |         |

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|-----------|----------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10541-AAB | IEEE 802.11ac WiFi (40MHz, MCS7, 99pc duty cycle)  | X | 5.02 | 66.13 | 15.85 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 5.01 | 66.64 | 16.05 |      | 150.0 |         |
|           |                                                    | Z | 5.10 | 66.08 | 15.86 |      | 150.0 |         |
| 10542-AAB | IEEE 802.11ac WiFi (40MHz, MCS8, 99pc duty cycle)  | X | 5.18 | 66.21 | 15.91 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 5.16 | 66.70 | 16.10 |      | 150.0 |         |
|           |                                                    | Z | 5.26 | 66.16 | 15.92 |      | 150.0 |         |
| 10543-AAB | IEEE 802.11ac WiFi (40MHz, MCS9, 99pc duty cycle)  | X | 5.26 | 66.25 | 15.95 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 5.22 | 66.71 | 16.12 |      | 150.0 |         |
|           |                                                    | Z | 5.34 | 66.21 | 15.96 |      | 150.0 |         |
| 10544-AAB | IEEE 802.11ac WiFi (80MHz, MCS0, 99pc duty cycle)  | X | 5.35 | 66.26 | 15.83 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 5.35 | 66.75 | 16.03 |      | 150.0 |         |
|           |                                                    | Z | 5.41 | 66.20 | 15.84 |      | 150.0 |         |
| 10545-AAB | IEEE 802.11ac WiFi (80MHz, MCS1, 99pc duty cycle)  | X | 5.54 | 66.67 | 15.99 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 5.50 | 67.07 | 16.14 |      | 150.0 |         |
|           |                                                    | Z | 5.61 | 66.64 | 16.00 |      | 150.0 |         |
| 10546-AAB | IEEE 802.11ac WiFi (80MHz, MCS2, 99pc duty cycle)  | X | 5.41 | 66.46 | 15.90 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 5.39 | 66.90 | 16.07 |      | 150.0 |         |
|           |                                                    | Z | 5.49 | 66.45 | 15.93 |      | 150.0 |         |
| 10547-AAB | IEEE 802.11ac WiFi (80MHz, MCS3, 99pc duty cycle)  | X | 5.48 | 66.50 | 15.91 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 5.46 | 66.94 | 16.08 |      | 150.0 |         |
|           |                                                    | Z | 5.57 | 66.53 | 15.96 |      | 150.0 |         |
| 10548-AAB | IEEE 802.11ac WiFi (80MHz, MCS4, 99pc duty cycle)  | X | 5.73 | 67.42 | 16.34 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 5.59 | 67.52 | 16.34 |      | 150.0 |         |
|           |                                                    | Z | 5.87 | 67.60 | 16.46 |      | 150.0 |         |
| 10550-AAB | IEEE 802.11ac WiFi (80MHz, MCS6, 99pc duty cycle)  | X | 5.44 | 66.48 | 15.92 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 5.42 | 66.94 | 16.10 |      | 150.0 |         |
|           |                                                    | Z | 5.51 | 66.43 | 15.93 |      | 150.0 |         |
| 10551-AAB | IEEE 802.11ac WiFi (80MHz, MCS7, 99pc duty cycle)  | X | 5.45 | 66.52 | 15.90 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 5.41 | 66.93 | 16.06 |      | 150.0 |         |
|           |                                                    | Z | 5.52 | 66.48 | 15.91 |      | 150.0 |         |
| 10552-AAB | IEEE 802.11ac WiFi (80MHz, MCS8, 99pc duty cycle)  | X | 5.36 | 66.32 | 15.81 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 5.36 | 66.86 | 16.03 |      | 150.0 |         |
|           |                                                    | Z | 5.42 | 66.27 | 15.82 |      | 150.0 |         |
| 10553-AAB | IEEE 802.11ac WiFi (80MHz, MCS9, 99pc duty cycle)  | X | 5.44 | 66.36 | 15.86 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 5.43 | 66.84 | 16.05 |      | 150.0 |         |
|           |                                                    | Z | 5.52 | 66.32 | 15.88 |      | 150.0 |         |
| 10554-AAC | IEEE 802.11ac WiFi (160MHz, MCS0, 99pc duty cycle) | X | 5.76 | 66.63 | 15.93 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 5.75 | 67.07 | 16.09 |      | 150.0 |         |
|           |                                                    | Z | 5.81 | 66.59 | 15.95 |      | 150.0 |         |
| 10555-AAC | IEEE 802.11ac WiFi (160MHz, MCS1, 99pc duty cycle) | X | 5.88 | 66.92 | 16.05 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 5.85 | 67.31 | 16.19 |      | 150.0 |         |
|           |                                                    | Z | 5.95 | 66.91 | 16.08 |      | 150.0 |         |
| 10556-AAC | IEEE 802.11ac WiFi (160MHz, MCS2, 99pc duty cycle) | X | 5.90 | 66.97 | 16.07 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 5.87 | 67.36 | 16.21 |      | 150.0 |         |
|           |                                                    | Z | 5.97 | 66.94 | 16.09 |      | 150.0 |         |
| 10557-AAC | IEEE 802.11ac WiFi (160MHz, MCS3, 99pc duty cycle) | X | 5.87 | 66.87 | 16.04 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                    | Y | 5.84 | 67.29 | 16.19 |      | 150.0 |         |
|           |                                                    | Z | 5.94 | 66.87 | 16.08 |      | 150.0 |         |

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|-----------|-----------------------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10558-AAC | IEEE 802.11ac WiFi (160MHz, MCS4, 99pc duty cycle)              | X | 5.92 | 67.03 | 16.14 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 5.88 | 67.42 | 16.27 |      | 150.0 |         |
|           |                                                                 | Z | 6.00 | 67.04 | 16.18 |      | 150.0 |         |
| 10560-AAC | IEEE 802.11ac WiFi (160MHz, MCS6, 99pc duty cycle)              | X | 5.91 | 66.89 | 16.11 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 5.88 | 67.30 | 16.25 |      | 150.0 |         |
|           |                                                                 | Z | 5.99 | 66.88 | 16.14 |      | 150.0 |         |
| 10561-AAC | IEEE 802.11ac WiFi (160MHz, MCS7, 99pc duty cycle)              | X | 5.84 | 66.86 | 16.12 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 5.80 | 67.25 | 16.26 |      | 150.0 |         |
|           |                                                                 | Z | 5.91 | 66.85 | 16.16 |      | 150.0 |         |
| 10562-AAC | IEEE 802.11ac WiFi (160MHz, MCS8, 99pc duty cycle)              | X | 5.95 | 67.23 | 16.31 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 5.89 | 67.52 | 16.39 |      | 150.0 |         |
|           |                                                                 | Z | 6.05 | 67.30 | 16.38 |      | 150.0 |         |
| 10563-AAC | IEEE 802.11ac WiFi (160MHz, MCS9, 99pc duty cycle)              | X | 6.17 | 67.48 | 16.39 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 5.96 | 67.36 | 16.27 |      | 150.0 |         |
|           |                                                                 | Z | 6.41 | 67.93 | 16.65 |      | 150.0 |         |
| 10564-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc duty cycle)  | X | 4.76 | 66.50 | 16.11 | 0.46 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 4.74 | 67.04 | 16.31 |      | 150.0 |         |
|           |                                                                 | Z | 4.84 | 66.45 | 16.16 |      | 150.0 |         |
| 10565-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle) | X | 4.99 | 66.97 | 16.45 | 0.46 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 4.96 | 67.47 | 16.63 |      | 150.0 |         |
|           |                                                                 | Z | 5.09 | 66.92 | 16.49 |      | 150.0 |         |
| 10566-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc duty cycle) | X | 4.82 | 66.79 | 16.25 | 0.46 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 4.79 | 67.30 | 16.44 |      | 150.0 |         |
|           |                                                                 | Z | 4.92 | 66.76 | 16.30 |      | 150.0 |         |
| 10567-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle) | X | 4.86 | 67.21 | 16.63 | 0.46 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 4.83 | 67.76 | 16.84 |      | 150.0 |         |
|           |                                                                 | Z | 4.94 | 67.14 | 16.65 |      | 150.0 |         |
| 10568-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle) | X | 4.73 | 66.54 | 16.00 | 0.46 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 4.69 | 67.02 | 16.17 |      | 150.0 |         |
|           |                                                                 | Z | 4.83 | 66.52 | 16.06 |      | 150.0 |         |
| 10569-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle) | X | 4.81 | 67.31 | 16.69 | 0.46 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 4.81 | 67.92 | 16.94 |      | 150.0 |         |
|           |                                                                 | Z | 4.89 | 67.20 | 16.69 |      | 150.0 |         |
| 10570-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle) | X | 4.85 | 67.14 | 16.61 | 0.46 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 4.83 | 67.72 | 16.84 |      | 150.0 |         |
|           |                                                                 | Z | 4.93 | 67.06 | 16.63 |      | 150.0 |         |
| 10571-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)       | X | 1.08 | 63.56 | 14.86 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 1.16 | 64.87 | 15.60 |      | 130.0 |         |
|           |                                                                 | Z | 1.14 | 64.03 | 15.00 |      | 130.0 |         |
| 10572-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)       | X | 1.08 | 64.07 | 14.98 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 1.18 | 65.49 | 15.99 |      | 130.0 |         |
|           |                                                                 | Z | 1.16 | 64.57 | 15.33 |      | 130.0 |         |
| 10573-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle)     | X | 1.25 | 76.91 | 18.60 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 2.38 | 88.54 | 24.12 |      | 130.0 |         |
|           |                                                                 | Z | 1.66 | 79.82 | 19.74 |      | 130.0 |         |
| 10574-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)      | X | 1.15 | 69.04 | 17.43 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 1.34 | 71.96 | 19.28 |      | 130.0 |         |
|           |                                                                 | Z | 1.25 | 69.77 | 17.81 |      | 130.0 |         |

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|-----------|-----------------------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10575-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)  | X | 4.55 | 66.28 | 16.14 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.52 | 66.75 | 16.27 |      | 130.0 |         |
|           |                                                                 | Z | 4.65 | 66.29 | 16.25 |      | 130.0 |         |
| 10576-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)  | X | 4.57 | 66.45 | 16.21 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.55 | 66.94 | 16.36 |      | 130.0 |         |
|           |                                                                 | Z | 4.67 | 66.45 | 16.31 |      | 130.0 |         |
| 10577-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle) | X | 4.78 | 66.76 | 16.39 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.73 | 67.19 | 16.51 |      | 130.0 |         |
|           |                                                                 | Z | 4.89 | 66.76 | 16.49 |      | 130.0 |         |
| 10578-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle) | X | 4.68 | 66.91 | 16.49 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.63 | 67.38 | 16.64 |      | 130.0 |         |
|           |                                                                 | Z | 4.78 | 66.92 | 16.58 |      | 130.0 |         |
| 10579-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle) | X | 4.43 | 66.14 | 15.75 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.38 | 66.54 | 15.86 |      | 130.0 |         |
|           |                                                                 | Z | 4.55 | 66.22 | 15.90 |      | 130.0 |         |
| 10580-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle) | X | 4.48 | 66.18 | 15.78 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.42 | 66.58 | 15.88 |      | 130.0 |         |
|           |                                                                 | Z | 4.60 | 66.24 | 15.92 |      | 130.0 |         |
| 10581-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle) | X | 4.57 | 66.93 | 16.42 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.54 | 67.44 | 16.59 |      | 130.0 |         |
|           |                                                                 | Z | 4.68 | 66.96 | 16.52 |      | 130.0 |         |
| 10582-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle) | X | 4.37 | 65.89 | 15.53 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.31 | 66.26 | 15.62 |      | 130.0 |         |
|           |                                                                 | Z | 4.50 | 65.99 | 15.70 |      | 130.0 |         |
| 10583-AAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)       | X | 4.55 | 66.28 | 16.14 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.52 | 66.75 | 16.27 |      | 130.0 |         |
|           |                                                                 | Z | 4.65 | 66.29 | 16.25 |      | 130.0 |         |
| 10584-AAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)       | X | 4.57 | 66.45 | 16.21 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.55 | 66.94 | 16.36 |      | 130.0 |         |
|           |                                                                 | Z | 4.67 | 66.45 | 16.31 |      | 130.0 |         |
| 10585-AAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)      | X | 4.78 | 66.76 | 16.39 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.73 | 67.19 | 16.51 |      | 130.0 |         |
|           |                                                                 | Z | 4.89 | 66.76 | 16.49 |      | 130.0 |         |
| 10586-AAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)      | X | 4.68 | 66.91 | 16.49 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.63 | 67.38 | 16.64 |      | 130.0 |         |
|           |                                                                 | Z | 4.78 | 66.92 | 16.58 |      | 130.0 |         |
| 10587-AAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)      | X | 4.43 | 66.14 | 15.75 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.38 | 66.54 | 15.86 |      | 130.0 |         |
|           |                                                                 | Z | 4.55 | 66.22 | 15.90 |      | 130.0 |         |
| 10588-AAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)      | X | 4.48 | 66.18 | 15.78 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.42 | 66.58 | 15.88 |      | 130.0 |         |
|           |                                                                 | Z | 4.60 | 66.24 | 15.92 |      | 130.0 |         |
| 10589-AAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)      | X | 4.57 | 66.93 | 16.42 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.54 | 67.44 | 16.59 |      | 130.0 |         |
|           |                                                                 | Z | 4.68 | 66.96 | 16.52 |      | 130.0 |         |
| 10590-AAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)      | X | 4.37 | 65.89 | 15.53 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.31 | 66.26 | 15.62 |      | 130.0 |         |
|           |                                                                 | Z | 4.50 | 65.99 | 15.70 |      | 130.0 |         |

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|-----------|-------------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10591-AAB | IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle) | X | 4.70 | 66.36 | 16.26 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 4.67 | 66.82 | 16.38 |      | 130.0 |         |
|           |                                                       | Z | 4.80 | 66.36 | 16.36 |      | 130.0 |         |
| 10592-AAB | IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc duty cycle) | X | 4.85 | 66.70 | 16.39 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 4.81 | 67.14 | 16.51 |      | 130.0 |         |
|           |                                                       | Z | 4.96 | 66.70 | 16.49 |      | 130.0 |         |
| 10593-AAB | IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc duty cycle) | X | 4.77 | 66.59 | 16.26 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 4.72 | 67.02 | 16.37 |      | 130.0 |         |
|           |                                                       | Z | 4.89 | 66.62 | 16.37 |      | 130.0 |         |
| 10594-AAB | IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle) | X | 4.83 | 66.77 | 16.43 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 4.78 | 67.21 | 16.54 |      | 130.0 |         |
|           |                                                       | Z | 4.94 | 66.76 | 16.52 |      | 130.0 |         |
| 10595-AAB | IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc duty cycle) | X | 4.79 | 66.71 | 16.31 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 4.74 | 67.16 | 16.44 |      | 130.0 |         |
|           |                                                       | Z | 4.91 | 66.74 | 16.42 |      | 130.0 |         |
| 10596-AAB | IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc duty cycle) | X | 4.73 | 66.70 | 16.31 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 4.68 | 67.14 | 16.43 |      | 130.0 |         |
|           |                                                       | Z | 4.84 | 66.73 | 16.42 |      | 130.0 |         |
| 10597-AAB | IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc duty cycle) | X | 4.68 | 66.59 | 16.18 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 4.63 | 67.02 | 16.30 |      | 130.0 |         |
|           |                                                       | Z | 4.79 | 66.64 | 16.31 |      | 130.0 |         |
| 10598-AAB | IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc duty cycle) | X | 4.66 | 66.85 | 16.46 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 4.62 | 67.29 | 16.59 |      | 130.0 |         |
|           |                                                       | Z | 4.77 | 66.88 | 16.57 |      | 130.0 |         |
| 10599-AAB | IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle) | X | 5.38 | 66.95 | 16.50 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.30 | 67.19 | 16.52 |      | 130.0 |         |
|           |                                                       | Z | 5.47 | 66.95 | 16.58 |      | 130.0 |         |
| 10600-AAB | IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc duty cycle) | X | 5.51 | 67.34 | 16.67 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.38 | 67.45 | 16.62 |      | 130.0 |         |
|           |                                                       | Z | 5.65 | 67.51 | 16.83 |      | 130.0 |         |
| 10601-AAB | IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc duty cycle) | X | 5.40 | 67.09 | 16.56 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.31 | 67.34 | 16.59 |      | 130.0 |         |
|           |                                                       | Z | 5.51 | 67.18 | 16.68 |      | 130.0 |         |
| 10602-AAB | IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc duty cycle) | X | 5.49 | 67.12 | 16.49 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.40 | 67.35 | 16.51 |      | 130.0 |         |
|           |                                                       | Z | 5.60 | 67.17 | 16.60 |      | 130.0 |         |
| 10603-AAB | IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle) | X | 5.57 | 67.44 | 16.79 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.49 | 67.73 | 16.83 |      | 130.0 |         |
|           |                                                       | Z | 5.69 | 67.49 | 16.89 |      | 130.0 |         |
| 10604-AAB | IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc duty cycle) | X | 5.39 | 66.92 | 16.52 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.36 | 67.36 | 16.63 |      | 130.0 |         |
|           |                                                       | Z | 5.48 | 66.92 | 16.59 |      | 130.0 |         |
| 10605-AAB | IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc duty cycle) | X | 5.49 | 67.22 | 16.66 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.39 | 67.42 | 16.66 |      | 130.0 |         |
|           |                                                       | Z | 5.60 | 67.27 | 16.77 |      | 130.0 |         |
| 10606-AAB | IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc duty cycle) | X | 5.23 | 66.55 | 16.18 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.16 | 66.82 | 16.21 |      | 130.0 |         |
|           |                                                       | Z | 5.36 | 66.68 | 16.33 |      | 130.0 |         |

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|-----------|---------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10607-AAB | IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle) | X | 4.54 | 65.65 | 15.87 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.51 | 66.18 | 16.04 |      | 130.0 |         |
|           |                                                   | Z | 4.63 | 65.63 | 15.95 |      | 130.0 |         |
| 10608-AAB | IEEE 802.11ac WiFi (20MHz, MCS1, 90pc duty cycle) | X | 4.72 | 66.05 | 16.03 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.68 | 66.55 | 16.19 |      | 130.0 |         |
|           |                                                   | Z | 4.82 | 66.05 | 16.12 |      | 130.0 |         |
| 10609-AAB | IEEE 802.11ac WiFi (20MHz, MCS2, 90pc duty cycle) | X | 4.60 | 65.88 | 15.86 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.57 | 66.38 | 16.01 |      | 130.0 |         |
|           |                                                   | Z | 4.71 | 65.90 | 15.96 |      | 130.0 |         |
| 10610-AAB | IEEE 802.11ac WiFi (20MHz, MCS3, 90pc duty cycle) | X | 4.66 | 66.05 | 16.03 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.62 | 66.55 | 16.19 |      | 130.0 |         |
|           |                                                   | Z | 4.76 | 66.06 | 16.12 |      | 130.0 |         |
| 10611-AAB | IEEE 802.11ac WiFi (20MHz, MCS4, 90pc duty cycle) | X | 4.57 | 65.85 | 15.87 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.53 | 66.34 | 16.02 |      | 130.0 |         |
|           |                                                   | Z | 4.68 | 65.88 | 15.97 |      | 130.0 |         |
| 10612-AAB | IEEE 802.11ac WiFi (20MHz, MCS5, 90pc duty cycle) | X | 4.58 | 65.99 | 15.90 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.53 | 66.46 | 16.05 |      | 130.0 |         |
|           |                                                   | Z | 4.69 | 66.02 | 16.01 |      | 130.0 |         |
| 10613-AAB | IEEE 802.11ac WiFi (20MHz, MCS6, 90pc duty cycle) | X | 4.58 | 65.86 | 15.78 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.53 | 66.31 | 15.92 |      | 130.0 |         |
|           |                                                   | Z | 4.70 | 65.92 | 15.90 |      | 130.0 |         |
| 10614-AAB | IEEE 802.11ac WiFi (20MHz, MCS7, 90pc duty cycle) | X | 4.53 | 66.07 | 16.03 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.49 | 66.57 | 16.19 |      | 130.0 |         |
|           |                                                   | Z | 4.64 | 66.10 | 16.13 |      | 130.0 |         |
| 10615-AAB | IEEE 802.11ac WiFi (20MHz, MCS8, 90pc duty cycle) | X | 4.57 | 65.66 | 15.63 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.52 | 66.14 | 15.77 |      | 130.0 |         |
|           |                                                   | Z | 4.68 | 65.70 | 15.75 |      | 130.0 |         |
| 10616-AAB | IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle) | X | 5.19 | 66.16 | 16.09 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 5.14 | 66.53 | 16.19 |      | 130.0 |         |
|           |                                                   | Z | 5.29 | 66.20 | 16.18 |      | 130.0 |         |
| 10617-AAB | IEEE 802.11ac WiFi (40MHz, MCS1, 90pc duty cycle) | X | 5.26 | 66.33 | 16.15 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 5.19 | 66.67 | 16.23 |      | 130.0 |         |
|           |                                                   | Z | 5.35 | 66.33 | 16.22 |      | 130.0 |         |
| 10618-AAB | IEEE 802.11ac WiFi (40MHz, MCS2, 90pc duty cycle) | X | 5.14 | 66.33 | 16.17 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 5.09 | 66.73 | 16.28 |      | 130.0 |         |
|           |                                                   | Z | 5.24 | 66.36 | 16.25 |      | 130.0 |         |
| 10619-AAB | IEEE 802.11ac WiFi (40MHz, MCS3, 90pc duty cycle) | X | 5.16 | 66.14 | 16.00 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 5.10 | 66.49 | 16.09 |      | 130.0 |         |
|           |                                                   | Z | 5.26 | 66.21 | 16.11 |      | 130.0 |         |
| 10620-AAB | IEEE 802.11ac WiFi (40MHz, MCS4, 90pc duty cycle) | X | 5.25 | 66.19 | 16.08 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 5.18 | 66.51 | 16.15 |      | 130.0 |         |
|           |                                                   | Z | 5.36 | 66.27 | 16.19 |      | 130.0 |         |
| 10621-AAB | IEEE 802.11ac WiFi (40MHz, MCS5, 90pc duty cycle) | X | 5.25 | 66.33 | 16.28 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 5.20 | 66.71 | 16.37 |      | 130.0 |         |
|           |                                                   | Z | 5.34 | 66.35 | 16.35 |      | 130.0 |         |
| 10622-AAB | IEEE 802.11ac WiFi (40MHz, MCS6, 90pc duty cycle) | X | 5.26 | 66.49 | 16.35 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 5.19 | 66.80 | 16.41 |      | 130.0 |         |
|           |                                                   | Z | 5.36 | 66.51 | 16.42 |      | 130.0 |         |

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|-----------|----------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10623-AAB | IEEE 802.11ac WiFi (40MHz, MCS7, 90pc duty cycle)  | X | 5.14 | 66.00 | 15.97 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                    | Y | 5.08 | 66.34 | 16.05 |      | 130.0 |         |
|           |                                                    | Z | 5.23 | 66.04 | 16.06 |      | 130.0 |         |
| 10624-AAB | IEEE 802.11ac WiFi (40MHz, MCS8, 90pc duty cycle)  | X | 5.33 | 66.22 | 16.15 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                    | Y | 5.27 | 66.55 | 16.22 |      | 130.0 |         |
|           |                                                    | Z | 5.43 | 66.26 | 16.24 |      | 130.0 |         |
| 10625-AAB | IEEE 802.11ac WiFi (40MHz, MCS9, 90pc duty cycle)  | X | 5.69 | 67.18 | 16.68 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                    | Y | 5.48 | 67.08 | 16.53 |      | 130.0 |         |
|           |                                                    | Z | 5.85 | 67.39 | 16.85 |      | 130.0 |         |
| 10626-AAB | IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)  | X | 5.48 | 66.23 | 16.06 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                    | Y | 5.45 | 66.59 | 16.15 |      | 130.0 |         |
|           |                                                    | Z | 5.56 | 66.25 | 16.14 |      | 130.0 |         |
| 10627-AAB | IEEE 802.11ac WiFi (80MHz, MCS1, 90pc duty cycle)  | X | 5.72 | 66.80 | 16.30 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                    | Y | 5.64 | 67.05 | 16.34 |      | 130.0 |         |
|           |                                                    | Z | 5.82 | 66.85 | 16.40 |      | 130.0 |         |
| 10628-AAB | IEEE 802.11ac WiFi (80MHz, MCS2, 90pc duty cycle)  | X | 5.52 | 66.31 | 15.99 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                    | Y | 5.45 | 66.58 | 16.04 |      | 130.0 |         |
|           |                                                    | Z | 5.62 | 66.39 | 16.10 |      | 130.0 |         |
| 10629-AAB | IEEE 802.11ac WiFi (80MHz, MCS3, 90pc duty cycle)  | X | 5.59 | 66.37 | 16.02 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                    | Y | 5.52 | 66.64 | 16.06 |      | 130.0 |         |
|           |                                                    | Z | 5.70 | 66.47 | 16.14 |      | 130.0 |         |
| 10630-AAB | IEEE 802.11ac WiFi (80MHz, MCS4, 90pc duty cycle)  | X | 6.03 | 67.86 | 16.76 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                    | Y | 5.75 | 67.54 | 16.52 |      | 130.0 |         |
|           |                                                    | Z | 6.25 | 68.26 | 17.02 |      | 130.0 |         |
| 10631-AAB | IEEE 802.11ac WiFi (80MHz, MCS5, 90pc duty cycle)  | X | 5.93 | 67.68 | 16.87 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                    | Y | 5.78 | 67.76 | 16.82 |      | 130.0 |         |
|           |                                                    | Z | 6.08 | 67.89 | 17.03 |      | 130.0 |         |
| 10632-AAB | IEEE 802.11ac WiFi (80MHz, MCS6, 90pc duty cycle)  | X | 5.70 | 66.88 | 16.49 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                    | Y | 5.63 | 67.19 | 16.55 |      | 130.0 |         |
|           |                                                    | Z | 5.78 | 66.88 | 16.55 |      | 130.0 |         |
| 10633-AAB | IEEE 802.11ac WiFi (80MHz, MCS7, 90pc duty cycle)  | X | 5.58 | 66.48 | 16.11 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                    | Y | 5.52 | 66.80 | 16.18 |      | 130.0 |         |
|           |                                                    | Z | 5.68 | 66.55 | 16.21 |      | 130.0 |         |
| 10634-AAB | IEEE 802.11ac WiFi (80MHz, MCS8, 90pc duty cycle)  | X | 5.56 | 66.51 | 16.19 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                    | Y | 5.52 | 66.88 | 16.28 |      | 130.0 |         |
|           |                                                    | Z | 5.66 | 66.57 | 16.28 |      | 130.0 |         |
| 10635-AAB | IEEE 802.11ac WiFi (80MHz, MCS9, 90pc duty cycle)  | X | 5.44 | 65.82 | 15.56 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                    | Y | 5.37 | 66.09 | 15.60 |      | 130.0 |         |
|           |                                                    | Z | 5.55 | 65.93 | 15.70 |      | 130.0 |         |
| 10636-AAC | IEEE 802.11ac WiFi (160MHz, MCS0, 90pc duty cycle) | X | 5.90 | 66.61 | 16.16 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                    | Y | 5.86 | 66.93 | 16.22 |      | 130.0 |         |
|           |                                                    | Z | 5.98 | 66.65 | 16.25 |      | 130.0 |         |
| 10637-AAC | IEEE 802.11ac WiFi (160MHz, MCS1, 90pc duty cycle) | X | 6.05 | 66.99 | 16.33 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                    | Y | 5.98 | 67.22 | 16.35 |      | 130.0 |         |
|           |                                                    | Z | 6.15 | 67.05 | 16.42 |      | 130.0 |         |
| 10638-AAC | IEEE 802.11ac WiFi (160MHz, MCS2, 90pc duty cycle) | X | 6.05 | 66.95 | 16.29 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                    | Y | 5.99 | 67.24 | 16.33 |      | 130.0 |         |
|           |                                                    | Z | 6.14 | 67.02 | 16.39 |      | 130.0 |         |

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|-----------|--------------------------------------------------------|---|--------|--------|-------|-------|-------|---------|
| 10639-AAC | IEEE 802.11ac WiFi (160MHz, MCS3, 90pc duty cycle)     | X | 6.03   | 66.91  | 16.31 | 0.46  | 130.0 | ± 9.6 % |
|           |                                                        | Y | 5.97   | 67.19  | 16.35 |       | 130.0 |         |
|           |                                                        | Z | 6.13   | 66.99  | 16.42 |       | 130.0 |         |
| 10640-AAC | IEEE 802.11ac WiFi (160MHz, MCS4, 90pc duty cycle)     | X | 6.03   | 66.91  | 16.25 | 0.46  | 130.0 | ± 9.6 % |
|           |                                                        | Y | 5.95   | 67.15  | 16.27 |       | 130.0 |         |
|           |                                                        | Z | 6.15   | 67.03  | 16.38 |       | 130.0 |         |
| 10641-AAC | IEEE 802.11ac WiFi (160MHz, MCS5, 90pc duty cycle)     | X | 6.08   | 66.82  | 16.23 | 0.46  | 130.0 | ± 9.6 % |
|           |                                                        | Y | 6.00   | 67.07  | 16.25 |       | 130.0 |         |
|           |                                                        | Z | 6.16   | 66.85  | 16.31 |       | 130.0 |         |
| 10642-AAC | IEEE 802.11ac WiFi (160MHz, MCS6, 90pc duty cycle)     | X | 6.12   | 67.09  | 16.54 | 0.46  | 130.0 | ± 9.6 % |
|           |                                                        | Y | 6.06   | 67.39  | 16.59 |       | 130.0 |         |
|           |                                                        | Z | 6.22   | 67.15  | 16.63 |       | 130.0 |         |
| 10643-AAC | IEEE 802.11ac WiFi (160MHz, MCS7, 90pc duty cycle)     | X | 5.96   | 66.76  | 16.26 | 0.46  | 130.0 | ± 9.6 % |
|           |                                                        | Y | 5.89   | 67.01  | 16.29 |       | 130.0 |         |
|           |                                                        | Z | 6.05   | 66.83  | 16.36 |       | 130.0 |         |
| 10644-AAC | IEEE 802.11ac WiFi (160MHz, MCS8, 90pc duty cycle)     | X | 6.11   | 67.24  | 16.52 | 0.46  | 130.0 | ± 9.6 % |
|           |                                                        | Y | 5.99   | 67.35  | 16.48 |       | 130.0 |         |
|           |                                                        | Z | 6.26   | 67.45  | 16.69 |       | 130.0 |         |
| 10645-AAC | IEEE 802.11ac WiFi (160MHz, MCS9, 90pc duty cycle)     | X | 6.44   | 67.81  | 16.76 | 0.46  | 130.0 | ± 9.6 % |
|           |                                                        | Y | 6.09   | 67.27  | 16.40 |       | 130.0 |         |
|           |                                                        | Z | 6.75   | 68.43  | 17.14 |       | 130.0 |         |
| 10646-AAF | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7)  | X | 15.86  | 102.88 | 34.20 | 9.30  | 60.0  | ± 9.6 % |
|           |                                                        | Y | 14.56  | 101.59 | 33.34 |       | 60.0  |         |
|           |                                                        | Z | 31.86  | 118.29 | 39.55 |       | 60.0  |         |
| 10647-AAF | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7) | X | 14.47  | 101.56 | 33.92 | 9.30  | 60.0  | ± 9.6 % |
|           |                                                        | Y | 12.88  | 99.66  | 32.86 |       | 60.0  |         |
|           |                                                        | Z | 29.55  | 117.39 | 39.44 |       | 60.0  |         |
| 10648-AAA | CDMA2000 (1x Advanced)                                 | X | 0.55   | 61.70  | 8.96  | 0.00  | 150.0 | ± 9.6 % |
|           |                                                        | Y | 0.65   | 64.10  | 10.70 |       | 150.0 |         |
|           |                                                        | Z | 0.61   | 61.96  | 9.51  |       | 150.0 |         |
| 10652-AAD | LTE-TDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)         | X | 3.51   | 66.22  | 16.02 | 2.23  | 80.0  | ± 9.6 % |
|           |                                                        | Y | 3.52   | 66.85  | 16.10 |       | 80.0  |         |
|           |                                                        | Z | 3.85   | 67.13  | 16.68 |       | 80.0  |         |
| 10653-AAD | LTE-TDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)        | X | 4.07   | 65.82  | 16.32 | 2.23  | 80.0  | ± 9.6 % |
|           |                                                        | Y | 4.06   | 66.27  | 16.35 |       | 80.0  |         |
|           |                                                        | Z | 4.37   | 66.54  | 16.84 |       | 80.0  |         |
| 10654-AAD | LTE-TDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)        | X | 4.05   | 65.51  | 16.35 | 2.23  | 80.0  | ± 9.6 % |
|           |                                                        | Y | 4.05   | 65.94  | 16.38 |       | 80.0  |         |
|           |                                                        | Z | 4.33   | 66.21  | 16.84 |       | 80.0  |         |
| 10655-AAE | LTE-TDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)        | X | 4.12   | 65.52  | 16.39 | 2.23  | 80.0  | ± 9.6 % |
|           |                                                        | Y | 4.12   | 65.90  | 16.42 |       | 80.0  |         |
|           |                                                        | Z | 4.39   | 66.23  | 16.88 |       | 80.0  |         |
| 10658-AAA | Pulse Waveform (200Hz, 10%)                            | X | 7.59   | 78.34  | 17.28 | 10.00 | 50.0  | ± 9.6 % |
|           |                                                        | Y | 5.60   | 73.79  | 15.18 |       | 50.0  |         |
|           |                                                        | Z | 55.63  | 107.82 | 27.51 |       | 50.0  |         |
| 10659-AAA | Pulse Waveform (200Hz, 20%)                            | X | 15.39  | 86.88  | 18.55 | 6.99  | 60.0  | ± 9.6 % |
|           |                                                        | Y | 6.62   | 77.29  | 15.24 |       | 60.0  |         |
|           |                                                        | Z | 100.00 | 112.32 | 26.70 |       | 60.0  |         |

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|           |                             |   |        |        |       |      |       |         |
|-----------|-----------------------------|---|--------|--------|-------|------|-------|---------|
| 10660-AAA | Pulse Waveform (200Hz, 40%) | X | 100.00 | 102.61 | 20.38 | 3.98 | 80.0  | ± 9.6 % |
|           |                             | Y | 100.00 | 102.96 | 20.48 |      | 80.0  |         |
|           |                             | Z | 100.00 | 109.14 | 23.89 |      | 80.0  |         |
| 10661-AAA | Pulse Waveform (200Hz, 60%) | X | 29.42  | 89.49  | 15.52 | 2.22 | 100.0 | ± 9.6 % |
|           |                             | Y | 100.00 | 103.58 | 19.69 |      | 100.0 |         |
|           |                             | Z | 100.00 | 106.51 | 21.49 |      | 100.0 |         |
| 10662-AAA | Pulse Waveform (200Hz, 80%) | X | 0.22   | 60.00  | 4.16  | 0.97 | 120.0 | ± 9.6 % |
|           |                             | Y | 100.00 | 108.67 | 20.36 |      | 120.0 |         |
|           |                             | Z | 100.00 | 96.50  | 15.84 |      | 120.0 |         |
| 10670-AAA | Bluetooth Low Energy        | X | 100.00 | 102.44 | 19.45 | 2.19 | 100.0 | ± 9.6 % |
|           |                             | Y | 100.00 | 107.47 | 21.61 |      | 100.0 |         |
|           |                             | Z | 100.00 | 109.02 | 22.88 |      | 100.0 |         |

\* Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.