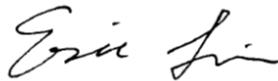


# FCC SAR TEST REPORT

|                          |  |
|--------------------------|--|
| Application No.:         | KSEM2107001119CR(SZCR2106021815AT)   |
| Applicant:               | Poynt, LLC   |
| Address of Applicant:    | 3032 Bunker Hill Lane Santa Clara California 95054 United States                                   |
| Manufacturer:            | Beijing Wiseeasy Technology CO.,Ltd.   |
| Address of Manufacturer: | 7thFloor, Block B, Wangxin Mansion, No.28 Xiaoyun Road, Chaoyang District, 100027, Beijing, China. |
| Factory:                 | BYD Precision Manufacture Co., Ltd.  |
| Address of Factory:      | Baolong Industrial Park, 3001 Baohe Rd., Longgang District, Shenzhen, P.R.C                        |
| Product Name:            | Poynt Smart Terminal V3.0  |
| Model No.(EUT):          | PST3   |
| Trade mark:              | POYNT  |
| FCC ID:                  | 2AFD7-PST3   |
| Standard(s) :            | FCC 47CFR §2.1093  |
| Date of Receipt:         | 2021-07-16   |
| Date of Test:            | 2021-08-07 to 2021-08-14   |
| Date of Issue:           | 2021-08-27   |
| Test Result:             | Pass*  |

\* In the configuration tested, the EUT complied with the standards specified above.



Eric Lin

Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.



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## REVISION HISTORY

| Revision Record |             |            |        |
|-----------------|-------------|------------|--------|
| Version         | Description | Date       | Remark |
| 00              | Original    | 2021-08-27 | /      |
|                 |             |            |        |
|                 |             |            |        |

|                          |  |                                |  |
|--------------------------|--|--------------------------------|--|
| Authorized for issue by: |  |                                |  |
|                          |  | Richard. Kong                  |  |
|                          |  | Richard.Kong/ Project Engineer |  |
|                          |  | Eric. Lin                      |  |
|                          |  | Eric.Lin/Reviewer              |  |

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## TEST SUMMARY

| Frequency Band                               | Maximum   | Reported SAR(W/kg) |
|--|-----------|--------------------|
|  | Extremity |                    |
| WCDMA Band II                                |           | 3.19               |
| WCDMA Band IV                                |           | 2.98               |
| WCDMA Band V                                 |           | 0.91               |
| LTE Band 2                                   |           | <b>3.56</b>        |
| LTE Band 4                                   |           | 2.98               |
| LTE Band 5                                   |           | 1.16               |
| LTE Band 7                                   |           | 2.89               |
| LTE Band 12                                  |           | 0.97               |
| LTE Band 13                                  |           | 1.01               |
| LTE Band 14                                  |           | 1.11               |
| LTE Band 17                                  |           | 0.89               |
| LTE Band 25                                  |           | 3.41               |
| LTE Band 26                                  |           | 1.00               |
| LTE Band 41                                  |           | 1.81               |
| WI-FI (2.4GHz)                               |           | 0.29               |
| WI-FI (5GHz)                                 |           | 0.07               |
| SAR Limited(W/kg)                            |           | 4                  |
| Maximum Simultaneous Transmission SAR (W/kg) |           |                    |
| Scenario                                     | Extremity |                    |
| Sum SAR                                      | 3.674     |                    |
| SPLSR  | NA        |                    |
| SPLSR Limited                                | 0.1       |                    |

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# 1 General Information

## 1.1 General Description of EUT

|                                   |   |                     |           |
|-----------------------------------|---|---------------------|-----------|
| Device Type :                     | portable device   |                     |           |
| Exposure Category:                | uncontrolled environment / general population   |                     |           |
| Product Phase:                    | production unit   |                     |           |
| SN:                               | ST3SL205MW000251  |                     |           |
| Hardware Version:                 | P2  |                     |           |
| Software Version:                 | user-pst3-1   |                     |           |
| Antenna Type:                     | FPC   |                     |           |
| Device Operating Configurations : |   |                     |           |
| Modulation Mode:                  | <b>WCDMA</b> :QPSK; <b>LTE</b> : QPSK,16QAM;<br><b>WI-FI</b> : CCK, DSSS, OFDM; <b>BT</b> : GFSK, π/4DQPSK,8DPSK                          |                     |           |
| Antenna Gain:                     | 2.5dBi for BT/BLE(Provided by the manufacturer)<br>2.0dBi for 2.4/5G WiFi<br>-1dBi for 3/4G   |                     |           |
| Device Class:                     | B   |                     |           |
| HSDPA UE Category :               | 14  | HSUPA UE Category : | 6         |
| Power Class:                      | 3, tested with power control "all 1"(WCDMA Band II/IV/V)<br>3, tested with power control Max Power(LTE Band 2/4/5/7/12/13/14/17/25/26/41) |                     |           |
| Frequency Bands:                  | Band  | Tx (MHz)            | Rx (MHz)  |
|                                   | WCDMA Band II   | 1850~1910           | 1930~1990 |
|                                   | WCDMA Band IV   | 1710~1755           | 2110~2155 |
|                                   | WCDMA Band V  | 824~849             | 869~894   |
|                                   | LTE Band 2  | 1850~1910           | 1930~1990 |
|                                   | LTE Band 4  | 1710~1755           | 2110~2155 |
|                                   | LTE Band 5  | 824~849             | 869~894   |
|                                   | LTE Band 7  | 2500-2570           | 2620-2690 |
|                                   | LTE Band 12   | 699~716             | 729~746   |
|                                   | LTE Band 13   | 777~787             | 746~756   |
|                                   | LTE Band 14   | 788~798             | 758~768   |
|                                   | LTE Band 17   | 704~716             | 734~746   |
|                                   | LTE Band 25   | 1850-1915           | 1930-1995 |
|                                   | LTE Band 26   | 814-849             | 859-894   |
|                                   | LTE Band 41   | 2496-2690           | 2496-2690 |
|                                   | WI-FI2.4G   | 2412~2462           | 2412~2462 |
|                                   | Bluetooth   | 2402~2480           | 2402~2480 |
|                                   | Wi-Fi(U-NII-1)  | 5150~5250           | 5150~5250 |
|                                   | Wi-Fi(U-NII-2A)   | 5250~5350           | 5250~5350 |
|                                   | Wi-Fi(U-NII-2C)   | 5470~5725           | 5470~5725 |
|                                   | Wi-Fi(U-NII-3)  | 5725~5850           | 5725~5850 |
| Battery1 Information:             | Manufacturer:Huizhou Desay Battery Co., Ltd.  |                     |           |
|                                   | Model: 2532002  |                     |           |
|                                   | Rated Capacity: 3.7V 5900mAh, 21.83Wh   |                     |           |

## Note1:

The antenna gain value is provided by the customer. The test lab will not be responsible for wrong test result due to incorrect information about antenna gain values.

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### 1.1.1 DUT Antenna Locations(Unit:mm)



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Compliance Certification Services (Kunshan) Inc.  
EMC Laboratory

## 1.2 Test Specification

| Identity   | Document Title  |
|--|---|
| FCC 47CFR §2.1093                                      | Radio frequency Radiation Exposure Evaluation: Portable Devices   |
| IEEE Std C95.1 – 2019                                  | IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz   |
| IEEE 1528-2013   | Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques |
| KDB 941225 D01 3G SAR Procedures v03r01                | 3G SAR Measurement Procedures   |
| KDB 248227 D01 802.11 Wi-Fi SAR v02r02                 | SAR GUIDANCE FOR IEEE 802.11 (Wi-Fi) TRANSMITTERS   |
| KDB 941225 D05 SAR for LTE Devices v02r05              | SAR EVALUATION CONSIDERATIONS FOR LTE DEVICES   |
| KDB447498 D01 General RF Exposure Guidance v06         | Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies   |
| KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04 | SAR Measurement Requirements for 100 MHz to 6 GHz   |
| KDB 865664 D02 RF Exposure Reporting v01r02            | RF Exposure Compliance Reporting and Documentation Considerations   |



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### 1.3 RF exposure limits

| Human Exposure   | Uncontrolled Environment<br>General Population | Controlled Environment<br>Occupational |
|--|--|--|
| <b>Spatial Peak SAR*</b><br>(Brain*Trunk)              | 1.60 W/kg                                      | 8.00 W/kg                              |
| <b>Spatial Average SAR**</b><br>(Whole Body)           | 0.08 W/kg                                      | 0.40 W/kg                              |
| <b>Spatial Peak SAR***</b><br>(Hands/Feet/Ankle/Wrist) | <b>4.00 W/kg</b>                               | 20.00 W/kg                             |

**Notes:**

- \* The Spatial Peak value of the SAR averaged over any 1 gram 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 grams 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.

**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.)

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## 1.4 Test Location

Company: Compliance Certification Services (Kunshan) Inc.  
 Address: No.10 Weiye Rd., Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China  
 Post code: 215300  
 Telephone: 86-512-57355888  
 Fax: 86-512-57370818

## 1.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• **CNAS (No. CNAS L4354)**

CNAS has accredited Compliance Certification Services (Kunshan) Inc. to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• **A2LA (Certificate No. 2541.01)**

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

• **FCC –Designation Number: CN1172**

Compliance Certification Services Inc. has been recognized as an accredited testing laboratory.

Designation Number: CN1172.

• **ISED (CAB identifier: CN0072)**

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory

CAB Identifier: CN0072.

• **VCCI (Member No.: 1938)**

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-20134, R-11600, C-11707, T-11499, G-10216 respectively.

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## 2 Laboratory Environment

|   |                           |
|---|---------------------------|
| Temperature   | Min. = 18°C, Max. = 25 °C |
| Relative humidity   | Min. = 30%, Max. = 70%    |
| Ground system resistance  | < 0.5 Ω                   |
| Ambient noise is checked and found very low and in compliance with requirement of standards.    |                           |
| Reflection of surrounding objects is minimized and in compliance with requirement of standards. |                           |

Table 2: The Ambient Conditions

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## 3 SAR Measurements System Configuration

### 3.1 The SAR Measurement System

This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (SPEAG DASY5 professional system). A E-field probe is used to determine the internal electric fields. The SAR can be obtained from the equation  $SAR = \sigma (|E|)^2 / \rho$  where  $\sigma$  and  $\rho$  are the conductivity and mass density of the tissue-Simulate.

The DASY5 system for performing compliance tests consists of the following items:

A standard high precision 6-axis robot (Stabile RX family) with controller, teach pendant and software .An arm extension for accommodation the data acquisition electronics (DAE).

A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.

A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.

The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.

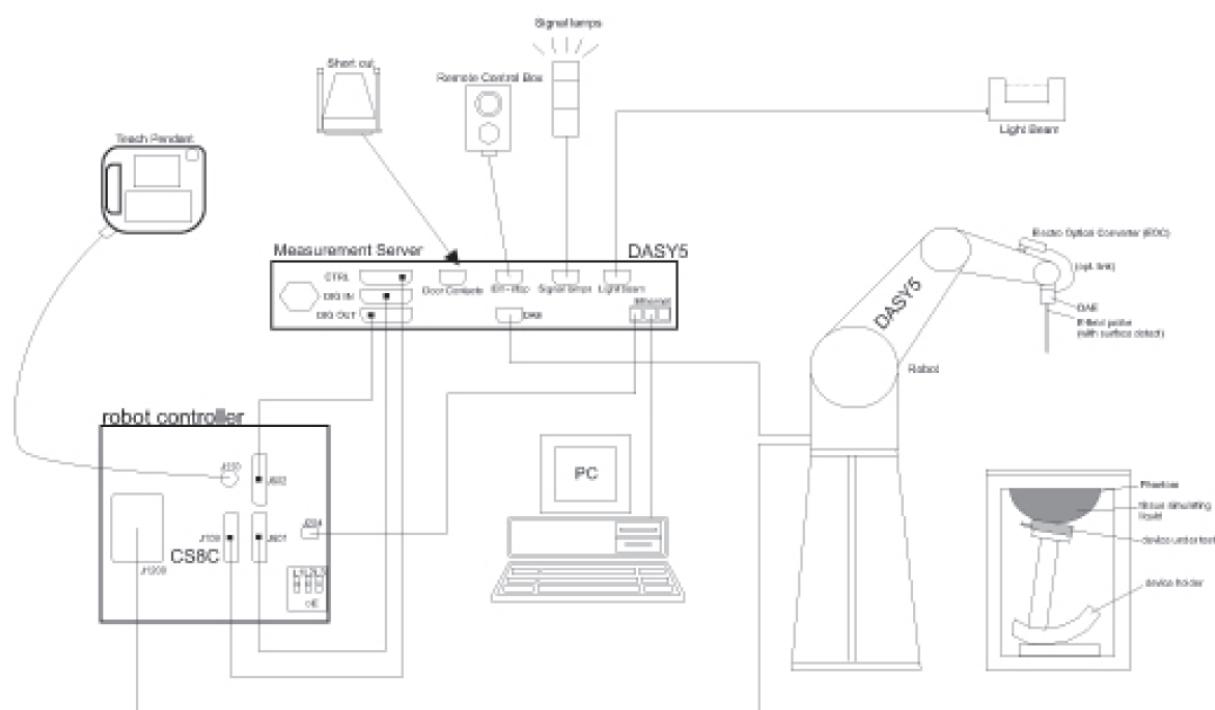
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F-1. SAR Measurement System Configuration

- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows 7.
- DASY5 software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand, right-hand and Body Worn usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- Validation dipole kits allowing to validate the proper functioning of the system.

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### 3.2 Isotropic E-field Probe EX3DV4

|   |   |
|---|---|
|  | Symmetrical design with triangular core<br>Built-in shielding against static charges<br>PEEK enclosure material (resistant to organic solvents, e.g., DGBE)   |
| <b>Calibration</b>  | ISO/IEC 17025 <a href="#">calibration service</a> available.  |
| <b>Frequency</b>  | 10 MHz to > 6 GHz<br>Linearity: ± 0.2 dB (30 MHz to 6 GHz)  |
| <b>Directivity</b>  | ± 0.3 dB in TSL (rotation around probe axis)<br>± 0.5 dB in TSL (rotation normal to probe axis)   |
| <b>Dynamic Range</b>  | 10 µW/g to > 100 mW/g<br>Linearity: ± 0.2 dB (noise: typically < 1 µW/g)  |
| <b>Dimensions</b>   | Overall length: 337 mm (Tip: 20 mm)<br>Tip diameter: 2.5 mm (Body: 12 mm)<br>Typical distance from probe tip to dipole centers: 1 mm  |
| <b>Application</b>  | High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better 30%. |
| <b>Compatibility</b>  | DASY3, DASY4, DASY52 SAR and higher, EASY4/MRI  |

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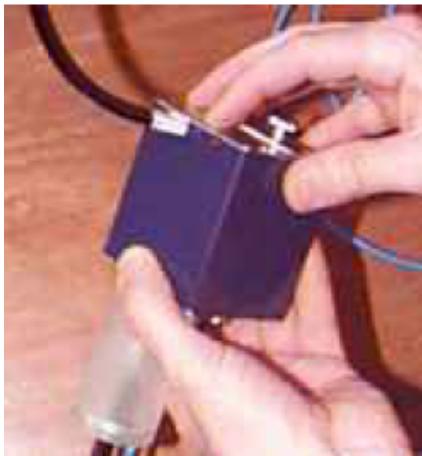
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### 3.3 Data Acquisition Electronics (DAE)

|                             |  |   |
|-----------------------------|--|---|
| <b>Model</b>                | DAE4   |  |
| <b>Construction</b>         | Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY4/5 embedded system (fully remote controlled). Two step probe touch detector for mechanical surface detection and emergency robot stop. |   |
| <b>Measurement Range</b>    | -100 to +300 mV (16 bit resolution and two range settings: 4mV, 400mV)   |   |
| <b>Input Offset Voltage</b> | < 5µV (with auto zero)   |   |
| <b>Input Bias Current</b>   | < 50 fA  |   |
| <b>Dimensions</b>           | 60 x 60 x 68 mm  |   |

### 3.4 SAM Twin Phantom

|  |   |   |
|--|---|---|
| <b>Material</b>  | Vinylester, glass fiber reinforced (VE-GF)                            |  |
| <b>Liquid Compatibility</b>  | Compatible with all SPEAG tissue simulating liquids (incl. DGBE type) |   |
| <b>Shell Thickness</b>   | 2 ± 0.2 mm (6 ± 0.2 mm at ear point)                                  |   |
| <b>Dimensions (incl. Wooden Support)</b>   | Length: 1000 mm<br>Width: 500 mm<br>Height: adjustable feet           |   |
| <b>Filling Volume</b>  | approx. 25 liters   |   |
| <b>Wooden Support</b>  | SPEAG standard phantom table  |   |
| <p>The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.</p> <p>Twin SAM V5.0 has the same shell geometry and is manufactured from the same material as Twin SAM V4.0, but has reinforced top structure.</p> |   |   |

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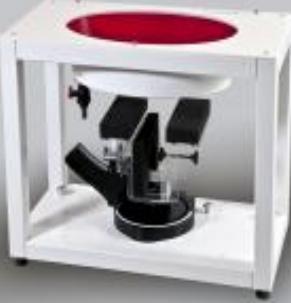
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### 3.5 ELI Phantom

|  |   |   |
|--|---|---|
| <b>Material</b>  | Vinylester, glass fiber reinforced (VE-GF)                            |  |
| <b>Liquid Compatibility</b>  | Compatible with all SPEAG tissue simulating liquids (incl. DGBE type) |   |
| <b>Shell Thickness</b>   | 2.0 ± 0.2 mm (bottom plate)   |   |
| <b>Dimensions</b>  | Major axis: 600 mm<br>Minor axis: 400 mm                              |   |
| <b>Filling Volume</b>  | approx. 30 liters   |   |
| <b>Wooden Support</b>  | SPEAG standard phantom table  |   |
| <p>Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.</p> <p>ELI V5.0 has the same shell geometry and is manufactured from the same material as ELI4, but has reinforced top structure.</p> |   |   |



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### 3.6 Device Holder for Transmitters



F-2. Device Holder for Transmitters

- The DASY device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation centres for both scales are the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.
- The DASY device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity  $\epsilon=3$  and loss tangent  $\delta=0.02$ . The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

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## 3.7 Measurement procedure

### 3.7.1 Scanning procedure

#### Step 1: Power reference measurement

The “reference” and “drift” measurements are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure.

#### Step 2: Area scan

The SAR distribution at the exposed side of the head was measured at a distance of 4mm from the inner surface of the shell. The area covered the entire dimension of the head and the horizontal grid spacing was 15mm\*15mm or 12mm\*12mm or 10mm\*10mm. Based on the area scan data, the area of the maximum absorption was determined by spline interpolation.

#### Step 3: Zoom scan

Around this point, a volume of 30mm\*30mm\*30mm (fine resolution volume scan, zoom scan) was assessed by measuring 5x5x7 points ( $\leq 2\text{GHz}$ ) and 7x7x7 points ( $\geq 2\text{GHz}$ ). On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

The data at the surface was extrapolated, since the centre of the dipoles is 2.0mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.2mm. (This can be variable. Refer to the probe specification). 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. The maximum interpolated value was searched with a straight-forward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1g or 10g) were computed using the 3D-Spline interpolation algorithm. The volume was integrated with the trapezoidal algorithm. One thousand points were interpolated to calculate the average. All neighbouring volumes were evaluated until no neighboring volume with a higher average value was found.

The area and zoom scan resolutions specified in the table below must be applied to the SAR measurements. Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Both the probe tip diameter and sensor offset distance must satisfy measurement protocols; to ensure probe boundary effect errors are minimized and the higher fields closest to the phantom surface can be correctly measured and extrapolated to the phantom surface for computing 1-g SAR. Tolerances of the post-processing algorithms must be verified by the test laboratory for the scan resolutions used in the SAR measurements, according to the reference distribution functions specified in IEEE Std. 1528-2013.

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|  |   | $\leq 3$ GHz   | $> 3$ GHz   |
|--|---|--|---|
| Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface |   | $5 \pm 1$ mm   | $\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm                                  |
| Maximum probe angle from probe axis to phantom surface normal at the measurement location              |   | $30^\circ \pm 1^\circ$   | $20^\circ \pm 1^\circ$  |
|  |   | $\leq 2$ GHz: $\leq 15$ mm<br>$2 - 3$ GHz: $\leq 12$ mm  | $3 - 4$ GHz: $\leq 12$ mm<br>$4 - 6$ GHz: $\leq 10$ mm                              |
| Maximum area scan spatial resolution: $\Delta x_{\text{Area}}$ , $\Delta y_{\text{Area}}$              |   | When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device. |   |
| Maximum zoom scan spatial resolution: $\Delta x_{\text{Zoom}}$ , $\Delta y_{\text{Zoom}}$              |   | $\leq 2$ GHz: $\leq 8$ mm<br>$2 - 3$ GHz: $\leq 5$ mm*   | $3 - 4$ GHz: $\leq 5$ mm*<br>$4 - 6$ GHz: $\leq 4$ mm*                              |
| Maximum zoom scan spatial resolution, normal to phantom surface  | uniform grid: $\Delta z_{\text{Zoom}}(n)$ | $\leq 5$ mm  | $3 - 4$ GHz: $\leq 4$ mm<br>$4 - 5$ GHz: $\leq 3$ mm<br>$5 - 6$ GHz: $\leq 2$ mm    |
|  | graded grid                               | $\Delta z_{\text{Zoom}}(1)$ : between 1 <sup>st</sup> two points closest to phantom surface  | $\leq 4$ mm   |
|  |   | $\Delta z_{\text{Zoom}}(n > 1)$ : between subsequent points  | $\leq 1.5 \cdot \Delta z_{\text{Zoom}}(n-1)$  |
| Minimum zoom scan volume   | x, y, z                                   | $\geq 30$ mm   | $3 - 4$ GHz: $\geq 28$ mm<br>$4 - 5$ GHz: $\geq 25$ mm<br>$5 - 6$ GHz: $\geq 22$ mm |

Note:  $\delta$  is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

\* When zoom scan is required and the reported SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is  $\leq 1.4$  W/kg,  $\leq 8$  mm,  $\leq 7$  mm and  $\leq 5$  mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

#### Step 4: Power reference measurement (drift)

The Power Drift Measurement job measures the field at the same location as the most recent power reference measurement job within the same procedure, and with the same settings. The indicated drift is mainly the variation of the DUT's output power and should vary max.  $\pm 5\%$

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### 3.7.2 Data Storage

The DASY software stores the acquired data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension ".DAE3". The software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of incorrect parameter settings. For example, if a measurement has been performed with a wrong crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be re-evaluated. The measured data can be visualized or exported in different units or formats, depending on the selected probe type ([V/m], [A/m], [°C], [m W/g], [m W/cm<sup>2</sup>], [dBrel], etc.). Some of these units are not available in certain situations or show meaningless results, e.g., a SAR output in a lossless media will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

### 3.7.3 Data Evaluation by SEMCAD

The SEMCAD software automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

|                           |                |                      |
|---------------------------|----------------|----------------------|
| Probe parameters:         | - Sensitivity  | Normi, ai0, ai1, ai2 |
| - Conversion factor       | ConvFi         |                      |
| - Diode compression point | Dcp <i>i</i>   |                      |
| Device parameters:        | - Frequency    | f                    |
| - Crest factor            | cf             |                      |
| Media parameters:         | - Conductivity | ε                    |
| - Density                 | ρ              |                      |

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY components. In the direct measuring mode of the multimeter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics.

If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \cdot c f / d c p_i$$

With  $V_i$  = compensated signal of channel  $i$  ( $i = x, y, z$ )

$U_i$  = input signal of channel  $i$  ( $i = x, y, z$ )

cf = crest factor of exciting field (DASY parameter)

dcp  $i$  = diode compression point (DASY parameter)

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From the compensated input signals the primary field data for each channel can be evaluated:

E-field probes:

$$E_i = (V_i / Norm_i \cdot ConvF)^{1/2}$$

H-field probes:

$$H_i = (V_i)^{1/2} \cdot (a_{i0} + a_{i1}f + a_{i2}f^2) / f$$

With  $V_i$  = compensated signal of channel i  $(i = x, y, z)$

$Norm_i$  = sensor sensitivity of channel i  $(i = x, y, z)$

[mV/(V/m)2] for E-field Probes

$ConvF$  = sensitivity enhancement in solution

$a_{ij}$  = sensor sensitivity factors for H-field probes

$f$  = carrier frequency [GHz]

$E_i$  = electric field strength of channel i in V/m

$H_i$  = magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude):

$$E_{tot} = (E_x^2 + E_y^2 + E_z^2)^{1/2}$$

The primary field data are used to calculate the derived field units.

$$SAR = (E_{tot}^2 \cdot \sigma) / (\epsilon \cdot 1000)$$

With  $SAR$  = local specific absorption rate in mW/g

$E_{tot}$  = total field strength in V/m

$\sigma$  = conductivity in [mho/m] or [Siemens/m]

$\epsilon$  = equivalent tissue density in g/cm<sup>3</sup>

Note that the density is normally set to 1 (or 1.06), to account for actual brain density rather than the density of the simulation liquid. The power flow density is calculated assuming the excitation field to be a free space field.

$$P_{pwe} = E_{tot}^2 / 3770 \quad \text{or} \quad P_{pwe} = H_{tot}^2 \cdot 37.7$$

with  $P_{pwe}$  = equivalent power density of a plane wave in mW/cm<sup>2</sup>

$E_{tot}$  = total electric field strength in V/m

$H_{tot}$  = total magnetic field strength in A/m



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## 4 SAR measurement variability and uncertainty

### 4.1 SAR measurement variability

Per KDB865664 D01 SAR measurement 100 MHz to 6 GHz v01r04, SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. The 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.

- 1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.
- 2) When the original highest measured SAR is ≥ 0.80 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 ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
- 4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.

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## 4.2 SAR measurement uncertainty

Per KDB865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. The equivalent ratio (1.5/1.6) is applied to extremity and occupational exposure conditions.

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## 5 Description of Test Position

### 5.1.1 Extremity exposure conditions

Devices that are designed or intended for use on extremities, or mainly operated in extremity only exposure conditions, i.e., hands, wrists, 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. The 1-g body and 10-g extremity SAR Test Exclusion Thresholds in 8.2 should be applied to determine SAR test requirements. When extremity SAR testing is required, a flat phantom must be used if the exposure condition is more conservative than the actual use conditions; otherwise, a KDB inquiry is required to determine the phantom and test requirements. Body SAR compliance is also tested with a flat phantom. For devices with irregular shapes or form factors that do not conform to a flat phantom, and/or unusual operating configurations and exposure conditions, a KDB inquiry is also required to determine the appropriate SAR measurement procedures. Unless it is specified differently in the published RF exposure KDB procedures, when simultaneous transmission applies to extremity exposure, the simultaneous transmission SAR test exclusion provisions should be applied. When simultaneous transmission SAR measurement is required, the enlarged zoom scan and volume scan post-processing procedures in KDB Publication 865664 D01 should be applied.

SAR can test the sides near the antenna, the surface of the device should be tested for SAR compliance with the device touching the phantom. The SAR Exclusion Threshold in KDB 447498 D01 can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an adjacent device surface is used to determine if SAR testing is required for the adjacent surfaces, with the adjacent surface positioned against the phantom and the surface containing the antenna positioned perpendicular to the phantom.

### Test Distance for SAR Evaluation

For 10g Extremity SAR the EUT is set directly against the phantom and the test distance is 0mm.

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## 6 SAR System Verification Procedure

### 6.1 Tissue Simulate Liquid

#### 6.1.1 Recipes for Tissue Simulate Liquid

The following tables give the recipes for tissue simulating liquids to be used in different frequency bands:

| Ingredients<br>(% by weight) | Frequency<br>(MHz) |       |       |      |       |       |       |      |      |      |
|------------------------------|--------------------|-------|-------|------|-------|-------|-------|------|------|------|
|                              | 450                |       | 835   |      | 915   |       | 1900  |      | 2450 |      |
| Tissue Type                  | Head               | Body  | Head  | Body | Head  | Body  | Head  | Body | Head | Body |
| Water                        | 38.56              | 51.16 | 41.45 | 52.4 | 41.05 | 56.0  | 54.9  | 40.4 | 62.7 | 73.2 |
| Salt (NaCl)                  | 3.95               | 1.49  | 1.45  | 1.4  | 1.35  | 0.76  | 0.18  | 0.5  | 0.5  | 0.04 |
| Sugar                        | 56.32              | 46.78 | 56.0  | 45.0 | 56.5  | 41.76 | 0.0   | 58.0 | 0.0  | 0.0  |
| HEC                          | 0.98               | 0.52  | 1.0   | 1.0  | 1.0   | 1.21  | 0.0   | 1.0  | 0.0  | 0.0  |
| Bactericide                  | 0.19               | 0.05  | 0.1   | 0.1  | 0.1   | 0.27  | 0.0   | 0.1  | 0.0  | 0.0  |
| Triton X-100                 | 0.0                | 0.0   | 0.0   | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  | 36.8 | 0.0  |
| DGBE                         | 0.0                | 0.0   | 0.0   | 0.0  | 0.0   | 0.0   | 44.92 | 0.0  | 0.0  | 26.7 |
| Dielectric Constant          | 43.42              | 58.0  | 42.54 | 56.1 | 42.0  | 56.8  | 39.9  | 54.0 | 39.8 | 52.5 |
| Conductivity (S/m)           | 0.85               | 0.83  | 0.91  | 0.95 | 1.0   | 1.07  | 1.42  | 1.45 | 1.88 | 1.78 |

|   |
|---|
| HSL5GHz is composed of the following ingredients: |
| Water: 50-65%                                     |
| Mineral oil: 10-30%                               |
| Emulsifiers: 8-25%                                |
| Sodium salt: 0-1.5%                               |
| MSL5GHz is composed of the following ingredients: |
| Water: 64-78%                                     |
| Mineral oil: 11-18%                               |
| Emulsifiers: 9-15%                                |
| Sodium salt: 2-3%                                 |

Table 3: Recipe of Tissue Simulate Liquid

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## 6.1.2 Test Liquids Confirmation

### Simulated tissue liquid parameter confirmation

The dielectric parameters were checked prior to assessment using the SPEAG DAK3.5 dielectric probe kit. The dielectric parameters measured are reported in each correspondent section.

### IEEE SCC-34/SC-2 P1528 recommended tissue dielectric parameters

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations and extrapolated according to the head parameters specified in P1528

| Target Frequency<br>(MHz) | Head         |                | Body         |                |
|---------------------------|--------------|----------------|--------------|----------------|
|                           | $\epsilon_r$ | $\sigma$ (S/m) | $\epsilon_r$ | $\sigma$ (S/m) |
| 150                       | 52.3         | 0.76           | 61.9         | 0.80           |
| 300                       | 45.3         | 0.87           | 58.2         | 0.92           |
| 450                       | 43.5         | 0.87           | 56.7         | 0.94           |
| 835                       | 41.5         | 0.90           | 55.2         | 0.97           |
| 900                       | 41.5         | 0.97           | 55.0         | 1.05           |
| 915                       | 41.5         | 0.98           | 55.0         | 1.06           |
| 1450                      | 40.5         | 1.20           | 54.0         | 1.30           |
| 1610                      | 40.3         | 1.29           | 53.8         | 1.40           |
| 1800-2000                 | 40.0         | 1.40           | 53.3         | 1.52           |
| 2450                      | 39.2         | 1.80           | 52.7         | 1.95           |
| 3000                      | 38.5         | 2.40           | 52.0         | 2.73           |
| 5800                      | 35.3         | 5.27           | 48.2         | 6.00           |

( $\epsilon_r$  = relative permittivity,  $\sigma$  = conductivity and  $\rho = 1000$  kg/m<sup>3</sup>)

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### 6.1.3 Measurement for Tissue Simulate Liquid

The dielectric properties for this Tissue Simulate Liquids were measured by using the Agilent Model 85070E Dielectric Probe in conjunction with Agilent E5071C Network Analyzer (300 KHz-8500 MHz). The Conductivity ( $\sigma$ ) and Permittivity ( $\rho$ ) are listed in bellow table. For the SAR measurement given in this report. The temperature variation of the Tissue Simulate Liquids was  $22\pm2^{\circ}\text{C}$ .

| Tissue Type | Measured Frequency (MHz) | Conductivity ( $\sigma$ ) | Permittivity ( $\epsilon_r$ ) | Conductivity Target ( $\sigma$ ) | Permittivity Target ( $\epsilon_r$ ) | Delta ( $\sigma$ ) (%) | Delta ( $\epsilon_r$ ) (%) | Limit (%) | Liquid Temp. (°C) | Date       |
|-------------|--------------------------|---------------------------|-------------------------------|----------------------------------|--------------------------------------|------------------------|----------------------------|-----------|-------------------|------------|
| 750 Head    | 750                      | 0.898                     | 41.66                         | 0.89                             | 41.90                                | 0.90                   | -0.57                      | $\pm 5$   | 22.1              | 2021/08/07 |
| 835 Head    | 835                      | 0.904                     | 42.233                        | 0.90                             | 41.50                                | 0.44                   | 1.77                       | $\pm 5$   | 22.1              | 2021/08/09 |
| 1800 Head   | 1800                     | 1.38                      | 38.612                        | 1.40                             | 40.00                                | -1.43                  | -3.47                      | $\pm 5$   | 22.2              | 2021/08/10 |
| 1900 Head   | 1900                     | 1.373                     | 40.580                        | 1.40                             | 40.00                                | -1.93                  | 1.45                       | $\pm 5$   | 22.3              | 2021/08/11 |
| 2450 Head   | 2450                     | 1.79                      | 39.739                        | 1.80                             | 39.20                                | -0.56                  | 1.37                       | $\pm 5$   | 22                | 2021/08/12 |
| 2600 Head   | 2600                     | 1.962                     | 39.248                        | 1.96                             | 39.00                                | 0.10                   | 0.64                       | $\pm 5$   | 22.1              | 2021/08/13 |
| 5250 Head   | 5250                     | 4.617                     | 35.482                        | 4.71                             | 35.95                                | -1.97                  | -1.30                      | $\pm 5$   | 22.2              | 2021/08/14 |
| 5600 Head   | 5600                     | 5.007                     | 34.628                        | 5.07                             | 35.50                                | -1.24                  | -2.46                      | $\pm 5$   | 22.2              | 2021/08/14 |
| 5750 Head   | 5750                     | 5.315                     | 34.651                        | 5.22                             | 35.35                                | 1.82                   | -1.98                      | $\pm 5$   | 22.2              | 2021/08/14 |

Table 4: Measurement result of Tissue electric parameters

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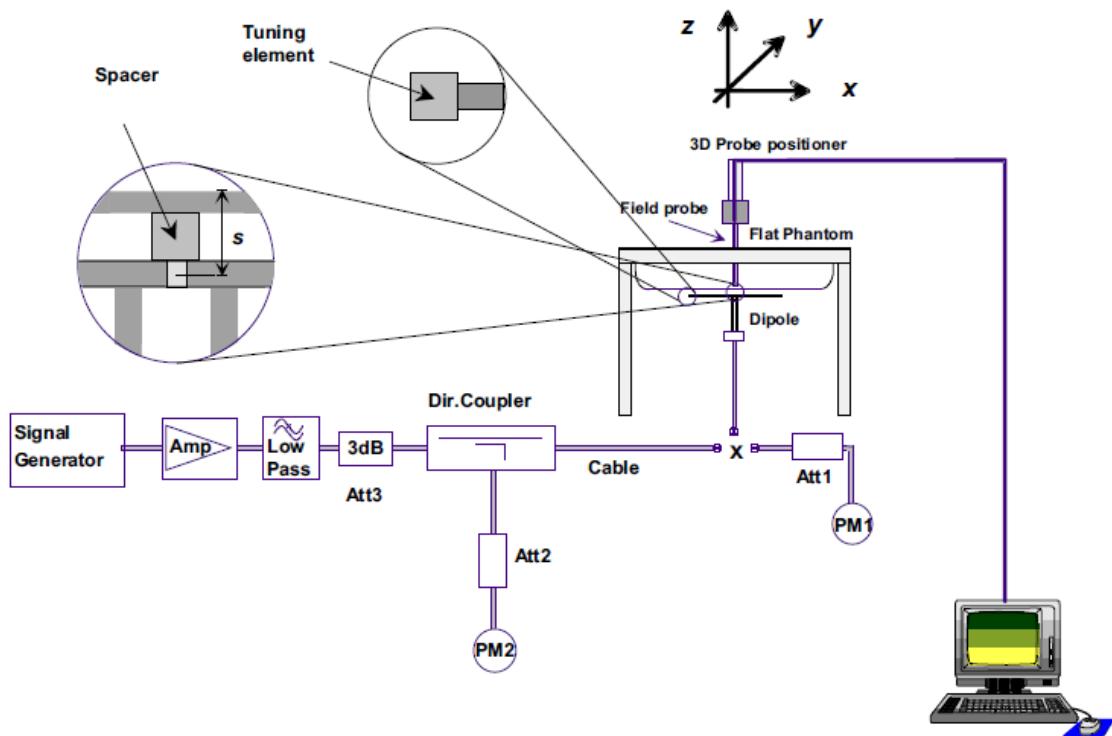


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## 6.2 SAR System Check

The microwave circuit arrangement for system check is sketched in bellow figure. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% from the target SAR values. The tests were conducted on the same days as the measurement of the EUT. The obtained results from the system accuracy verification are displayed in the following table. During the tests, the ambient temperature of the laboratory was in the range  $22 \pm 2^\circ\text{C}$ , the relative humidity was in the range 60% and the liquid depth above the ear reference points was above 15 cm in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.



F-3. the microwave circuit arrangement used for SAR system verification

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### 6.2.1 Justification for Extended SAR Dipole Calibrations

1) Referring to KDB865664 D01 requirements for dipole calibration, instead of the typical annual calibration recommended by measurement standards, longer calibration intervals of up to three years may be considered when it is demonstrated that the SAR target, impedance and return loss of a dipole have remain stable according to the following requirements. Each measured dipole is expected to evaluate with the following criteria at least on annual interval in Appendix C.

- a) There is no physical damage on the dipole;
- b) System check with specific dipole is within 10% of calibrated value;
- c) Return-loss is within 10% of calibrated measurement;
- d) Impedance is within  $5\Omega$  from the previous measurement.

2) Network analyzer probe calibration against air, distilled water and a shorting block performed before measuring liquid parameters.

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### 6.2.2 Summary System Check Result(s)

| Validation Kit |               | Measured SAR 250mW | Measured SAR 250mW | Measured SAR (normalized to 1w) | Measured SAR (normalized to 1w) | Target SAR (normalized to 1w) (±10%) | Target SAR (normalized to 1w) (±10%) | Liquid Temp. (°C) | Measured Date |
|----------------|---------------|--------------------|--------------------|---------------------------------|---------------------------------|--------------------------------------|--------------------------------------|-------------------|---------------|
|                |               | 1g (W/kg)          | 10g (W/kg)         | 1g (W/kg)                       | 10g (W/kg)                      | 1-g(W/kg)                            | 10-g(W/kg)                           |                   |               |
| D750V2         | Head          | 2.02               | 1.33               | 8.08                            | 5.32                            | 8.23 (7.41~9.05)                     | 5.41 (4.87~5.95)                     | 22.1              | 2021/08/07    |
| D835V2         | Head          | 2.31               | 1.5                | 9.24                            | 6                               | 9.41 (8.47~10.35)                    | 6.25 (5.63~6.88)                     | 22.1              | 2021/08/09    |
| D1800V2        | Head          | 9.39               | 4.98               | 37.56                           | 19.92                           | 38.4 (34.56~42.24)                   | 20.2 (18.18~22.22)                   | 22.2              | 2021/08/10    |
| D1900V2        | Head          | 9.87               | 5.09               | 39.48                           | 20.36                           | 39.7 (35.73~43.67)                   | 20.5 (18.45~22.55)                   | 22.3              | 2021/08/11    |
| D2450V2        | Head          | 12.8               | 5.85               | 51.2                            | 23.4                            | 53 (47.70~58.30)                     | 24.6 (22.14~27.60)                   | 22                | 2021/08/12    |
| D2600V2        | Head          | 13.3               | 6.03               | 53.2                            | 24.12                           | 56.2 (50.58~61.82)                   | 25 (22.50~27.50)                     | 22.1              | 2021/08/13    |
| Validation Kit |               | Measured SAR 100mW | Measured SAR 100mW | Measured SAR (normalized to 1w) | Measured SAR (normalized to 1w) | Target SAR (normalized to 1w) (±10%) | Target SAR (normalized to 1w) (±10%) | Liquid Temp. (°C) | Measured Date |
|                |               | 1g (W/kg)          | 10g (W/kg)         | 1g (W/kg)                       | 10g (W/kg)                      | 1-g(W/kg)                            | 10-g(W/kg)                           |                   |               |
| D5GHzV2        | Head(5.25GHz) | 7.46               | 2.19               | 74.6                            | 21.9                            | 77.7 (69.93~85.47)                   | 22.4 (20.16~24.64)                   | 22.2              | 2021/08/14    |
|                | Head(5.6GHz)  | 7.68               | 2.26               | 76.8                            | 22.6                            | 81.2 (73.08~89.32)                   | 23.5 (21.15~25.85)                   | 22.2              | 2021/08/14    |
|                | Head(5.75GHz) | 7.62               | 2.18               | 76.2                            | 21.8                            | 78.9 (71.01~86.79)                   | 22.7 (20.43~24.97)                   | 22.2              | 2021/08/14    |

Table 5: SAR System Check Result

### 6.2.3 Detailed System Check Results

Please see the Appendix A

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## 7 Test Configuration

### 7.1 3G SAR Test Reduction Procedure

According to KDB 941225D01, in the following procedures, the mode tested for SAR is referred to as the primary mode. The equivalent modes considered for SAR test reduction are denoted as secondary modes. Both primary and secondary modes must be in the same frequency band. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is  $\leq \frac{1}{4}$  dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is  $\leq 1.2$  W/kg, SAR measurement is not required for the secondary mode. This is referred to as the 3G SAR test reduction procedure in the following SAR test guidance, where the primary mode is identified in the applicable wireless mode test procedures and the secondary mode is wireless mode being considered for SAR test reduction by that procedure. When the 3G SAR test reduction procedure is not satisfied, it is identified as "otherwise" in the applicable procedures; SAR measurement is required for the secondary mode.

## 7.2 Operation Configurations

### 7.2.1 WCDMA Test Configuration

#### 1) . Output Power Verification

Maximum output power is verified on the high, middle and low channels according to procedures described in section 5.2 of 3GPP TS 34.121, using the appropriate RMC or AMR with TPC (transmit power control) set to all "1's" for WCDMA/HSDPA or by 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, HSDPA, HSPA) are required in the SAR report. All configurations that are not supported by the handset or cannot be measured due to technical or equipment limitations must be clearly identified.

#### 2) . Head SAR

SAR for next to the ear head exposure is measured using a 12.2 kbps RMC with TPC bits configured to all "1's". The 3G SAR test reduction procedure is applied to AMR configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for 12.2 kbps AMR in 3.4 kbps SRB (signaling radio bearer) using the highest reported SAR configuration in 12.2 kbps RMC for head exposure

#### 3) . Body SAR

SAR for body configurations is measured using a 12.2 kbps RMC with TPC bits configured to all "1's". 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 an applicable RMC configuration with the corresponding spreading code or DPDCHn, for the highest reported body-worn accessory exposure SAR configuration in 12.2 kbps RMC. When more than 2 DPDCHn are supported by the handset, it may be necessary to configure additional DPDCHn using FTM (Factory Test Mode) or other chipset based test approaches with parameters similar to those used in 384 kbps and 768 kbps RMC.

#### 4) . HSDPA / HSUPA / DC-HSDPA

According to KDB 941225 D01v03, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is  $\leq \frac{1}{4}$  dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified



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maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is  $\leq 1.2$  W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA

**a) HSDPA**

HSDPA is configured according to the applicable UE category of a test device. The number of HS-DSCH/HS-PDSCHs, HARQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the H-set. To maintain a consistent test configuration and stable transmission conditions, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4 ms and a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. DPCCH and DPDCH gain factors( $\beta_c$ ,  $\beta_d$ ), and HS-DPCCH power offset parameters ( $\Delta ACK$ ,  $\Delta NACK$ ,  $\Delta CQI$ ) are set according to values indicated in the following table. The CQI value is determined by the UE category, transport block size, number of HS-PDSCHs and modulation used in the H-set.

| Sub-test | $\beta_c$ | $\beta_d$ | $\beta_d(SF)$ | $\beta_c/\beta_d$ | $\beta_{hs}$ | CM(dB) | MPR (dB) |
|----------|-----------|-----------|---------------|-------------------|--------------|--------|----------|
| 1        | 2/15      | 15/15     | 64            | 2/15              | 4/15         | 0.0    | 0        |
| 2        | 12/15(3)  | 15/15(3)  | 64            | 12/15(3)          | 24/15        | 1.0    | 0        |
| 3        | 15/15     | 8/15      | 64            | 15/8              | 30/15        | 1.5    | 0.5      |
| 4        | 15/15     | 4/15      | 64            | 15/4              | 30/15        | 1.5    | 0.5      |

Note1:  $\Delta ACK$ ,  $\Delta NACK$  and  $\Delta CQI = 8$  Ahs =  $\beta_{hs}/\beta_c = 30/15$   $\beta_{hs} = 30/15 * \beta_c$

Note2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude(EVM) with HS-DPCCH test in clause 5.13.1.A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA,  $\Delta ACK$  and  $\Delta NACK = 8$  ( Ahs=30/15) with  $\beta_{hs}=30/15 * \beta_c$ , and  $\Delta CQI = 7$  ( Ahs=24/15) with  $\beta_{hs}=24/15 * \beta_c$ .

Note3: CM=1 for  $\beta_c/\beta_d = 12/15$ ,  $\beta_{hs}/\beta_c = 24/15$ . For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

The measurements were performed with a Fixed Reference Channel (FRC) and H-Set 1 QPSK.

| Parameter                     | Value       |
|-------------------------------|-------------|
| Nominal average inf. bit rate | 534 kbit/s  |
| Inter-TTI Distance            | 3 TTI's     |
| Number of HARQ Processes      | 2 Processes |
| Information Bit Payload       | 3202 Bits   |
| MAC-d PDU size                | 336 Bits    |
| Number Code Blocks            | 1 Block     |
| Binary Channel Bits Per TTI   | 4800 Bits   |
| Total Available SMLs in UE    | 19200 SMLs  |



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|                                  |           |
|----------------------------------|-----------|
| Number of SMLs per HARQ Process  | 9600 SMLs |
| Coding Rate                      | 0.67      |
| Number of Physical Channel Codes | 5         |

Table 6: settings of required H-Set 1 QPSK acc. to 3GPP 34.121

| HS-DSCH Category | Maximum HS-DSCH Codes Received | Minimum Inter-TTI Interval | Maximum H S-DSCH Transport Block Bits/HS-DSCH TTI | Total Soft Channel Bits |
|------------------|--------------------------------|----------------------------|---|-------------------------|
| 1                | 5                              | 3                          | 7298  | 19200                   |
| 2                | 5                              | 3                          | 7298  | 28800                   |
| 3                | 5                              | 2                          | 7298  | 28800                   |
| 4                | 5                              | 2                          | 7298  | 38400                   |
| 5                | 5                              | 1                          | 7298  | 57600                   |
| 6                | 5                              | 1                          | 7298  | 67200                   |
| 7                | 10                             | 1                          | 14411   | 115200                  |
| 8                | 10                             | 1                          | 14411   | 134400                  |
| 9                | 15                             | 1                          | 25251   | 172800                  |
| 10               | 15                             | 1                          | 27952   | 172800                  |
| 11               | 5                              | 2                          | 3630  | 14400                   |
| 12               | 5                              | 1                          | 3630  | 28800                   |
| 13               | 15                             | 1                          | 34800   | 259200                  |
| 14               | 15                             | 1                          | 42196   | 259200                  |
| 15               | 15                             | 1                          | 23370   | 345600                  |
| 16               | 15                             | 1                          | 27952   | 345600                  |

Table 7: HSDPA UE category

### b) HSUPA

Due to inner loop power control requirements in HSUPA, a commercial communication test set should be used for the output power and SAR tests. The 12.2 kbps RMC, FRC H-set 1 and E-DCH configurations for HSUPA should be configured according to the values indicated below as well as other applicable procedures described in the „WCDMA Handset“ and „Release 5 HSUPA Data Device“ sections of 3G device.



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| Sub-test   | $\beta_c$            | $\beta_d$            | $\beta_d$<br>(SF) | $\beta_c/\beta_d$    | $\beta_{hz}$ <sup>(1)</sup> | $\beta_{ec}$         | $\beta_{ed}$   | $\beta_e$<br>(SF) | $\beta_{ed}$<br>(code) | CM <sup>(2)</sup><br>(dB) | MP<br>R <sup>(3)</sup><br>(dB) | AG <sup>(4)</sup><br>Inde | E-TFC<br>I <sup>(5)</sup> |
|--|----------------------|----------------------|-------------------|----------------------|-----------------------------|----------------------|--|-------------------|------------------------|---------------------------|--------------------------------|---------------------------|---------------------------|
| 1 <sup>a</sup>   | 11/15 <sup>(3)</sup> | 15/15 <sup>(3)</sup> | 64 <sup>a</sup>   | 11/15 <sup>(3)</sup> | 22/15 <sup>a</sup>          | 209/225 <sup>a</sup> | 1039/225 <sup>a</sup>                                      | 4 <sup>a</sup>    | 1 <sup>a</sup>         | 1.0 <sup>a</sup>          | 0.0 <sup>a</sup>               | 20 <sup>a</sup>           | 75 <sup>a</sup>           |
| 2 <sup>a</sup>   | 6/15 <sup>a</sup>    | 15/15 <sup>a</sup>   | 64 <sup>a</sup>   | 6/15 <sup>a</sup>    | 12/15 <sup>a</sup>          | 12/15 <sup>a</sup>   | 94/75 <sup>a</sup>   | 4 <sup>a</sup>    | 1 <sup>a</sup>         | 3.0 <sup>a</sup>          | 2.0 <sup>a</sup>               | 12 <sup>a</sup>           | 67 <sup>a</sup>           |
| 3 <sup>a</sup>   | 15/15 <sup>a</sup>   | 9/15 <sup>a</sup>    | 64 <sup>a</sup>   | 15/9 <sup>a</sup>    | 30/15 <sup>a</sup>          | 30/15 <sup>a</sup>   | $\beta_{ed1}:47/1$<br>$\beta_{ed2}:47/1$<br>5 <sup>a</sup> | 4 <sup>a</sup>    | 2 <sup>a</sup>         | 2.0 <sup>a</sup>          | 1.0 <sup>a</sup>               | 15 <sup>a</sup>           | 92 <sup>a</sup>           |
| 4 <sup>a</sup>   | 2/15 <sup>a</sup>    | 15/15 <sup>a</sup>   | 64 <sup>a</sup>   | 2/15 <sup>a</sup>    | 4/15 <sup>a</sup>           | 2/15 <sup>a</sup>    | 56/75 <sup>a</sup>   | 4 <sup>a</sup>    | 1 <sup>a</sup>         | 3.0 <sup>a</sup>          | 2.0 <sup>a</sup>               | 17 <sup>a</sup>           | 71 <sup>a</sup>           |
| 5 <sup>a</sup>   | 15/15 <sup>(4)</sup> | 15/15 <sup>(4)</sup> | 64 <sup>a</sup>   | 15/15 <sup>(4)</sup> | 30/15 <sup>a</sup>          | 24/15 <sup>a</sup>   | 134/15 <sup>a</sup>  | 4 <sup>a</sup>    | 1 <sup>a</sup>         | 1.0 <sup>a</sup>          | 0.0 <sup>a</sup>               | 21 <sup>a</sup>           | 81 <sup>a</sup>           |
| Note 1: $\Delta$ ACK, $\Delta$ NACK and $\Delta$ CQI=8 $A_{hz} = \beta_{hz}/\beta_e = 30/15$ $\beta_{hz} = 30/15 * \beta_e$  |                      |                      |                   |                      |                             |                      |  |                   |                        |                           |                                |                           |                           |
| Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$ , $\beta_{hz}/\beta_e = 24/15$ . For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference <sup>a</sup>                            |                      |                      |                   |                      |                             |                      |  |                   |                        |                           |                                |                           |                           |
| Note 3 : For subtest 1 the $\beta_c/\beta_d$ ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$ |                      |                      |                   |                      |                             |                      |  |                   |                        |                           |                                |                           |                           |
| Note 4 : For subtest 5 the $\beta_c/\beta_d$ ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 14/15$ and $\beta_d = 15/15$ |                      |                      |                   |                      |                             |                      |  |                   |                        |                           |                                |                           |                           |
| Note 5 : Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g <sup>a</sup>  |                      |                      |                   |                      |                             |                      |  |                   |                        |                           |                                |                           |                           |
| Note 6: $\beta_{ed}$ can not be set directly; it is set by Absolute Grant Value. <sup>a</sup>  |                      |                      |                   |                      |                             |                      |  |                   |                        |                           |                                |                           |                           |

Table 8: Subtests for WCDMA Release 6 HSUPA

| UE E-DCH Category  | Maximum E-DCH Codes Transmitted | Number of HARQ Processes | E-DCH TTI(ms) | Minimum Spreading Factor | Maximum E-DCH Transport Block Bits | Max Rate (Mbps) |
|--|---------------------------------|--------------------------|---------------|--------------------------|------------------------------------|-----------------|
| 1  | 1                               | 4                        | 10            | 4                        | 7110                               | 0.7296          |
| 2  | 2                               | 8                        | 2             | 4                        | 2798                               | 1.4592          |
|  | 2                               | 4                        | 10            | 4                        | 14484                              |                 |
| 3  | 2                               | 4                        | 10            | 4                        | 14484                              | 1.4592          |
| 4  | 2                               | 8                        | 2             | 2                        | 5772                               | 2.9185          |
|  | 2                               | 4                        | 10            | 2                        | 20000                              | 2.00            |
| 5  | 2                               | 4                        | 10            | 2                        | 20000                              | 2.00            |
| 6<br>(No DPDCH)  | 4                               | 8                        | 10            | 4                        | 11484                              | 5.76            |
|  | 4                               | 4                        | 2             |                          | 20000                              | 2.00            |
| 7<br>(No DPDCH)  | 4                               | 8                        | 2             | 4                        | 22996                              | ?               |
|  | 4                               | 4                        | 10            |                          | 20000                              | ?               |
| NOTE: When 4 codes are transmitted in parallel, two codes shall be transmitted with SF2 and two with SF4. UE categories 1 to 6 support QPSK only. UE category 7 supports QPSK and 16QAM. (TS25.306-7.3.0). |                                 |                          |               |                          |                                    |                 |

Table 9: HSUPA UE category



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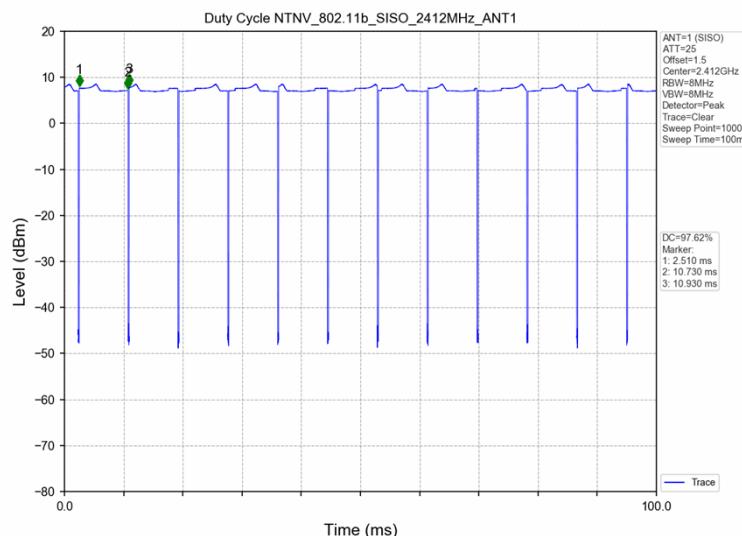
## 7.2.2 Wi-Fi Test Configuration

A Wi-Fi device must be 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 for SAR measurement.

### 7.2.2.1 Duty cycle

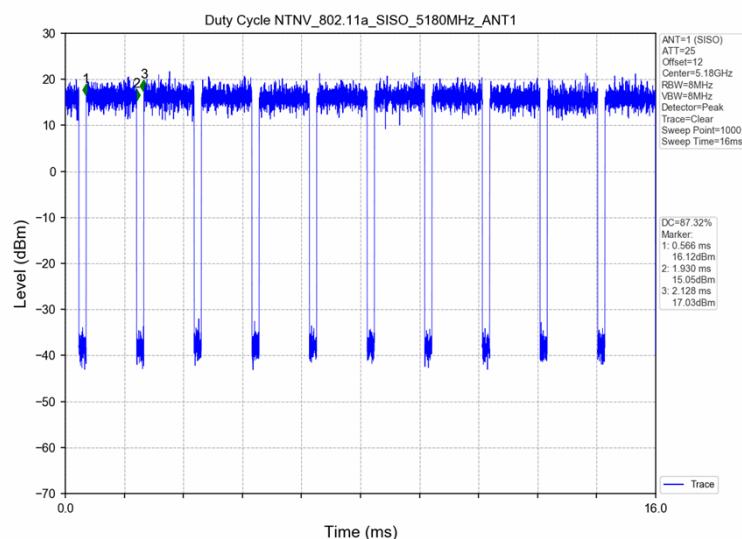
1) 2.4GHz Wi-Fi 802.11b:

WI-FI1 802.11b 1M: Duty cycle=97.62%



2) 5GHz Wi-Fi:

WI-FI1 802.11a 6M: Duty cycle=87.32%



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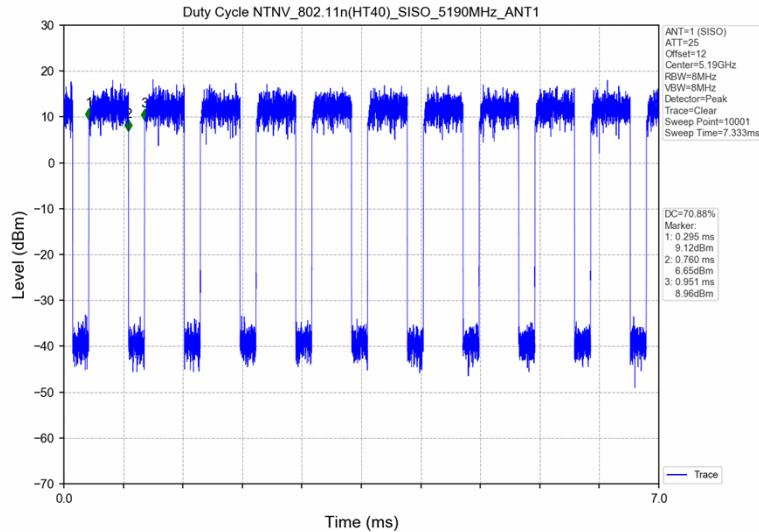
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WI-FI1 802.11n-HT40 MCS0: Duty cycle=70.88%



### 7.2.2.2 Initial Test Position SAR Test Reduction Procedure

DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures. The initial test position procedure is described in the following:

- 1) When the reported SAR of the initial test position is  $\leq 0.4$  W/kg, further SAR measurement is not required for the other (remaining) test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band. SAR is also not required for that exposure configuration in the subsequent test configuration(s).
- 2) When the reported SAR of the initial test position is  $> 0.4$  W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest extrapolated or estimated 1-g SAR conditions determined by area scans or next closest/smallest test separation distance and maximum RF coupling test positions based on manufacturer justification, on the highest maximum output power channel, until the reported SAR is  $\leq 0.8$  W/kg or all required test positions (left, right, touch, tilt or subsequent surfaces and edges) are tested.
- 3) For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is  $> 0.8$  W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is  $\leq 1.2$  W/kg or all required channels are tested. a) Additional power measurements may be required for this step, which should be limited to those necessary for identifying the subsequent highest output power channels.

### 7.2.2.3 Initial Test Configuration Procedures

An initial test configuration is determined for OFDM transmission modes according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band. SAR is measured using the highest measured maximum



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output power channel. For configurations with the same specified or measured maximum output power, additional transmission mode and test channel selection procedures are required. SAR test reduction for subsequent highest output test channels is determined according to *reported* SAR of the initial test configuration.

For next to the ear, hotspot mode and UMC mini-tablet exposure configurations where multiple test positions are required, the initial test position procedure is applied to minimize the number of test positions required for SAR measurement using the initial test configuration transmission mode. For fixed exposure conditions that do not have multiple SAR test positions, SAR is measured in the transmission mode determined by the initial test configuration.

When the *reported* SAR of the initial test configuration is  $> 0.8 \text{ W/kg}$ , SAR measurement is required for subsequent next highest measured output power channel(s) in the initial test configuration until *reported* SAR is  $\leq 1.2 \text{ W/kg}$  or all required channels are tested.

#### 7.2.2.4 Subsequent Test Configuration Procedures

SAR measurement requirements for the remaining 802.11 transmission mode configurations that have not been tested in the initial test configuration are determined separately for each standalone and aggregated frequency band, in each exposure condition, according to the maximum output power specified for production units. The initial test position procedure is applied to next to the ear, UMPC mini-tablet and hotspot mode configurations. When the same maximum output power is specified for multiple transmission modes, additional power measurements may be required to determine if SAR measurements are required for subsequent highest output power channels in a subsequent test configuration. The subsequent test configuration and SAR measurement procedures are described in the following.

- 1) . When SAR test exclusion provisions of KDB Publication 447498 are applicable and SAR measurement is not required for the initial test configuration, SAR is also not required for the next highest maximum output power transmission mode subsequent test configuration(s) in that frequency band or aggregated band and exposure configuration.
- 2) . When the highest *reported* SAR for the initial test configuration (when applicable, include subsequent highest output channels), according to the initial test position or fixed exposure position requirements, is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is  $\leq 1.2 \text{ W/kg}$ , SAR is not required for that subsequent test configuration.
- 3) . The number of channels in the initial test configuration and subsequent test configuration can be different due to differences in channel bandwidth. When SAR measurement is required for a subsequent test configuration and the channel bandwidth is smaller than that in the initial test configuration, all channels in the subsequent test configuration that overlap with the larger bandwidth channel tested in the initial test configuration should be used to determine the highest maximum output power channel. This step requires additional power measurement to identify the highest maximum output power channel in the subsequent test configuration to determine SAR test reduction.
  - a) SAR should first be measured for the channel with highest measured output power in the subsequent test configuration.
  - b) SAR for subsequent highest measured maximum output power channels in the subsequent test configuration is required only when the *reported* SAR of the preceding higher maximum output power channel(s) in the subsequent test configuration is  $> 1.2 \text{ W/kg}$  or until all required channels are tested. i) For channels with the same measured maximum output power, SAR should be measured using the channel closest to the center frequency of the larger channel bandwidth channel in the initial test configuration.
- 4) . SAR measurements for the remaining highest specified maximum output OFDM transmission mode configurations that have not been tested in the initial test configuration (highest maximum output) or subsequent test configuration(s) (subsequent next highest maximum output power) is determined by recursively applying the subsequent test configuration procedures in this section to the remaining configurations according to the following:
  - a) replace "subsequent test configuration" with "next subsequent test configuration" (i.e., subsequent next highest specified maximum output power configuration)



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b) replace "initial test configuration" with "all tested higher output power configurations"

#### 7.2.2.5 2.4 GHz Wi-Fi SAR Procedures

Separate SAR procedures are applied to DSSS and OFDM configurations in the 2.4 GHz band to simplify DSSS test requirements. For 802.11b DSSS SAR measurements, DSSS SAR procedure applies to fixed exposure test position and initial test position procedure applies to multiple exposure test positions. When SAR measurement is required for an OFDM configuration, the initial test configuration, subsequent test configuration and initial test position procedures are applied. The SAR test exclusion requirements for 802.11g/n OFDM configurations are described in following.

- **802.11b DSSS SAR Test Requirements**

SAR is measured for 2.4 GHz 802.11b DSSS using either a 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 exposure configuration 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 802.11g/n OFDM SAR Test Exclusion Requirements**

When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied (section 5.3, including sub-sections). SAR is not required for the following 2.4 GHz OFDM conditions.

- 1) . When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.
- 2) . When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is  $\leq 1.2$  W/kg.

#### 7.2.2.6 5 GHz Wi-Fi SAR Procedures

- **U-NII-1 and U-NII-2A Bands**

For devices that operate in only one of the U-NII-1 and U-NII-2A bands, the normally required SAR procedures for OFDM configurations are applied. For devices that operate in both U-NII bands using the same transmitter and antenna(s), SAR test reduction is determined according to the following :

- 1) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is  $\leq 1.2$  W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, both bands are tested independently for SAR.
- 2) When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is  $\leq 1.2$  W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, both bands are tested independently for SAR.
- 3) The two U-NII bands may be aggregated to support a 160 MHz channel on channel number 50. Without additional testing, the maximum output power for this is limited to the lower of the maximum output power certified for the two bands. When SAR measurement is required for at least one of the bands and the highest reported SAR adjusted by the ratio of specified maximum output power of aggregated to standalone band is  $> 1.2$  W/kg, SAR is required for the 160 MHz channel. This procedure does not apply to an aggregated band with maximum output higher than the standalone band(s); the aggregated band must be tested independently for SAR. SAR is not required when the 160 MHz channel is operating at a reduced maximum power and also qualifies for SAR test exclusion.

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- **U-NII-2C and U-NII-3 Bands**

The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. When Terminal Doppler Weather Radar (TDWR) restriction applies, all channels that operate at 5.60 – 5.65 GHz must be included to apply the SAR test reduction and measurement procedures.

When the same transmitter and antenna(s) are used for U-NII-2C band and U-NII-3 band or 5.8 GHz band of §15.247, the bands may be aggregated to enable additional channels with 20, 40 or 80 MHz bandwidth to span across the band gap, as illustrated in Appendix B. The maximum output power for the additional band gap channels is limited to the lower of those certified for the bands. Unless band gap channels are permanently disabled, they must be considered for SAR testing. The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. To maintain SAR measurement accuracy and to facilitate test reduction, the channels in U-NII-2C band above 5.65 GHz may be grouped with the 5.8 GHz channels in U-NII-3 or §15.247 band to enable two SAR probe calibration frequency points to cover the bands, including the band gap channels. When band gap channels are supported and the bands are not aggregated for SAR testing, band gap channels must be considered independently in each band according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

- **OFDM Transmission Mode SAR Test Configuration and Channel Selection Requirements**

The initial test configuration for 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple configurations in a frequency band have the same specified maximum output power, the initial test configuration is determined according to the following steps applied sequentially.

- 1) The largest channel bandwidth configuration is selected among the multiple configurations with the same specified maximum output power.
- 2) If multiple configurations have the same specified maximum output power and largest channel bandwidth, the lowest order modulation among the largest channel bandwidth configurations is selected.
- 3) If multiple configurations have the same specified maximum output power, largest channel bandwidth and lowest order modulation, the lowest data rate configuration among these configurations is selected.
- 4) When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n. After an initial test configuration is determined, if multiple test channels have the same measured maximum output power, the channel chosen for SAR measurement is determined according to the following. These channel selection procedures apply to both the initial test configuration and subsequent test configuration(s), with respect to the default power measurement procedures or additional power measurements required for further SAR test reduction. The same procedures also apply to subsequent highest output power channel(s) selection.
  - a) The channel closest to mid-band frequency is selected for SAR measurement.
  - b) For channels with equal separation from mid-band frequency; for example, high and low channels or two mid-band channels, the higher frequency (number) channel is selected for SAR measurement.

- **SAR Test Requirements for OFDM configurations**

When SAR measurement is required for 802.11 a/n/ac OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. When the same transmitter and antenna(s) are



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used for U-NII-1 and U-NII-2A bands, additional SAR test reduction applies. When band gap channels between U-NII-2C band and 5.8 GHz U-NII-3 or §15.247 band are supported, the highest maximum output power transmission mode configuration and maximum output power channel across the bands must be used to determine SAR test reduction, according to the initial test configuration and subsequent test configuration requirements. In applying the initial test configuration and subsequent test configuration procedures, the 802.11 transmission configuration with the highest specified maximum output power and the channel within a test configuration with the highest measured maximum output power should be clearly distinguished to apply the procedures.

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### 7.2.3 Bluetooth Test Configuration

For the Bluetooth SAR tests, a communication link is set up with the test mode software for BT mode test. Bluetooth USES frequency hopping technology to divide the transmitted data into packets and transmit the packets respectively through 79 designated Bluetooth channels, 1MHz Bandwidth, frequency hops at 1600 hops/second per the Bluetooth standard. The Radio Frequency Channel Number (RFCN) is allocated to 0, 39 and 78 respectively in the case of 2402~2480 MHz during the test at each test frequency channel, the EUT is operated at the RF continuous emission mode.

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## 7.2.4 LTE Test Configuration

LTE modes were tested according to FCC KDB 941225 D05 publication. Please see notes after the tabulated SAR data for required test configurations. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The R&S CMW500 was used for LTE output power measurements and SAR testing. Max power control was used so the UE transmits with maximum output power during SAR testing. SAR must be measured with the maximum TTI (transmit time interval) supported by the device in each LTE configuration.

### A) 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.

### B) 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 V13.5.0 (201609) Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

| Modulation | Channel bandwidth / Transmission bandwidth (N <sub>RB</sub> ) |         |       |        |        |        | MPR (dB) |
|------------|---|---------|-------|--------|--------|--------|----------|
|            | 1.4 MHz   | 3.0 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz |          |
| QPSK       | > 5   | > 4     | > 8   | > 12   | > 16   | > 18   | ≤ 1      |
| 16 QAM     | ≤ 5   | ≤ 4     | ≤ 8   | ≤ 12   | ≤ 16   | ≤ 18   | ≤ 1      |
| 16 QAM     | > 5   | > 4     | > 8   | > 12   | > 16   | > 18   | ≤ 2      |

### C) A-MPR

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

### D) Largest channel bandwidth standalone SAR test requirements

#### 1) QPSK with 1 RB allocation

Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

#### 2) QPSK with 50% RB allocation

The procedures required for 1 RB allocation in 1) are applied to measure the SAR for QPSK with 50% RB allocation.

#### 3) QPSK with 100% RB allocation

For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in 1) and 2) are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

#### 4) Higher order modulations

For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in above sections to



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determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is  $> \frac{1}{2}$  dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is  $> 1.45$  W/kg.

#### E) Other channel bandwidth standalone SAR test requirements

For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in section A) to determine the channels and RB configurations that need SAR testing and only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is  $> \frac{1}{2}$  dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is  $> 1.45$  W/kg..

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## 8 Test Result

### 8.1 Measurement of RF Conducted Power

#### 8.1.1 Conducted Power Of WCDMA

| WCDMA Band II                |              |              |       |              |         |
|------------------------------|--------------|--------------|-------|--------------|---------|
| Average Conducted Power(dBm) |              |              |       |              |         |
| Channel                      | Mode         | 9262         | 9400  | 9538         | Tune up |
| WCDMA                        | 12.2kbps RMC | 22.31        | 22.31 | <b>22.43</b> | 23      |
| HSDPA                        | Subtest 1    | 18.69        | 18.76 | 18.45        | 20      |
|                              | Subtest 2    | 18.46        | 18.61 | 18.24        | 20      |
|                              | Subtest 3    | 18.68        | 18.81 | 18.18        | 20      |
|                              | Subtest 4    | 18.69        | 18.79 | 18.45        | 20      |
| HSUPA                        | Subtest 1    | 18.18        | 18.61 | 18.25        | 20      |
|                              | Subtest 2    | 18.68        | 19.19 | 19.1         | 20      |
|                              | Subtest 3    | 19.2         | 18.93 | 18.81        | 20      |
|                              | Subtest 4    | 17.99        | 17.94 | 18.25        | 19      |
|                              | Subtest 5    | 17.76        | 18.17 | 18.08        | 19      |
| WCDMA Band IV                |              |              |       |              |         |
| Average Conducted Power(dBm) |              |              |       |              |         |
| Channel                      | Mode         | 1312         | 1412  | 1513         | Tune up |
| WCDMA                        | 12.2kbps RMC | 23.1         | 22.97 | <b>23.23</b> | 23.5    |
| HSDPA                        | Subtest 1    | 18.96        | 18.89 | 19.07        | 20      |
|                              | Subtest 2    | 19.22        | 18.69 | 19.07        | 20      |
|                              | Subtest 3    | 19.3         | 18.87 | 19.05        | 20      |
|                              | Subtest 4    | 19.49        | 18.67 | 18.9         | 20      |
| HSUPA                        | Subtest 1    | 19.54        | 19.15 | 19.35        | 20      |
|                              | Subtest 2    | 19.46        | 19.26 | 19.56        | 20      |
|                              | Subtest 3    | 19.62        | 19.78 | 19.78        | 20      |
|                              | Subtest 4    | 18.63        | 18.62 | 19.05        | 20      |
|                              | Subtest 5    | 18.78        | 18.58 | 18.48        | 20      |
| WCDMA Band V                 |              |              |       |              |         |
| Average Conducted Power(dBm) |              |              |       |              |         |
| Channel                      | Mode         | 4132         | 4182  | 4233         | Tune up |
| WCDMA                        | 12.2kbps RMC | <b>23.53</b> | 22.46 | 22.45        | 24      |
| HSDPA                        | Subtest 1    | 18.87        | 18.78 | 18.93        | 20      |
|                              | Subtest 2    | 18.37        | 18.23 | 18.94        | 20      |
|                              | Subtest 3    | 18.87        | 18.77 | 18.91        | 20      |
|                              | Subtest 4    | 18.6         | 18.27 | 18.4         | 20      |
| HSUPA                        | Subtest 1    | 18.4         | 18.64 | 18.31        | 20      |
|                              | Subtest 2    | 19.41        | 18.89 | 19.1         | 20      |
|                              | Subtest 3    | 19.4         | 19.38 | 19.32        | 20      |
|                              | Subtest 4    | 18.27        | 18.38 | 18.1         | 20      |
|                              | Subtest 5    | 17.96        | 17.89 | 18.13        | 19      |

Table 10: Conducted Power Of WCDMA



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## 8.1.2 Conducted Power Of LTE

| LTE Band 2 |            |         |           | Conducted Power(dBm) |         |         |         |
|------------|------------|---------|-----------|----------------------|---------|---------|---------|
| Bandwidth  | Modulation | RB size | RB offset | Channel              | Channel | Channel | Tune up |
|            |            |         |           | 18607                | 18900   | 19193   |         |
| 1.4MHz     | QPSK       | 1       | 0         | 22.07                | 21.97   | 22.15   | 23      |
|            |            | 1       | 2         | 22.15                | 22.03   | 22.29   | 23      |
|            |            | 1       | 5         | 21.99                | 21.95   | 22.25   | 23      |
|            |            | 3       | 0         | 22.07                | 21.97   | 22.2    | 22.5    |
|            |            | 3       | 2         | 22.09                | 22.02   | 22.32   | 22.5    |
|            |            | 3       | 3         | 22.05                | 21.99   | 22.26   | 22.5    |
|            |            | 6       | 0         | 21.07                | 21.05   | 21.28   | 22      |
|            | 16QAM      | 1       | 0         | 21.02                | 21.12   | 21.6    | 22      |
|            |            | 1       | 2         | 21.18                | 21.18   | 21.75   | 22      |
|            |            | 1       | 5         | 20.94                | 21.11   | 21.74   | 22      |
|            |            | 3       | 0         | 20.91                | 21.06   | 21.37   | 22      |
|            |            | 3       | 2         | 20.97                | 21.12   | 21.53   | 22      |
|            |            | 3       | 3         | 20.94                | 21.03   | 21.43   | 22      |
|            |            | 6       | 0         | 20.09                | 20.12   | 20.31   | 21      |
| 3MHz       | QPSK       | 1       | 0         | 22.23                | 22.1    | 22.22   | 23      |
|            |            | 1       | 7         | 22.21                | 22.2    | 22.18   | 23      |
|            |            | 1       | 14        | 22.15                | 22      | 22.18   | 23      |
|            |            | 8       | 0         | 21.06                | 20.99   | 21.24   | 21.5    |
|            |            | 8       | 4         | 20.99                | 21.07   | 21.34   | 21.5    |
|            |            | 8       | 7         | 20.98                | 20.96   | 21.28   | 21.5    |
|            |            | 15      | 0         | 21.02                | 21.04   | 21.3    | 21.5    |
|            | 16QAM      | 1       | 0         | 21.39                | 21.12   | 21.21   | 21.5    |
|            |            | 1       | 7         | 21.38                | 21.1    | 21.27   | 21.5    |
|            |            | 1       | 14        | 21.38                | 20.99   | 21.16   | 22      |
|            |            | 8       | 0         | 20.17                | 20.02   | 20.2    | 21      |
|            |            | 8       | 4         | 20.14                | 20.03   | 20.28   | 21      |
|            |            | 8       | 7         | 20.1                 | 19.97   | 20.19   | 21      |
|            |            | 15      | 0         | 19.99                | 20.1    | 20.2    | 21      |
| 5MHz       | QPSK       | 1       | 0         | 22.2                 | 22.3    | 22.41   | 23      |
|            |            | 1       | 13        | 22.18                | 22.1    | 22.35   | 23      |
|            |            | 1       | 24        | 22.16                | 21.98   | 22.33   | 23      |
|            |            | 12      | 0         | 21.02                | 21.24   | 21.4    | 21.5    |
|            |            | 12      | 6         | 21.09                | 21.05   | 21.38   | 21.5    |
|            |            | 12      | 13        | 21.05                | 20.97   | 21.39   | 21.5    |

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|       |       |         |           |         |         |         |         |  |  |
|-------|-------|---------|-----------|---------|---------|---------|---------|--|--|
|       |       | 25      | 0         | 21.02   | 21.14   | 21.37   | 21.5    |  |  |
| 16QAM | 16QAM | 1       | 0         | 21.28   | 21.56   | 21.43   | 21.5    |  |  |
|       |       | 1       | 13        | 21.19   | 21.42   | 21.5    | 21.5    |  |  |
|       |       | 1       | 24        | 21.13   | 21.32   | 21.37   | 22      |  |  |
|       |       | 12      | 0         | 20.11   | 20.23   | 20.36   | 21      |  |  |
|       |       | 12      | 6         | 20.16   | 20.05   | 20.37   | 21      |  |  |
|       |       | 12      | 13        | 20.07   | 19.97   | 20.42   | 21      |  |  |
|       |       | 25      | 0         | 20.06   | 20.08   | 20.39   | 21      |  |  |
|       |       | RB size | RB offset | Channel | Channel | Channel | Tune up |  |  |
| 10MHz | QPSK  |         |           | 18650   | 18900   | 19150   |         |  |  |
|       | 1     | 0       | 22.42     | 22.44   | 22.39   | 23      |         |  |  |
|       | 1     | 25      | 22.35     | 22.11   | 22.25   | 23      |         |  |  |
|       | 1     | 49      | 22.43     | 22.06   | 22.13   | 23      |         |  |  |
|       | 25    | 0       | 21.1      | 21.07   | 21.43   | 21.5    |         |  |  |
|       | 25    | 13      | 21.17     | 21.03   | 21.39   | 21.5    |         |  |  |
|       | 25    | 25      | 21.22     | 21      | 21.4    | 21.5    |         |  |  |
|       | 16QAM | 50      | 0         | 21.23   | 21.14   | 21.39   | 21.5    |  |  |
|       |       | 1       | 0         | 21.63   | 21.45   | 21.64   | 21.5    |  |  |
|       |       | 1       | 25        | 21.46   | 21.08   | 21.52   | 21.5    |  |  |
|       |       | 1       | 49        | 21.76   | 21      | 21.45   | 22      |  |  |
|       |       | 25      | 0         | 20.09   | 20.17   | 20.46   | 21      |  |  |
|       |       | 25      | 13        | 20.24   | 20.1    | 20.37   | 21      |  |  |
|       |       | 25      | 25        | 20.21   | 20.08   | 20.42   | 21      |  |  |
| 15MHz | QPSK  | 50      | 0         | 20.21   | 20.14   | 20.44   | 21      |  |  |
|       |       | 16QAM   | RB size   | Channel | Channel | Channel | Tune up |  |  |
|       |       |         |           | 18675   | 18900   | 19125   |         |  |  |
|       |       |         |           | 1       | 0       | 22.36   | 22.42   |  |  |
|       |       |         |           | 1       | 38      | 22.11   | 21.99   |  |  |
|       |       |         |           | 1       | 74      | 22.15   | 22.13   |  |  |
|       |       |         |           | 36      | 0       | 21.06   | 20.98   |  |  |
|       | 16QAM |         |           | 36      | 18      | 21.06   | 21.01   |  |  |
|       |       |         |           | 36      | 39      | 21.18   | 20.9    |  |  |
|       |       |         |           | 75      | 0       | 21.12   | 20.96   |  |  |
|       |       |         |           | 1       | 0       | 21.46   | 21.42   |  |  |
|       |       |         |           | 1       | 38      | 21.15   | 21      |  |  |
|       |       |         |           | 1       | 74      | 21.21   | 21.1    |  |  |
|       |       |         |           | 36      | 0       | 20.21   | 20.05   |  |  |
| 20MHz | QPSK  | RB size | RB offset | Channel | Channel | Channel | Tune up |  |  |
|       |       |         |           | 18700   | 18900   | 19100   |         |  |  |
|       |       | 1       | 0         | 22.16   | 22.46   | 22.04   | 23      |  |  |
|       |       | 1       | 50        | 22.12   | 22.13   | 22.17   | 23      |  |  |

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|  |       |     |    |       |              |       |      |
|--|-------|-----|----|-------|--------------|-------|------|
|  |       | 1   | 99 | 21.84 | 22.06        | 22.17 | 23   |
|  |       | 50  | 0  | 21.1  | <b>21.22</b> | 21.03 | 21.5 |
|  |       | 50  | 25 | 21.13 | 20.99        | 21.12 | 21.5 |
|  |       | 50  | 50 | 21.15 | 20.85        | 21.05 | 21.5 |
|  |       | 100 | 0  | 21.1  | <b>21.11</b> | 21.01 | 21.5 |
|  | 16QAM | 1   | 0  | 21.29 | 21.11        | 21.47 | 21.5 |
|  |       | 1   | 50 | 21.22 | 20.66        | 21.31 | 21.5 |
|  |       | 1   | 99 | 20.94 | 20.75        | 21.57 | 22   |
|  |       | 50  | 0  | 20.09 | 20.07        | 20.06 | 21   |
|  |       | 50  | 25 | 20.16 | 19.97        | 20.14 | 21   |
|  |       | 50  | 50 | 20.09 | 19.79        | 20.19 | 21   |
|  |       | 100 | 0  | 20.14 | 20.04        | 20.13 | 21   |

| LTE Band 4 |            |         |           | Conducted Power(dBm) |         |         |         |
|------------|------------|---------|-----------|----------------------|---------|---------|---------|
| Bandwidth  | Modulation | RB size | RB offset | Channel              | Channel | Channel | Tune up |
|            |            |         |           | 19957                | 20175   | 20393   |         |
| 1.4MHz     | QPSK       | 1       | 0         | 22.39                | 22.1    | 22.19   | 23      |
|            |            | 1       | 2         | 22.48                | 22.15   | 22.25   | 23      |
|            |            | 1       | 5         | 22.48                | 22.03   | 22.16   | 23      |
|            |            | 3       | 0         | 22.09                | 22.02   | 22.15   | 22.5    |
|            |            | 3       | 2         | 22.06                | 22.03   | 22.22   | 22.5    |
|            |            | 3       | 3         | 22.04                | 21.98   | 22.19   | 22.5    |
|            |            | 6       | 0         | 21.81                | 21.44   | 21.57   | 22.5    |
|            | 16QAM      | 1       | 0         | 22.12                | 21.47   | 21.64   | 22.5    |
|            |            | 1       | 2         | 22.23                | 21.55   | 21.79   | 22.5    |
|            |            | 1       | 5         | 22.15                | 21.39   | 21.68   | 22.5    |
|            |            | 3       | 0         | 21.9                 | 21.38   | 21.58   | 22      |
|            |            | 3       | 2         | 21.89                | 21.41   | 21.71   | 22      |
|            |            | 3       | 3         | 21.86                | 21.34   | 21.61   | 22      |
|            |            | 6       | 0         | 20.88                | 20.45   | 20.68   | 22      |
| Bandwidth  | Modulation | RB size | RB offset | Channel              | Channel | Channel | Tune up |
|            |            |         |           | 19965                | 20175   | 20385   |         |
| 3MHz       | QPSK       | 1       | 0         | 22.48                | 22.12   | 22.27   | 23      |
|            |            | 1       | 7         | 22.5                 | 22.05   | 22.22   | 23      |
|            |            | 1       | 14        | 22.47                | 22.02   | 22.19   | 23      |
|            |            | 8       | 0         | 21.9                 | 21.51   | 21.58   | 22      |
|            |            | 8       | 4         | 21.83                | 21.47   | 21.7    | 22      |
|            |            | 8       | 7         | 21.91                | 21.4    | 21.71   | 22      |
|            |            | 15      | 0         | 21.79                | 21.46   | 21.56   | 22      |
|            | 16QAM      | 1       | 0         | 22.14                | 21.46   | 21.65   | 22      |
|            |            | 1       | 7         | 22.31                | 21.61   | 21.64   | 22.5    |
|            |            | 1       | 14        | 22.17                | 21.45   | 21.6    | 22      |

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|                  |                   |                |                  |                |                |                |                |
|------------------|-------------------|----------------|------------------|----------------|----------------|----------------|----------------|
|                  |                   | 8              | 0                | 20.96          | 20.54          | 20.65          | 21             |
|                  |                   | 8              | 4                | 20.95          | 20.48          | 20.72          | 21             |
|                  |                   | 8              | 7                | 20.92          | 20.44          | 20.64          | 21             |
|                  |                   | 15             | 0                | 20.8           | 20.55          | 20.55          | 21             |
| <b>Bandwidth</b> | <b>Modulation</b> | <b>RB size</b> | <b>RB offset</b> | <b>Channel</b> | <b>Channel</b> | <b>Channel</b> | <b>Tune up</b> |
| 5MHz             | QPSK              | 1              | 0                | 22.37          | 22.33          | 22.36          | 23             |
|                  |                   | 1              | 13               | 22.35          | 22.41          | 22.38          | 23             |
|                  |                   | 1              | 24               | 22.4           | 22.15          | 22.33          | 23             |
|                  |                   | 12             | 0                | 21.84          | 21.51          | 21.74          | 22             |
|                  |                   | 12             | 6                | 21.85          | 21.57          | 21.63          | 22             |
|                  |                   | 12             | 13               | 21.93          | 21.45          | 21.59          | 22             |
|                  |                   | 25             | 0                | 21.82          | 21.57          | 21.65          | 22             |
|                  | 16QAM             | 1              | 0                | 22.05          | 21.97          | 21.75          | 22.5           |
|                  |                   | 1              | 13               | 21.99          | 21.94          | 21.72          | 22             |
|                  |                   | 1              | 24               | 21.87          | 21.76          | 21.81          | 22             |
|                  |                   | 12             | 0                | 20.93          | 20.52          | 20.75          | 21             |
|                  |                   | 12             | 6                | 20.89          | 20.48          | 20.63          | 21             |
|                  |                   | 12             | 13               | 20.97          | 20.47          | 20.68          | 21             |
|                  |                   | 25             | 0                | 20.95          | 20.52          | 20.71          | 21             |
| <b>Bandwidth</b> | <b>Modulation</b> | <b>RB size</b> | <b>RB offset</b> | <b>Channel</b> | <b>Channel</b> | <b>Channel</b> | <b>Tune up</b> |
| 10MHz            | QPSK              | 1              | 0                | 22.46          | 22.47          | 22.36          | 23             |
|                  |                   | 1              | 25               | 22.39          | 22.51          | 22.4           | 23             |
|                  |                   | 1              | 49               | 22.43          | 22.42          | 22.43          | 23             |
|                  |                   | 25             | 0                | 21.96          | 21.54          | 21.54          | 22             |
|                  |                   | 25             | 13               | 21.88          | 21.53          | 21.58          | 22             |
|                  |                   | 25             | 25               | 21.97          | 21.57          | 21.66          | 22             |
|                  |                   | 50             | 0                | 21.95          | 21.48          | 21.62          | 22             |
|                  | 16QAM             | 1              | 0                | 22.36          | 21.7           | 21.99          | 22.5           |
|                  |                   | 1              | 25               | 22.16          | 21.59          | 21.68          | 22.5           |
|                  |                   | 1              | 49               | 22.11          | 21.76          | 21.92          | 22.5           |
|                  |                   | 25             | 0                | 20.91          | 20.58          | 20.63          | 21             |
|                  |                   | 25             | 13               | 20.94          | 20.55          | 20.64          | 21             |
|                  |                   | 25             | 25               | 21.05          | 20.56          | 20.76          | 21.5           |
|                  |                   | 50             | 0                | 20.91          | 20.56          | 20.67          | 21             |
| <b>Bandwidth</b> | <b>Modulation</b> | <b>RB size</b> | <b>RB offset</b> | <b>Channel</b> | <b>Channel</b> | <b>Channel</b> | <b>Tune up</b> |
| 15MHz            | QPSK              | 1              | 0                | 22.51          | 22.47          | 22.47          | 23             |
|                  |                   | 1              | 38               | 22.49          | 22.45          | 22.33          | 23             |
|                  |                   | 1              | 74               | 22.26          | 22.15          | 22.43          | 23             |
|                  |                   | 36             | 0                | 21.64          | 21.48          | 21.26          | 22             |
|                  |                   | 36             | 18               | 21.69          | 21.37          | 21.42          | 22             |

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|       |       |           |            |         |           |         |         |
|-------|-------|-----------|------------|---------|-----------|---------|---------|
|       | 16QAM | 36        | 39         | 21.63   | 21.27     | 21.32   | 22      |
|       |       | 75        | 0          | 21.54   | 21.33     | 21.2    | 22      |
|       |       | 1         | 0          | 21.74   | 21.6      | 21.65   | 22      |
|       |       | 1         | 38         | 21.68   | 21.52     | 21.44   | 22      |
|       |       | 1         | 74         | 21.42   | 21.21     | 21.54   | 22      |
|       |       | 36        | 0          | 20.85   | 20.57     | 20.25   | 21      |
|       |       | 36        | 18         | 20.74   | 20.44     | 20.37   | 21      |
|       |       | 36        | 39         | 20.55   | 20.26     | 20.28   | 21      |
|       |       | 75        | 0          | 20.59   | 20.4      | 20.32   | 21      |
|       |       | Bandwidth | Modulation | RB size | RB offset | Channel | Channel |
|       |       |           |            |         |           | 20050   | 20175   |
| 20MHz | QPSK  | 1         | 0          | 22.34   | 22.48     | 22.13   | 23      |
|       |       | 1         | 50         | 22.54   | 22.54     | 22.36   | 23      |
|       |       | 1         | 99         | 22.28   | 22.25     | 22.29   | 23      |
|       |       | 50        | 0          | 21.61   | 21.53     | 21.26   | 22      |
|       |       | 50        | 25         | 21.59   | 21.35     | 21.29   | 22      |
|       |       | 50        | 50         | 21.5    | 21.22     | 21.31   | 22      |
|       |       | 100       | 0          | 21.55   | 21.3      | 21.3    | 22      |
|       |       | 16QAM     | 16QAM      | 1       | 0         | 21.65   | 21.15   |
|       |       |           |            | 1       | 50        | 21.76   | 21.09   |
|       |       |           |            | 1       | 99        | 21.52   | 20.8    |
|       |       |           |            | 50      | 0         | 20.61   | 20.5    |
|       |       |           |            | 50      | 25        | 20.55   | 20.38   |
|       |       |           |            | 50      | 50        | 20.45   | 20.2    |
|       |       |           |            | 100     | 0         | 20.54   | 20.39   |
|       |       |           |            |         |           | 20.24   | 21      |

| LTE Band 5 |            |         |           | Conducted Power(dBm) |         |         |         |
|------------|------------|---------|-----------|----------------------|---------|---------|---------|
| Bandwidth  | Modulation | RB size | RB offset | Channel              | Channel | Channel | Tune up |
|            |            |         |           | 20407                | 20525   | 20643   |         |
| 1.4MHz     | QPSK       | 1       | 0         | 22.36                | 22.62   | 22.37   | 23.5    |
|            |            | 1       | 2         | 22.35                | 22.74   | 22.74   | 23.5    |
|            |            | 1       | 5         | 22.29                | 22.74   | 22.57   | 23.5    |
|            |            | 3       | 0         | 22.27                | 22.67   | 22.75   | 23      |
|            |            | 3       | 2         | 22.21                | 22.76   | 22.74   | 23      |
|            |            | 3       | 3         | 22.34                | 22.63   | 22.71   | 23      |
|            |            | 6       | 0         | 21.33                | 21.67   | 21.61   | 22.5    |
|            | 16QAM      | 1       | 0         | 21.77                | 21.16   | 21.2    | 22.5    |
|            |            | 1       | 2         | 21.79                | 21.38   | 21.35   | 22.5    |
|            |            | 1       | 5         | 21.73                | 21.42   | 21.29   | 22.5    |
|            |            | 3       | 0         | 21.42                | 21.33   | 21.49   | 22      |
|            |            | 3       | 2         | 21.38                | 21.45   | 21.48   | 22      |
|            |            | 3       | 3         | 21.47                | 21.33   | 21.5    | 22      |
|            |            | 6       | 0         | 20.36                | 20.48   | 20.39   | 21.5    |

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| Bandwidth | Modulation | RB size | RB offset | Channel | Channel | Channel | Tune up |
|-----------|------------|---------|-----------|---------|---------|---------|---------|
|           |            |         |           | 20415   | 20525   | 20635   |         |
| 3MHz      | QPSK       | 1       | 0         | 22.5    | 22.42   | 22.3    | 23.5    |
|           |            | 1       | 7         | 22.6    | 22.79   | 22.55   | 23.5    |
|           |            | 1       | 14        | 22.47   | 22.68   | 22.57   | 23.5    |
|           |            | 8       | 0         | 21.46   | 21.63   | 21.69   | 22.5    |
|           |            | 8       | 4         | 21.5    | 21.6    | 21.71   | 22.5    |
|           |            | 8       | 7         | 21.53   | 21.65   | 21.77   | 22.5    |
|           |            | 15      | 0         | 21.51   | 21.68   | 21.69   | 22.5    |
|           | 16QAM      | 1       | 0         | 21.92   | 21.35   | 21.37   | 22.5    |
|           |            | 1       | 7         | 22      | 21.68   | 21.65   | 22.5    |
|           |            | 1       | 14        | 21.87   | 21.59   | 21.66   | 22.5    |
|           |            | 8       | 0         | 20.57   | 20.64   | 20.71   | 21.5    |
|           |            | 8       | 4         | 20.57   | 20.63   | 20.64   | 21.5    |
|           |            | 8       | 7         | 20.58   | 20.65   | 20.77   | 21.5    |
|           |            | 15      | 0         | 20.69   | 20.71   | 20.6    | 21.5    |
| Bandwidth | Modulation | RB size | RB offset | Channel | Channel | Channel | Tune up |
|           |            |         |           | 20425   | 20525   | 20625   |         |
| 5MHz      | QPSK       | 1       | 0         | 22.45   | 22.43   | 22.39   | 23.5    |
|           |            | 1       | 13        | 22.49   | 22.64   | 22.74   | 23.5    |
|           |            | 1       | 24        | 22.4    | 22.58   | 22.69   | 23.5    |
|           |            | 12      | 0         | 21.51   | 21.72   | 21.74   | 22.5    |
|           |            | 12      | 6         | 21.45   | 21.71   | 21.81   | 22.5    |
|           |            | 12      | 13        | 21.35   | 21.66   | 21.7    | 22.5    |
|           |            | 25      | 0         | 21.46   | 21.66   | 21.73   | 22.5    |
|           | 16QAM      | 1       | 0         | 21.35   | 21.88   | 21.45   | 22.5    |
|           |            | 1       | 13        | 21.43   | 22.16   | 21.81   | 22.5    |
|           |            | 1       | 24        | 21.3    | 22.14   | 21.7    | 22.5    |
|           |            | 12      | 0         | 20.6    | 20.8    | 20.75   | 21.5    |
|           |            | 12      | 6         | 20.56   | 20.7    | 20.73   | 21.5    |
|           |            | 12      | 13        | 20.44   | 20.65   | 20.67   | 21.5    |
|           |            | 25      | 0         | 20.59   | 20.63   | 20.77   | 21.5    |
| Bandwidth | Modulation | RB size | RB offset | Channel | Channel | Channel | Tune up |
|           |            |         |           | 20450   | 20525   | 20600   |         |
| 10MHz     | QPSK       | 1       | 0         | 22.68   | 22.66   | 22.63   | 23.5    |
|           |            | 1       | 25        | 22.45   | 22.78   | 22.98   | 23.5    |
|           |            | 1       | 49        | 22.7    | 22.9    | 23.01   | 23.5    |
|           |            | 25      | 0         | 21.46   | 21.81   | 21.97   | 22.5    |
|           |            | 25      | 13        | 21.34   | 21.82   | 21.9    | 22.5    |
|           |            | 25      | 25        | 21.41   | 21.76   | 21.91   | 22.5    |
|           |            | 50      | 0         | 21.42   | 21.74   | 21.91   | 22.5    |
|           | 16QAM      | 1       | 0         | 22.12   | 21.56   | 21.64   | 22.5    |
|           |            | 1       | 25        | 21.83   | 21.69   | 21.81   | 22.5    |

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|  |    |    |       |       |       |      |
|--|----|----|-------|-------|-------|------|
|  | 1  | 49 | 22.04 | 21.87 | 21.8  | 22.5 |
|  | 25 | 0  | 20.5  | 20.89 | 21.06 | 21.5 |
|  | 25 | 13 | 20.37 | 20.84 | 20.92 | 21.5 |
|  | 25 | 25 | 20.4  | 20.8  | 20.96 | 21.5 |
|  | 50 | 0  | 20.48 | 20.7  | 20.9  | 21.5 |

| LTE Band 7 |            |         |           | Conducted Power(dBm) |         |         |         |
|------------|------------|---------|-----------|----------------------|---------|---------|---------|
| Bandwidth  | Modulation | RB size | RB offset | Channel              | Channel | Channel | Tune up |
|            |            |         |           | 20775                | 21100   | 21425   |         |
| 5MHz       | QPSK       | 1       | 0         | 21.29                | 21.71   | 21.74   | 22      |
|            |            | 1       | 13        | 21.95                | 21.71   | 21.4    | 22      |
|            |            | 1       | 24        | 21.61                | 21.6    | 20.87   | 22      |
|            |            | 12      | 0         | 20.83                | 20.8    | 20.73   | 21      |
|            |            | 12      | 6         | 20.77                | 20.73   | 20.7    | 21      |
|            |            | 12      | 13        | 20.65                | 20.65   | 20.68   | 21      |
|            |            | 25      | 0         | 20.83                | 20.7    | 20.67   | 21      |
|            | 16QAM      | 1       | 0         | 20.43                | 21.15   | 20.87   | 22      |
|            |            | 1       | 13        | 21.51                | 21.11   | 20.76   | 22      |
|            |            | 1       | 24        | 20.59                | 20.97   | 20.62   | 22      |
|            |            | 12      | 0         | 19.86                | 19.81   | 19.72   | 20      |
|            |            | 12      | 6         | 19.78                | 19.75   | 19.68   | 20      |
|            |            | 12      | 13        | 19.66                | 19.64   | 19.68   | 20      |
|            |            | 25      | 0         | 19.86                | 19.74   | 19.66   | 20      |
| 10MHz      | QPSK       | 1       | 0         | 21.27                | 22      | 21.7    | 22      |
|            |            | 1       | 25        | 21.93                | 21.93   | 21.56   | 22      |
|            |            | 1       | 49        | 21.67                | 21.7    | 20.72   | 22      |
|            |            | 25      | 0         | 20.94                | 20.74   | 20.55   | 21      |
|            |            | 25      | 13        | 20.68                | 20.68   | 20.49   | 21      |
|            |            | 25      | 25        | 20.7                 | 20.59   | 20.61   | 21      |
|            |            | 50      | 0         | 20.75                | 20.68   | 20.64   | 21      |
|            | 16QAM      | 1       | 0         | 20.78                | 20.85   | 20.76   | 21      |
|            |            | 1       | 25        | 22.51                | 20.76   | 20.68   | 21      |
|            |            | 1       | 49        | 21.09                | 20.62   | 20.24   | 21.5    |
|            |            | 25      | 0         | 19.78                | 19.82   | 19.6    | 20      |
|            |            | 25      | 13        | 19.65                | 19.77   | 19.58   | 20      |
|            |            | 25      | 25        | 19.65                | 19.66   | 19.65   | 20      |
|            |            | 50      | 0         | 19.77                | 19.71   | 19.65   | 20      |
| Bandwidth  | Modulation | RB size | RB offset | Channel              | Channel | Channel | Tune up |
|            |            |         |           | 20800                | 21100   | 21400   |         |
| 15MHz      | QPSK       | 1       | 0         | 21.63                | 21.61   | 21.33   | 22      |

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|       |       |         |           |               |               |               |         |
|-------|-------|---------|-----------|---------------|---------------|---------------|---------|
|       |       | 1       | 38        | 21.92         | 21.84         | 21.34         | 22      |
|       |       | 1       | 74        | 21.58         | 21.51         | 20.83         | 22      |
|       |       | 36      | 0         | 20.73         | 20.78         | 20.53         | 21      |
|       |       | 36      | 18        | 20.74         | 20.88         | 20.63         | 21      |
|       |       | 36      | 39        | 20.7          | 20.73         | 20.59         | 21      |
|       |       | 75      | 0         | 20.87         | 20.74         | 20.54         | 21      |
|       |       | 1       | 0         | 20.54         | 20.59         | 20.45         | 21      |
|       | 16QAM | 1       | 38        | 20.69         | 20.84         | 20.44         | 21      |
|       |       | 1       | 74        | 20.45         | 20.46         | 20.39         | 21      |
|       |       | 36      | 0         | 19.99         | 19.73         | 19.49         | 20      |
|       |       | 36      | 18        | 19.88         | 19.84         | 19.64         | 20      |
|       |       | 36      | 39        | 19.7          | 19.76         | 19.52         | 20      |
|       |       | 75      | 0         | 19.9          | 19.7          | 19.67         | 20      |
|       |       | RB size | RB offset | Channel 20850 | Channel 21100 | Channel 21350 | Tune up |
| 20MHz | QPSK  | 1       | 0         | 21.48         | 21.6          | 21.31         | 22      |
|       |       | 1       | 50        | <b>21.59</b>  | <b>21.97</b>  | <b>21.32</b>  | 22      |
|       |       | 1       | 99        | 21.31         | 21.44         | 20.75         | 22      |
|       |       | 50      | 0         | 20.75         | 20.8          | 20.43         | 21      |
|       |       | 50      | 25        | 20.77         | <b>20.81</b>  | 20.54         | 21      |
|       |       | 50      | 50        | 20.68         | 20.65         | 20.47         | 21      |
|       |       | 100     | 0         | 20.68         | <b>20.75</b>  | 20.6          | 21      |
|       | 16QAM | 1       | 0         | 20.61         | 20.47         | 20.87         | 21      |
|       |       | 1       | 50        | 20.64         | 20.75         | 20.83         | 21      |
|       |       | 1       | 99        | 20.29         | 20.23         | 20.7          | 21      |
|       |       | 50      | 0         | 19.8          | 19.79         | 19.51         | 20      |
|       |       | 50      | 25        | 19.69         | 19.8          | 19.58         | 20      |
|       |       | 50      | 50        | 19.61         | 19.62         | 19.57         | 20      |
|       |       | 100     | 0         | 19.75         | 19.74         | 19.51         | 20      |

| LTE FDD Band 12 |            |         |           | Conducted Power(dBm) |         |         |         |
|-----------------|------------|---------|-----------|----------------------|---------|---------|---------|
| Bandwidth       | Modulation | RB size | RB offset | Channel              | Channel | Channel | Tune up |
|                 |            |         |           | 23017                | 23095   | 23173   |         |
| 1.4MHz          | QPSK       | 1       | 0         | 22.13                | 22.19   | 22.21   | 23      |
|                 |            | 1       | 2         | 22.11                | 22.35   | 22.44   | 23      |
|                 |            | 1       | 5         | 22.08                | 22.3    | 22.48   | 23      |
|                 |            | 3       | 0         | 22.11                | 22.22   | 22.39   | 23      |
|                 |            | 3       | 2         | 22.09                | 22.29   | 22.48   | 23      |
|                 |            | 3       | 3         | 22.06                | 22.21   | 22.38   | 23      |
|                 |            | 6       | 0         | 21.13                | 21.31   | 21.55   | 22      |
|                 | 16QAM      | 1       | 0         | 21.25                | 21.45   | 21.15   | 22      |
|                 |            | 1       | 2         | 21.25                | 21.64   | 21.56   | 22      |

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|       |       |           |            |         |           |         |         |
|-------|-------|-----------|------------|---------|-----------|---------|---------|
|       |       | 1         | 5          | 21.25   | 21.54     | 21.43   | 22      |
|       |       | 3         | 0          | 21.21   | 21.25     | 21.33   | 22      |
|       |       | 3         | 2          | 21.18   | 21.26     | 21.46   | 22      |
|       |       | 3         | 3          | 21.14   | 21.25     | 21.35   | 22      |
|       |       | 6         | 0          | 20.22   | 20.36     | 20.59   | 21      |
|       |       | Bandwidth | Modulation | RB size | RB offset | Channel | Channel |
|       |       |           |            | 23025   | 23095     | 23165   | Tune up |
| 3MHz  | QPSK  | 1         | 0          | 22.22   | 22.18     | 22.27   | 23      |
|       |       | 1         | 7          | 22.25   | 22.4      | 22.53   | 23      |
|       |       | 1         | 14         | 22.19   | 22.3      | 22.46   | 23      |
|       |       | 8         | 0          | 21.24   | 21.27     | 21.53   | 22      |
|       |       | 8         | 4          | 21.17   | 21.35     | 21.58   | 22      |
|       |       | 8         | 7          | 21.14   | 21.29     | 21.48   | 22      |
|       |       | 15        | 0          | 21.19   | 21.33     | 21.6    | 22      |
|       | 16QAM | 1         | 0          | 21.59   | 21.17     | 21.25   | 22      |
|       |       | 1         | 7          | 21.54   | 21.38     | 21.63   | 22      |
|       |       | 1         | 14         | 21.43   | 21.28     | 21.47   | 22      |
|       |       | 8         | 0          | 20.28   | 20.31     | 20.56   | 21      |
|       |       | 8         | 4          | 20.29   | 20.27     | 20.57   | 21      |
|       |       | 8         | 7          | 20.19   | 20.3      | 20.5    | 21      |
|       |       | 15        | 0          | 20.21   | 20.35     | 20.49   | 21      |
| 5MHz  | QPSK  | 1         | 0          | 22.22   | 22.19     | 22.3    | 23      |
|       |       | 1         | 13         | 22.28   | 22.29     | 22.4    | 23      |
|       |       | 1         | 24         | 22.3    | 22.36     | 22.35   | 23      |
|       |       | 12        | 0          | 21.27   | 21.41     | 21.47   | 22      |
|       |       | 12        | 6          | 21.31   | 21.38     | 21.54   | 22      |
|       |       | 12        | 13         | 21.36   | 21.39     | 21.44   | 22      |
|       |       | 25        | 0          | 21.34   | 21.41     | 21.48   | 22      |
|       | 16QAM | 1         | 0          | 21.33   | 21.47     | 21.39   | 22      |
|       |       | 1         | 13         | 21.42   | 21.74     | 21.57   | 22      |
|       |       | 1         | 24         | 21.33   | 21.71     | 21.47   | 22      |
|       |       | 12        | 0          | 20.35   | 20.37     | 20.49   | 21      |
|       |       | 12        | 6          | 20.35   | 20.34     | 20.53   | 21      |
|       |       | 12        | 13         | 20.4    | 20.35     | 20.46   | 21      |
|       |       | 25        | 0          | 20.46   | 20.35     | 20.52   | 21      |
| 10MHz | QPSK  | 1         | 0          | 22.54   | 22.5      | 22.55   | 23      |
|       |       | 1         | 25         | 22.31   | 22.49     | 22.39   | 23      |
|       |       | 1         | 49         | 22.55   | 22.55     | 22.57   | 23      |
|       |       | 25        | 0          | 21.49   | 21.5      | 21.59   | 22      |

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|       |    |    |       |       |             |    |
|-------|----|----|-------|-------|-------------|----|
| 16QAM | 25 | 13 | 21.48 | 21.44 | 21.53       | 22 |
|       | 25 | 25 | 21.48 | 21.45 | 21.5        | 22 |
|       | 50 | 0  | 21.42 | 21.4  | <b>21.6</b> | 22 |
|       | 1  | 0  | 21.85 | 21.48 | 21.66       | 22 |
|       | 1  | 25 | 21.61 | 21.39 | 21.72       | 22 |
|       | 1  | 49 | 21.84 | 21.44 | 21.63       | 22 |
|       | 25 | 0  | 20.51 | 20.5  | 20.66       | 21 |
|       | 25 | 13 | 20.46 | 20.48 | 20.58       | 21 |
|       | 25 | 25 | 20.44 | 20.45 | 20.56       | 21 |
|       | 50 | 0  | 20.48 | 20.4  | 20.56       | 21 |

| LTE FDD Band 13 |            |         |           | Conducted Power(dBm) |              |         |         |
|-----------------|------------|---------|-----------|----------------------|--------------|---------|---------|
| Bandwidth       | Modulation | RB size | RB offset | Channel              | Channel      | Channel | Tune up |
|                 |            |         |           | 23205                | 23230        | 23255   |         |
| 5MHz            | QPSK       | 1       | 0         | 22.36                | 22.43        | 22.32   | 23      |
|                 |            | 1       | 13        | 22.31                | 22.34        | 22.67   | 23      |
|                 |            | 1       | 24        | 22.29                | 22.46        | 22.58   | 23      |
|                 |            | 12      | 0         | 21.43                | 21.55        | 21.71   | 22      |
|                 |            | 12      | 6         | 21.4                 | 21.38        | 21.73   | 22      |
|                 |            | 12      | 13        | 21.4                 | 21.48        | 21.72   | 22      |
|                 |            | 25      | 0         | 21.4                 | 21.59        | 21.77   | 22      |
|                 | 16QAM      | 1       | 0         | 21.48                | 21.98        | 21.44   | 22      |
|                 |            | 1       | 13        | 21.28                | 21.93        | 21.83   | 22      |
|                 |            | 1       | 24        | 21.2                 | 21.84        | 21.76   | 22      |
|                 |            | 12      | 0         | 20.45                | 20.64        | 20.72   | 22      |
|                 |            | 12      | 6         | 20.42                | 20.4         | 20.71   | 22      |
|                 |            | 12      | 13        | 20.44                | 20.5         | 20.7    | 22      |
|                 |            | 25      | 0         | 20.52                | 20.57        | 20.73   | 22      |
| 10MHz           | QPSK       | RB size | RB offset | Channel              | Channel      | Channel | Tune up |
|                 |            | 1       | 0         | NA                   | 22.76        | NA      | 23      |
|                 |            | 1       | 25        | NA                   | 22.29        | NA      | 23      |
|                 |            | 1       | 49        | NA                   | 22.54        | NA      | 23      |
|                 |            | 25      | 0         | NA                   | 21.5         | NA      | 22      |
|                 |            | 25      | 13        | NA                   | <b>21.6</b>  | NA      | 22      |
|                 |            | 25      | 25        | NA                   | 21.55        | NA      | 22      |
|                 | 16QAM      | 50      | 0         | NA                   | <b>21.71</b> | NA      | 22      |
|                 |            | 1       | 0         | NA                   | 21.8         | NA      | 22      |
|                 |            | 1       | 25        | NA                   | 21.41        | NA      | 22      |
|                 |            | 1       | 49        | NA                   | 21.69        | NA      | 22      |
|                 |            | 25      | 0         | NA                   | 20.59        | NA      | 22      |
|                 |            | 25      | 13        | NA                   | 20.62        | NA      | 22      |

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|  |  |    |    |    |       |    |    |
|--|--|----|----|----|-------|----|----|
|  |  | 25 | 25 | NA | 20.62 | NA | 22 |
|  |  | 50 | 0  | NA | 20.71 | NA | 22 |

| LTE FDD Band 14 |            |         |           | Conducted Power(dBm) |              |         |         |
|-----------------|------------|---------|-----------|----------------------|--------------|---------|---------|
| Bandwidth       | Modulation | RB size | RB offset | Channel              | Channel      | Channel | Tune up |
|                 |            |         |           | 23305                | 23330        | 23355   |         |
| 5MHz            | QPSK       | 1       | 0         | 22.35                | 22.36        | 22.35   | 23.5    |
|                 |            | 1       | 13        | 22.46                | 22.51        | 22.68   | 23.5    |
|                 |            | 1       | 24        | 22.4                 | 22.49        | 22.46   | 23.5    |
|                 |            | 12      | 0         | 21.4                 | 21.53        | 21.78   | 22      |
|                 |            | 12      | 6         | 21.28                | 21.46        | 21.73   | 22      |
|                 |            | 12      | 13        | 21.31                | 21.49        | 21.7    | 22      |
|                 |            | 25      | 0         | 21.33                | 21.5         | 21.72   | 22      |
|                 | 16QAM      | 1       | 0         | 21.37                | 21.78        | 21.45   | 22      |
|                 |            | 1       | 13        | 21.48                | 21.92        | 21.85   | 22      |
|                 |            | 1       | 24        | 21.36                | 21.89        | 21.67   | 22      |
|                 |            | 12      | 0         | 20.44                | 20.53        | 20.81   | 21.5    |
|                 |            | 12      | 6         | 20.39                | 20.5         | 20.67   | 21.5    |
|                 |            | 12      | 13        | 20.37                | 20.5         | 20.72   | 21.5    |
|                 |            | 25      | 0         | 20.47                | 20.49        | 20.66   | 21.5    |
| 10MHz           | QPSK       | RB size | RB offset | Channel              | Channel      | Channel | Tune up |
|                 |            | 1       | 0         | NA                   | 22.8         | NA      | 23.5    |
|                 |            | 1       | 25        | NA                   | <b>23.38</b> | NA      | 23.5    |
|                 |            | 1       | 49        | NA                   | 21.84        | NA      | 23.5    |
|                 |            | 25      | 0         | NA                   | <b>21.54</b> | NA      | 22      |
|                 |            | 25      | 13        | NA                   | 21.48        | NA      | 22      |
|                 |            | 25      | 25        | NA                   | 21.54        | NA      | 22      |
|                 | 16QAM      | 50      | 0         | NA                   | <b>21.5</b>  | NA      | 22      |
|                 |            | 1       | 0         | NA                   | 21.82        | NA      | 22      |
|                 |            | 1       | 25        | NA                   | 22.05        | NA      | 22.5    |
|                 |            | 1       | 49        | NA                   | 20.89        | NA      | 21.5    |
|                 |            | 25      | 0         | NA                   | 20.62        | NA      | 21.5    |
|                 |            | 25      | 13        | NA                   | 20.56        | NA      | 21.5    |
|                 |            | 25      | 25        | NA                   | 20.53        | NA      | 21.5    |
|                 |            | 50      | 0         | NA                   | 20.54        | NA      | 21.5    |

| LTE FDD Band 17 |            |         |           | Conducted Power(dBm) |         |         |         |
|-----------------|------------|---------|-----------|----------------------|---------|---------|---------|
| Bandwidth       | Modulation | RB size | RB offset | Channel              | Channel | Channel | Tune up |
|                 |            |         |           | 23755                | 23790   | 23825   |         |
| 5MHz            | QPSK       | 1       | 0         | 22.22                | 22.3    | 22.25   | 23      |



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|           |            |         |           |              |              |              |         |
|-----------|------------|---------|-----------|--------------|--------------|--------------|---------|
|           |            | 1       | 13        | 22.43        | 22.32        | 22.49        | 23      |
|           |            | 1       | 24        | 22.34        | 22.39        | 22.5         | 23      |
|           |            | 12      | 0         | 21.26        | 21.4         | 21.59        | 22      |
|           |            | 12      | 6         | 21.19        | 21.37        | 21.57        | 22      |
|           |            | 12      | 13        | 21.33        | 21.29        | 21.56        | 22      |
|           |            | 25      | 0         | 21.35        | 21.37        | 21.55        | 22      |
|           |            | 1       | 0         | 21.34        | 21.76        | 21.41        | 22      |
|           |            | 1       | 13        | 21.51        | 21.79        | 21.72        | 22      |
|           |            | 1       | 24        | 21.36        | 21.83        | 21.53        | 22      |
|           |            | 12      | 0         | 20.29        | 20.34        | 20.58        | 21      |
|           |            | 12      | 6         | 20.28        | 20.31        | 20.53        | 21      |
|           |            | 12      | 13        | 20.31        | 20.34        | 20.57        | 21      |
|           |            | 25      | 0         | 20.41        | 20.28        | 20.56        | 21      |
| Bandwidth | Modulation | RB size | RB offset | Channel      | Channel      | Channel      | Tune up |
|           |            |         |           | 23780        | 23790        | 23800        |         |
| 10MHz     | QPSK       | 1       | 0         | 22.6         | 22.61        | 22.44        | 23      |
|           |            | 1       | 25        | <b>22.76</b> | <b>22.67</b> | <b>22.58</b> | 23      |
|           |            | 1       | 49        | 22.59        | 22.52        | 22.36        | 23      |
|           |            | 25      | 0         | <b>21.51</b> | 21.47        | 21.46        | 22      |
|           |            | 25      | 13        | 21.45        | 21.39        | 21.36        | 22      |
|           |            | 25      | 25        | 21.35        | 21.42        | 21.42        | 22      |
|           |            | 50      | 0         | <b>21.46</b> | 21.36        | 21.38        | 22      |
|           | 16QAM      | 1       | 0         | 21.76        | 21.37        | 21.66        | 22      |
|           |            | 1       | 25        | 21.9         | 21.64        | 21.73        | 22      |
|           |            | 1       | 49        | 21.84        | 21.33        | 21.51        | 22      |
|           |            | 25      | 0         | 20.43        | 20.5         | 20.47        | 21      |
|           |            | 25      | 13        | 20.41        | 20.42        | 20.37        | 21      |
|           |            | 25      | 25        | 20.32        | 20.48        | 20.47        | 21      |
|           |            | 50      | 0         | 20.4         | 20.32        | 20.4         | 21      |

| LTE Band 25 |            |         |           | Conducted Power(dBm) |         |         |         |  |
|-------------|------------|---------|-----------|----------------------|---------|---------|---------|--|
| Bandwidth   | Modulation | RB size | RB offset | Channel              | Channel | Channel | Tune up |  |
|             |            |         |           | 26047                | 26365   | 26683   |         |  |
| 1.4MHz      | QPSK       | 1       | 0         | 22.25                | 22      | 22.29   | 23      |  |
|             |            | 1       | 2         | 22.33                | 21.88   | 22.29   | 23      |  |
|             |            | 1       | 5         | 22.19                | 21.76   | 22.27   | 23      |  |
|             |            | 3       | 0         | 22.21                | 21.8    | 22.28   | 22      |  |
|             |            | 3       | 2         | 22.24                | 21.8    | 22.27   | 22      |  |
|             |            | 3       | 3         | 22.24                | 21.77   | 22.34   | 22      |  |
|             |            | 6       | 0         | 21.14                | 20.83   | 21.21   | 22      |  |
| 16QAM       |            | 1       | 0         | 21.46                | 20.97   | 21.32   | 22      |  |
|             |            | 1       | 2         | 21.59                | 20.91   | 21.33   | 22      |  |

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|           |            |         |           |         |         |         |         |
|-----------|------------|---------|-----------|---------|---------|---------|---------|
|           |            | 1       | 5         | 21.37   | 20.75   | 21.31   | 22      |
|           |            | 3       | 0         | 21.11   | 20.68   | 21.35   | 21      |
|           |            | 3       | 2         | 21.24   | 20.74   | 21.3    | 21      |
|           |            | 3       | 3         | 21.13   | 20.66   | 21.35   | 21      |
|           |            | 6       | 0         | 20.18   | 19.83   | 20.3    | 21      |
| Bandwidth | Modulation | RB size | RB offset | Channel | Channel | Channel | Tune up |
|           |            |         |           | 26055   | 26365   | 26675   |         |
| 3MHz      | QPSK       | 1       | 0         | 22.31   | 22.05   | 22.28   | 23      |
|           |            | 1       | 7         | 22.3    | 22      | 22.3    | 23      |
|           |            | 1       | 14        | 22.29   | 21.82   | 22.28   | 23      |
|           |            | 8       | 0         | 21.25   | 20.85   | 21.37   | 22      |
|           |            | 8       | 4         | 21.18   | 20.83   | 21.45   | 22      |
|           |            | 8       | 7         | 21.16   | 20.83   | 21.37   | 22      |
|           |            | 15      | 0         | 21.14   | 20.82   | 21.31   | 22      |
|           | 16QAM      | 1       | 0         | 21.55   | 21.03   | 21.29   | 22      |
|           |            | 1       | 7         | 21.56   | 20.88   | 21.28   | 22      |
|           |            | 1       | 14        | 21.51   | 20.78   | 21.25   | 22      |
|           |            | 8       | 0         | 20.26   | 19.84   | 20.3    | 21      |
|           |            | 8       | 4         | 20.21   | 19.84   | 20.3    | 21      |
|           |            | 8       | 7         | 20.24   | 19.76   | 20.31   | 21      |
|           |            | 15      | 0         | 20.15   | 19.9    | 20.15   | 21      |
| 5MHz      | QPSK       | 1       | 0         | 22.31   | 22.28   | 22.46   | 23      |
|           |            | 1       | 13        | 22.21   | 21.94   | 22.3    | 23      |
|           |            | 1       | 24        | 22.15   | 21.83   | 22.22   | 23      |
|           |            | 12      | 0         | 21.12   | 20.88   | 21.38   | 22      |
|           |            | 12      | 6         | 21.09   | 20.89   | 21.3    | 22      |
|           |            | 12      | 13        | 21.06   | 20.79   | 21.25   | 22      |
|           |            | 25      | 0         | 21.04   | 20.86   | 21.36   | 22      |
|           | 16QAM      | 1       | 0         | 21.25   | 21.59   | 21.53   | 22      |
|           |            | 1       | 13        | 21.28   | 21.3    | 21.41   | 22      |
|           |            | 1       | 24        | 21.19   | 21.16   | 21.34   | 22      |
|           |            | 12      | 0         | 20.11   | 19.88   | 20.42   | 21      |
|           |            | 12      | 6         | 20.21   | 19.83   | 20.33   | 21      |
|           |            | 12      | 13        | 20.14   | 19.82   | 20.3    | 21      |
|           |            | 25      | 0         | 20.11   | 19.88   | 20.5    | 21      |
| 10MHz     | QPSK       | RB size | RB offset | Channel | Channel | Channel | Tune up |
|           |            |         |           | 26090   | 26365   | 26640   |         |
|           |            | 1       | 0         | 22.54   | 22.33   | 22.35   | 23      |
|           |            | 1       | 25        | 22.25   | 21.93   | 22.55   | 23      |
|           |            | 1       | 49        | 22.4    | 22      | 22.04   | 23      |
|           |            | 25      | 0         | 21.14   | 20.88   | 21.35   | 22      |

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|       |       |         |           |         |         |         |         |
|-------|-------|---------|-----------|---------|---------|---------|---------|
|       |       | 25      | 13        | 21.21   | 20.88   | 21.36   | 22      |
|       |       | 25      | 25        | 21.16   | 20.83   | 21.39   | 22      |
|       |       | 50      | 0         | 21.15   | 20.89   | 21.4    | 22      |
| 16QAM | 16QAM | 1       | 0         | 21.72   | 21.28   | 21.57   | 22      |
|       |       | 1       | 25        | 21.53   | 20.88   | 21.24   | 22      |
|       |       | 1       | 49        | 21.67   | 20.99   | 21.09   | 22      |
|       |       | 25      | 0         | 20.05   | 19.91   | 20.36   | 21      |
|       |       | 25      | 13        | 20.27   | 19.9    | 20.42   | 21      |
|       |       | 25      | 25        | 20.21   | 19.89   | 20.44   | 21      |
|       |       | 50      | 0         | 20.12   | 19.91   | 20.39   | 21      |
|       |       | RB size | RB offset | Channel | Channel | Channel | Tune up |
| 15MHz | QPSK  |         |           | 26115   | 26365   | 26615   |         |
|       | 1     | 0       | 22.17     | 22.19   | 22.23   | 23      |         |
|       | 1     | 38      | 22.13     | 22.03   | 22.48   | 23      |         |
|       | 1     | 74      | 22.1      | 22.03   | 22.17   | 23      |         |
|       | 36    | 0       | 21.15     | 21.21   | 21.56   | 22      |         |
|       | 36    | 18      | 21.31     | 21.06   | 21.53   | 22      |         |
|       | 36    | 39      | 21.28     | 21.04   | 21.72   | 22      |         |
|       | 16QAM | 75      | 0         | 21.23   | 21.07   | 21.56   | 22      |
|       |       | 1       | 0         | 21.23   | 21.17   | 21.54   | 22      |
|       |       | 1       | 38        | 21.15   | 21.06   | 21.5    | 22      |
|       |       | 1       | 74        | 21.11   | 20.97   | 21.16   | 22      |
|       |       | 36      | 0         | 20.2    | 20.26   | 20.6    | 21      |
|       |       | 36      | 18        | 20.34   | 20.12   | 20.53   | 21      |
|       |       | 36      | 39        | 20.25   | 20.11   | 20.65   | 21      |
| 20MHz | QPSK  | 75      | 0         | 20.24   | 20.12   | 20.72   | 21      |
|       |       | RB size | RB offset | Channel | Channel | Channel | Tune up |
|       |       |         |           | 26140   | 26365   | 26590   |         |
|       |       | 1       | 0         | 22.06   | 22.25   | 22.4    | 23      |
|       |       | 1       | 50        | 22.25   | 22.16   | 22.44   | 23      |
|       |       | 1       | 99        | 21.77   | 21.61   | 22.05   | 23      |
|       |       | 50      | 0         | 21.08   | 21.04   | 21.38   | 22      |
|       | 16QAM | 50      | 25        | 21.18   | 21.03   | 21.44   | 22      |
|       |       | 50      | 50        | 21.23   | 20.99   | 21.48   | 22      |
|       |       | 100     | 0         | 21.15   | 21.03   | 21.59   | 22      |
|       |       | 1       | 0         | 21.18   | 20.94   | 21.44   | 22      |
|       |       | 1       | 50        | 21.31   | 20.84   | 21.68   | 22      |
|       |       | 1       | 99        | 20.82   | 20.45   | 21.46   | 22      |
|       |       | 50      | 0         | 20.09   | 20.02   | 20.44   | 21      |

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| LTE FDD Band 26 |            |         |           | Conducted Power(dBm) |         |         |         |
|-----------------|------------|---------|-----------|----------------------|---------|---------|---------|
| Bandwidth       | Modulation | RB size | RB offset | Channel              | Channel | Channel | Tune up |
|                 |            |         |           | 26697                | 26865   | 27033   |         |
| 1.4MHz          | QPSK       | 1       | 0         | 22.32                | 22.25   | 22.17   | 23.5    |
|                 |            | 1       | 2         | 22.4                 | 22.73   | 22.79   | 23.5    |
|                 |            | 1       | 5         | 22.36                | 22.63   | 22.61   | 23.5    |
|                 |            | 3       | 0         | 22.25                | 22.66   | 22.76   | 22.5    |
|                 |            | 3       | 2         | 22.3                 | 22.61   | 22.84   | 22.5    |
|                 |            | 3       | 3         | 22.29                | 22.62   | 22.7    | 22.5    |
|                 |            | 6       | 0         | 21.28                | 21.62   | 21.66   | 22.5    |
|                 | 16QAM      | 1       | 0         | 21.76                | 21.13   | 21.11   | 22.5    |
|                 |            | 1       | 2         | 21.94                | 21.6    | 21.59   | 22.5    |
|                 |            | 1       | 5         | 21.82                | 21.53   | 21.56   | 22.5    |
|                 |            | 3       | 0         | 21.48                | 21.49   | 21.86   | 21.5    |
|                 |            | 3       | 2         | 21.52                | 21.53   | 21.85   | 21.5    |
|                 |            | 3       | 3         | 21.51                | 21.53   | 21.83   | 21.5    |
|                 |            | 6       | 0         | 20.29                | 20.69   | 20.69   | 21.5    |
| 3MHz            | QPSK       | 1       | 0         | 22.38                | 22.24   | 22.11   | 23.5    |
|                 |            | 1       | 7         | 22.37                | 22.91   | 22.46   | 23.5    |
|                 |            | 1       | 14        | 22.31                | 22.79   | 22.51   | 23.5    |
|                 |            | 8       | 0         | 21.46                | 21.67   | 21.72   | 22.5    |
|                 |            | 8       | 4         | 21.35                | 21.64   | 21.67   | 22.5    |
|                 |            | 8       | 7         | 21.37                | 21.69   | 21.78   | 22.5    |
|                 |            | 15      | 0         | 21.31                | 21.73   | 21.66   | 22.5    |
|                 | 16QAM      | 1       | 0         | 21.82                | 21.16   | 21.21   | 22.5    |
|                 |            | 1       | 7         | 21.79                | 21.62   | 21.53   | 22.5    |
|                 |            | 1       | 14        | 21.78                | 21.62   | 21.58   | 22.5    |
|                 |            | 8       | 0         | 20.44                | 20.63   | 20.64   | 21.5    |
|                 |            | 8       | 4         | 20.43                | 20.64   | 20.6    | 21.5    |
|                 |            | 8       | 7         | 20.36                | 20.6    | 20.69   | 21.5    |
|                 |            | 15      | 0         | 20.5                 | 20.73   | 20.61   | 21.5    |
| 5MHz            | QPSK       | 1       | 0         | 22.35                | 22.25   | 22.28   | 23.5    |
|                 |            | 1       | 13        | 22.35                | 22.68   | 22.73   | 23.5    |
|                 |            | 1       | 24        | 22.37                | 22.63   | 22.71   | 23.5    |
|                 |            | 12      | 0         | 21.52                | 21.7    | 21.86   | 22.5    |
|                 |            | 12      | 6         | 21.36                | 21.7    | 21.75   | 22.5    |
|                 |            | 12      | 13        | 21.37                | 21.61   | 21.81   | 22.5    |
|                 |            | 25      | 0         | 21.37                | 21.7    | 21.74   | 22.5    |
|                 | 16QAM      | 1       | 0         | 21.17                | 21.78   | 21.31   | 22.5    |
|                 |            | 1       | 13        | 21.22                | 22.24   | 21.81   | 22.5    |
|                 |            | 1       | 24        | 21.23                | 22.26   | 21.76   | 22.5    |

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|           |            |         |           |             |              |              |         |
|-----------|------------|---------|-----------|-------------|--------------|--------------|---------|
|           |            | 12      | 0         | 20.59       | 20.79        | 20.88        | 21.5    |
|           |            | 12      | 6         | 20.46       | 20.77        | 20.79        | 21.5    |
|           |            | 12      | 13        | 20.45       | 20.64        | 20.79        | 21.5    |
|           |            | 25      | 0         | 20.54       | 20.7         | 20.81        | 21.5    |
| Bandwidth | Modulation | RB size | RB offset | Channel     | Channel      | Channel      | Tune up |
|           |            |         |           | 26750       | 26865        | 26990        |         |
| 10MHz     | QPSK       | 1       | 0         | 22.67       | 22.67        | 22.64        | 23.5    |
|           |            | 1       | 25        | 22.58       | 22.72        | 22.95        | 23.5    |
|           |            | 1       | 49        | 22.56       | 22.86        | 22.87        | 23.5    |
|           |            | 25      | 0         | 21.41       | 21.83        | 21.9         | 22.5    |
|           |            | 25      | 13        | 21.39       | 21.77        | 21.8         | 22.5    |
|           |            | 25      | 25        | 21.4        | 21.75        | 21.83        | 22.5    |
|           |            | 50      | 0         | 21.41       | 21.77        | 21.84        | 22.5    |
|           | 16QAM      | 1       | 0         | 22.13       | 21.45        | 21.56        | 22.5    |
|           |            | 1       | 25        | 21.9        | 21.62        | 21.65        | 22.5    |
|           |            | 1       | 49        | 21.98       | 21.7         | 21.57        | 22.5    |
|           |            | 25      | 0         | 20.44       | 20.91        | 20.94        | 21.5    |
|           |            | 25      | 13        | 20.43       | 20.86        | 20.89        | 21.5    |
|           |            | 25      | 25        | 20.33       | 20.79        | 20.87        | 21.5    |
|           |            | 50      | 0         | 20.44       | 20.8         | 20.9         | 21.5    |
| 15MHz     | QPSK       | 1       | 0         | <b>22.7</b> | <b>23.01</b> | <b>22.77</b> | 23.5    |
|           |            | 1       | 38        | 22.4        | 22.63        | 22.59        | 23.5    |
|           |            | 1       | 74        | 22.53       | 22.91        | 22.38        | 23.5    |
|           |            | 36      | 0         | 21.64       | <b>21.85</b> | 22.07        | 22.5    |
|           |            | 36      | 18        | 21.53       | 21.7         | 21.78        | 22.5    |
|           |            | 36      | 39        | 21.48       | 21.56        | 21.68        | 22.5    |
|           |            | 75      | 0         | 21.45       | <b>21.66</b> | 21.62        | 22.5    |
|           | 16QAM      | 1       | 0         | 21.35       | 21.43        | 21.47        | 22.5    |
|           |            | 1       | 38        | 21.19       | 21.53        | 21.67        | 22.5    |
|           |            | 1       | 74        | 21.54       | 21.78        | 21.76        | 22.5    |
|           |            | 36      | 0         | 20.86       | 20.92        | 21.15        | 21.5    |
|           |            | 36      | 18        | 20.49       | 20.62        | 20.9         | 21.5    |
|           |            | 36      | 39        | 20.21       | 20.48        | 20.62        | 21.5    |
|           |            | 75      | 0         | 20.57       | 20.65        | 21           | 21.5    |

| LTE FDD Band 41 |            |         |           | Conducted Power(dBm) |         |         |         |
|-----------------|------------|---------|-----------|----------------------|---------|---------|---------|
| Bandwidth       | Modulation | RB size | RB offset | Channel              | Channel | Channel | Tune up |
|                 |            |         |           | 39675                | 40620   | 41565   |         |
| 5MHz            | QPSK       | 1       | 0         | 22.14                | 21.64   | 22.39   | 22      |
|                 |            | 1       | 13        | 21.82                | 21.58   | 22.33   | 22      |
|                 |            | 1       | 24        | 21.41                | 21.57   | 22.34   | 22      |
|                 |            | 12      | 0         | 21.12                | 20.81   | 21.2    | 21.5    |

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|           |            |         |           |         |         |         |         |
|-----------|------------|---------|-----------|---------|---------|---------|---------|
|           | 16QAM      | 12      | 6         | 20.66   | 20.96   | 21.38   | 21.5    |
|           |            | 12      | 13        | 20.73   | 20.86   | 21.15   | 21.5    |
|           |            | 25      | 0         | 20.95   | 20.76   | 21.33   | 21.5    |
|           |            | 1       | 0         | 21.24   | 20.99   | 21.43   | 21.5    |
|           |            | 1       | 13        | 20.71   | 20.98   | 21.42   | 21.5    |
|           |            | 1       | 24        | 20.67   | 20.87   | 21.29   | 21.5    |
|           |            | 12      | 0         | 19.91   | 19.82   | 20.14   | 20.5    |
|           |            | 12      | 6         | 19.96   | 19.91   | 20.2    | 20.5    |
|           |            | 12      | 13        | 19.59   | 19.83   | 20.22   | 20.5    |
|           |            | 25      | 0         | 19.74   | 19.91   | 20.16   | 20.5    |
| Bandwidth | Modulation | RB size | RB offset | Channel | Channel | Channel | Tune up |
|           |            |         |           | 39700   | 40620   | 41540   |         |
| 10MHz     | QPSK       | 1       | 0         | 21.89   | 21.54   | 22      | 22      |
|           |            | 1       | 25        | 21.47   | 21.7    | 22.25   | 22      |
|           |            | 1       | 49        | 21.45   | 21.78   | 21.87   | 22      |
|           |            | 25      | 0         | 20.76   | 20.67   | 21.14   | 21.5    |
|           |            | 25      | 13        | 20.75   | 20.75   | 21.39   | 21.5    |
|           |            | 25      | 25        | 20.47   | 20.85   | 21.36   | 21.5    |
|           |            | 50      | 0         | 20.45   | 20.88   | 21.3    | 21.5    |
|           | 16QAM      | 1       | 0         | 20.67   | 20.59   | 21.18   | 21.5    |
|           |            | 1       | 25        | 20.71   | 20.7    | 21.09   | 21.5    |
|           |            | 1       | 49        | 20.05   | 20.75   | 21.01   | 21.5    |
|           |            | 25      | 0         | 19.88   | 19.88   | 20.24   | 20.5    |
|           |            | 25      | 13        | 19.81   | 20      | 20.38   | 20.5    |
|           |            | 25      | 25        | 19.75   | 19.79   | 20.34   | 20.5    |
|           |            | 50      | 0         | 19.71   | 19.91   | 20.11   | 20.5    |
| Bandwidth | Modulation | RB size | RB offset | Channel | Channel | Channel | Tune up |
|           |            |         |           | 39725   | 40620   | 41515   |         |
| 15MHz     | QPSK       | 1       | 0         | 21.67   | 20.99   | 21.47   | 22      |
|           |            | 1       | 38        | 21.64   | 21.55   | 21.67   | 22      |
|           |            | 1       | 74        | 21.05   | 21.01   | 21.14   | 22      |
|           |            | 36      | 0         | 20.41   | 20.47   | 21      | 21.5    |
|           |            | 36      | 18        | 20.5    | 20.53   | 21.13   | 21.5    |
|           |            | 36      | 39        | 20.47   | 20.69   | 21.11   | 21.5    |
|           |            | 75      | 0         | 20.61   | 20.58   | 21.02   | 21.5    |
|           | 16QAM      | 1       | 0         | 20.64   | 19.77   | 20.59   | 21.5    |
|           |            | 1       | 38        | 20.48   | 20.43   | 20.63   | 21.5    |
|           |            | 1       | 74        | 19.79   | 19.86   | 20.22   | 21.5    |
|           |            | 36      | 0         | 19.39   | 19.48   | 19.86   | 20.5    |
|           |            | 36      | 18        | 19.44   | 19.7    | 20.09   | 20.5    |
|           |            | 36      | 39        | 19.44   | 19.59   | 20.1    | 20.5    |
|           |            | 75      | 0         | 19.66   | 19.61   | 20.05   | 20.5    |
| Bandwidth | Modulation | RB      | RB        | Channel | Channel | Channel | Tune up |

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|       |       | size | offset | 39750 | 40620 | 41490 |      |
|-------|-------|------|--------|-------|-------|-------|------|
| 20MHz | QPSK  | 1    | 0      | 21.43 | 21.13 | 21.27 | 22   |
|       |       | 1    | 50     | 21.69 | 21.46 | 21.73 | 22   |
|       |       | 1    | 99     | 21    | 20.9  | 21.23 | 22   |
|       |       | 50   | 0      | 20.42 | 20.63 | 20.84 | 21.5 |
|       |       | 50   | 25     | 20.63 | 20.68 | 21.1  | 21.5 |
|       |       | 50   | 50     | 20.27 | 20.45 | 20.83 | 21.5 |
|       |       | 100  | 0      | 20.25 | 20.43 | 20.68 | 21.5 |
|       |       | 1    | 0      | 20.77 | 20.32 | 20.47 | 21.5 |
| 16QAM | 16QAM | 1    | 50     | 20.59 | 20.76 | 20.81 | 21.5 |
|       |       | 1    | 99     | 20.22 | 20.01 | 20.59 | 21.5 |
|       |       | 50   | 0      | 19.45 | 19.44 | 19.92 | 20.5 |
|       |       | 50   | 25     | 19.44 | 19.77 | 20.22 | 20.5 |
|       |       | 50   | 50     | 19.34 | 19.31 | 20.09 | 20.5 |
|       |       | 100  | 0      | 19.44 | 19.31 | 19.79 | 20.5 |

Table 11: Conducted Power Of LTE

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## 8.1.3 Conducted Power Of Wi-Fi and BT

| Mode                 | Channel | Frequency (MHz) | Data Rate (Mbps) | Average Power (dBm) | Tune up |
|----------------------|---------|-----------------|------------------|---------------------|---------|
| 802.11b              | 1       | 2412            | 1                | <b>11.55</b>        | 12      |
|                      | 6       | 2437            |                  | 11.28               | 12      |
|                      | 11      | 2462            |                  | 11.32               | 12      |
| 802.11g              | 1       | 2412            | 6                | 9.95                | 10.5    |
|                      | 6       | 2437            |                  | 9.95                | 10.5    |
|                      | 11      | 2462            |                  | 9.92                | 10.5    |
| 802.11n<br>HT20 SISO | 1       | 2412            | MCS0             | 10.12               | 10.5    |
|                      | 6       | 2437            |                  | 9.83                | 10.5    |
|                      | 11      | 2462            |                  | 10.1                | 10.5    |
| 802.11n<br>HT40 SISO | 3       | 2422            | MCS0             | 9.95                | 10.5    |
|                      | 6       | 2437            |                  | 9.99                | 10.5    |
|                      | 9       | 2452            |                  | 9.85                | 10.5    |

| 5GHz         | mode     | Channel | Frequency (MHz) | Data Rate (Mbps) | Average Power (dBm) | Tune up |
|--------------|----------|---------|-----------------|------------------|---------------------|---------|
| 802.11a      | U-NII-1  | 36      | 5180            | 6                | <b>10.04</b>        | 10.5    |
|              |          | 40      | 5200            |                  | 9.85                | 10.5    |
|              |          | 48      | 5240            |                  | 9.19                | 10.5    |
|              | U-NII-2A | 52      | 5260            |                  | <b>8.95</b>         | 9.5     |
|              |          | 60      | 5300            |                  | 8.33                | 9.5     |
|              |          | 64      | 5320            |                  | 8.16                | 9.5     |
|              | U-NII-2C | 100     | 5500            |                  | <b>8.21</b>         | 9       |
|              |          | 116     | 5580            |                  | 7.98                | 9       |
|              |          | 140     | 5700            |                  | 6.02                | 7.5     |
|              | U-NII-3  | 149     | 5745            |                  | 5.27                | 6       |
|              |          | 157     | 5785            |                  | 4.71                | 5.5     |
|              |          | 165     | 5825            |                  | 3.16                | 4.5     |
| 5GHz         | mode     | Channel | Frequency (MHz) | Data Rate (Mbps) | Average Power (dBm) | Tune up |
| 802.11n-HT20 | U-NII-1  | 36      | 5180            | MCS0             | 9.3                 | 10      |
|              |          | 40      | 5200            |                  | 8.91                | 10      |
|              |          | 48      | 5240            |                  | 8.19                | 10      |
|              | U-NII-2A | 52      | 5260            |                  | 7.88                | 8       |
|              |          | 60      | 5300            |                  | 7.27                | 8       |
|              |          | 64      | 5320            |                  | 7.16                | 8       |
|              | U-NII-2C | 100     | 5500            |                  | 7.01                | 7.5     |
|              |          | 116     | 5580            |                  | 6.98                | 7.5     |



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|              |          |         |                 |                  |                     |         |
|--------------|----------|---------|-----------------|------------------|---------------------|---------|
|              | U-NII-3  | 140     | 5700            |                  | 5.39                | 6.5     |
|              |          | 149     | 5745            |                  | 4.46                | 5       |
|              |          | 157     | 5785            |                  | 3.81                | 5       |
|              |          | 165     | 5825            |                  | 2.4                 | 4       |
| 5GHz         | mode     | Channel | Frequency (MHz) | Data Rate (Mbps) | Average Power (dBm) | Tune up |
| 802.11n-HT40 | U-NII-1  | 38      | 5190            | MCS0             | 9.3                 | 10      |
|              |          | 46      | 5230            |                  | 8.91                | 9.5     |
|              | U-NII-2A | 54      | 5270            |                  | 8.19                | 9       |
|              |          | 62      | 5310            |                  | 7.88                | 8.5     |
|              | U-NII-2C | 102     | 5510            |                  | 7.27                | 8       |
|              |          | 110     | 5550            |                  | 7.16                | 8       |
|              |          | 134     | 5670            |                  | 7.01                | 8       |
|              | U-NII-3  | 151     | 5755            |                  | <b>6.98</b>         | 7.5     |
|              |          | 159     | 5795            |                  | 5.39                | 6       |
| 5GHz         | mode     | Channel | Frequency (MHz) | Data Rate (Mbps) | Average Power (dBm) | Tune up |
| 802.11ac 20M | U-NII-1  | 36      | 5180            | MCS0             | 9.23                | 9.5     |
|              |          | 40      | 5200            |                  | 8.98                | 9.5     |
|              |          | 48      | 5240            |                  | 8.35                | 9.5     |
|              | U-NII-2A | 52      | 5260            |                  | 7.88                | 8       |
|              |          | 60      | 5300            |                  | 7.39                | 8       |
|              |          | 64      | 5320            |                  | 7.07                | 8       |
|              | U-NII-2C | 100     | 5500            |                  | 7.09                | 8       |
|              |          | 116     | 5580            |                  | 6.97                | 8       |
|              |          | 140     | 5700            |                  | 5.27                | 7       |
|              | U-NII-3  | 149     | 5745            |                  | 4.78                | 5       |
|              |          | 157     | 5785            |                  | 3.91                | 5       |
|              |          | 165     | 5825            |                  | 2.39                | 4       |
| 5GHz         | mode     | Channel | Frequency (MHz) | Data Rate (Mbps) | Average Power (dBm) | Tune up |
| 802.11ac 40M | U-NII-1  | 38      | 5190            | MCS0             | 9.75                | 10      |
|              |          | 46      | 5230            |                  | 9.17                | 10      |
|              | U-NII-2A | 54      | 5270            |                  | 8.49                | 9       |
|              |          | 62      | 5310            |                  | 7.4                 | 8       |
|              | U-NII-2C | 102     | 5510            |                  | 6.65                | 8       |
|              |          | 110     | 5550            |                  | 7.45                | 8       |
|              |          | 134     | 5670            |                  | 6.34                | 7       |
|              | U-NII-3  | 151     | 5755            |                  | 5.1                 | 6.5     |
|              |          | 159     | 5795            |                  | 4.2                 | 5       |

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| 5GHz            | mode     | Channel | Frequency (MHz) | Data Rate (Mbps) | Average Power (dBm) | Tune up |
|-----------------|----------|---------|-----------------|------------------|---------------------|---------|
| 802.11ac<br>80M | U-NII-1  | 42      | 5210            | MCS0             | 9.39                | 10      |
|                 | U-NII-2A | 58      | 5290            |                  | 8.33                | 9.5     |
|                 | U-NII-2C | 106     | 5530            |                  | 8.1                 | 9       |
|                 | U-NII-3  | 155     | 5775            |                  | 5.03                | 6       |

Table 12: Conducted Power Of Wi-Fi

Note:

- a) Power must be measured at each transmit antenna port according to the DSSS and OFDM transmission configurations in each standalone and aggregated frequency band.
- b) Power measurement is required for the transmission mode configuration with the highest maximum output power specified for production units.
  - 1) When the same highest maximum output power specification applies to multiple transmission modes, the largest channel bandwidth configuration with the lowest order modulation and lowest data rate is measured.
  - 2) When the same highest maximum output power is specified for multiple largest channel bandwidth configurations with the same lowest order modulation or lowest order modulation and lowest data rate, power measurement is required for all equivalent 802.11 configurations with the same maximum output power.
  - c) For each transmission mode configuration, power must be measured for the highest and lowest channels; and at the mid-band channel(s) when there are at least 3 channels. For configurations with multiple mid-band channels, due to an even number of channels, both channels should be measured.

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| BT            |         |                 | Average Conducted Power(dBm) | Tune up (dBm) |
|---------------|---------|-----------------|------------------------------|---------------|
| Modulation    | Channel | Frequency (MHz) |                              |               |
| GFSK          | 0       | 2402            | 8.15                         | 8.5           |
|               | 39      | 2441            | 6.46                         | 8             |
|               | 78      | 2480            | 6.07                         | 8             |
| $\pi/4$ DQPSK | 0       | 2402            | 3.41                         | 4             |
|               | 39      | 2441            | 4.54                         | 5             |
|               | 78      | 2480            | 2.18                         | 3             |
| 8DPSK         | 0       | 2402            | 3.82                         | 4             |
|               | 39      | 2441            | 4.84                         | 5             |
|               | 78      | 2480            | 2.45                         | 4             |
| BLE_1M        |         |                 | Average Conducted Power(dBm) | Tune up (dBm) |
| Modulation    | Channel | Frequency (MHz) |                              |               |
| GFSK          | 0       | 2402            | -0.83                        | 0             |
|               | 19      | 2440            | 0.08                         | 1             |
|               | 39      | 2480            | -1.96                        | 0             |

Table 13: Conducted Power Of BT

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## 8.2 Stand-alone SAR test evaluation

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Test Exclusion Threshold condition is satisfied. These test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions.

| Freq. Band    | Frequency (GHz) | Position  | Average Power |       | Test Separation (mm) | Calculate Value | Exclusion Threshold | Exclusion (Y/N) |
|---------------|-----------------|-----------|---------------|-------|----------------------|-----------------|---------------------|-----------------|
|               |                 |           | dBm           | mW    |                      |                 |                     |                 |
| WCDMA Band II | 1.91            | Extremity | 23            | 199.5 | 0                    | 55.2            | 7.5                 | N               |
| WCDMA Band IV | 1.755           | Extremity | 23.5          | 223.9 | 0                    | 59.3            | 7.5                 | N               |
| WCDMA Band V  | 0.849           | Extremity | 24            | 251.2 | 0                    | 46.3            | 7.5                 | N               |
| LTE band 2    | 1.91            | Extremity | 23            | 199.5 | 0                    | 55.2            | 7.5                 | N               |
| LTE band 4    | 1.755           | Extremity | 23            | 199.5 | 0                    | 52.9            | 7.5                 | N               |
| LTE band 5    | 0.849           | Extremity | 23.5          | 223.9 | 0                    | 41.3            | 7.5                 | N               |
| LTE band 7    | 2.57            | Extremity | 22            | 158.5 | 0                    | 50.8            | 7.5                 | N               |
| LTE band 12   | 0.716           | Extremity | 23            | 199.5 | 0                    | 33.8            | 7.5                 | N               |
| LTE band 13   | 0.787           | Extremity | 23            | 199.5 | 0                    | 35.4            | 7.5                 | N               |
| LTE band 14   | 0.793           | Extremity | 23.5          | 223.9 | 0                    | 39.9            | 7.5                 | N               |
| LTE band 17   | 0.716           | Extremity | 23.5          | 223.9 | 0                    | 37.9            | 7.5                 | N               |
| LTE Band 25   | 1.915           | Extremity | 23            | 199.5 | 0                    | 55.2            | 7.5                 | N               |
| LTE Band 26   | 0.849           | Extremity | 23.5          | 223.9 | 0                    | 41.3            | 7.5                 | N               |
| LTE Band 41   | 2.69            | Extremity | 22            | 158.5 | 0                    | 52              | 7.5                 | N               |
| Wi-Fi 2.4GHz  | 2.462           | Extremity | 12            | 15.8  | 0                    | 5               | 7.5                 | Y               |
| Wi-Fi 5GHz    | 5.85            | Extremity | 10.5          | 11.2  | 0                    | 5.4             | 7.5                 | Y               |
| Bluetooth     | 2.48            | Extremity | 8.5           | 7.1   | 0                    | 2.2             | 7.5                 | Y               |

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq 50$  mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$  for 1-g SAR and  $\leq 7.5$  for 10-g extremity SAR, where

- $f(\text{GHz})$  is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is  $< 5$  mm, a distance of 5 mm is applied to determine SAR test exclusion.

Note:

The customer requires testing Wi-Fi 2.4GHz and Wi-Fi 5GHz.



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## 8.3 Measurement of SAR Data

### 8.3.1 SAR Result Of WCDMA Band II

| Test position                     | Test mode | Test Ch./Freq. | Duty Cycle | SAR (W/kg) 1-g | SAR (W/kg) 10-g | Power Drift (dB) | Conducted Power (dBm) | Tune up Limit (dBm) | Scaled factor | Scaled SAR (W/kg) 10-g | Liquid Temp | SAR limit (W/kg) |
|-----------------------------------|-----------|----------------|------------|----------------|-----------------|------------------|-----------------------|---------------------|---------------|------------------------|-------------|------------------|
| Extremity Test data(Separate 0mm) |           |                |            |                |                 |                  |                       |                     |               |                        |             |                  |
| Front side                        | RMC       | 9538/1907.6    | 1:1        | 3.12           | 1.39            | 0.04             | 22.43                 | 23                  | 1.140         | 1.585                  | 22.3        | 4.0              |
| Back side                         | RMC       | 9538/1907.6    | 1:1        | 6.73           | 2.79            | -0.14            | 22.43                 | 23                  | 1.140         | 3.181                  | 22.3        | 4.0              |
| Left side                         | RMC       | 9538/1907.6    | 1:1        | 0.417          | 0.189           | 0.01             | 22.43                 | 23                  | 1.140         | 0.216                  | 22.3        | 4.0              |
| Right side                        | RMC       | 9538/1907.6    | 1:1        | 0.32           | 0.157           | -0.16            | 22.43                 | 23                  | 1.140         | 0.179                  | 22.3        | 4.0              |
| Bottom side                       | RMC       | 9538/1907.6    | 1:1        | 3.92           | 1.68            | 0.17             | 22.43                 | 23                  | 1.140         | 1.916                  | 22.3        | 4.0              |
| Back side                         | RMC       | 9262/1852.4    | 1:1        | 5.57           | 2.31            | 0.02             | 22.31                 | 23                  | 1.172         | 2.708                  | 22.3        | 4.0              |
| Back side                         | RMC       | 9400/1880      | 1:1        | 6.51           | 2.72            | -0.02            | 22.31                 | 23                  | 1.172         | <b>3.188</b>           | 22.3        | 4.0              |
| Back side-repeat                  | RMC       | 9400/1880      | 1:1        | 6.32           | 2.63            | 0.06             | 22.31                 | 23                  | 1.172         | 3.083                  | 22.3        | 4.0              |

Table 14: SAR Result Of WCDMA Band II

Note:

1) The maximum Scaled SAR value is marked in bold. Graph Results refer to Appendix B

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### 8.3.2 SAR Result Of WCDMA Band IV

| Test position                     | Test mode | Test Ch./Freq. | Duty Cycle | SAR (W/kg)<br>1-g | SAR (W/kg)<br>10-g | Power Drift (dB) | Conducted Power (dBm) | Tune up Limit (dBm) | Scaled factor | Scaled SAR (W/kg)<br>10-g | Liquid Temp | SAR limit (W/kg) |
|-----------------------------------|-----------|----------------|------------|-------------------|--------------------|------------------|-----------------------|---------------------|---------------|---------------------------|-------------|------------------|
| Extremity Test data(Separate 0mm) |           |                |            |                   |                    |                  |                       |                     |               |                           |             |                  |
| Front side                        | RMC       | 1513/1752.6    | 1:1        | 2.91              | 1.35               | 0.05             | 23.23                 | 23.5                | 1.064         | 1.437                     | 22.2        | 4.0              |
| Back side                         | RMC       | 1513/1752.6    | 1:1        | 6.06              | 2.57               | 0.02             | 23.23                 | 23.5                | 1.064         | 2.735                     | 22.2        | 4.0              |
| Left side                         | RMC       | 1513/1752.6    | 1:1        | 0.045             | 0.023              | -0.16            | 23.23                 | 23.5                | 1.064         | 0.024                     | 22.2        | 4.0              |
| Right side                        | RMC       | 1513/1752.6    | 1:1        | 0.038             | 0.016              | 0.04             | 23.23                 | 23.5                | 1.064         | 0.017                     | 22.2        | 4.0              |
| Top side                          | RMC       | 1513/1752.6    | 1:1        | 0                 | 0                  | 0                | 23.23                 | 23.5                | 1.064         | 0.000                     | 22.2        | 4.0              |
| Bottom side                       | RMC       | 1513/1752.6    | 1:1        | 3.45              | 1.66               | -0.18            | 23.23                 | 23.5                | 1.064         | 1.766                     | 22.2        | 4.0              |
| Back side                         | RMC       | 1312/1712.4    | 1:1        | 5.51              | 2.36               | 0.02             | 23.1                  | 23.5                | 1.096         | 2.588                     | 22.2        | 4.0              |
| Back side                         | RMC       | 1412/1732.4    | 1:1        | 6.22              | 2.64               | 0.03             | 22.97                 | 23.5                | 1.130         | <b>2.983</b>              | 22.2        | 4.0              |
| Back side-repeat                  | RMC       | 1412/1732.4    | 1:1        | 5.85              | 2.52               | 0.09             | 22.97                 | 23.5                | 1.130         | 2.847                     | 22.2        | 4.0              |

Table 2: SAR Result Of WCDMA Band IV

Note:

1) The maximum Scaled SAR value is marked in bold. Graph Results refer to Appendix B

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## 8.3.3 SAR Result Of WCDMA Band V

| Test position                     | Test mode | Test Ch./Freq. | Duty Cycle | SAR (W/kg) 1-g | SAR (W/kg) 10-g | Power Drift (dB) | Conducted Power (dBm) | Tune up Limit (dBm) | Scaled factor | Scaled SAR (W/kg) 10-g | Liquid Temp | SAR limit (W/kg) |
|-----------------------------------|-----------|----------------|------------|----------------|-----------------|------------------|-----------------------|---------------------|---------------|------------------------|-------------|------------------|
| Extremity Test data(Separate 0mm) |           |                |            |                |                 |                  |                       |                     |               |                        |             |                  |
| Front side                        | RMC       | 4132/826.4     | 1:1        | 0.51           | 0.22            | 0.03             | 23.53                 | 24                  | 1.114         | 0.245                  | 22.1        | 4.0              |
| Back side                         | RMC       | 4132/826.4     | 1:1        | 1.04           | 0.601           | 0.09             | 23.53                 | 24                  | 1.114         | 0.670                  | 22.1        | 4.0              |
| Left side                         | RMC       | 4132/826.4     | 1:1        | 0.086          | 0.04            | -0.13            | 23.53                 | 24                  | 1.114         | 0.045                  | 22.1        | 4.0              |
| Right side                        | RMC       | 4132/826.4     | 1:1        | 0.065          | 0.029           | 0.08             | 23.53                 | 24                  | 1.114         | 0.032                  | 22.1        | 4.0              |
| Bottom side                       | RMC       | 4132/826.4     | 1:1        | 0.68           | 0.31            | -0.16            | 23.53                 | 24                  | 1.114         | 0.345                  | 22.1        | 4.0              |
| Back side                         | RMC       | 4182/836.4     | 1:1        | 1.07           | 0.633           | 0.05             | 22.46                 | 24                  | 1.426         | 0.902                  | 22.1        | 4.0              |
| Back side                         | RMC       | 4233/846.6     | 1:1        | 1.08           | 0.639           | -0.04            | 22.45                 | 24                  | 1.429         | <b>0.913</b>           | 22.1        | 4.0              |

Table 3: SAR Result Of WCDMA Band V

Note:

 1) The maximum Scaled SAR value is marked in bold. Graph Results refer to Appendix B


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## 8.3.4 SAR Result Of LTE Band 2

| Test position                     | Test mode        | Test Ch./Freq | Duty Cycle | SAR (W/kg) 1-g | SAR (W/kg) 10-g | Power Drift (dB) | Conducted power (dB m) | Tune up Limit (dB m) | Scaled factor | Scaled SAR (W/kg) 10-g | Liquid Temp. | SAR limit (W/kg) |
|-----------------------------------|------------------|---------------|------------|----------------|-----------------|------------------|------------------------|----------------------|---------------|------------------------|--------------|------------------|
| Extremity Test data(Separate 0mm) |                  |               |            |                |                 |                  |                        |                      |               |                        |              |                  |
| Front side                        | 20M_QPSK 1RB_0   | 18900/1880    | 1:1        | 2.97           | 1.23            | 0.04             | 22.46                  | 23                   | 1.132         | 1.393                  | 22.3         | 4.0              |
| Front side                        | 20M_QPSK 50RB_0  | 18900/1880    | 1:1        | 2.12           | 0.88            | 0.02             | 21.22                  | 21.5                 | 1.067         | 0.939                  | 22.3         | 4.0              |
| Back side                         | 20M_QPSK 1RB_0   | 18900/1880    | 1:1        | 6.01           | 2.57            | 0.05             | 22.46                  | 23                   | 1.132         | 2.910                  | 22.3         | 4.0              |
| Back side                         | 20M_QPSK 50RB_0  | 18900/1880    | 1:1        | 4.86           | 2.02            | 0.03             | 21.22                  | 21.5                 | 1.067         | 2.155                  | 22.3         | 4.0              |
| Left side                         | 20M_QPSK 1RB_0   | 18900/1880    | 1:1        | 0.52           | 0.271           | -0.17            | 22.46                  | 23                   | 1.132         | 0.307                  | 22.3         | 4.0              |
| Left side                         | 20M_QPSK 50RB_0  | 18900/1880    | 1:1        | 0.392          | 0.188           | 0.03             | 21.22                  | 21.5                 | 1.067         | 0.201                  | 22.3         | 4.0              |
| Right side                        | 20M_QPSK 1RB_0   | 18900/1880    | 1:1        | 0.32           | 0.16            | -0.18            | 22.46                  | 23                   | 1.132         | 0.181                  | 22.3         | 4.0              |
| Right side                        | 20M_QPSK 50RB_0  | 18900/1880    | 1:1        | 0.2            | 0.1             | 0.09             | 21.22                  | 21.5                 | 1.067         | 0.107                  | 22.3         | 4.0              |
| Bottom side                       | 20M_QPSK 1RB_0   | 18900/1880    | 1:1        | 3.55           | 1.71            | 0.04             | 22.46                  | 23                   | 1.132         | 1.936                  | 22.3         | 4.0              |
| Bottom side                       | 20M_QPSK 50RB_0  | 18900/1880    | 1:1        | 2.89           | 1.41            | -0.17            | 21.22                  | 21.5                 | 1.067         | 1.504                  | 22.3         | 4.0              |
| Back side                         | 20M_QPSK 1RB_0   | 18700/1860    | 1:1        | 5.67           | 2.4             | 0.08             | 22.16                  | 23                   | 1.213         | 2.912                  | 22.3         | 4.0              |
| Back side                         | 20M_QPSK 1RB_0   | 19100/1900    | 1:1        | 6.75           | 2.85            | 0.05             | 22.04                  | 23                   | 1.247         | <b>3.555</b>           | 22.3         | 4.0              |
| Back side-repeat                  | 20M_QPSK 1RB_0   | 19100/1900    | 1:1        | 6.43           | 2.69            | 0.01             | 22.04                  | 23                   | 1.247         | 3.355                  | 22.3         | 4.0              |
| Back side                         | 20M_QPSK 100RB_0 | 18900/1880    | 1:1        | 4.79           | 1.99            | 0.06             | 21.11                  | 21.5                 | 1.094         | 2.177                  | 22.3         | 4.0              |

Table 2: SAR Result of LTE Band 2

Note:

 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B

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## 8.3.5 SAR Result Of LTE Band 4

| Test position                     | Test mode        | Test Ch./Freq. | Duty Cycle | SAR (W/kg) 1-g | SAR (W/kg) 10-g | Power Drift (dB) | Cond ucted power (dBm) | Tune up Limit (dB m) | Scale d factor | Scaled SAR (W/kg) 10-g | Liqui d Tem p. | SAR limit (W/kg) |
|-----------------------------------|------------------|----------------|------------|----------------|-----------------|------------------|------------------------|----------------------|----------------|------------------------|----------------|------------------|
| Extremity Test data(Separate 0mm) |                  |                |            |                |                 |                  |                        |                      |                |                        |                |                  |
| Front side                        | 20M_QPSK_1RB_50  | 20050/1720     | 1:1        | 2.91           | 1.23            | 0.03             | 22.54                  | 23                   | 1.112          | 1.367                  | 22.2           | 4.0              |
| Front side                        | 20M_QPSK_50RB_0  | 20050/1720     | 1:1        | 2.45           | 1.02            | -0.17            | 21.61                  | 22                   | 1.094          | 1.116                  | 22.2           | 4.0              |
| Back side                         | 20M_QPSK_1RB_50  | 20050/1720     | 1:1        | 5.64           | 2.58            | 0.07             | 22.54                  | 23                   | 1.112          | 2.868                  | 22.2           | 4.0              |
| Back side                         | 20M_QPSK_50RB_0  | 20050/1720     | 1:1        | 5.02           | 2.12            | 0.09             | 21.61                  | 22                   | 1.094          | 2.319                  | 22.2           | 4.0              |
| Left side                         | 20M_QPSK_1RB_50  | 20050/1720     | 1:1        | 0.47           | 0.22            | 0.03             | 22.54                  | 23                   | 1.112          | 0.245                  | 22.2           | 4.0              |
| Left side                         | 20M_QPSK_50RB_0  | 20050/1720     | 1:1        | 0.32           | 0.15            | 0.02             | 21.61                  | 22                   | 1.094          | 0.164                  | 22.2           | 4.0              |
| Right side                        | 20M_QPSK_1RB_50  | 20050/1720     | 1:1        | 0.31           | 0.144           | -0.18            | 22.54                  | 23                   | 1.112          | 0.160                  | 22.2           | 4.0              |
| Right side                        | 20M_QPSK_50RB_0  | 20050/1720     | 1:1        | 0.25           | 0.121           | 0.03             | 21.61                  | 22                   | 1.094          | 0.132                  | 22.2           | 4.0              |
| Bottom side                       | 20M_QPSK_1RB_50  | 20050/1720     | 1:1        | 3.72           | 1.69            | -0.18            | 22.54                  | 23                   | 1.112          | 1.879                  | 22.2           | 4.0              |
| Bottom side                       | 20M_QPSK_50RB_0  | 20050/1720     | 1:1        | 3.22           | 1.47            | 0.01             | 21.61                  | 22                   | 1.094          | 1.608                  | 22.2           | 4.0              |
| Back side                         | 20M_QPSK_1RB_50  | 20300/1745     | 1:1        | 5.7            | 2.57            | 0.02             | 22.36                  | 23                   | 1.159          | <b>2.978</b>           | 22.2           | 4.0              |
| Back side-repeat                  | 20M_QPSK_1RB_50  | 20300/1745     | 1:1        | 5.45           | 2.44            | 0.06             | 22.36                  | 23                   | 1.159          | 2.827                  | 22.2           | 4.0              |
| Back side                         | 20M_QPSK_1RB_50  | 20175/1732.5   | 1:1        | 5.6            | 2.54            | 0.06             | 22.54                  | 23                   | 1.112          | 2.824                  | 22.2           | 4.0              |
| Back side                         | 20M_QPSK_100RB_0 | 20050/1720     | 1:1        | 4.99           | 2.09            | 0.09             | 21.55                  | 22                   | 1.109          | 2.318                  | 22.2           | 4.0              |

Table 2: SAR Result of LTE Band 4

Note:

 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B

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### 8.3.6 SAR Result Of LTE Band 5

| Test position                     | Test mode       | Test Ch./Freq. | Duty Cycle | SAR (W/kg) 1-g | SAR (W/kg) 10-g | Power Drift (dB) | Conducted power (dBm) | Tune up Limit (dBm) | Scaled factor | Scaled SAR (W/kg) 10-g | Liquid Temp. | SAR limit (W/kg) |
|-----------------------------------|-----------------|----------------|------------|----------------|-----------------|------------------|-----------------------|---------------------|---------------|------------------------|--------------|------------------|
| Extremity Test data(Separate 0mm) |                 |                |            |                |                 |                  |                       |                     |               |                        |              |                  |
| Front side                        | 10M_QPSK 1RB_49 | 20600/844      | 1:1        | 0.92           | 0.45            | 0.02             | 23.01                 | 23.5                | 1.119         | 0.504                  | 22.1         | 4.0              |
| Front side                        | 10M_QPSK 25RB_0 | 20600/844      | 1:1        | 0.71           | 0.34            | -0.17            | 21.97                 | 22.5                | 1.130         | 0.384                  | 22.1         | 4.0              |
| Back side                         | 10M_QPSK 1RB_49 | 20600/844      | 1:1        | 1.69           | 1.04            | 0.02             | 23.01                 | 23.5                | 1.119         | <b>1.164</b>           | 22.1         | 4.0              |
| Back side                         | 10M_QPSK 25RB_0 | 20600/844      | 1:1        | 1.31           | 0.77            | 0.04             | 21.97                 | 22.5                | 1.130         | 0.870                  | 22.1         | 4.0              |
| Left side                         | 10M_QPSK 1RB_49 | 20600/844      | 1:1        | 0.23           | 0.11            | 0.01             | 23.01                 | 23.5                | 1.119         | 0.123                  | 22.1         | 4.0              |
| Left side                         | 10M_QPSK 25RB_0 | 20600/844      | 1:1        | 0.15           | 0.07            | -0.17            | 21.97                 | 22.5                | 1.130         | 0.079                  | 22.1         | 4.0              |
| Right side                        | 10M_QPSK 1RB_49 | 20600/844      | 1:1        | 0.17           | 0.08            | 0.03             | 23.01                 | 23.5                | 1.119         | 0.090                  | 22.1         | 4.0              |
| Right side                        | 10M_QPSK 25RB_0 | 20600/844      | 1:1        | 0.11           | 0.05            | -0.19            | 21.97                 | 22.5                | 1.130         | 0.056                  | 22.1         | 4.0              |
| Bottom side                       | 10M_QPSK 1RB_49 | 20600/844      | 1:1        | 1.22           | 0.58            | 0.02             | 23.01                 | 23.5                | 1.119         | 0.649                  | 22.1         | 4.0              |
| Bottom side                       | 10M_QPSK 25RB_0 | 20600/844      | 1:1        | 0.93           | 0.44            | 0.07             | 21.97                 | 22.5                | 1.130         | 0.497                  | 22.1         | 4.0              |
| Back side                         | 10M_QPSK 1RB_49 | 20450/829      | 1:1        | 1.5            | 0.916           | 0.02             | 22.7                  | 23.5                | 1.202         | 1.101                  | 22.1         | 4.0              |
| Back side                         | 10M_QPSK 1RB_49 | 20525/836.5    | 1:1        | 1.64           | 1.01            | 0.02             | 22.9                  | 23.5                | 1.148         | 1.160                  | 22.1         | 4.0              |

Table 3: SAR Result of LTE Band 5

Note:

1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B

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## 8.3.7 SAR Result Of LTE Band 7

| Test position                     | Test mode        | Test Ch./Freq. | Duty Cycle | SAR (W/kg) 1-g | SAR (W/kg) 10-g | Power Drift (dB) | Cond ucted power (dBm) | Tune up Limit (dB m) | Scale d factor | Scaled SAR (W/kg) 10-g | Liqui d Tem p. | SAR limit (W/kg) |
|-----------------------------------|------------------|----------------|------------|----------------|-----------------|------------------|------------------------|----------------------|----------------|------------------------|----------------|------------------|
| Extremity Test data(Separate 0mm) |                  |                |            |                |                 |                  |                        |                      |                |                        |                |                  |
| Front side                        | 20M_QPSK 1RB_50  | 21100/2535 .5  | 1:1        | 3.45           | 1.22            | 0.02             | 21.97                  | 22                   | 1.007          | 1.228                  | 22.1           | 4.0              |
| Front side                        | 20M_QPSK 50RB_25 | 21100/2535 .5  | 1:1        | 2.96           | 1.02            | -0.09            | 20.81                  | 21                   | 1.045          | 1.066                  | 22.1           | 4.0              |
| Back side                         | 20M_QPSK 1RB_50  | 21100/2535 .5  | 1:1        | 7.29           | 2.67            | -0.03            | 21.97                  | 22                   | 1.007          | 2.689                  | 22.1           | 4.0              |
| Back side                         | 20M_QPSK 50RB_25 | 21100/2535 .5  | 1:1        | 6.12           | 2.35            | 0.01             | 20.81                  | 21                   | 1.045          | 2.455                  | 22.1           | 4.0              |
| Left side                         | 20M_QPSK 1RB_50  | 21100/2535 .5  | 1:1        | 0.612          | 0.277           | 0.08             | 21.97                  | 22                   | 1.007          | 0.279                  | 22.1           | 4.0              |
| Left side                         | 20M_QPSK 50RB_25 | 21100/2535 .5  | 1:1        | 0.589          | 0.235           | 0.05             | 20.81                  | 21                   | 1.045          | 0.246                  | 22.1           | 4.0              |
| Right side                        | 20M_QPSK 1RB_50  | 21100/2535 .5  | 1:1        | 0.461          | 0.203           | -0.18            | 21.97                  | 22                   | 1.007          | 0.204                  | 22.1           | 4.0              |
| Right side                        | 20M_QPSK 50RB_25 | 21100/2535 .5  | 1:1        | 0.427          | 0.183           | 0.05             | 20.81                  | 21                   | 1.045          | 0.191                  | 22.1           | 4.0              |
| Bottom side                       | 20M_QPSK 1RB_50  | 21100/2535 .5  | 1:1        | 5.12           | 2.09            | 0.03             | 21.97                  | 22                   | 1.007          | 2.104                  | 22.1           | 4.0              |
| Bottom side                       | 20M_QPSK 50RB_25 | 21100/2535 .5  | 1:1        | 4.57           | 1.71            | 0.06             | 20.81                  | 21                   | 1.045          | 1.786                  | 22.1           | 4.0              |
| Back side                         | 20M_QPSK 1RB_50  | 20850/2510     | 1:1        | 7.01           | 2.6             | 0.18             | 21.59                  | 22                   | 1.099          | 2.857                  | 22.1           | 4.0              |
| Back side                         | 20M_QPSK 1RB_50  | 21350/2560     | 1:1        | 6.85           | 2.47            | 0.15             | 21.32                  | 22                   | 1.169          | <b>2.889</b>           | 22.1           | 4.0              |
| Back side-repeat                  | 20M_QPSK 1RB_50  | 21350/2560     | 1:1        | 6.51           | 2.37            | -0.09            | 21.32                  | 22                   | 1.169          | 2.772                  | 22.1           | 4.0              |
| Back side                         | 20M_QPSK 100RB_0 | 21100/2535 .5  | 1:1        | 2.95           | 1.01            | 0.06             | 20.75                  | 21                   | 1.059          | 1.070                  | 22.1           | 4.0              |

Table 2: SAR Result of LTE Band 7

Note:

 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B

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## 8.3.8 SAR Result Of LTE Band 12

| Test position                     | Test mode       | Test Ch./Freq. | Duty Cycle | SAR (W/kg) 1-g | SAR (W/kg) 10-g | Power Drift (dB) | Conducted power (dBm) | Tune up Limit (dBm) | Scaled factor | Scaled SAR (W/kg) 10-g | Liquid Temp. | SAR limit (W/kg) |
|-----------------------------------|-----------------|----------------|------------|----------------|-----------------|------------------|-----------------------|---------------------|---------------|------------------------|--------------|------------------|
| Extremity Test data(Separate 0mm) |                 |                |            |                |                 |                  |                       |                     |               |                        |              |                  |
| Front side                        | 10M_QPSK 1RB_49 | 23130/711      | 1:1        | 0.85           | 0.41            | 0.06             | 22.57                 | 23                  | 1.104         | 0.453                  | 22.1         | 4.0              |
| Front side                        | 10M_QPSK 25RB_0 | 23130/711      | 1:1        | 0.69           | 0.34            | -0.19            | 21.59                 | 22                  | 1.099         | 0.374                  | 22.1         | 4.0              |
| Back side                         | 10M_QPSK 1RB_49 | 23130/711      | 1:1        | 1.56           | 0.876           | -0.02            | 22.57                 | 23                  | 1.104         | <b>0.967</b>           | 22.1         | 4.0              |
| Back side                         | 10M_QPSK 25RB_0 | 23130/711      | 1:1        | 1.13           | 0.522           | 0.04             | 21.59                 | 22                  | 1.099         | 0.574                  | 22.1         | 4.0              |
| Left side                         | 10M_QPSK 1RB_49 | 23130/711      | 1:1        | 0.23           | 0.112           | 0.03             | 22.57                 | 23                  | 1.104         | 0.124                  | 22.1         | 4.0              |
| Left side                         | 10M_QPSK 25RB_0 | 23130/711      | 1:1        | 0.192          | 0.097           | -0.19            | 21.59                 | 22                  | 1.099         | 0.107                  | 22.1         | 4.0              |
| Right side                        | 10M_QPSK 1RB_49 | 23130/711      | 1:1        | 0.142          | 0.067           | 0.05             | 22.57                 | 23                  | 1.104         | 0.074                  | 22.1         | 4.0              |
| Right side                        | 10M_QPSK 25RB_0 | 23130/711      | 1:1        | 0.127          | 0.05            | 0.02             | 21.59                 | 22                  | 1.099         | 0.055                  | 22.1         | 4.0              |
| Bottom side                       | 10M_QPSK 1RB_49 | 23130/711      | 1:1        | 1.19           | 0.54            | 0.08             | 22.57                 | 23                  | 1.104         | 0.596                  | 22.1         | 4.0              |
| Bottom side                       | 10M_QPSK 25RB_0 | 23130/711      | 1:1        | 1.02           | 0.48            | -0.17            | 21.59                 | 22                  | 1.099         | 0.528                  | 22.1         | 4.0              |
| Back side                         | 10M_QPSK 1RB_49 | 23060/704      | 1:1        | 1.52           | 0.862           | 0.14             | 22.55                 | 23                  | 1.109         | 0.956                  | 22.1         | 4.0              |
| Back side                         | 10M_QPSK 1RB_49 | 23095/707.5    | 1:1        | 1.5            | 0.86            | 0.06             | 22.55                 | 23                  | 1.109         | 0.954                  | 22.1         | 4.0              |

Table 3: SAR Result of LTE Band 12

Note:

 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B

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### 8.3.9 SAR Result Of LTE Band 13

| Test position                     | Test mode        | Test Ch./Freq. | Duty Cycle | SAR (W/kg) 1-g | SAR (W/kg) 10-g | Power Drift (dB) | Conducted power (dBm) | Tune up Limit (dBm) | Scaled factor | Scaled SAR (W/kg) 10-g | Liquid Temp. | SAR limit (W/kg) |
|-----------------------------------|------------------|----------------|------------|----------------|-----------------|------------------|-----------------------|---------------------|---------------|------------------------|--------------|------------------|
| Extremity Test data(Separate 0mm) |                  |                |            |                |                 |                  |                       |                     |               |                        |              |                  |
| Front side                        | 10M_QPSK 1RB_0   | 23230/782      | 1:1        | 0.92           | 0.48            | -0.09            | 22.76                 | 23                  | 1.057         | 0.507                  | 22.1         | 4.0              |
| Front side                        | 10M_QPSK 25RB_13 | 23230/782      | 1:1        | 0.73           | 0.36            | -0.04            | 21.6                  | 22                  | 1.096         | 0.395                  | 22.1         | 4.0              |
| Back side                         | 10M_QPSK 1RB_0   | 23230/782      | 1:1        | 1.7            | 0.958           | 0.07             | 22.76                 | 23                  | 1.057         | <b>1.012</b>           | 22.1         | 4.0              |
| Back side                         | 10M_QPSK 25RB_13 | 23230/782      | 1:1        | 1.29           | 0.739           | 0.03             | 21.6                  | 22                  | 1.096         | 0.810                  | 22.1         | 4.0              |
| Left side                         | 10M_QPSK 1RB_0   | 23230/782      | 1:1        | 0.22           | 0.104           | 0.04             | 22.76                 | 23                  | 1.057         | 0.110                  | 22.1         | 4.0              |
| Left side                         | 10M_QPSK 25RB_13 | 23230/782      | 1:1        | 0.17           | 0.089           | 0.02             | 21.6                  | 22                  | 1.096         | 0.098                  | 22.1         | 4.0              |
| Right side                        | 10M_QPSK 1RB_0   | 23230/782      | 1:1        | 0.138          | 0.062           | -0.17            | 22.76                 | 23                  | 1.057         | 0.066                  | 22.1         | 4.0              |
| Right side                        | 10M_QPSK 25RB_13 | 23230/782      | 1:1        | 0.117          | 0.051           | 0.04             | 21.6                  | 22                  | 1.096         | 0.056                  | 22.1         | 4.0              |
| Bottom side                       | 10M_QPSK 1RB_0   | 23230/782      | 1:1        | 1.26           | 0.512           | 0.05             | 22.76                 | 23                  | 1.057         | 0.541                  | 22.1         | 4.0              |
| Bottom side                       | 10M_QPSK 25RB_13 | 23230/782      | 1:1        | 1.01           | 0.493           | -0.17            | 21.6                  | 22                  | 1.096         | 0.541                  | 22.1         | 4.0              |

Table 4: SAR Result of LTE Band 13

Note:

1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B

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### 8.3.10 SAR Result Of LTE Band 14

| Test position                     | Test mode       | Test Ch./Freq. | Duty Cycle | SAR (W/kg) 1-g | SAR (W/kg) 10-g | Power Drift (dB) | Conducted power (dBm) | Tune up Limit (dBm) | Scaled factor | Scaled SAR (W/kg) 10-g | Liquid Temp. | SAR limit (W/kg) |
|-----------------------------------|-----------------|----------------|------------|----------------|-----------------|------------------|-----------------------|---------------------|---------------|------------------------|--------------|------------------|
| Extremity Test data(Separate 0mm) |                 |                |            |                |                 |                  |                       |                     |               |                        |              |                  |
| Front side                        | 10M_QPSK 1RB_25 | 23330/793      | 1:1        | 1.05           | 0.56            | 0.04             | 23.38                 | 23.5                | 1.028         | 0.576                  | 22.1         | 4.0              |
| Front side                        | 10M_QPSK 25RB_0 | 23330/793      | 1:1        | 0.71           | 0.39            | -0.12            | 21.54                 | 22                  | 1.112         | 0.434                  | 22.1         | 4.0              |
| Back side                         | 10M_QPSK 1RB_25 | 23330/793      | 1:1        | 1.95           | 1.08            | 0.09             | 23.38                 | 23.5                | 1.028         | <b>1.110</b>           | 22.1         | 4.0              |
| Back side                         | 10M_QPSK 25RB_0 | 23330/793      | 1:1        | 1.37           | 0.712           | -0.04            | 21.54                 | 22                  | 1.112         | 0.792                  | 22.1         | 4.0              |
| Left side                         | 10M_QPSK 1RB_25 | 23330/793      | 1:1        | 0.26           | 0.133           | 0.03             | 23.38                 | 23.5                | 1.028         | 0.137                  | 22.1         | 4.0              |
| Left side                         | 10M_QPSK 25RB_0 | 23330/793      | 1:1        | 0.212          | 0.105           | 0.11             | 21.54                 | 22                  | 1.112         | 0.117                  | 22.1         | 4.0              |
| Right side                        | 10M_QPSK 1RB_25 | 23330/793      | 1:1        | 0.139          | 0.072           | 0.07             | 23.38                 | 23.5                | 1.028         | 0.074                  | 22.1         | 4.0              |
| Right side                        | 10M_QPSK 25RB_0 | 23330/793      | 1:1        | 0.106          | 0.051           | 0.18             | 21.54                 | 22                  | 1.112         | 0.057                  | 22.1         | 4.0              |
| Bottom side                       | 10M_QPSK 1RB_25 | 23330/793      | 1:1        | 1.28           | 0.676           | -0.09            | 23.38                 | 23.5                | 1.028         | 0.695                  | 22.1         | 4.0              |
| Bottom side                       | 10M_QPSK 25RB_0 | 23330/793      | 1:1        | 0.97           | 0.502           | 0.06             | 21.54                 | 22                  | 1.112         | 0.558                  | 22.1         | 4.0              |

Table 5: SAR Result of LTE Band 14

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B

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## 8.3.11 SAR Result Of LTE Band 17

| Test position                     | Test mode       | Test Ch./Freq. | Duty Cycle | SAR (W/kg) 1-g | SAR (W/kg) 10-g | Power Drift (dB) | Conducted power (dBm) | Tune up Limit (dBm) | Scaled factor | Scaled SAR (W/kg) 10-g | Liquid Temp. | SAR limit (W/kg) |
|-----------------------------------|-----------------|----------------|------------|----------------|-----------------|------------------|-----------------------|---------------------|---------------|------------------------|--------------|------------------|
| Extremity Test data(Separate 0mm) |                 |                |            |                |                 |                  |                       |                     |               |                        |              |                  |
| Front side                        | 10M_QPSK 1RB_25 | 23780/709      | 1:1        | 0.86           | 0.454           | 0.06             | 22.76                 | 23                  | 1.057         | 0.480                  | 22.1         | 4.0              |
| Front side                        | 10M_QPSK 25RB_0 | 23780/709      | 1:1        | 0.69           | 0.366           | -0.16            | 21.51                 | 22                  | 1.119         | 0.410                  | 22.1         | 4.0              |
| Back side                         | 10M_QPSK 1RB_25 | 23780/709      | 1:1        | 1.44           | 0.815           | 0.03             | 22.76                 | 23                  | 1.057         | 0.861                  | 22.1         | 4.0              |
| Back side                         | 10M_QPSK 25RB_0 | 23780/709      | 1:1        | 1.17           | 0.632           | 0.05             | 21.51                 | 22                  | 1.119         | 0.707                  | 22.1         | 4.0              |
| Left side                         | 10M_QPSK 1RB_25 | 23780/709      | 1:1        | 0.237          | 0.129           | 0.02             | 22.76                 | 23                  | 1.057         | 0.136                  | 22.1         | 4.0              |
| Left side                         | 10M_QPSK 25RB_0 | 23780/709      | 1:1        | 0.195          | 0.103           | -0.19            | 21.51                 | 22                  | 1.119         | 0.115                  | 22.1         | 4.0              |
| Right side                        | 10M_QPSK 1RB_25 | 23780/709      | 1:1        | 0.154          | 0.082           | 0.06             | 22.76                 | 23                  | 1.057         | 0.087                  | 22.1         | 4.0              |
| Right side                        | 10M_QPSK 25RB_0 | 23780/709      | 1:1        | 0.121          | 0.069           | 0.02             | 21.51                 | 22                  | 1.119         | 0.077                  | 22.1         | 4.0              |
| Bottom side                       | 10M_QPSK 1RB_25 | 23780/709      | 1:1        | 1.11           | 0.59            | -0.17            | 22.76                 | 23                  | 1.057         | 0.624                  | 22.1         | 4.0              |
| Bottom side                       | 10M_QPSK 25RB_0 | 23780/709      | 1:1        | 0.84           | 0.443           | 0.04             | 21.51                 | 22                  | 1.119         | 0.496                  | 22.1         | 4.0              |
| Back side                         | 10M_QPSK 1RB_25 | 23790/710      | 1:1        | 1.42           | 0.806           | 0.02             | 22.67                 | 23                  | 1.079         | 0.870                  | 22.1         | 4.0              |
| Back side                         | 10M_QPSK 1RB_25 | 23800/711      | 1:1        | 1.4            | 0.804           | 0.07             | 22.58                 | 23                  | 1.102         | <b>0.886</b>           | 22.1         | 4.0              |

Table 6: SAR Result of LTE Band 17

Note:

 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B

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## 8.3.12 SAR Result Of LTE Band 25

| Test position                     | Test mode        | Test Ch./Freq. | Duty Cycle | SAR (W/kg) 1-g | SAR (W/kg) 10-g | Power Drift (dB) | Cond ucted power (dBm) | Tune up Limit (dBm) | Scaled factor | Scaled SAR (W/kg) 10-g | Liquid Temp | SAR limit (W/kg) |
|-----------------------------------|------------------|----------------|------------|----------------|-----------------|------------------|------------------------|---------------------|---------------|------------------------|-------------|------------------|
| Extremity Test data(Separate 0mm) |                  |                |            |                |                 |                  |                        |                     |               |                        |             |                  |
| Front side                        | 20M_QPSK 1RB_50  | 26590/1905     | 1:1        | 3.32           | 1.46            | 0.03             | 22.44                  | 23                  | 1.138         | 1.661                  | 22.3        | 4.0              |
| Front side                        | 20M_QPSK 50RB_50 | 26590/1905     | 1:1        | 2.98           | 1.21            | -0.17            | 21.48                  | 22                  | 1.127         | 1.364                  | 22.3        | 4.0              |
| Back side                         | 20M_QPSK 1RB_50  | 26590/1905     | 1:1        | 7.19           | 3               | 0.02             | 22.44                  | 23                  | 1.138         | <b>3.413</b>           | 22.3        | 4.0              |
| Back side-repeat                  | 20M_QPSK 1RB_50  | 26590/1905     | 1:1        | 6.91           | 2.82            | 0.05             | 22.44                  | 23                  | 1.138         | 3.208                  | 22.3        | 4.0              |
| Back side                         | 20M_QPSK 50RB_50 | 26590/1905     | 1:1        | 6.41           | 2.58            | 0.03             | 21.48                  | 22                  | 1.127         | 2.908                  | 22.3        | 4.0              |
| Left side                         | 20M_QPSK 1RB_50  | 26590/1905     | 1:1        | 0.51           | 0.236           | 0.05             | 22.44                  | 23                  | 1.138         | 0.268                  | 22.3        | 4.0              |
| Left side                         | 20M_QPSK 50RB_50 | 26590/1905     | 1:1        | 0.39           | 0.177           | -0.18            | 21.48                  | 22                  | 1.127         | 0.200                  | 22.3        | 4.0              |
| Right side                        | 20M_QPSK 1RB_50  | 26590/1905     | 1:1        | 0.4            | 0.183           | 0.04             | 22.44                  | 23                  | 1.138         | 0.208                  | 22.3        | 4.0              |
| Right side                        | 20M_QPSK 50RB_50 | 26590/1905     | 1:1        | 0.32           | 0.143           | -0.17            | 21.48                  | 22                  | 1.127         | 0.161                  | 22.3        | 4.0              |
| Bottom side                       | 20M_QPSK 1RB_50  | 26590/1905     | 1:1        | 4.16           | 1.89            | 0.02             | 22.44                  | 23                  | 1.138         | 2.150                  | 22.3        | 4.0              |
| Bottom side                       | 20M_QPSK 50RB_50 | 26590/1905     | 1:1        | 3.76           | 1.49            | 0.08             | 21.48                  | 22                  | 1.127         | 1.680                  | 22.3        | 4.0              |
| Back side                         | 20M_QPSK 1RB_50  | 26140/1860     | 1:1        | 5.75           | 2.38            | 0.03             | 22.25                  | 23                  | 1.189         | 2.829                  | 22.3        | 4.0              |
| Back side                         | 20M_QPSK 1RB_50  | 26365/1882.5   | 1:1        | 6.18           | 2.57            | -0.04            | 22.16                  | 23                  | 1.213         | 3.118                  | 22.3        | 4.0              |

Table 2: SAR Result of LTE Band 25

Note:

 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B

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## 8.3.13 SAR Result Of LTE Band 26

| Test position                     | Test mode       | Test Ch./Freq. | Duty Cycle | SAR (W/kg) 1-g | SAR (W/kg) 10-g | Power Drift (dB) | Conducted power (dBm) | Tune up Limit (dBm) | Scaled factor | Scaled SAR (W/kg) 10-g | Liquid Temp. | SAR limit (W/kg) |
|-----------------------------------|-----------------|----------------|------------|----------------|-----------------|------------------|-----------------------|---------------------|---------------|------------------------|--------------|------------------|
| Extremity Test data(Separate 0mm) |                 |                |            |                |                 |                  |                       |                     |               |                        |              |                  |
| Front side                        | 15M_QPSK 1RB_0  | 26865/831.5    | 1:1        | 1.12           | 0.53            | 0.01             | 23.01                 | 23.5                | 1.119         | 0.593                  | 22.1         | 4.0              |
| Front side                        | 15M_QPSK 36RB_0 | 26865/831.5    | 1:1        | 0.91           | 0.44            | -0.17            | 21.85                 | 22.5                | 1.161         | 0.511                  | 22.1         | 4.0              |
| Back side                         | 15M_QPSK 1RB_0  | 26865/831.5    | 1:1        | 1.81           | 0.89            | 0.05             | 23.01                 | 23.5                | 1.119         | <b>0.996</b>           | 22.1         | 4.0              |
| Back side                         | 15M_QPSK 36RB_0 | 26865/831.5    | 1:1        | 1.56           | 0.77            | 0.09             | 21.85                 | 22.5                | 1.161         | 0.894                  | 22.1         | 4.0              |
| Left side                         | 15M_QPSK 1RB_0  | 26865/831.5    | 1:1        | 0.224          | 0.103           | -0.17            | 23.01                 | 23.5                | 1.119         | 0.115                  | 22.1         | 4.0              |
| Left side                         | 15M_QPSK 36RB_0 | 26865/831.5    | 1:1        | 0.201          | 0.092           | 0.03             | 21.85                 | 22.5                | 1.161         | 0.107                  | 22.1         | 4.0              |
| Right side                        | 15M_QPSK 1RB_0  | 26865/831.5    | 1:1        | 0.136          | 0.067           | 0.06             | 23.01                 | 23.5                | 1.119         | 0.075                  | 22.1         | 4.0              |
| Right side                        | 15M_QPSK 36RB_0 | 26865/831.5    | 1:1        | 0.109          | 0.052           | -0.11            | 21.85                 | 22.5                | 1.161         | 0.060                  | 22.1         | 4.0              |
| Bottom side                       | 15M_QPSK 1RB_0  | 26865/831.5    | 1:1        | 1.57           | 0.81            | -0.06            | 23.01                 | 23.5                | 1.119         | 0.907                  | 22.1         | 4.0              |
| Bottom side                       | 15M_QPSK 36RB_0 | 26865/831.5    | 1:1        | 1.33           | 0.69            | 0.02             | 21.85                 | 22.5                | 1.161         | 0.801                  | 22.1         | 4.0              |
| Back side                         | 15M_QPSK 1RB_0  | 26775/822.5    | 1:1        | 1.74           | 0.81            | 0.04             | 22.7                  | 23.5                | 1.202         | 0.974                  | 22.1         | 4.0              |
| Back side                         | 15M_QPSK 1RB_0  | 26965/841.5    | 1:1        | 1.75           | 0.83            | -0.18            | 22.77                 | 23.5                | 1.183         | 0.982                  | 22.1         | 4.0              |

Table 3: SAR Result of LTE Band 26

Note:

 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B

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## 8.3.14 SAR Result Of LTE Band 41

| Test position                     | Test mode        | Test Ch./Freq. | Duty Cycle | SAR (W/kg) 1-g | SAR (W/kg) 10-g | Power Drift (dB) | Conducted power (dBm) | Tune up Limit (dBm) | Scaled factor | Scaled SAR (W/kg) 10-g | Liquid Temp. | SAR limit (W/kg) |
|-----------------------------------|------------------|----------------|------------|----------------|-----------------|------------------|-----------------------|---------------------|---------------|------------------------|--------------|------------------|
| Extremity Test data(Separate 0mm) |                  |                |            |                |                 |                  |                       |                     |               |                        |              |                  |
| Front side                        | 20M_QPSK 1RB_50  | 41490/2680     | 1:1        | 2.85           | 1.03            | 0.02             | 21.73                 | 22                  | 1.064         | 1.096                  | 22.1         | 4.0              |
| Front side                        | 20M_QPSK 50RB_25 | 41490/2680     | 1:1        | 2.31           | 0.81            | -0.18            | 21.1                  | 21.5                | 1.096         | 0.888                  | 22.1         | 4.0              |
| Back side                         | 20M_QPSK 1RB_50  | 41490/2680     | 1:1        | 4.55           | 1.7             | 0.15             | 21.73                 | 22                  | 1.064         | <b>1.809</b>           | 22.1         | 4.0              |
| Back side                         | 20M_QPSK 50RB_25 | 41490/2680     | 1:1        | 3.92           | 1.31            | 0.07             | 21.1                  | 21.5                | 1.096         | 1.436                  | 22.1         | 4.0              |
| Left side                         | 20M_QPSK 1RB_50  | 41490/2680     | 1:1        | 0.35           | 0.134           | -0.18            | 21.73                 | 22                  | 1.064         | 0.143                  | 22.1         | 4.0              |
| Left side                         | 20M_QPSK 50RB_25 | 41490/2680     | 1:1        | 0.289          | 0.106           | 0.03             | 21.1                  | 21.5                | 1.096         | 0.116                  | 22.1         | 4.0              |
| Right side                        | 20M_QPSK 1RB_50  | 41490/2680     | 1:1        | 0.191          | 0.065           | -0.18            | 21.73                 | 22                  | 1.064         | 0.069                  | 22.1         | 4.0              |
| Right side                        | 20M_QPSK 50RB_25 | 41490/2680     | 1:1        | 0.162          | 0.057           | 0.04             | 21.1                  | 21.5                | 1.096         | 0.062                  | 22.1         | 4.0              |
| Bottom side                       | 20M_QPSK 1RB_50  | 41490/2680     | 1:1        | 3.11           | 1.14            | -0.18            | 21.73                 | 22                  | 1.064         | 1.213                  | 22.1         | 4.0              |
| Bottom side                       | 20M_QPSK 50RB_25 | 41490/2680     | 1:1        | 2.81           | 0.99            | 0.08             | 21.1                  | 21.5                | 1.096         | 1.086                  | 22.1         | 4.0              |
| Back side                         | 20M_QPSK 1RB_50  | 39750/2506     | 1:1        | 4.29           | 1.57            | 0.03             | 21.69                 | 22                  | 1.074         | 1.686                  | 22.1         | 4.0              |
| Back side                         | 20M_QPSK 1RB_50  | 40620/2593     | 1:1        | 4.21           | 1.55            | -0.04            | 21.46                 | 22                  | 1.132         | 1.755                  | 22.1         | 4.0              |

Table 4: SAR Result of LTE Band 41

Note:

 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B

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### 8.3.15 SAR Result Of 2.4GHz Wi-Fi

| Test position                      | Test mode | Test Ch./Freq. | Duty Cycle | Duty Cycle Scaled factor | SAR (W/kg) 1-g | SAR (W/kg) 10-g | Power drift (dB) | Conducted power (dBm) | Tune up Limit (dBm) | Scaled factor | Scaled SAR (W/kg) 10-g | Liquid Temp. | SAR limit (W/kg) |
|------------------------------------|-----------|----------------|------------|--------------------------|----------------|-----------------|------------------|-----------------------|---------------------|---------------|------------------------|--------------|------------------|
| Extremity Test data (Separate 0mm) |           |                |            |                          |                |                 |                  |                       |                     |               |                        |              |                  |
| Front side                         | 802.11b   | 1/2412         | 97.62%     | 1.024                    | 0.206          | 0.099           | 0.03             | 11.55                 | 12.00               | 1.109         | 0.112                  | 22.0         | 4.0              |
| Back-1 side                        | 802.11b   | 1/2412         | 97.62%     | 1.024                    | 0.029          | 0.014           | -0.17            | 11.55                 | 12.00               | 1.109         | 0.016                  | 22.0         | 4.0              |
| Left side                          | 802.11b   | 1/2412         | 97.62%     | 1.024                    | 0.013          | 0.006           | 0.05             | 11.55                 | 12.00               | 1.109         | 0.007                  | 22.0         | 4.0              |
| Right side                         | 802.11b   | 1/2412         | 97.62%     | 1.024                    | 0.623          | 0.244           | 0.07             | 11.55                 | 12.00               | 1.109         | 0.277                  | 22.0         | 4.0              |
| Top side                           | 802.11b   | 1/2412         | 97.62%     | 1.024                    | 0.016          | 0.006           | -0.18            | 11.55                 | 12.00               | 1.109         | 0.007                  | 22.0         | 4.0              |
| Bottom side                        | 802.11b   | 1/2412         | 97.62%     | 1.024                    | 0.000          | 0.000           | 0.00             | 11.55                 | 12.00               | 1.109         | 0.000                  | 22.0         | 4.0              |
| Right side                         | 802.11b   | 6/2437         | 97.62%     | 1.024                    | 0.611          | 0.239           | 0.01             | 11.28                 | 12.00               | 1.180         | <b>0.289</b>           | 22.0         | 4.0              |
| Right side                         | 802.11b   | 11/2462        | 97.62%     | 1.024                    | 0.612          | 0.240           | -0.04            | 11.32                 | 12.00               | 1.169         | 0.287                  | 22.0         | 4.0              |

Table 5: SAR Result Of 2.4GHz Wi-Fi

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B
- 2) If the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is  $\leq 2.0$  W/kg then testing at the other channels is not required for such test configuration(s). Per Kdb248227 D01, When the reported SAR is  $> 2.0$  W/kg, SAR is required for that exposure configuration using the next highest measured output power channel.
- 3) Each channel was tested at the lowest data rate.
- 4) Per KDB248227 D01, for Limbs SAR test of Wi-Fi 2.4G, SAR is measured for 2.4 GHz 802.11b DSSS using the initial test position procedure. The highest reported SAR for DSSS is adjusted by the ratio of OFDM 802.11g/n to DSSS specified maximum output power and the adjusted SAR is  $< 3.0$  W/kg, so SAR for 802.11g/n is not required.

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## 8.3.16 SAR Result Of 5GHz Wi-Fi

| Test position                              | Test mode    | Test Ch./Freq. | Duty Cycle % | Duty Cycle Scaled factor | SAR (W/kg) 1-g | SAR (W/kg) 10-g | Power drift (dB) | Conducted power (dBm) | Tune up Limit (dBm) | Scaled factor | Scaled SAR (W/kg) 10-g | Liquid Temp. | SAR limit (W/kg) |
|--|--------------|----------------|--------------|--------------------------|----------------|-----------------|------------------|-----------------------|---------------------|---------------|------------------------|--------------|------------------|
| Extremity Test data U-NII-1(Separate 0mm)  |              |                |              |                          |                |                 |                  |                       |                     |               |                        |              |                  |
| Front side                                 | 802.11a      | 36/5180        | 87.32        | 1.145                    | 0.092          | 0.031           | 0.05             | 10.04                 | 10.5                | 1.112         | 0.039                  | 22.2         | 4.0              |
| Back-1 side                                | 802.11a      | 36/5180        | 87.32        | 1.145                    | 0.018          | 0.005           | -0.11            | 10.04                 | 10.5                | 1.112         | 0.006                  | 22.2         | 4.0              |
| Left side                                  | 802.11a      | 36/5180        | 87.32        | 1.145                    | 0.014          | 0.004           | 0.04             | 10.04                 | 10.5                | 1.112         | 0.005                  | 22.2         | 4.0              |
| Right side                                 | 802.11a      | 36/5180        | 87.32        | 1.145                    | 0.197          | 0.052           | 0.02             | 10.04                 | 10.5                | 1.112         | <b>0.066</b>           | 22.2         | 4.0              |
| Top side                                   | 802.11a      | 36/5180        | 87.32        | 1.145                    | 0.015          | 0.005           | -0.17            | 10.04                 | 10.5                | 1.112         | 0.006                  | 22.2         | 4.0              |
| Bottom side                                | 802.11a      | 36/5180        | 87.32        | 1.145                    | 0              | 0               | 0                | 10.04                 | 10.5                | 1.112         | 0.000                  | 22.2         | 4.0              |
| Right side                                 | 802.11a      | 40/5200        | 87.32        | 1.145                    | 0.171          | 0.045           | 0.02             | 9.85                  | 10.5                | 1.161         | 0.060                  | 22.2         | 4.0              |
| Right side                                 | 802.11a      | 48/5240        | 87.32        | 1.145                    | 0.163          | 0.041           | -0.19            | 9.19                  | 10.5                | 1.352         | 0.063                  | 22.2         | 4.0              |
| Extremity Test data U-NII-2A(Separate 0mm) |              |                |              |                          |                |                 |                  |                       |                     |               |                        |              |                  |
| Front side                                 | 802.11a      | 52/5260        | 87.32        | 1.145                    | 0.098          | 0.035           | 0.07             | 8.95                  | 9.5                 | 1.135         | 0.045                  | 22.2         | 4.0              |
| Back-1 side                                | 802.11a      | 52/5260        | 87.32        | 1.145                    | 0.016          | 0.004           | 0.09             | 8.95                  | 9.5                 | 1.135         | 0.005                  | 22.2         | 4.0              |
| Left side                                  | 802.11a      | 52/5260        | 87.32        | 1.145                    | 0.015          | 0.004           | -0.16            | 8.95                  | 9.5                 | 1.135         | 0.005                  | 22.2         | 4.0              |
| Right side                                 | 802.11a      | 52/5260        | 87.32        | 1.145                    | 0.178          | 0.048           | 0.04             | 8.95                  | 9.5                 | 1.135         | 0.062                  | 22.2         | 4.0              |
| Top side                                   | 802.11a      | 52/5260        | 87.32        | 1.145                    | 0.016          | 0.005           | 0.06             | 8.95                  | 9.5                 | 1.135         | 0.006                  | 22.2         | 4.0              |
| Bottom side                                | 802.11a      | 52/5260        | 87.32        | 1.145                    | 0              | 0               | 0                | 8.95                  | 9.5                 | 1.135         | 0.000                  | 22.2         | 4.0              |
| Right side                                 | 802.11a      | 60/5300        | 87.32        | 1.145                    | 0.174          | 0.047           | 0.03             | 8.33                  | 9.5                 | 1.309         | <b>0.070</b>           | 22.2         | 4.0              |
| Right side                                 | 802.11a      | 64/5320        | 87.32        | 1.145                    | 0.168          | 0.043           | 0.01             | 8.16                  | 9.5                 | 1.361         | 0.067                  | 22.2         | 4.0              |
| Extremity Test data U-NII-2C(Separate 0mm) |              |                |              |                          |                |                 |                  |                       |                     |               |                        |              |                  |
| Front side                                 | 802.11a      | 100/5500       | 87.32        | 1.145                    | 0.089          | 0.03            | 0.04             | 8.21                  | 9                   | 1.199         | 0.041                  | 22.2         | 4.0              |
| Back-1 side                                | 802.11a      | 100/5500       | 87.32        | 1.145                    | 0.015          | 0.004           | 0.01             | 8.21                  | 9                   | 1.199         | 0.005                  | 22.2         | 4.0              |
| Left side                                  | 802.11a      | 100/5500       | 87.32        | 1.145                    | 0.012          | 0.003           | -0.19            | 8.21                  | 9                   | 1.199         | 0.004                  | 22.2         | 4.0              |
| Right side                                 | 802.11a      | 100/5500       | 87.32        | 1.145                    | 0.185          | 0.05            | 0.06             | 8.21                  | 9                   | 1.199         | <b>0.069</b>           | 22.2         | 4.0              |
| Top side                                   | 802.11a      | 100/5500       | 87.32        | 1.145                    | 0.019          | 0.005           | 0.03             | 8.21                  | 9                   | 1.199         | 0.007                  | 22.2         | 4.0              |
| Bottom side                                | 802.11a      | 100/5500       | 87.32        | 1.145                    | 0              | 0               | 0                | 8.21                  | 9                   | 1.199         | 0.000                  | 22.2         | 4.0              |
| Right side                                 | 802.11a      | 116/5580       | 87.32        | 1.145                    | 0.166          | 0.043           | 0.02             | 7.98                  | 9                   | 1.265         | 0.062                  | 22.2         | 4.0              |
| Right side                                 | 802.11a      | 140/5700       | 87.32        | 1.145                    | 0.161          | 0.041           | 0.05             | 6.02                  | 7.5                 | 1.406         | 0.066                  | 22.2         | 4.0              |
| Extremity Test data U-NII-3(Separate 0mm)  |              |                |              |                          |                |                 |                  |                       |                     |               |                        |              |                  |
| Front side                                 | 802.11n-HT40 | 151/5755       | 70.88        | 1.411                    | 0.079          | 0.028           | 0.05             | 6.98                  | 7.5                 | 1.127         | 0.045                  | 22.2         | 4.0              |
| Back-1 side                                | 802.11n-HT40 | 151/5755       | 70.88        | 1.411                    | 0.011          | 0.004           | -0.17            | 6.98                  | 7.5                 | 1.127         | 0.006                  | 22.2         | 4.0              |
| Left side                                  | 802.11n-HT40 | 151/5755       | 70.88        | 1.411                    | 0.008          | 0.003           | 0.03             | 6.98                  | 7.5                 | 1.127         | 0.005                  | 22.2         | 4.0              |
| Right side                                 | 802.11n-HT40 | 151/5755       | 70.88        | 1.411                    | 0.157          | 0.037           | 0.08             | 6.98                  | 7.5                 | 1.127         | <b>0.059</b>           | 22.2         | 4.0              |
| Top side                                   | 802.11n-HT40 | 151/5755       | 70.88        | 1.411                    | 0.01           | 0.004           | 0.01             | 6.98                  | 7.5                 | 1.127         | 0.006                  | 22.2         | 4.0              |
| Bottom side                                | 802.11n-HT40 | 151/5755       | 70.88        | 1.411                    | 0              | 0               | 0                | 6.98                  | 7.5                 | 1.127         | 0.000                  | 22.2         | 4.0              |

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|            |              |          |       |       |       |       |      |      |   |       |       |      |     |
|------------|--------------|----------|-------|-------|-------|-------|------|------|---|-------|-------|------|-----|
| Right side | 802.11n-HT40 | 159/5795 | 70.88 | 1.411 | 0.136 | 0.029 | 0.06 | 5.39 | 6 | 1.151 | 0.047 | 22.2 | 4.0 |
|------------|--------------|----------|-------|-------|-------|-------|------|------|---|-------|-------|------|-----|

Table 6: SAR Result Of 5GHz Wi-Fi

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B
- 2) If the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is  $\leq 2.0$  W/kg then testing at the other channels is not required for such test configuration(s). Per Kdb248227 D01, When the reported SAR is  $> 2.0$  W/kg, SAR is required for that exposure configuration using the next highest measured output power channel.
- 3) Each channel was tested at the lowest data rate.

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## 8.3.17 Repeat SAR Measurement

| Band          | Mode | Test Position | Test Ch./Freq. | Original Measured SAR10g (mW/g) | 1st Repeated SAR10g (mW/g) | Ratio |
|---------------|------|---------------|----------------|---------------------------------|----------------------------|-------|
| WCDMA Band II | RMC  | Back side     | 9400/1880      | 2.72                            | 2.63                       | 1.03  |
| WCDMA Band IV | RMC  | Back side     | 1412/1732.4    | 2.64                            | 2.52                       | 1.05  |
| LTE Band 2    | QPSK | Back side     | 19100/1900     | 2.85                            | 2.69                       | 1.06  |
| LTE Band 4    | QPSK | Back side     | 20300/1745     | 2.57                            | 2.44                       | 1.05  |
| LTE Band 7    | QPSK | Back side     | 21350/2560     | 2.47                            | 2.37                       | 1.04  |
| LTE Band 25   | QPSK | Back side     | 26590/1905     | 3                               | 2.82                       | 1.06  |

Note:

- 1) Per KDB 865664 D01v01, for each frequency band, repeated SAR measurement is required only when the measured SAR is  $\geq 2.0\text{W/Kg}$ .
- 2) Per KDB 865664 D01v01, if the ratio of largest to smallest SAR for the original and first repeated measurement is  $\leq 1.2$  and the measured SAR  $< 3.625\text{W/Kg}$ , only one repeated measurement is required.
- 3) The ratio is the difference in percentage between original and repeated measured SAR.

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## 8.4 Multiple Transmitter Evaluation

### 8.4.1 Simultaneous SAR SAR test evaluation

#### Simultaneous Transmission

| NO. | Simultaneous Transmission Configuration | Extremity |
|-----|---|-----------|
| 1   | WCDMA(Data) + Wi-Fi                     | Yes       |
| 2   | WCDMA(Data) + BT                        | Yes       |
| 3   | LTE(Data) + Wi-Fi                       | Yes       |
| 4   | LTE(Data) + BT                          | Yes       |
| 5   | BT+ Wi-Fi                               | No        |

Note:

- 1) Wi-Fi and Bluetooth share the same Tx antenna and can't transmit simultaneously.



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## 8.4.2 Estimated SAR

When the standalone SAR test exclusion is applied to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to the following to determine simultaneous transmission SAR test exclusion:

- (max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[ $\sqrt{f(\text{GHz})/x}$ ] W/kg for test separation distances  $\leq$  50 mm;

Where  $x$  = 7.5 for 1-g SAR, and  $x$  = 18.75 for 10-g SAR.

- 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the test separation distances is  $>$  50 mm.

### Estimated SAR Result

| Freq. Band | Frequency (MHz) | Test Position | Test Separation (mm) | max. power(dBm) | Estimated 10g SAR (W/kg) |
|------------|-----------------|---------------|----------------------|-----------------|--------------------------|
| Bluetooth  | 2480            | Extremity     | 0                    | 8.5             | 0.119                    |

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**1) Simultaneous Transmission SAR Summation Scenario for Extremity**

| WWAN Band     | Exposure position | ①MAX. WWAN SAR(W/kg) | ②MAX. WLAN 2.4GHz SAR(W/kg) | ③MAX. WLAN 5GHz SAR(W/kg) | ④MAX. BT SAR(W/kg) | Summed SAR ①+② | Summed SAR ①+③ | Summed SAR ①+④ | Case NO. |
|---------------|-------------------|----------------------|-----------------------------|---------------------------|--------------------|----------------|----------------|----------------|----------|
| WCDMA Band II | Front             | 1.585                | 0.112                       | 0.045                     | 0.119              | 1.697          | 1.630          | 1.704          | No       |
|               | Back              | 3.188                | 0.016                       | 0.006                     | 0.119              | 3.204          | 3.194          | 3.307          | No       |
|               | Left              | 0.216                | 0.007                       | 0.005                     | 0.119              | 0.223          | 0.221          | 0.335          | No       |
|               | Right             | 0.179                | 0.277                       | 0.070                     | 0.119              | 0.456          | 0.249          | 0.298          | No       |
|               | Top               | 0.000                | 0.007                       | 0.007                     | 0.119              | 0.007          | 0.007          | 0.119          | No       |
|               | Bottom            | 1.916                | 0.000                       | 0.000                     | 0.119              | 1.916          | 1.916          | 2.035          | No       |
| WCDMA Band IV | Front             | 1.437                | 0.112                       | 0.045                     | 0.119              | 1.549          | 1.482          | 1.556          | No       |
|               | Back              | 2.983                | 0.016                       | 0.006                     | 0.119              | 2.999          | 2.989          | 3.102          | No       |
|               | Left              | 0.024                | 0.007                       | 0.005                     | 0.119              | 0.031          | 0.029          | 0.143          | No       |
|               | Right             | 0.017                | 0.277                       | 0.070                     | 0.119              | 0.294          | 0.087          | 0.136          | No       |
|               | Top               | 0.000                | 0.007                       | 0.007                     | 0.119              | 0.007          | 0.007          | 0.119          | No       |
|               | Bottom            | 1.766                | 0.000                       | 0.000                     | 0.119              | 1.766          | 1.766          | 1.885          | No       |
| WCDMA Band V  | Front             | 0.245                | 0.112                       | 0.045                     | 0.119              | 0.357          | 0.290          | 0.364          | No       |
|               | Back              | 0.913                | 0.016                       | 0.006                     | 0.119              | 0.929          | 0.919          | 1.032          | No       |
|               | Left              | 0.045                | 0.007                       | 0.005                     | 0.119              | 0.052          | 0.050          | 0.164          | No       |
|               | Right             | 0.032                | 0.277                       | 0.070                     | 0.119              | 0.309          | 0.102          | 0.151          | No       |
|               | Top               | 0.000                | 0.007                       | 0.007                     | 0.119              | 0.007          | 0.007          | 0.119          | No       |
|               | Bottom            | 0.345                | 0.000                       | 0.000                     | 0.119              | 0.345          | 0.345          | 0.464          | No       |
| LTE Band 2    | Front             | 1.393                | 0.112                       | 0.045                     | 0.119              | 1.505          | 1.438          | 1.512          | No       |
|               | Back              | 3.555                | 0.016                       | 0.006                     | 0.119              | 3.571          | 3.561          | 3.674          | No       |
|               | Left              | 0.307                | 0.007                       | 0.005                     | 0.119              | 0.314          | 0.312          | 0.426          | No       |
|               | Right             | 0.181                | 0.277                       | 0.070                     | 0.119              | 0.458          | 0.251          | 0.300          | No       |
|               | Top               | 0.000                | 0.007                       | 0.007                     | 0.119              | 0.007          | 0.007          | 0.119          | No       |
|               | Bottom            | 1.936                | 0.000                       | 0.000                     | 0.119              | 1.936          | 1.936          | 2.055          | No       |
| LTE Band 4    | Front             | 1.367                | 0.112                       | 0.045                     | 0.119              | 1.479          | 1.412          | 1.486          | No       |
|               | Back              | 2.978                | 0.016                       | 0.006                     | 0.119              | 2.994          | 2.984          | 3.097          | No       |
|               | Left              | 0.245                | 0.007                       | 0.005                     | 0.119              | 0.252          | 0.250          | 0.364          | No       |
|               | Right             | 0.160                | 0.277                       | 0.070                     | 0.119              | 0.437          | 0.230          | 0.279          | No       |
|               | Top               | 0.000                | 0.007                       | 0.007                     | 0.119              | 0.007          | 0.007          | 0.119          | No       |
|               | Bottom            | 1.879                | 0.000                       | 0.000                     | 0.119              | 1.879          | 1.879          | 1.998          | No       |

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|                |        |       |       |       |       |       |       |       |    |
|----------------|--------|-------|-------|-------|-------|-------|-------|-------|----|
| LTE<br>Band 5  | Front  | 0.504 | 0.112 | 0.045 | 0.119 | 0.616 | 0.549 | 0.623 | No |
|                | Back   | 1.164 | 0.016 | 0.006 | 0.119 | 1.180 | 1.170 | 1.283 | No |
|                | Left   | 0.123 | 0.007 | 0.005 | 0.119 | 0.130 | 0.128 | 0.242 | No |
|                | Right  | 0.090 | 0.277 | 0.070 | 0.119 | 0.367 | 0.160 | 0.209 | No |
|                | Top    | 0.000 | 0.007 | 0.007 | 0.119 | 0.007 | 0.007 | 0.119 | No |
|                | Bottom | 0.649 | 0.000 | 0.000 | 0.119 | 0.649 | 0.649 | 0.768 | No |
| LTE<br>Band 7  | Front  | 1.228 | 0.112 | 0.045 | 0.119 | 1.340 | 1.273 | 1.347 | No |
|                | Back   | 2.889 | 0.016 | 0.006 | 0.119 | 2.905 | 2.895 | 3.008 | No |
|                | Left   | 0.279 | 0.007 | 0.005 | 0.119 | 0.286 | 0.284 | 0.398 | No |
|                | Right  | 0.204 | 0.277 | 0.070 | 0.119 | 0.481 | 0.274 | 0.323 | No |
|                | Top    | 0.000 | 0.007 | 0.007 | 0.119 | 0.007 | 0.007 | 0.119 | No |
|                | Bottom | 2.104 | 0.000 | 0.000 | 0.119 | 2.104 | 2.104 | 2.223 | No |
| LTE<br>Band 12 | Front  | 0.453 | 0.112 | 0.045 | 0.119 | 0.565 | 0.498 | 0.572 | No |
|                | Back   | 0.967 | 0.016 | 0.006 | 0.119 | 0.983 | 0.973 | 1.086 | No |
|                | Left   | 0.124 | 0.007 | 0.005 | 0.119 | 0.131 | 0.129 | 0.243 | No |
|                | Right  | 0.074 | 0.277 | 0.070 | 0.119 | 0.351 | 0.144 | 0.193 | No |
|                | Top    | 0.000 | 0.007 | 0.007 | 0.119 | 0.007 | 0.007 | 0.119 | No |
|                | Bottom | 0.596 | 0.000 | 0.000 | 0.119 | 0.596 | 0.596 | 0.715 | No |
| LTE<br>Band 13 | Front  | 0.507 | 0.112 | 0.045 | 0.119 | 0.619 | 0.552 | 0.626 | No |
|                | Back   | 1.012 | 0.016 | 0.006 | 0.119 | 1.028 | 1.018 | 1.131 | No |
|                | Left   | 0.110 | 0.007 | 0.005 | 0.119 | 0.117 | 0.115 | 0.229 | No |
|                | Right  | 0.066 | 0.277 | 0.070 | 0.119 | 0.343 | 0.136 | 0.185 | No |
|                | Top    | 0.000 | 0.007 | 0.007 | 0.119 | 0.007 | 0.007 | 0.119 | No |
|                | Bottom | 0.541 | 0.000 | 0.000 | 0.119 | 0.541 | 0.541 | 0.660 | No |
| LTE<br>Band 14 | Front  | 0.576 | 0.112 | 0.045 | 0.119 | 0.688 | 0.621 | 0.695 | No |
|                | Back   | 1.110 | 0.016 | 0.006 | 0.119 | 1.126 | 1.116 | 1.229 | No |
|                | Left   | 0.137 | 0.007 | 0.005 | 0.119 | 0.144 | 0.142 | 0.256 | No |
|                | Right  | 0.074 | 0.277 | 0.070 | 0.119 | 0.351 | 0.144 | 0.193 | No |
|                | Top    | 0.000 | 0.007 | 0.007 | 0.119 | 0.007 | 0.007 | 0.119 | No |
|                | Bottom | 0.695 | 0.000 | 0.000 | 0.119 | 0.695 | 0.695 | 0.814 | No |
| LTE<br>Band 17 | Front  | 0.480 | 0.112 | 0.045 | 0.119 | 0.592 | 0.525 | 0.599 | No |
|                | Back   | 0.861 | 0.016 | 0.006 | 0.119 | 0.877 | 0.867 | 0.980 | No |
|                | Left   | 0.136 | 0.007 | 0.005 | 0.119 | 0.143 | 0.141 | 0.255 | No |

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|                |        |       |       |       |       |       |       |       |    |
|----------------|--------|-------|-------|-------|-------|-------|-------|-------|----|
|                | Right  | 0.087 | 0.277 | 0.070 | 0.119 | 0.364 | 0.157 | 0.206 | No |
|                | Top    | 0.000 | 0.007 | 0.007 | 0.119 | 0.007 | 0.007 | 0.119 | No |
|                | Bottom | 0.624 | 0.000 | 0.000 | 0.119 | 0.624 | 0.624 | 0.743 | No |
| LTE<br>Band 25 | Front  | 1.661 | 0.112 | 0.045 | 0.119 | 1.773 | 1.706 | 1.780 | No |
|                | Back   | 3.413 | 0.016 | 0.006 | 0.119 | 3.429 | 3.419 | 3.532 | No |
|                | Left   | 0.268 | 0.007 | 0.005 | 0.119 | 0.275 | 0.273 | 0.387 | No |
|                | Right  | 0.208 | 0.277 | 0.070 | 0.119 | 0.485 | 0.278 | 0.327 | No |
|                | Top    | 0.000 | 0.007 | 0.007 | 0.119 | 0.007 | 0.007 | 0.119 | No |
|                | Bottom | 2.150 | 0.000 | 0.000 | 0.119 | 2.150 | 2.150 | 2.269 | No |
| LTE<br>Band 26 | Front  | 0.593 | 0.112 | 0.045 | 0.119 | 0.705 | 0.638 | 0.712 | No |
|                | Back   | 0.996 | 0.016 | 0.006 | 0.119 | 1.012 | 1.002 | 1.115 | No |
|                | Left   | 0.115 | 0.007 | 0.005 | 0.119 | 0.122 | 0.120 | 0.234 | No |
|                | Right  | 0.075 | 0.277 | 0.070 | 0.119 | 0.352 | 0.145 | 0.194 | No |
|                | Top    | 0.000 | 0.007 | 0.007 | 0.119 | 0.007 | 0.007 | 0.119 | No |
|                | Bottom | 0.907 | 0.000 | 0.000 | 0.119 | 0.907 | 0.907 | 1.026 | No |
| LTE<br>Band 41 | Front  | 1.096 | 0.112 | 0.045 | 0.119 | 1.208 | 1.141 | 1.215 | No |
|                | Back   | 1.809 | 0.016 | 0.006 | 0.119 | 1.825 | 1.815 | 1.928 | No |
|                | Left   | 0.143 | 0.007 | 0.005 | 0.119 | 0.150 | 0.148 | 0.262 | No |
|                | Right  | 0.069 | 0.277 | 0.070 | 0.119 | 0.346 | 0.139 | 0.188 | No |
|                | Top    | 0.000 | 0.007 | 0.007 | 0.119 | 0.007 | 0.007 | 0.119 | No |
|                | Bottom | 1.213 | 0.000 | 0.000 | 0.119 | 1.213 | 1.213 | 1.332 | No |

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## 9 Equipment list

| Test Platform  | SPEAG DASY5 Professional                         |               |                 |                  |                         |
|--|--|---------------|-----------------|------------------|-------------------------|
| Location   | Compliance Certification Services (Kunshan) Inc. |               |                 |                  |                         |
| Software Reference   | DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)      |               |                 |                  |                         |
| <b>Hardware Reference</b>  |  |               |                 |                  |                         |
| Equipment  | Manufacturer                                     | Model         | Serial Number   | Calibration Date | Due date of calibration |
| <input checked="" type="checkbox"/> P C                                  | HP   | Core(rm)3.16G | CZCO48171H      | N/A              | N/A                     |
| <input checked="" type="checkbox"/> Signal Generator                     | Agilent  | N5182A        | MY50142015      | 2020/09/25       | 2021/09/24              |
| <input checked="" type="checkbox"/> S-Parameter Network Analyzer         | Agilent  | E5071B        | MY42301382      | 2021/02/01       | 2022/01/31              |
| <input checked="" type="checkbox"/> DAK-3.5 probe                        | SPEAG  | DAK-3.5       | 1102            | N/A              | N/A                     |
| <input checked="" type="checkbox"/> Power meter                          | Anritsu  | ML2495A       | 1445010         | 2021/04/15       | 2022/04/14              |
| <input checked="" type="checkbox"/> Power sensor                         | Anritsu  | MA2411B       | 1339220         | 2021/04/15       | 2022/04/14              |
| <input checked="" type="checkbox"/> Wireless Communication Test Set      | R&S  | CMU200        | 109525          | 2020/10/19       | 2021/10/18              |
| <input checked="" type="checkbox"/> universal Radio communication tester | R&S  | CMW500        | 159275          | 2020/10/19       | 2021/10/18              |
| <input checked="" type="checkbox"/> DAE                                  | SPEAG  | DAE4          | 1245            | 2021/05/19       | 2022/05/18              |
| <input checked="" type="checkbox"/> E-field PROBE                        | SPEAG  | EX3DV4        | 3798            | 2021/05/31       | 2022/05/30              |
| <input checked="" type="checkbox"/> Dipole                               | SPEAG  | D750V3        | 1188            | 2019/03/07       | 2022/03/06              |
| <input checked="" type="checkbox"/> Dipole                               | SPEAG  | D835V2        | 4d114           | 2019/06/11       | 2022/06/10              |
| <input checked="" type="checkbox"/> Dipole                               | SPEAG  | D1800V2       | 2d170           | 2019/06/11       | 2022/06/10              |
| <input checked="" type="checkbox"/> Dipole                               | SPEAG  | D1900V2       | 5d136           | 2019/06/11       | 2022/06/10              |
| <input checked="" type="checkbox"/> Dipole                               | SPEAG  | D2450V2       | 817             | 2019/06/10       | 2022/06/09              |
| <input checked="" type="checkbox"/> Dipole                               | SPEAG  | D2600V2       | 1158            | 2019/03/08       | 2022/03/07              |
| <input checked="" type="checkbox"/> Dipole                               | SPEAG  | D5GHzV2       | 1095            | 2019/06/14       | 2022/06/13              |
| <input checked="" type="checkbox"/> Electro Thermometer                  | DTM  | DTM3000       | 3030            | 2020/10/24       | 2021/10/23              |
| <input checked="" type="checkbox"/> Amplifier                            | Mini-circuits                                    | ZVE-8G        | 110405          | N/A              | N/A                     |
| <input checked="" type="checkbox"/> Amplifier                            | Mini-circuits                                    | ZHL-42        | QA1331003       | N/A              | N/A                     |
| <input checked="" type="checkbox"/> 3db ATTENUATOR                       | MINI   | MCL BW-S3W5   | 0533            | N/A              | N/A                     |
| <input checked="" type="checkbox"/> DUMMY PROBE                          | SPEAG  | DP_2          | SPDP2001AA      | N/A              | N/A                     |
| <input checked="" type="checkbox"/> Dual Directional Coupler             | Woken  | 20W couple    | DOM2BHW1A1      | N/A              | N/A                     |
| <input checked="" type="checkbox"/> SAM PHANTOM (ELI4 v4.0)              | SPEAG  | QDOVA001BB    | 1102            | N/A              | N/A                     |
| <input checked="" type="checkbox"/> Twin SAM Phantom                     | SPEAG  | QD000P40CD    | 1609            | N/A              | N/A                     |
| <input checked="" type="checkbox"/> ROBOT                                | SPEAG  | TX60          | F10/5E6AA1/A101 | N/A              | N/A                     |
| <input checked="" type="checkbox"/> ROBOT KRC                            | SPEAG  | CS8C          | F10/5E6AA1/C101 | N/A              | N/A                     |
| <input checked="" type="checkbox"/> LIQUID CALIBRATION KIT               | ANTENNESSA                                       | 41/05 OCP9    | 00425167        | N/A              | N/A                     |

Note: All the equipments are within the valid period when the tests are performed.

All measurement facilities used to collect the measurement data are located at

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## 10 Calibration certificate

Please see the Appendix C

## 11 Photographs

Please see the Appendix D

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## Appendix A: Detailed System Check Results

The plots are showing as followings.

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Test Laboratory: Compliance Certification Services Inc.

### System Performance Check-Head 750MHz

**DUT: Dipole 750 MHz; Type: D750V2; Serial: 1188**

Communication System: UID 0, CW (0); Frequency: 750 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 750 \text{ MHz}$ ;  $\sigma = 0.898 \text{ S/m}$ ;  $\epsilon_r = 41.66$ ;  $\rho = 1000 \text{ kg/m}^3$   
 Phantom section: Flat Section  
 Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(9.78, 9.78, 9.78); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**System Performance Check at Frequencies Low 1 GHz/Pin=250 mW, dist=15 mm (EX-Probe)/Area Scan (7x12x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (measured) = 2.49 W/kg

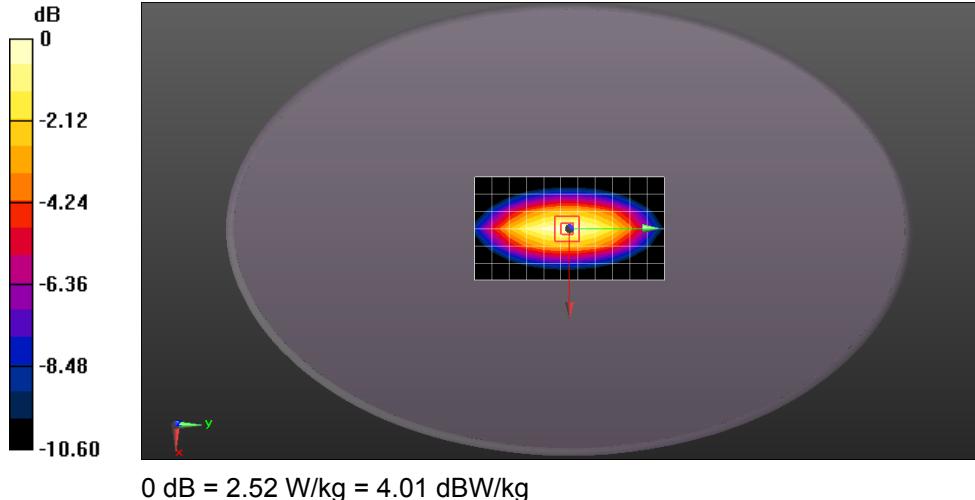
**System Performance Check at Frequencies Low 1 GHz/Pin=250 mW, dist=15 mm (EX-Probe)/Zoom Scan (7x7x7) (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 52.06 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 2.86 W/kg

**SAR(1 g) = 2.02 W/kg; SAR(10 g) = 1.33 W/kg**

Maximum value of SAR (measured) = 2.52 W/kg



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Test Laboratory: Compliance Certification Services Inc.

### System Performance Check-Head 835MHz

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d114

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 835$  MHz;  $\sigma = 0.904$  S/m;  $\epsilon_r = 42.233$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(9.52, 9.52, 9.52); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**System Performance Check at Frequencies Low 1 GHz/dist=15mm, Pin=250 mW(EX-Probe)/Area Scan (7x12x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (measured) = 3.19 W/kg

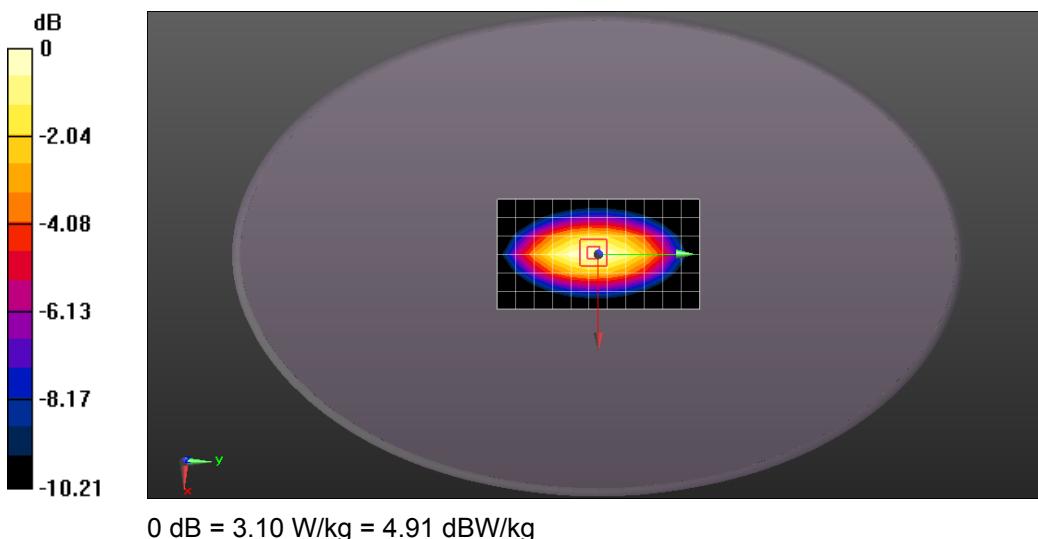
**System Performance Check at Frequencies Low 1 GHz/dist=15mm, Pin=250 mW(EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 61.23 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 3.67 W/kg

**SAR(1 g) = 2.31 W/kg; SAR(10 g) = 1.5 W/kg**

Maximum value of SAR (measured) = 3.10 W/kg



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Test Laboratory: Compliance Certification Services Inc.

### System Performance Check-Head 1800MHz

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: 2d170

Communication System: UID 10000, CW; Frequency: 1800 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 1800 \text{ MHz}$ ;  $\sigma = 1.38 \text{ S/m}$ ;  $\epsilon_r = 38.612$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(8.22, 8.22, 8.22); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**System Performance Check at Frequencies above 1 GHz/d=10mm, Pin=250 mW, dist=2.0mm (EX-Probe) (23.6 dBm)/Area Scan (7x7x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (measured) = 13.3 W/kg

**System Performance Check at Frequencies above 1 GHz/d=10mm, Pin=250 mW, dist=2.0mm (EX-Probe) (23.6 dBm)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:**

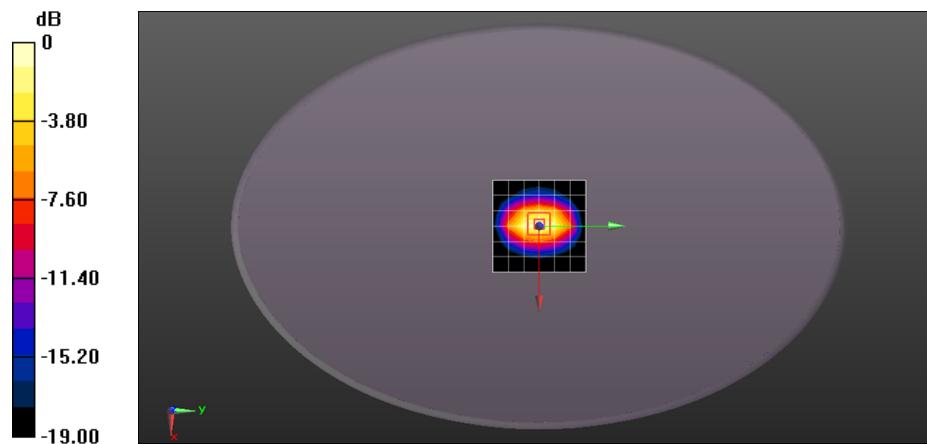
Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 100.8 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 17.2 W/kg

**SAR(1 g) = 9.39 W/kg; SAR(10 g) = 4.98 W/kg**

Maximum value of SAR (measured) = 13.7 W/kg



0 dB = 13.7 W/kg = 11.37 dBW/kg

Date: 2021/08/11



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Test Laboratory: Compliance Certification Services Inc.

### System Performance Check-Head 1900MHz

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d136

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1  
Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.373$  S/m;  $\epsilon_r = 40.58$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

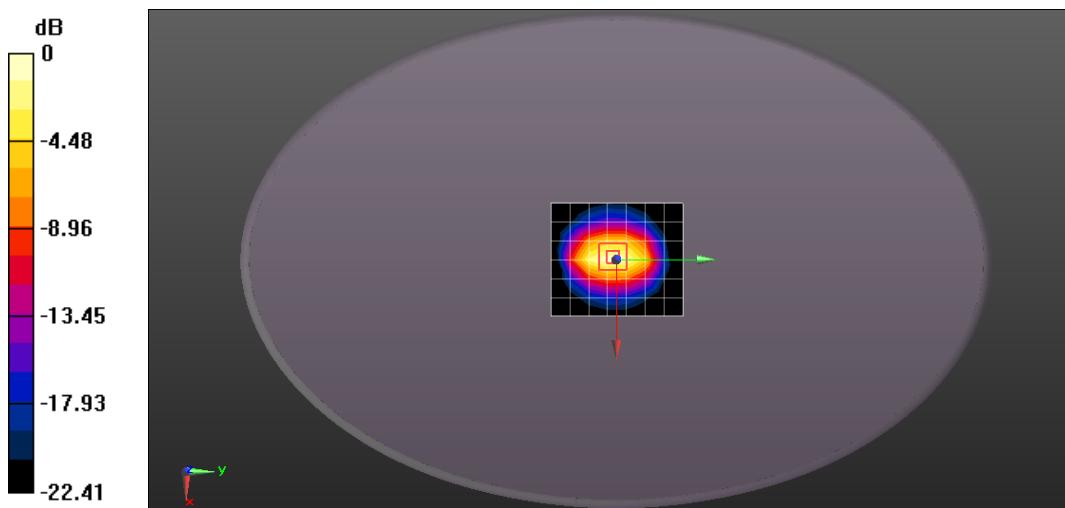
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(7.89, 7.89, 7.89); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**System Performance Check at Frequencies above 1 GHz/Pin=250 mW, dist=10mm (EX-Probe)/Area Scan (7x8x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (measured) = 11.2 W/kg

**System Performance Check at Frequencies above 1 GHz/Pin=250 mW, dist=10mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm  
Reference Value = 92.84 V/m; Power Drift = 0.06 dB  
Peak SAR (extrapolated) = 16.6 W/kg  
**SAR(1 g) = 9.87 W/kg; SAR(10 g) = 5.09 W/kg**  
Maximum value of SAR (measured) = 11.9 W/kg



Date: 2021/08/12



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Test Laboratory: Compliance Certification Services Inc.

### System Performance Check-Head 2450MHz

**DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 817**

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1  
Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.79$  S/m;  $\epsilon_r = 39.739$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(7.33, 7.33, 7.33); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**System Performance Check at Frequencies above 1 GHz/d=10mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (9x9x1):** Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 13.4 W/kg

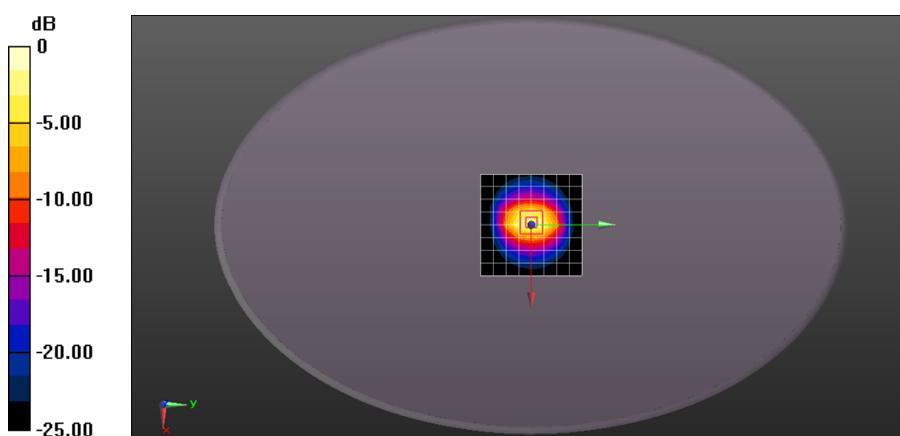
**System Performance Check at Frequencies above 1 GHz/d=10mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 87.97 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 21.4 W/kg

**SAR(1 g) = 12.8 W/kg; SAR(10 g) = 5.85 W/kg**

Maximum value of SAR (measured) = 16.2 W/kg



0 dB = 16.2 W/kg = 12.10 dBW/kg

Date: 2021/08/13

Test Laboratory: Compliance Certification Services Inc.



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## System Performance Check-Head 2600MHz

**DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1158**

Communication System: UID 0, CW (0); Frequency: 2600 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 2600$  MHz;  $\sigma = 1.962$  S/m;  $\epsilon_r = 39.248$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section  
 Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(7.13, 7.13, 7.13); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**System Performance Check at Frequencies above 1 GHz/Pin=250 mW, dist=10mm (EX-Probe)/Area Scan (9x10x1):** Measurement grid: dx=12mm, dy=12mm  
 Maximum value of SAR (measured) = 18.2 W/kg

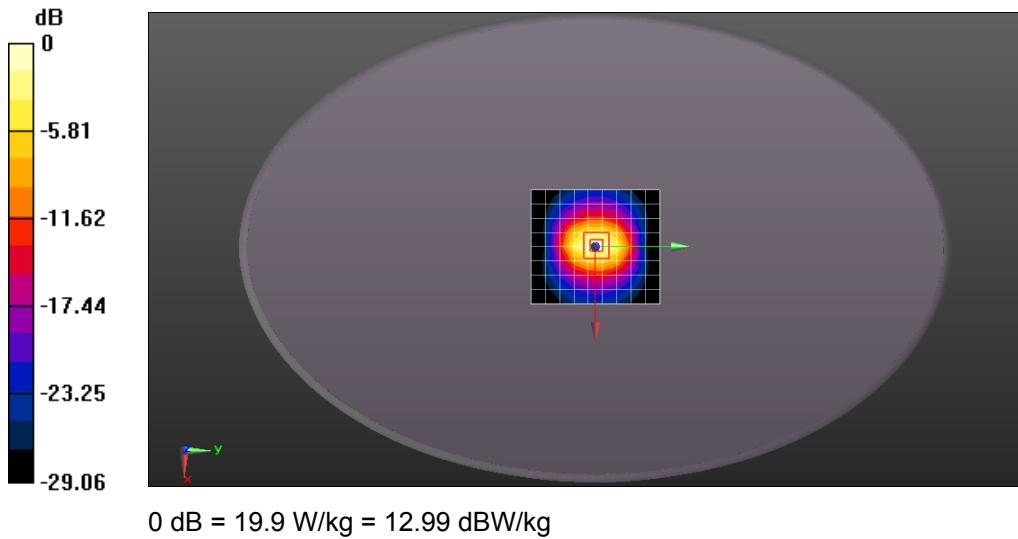
**System Performance Check at Frequencies above 1 GHz/Pin=250 mW, dist=10mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 101.5 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 30.0 W/kg

**SAR(1 g) = 13.3 W/kg; SAR(10 g) = 6.03 W/kg**

Maximum value of SAR (measured) = 19.9 W/kg



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## System Performance Check-Head 5250MHz

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: 1095

Communication System: UID 0, CW (0); Frequency: 5250 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 5250$  MHz;  $\sigma = 4.617$  S/m;  $\epsilon_r = 35.482$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section  
 Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(4.85, 4.85, 4.85); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**System Performance Check with D5GHzV2 Dipole (graded grid)/d=10mm, Pin=100mW, f=5250 MHz/Area Scan (9x10x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 15.8 W/kg

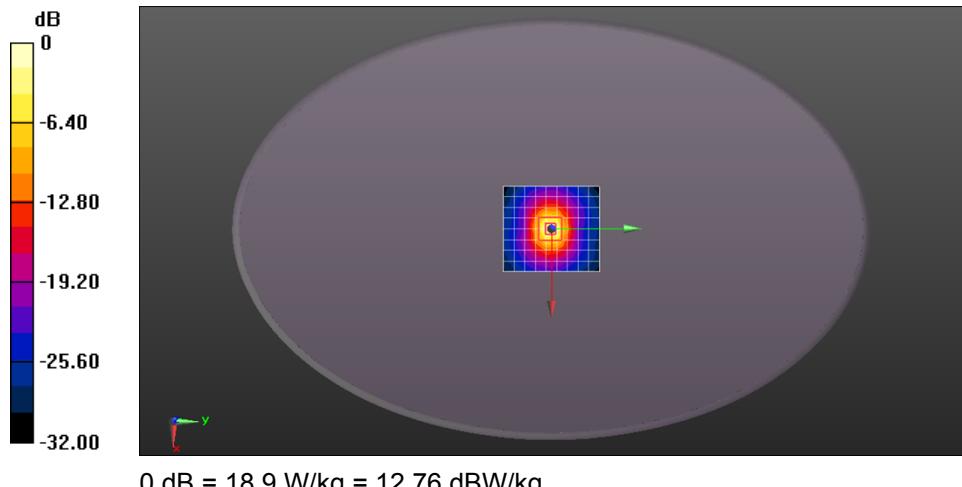
**System Performance Check with D5GHzV2 Dipole (graded grid)/d=10mm, Pin=100mW, f=5250 MHz/Zoom Scan (4x4x1.4mm, graded), dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 71.92 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 33.0 W/kg

**SAR(1 g) = 7.46 W/kg; SAR(10 g) = 2.19 W/kg**

Maximum value of SAR (measured) = 18.9 W/kg



Date: 2021/08/14

Test Laboratory: Compliance Certification Services Inc.



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## System Performance Check-Head 5600MHz

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: 1095

Communication System: UID 0, CW (0); Frequency: 5600 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 5600$  MHz;  $\sigma = 5.007$  S/m;  $\epsilon_r = 34.628$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section  
 Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(4.5, 4.5, 4.5); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**System Performance Check with D5GHzV2 Dipole (graded grid)/d=10mm, Pin=100mW, f=5600 MHz/Area Scan (9x10x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 17.9 W/kg

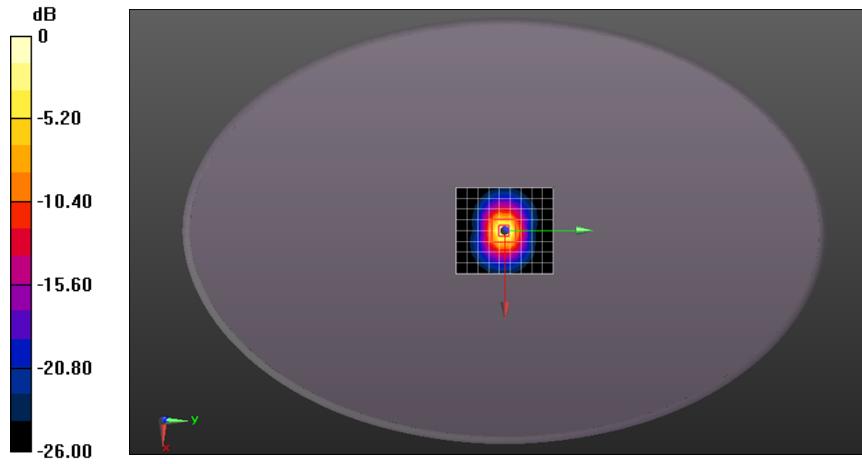
**System Performance Check with D5GHzV2 Dipole (graded grid)/d=10mm, Pin=100mW, f=5600 MHz/Zoom Scan (4x4x1.4mm, graded), dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 73.81 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 39.2 W/kg

**SAR(1 g) = 7.68 W/kg; SAR(10 g) = 2.26 W/kg**

Maximum value of SAR (measured) = 21.4 W/kg



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Test Laboratory: Compliance Certification Services Inc.



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## System Performance Check-Head 5750MHz

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: 1095

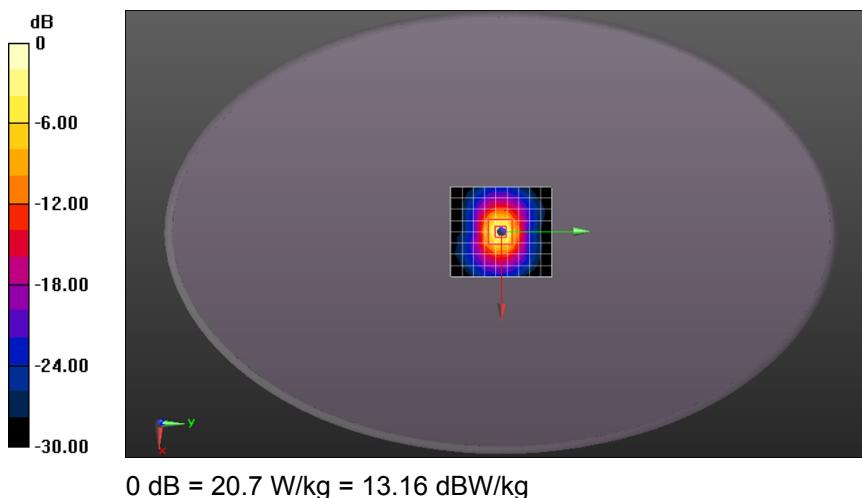
Communication System: UID 0, CW (0); Frequency: 5750 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 5750$  MHz;  $\sigma = 5.315$  S/m;  $\epsilon_r = 34.651$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section  
 Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(4.6, 4.6, 4.6); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**System Performance Check with D5GHzV2 Dipole (graded grid)/d=10mm, Pin=100mW, f=5750 MHz/Area Scan (9x10x1):** Measurement grid: dx=10mm, dy=10mm  
 Maximum value of SAR (measured) = 17.1 W/kg

**System Performance Check with D5GHzV2 Dipole (graded grid)/d=10mm, Pin=100mW, f=5750 MHz/Zoom Scan (4x4x1.4mm, graded), dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm  
 Reference Value = 70.63 V/m; Power Drift = -0.03 dB  
 Peak SAR (extrapolated) = 39.6 W/kg  
**SAR(1 g) = 7.62 W/kg; SAR(10 g) = 2.18 W/kg**  
 Maximum value of SAR (measured) = 20.7 W/kg



## Appendix B: Detailed Test Results

The plots of worse case are showing as followings.



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Date: 2021/08/11

Test Laboratory: Compliance Certification Services Inc.

### WCDMA Band II RMC Back side 0mm Ch9400

#### DUT: Poynt Smart Terminal V3.0; Type: PST3

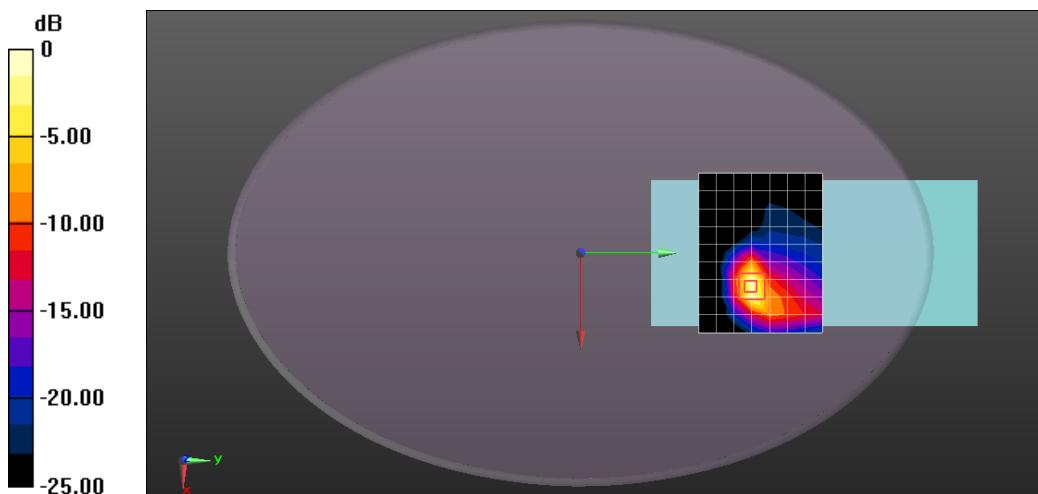
Communication System: UID 0, WCDMA / UMTS (0); Frequency: 1880 MHz; Duty Cycle: 1:1  
Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.368$  S/m;  $\epsilon_r = 40.662$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section  
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(7.89, 7.89, 7.89); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Configuration/Body/Area Scan (10x8x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (measured) = 11.7 W/kg

**Configuration/Body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
Reference Value = 2.022 V/m; Power Drift = -0.02 dB  
Peak SAR (extrapolated) = 17.2 W/kg  
**SAR(1 g) = 6.51 W/kg; SAR(10 g) = 2.72 W/kg**  
Maximum value of SAR (measured) = 14.2 W/kg



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Test Laboratory: Compliance Certification Services Inc.

**WCDMA Band IV RMC Back side 0mm Ch1412**

**DUT: Poynt Smart Terminal V3.0; Type: PST3**

Communication System: UID 0, WCDMA / UMTS (0); Frequency: 1732.4 MHz; Duty Cycle: 1:1  
Medium parameters used:  $f = 1732.4$  MHz;  $\sigma = 1.316$  S/m;  $\epsilon_r = 38.893$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(8.22, 8.22, 8.22); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Configuration/Body/Area Scan (10x8x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (measured) = 12.3 W/kg

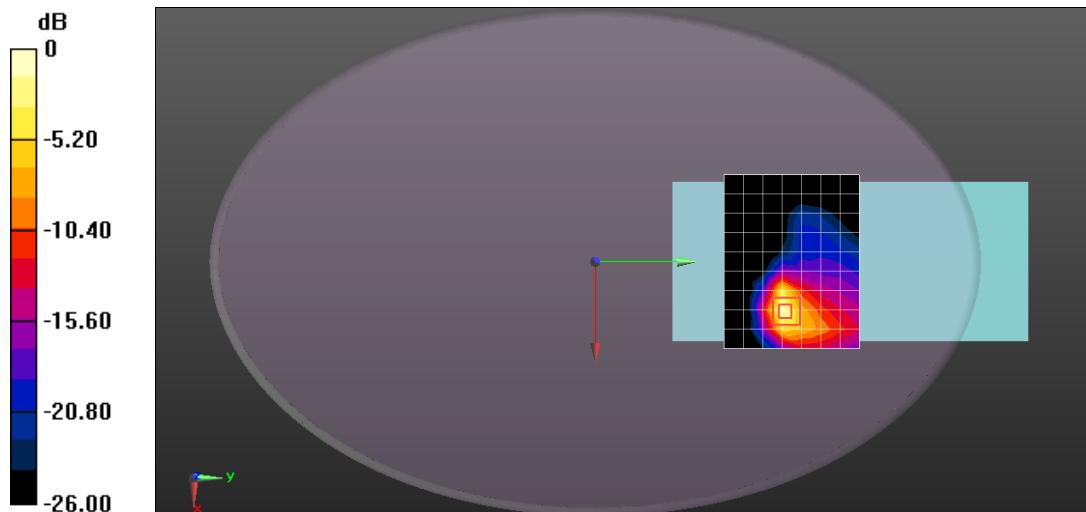
**Configuration/Body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.441 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 16.7 W/kg

**SAR(1 g) = 6.22 W/kg; SAR(10 g) = 2.64 W/kg**

Maximum value of SAR (measured) = 13.6 W/kg



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Test Laboratory: Compliance Certification Services Inc.

**WCDMA Band V RMC Back side 0mm Ch4233**

**DUT: Poynt Smart Terminal V3.0; Type: PST3**

Communication System: UID 0, WCDMA / UMTS (0); Frequency: 846.6 MHz; Duty Cycle: 1:1  
Medium parameters used:  $f = 847$  MHz;  $\sigma = 0.914$  S/m;  $\epsilon_r = 42.437$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(9.52, 9.52, 9.52); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Configuration/Body/Area Scan (10x8x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (measured) = 1.81 W/kg

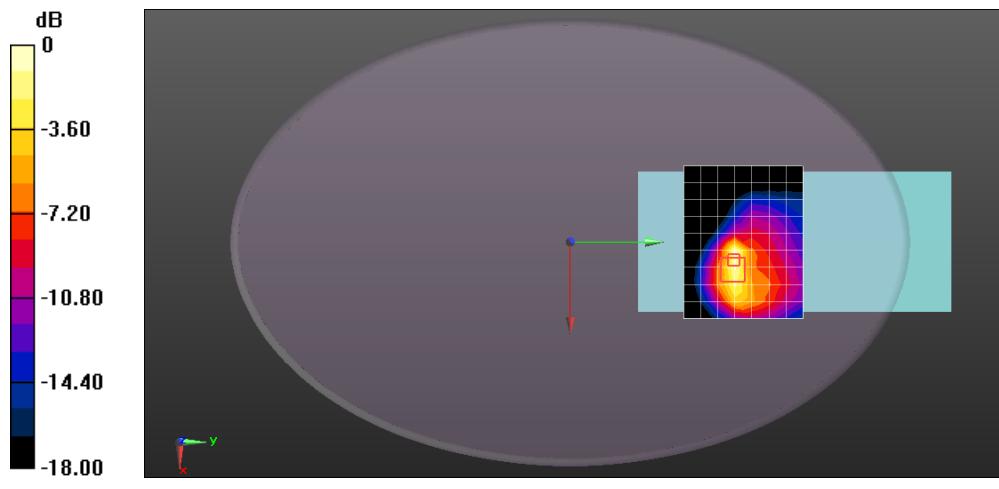
**Configuration/Body/Zoom Scan (6x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.567 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 2.72 W/kg

**SAR(1 g) = 1.08 W/kg; SAR(10 g) = 0.639 W/kg**

Maximum value of SAR (measured) = 2.01 W/kg



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Test Laboratory: Compliance Certification Services Inc.

**LTE Band 2 20M QPSK 1RB0 Back side 0mm Ch19100**

**DUT: Poynt Smart Terminal V3.0; Type: PST3**

Communication System: UID 0, FDD LTE (0); Frequency: 1900 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 1900 \text{ MHz}$ ;  $\sigma = 1.373 \text{ S/m}$ ;  $\epsilon_r = 40.58$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(7.89, 7.89, 7.89); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Configuration/Body/Area Scan (10x8x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (measured) = 11.5 W/kg

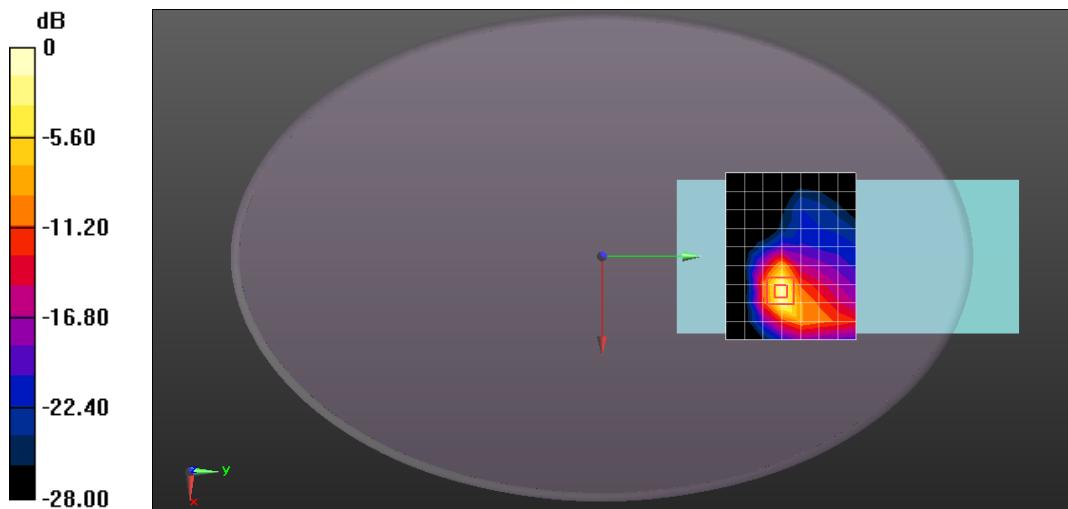
**Configuration/Body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  
 $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 1.399 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 17.6 W/kg

**SAR(1 g) = 6.75 W/kg; SAR(10 g) = 2.85 W/kg**

Maximum value of SAR (measured) = 14.6 W/kg



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Test Laboratory: Compliance Certification Services Inc.

**LTE Band 4 20M QPSK 1RB50 Back side 0mm Ch20300**

**DUT: Poynt Smart Terminal V3.0; Type: PST3**

Communication System: UID 0, FDD LTE (0); Frequency: 1745 MHz; Duty Cycle: 1:1  
Medium parameters used:  $f = 1745$  MHz;  $\sigma = 1.325$  S/m;  $\epsilon_r = 38.856$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(8.22, 8.22, 8.22); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Configuration/Body/Area Scan (10x8x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (measured) = 8.51 W/kg

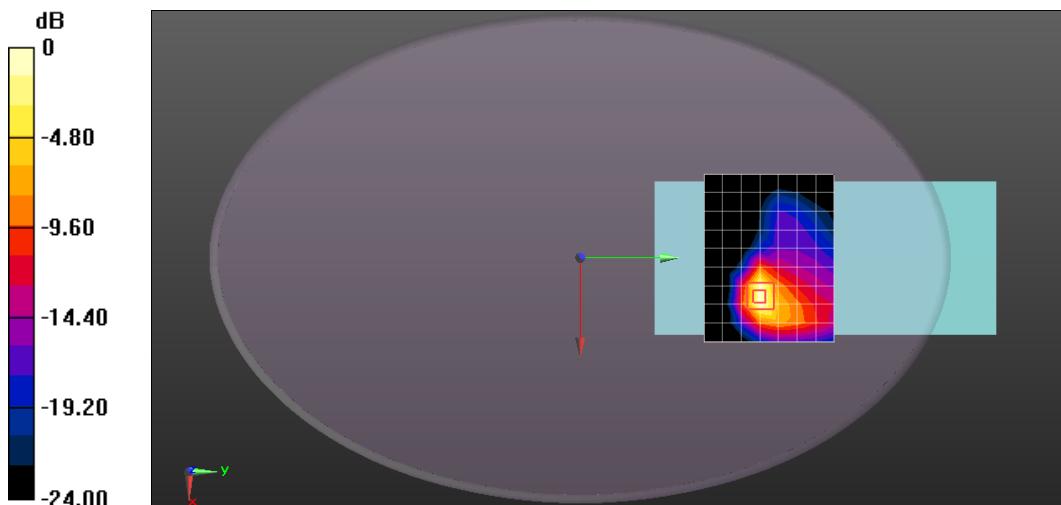
**Configuration/Body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.372 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 12.1 W/kg

**SAR(1 g) = 5.7 W/kg; SAR(10 g) = 2.57 W/kg**

Maximum value of SAR (measured) = 9.36 W/kg



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Test Laboratory: Compliance Certification Services Inc.

**LTE Band 5 10M QPSK 1RB49 Back side 0mm Ch20600**

**DUT: Poynt Smart Terminal V3.0; Type: PST3**

Communication System: UID 0, FDD LTE (0); Frequency: 844 MHz; Duty Cycle: 1:1  
Medium parameters used:  $f = 844$  MHz;  $\sigma = 0.91$  S/m;  $\epsilon_r = 41.998$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(9.52, 9.52, 9.52); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Configuration/Body/Area Scan (10x8x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (measured) = 2.59 W/kg

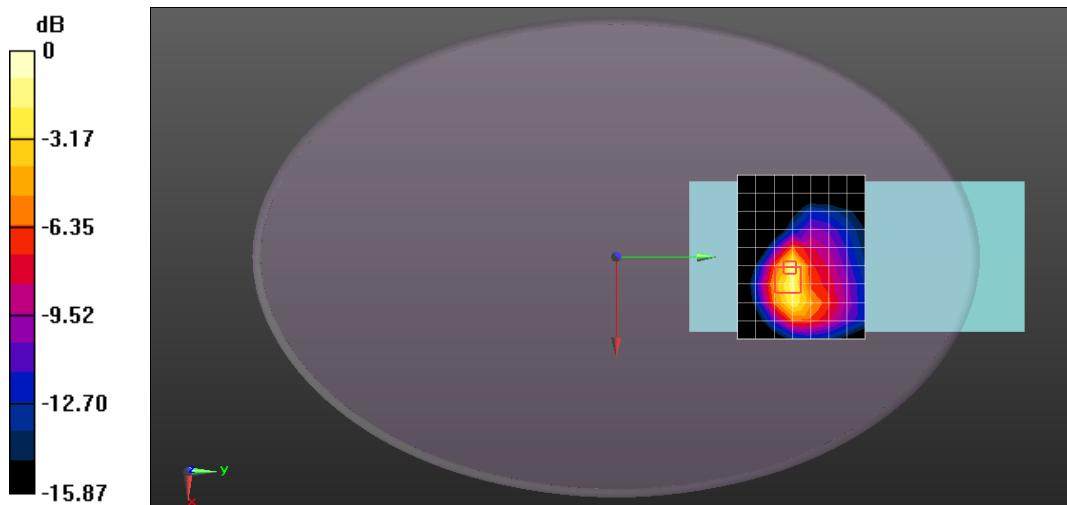
**Configuration/Body/Zoom Scan (6x6x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.546 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 4.32 W/kg

**SAR(1 g) = 1.69 W/kg; SAR(10 g) = 1.04 W/kg**

Maximum value of SAR (measured) = 3.19 W/kg



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Test Laboratory: Compliance Certification Services Inc.

**LTE Band 7 20M QPSK 1RB50 Back side 0mm Ch21350**

**DUT: Poynt Smart Terminal V3.0; Type: PST3**

Communication System: UID 0, FDD LTE (0); Frequency: 2560 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 2560$  MHz;  $\sigma = 1.914$  S/m;  $\epsilon_r = 39.396$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(7.13, 7.13, 7.13); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Configuration/Body/Area Scan (10x8x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (measured) = 14.2 W/kg

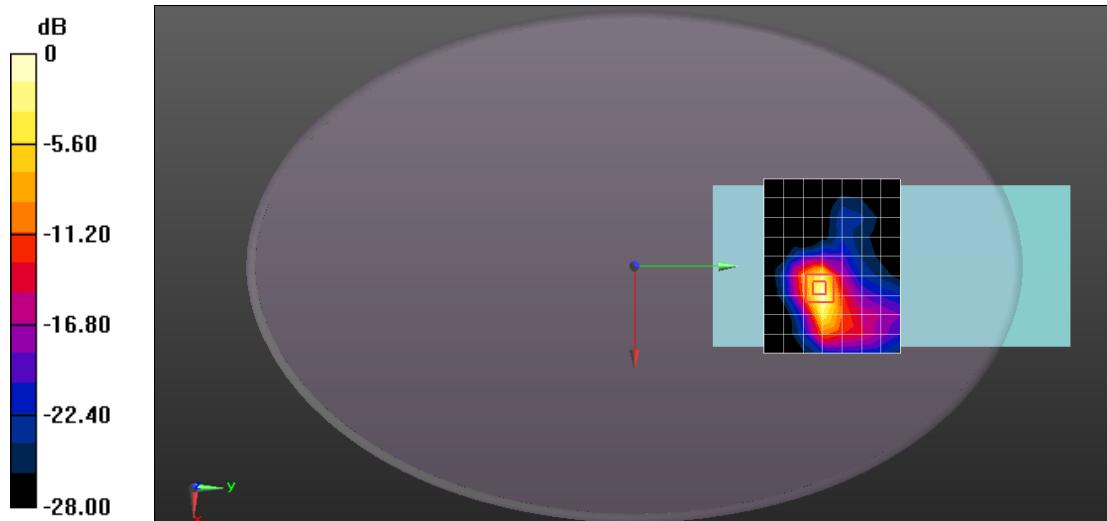
**Configuration/Body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.773 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 19.6 W/kg

**SAR(1 g) = 6.85 W/kg; SAR(10 g) = 2.47 W/kg**

Maximum value of SAR (measured) = 15.7 W/kg



Date: 2021/08/07



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Test Laboratory: Compliance Certification Services Inc.

**LTE Band 12 10M QPSK 1RB49 Back side 0mm Ch23130**

**DUT: Poynt Smart Terminal V3.0; Type: PST3**

Communication System: UID 0, FDD LTE (0); Frequency: 711 MHz; Duty Cycle: 1:1  
Medium parameters used:  $f = 711$  MHz;  $\sigma = 0.859$  S/m;  $\epsilon_r = 42.159$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(9.78, 9.78, 9.78); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Configuration/Body/Area Scan (10x8x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (measured) = 2.61 W/kg

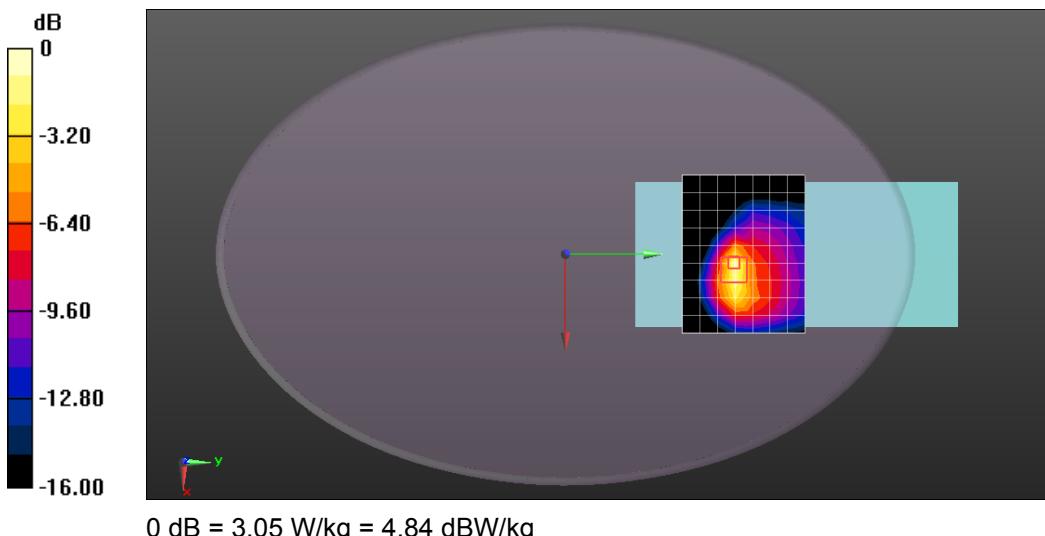
**Configuration/Body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm,  
dy=8mm, dz=5mm

Reference Value = 2.375 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 4.37 W/kg

**SAR(1 g) = 1.56 W/kg; SAR(10 g) = 0.876 W/kg**

Maximum value of SAR (measured) = 3.05 W/kg



Date: 2021/08/07



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Test Laboratory: Compliance Certification Services Inc.

**LTE Band 13 10M QPSK 1RB0 Back side 0mm Ch23230**

**DUT: Poynt Smart Terminal V3.0; Type: PST3**

Communication System: UID 0, FDD LTE (0); Frequency: 782 MHz; Duty Cycle: 1:1  
Medium parameters used:  $f = 782$  MHz;  $\sigma = 0.93$  S/m;  $\epsilon_r = 41.198$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(9.78, 9.78, 9.78); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Configuration/Body/Area Scan (10x8x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (measured) = 2.94 W/kg

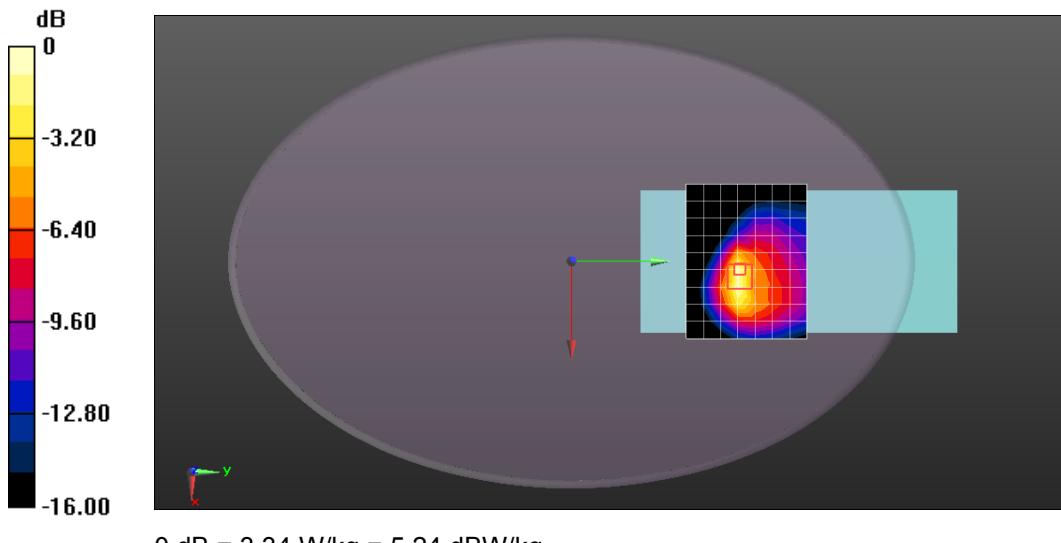
**Configuration/Body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.236 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 4.69 W/kg

**SAR(1 g) = 1.7 W/kg; SAR(10 g) = 0.958 W/kg**

Maximum value of SAR (measured) = 3.34 W/kg



Date: 2021/08/07



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Test Laboratory: Compliance Certification Services Inc.

**LTE Band 14 10M QPSK 1RB25 Back side 0mm Ch23330**

**DUT: Poynt Smart Terminal V3.0; Type: PST3**

Communication System: UID 0, FDD LTE (0); Frequency: 793 MHz; Duty Cycle: 1:1  
Medium parameters used:  $f = 793$  MHz;  $\sigma = 0.932$  S/m;  $\epsilon_r = 41.018$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(9.78, 9.78, 9.78); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Configuration/Body/Area Scan (10x8x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (measured) = 2.95 W/kg

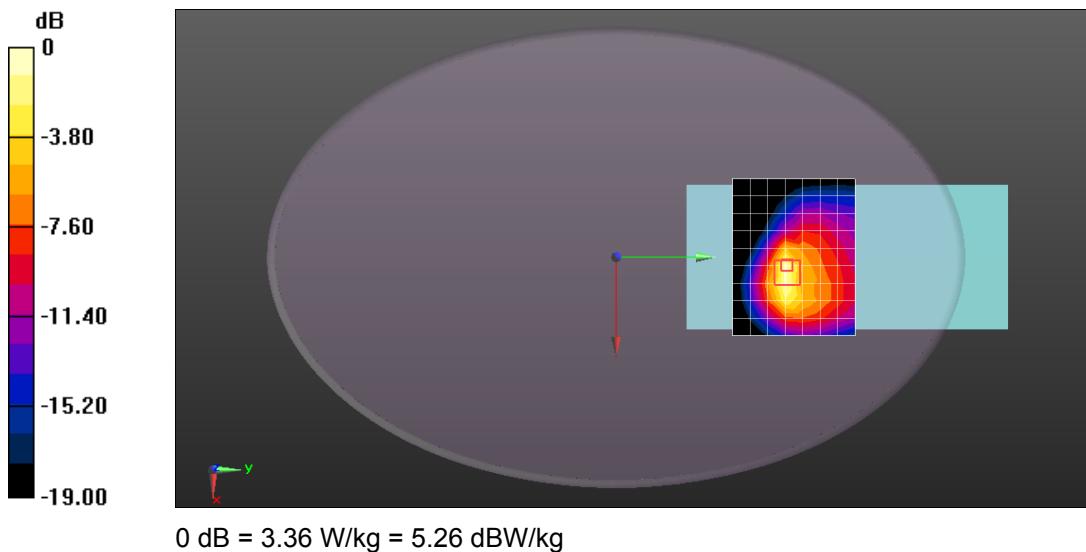
**Configuration/Body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.240 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 4.72 W/kg

**SAR(1 g) = 1.95 W/kg; SAR(10 g) = 1.08 W/kg**

Maximum value of SAR (measured) = 3.36 W/kg



Date: 2021/08/07



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Test Laboratory: Compliance Certification Services Inc.

**LTE Band 17 10M QPSK 1RB25 Back side 0mm Ch23800**

**DUT: Poynt Smart Terminal V3.0; Type: PST3**

Communication System: UID 0, FDD LTE (0); Frequency: 711 MHz; Duty Cycle: 1:1  
Medium parameters used:  $f = 711$  MHz;  $\sigma = 0.859$  S/m;  $\epsilon_r = 42.159$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(9.78, 9.78, 9.78); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Configuration/Body/Area Scan (10x8x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (measured) = 2.29 W/kg

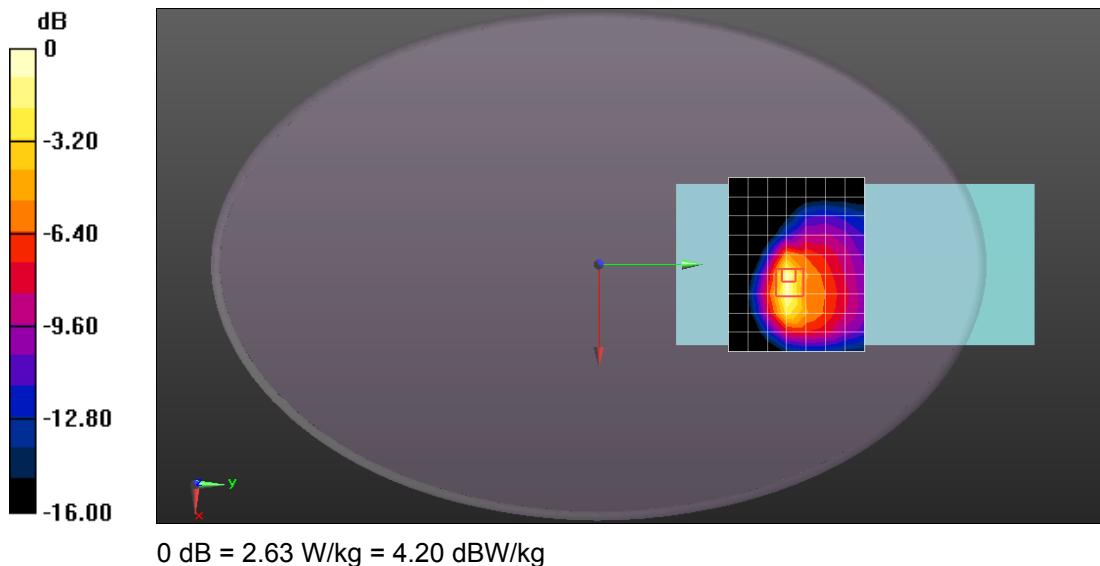
**Configuration/Body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.110 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 3.84 W/kg

**SAR(1 g) = 1.4 W/kg; SAR(10 g) = 0.804 W/kg**

Maximum value of SAR (measured) = 2.63 W/kg



Date: 2021/08/11

Test Laboratory: Compliance Certification Services Inc.



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## LTE Band 25 20M QPSK 1RB50 Back side 0mm Ch26590

DUT: Poynt Smart Terminal V3.0; Type: PST3

Communication System: UID 0, FDD LTE (0); Frequency: 1905 MHz; Duty Cycle: 1:1  
Medium parameters used:  $f = 1905$  MHz;  $\sigma = 1.383$  S/m;  $\epsilon_r = 40.442$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(7.89, 7.89, 7.89); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Configuration/Body/Area Scan (10x8x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (measured) = 13.1 W/kg

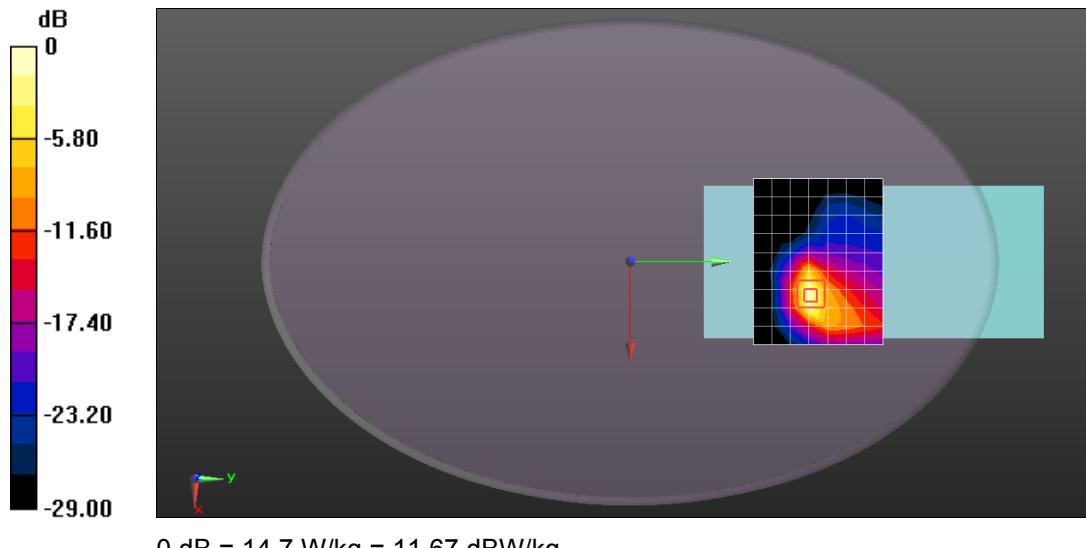
**Configuration/Body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.903 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 17.8 W/kg

**SAR(1 g) = 7.19 W/kg; SAR(10 g) = 3.0 W/kg**

Maximum value of SAR (measured) = 14.7 W/kg



Date: 2021/08/09

Test Laboratory: Compliance Certification Services Inc.

## LTE Band 26 15M QPSK 1RB0 Back side 0mm Ch26865



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**DUT: Poynt Smart Terminal V3.0; Type: PST3**

Communication System: UID 0, FDD LTE (0); Frequency: 831.5 MHz; Duty Cycle: 1:1  
Medium parameters used:  $f = 831.5 \text{ MHz}$ ;  $\sigma = 0.908 \text{ S/m}$ ;  $\epsilon_r = 42.339$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

**DASY5 Configuration:**

- Probe: EX3DV4 - SN3798; ConvF(9.52, 9.52, 9.52); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Configuration/Body/Area Scan (10x8x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (measured) = 2.57 W/kg

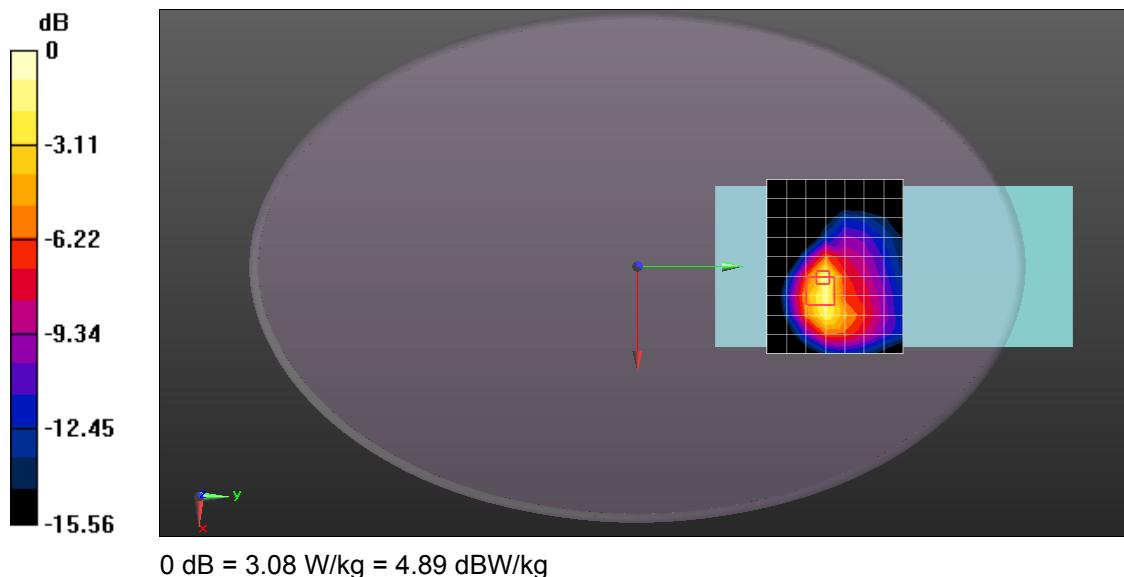
**Configuration/Body/Zoom Scan (6x6x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  
 $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 1.441 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 4.09 W/kg

**SAR(1 g) = 1.81 W/kg; SAR(10 g) = 0.89 W/kg**

Maximum value of SAR (measured) = 3.08 W/kg



Date: 2021/08/13

Test Laboratory: Compliance Certification Services Inc.

**LTE Band 41 20M QPSK 1RB50 Back side 0mm Ch41490**

**DUT: Poynt Smart Terminal V3.0; Type: PST3**



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Communication System: UID 0, TDD LTE (0); Frequency: 2680 MHz; Duty Cycle: 1:1.57943  
 Medium parameters used:  $f = 2680$  MHz;  $\sigma = 2.048$  S/m;  $\epsilon_r = 38.967$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section  
 Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(7.13, 7.13, 7.13); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Configuration/Body/Area Scan (10x8x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (measured) = 10.4 W/kg

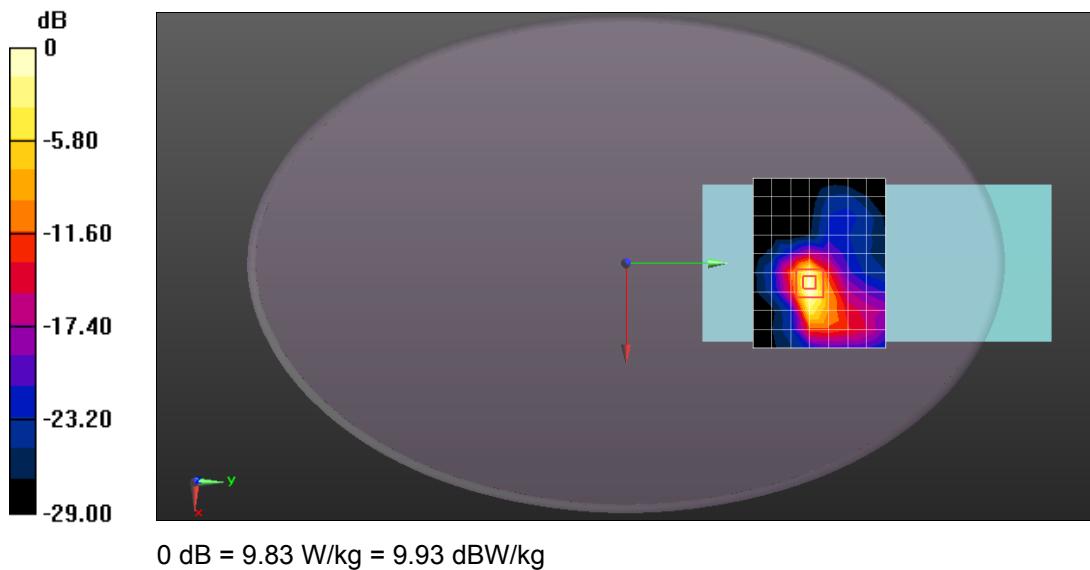
**Configuration/Body/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.106 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 12.4 W/kg

**SAR(1 g) = 4.55 W/kg; SAR(10 g) = 1.7 W/kg**

Maximum value of SAR (measured) = 9.83 W/kg



Date: 2021/08/12

Test Laboratory: Compliance Certification Services Inc.

**WLAN2.4GHz 802.11b 1Mbps Right side 0mm Ch6**

**DUT: Poynt Smart Terminal V3.0; Type: PST3**



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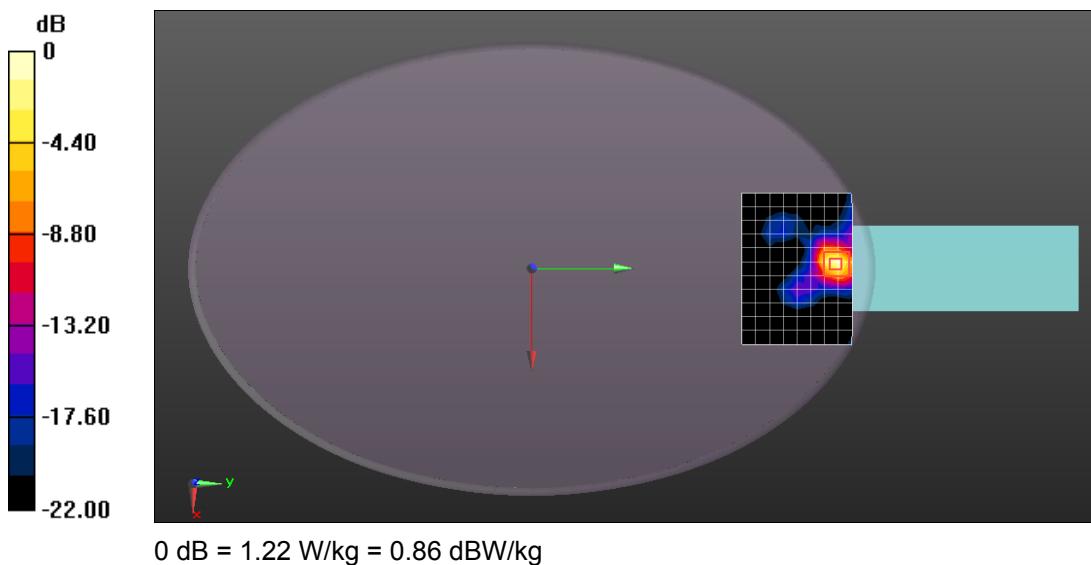
Communication System: UID 0, WiFi (0); Frequency: 2437 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 2437$  MHz;  $\sigma = 1.78$  S/m;  $\epsilon_r = 39.797$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section  
 Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(7.33, 7.33, 7.33); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Configuration/Body/Area Scan (12x9x1):** Measurement grid: dx=12mm, dy=12mm  
 Maximum value of SAR (measured) = 1.10 W/kg

**Configuration/Body/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm  
 Reference Value = 0.9520 V/m; Power Drift = 0.01 dB  
 Peak SAR (extrapolated) = 1.55 W/kg  
**SAR(1 g) = 0.611 W/kg; SAR(10 g) = 0.239 W/kg**  
 Maximum value of SAR (measured) = 1.22 W/kg



Date: 2021/08/14

Test Laboratory: Compliance Certification Services Inc.

**WLAN5GHz 802.11a 6Mbps Right side 0mm Ch36**

**DUT: Poynt Smart Terminal V3.0; Type: PST3**



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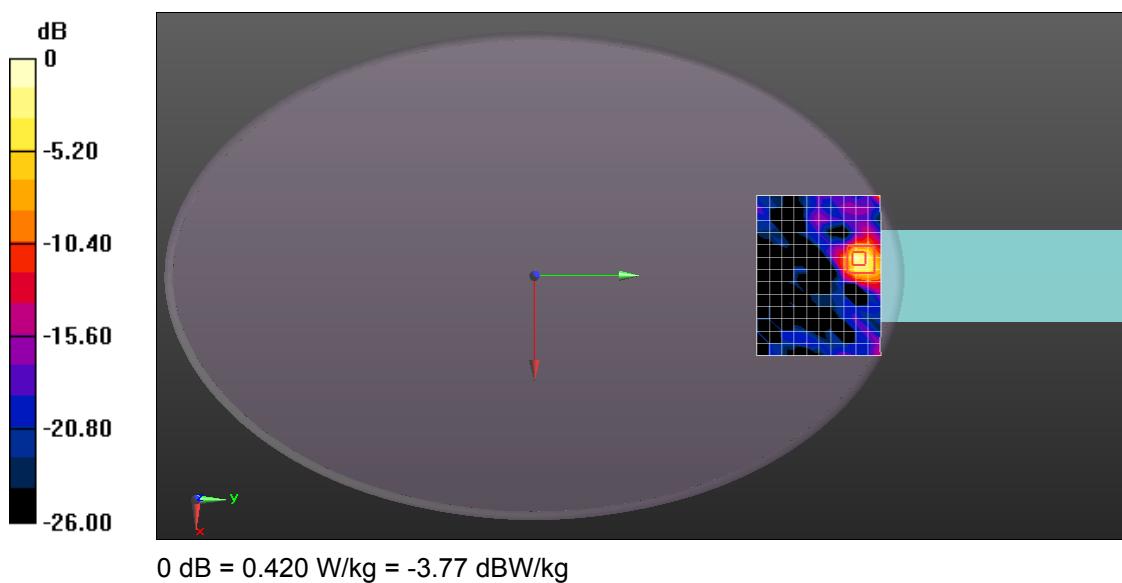
Communication System: UID 0, WiFi (0); Frequency: 5180 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 5180$  MHz;  $\sigma = 4.66$  S/m;  $\epsilon_r = 36.031$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section  
 Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(4.85, 4.85, 4.85); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Configuration/Body/Area Scan (14x11x1):** Measurement grid: dx=10mm, dy=10mm  
 Maximum value of SAR (measured) = 0.337 W/kg

**Configuration/Body/Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm  
 Reference Value = 0.6880 V/m; Power Drift = 0.02 dB  
 Peak SAR (extrapolated) = 0.632 W/kg  
**SAR(1 g) = 0.197 W/kg; SAR(10 g) = 0.052 W/kg**  
 Maximum value of SAR (measured) = 0.420 W/kg



Date: 2021/08/14

Test Laboratory: Compliance Certification Services Inc.

**WLAN5GHz 802.11a 6Mbps Right side 0mm Ch60**

**DUT: Poynt Smart Terminal V3.0; Type: PST3**



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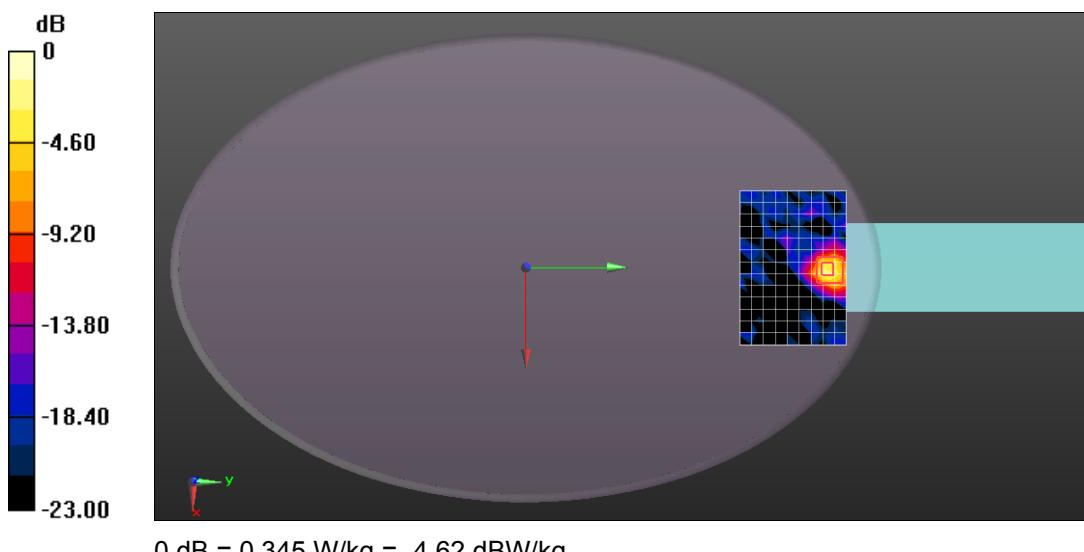
Communication System: UID 0, WiFi (0); Frequency: 5300 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 5300$  MHz;  $\sigma = 4.803$  S/m;  $\epsilon_r = 35.783$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section  
 Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(4.75, 4.75, 4.75); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Configuration/Body/Area Scan (14x10x1):** Measurement grid: dx=10mm, dy=10mm  
 Maximum value of SAR (measured) = 0.246 W/kg

**Configuration/Body/Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm  
 Reference Value = 0.4500 V/m; Power Drift = 0.03 dB  
 Peak SAR (extrapolated) = 0.546 W/kg  
**SAR(1 g) = 0.174 W/kg; SAR(10 g) = 0.047 W/kg**  
 Maximum value of SAR (measured) = 0.345 W/kg



Date: 2021/08/14

Test Laboratory: Compliance Certification Services Inc.

**WLAN5GHz 802.11a 6Mbps Right side 0mm Ch100**

**DUT: Poynt Smart Terminal V3.0; Type: PST3**



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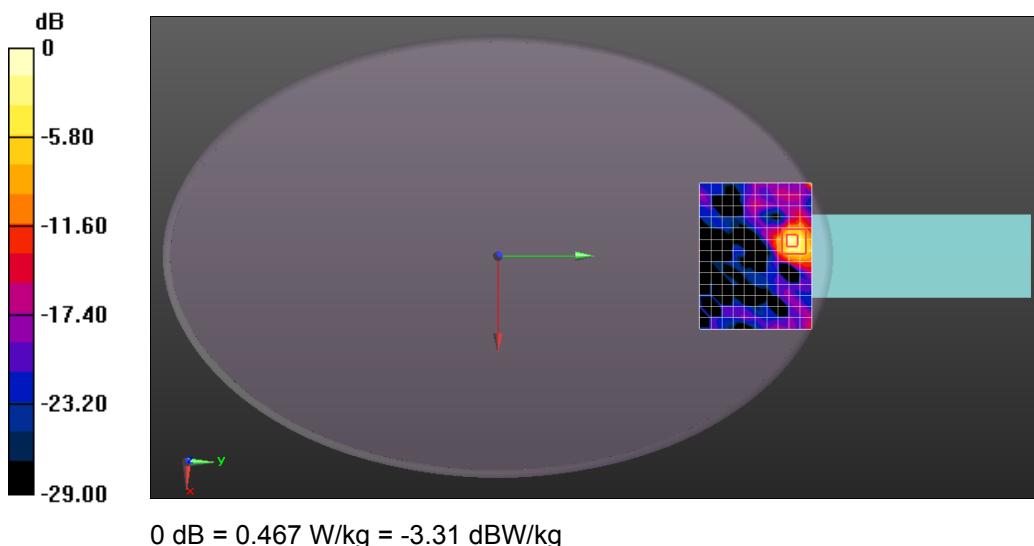
Communication System: UID 0, WiFi (0); Frequency: 5500 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 5500$  MHz;  $\sigma = 4.937$  S/m;  $\epsilon_r = 34.892$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section  
 Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(4.65, 4.65, 4.65); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Configuration/Body/Area Scan (14x11x1):** Measurement grid: dx=10mm, dy=10mm  
 Maximum value of SAR (measured) = 0.375 W/kg

**Configuration/Body/Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm  
 Reference Value = 0.7040 V/m; Power Drift = 0.06 dB  
 Peak SAR (extrapolated) = 0.703 W/kg  
**SAR(1 g) = 0.185 W/kg; SAR(10 g) = 0.05 W/kg**  
 Maximum value of SAR (measured) = 0.467 W/kg



Date: 2021/08/14

Test Laboratory: Compliance Certification Services Inc.

**WLAN5GHz 802.11n-HT40 MCS0 Right side 0mm Ch151**

**DUT: Poynt Smart Terminal V3.0; Type: PST3**



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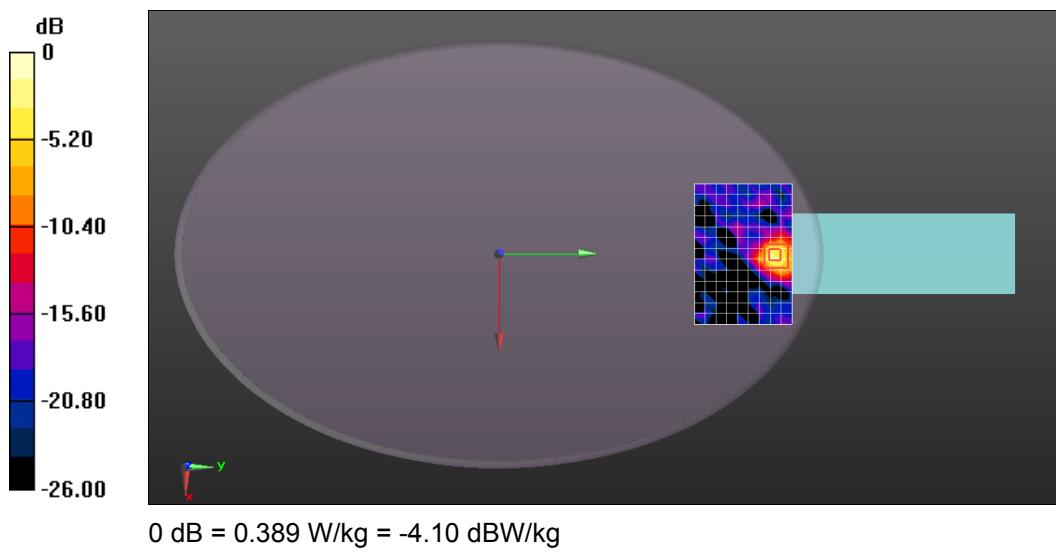
Communication System: UID 0, WiFi (0); Frequency: 5755 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 5755$  MHz;  $\sigma = 5.327$  S/m;  $\epsilon_r = 34.703$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section  
 Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3798; ConvF(4.6, 4.6, 4.6); Calibrated: 2021/05/31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1245; Calibrated: 2021/05/19
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1102
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Configuration/Body/Area Scan (14x10x1):** Measurement grid: dx=10mm, dy=10mm  
 Maximum value of SAR (measured) = 0.278 W/kg

**Configuration/Body/Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm  
 Reference Value = 0.4540 V/m; Power Drift = 0.08 dB  
 Peak SAR (extrapolated) = 0.617 W/kg  
**SAR(1 g) = 0.157 W/kg; SAR(10 g) = 0.037 W/kg**  
 Maximum value of SAR (measured) = 0.389 W/kg



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## Appendix C: Calibration certificate

## Appendix D: Photographs

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