# FCC SAR Test Report

| | | |
|---|---|---|
| APPLICANT | : | Elo Touch Solutions, Inc. |
| EQUIPMENT | : | Mobile POS |
| BRAND NAME | : | ELO or elo |
| MODEL NAME | : | EMC0600C |
| FCC ID | : | RBWEMC0600C |
| STANDARD | : | FCC 47 CFR Part 2 (2.1093) |

We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this variant report apply exclusively to the tested model / sample. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.

Nick Hu

Reviewed by: Nick Hu / Supervisor

Kat Yin

Approved by: Kat Yin / Manager

ACCREDITED Cert #5145.02

*Sporton International (Kunshan) Inc.*
*No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300*
*People's Republic of China*

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# History of this test report

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| FA142804-01 | 01 | Initial issue of report | Sep. 03, 2020 |
| FA142804-01 | 02 | Add body-worn SAR test data | Sep. 15, 2020 |
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# 1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Elo Touch Solutions, Inc., Mobile POS, EMC0600C,** are as follows.

| Highest 1g SAR Summary | | | | | |
|---|---|---|---|---|---|
| Equipment Class | Frequency Band | | Hotspot (Separation 10mm) | Body-worn (Separation 10mm) | Highest Simultaneous Transmission 1g SAR (W/kg) |
| Licensed | WCDMA | Band II | 0.47 | 0.47 | 1.00 |
| | | Band IV | 0.44 | 0.44 | |
| | | Band V | **0.77** | **0.77** | |
| | LTE | Band 2 | 0.56 | 0.56 | |
| | | Band 12 | 0.37 | 0.37 | |
| | | Band 13 | 0.36 | 0.36 | |
| | | Band 66/ Band 4 | 0.47 | 0.47 | |
| DTS | WLAN | 2.4GHz WLAN | 0.15 | 0.15 | 1.00 |
| NII | | 5GHz WLAN | 0.30 | <0.10 | 0.99 |
| DSS | Bluetooth | 2.4GHz Bluetooth | <0.10 | <0.10 | 0.92 |
| **Highest 10g SAR Summary** | | | | | |
| Equipment Class | Frequency Band | | Limbs (Separation 0mm) | | Highest Simultaneous Transmission 10g SAR (W/kg) |
| Licensed | WCDMA | Band II | 1.66 | | 2.23 |
| | | Band IV | 1.45 | | |
| | | Band V | 1.12 | | |
| | LTE | Band 2 | **1.67** | | |
| | | Band 12 | 1.13 | | |
| | | Band 13 | 1.22 | | |
| | | Band 66/ Band 4 | 1.31 | | |
| DTS | WLAN | 2.4GHz WLAN | 0.37 | | 2.23 |
| NII | | 5GHz WLAN | 0.28 | | 1.96 |
| DSS | Bluetooth | 2.4GHz Bluetooth | <0.10 | | 1.87 |
| Date of Testing: | | | 2021/7/25 ~ 2021/9/14 | | |

**Remark:** This device supports both LTE B4 and B66. Since the supported frequency span for LTE B4 falls completely within the supports frequency span for LTE B66, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for LTE B66.

| Declaration of Conformity: |
|---|
| The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. |
| Comments and Explanations: |
| The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification. |

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR, 4.0 W/kg for Limbs 10g SAR) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement

methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.

## 2. Administration Data

Sporton International (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

| Testing Laboratory | | | |
|---|---|---|---|
| Test Firm | Sporton International (Kunshan) Inc. | | |
| Test Site Location | No. 1098, Pengxi North Road, Kunshan Economic Development Zone<br>Jiangsu Province 215300 People's Republic of China<br>TEL : +86-512-57900158<br>FAX : +86-512-57900958 | | |
| Test Site No. | Sporton Site No. | FCC Designation No. | FCC Test Firm Registration No. |
| | SAR01-KS | CN1257 | 314309 |

| Applicant | |
|---|---|
| Company Name | Elo Touch Solutions, Inc. |
| Address | 670 N. McCarthy Blvd. Suite 100, Milpitas, CA 95035, United States |

| Manufacturer | |
|---|---|
| Company Name | Elo Touch Solutions, Inc. |
| Address | 670 N. McCarthy Blvd. Suite 100, Milpitas, CA 95035, United States |

## 3. Guidance Applied

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

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 616217 D04 SAR for laptop and tablets v01r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01

# 4. Equipment Under Test (EUT) Information

## 4.1 General Information

| Product Feature & Specification | |
|---|---|
| **Equipment Name** | Mobile POS |
| **Brand Name** | ELO or |
| **Model Name** | EMC0600C |
| **FCC ID** | RBWEMC0600C |
| **IMEI Code** | 357830300003087 |
| **Wireless Technology and Frequency Range** | WCDMA Band II: 1850 MHz ~ 1910 MHz<br>WCDMA Band IV: 1710 MHz ~ 1755 MHz<br>WCDMA Band V: 824 MHz ~ 849 MHz<br>LTE Band 2: 1850 MHz ~ 1910 MHz<br>LTE Band 4: 1710 MHz ~ 1755 MHz<br>LTE Band 12: 699 MHz ~ 716 MHz<br>LTE Band 13: 777 MHz ~ 787 MHz<br>LTE Band 66: 1710 MHz ~ 1780 MHz<br>WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz<br>WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz<br>WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz<br>WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz<br>WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz<br>Bluetooth: 2402 MHz ~ 2480 MHz<br>NFC : 13.56 MHz |
| **Mode** | RMC 12.2Kbps<br>HSDPA<br>HSUPA<br>DC-HSDPA<br>HSPA+ (16QAM uplink is not supported)<br>LTE: QPSK, 16QAM<br>WLAN 2.4GHz : 802.11b/g/n HT20/HT40<br>WLAN 5GHz 802.11a/n HT20/HT40<br>WLAN 5GHz 802.11ac VHT20/VHT40/VHT80//VHT80+VHT80<br>Bluetooth BR/EDR/LE<br>NFC:ASK |
| **HW Version** | A01 |
| **SW Version** | 5.07.100 |
| **EUT Stage** | Production Unit |

**Remark:**

1. This device does not support voice function.
2. This device 2.4GHz WLAN/5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only).
3. The device implements the power management and proximity sensor mode for SAR compliance at different exposure conditions (body-worn, hotspot, limbs) and the details about the power management decision and sensor detection are provided in the operational description. And the device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to power table at appendix E.

## 4.2 General LTE SAR Test and Reporting Considerations

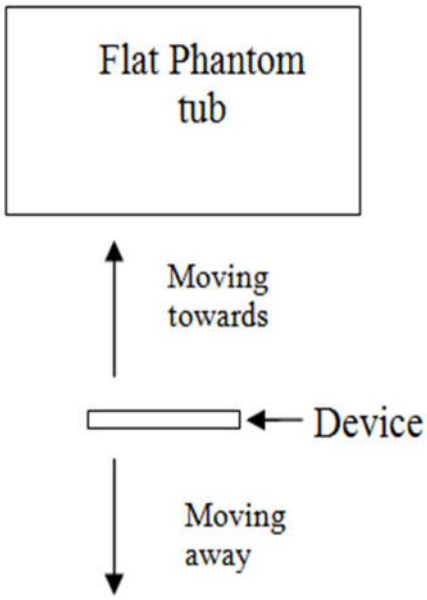
<table>
<tr><th colspan="2">Summarized necessary items addressed in KDB 941225 D05 v02r05</th></tr>
<tr><td>FCC ID</td><td>RBWEMC0600C</td></tr>
<tr><td>Equipment Name</td><td>Mobile POS</td></tr>
<tr><td>Operating Frequency Range of each LTE transmission band</td><td>LTE Band 2: 1850 MHz ~ 1910 MHz<br>LTE Band 4: 1710 MHz ~ 1755 MHz<br>LTE Band 12: 699 MHz ~ 716 MHz<br>LTE Band 13: 777 MHz ~ 787 MHz<br>LTE Band 66: 1710 MHz ~ 1780 MHz</td></tr>
<tr><td>Channel Bandwidth</td><td>LTE Band 2:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz<br>LTE Band 4:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz<br>LTE Band 12:1.4MHz, 3MHz, 5MHz, 10MHz<br>LTE Band 13: 5MHz, 10MHz<br>LTE Band 66:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz</td></tr>
<tr><td>Uplink Modulations Used</td><td>QPSK / 16QAM</td></tr>
<tr><td>LTE Voice / Data requirements</td><td>Data only</td></tr>
<tr><td>LTE Category Version</td><td>R11 ,Cat 3</td></tr>
<tr><td>CA Support</td><td>Not Supported</td></tr>
<tr><td>LTE MPR permanently built-in by design</td><td>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3
<table>
<tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth ($N_{RB}$)</th><th rowspan="2">MPR (dB)</th></tr>
<tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr>
<tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 3</td></tr>
<tr><td>256 QAM</td><td colspan="6">≥ 1</td><td>≤ 5</td></tr>
</table></td></tr>
<tr><td>LTE A-MPR</td><td>In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)</td></tr>
<tr><td>Spectrum plots for RB configuration</td><td>A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.</td></tr>
<tr><td>Power reduction applied to satisfy SAR compliance</td><td>Yes, body-worn/ hotspot/ limbs will trigger reduced power for some LTE bands, the detail please referred to section 13.</td></tr>
</table>

| Transmission (H, M, L) channel numbers and frequencies in each LTE band | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LTE Band 2 | | | | | | | | | | | | |
| | Bandwidth 1.4 MHz | | Bandwidth 3 MHz | | Bandwidth 5 MHz | | Bandwidth 10 MHz | | Bandwidth 15 MHz | | Bandwidth 20 MHz | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) |
| L | 18607 | 1850.7 | 18615 | 1851.5 | 18625 | 1852.5 | 18650 | 1855 | 18675 | 1857.5 | 18700 | 1860 |
| M | 18900 | 1880 | 18900 | 1880 | 18900 | 1880 | 18900 | 1880 | 18900 | 1880 | 18900 | 1880 |
| H | 19193 | 1909.3 | 19185 | 1908.5 | 19175 | 1907.5 | 19150 | 1905 | 19125 | 1902.5 | 19100 | 1900 |
| LTE Band 4 | | | | | | | | | | | | |
| | Bandwidth 1.4 MHz | | Bandwidth 3 MHz | | Bandwidth 5 MHz | | Bandwidth 10 MHz | | Bandwidth 15 MHz | | Bandwidth 20 MHz | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) |
| L | 19957 | 1710.7 | 19965 | 1711.5 | 19975 | 1712.5 | 20000 | 1715 | 20025 | 1717.5 | 20050 | 1720 |
| M | 20175 | 1732.5 | 20175 | 1732.5 | 20175 | 1732.5 | 20175 | 1732.5 | 20175 | 1732.5 | 20175 | 1732.5 |
| H | 20393 | 1754.3 | 20385 | 1753.5 | 20375 | 1752.5 | 20350 | 1750 | 20325 | 1747.5 | 20300 | 1745 |
| LTE Band 12 | | | | | | | | |
| | Bandwidth 1.4 MHz | | Bandwidth 3 MHz | | Bandwidth 5 MHz | | Bandwidth 10 MHz | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) |
| L | 23017 | 699.7 | 23025 | 700.5 | 23035 | 701.5 | 23060 | 704 |
| M | 23095 | 707.5 | 23095 | 707.5 | 23095 | 707.5 | 23095 | 707.5 |
| H | 23173 | 715.3 | 23165 | 714.5 | 23155 | 713.5 | 23130 | 711 |
| LTE Band 13 | | | | |
| | Bandwidth 5 MHz | | Bandwidth 10 MHz | |
| | Channel # | Freq.(MHz) | Channel # | Freq.(MHz) |
| L | 23205 | 779.5 | 23230 | 782 |
| M | 23230 | 782 | | |
| H | 23255 | 784.5 | | |
| LTE Band 66 | | | | | | | | | | | | |
| | Bandwidth 1.4 MHz | | Bandwidth 3 MHz | | Bandwidth 5 MHz | | Bandwidth 10 MHz | | Bandwidth 15 MHz | | Bandwidth 20 MHz | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) |
| L | 131979 | 1710.7 | 131987 | 1711.5 | 131997 | 1712.5 | 132022 | 1715 | 132047 | 1717.5 | 132072 | 1720 |
| M | 132322 | 1745 | 132322 | 1745 | 132322 | 1745 | 132322 | 1745 | 132322 | 1745 | 132322 | 1745 |
| H | 132665 | 1779.3 | 132657 | 1778.5 | 132647 | 1777.5 | 132622 | 1775 | 132597 | 1772.5 | 132572 | 1770 |

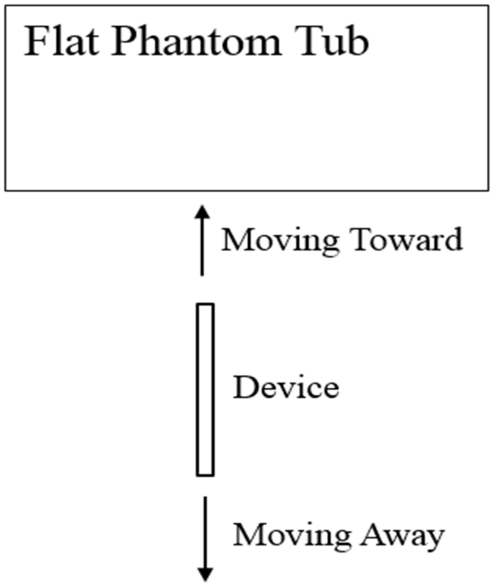
# 5. Proximity Sensor Triggering Test

**<Proximity Sensor Triggering Distance>:**

1. Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed and the tissue-equivalent medium for highest frequency (1900MHz) and lowest (835MHz) frequency was used for proximity sensor triggering testing.
2. Capacitive proximity sensors placed coincident with antenna elements at the top and bottom ends of the phone are utilized to determine when the device comes in proximity of the user's body at the front or back of the device. The output power will reduce to body worn power level when top and bottom sensor pad be detected.
3. The sensors used to detect the proximity of the user's body at the front or back surface of the device use a detection threshold distance. The data shown in the sections below shows the distance(s). When front or back body worn condition is detected reduced power will be active.
4. The device employs proximity sensors also can detect the presence of the user's a finger or hand when handheld state at the front/back/top side of the device. When front/back/top side of handheld condition is detected reduced power will be active.
5. For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance -1mm was performed:




Sensor/Handheld detection test set-up, front and back sides




Handheld detection test set-up, top side

**<P-Sensor>**

| Proximity Sensor Triggering Distance (mm) | | | | | | |
|---|---|---|---|---|---|---|
| Position | Front | | Back | | Top Side | |
| | Moving towards | Moving away | Moving towards | Moving away | Moving towards | Moving away |
| Minimum | 6 | 6 | 14 | 14 | 13 | 13 |

# 6. RF Exposure Limits

## 6.1 Uncontrolled Environment

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

## 6.2 Controlled Environment

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

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

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

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

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

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

# 7. Specific Absorption Rate (SAR)

## 7.1 Introduction

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

## 7.2 SAR Definition

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

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

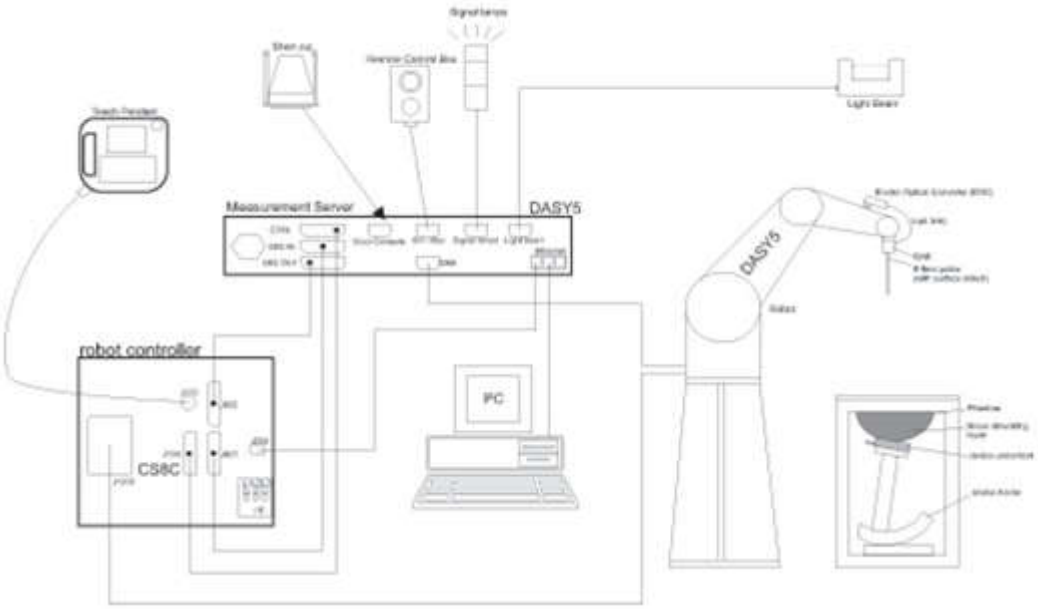
SAR is expressed in units of Watts per kilogram (W/kg)

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

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

# 8. System Description and Setup

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




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

## 8.1 E-Field Probe

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

**<EX3DV4 Probe>**

| | |
|---|---|
| **Construction** | Symmetric design with triangular core<br>Built-in shielding against static charges<br>PEEK enclosure material (resistant to organic solvents, e.g., DGBE) |
| **Frequency** | 10 MHz – >6 GHz<br>Linearity: ±0.2 dB (30 MHz – 6 GHz) |
| **Directivity** | ±0.3 dB in TSL (rotation around probe axis)<br>±0.5 dB in TSL (rotation normal to probe axis) |
| **Dynamic Range** | 10 µW/g – >100 mW/g<br>Linearity: ±0.2 dB (noise: typically <1 µW/g) |
| **Dimensions** | 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 |

## 8.2 Data Acquisition Electronics (DAE)

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

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

**Photo of DAE**

## 8.3 Phantom

**<SAM Twin Phantom>**

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

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

**<ELI Phantom>**

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

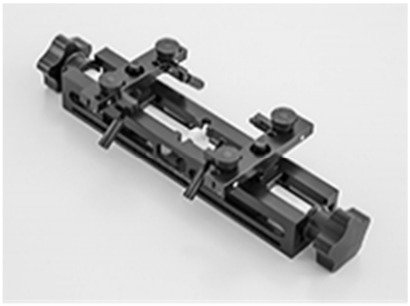
The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

## 8.4 Device Holder

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

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

Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

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

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

Mounting Device for Laptops

# 9. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

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

<SAR measurement>

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

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

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

## 9.1 Spatial Peak SAR Evaluation

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

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

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

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

## 9.2 Power Reference Measurement

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

## 9.3 Area Scan

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

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

| | ≤ 3 GHz | > 3 GHz |
|---|---|---|
| Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface | 5 ± 1 mm | ½·δ·ln(2) ± 0.5 mm |
| Maximum probe angle from probe axis to phantom surface normal at the measurement location | 30° ± 1° | 20° ± 1° |
| Maximum area scan spatial resolution: $\Delta x_{Area}$, $\Delta y_{Area}$ | ≤ 2 GHz: ≤ 15 mm<br>2 – 3 GHz: ≤ 12 mm | 3 – 4 GHz: ≤ 12 mm<br>4 – 6 GHz: ≤ 10 mm |
| | When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device. | |

## 9.4 Zoom Scan

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

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

| | | | ≤ 3 GHz | > 3 GHz |
|---|---|---|---|---|
| Maximum zoom scan spatial resolution: $\Delta x_{Zoom}$, $\Delta y_{Zoom}$ | | | ≤ 2 GHz: ≤ 8 mm<br>2 – 3 GHz: ≤ 5 mm* | 3 – 4 GHz: ≤ 5 mm*<br>4 – 6 GHz: ≤ 4 mm* |
| Maximum zoom scan spatial resolution, normal to phantom surface | uniform grid: $\Delta z_{Zoom}(n)$ | | ≤ 5 mm | 3 – 4 GHz: ≤ 4 mm<br>4 – 5 GHz: ≤ 3 mm<br>5 – 6 GHz: ≤ 2 mm |
| | graded grid | $\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface | ≤ 4 mm | 3 – 4 GHz: ≤ 3 mm<br>4 – 5 GHz: ≤ 2.5 mm<br>5 – 6 GHz: ≤ 2 mm |
| | | $\Delta z_{Zoom}(n>1)$: between subsequent points | ≤ 1.5·$\Delta z_{Zoom}(n-1)$ | |
| Minimum zoom scan volume | x, y, z | | ≥ 30 mm | 3 – 4 GHz: ≥ 28 mm<br>4 – 5 GHz: ≥ 25 mm<br>5 – 6 GHz: ≥ 22 mm |

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

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

## 9.5 Volume Scan Procedures

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

## 9.6 Power Drift Monitoring

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

# 10. Test Equipment List

| Manufacturer | Name of Equipment | Type/Model | Serial Number | Calibration | |
|---|---|---|---|---|---|
| | | | | Last Cal. | Due Date |
| SPEAG | 750MHz System Validation Kit | D750V3 | 1087 | 2019/3/27 | 2022/3/24 |
| SPEAG | 835MHz System Validation Kit | D835V2 | 4d258 | 2020/5/7 | 2023/5/6 |
| SPEAG | 1750MHz System Validation Kit | D1750V2 | 1090 | 2019/3/27 | 2022/3/25 |
| SPEAG | 1900MHz System Validation Kit | D1900V2 | 5d170 | 2019/3/26 | 2022/3/24 |
| SPEAG | 2450MHz System Validation Kit | D2450V2 | 908 | 2019/3/25 | 2022/3/23 |
| SPEAG | 5000MHz System Validation Kit | D5GHzV2 | 1113 | 2019/9/24 | 2022/9/23 |
| SPEAG | Data Acquisition Electronics | DAE4 | 799 | 2021/3/26 | 2022/3/25 |
| SPEAG | Data Acquisition Electronics | DAE4 | 1303 | 2021/6/18 | 2022/6/17 |
| SPEAG | Dosimetric E-Field Probe | EX3DV4 | 3843 | 2020/9/23 | 2021/9/22 |
| SPEAG | Dosimetric E-Field Probe | EX3DV4 | 7592 | 2021/6/24 | 2022/6/23 |
| SPEAG | SAM Twin Phantom | SAM Twin | TP-1754 | NCR | NCR |
| SPEAG | SAM Twin Phantom | SAM Twin | TP-1697 | NCR | NCR |
| Testo | Hygrometer | 608-H1 | 1241332126 | 2021/1/7 | 2022/1/6 |
| SPEAG | Phone Positioner | N/A | N/A | NCR | NCR |
| Anritsu | Radio Communication Analyzer | MT8821C | 6201432831 | 2021/4/13 | 2022/4/12 |
| Agilent | ENA Series Network Analyzer | E5071C | MY46112129 | 2020/10/17 | 2021/10/16 |
| SPEAG | Dielectric Probe Kit | DAK-3.5 | 1144 | 2020/12/2 | 2021/12/1 |
| Anritsu | Vector Signal Generator | MG3710A | 6201682672 | 2021/1/7 | 2022/1/6 |
| Rohde & Schwarz | Power Meter | NRVD | 102081 | 2020/8/13 | 2021/8/12 |
| Rohde & Schwarz | Power Meter | NRVD | 102081 | 2021/8/12 | 2022/8/11 |
| Rohde & Schwarz | Power Sensor | NRV-Z5 | 100538 | 2020/8/13 | 2021/8/12 |
| Rohde & Schwarz | Power Sensor | NRV-Z5 | 100538 | 2021/8/12 | 2022/8/11 |
| Rohde & Schwarz | Power Sensor | NRV-Z5 | 100539 | 2020/8/13 | 2021/8/12 |
| Rohde & Schwarz | Power Sensor | NRV-Z5 | 100539 | 2021/8/12 | 2022/8/11 |
| R&S | CBT BLUETOOTH TESTER | CBT | 101246 | 2021/4/12 | 2022/4/11 |
| EXA | Spectrum Analyzer | FSV7 | 101632 | 2021/1/7 | 2022/1/6 |
| FLUKE | DIGITAC THERMOMETER | 51II | 97240029 | 2020/8/14 | 2021/8/13 |
| FLUKE | DIGITAC THERMOMETER | 51II | 97240029 | 2021/8/13 | 2022/8/12 |
| BONN | POWER AMPLIFIER | BLMA 0830-3 | 087193A | Note 1 | |
| BONN | POWER AMPLIFIER | BLMA 2060-2 | 087193B | Note 1 | |
| Agilent | Dual Directional Coupler | 778D | 20500 | Note 1 | |
| Agilent | Dual Directional Coupler | 11691D | MY48151020 | Note 1 | |
| ARRA | Power Divider | A3200-2 | N/A | Note 1 | |
| MCL | Attenuation1 | BW-S10W5+ | N/A | Note 1 | |
| MCL | Attenuation2 | BW-S10W5+ | N/A | Note 1 | |
| MCL | Attenuation3 | BW-S10W5+ | N/A | Note 1 | |

**Note:**

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.
2. Referring to KDB 865664 D01v01r04, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.

3. The justification data of dipole can be found in appendix C. The return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration.

# 11. System Verification

## 11.1 Tissue Simulating Liquids

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

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

## 11.2 Tissue Verification

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

| Frequency (MHz) | Water (%) | Sugar (%) | Cellulose (%) | Salt (%) | Preventol (%) | DGBE (%) | Conductivity (σ) | Permittivity (εr) |
|---|---|---|---|---|---|---|---|---|
| For Head | | | | | | | | |
| 750 | 41.1 | 57.0 | 0.2 | 1.4 | 0.2 | 0 | 0.89 | 41.9 |
| 835 | 40.3 | 57.9 | 0.2 | 1.4 | 0.2 | 0 | 0.90 | 41.5 |
| 1800, 1900, 2000 | 55.2 | 0 | 0 | 0.3 | 0 | 44.5 | 1.40 | 40.0 |
| 2450 | 55.0 | 0 | 0 | 0 | 0 | 45.0 | 1.80 | 39.2 |

Simulating Liquid for 5GHz, Manufactured by SPEAG

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

**<Tissue Dielectric Parameter Check Results>**

| Frequency (MHz) | Tissue Type | Liquid Temp. (℃) | Conductivity (σ) | Permittivity ($\varepsilon_r$) | Conductivity Target (σ) | Permittivity Target ($\varepsilon_r$) | Delta (σ) (%) | Delta ($\varepsilon_r$) (%) | Limit (%) | Date |
|---|---|---|---|---|---|---|---|---|---|---|
| 750 | Head | 22.8 | 0.919 | 43.619 | 0.89 | 41.90 | 3.26 | 4.10 | ±5 | 2021/7/25 |
| 835 | Head | 22.6 | 0.935 | 42.530 | 0.90 | 41.50 | 3.89 | 2.48 | ±5 | 2021/7/27 |
| 1750 | Head | 22.7 | 1.345 | 40.533 | 1.37 | 40.10 | -1.82 | 1.08 | ±5 | 2021/7/29 |
| 1900 | Head | 22.8 | 1.440 | 40.287 | 1.40 | 40.00 | 2.86 | 0.72 | ±5 | 2021/7/31 |
| 2450 | Head | 22.9 | 1.870 | 40.620 | 1.80 | 39.20 | 3.89 | 3.62 | ±5 | 2021/8/2 |
| 5250 | Head | 22.6 | 4.603 | 36.241 | 4.71 | 35.90 | -2.27 | 0.95 | ±5 | 2021/8/4 |
| 5600 | Head | 22.7 | 4.982 | 35.683 | 5.07 | 35.50 | -1.74 | 0.52 | ±5 | 2021/8/6 |
| 5750 | Head | 22.7 | 5.155 | 35.527 | 5.22 | 35.40 | -1.25 | 0.36 | ±5 | 2021/8/8 |
| 5250 | Head | 22.6 | 4.594 | 36.251 | 4.71 | 35.90 | -2.46 | 0.98 | ±5 | 2021/9/13 |
| 5600 | Head | 22.7 | 4.973 | 35.717 | 5.07 | 35.50 | -1.91 | 0.61 | ±5 | 2021/9/13 |
| 5750 | Head | 22.6 | 5.148 | 35.533 | 5.22 | 35.40 | -1.38 | 0.38 | ±5 | 2021/9/14 |

## 11.3 System Performance Check Results

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

**<1g SAR>**

| Date | Frequency (MHz) | Tissue Type | Input Power (mW) | Dipole S/N | Probe S/N | DAE S/N | Measured 1g SAR (W/kg) | Targeted 1g SAR (W/kg) | Normalized 1g SAR (W/kg) | Deviation (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2021/7/25 | 750 | Head | 50 | 1087 | 3843 | 799 | 0.438 | 8.36 | 8.76 | 4.78 |
| 2021/7/27 | 835 | Head | 50 | 4d258 | 3843 | 799 | 0.453 | 9.44 | 9.06 | -4.03 |
| 2021/7/29 | 1750 | Head | 50 | 1090 | 3843 | 799 | 1.890 | 36.40 | 37.8 | 3.85 |
| 2021/7/31 | 1900 | Head | 50 | 5d170 | 3843 | 799 | 2.100 | 39.00 | 42 | 7.69 |
| 2021/8/2 | 2450 | Head | 50 | 908 | 3843 | 799 | 2.810 | 52.80 | 56.2 | 6.44 |
| 2021/8/4 | 5250 | Head | 50 | 1113 | 3843 | 799 | 4.340 | 80.50 | 86.8 | 7.83 |
| 2021/8/6 | 5600 | Head | 50 | 1113 | 3843 | 799 | 4.450 | 83.40 | 89 | 6.71 |
| 2021/8/8 | 5750 | Head | 50 | 1113 | 3843 | 799 | 4.290 | 80.00 | 85.8 | 7.25 |
| 2021/9/13 | 5250 | Head | 50 | 1113 | 7592 | 1303 | 3.840 | 80.50 | 76.8 | -4.60 |
| 2021/9/13 | 5600 | Head | 50 | 1113 | 7592 | 1303 | 4.280 | 83.40 | 85.6 | 2.64 |
| 2021/9/14 | 5750 | Head | 50 | 1113 | 7592 | 1303 | 4.060 | 80.00 | 81.2 | 1.50 |

**<10g SAR>**

| Date | Frequency (MHz) | Tissue Type | Input Power (mW) | Dipole S/N | Probe S/N | DAE S/N | Measured 10g SAR (W/kg) | Targeted 10g SAR (W/kg) | Normalized 10g SAR (W/kg) | Deviation (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2021/7/25 | 750 | Head | 50 | 1087 | 3843 | 799 | 0.285 | 5.65 | 5.7 | 0.88 |
| 2021/7/27 | 835 | Head | 50 | 4d258 | 3843 | 799 | 0.295 | 6.13 | 5.9 | -3.75 |
| 2021/7/29 | 1750 | Head | 50 | 1090 | 3843 | 799 | 0.988 | 19.20 | 19.76 | 2.92 |
| 2021/7/31 | 1900 | Head | 50 | 5d170 | 3843 | 799 | 1.090 | 20.30 | 21.8 | 7.39 |
| 2021/8/2 | 2450 | Head | 50 | 908 | 3843 | 799 | 1.280 | 24.20 | 25.6 | 5.79 |
| 2021/8/4 | 5250 | Head | 50 | 1113 | 3843 | 799 | 1.240 | 23.10 | 24.8 | 7.36 |
| 2021/8/6 | 5600 | Head | 50 | 1113 | 3843 | 799 | 1.270 | 23.80 | 25.4 | 6.72 |
| 2021/8/8 | 5750 | Head | 50 | 1113 | 3843 | 799 | 1.230 | 22.80 | 24.6 | 7.89 |
| 2021/9/13 | 5250 | Head | 50 | 1113 | 7592 | 1303 | 1.100 | 23.10 | 22 | -4.76 |
| 2021/9/13 | 5600 | Head | 50 | 1113 | 7592 | 1303 | 1.220 | 23.80 | 24.4 | 2.52 |
| 2021/9/14 | 5750 | Head | 50 | 1113 | 7592 | 1303 | 1.110 | 22.80 | 22.2 | -2.63 |

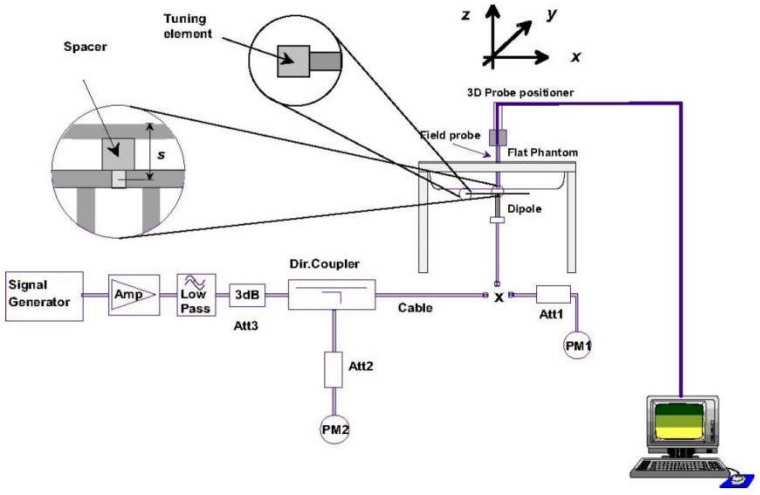



Fig 10.3.1 System Performance Check Setup

Fig 10.3.2 Setup Photo

# 12. RF Exposure Positions

## 12.1 Wireless Router

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

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

## 12.2 Body Worn Device

(a) To position the device parallel to the phantom surface with front and back of the device.

(b) To adjust the device parallel to the flat phantom.

(c) To adjust the distance between the device surface and the flat phantom to 10mm.

## 12.3 SAR Testing for Device

(d) To position the device parallel to the phantom surface with all surfaces of the device.

(b) To adjust the device parallel to the flat phantom.

(c) To adjust the distance between the device surface and the flat phantom to 0 mm.

Please refer to Appendix D for the test setup photos.

# 13. Conducted RF Output Power (Unit: dBm)

The detailed conducted power table can refer to Appendix E.

**<WCDMA Conducted Power>**

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

A summary of these settings are illustrated below:

**HSDPA Setup Configuration:**

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

**Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH**

| Sub-test | $\beta_c$ | $\beta_d$ | $\beta_d$ (SF) | $\beta_c/\beta_d$ | $\beta_{HS}$ (Note1, Note 2) | CM (dB) (Note 3) | MPR (dB) (Note 3) |
|---|---|---|---|---|---|---|---|
| 1 | 2/15 | 15/15 | 64 | 2/15 | 4/15 | 0.0 | 0.0 |
| 2 | 12/15 (Note 4) | 15/15 (Note 4) | 64 | 12/15 (Note 4) | 24/15 | 1.0 | 0.0 |
| 3 | 15/15 | 8/15 | 64 | 15/8 | 30/15 | 1.5 | 0.5 |
| 4 | 15/15 | 4/15 | 64 | 15/4 | 30/15 | 1.5 | 0.5 |

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

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

Note 3: CM = 1 for $\beta_c/\beta_d$ =12/15, $\beta_{hs}/\beta_c$=24/15. For all other combinations of 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.

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

**Setup Configuration**

**HSUPA Setup Configuration:**

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

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

| Sub-test | $\beta_c$ | $\beta_d$ | $\beta_d$ (SF) | $\beta_c/\beta_d$ | $\beta_{HS}$ (Note1) | $\beta_{ec}$ | $\beta_{ed}$ (Note 4) (Note 5) | $\beta_{ed}$ (SF) | $\beta_{ed}$ (Codes) | CM (dB) (Note 2) | MPR (dB) (Note 2) (Note 6) | AG Index (Note 5) | E-TFCI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11/15 (Note 3) | 15/15 (Note 3) | 64 | 11/15 (Note 3) | 22/15 | 209/225 | 1309/225 | 4 | 1 | 1.0 | 0.0 | 20 | 75 |
| 2 | 6/15 | 15/15 | 64 | 6/15 | 12/15 | 12/15 | 94/75 | 4 | 1 | 3.0 | 2.0 | 12 | 67 |
| 3 | 15/15 | 9/15 | 64 | 15/9 | 30/15 | 30/15 | $\beta_{ed}1$: 47/15<br>$\beta_{ed}2$: 47/15 | 4<br>4 | 2 | 2.0 | 1.0 | 15 | 92 |
| 4 | 2/15 | 15/15 | 64 | 2/15 | 4/15 | 2/15 | 56/75 | 4 | 1 | 3.0 | 2.0 | 17 | 71 |
| 5 | 15/15 | 0 | - | - | 5/15 | 5/15 | 47/15 | 4 | 1 | 1.0 | 0.0 | 12 | 67 |

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

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

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

Note 4: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 5: $\beta_{ed}$ can not be set directly; it is set by Absolute Grant Value.

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

**Setup Configuration**

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

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

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

C.8.1.12 Fixed Reference Channel Definition H-Set 12

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

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

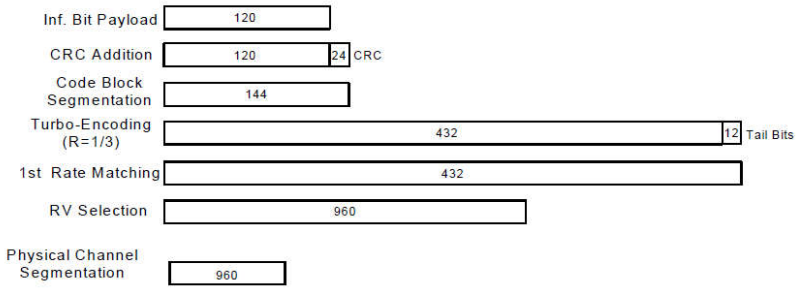



**Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)**

**Setup Configuration**

**<WCDMA Conducted Power>**

**General Note:**

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

## <LTE Conducted Power>

**General Note:**

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4 / B12 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE B4 SAR test was covered by B66; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. the maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion
   b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band

**<WLAN Conducted Power>**

**General Note:**

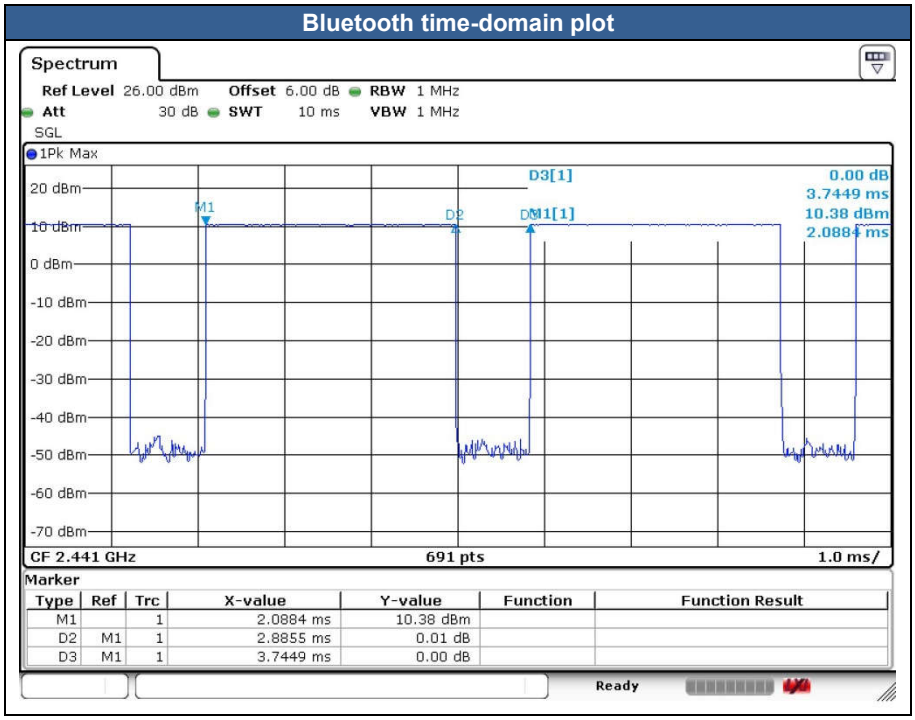
1. The reported TX power in EMC report is per actual shipping power setting and measured in this unit, the power set for SAR test is included the tune-up tolerance which is considered as worst case.
2. For the conducted power measurement is MIMO chains transmitting simultaneously and measured the separately conducted power for both chains and then based on the conducted power of antenna 1 and antenna 2 respectively to calculate sum of the power for MIMO mode.
3. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
4. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
5. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
6. 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.18 The initial test position procedure is described in the following:
    a. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
    b. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
    c. For all positions/configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

## <2.4GHz Bluetooth>

**General Note:**

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
2. The Bluetooth duty cycle is 77.05 % as following figure, according to 2016 Oct. TCB workshop for Bluetooth SAR scaling need further consideration and the duty cycle is 100%, therefore the actual duty cycle will be scaled up to the value of Bluetooth reported SAR calculation

**Bluetooth time-domain plot**



## 14. Antenna Location

The detailed antenna location information can refer to SAR Test Setup Photos.

# 15. SAR Test Results

**General Note:**

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of BT/WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   · ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   · ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   · ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is ≥ 0.8W/kg. Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, 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.
4. Based on WLAN2.4GHz and Bluetooth share the same antenna1, so Bluetooth RF exposure evaluation chose the worst positon of WLAN 2.4GHz Ant 1 to perform Bluetooth SAR test, and used this Bluetooth SAR value conservatively represent other position do co-located analysis with WWAN.
5. While 1-g SAR thresholds are specified in the procedures for SAR test reduction and exclusion, these thresholds should be multiplied by 2.5 when 10-g extremity SAR is considered.
6. The device implements the power management and proximity sensor mode for SAR compliance at different exposure conditions (body-worn, hotspot, limbs) and the details about the power management decision and sensor detection are provided in the operational description. And the device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to power table at appendix E.

**UMTS Note:**

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA, DC-HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

**LTE Note:**

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4 / B12 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE B4 SAR test was covered by B66; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. the maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion
   b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band

**WLAN Note:**

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. Per KDB 248227 D01v02r02, U-NII-1 SAR testing is not required when the U-NII-2A band highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band.
3. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
4. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
5. During SAR testing the WLAN transmission was verified using a spectrum analyzer.
6. While 1-g SAR thresholds are specified in the procedures for SAR test reduction and exclusion, these thresholds should be multiplied by 2.5 when 10-g extremity SAR is considered.

## 15.1 Hotspot SAR

| Plot No. | Band | BW (MHz) | Modulation | RB Size | RB offset | Mode | Test Position | Gap (mm) | Power Reduction | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **750MHz** | | | | | | | | | | | | | | | | | |
| | LTE Band 12 | 10M | QPSK | 1 | 0 | - | Front | 10mm | Full | 23095 | 707.5 | 22.84 | 24.00 | 1.306 | -0.06 | 0.228 | 0.298 |
| | LTE Band 12 | 10M | QPSK | 25 | 0 | - | Front | 10mm | Full | 23095 | 707.5 | 21.83 | 23.00 | 1.309 | 0.02 | 0.207 | 0.271 |
| 01 | LTE Band 12 | 10M | QPSK | 1 | 0 | - | Back | 10mm | Reduced | 23095 | 707.5 | 19.39 | 21.00 | 1.449 | -0.12 | 0.255 | **0.369** |
| | LTE Band 12 | 10M | QPSK | 25 | 0 | - | Back | 10mm | Reduced | 23095 | 707.5 | 19.37 | 21.00 | 1.455 | 0.02 | 0.212 | 0.309 |
| | LTE Band 12 | 10M | QPSK | 1 | 0 | - | Left Side | 10mm | Full | 23095 | 707.5 | 22.84 | 24.00 | 1.306 | 0.09 | 0.096 | 0.125 |
| | LTE Band 12 | 10M | QPSK | 25 | 0 | - | Left Side | 10mm | Full | 23095 | 707.5 | 21.83 | 23.00 | 1.309 | 0.08 | 0.076 | 0.099 |
| | LTE Band 12 | 10M | QPSK | 1 | 0 | - | Right Side | 10mm | Full | 23095 | 707.5 | 22.84 | 24.00 | 1.306 | 0.06 | 0.054 | 0.071 |
| | LTE Band 12 | 10M | QPSK | 25 | 0 | - | Right Side | 10mm | Full | 23095 | 707.5 | 21.83 | 23.00 | 1.309 | -0.07 | 0.044 | 0.058 |
| | LTE Band 12 | 10M | QPSK | 1 | 0 | - | Top Side | 10mm | Reduced | 23095 | 707.5 | 19.39 | 21.00 | 1.449 | 0.03 | 0.093 | 0.135 |
| | LTE Band 12 | 10M | QPSK | 25 | 0 | - | Top Side | 10mm | Reduced | 23095 | 707.5 | 19.37 | 21.00 | 1.455 | 0.15 | 0.082 | 0.119 |
| | LTE Band 12 | 10M | QPSK | 1 | 0 | - | Back | 13mm | Full | 23095 | 707.5 | 22.84 | 24.00 | 1.306 | -0.12 | 0.243 | 0.317 |
| | LTE Band 12 | 10M | QPSK | 1 | 0 | - | Top Side | 12mm | Full | 23095 | 707.5 | 22.84 | 24.00 | 1.306 | 0.03 | 0.079 | 0.103 |
| | LTE Band 13 | 10M | QPSK | 1 | 0 | - | Front | 10mm | Full | 23230 | 782 | 23.04 | 24.00 | 1.247 | -0.07 | 0.235 | 0.293 |
| | LTE Band 13 | 10M | QPSK | 25 | 0 | - | Front | 10mm | Full | 23230 | 782 | 21.92 | 23.00 | 1.282 | 0.02 | 0.189 | 0.242 |
| 02 | LTE Band 13 | 10M | QPSK | 1 | 0 | - | Back | 10mm | Reduced | 23230 | 782 | 19.65 | 21.00 | 1.365 | -0.07 | 0.264 | **0.360** |
| | LTE Band 13 | 10M | QPSK | 25 | 0 | - | Back | 10mm | Reduced | 23230 | 782 | 19.63 | 21.00 | 1.371 | 0.08 | 0.262 | 0.359 |
| | LTE Band 13 | 10M | QPSK | 1 | 0 | - | Left Side | 10mm | Full | 23230 | 782 | 23.04 | 24.00 | 1.247 | 0.02 | 0.064 | 0.080 |
| | LTE Band 13 | 10M | QPSK | 25 | 0 | - | Left Side | 10mm | Full | 23230 | 782 | 21.92 | 23.00 | 1.282 | 0.08 | 0.151 | 0.194 |
| | LTE Band 13 | 10M | QPSK | 1 | 0 | - | Right Side | 10mm | Full | 23230 | 782 | 23.04 | 24.00 | 1.247 | 0.06 | 0.146 | 0.182 |
| | LTE Band 13 | 10M | QPSK | 25 | 0 | - | Right Side | 10mm | Full | 23230 | 782 | 21.92 | 23.00 | 1.282 | -0.07 | 0.055 | 0.071 |
| | LTE Band 13 | 10M | QPSK | 1 | 0 | - | Top Side | 10mm | Reduced | 23230 | 782 | 19.65 | 21.00 | 1.365 | 0.01 | 0.126 | 0.172 |
| | LTE Band 13 | 10M | QPSK | 25 | 0 | - | Top Side | 10mm | Reduced | 23230 | 782 | 19.63 | 21.00 | 1.371 | 0.02 | 0.122 | 0.167 |
| | LTE Band 13 | 10M | QPSK | 1 | 0 | - | Back | 13mm | Full | 23230 | 782 | 23.04 | 24.00 | 1.247 | -0.12 | 0.259 | 0.323 |
| | LTE Band 13 | 10M | QPSK | 1 | 0 | - | Top Side | 12mm | Full | 23230 | 782 | 23.04 | 24.00 | 1.247 | 0.03 | 0.153 | 0.191 |
| **835MHz** | | | | | | | | | | | | | | | | | |
| | WCDMA V | - | - | - | - | RMC 12.2Kbps | Front | 10mm | Full | 4182 | 836.4 | 22.23 | 23.50 | 1.340 | 0.02 | 0.455 | 0.610 |
| | WCDMA V | - | - | - | - | RMC 12.2Kbps | Back | 10mm | Reduced | 4182 | 836.4 | 19.55 | 20.50 | 1.245 | 0.09 | 0.506 | 0.630 |
| | WCDMA V | - | - | - | - | RMC 12.2Kbps | Left Side | 10mm | Full | 4182 | 836.4 | 22.23 | 23.50 | 1.340 | -0.05 | 0.121 | 0.162 |
| | WCDMA V | - | - | - | - | RMC 12.2Kbps | Right Side | 10mm | Full | 4182 | 836.4 | 22.23 | 23.50 | 1.340 | 0.08 | 0.087 | 0.117 |
| | WCDMA V | - | - | - | - | RMC 12.2Kbps | Top Side | 10mm | Reduced | 4182 | 836.4 | 19.55 | 20.50 | 1.245 | 0.06 | 0.356 | 0.443 |
| | WCDMA V | - | - | - | - | RMC 12.2Kbps | Back | 10mm | Reduced | 4132 | 826.4 | 19.52 | 20.50 | 1.253 | -0.07 | 0.469 | 0.588 |
| 03 | WCDMA V | - | - | - | - | RMC 12.2Kbps | Back | 10mm | Reduced | 4233 | 846.6 | 19.43 | 20.50 | 1.279 | -0.06 | 0.599 | **0.766** |
| | WCDMA V | - | - | - | - | RMC 12.2Kbps | Back | 13mm | Full | 4182 | 836.4 | 22.23 | 23.50 | 1.340 | -0.12 | 0.477 | 0.639 |
| | WCDMA V | - | - | - | - | RMC 12.2Kbps | Top Side | 12mm | Full | 4182 | 836.4 | 22.23 | 23.50 | 1.340 | 0.03 | 0.245 | 0.328 |

| Plot No. | Band | BW (MHz) | Modulation | RB Size | RB offset | Mode | Test Position | Gap (mm) | Power Reduction | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1750MHz** | | | | | | | | | | | | | | | | | |
| | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Front | 10mm | Full | 1413 | 1732.6 | 21.89 | 23.00 | 1.291 | -0.03 | 0.327 | 0.422 |
| 04 | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Back | 10mm | Reduced | 1413 | 1732.6 | 19.60 | 20.00 | 1.096 | 0.05 | 0.404 | **0.443** |
| | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Left Side | 10mm | Full | 1413 | 1732.6 | 21.89 | 23.00 | 1.291 | 0.07 | 0.155 | 0.200 |
| | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Right Side | 10mm | Full | 1413 | 1732.6 | 21.89 | 23.00 | 1.291 | 0.06 | 0.130 | 0.168 |
| | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Top Side | 10mm | Reduced | 1413 | 1732.6 | 19.60 | 20.00 | 1.096 | -0.07 | 0.345 | 0.378 |
| | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Back | 10mm | Reduced | 1312 | 1712.4 | 19.30 | 20.00 | 1.175 | -0.02 | 0.375 | 0.441 |
| | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Back | 10mm | Reduced | 1513 | 1752.6 | 19.57 | 20.00 | 1.104 | -0.13 | 0.386 | 0.426 |
| | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Back | 13mm | Full | 1413 | 1732.6 | 21.89 | 23.00 | 1.291 | -0.12 | 0.214 | 0.276 |
| | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Top Side | 12mm | Full | 1413 | 1732.6 | 21.89 | 23.00 | 1.291 | 0.03 | 0.342 | 0.442 |
| 05 | LTE Band 66 | 20M | QPSK | 1 | 0 | - | Front | 10mm | Full | 132322 | 1745 | 22.66 | 24.00 | 1.361 | 0.01 | 0.344 | **0.468** |
| | LTE Band 66 | 20M | QPSK | 50 | 0 | - | Front | 10mm | Full | 132322 | 1745 | 21.82 | 23.00 | 1.312 | 0.06 | 0.271 | 0.356 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | - | Back | 10mm | Reduced | 132322 | 1745 | 19.44 | 21.00 | 1.432 | -0.07 | 0.264 | 0.378 |
| | LTE Band 66 | 20M | QPSK | 50 | 0 | - | Back | 10mm | Reduced | 132322 | 1745 | 19.40 | 21.00 | 1.445 | 0.06 | 0.269 | 0.389 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | - | Left Side | 10mm | Full | 132322 | 1745 | 22.66 | 24.00 | 1.361 | 0.06 | 0.221 | 0.301 |
| | LTE Band 66 | 20M | QPSK | 50 | 0 | - | Left Side | 10mm | Full | 132322 | 1745 | 21.82 | 23.00 | 1.312 | -0.07 | 0.177 | 0.232 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | - | Right Side | 10mm | Full | 132322 | 1745 | 22.66 | 24.00 | 1.361 | -0.02 | 0.093 | 0.127 |
| | LTE Band 66 | 20M | QPSK | 50 | 0 | - | Right Side | 10mm | Full | 132322 | 1745 | 21.82 | 23.00 | 1.312 | 0.05 | 0.092 | 0.121 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | - | Top Side | 10mm | Reduced | 132322 | 1745 | 19.44 | 21.00 | 1.432 | 0.07 | 0.227 | 0.325 |
| | LTE Band 66 | 20M | QPSK | 50 | 0 | - | Top Side | 10mm | Reduced | 132322 | 1745 | 19.40 | 21.00 | 1.445 | 0.08 | 0.230 | 0.332 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | - | Front | 10mm | Full | 132072 | 1720 | 22.55 | 24.00 | 1.396 | 0.02 | 0.324 | 0.452 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | - | Front | 10mm | Full | 132572 | 1770 | 22.52 | 24.00 | 1.406 | -0.01 | 0.332 | 0.467 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | - | Back | 13mm | Full | 132322 | 1745 | 22.66 | 24.00 | 1.361 | -0.12 | 0.213 | 0.290 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | - | Top Side | 12mm | Full | 132322 | 1745 | 22.66 | 24.00 | 1.361 | 0.03 | 0.335 | 0.456 |
| **1900MHz** | | | | | | | | | | | | | | | | | |
| 06 | WCDMA II | - | - | - | - | RMC 12.2Kbps | Front | 10mm | Full | 9400 | 1880 | 21.99 | 23.00 | 1.262 | -0.02 | 0.372 | **0.469** |
| | WCDMA II | - | - | - | - | RMC 12.2Kbps | Back | 10mm | Reduced | 9400 | 1880 | 19.10 | 20.00 | 1.230 | 0.03 | 0.299 | 0.368 |
| | WCDMA II | - | - | - | - | RMC 12.2Kbps | Left Side | 10mm | Full | 9400 | 1880 | 21.99 | 23.00 | 1.262 | 0.01 | 0.068 | 0.086 |
| | WCDMA II | - | - | - | - | RMC 12.2Kbps | Right Side | 10mm | Full | 9400 | 1880 | 21.99 | 23.00 | 1.262 | 0.06 | 0.162 | 0.204 |
| | WCDMA II | - | - | - | - | RMC 12.2Kbps | Top Side | 10mm | Reduced | 9400 | 1880 | 19.10 | 20.00 | 1.230 | 0.05 | 0.219 | 0.269 |
| | WCDMA II | - | - | - | - | RMC 12.2Kbps | Front | 10mm | Full | 9262 | 1852.4 | 21.92 | 23.00 | 1.282 | -0.07 | 0.322 | 0.413 |
| | WCDMA II | - | - | - | - | RMC 12.2Kbps | Front | 10mm | Full | 9538 | 1907.6 | 21.98 | 23.00 | 1.265 | 0.09 | 0.264 | 0.334 |
| | WCDMA II | - | - | - | - | RMC 12.2Kbps | Back | 13mm | Full | 9400 | 1880 | 21.99 | 23.00 | 1.262 | -0.12 | 0.226 | 0.285 |
| | WCDMA II | - | - | - | - | RMC 12.2Kbps | Top Side | 12mm | Full | 9400 | 1880 | 21.99 | 23.00 | 1.262 | 0.03 | 0.342 | 0.432 |
| 07 | LTE Band 2 | 20M | QPSK | 1 | 0 | - | Front | 10mm | Full | 18900 | 1880 | 22.77 | 24.00 | 1.327 | -0.08 | 0.418 | **0.555** |
| | LTE Band 2 | 20M | QPSK | 50 | 0 | - | Front | 10mm | Full | 18900 | 1880 | 21.67 | 23.00 | 1.358 | 0.02 | 0.343 | 0.466 |
| | LTE Band 2 | 20M | QPSK | 1 | 0 | - | Back | 10mm | Reduced | 18900 | 1880 | 19.49 | 21.00 | 1.416 | 0.09 | 0.290 | 0.411 |
| | LTE Band 2 | 20M | QPSK | 50 | 0 | - | Back | 10mm | Reduced | 18900 | 1880 | 19.45 | 21.00 | 1.429 | 0.08 | 0.278 | 0.397 |
| | LTE Band 2 | 20M | QPSK | 1 | 0 | - | Left Side | 10mm | Full | 18900 | 1880 | 22.77 | 24.00 | 1.327 | 0.06 | 0.074 | 0.098 |
| | LTE Band 2 | 20M | QPSK | 50 | 0 | - | Left Side | 10mm | Full | 18900 | 1880 | 21.67 | 23.00 | 1.358 | -0.07 | 0.059 | 0.080 |
| | LTE Band 2 | 20M | QPSK | 1 | 0 | - | Right Side | 10mm | Full | 18900 | 1880 | 22.77 | 24.00 | 1.327 | 0.01 | 0.141 | 0.187 |
| | LTE Band 2 | 20M | QPSK | 50 | 0 | - | Right Side | 10mm | Full | 18900 | 1880 | 21.67 | 23.00 | 1.358 | 0.09 | 0.148 | 0.201 |
| | LTE Band 2 | 20M | QPSK | 1 | 0 | - | Top Side | 10mm | Reduced | 18900 | 1880 | 19.49 | 21.00 | 1.416 | -0.06 | 0.207 | 0.293 |
| | LTE Band 2 | 20M | QPSK | 50 | 0 | - | Top Side | 10mm | Reduced | 18900 | 1880 | 19.45 | 21.00 | 1.429 | 0.08 | 0.196 | 0.280 |
| | LTE Band 2 | 20M | QPSK | 1 | 0 | - | Front | 10mm | Full | 18700 | 1860 | 22.60 | 24.00 | 1.380 | 0.01 | 0.400 | 0.552 |
| | LTE Band 2 | 20M | QPSK | 1 | 0 | - | Front | 10mm | Full | 19100 | 1900 | 22.56 | 24.00 | 1.393 | 0.03 | 0.385 | 0.536 |
| | LTE Band 2 | 20M | QPSK | 1 | 0 | - | Back | 13mm | Full | 18900 | 1880 | 22.77 | 24.00 | 1.327 | -0.12 | 0.239 | 0.317 |
| | LTE Band 2 | 20M | QPSK | 1 | 0 | - | Top Side | 12mm | Full | 18900 | 1880 | 22.77 | 24.00 | 1.327 | 0.03 | 0.393 | 0.522 |

| Plot No. | Band | Mode | Test Position | Gap (mm) | Antenna | Power Reduction | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Duty Cycle % | Duty Cycle Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **2450MHz** | | | | | | | | | | | | | | | | |
| 08 | WLAN2.4GHz | 802.11b 1Mbps | Front | 10mm | Ant 1 | Full | 1 | 2412 | 16.72 | 18.00 | 1.343 | 100 | 1.000 | 0.09 | 0.108 | **0.145** |
| | WLAN2.4GHz | 802.11b 1Mbps | Back | 10mm | Ant 1 | Full | 1 | 2412 | 16.72 | 18.00 | 1.343 | 100 | 1.000 | -0.08 | 0.104 | 0.140 |
| | WLAN2.4GHz | 802.11b 1Mbps | Left Side | 10mm | Ant 1 | Full | 1 | 2412 | 16.72 | 18.00 | 1.343 | 100 | 1.000 | 0.08 | 0.074 | 0.099 |
| | WLAN2.4GHz | 802.11b 1Mbps | Top Side | 10mm | Ant 1 | Full | 1 | 2412 | 16.72 | 18.00 | 1.343 | 100 | 1.000 | -0.07 | 0.058 | 0.078 |
| | WLAN2.4GHz | 802.11b 1Mbps | Front | 10mm | Ant 1 | Full | 6 | 2437 | 16.63 | 18.00 | 1.371 | 100 | 1.000 | 0.05 | 0.105 | 0.144 |
| | WLAN2.4GHz | 802.11b 1Mbps | Front | 10mm | Ant 1 | Full | 11 | 2462 | 16.66 | 18.00 | 1.361 | 100 | 1.000 | 0.07 | 0.091 | 0.124 |
| | WLAN2.4GHz | 802.11b 1Mbps | Front | 10mm | Ant 2 | Full | 11 | 2462 | 16.87 | 18.00 | 1.297 | 100 | 1.000 | 0.06 | 0.033 | 0.043 |
| | WLAN2.4GHz | 802.11b 1Mbps | Back | 10mm | Ant 2 | Full | 11 | 2462 | 16.87 | 18.00 | 1.297 | 100 | 1.000 | 0.05 | 0.056 | 0.073 |
| | WLAN2.4GHz | 802.11b 1Mbps | Right Side | 10mm | Ant 2 | Full | 11 | 2462 | 16.87 | 18.00 | 1.297 | 100 | 1.000 | 0.01 | 0.032 | 0.042 |
| | WLAN2.4GHz | 802.11b 1Mbps | Bottom Side | 10mm | Ant 2 | Full | 11 | 2462 | 16.87 | 18.00 | 1.297 | 100 | 1.000 | 0.02 | 0.029 | 0.038 |
| | WLAN2.4GHz | 802.11b 1Mbps | Back | 10mm | Ant 2 | Full | 1 | 2412 | 16.82 | 18.00 | 1.312 | 100 | 1.000 | -0.14 | 0.069 | 0.091 |
| | WLAN2.4GHz | 802.11b 1Mbps | Back | 10mm | Ant 2 | Full | 6 | 2437 | 16.76 | 18.00 | 1.330 | 100 | 1.000 | 0.05 | 0.055 | 0.073 |
| 09 | Bluetooth | 1Mbps | Front | 10mm | Ant 1 | Full | 39 | 2441 | 10.25 | 10.50 | 1.059 | 77.05 | 1.298 | 0.01 | 0.016 | **0.022** |
| | Bluetooth | 1Mbps | Front | 10mm | Ant 1 | Full | 0 | 2402 | 9.44 | 10.50 | 1.276 | 77.05 | 1.298 | -0.01 | 0.012 | 0.020 |
| | Bluetooth | 1Mbps | Front | 10mm | Ant 1 | Full | 78 | 2480 | 8.77 | 10.50 | 1.489 | 77.05 | 1.298 | 0.02 | 0.010 | 0.019 |
| **5000MHz** | | | | | | | | | | | | | | | | |
| | WLAN5.2GHz | 802.11a 6Mbps | Front | 10mm | Ant 1 | Full | 48 | 5240 | 11.88 | 13.00 | 1.294 | 98.27 | 1.018 | 0.06 | 0.032 | 0.042 |
| | WLAN5.2GHz | 802.11a 6Mbps | Back | 10mm | Ant 1 | Full | 48 | 5240 | 11.88 | 13.00 | 1.294 | 98.27 | 1.018 | -0.07 | 0.035 | 0.046 |
| | WLAN5.2GHz | 802.11a 6Mbps | Left Side | 10mm | Ant 1 | Full | 48 | 5240 | 11.88 | 13.00 | 1.294 | 98.27 | 1.018 | -0.02 | 0.068 | 0.090 |
| | WLAN5.2GHz | 802.11a 6Mbps | Top Side | 10mm | Ant 1 | Full | 48 | 5240 | 11.88 | 13.00 | 1.294 | 98.27 | 1.018 | 0.03 | 0.034 | 0.045 |
| 10 | WLAN5.2GHz | 802.11a 6Mbps | Left Side | 10mm | Ant 1 | Full | 36 | 5180 | 11.80 | 13.00 | 1.318 | 98.27 | 1.018 | -0.09 | 0.079 | **0.106** |
| | WLAN5.2GHz | 802.11a 6Mbps | Left Side | 10mm | Ant 1 | Full | 44 | 5220 | 11.75 | 13.00 | 1.333 | 98.27 | 1.018 | 0.02 | 0.068 | 0.092 |
| | WLAN5.2GHz | 802.11a 6Mbps | Front | 10mm | Ant 2 | Full | 48 | 5240 | 12.27 | 13.00 | 1.182 | 98.35 | 1.017 | 0.06 | 0.008 | 0.010 |
| | WLAN5.2GHz | 802.11a 6Mbps | Back | 10mm | Ant 2 | Full | 48 | 5240 | 12.27 | 13.00 | 1.182 | 98.35 | 1.017 | -0.07 | 0.013 | 0.016 |
| | WLAN5.2GHz | 802.11a 6Mbps | Right Side | 10mm | Ant 2 | Full | 48 | 5240 | 12.27 | 13.00 | 1.182 | 98.35 | 1.017 | 0.05 | 0.012 | 0.014 |
| | WLAN5.2GHz | 802.11a 6Mbps | Bottom Side | 10mm | Ant 2 | Full | 48 | 5240 | 12.27 | 13.00 | 1.182 | 98.35 | 1.017 | -0.06 | 0.017 | 0.020 |
| | WLAN5.2GHz | 802.11a 6Mbps | Bottom Side | 10mm | Ant 2 | Full | 36 | 5180 | 11.93 | 13.00 | 1.279 | 98.35 | 1.017 | 0.02 | 0.012 | 0.016 |
| | WLAN5.2GHz | 802.11a 6Mbps | Bottom Side | 10mm | Ant 2 | Full | 44 | 5220 | 12.13 | 13.00 | 1.221 | 98.35 | 1.017 | 0.01 | 0.008 | 0.010 |
| | WLAN5.8GHz | 802.11a 6Mbps | Front | 10mm | Ant 1 | Full | 149 | 5745 | 11.88 | 13.00 | 1.294 | 98.62 | 1.014 | 0.01 | 0.016 | 0.021 |
| | WLAN5.8GHz | 802.11a 6Mbps | Back | 10mm | Ant 1 | Full | 149 | 5745 | 11.88 | 13.00 | 1.294 | 98.62 | 1.014 | 0.05 | 0.018 | 0.024 |
| | WLAN5.8GHz | 802.11a 6Mbps | Left Side | 10mm | Ant 1 | Full | 149 | 5745 | 11.88 | 13.00 | 1.294 | 98.62 | 1.014 | 0.06 | 0.011 | 0.014 |
| | WLAN5.8GHz | 802.11a 6Mbps | Top Side | 10mm | Ant 1 | Full | 149 | 5745 | 11.88 | 13.00 | 1.294 | 98.62 | 1.014 | -0.02 | 0.016 | 0.021 |
| | WLAN5.8GHz | 802.11a 6Mbps | Back | 10mm | Ant 1 | Full | 157 | 5785 | 11.66 | 13.00 | 1.361 | 98.62 | 1.014 | -0.05 | 0.019 | 0.026 |
| | WLAN5.8GHz | 802.11a 6Mbps | Back | 10mm | Ant 1 | Full | 165 | 5825 | 11.56 | 13.00 | 1.393 | 98.62 | 1.014 | 0.06 | 0.015 | 0.021 |
| | WLAN5.8GHz | 802.11a 6Mbps | Front | 10mm | Ant 2 | Full | 149 | 5745 | 12.19 | 13.00 | 1.204 | 98.35 | 1.017 | 0.09 | 0.064 | 0.078 |
| | WLAN5.8GHz | 802.11a 6Mbps | Back | 10mm | Ant 2 | Full | 149 | 5745 | 12.19 | 13.00 | 1.204 | 98.35 | 1.017 | 0.01 | 0.065 | 0.080 |
| | WLAN5.8GHz | 802.11a 6Mbps | Right Side | 10mm | Ant 2 | Full | 149 | 5745 | 12.19 | 13.00 | 1.204 | 98.35 | 1.017 | -0.07 | 0.205 | 0.251 |
| | WLAN5.8GHz | 802.11a 6Mbps | Bottom Side | 10mm | Ant 2 | Full | 149 | 5745 | 12.19 | 13.00 | 1.204 | 98.35 | 1.017 | 0.04 | 0.039 | 0.048 |
| | WLAN5.8GHz | 802.11a 6Mbps | Right Side | 10mm | Ant 2 | Full | 157 | 5785 | 11.88 | 13.00 | 1.294 | 98.35 | 1.017 | 0.05 | 0.189 | 0.249 |
| 11 | WLAN5.8GHz | 802.11a 6Mbps | Right Side | 10mm | Ant 2 | Full | 165 | 5825 | 11.46 | 13.00 | 1.425 | 98.35 | 1.017 | -0.1 | 0.206 | **0.299** |

## 15.2 Body Worn Accessory SAR

| Plot No. | Band | BW (MHz) | Modulation | RB Size | RB offset | Mode | Test Position | Gap (mm) | Power Reduction | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **750MHz** | | | | | | | | | | | | | | | | | |
| | LTE Band 12 | 10M | QPSK | 1 | 0 | - | Front | 10mm | Full | 23095 | 707.5 | 22.84 | 24.00 | 1.306 | -0.06 | 0.228 | 0.298 |
| | LTE Band 12 | 10M | QPSK | 25 | 0 | - | Front | 10mm | Full | 23095 | 707.5 | 21.83 | 23.00 | 1.309 | 0.02 | 0.207 | 0.271 |
| 24 | LTE Band 12 | 10M | QPSK | 1 | 0 | - | Back | 10mm | Reduced | 23095 | 707.5 | 19.39 | 21.00 | 1.449 | -0.12 | 0.255 | **0.369** |
| | LTE Band 12 | 10M | QPSK | 25 | 0 | - | Back | 10mm | Reduced | 23095 | 707.5 | 19.37 | 21.00 | 1.455 | 0.02 | 0.212 | 0.309 |
| | LTE Band 12 | 10M | QPSK | 1 | 0 | - | Back | 13mm | Full | 23095 | 707.5 | 22.84 | 24.00 | 1.306 | -0.12 | 0.243 | 0.317 |
| | LTE Band 13 | 10M | QPSK | 1 | 0 | - | Front | 10mm | Full | 23230 | 782 | 23.04 | 24.00 | 1.247 | -0.07 | 0.235 | 0.293 |
| | LTE Band 13 | 10M | QPSK | 25 | 0 | - | Front | 10mm | Full | 23230 | 782 | 21.92 | 23.00 | 1.282 | 0.02 | 0.189 | 0.242 |
| 25 | LTE Band 13 | 10M | QPSK | 1 | 0 | - | Back | 10mm | Reduced | 23230 | 782 | 19.65 | 21.00 | 1.365 | -0.07 | 0.264 | **0.360** |
| | LTE Band 13 | 10M | QPSK | 25 | 0 | - | Back | 10mm | Reduced | 23230 | 782 | 19.63 | 21.00 | 1.371 | 0.08 | 0.262 | 0.359 |
| | LTE Band 13 | 10M | QPSK | 1 | 0 | - | Back | 13mm | Full | 23230 | 782 | 23.04 | 24.00 | 1.247 | -0.12 | 0.259 | 0.323 |
| **835MHz** | | | | | | | | | | | | | | | | | |
| | WCDMA V | - | - | - | - | RMC 12.2Kbps | Front | 10mm | Full | 4182 | 836.4 | 22.23 | 23.50 | 1.340 | 0.02 | 0.455 | 0.610 |
| | WCDMA V | - | - | - | - | RMC 12.2Kbps | Back | 10mm | Reduced | 4182 | 836.4 | 19.55 | 20.50 | 1.245 | 0.09 | 0.506 | 0.630 |
| | WCDMA V | - | - | - | - | RMC 12.2Kbps | Back | 10mm | Reduced | 4132 | 826.4 | 19.52 | 20.50 | 1.253 | -0.07 | 0.469 | 0.588 |
| 26 | WCDMA V | - | - | - | - | RMC 12.2Kbps | Back | 10mm | Reduced | 4233 | 846.6 | 19.43 | 20.50 | 1.279 | -0.06 | 0.599 | **0.766** |
| | WCDMA V | - | - | - | - | RMC 12.2Kbps | Back | 13mm | Full | 4182 | 836.4 | 22.23 | 23.50 | 1.340 | -0.12 | 0.477 | 0.639 |

| Plot No. | Band | BW (MHz) | Modulation | RB Size | RB offset | Mode | Test Position | Gap (mm) | Power Reduction | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1750MHz** | | | | | | | | | | | | | | | | | |
| | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Front | 10mm | Full | 1413 | 1732.6 | 21.89 | 23.00 | 1.291 | -0.03 | 0.327 | 0.422 |
| 27 | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Back | 10mm | Reduced | 1413 | 1732.6 | 19.60 | 20.00 | 1.096 | 0.05 | 0.404 | **0.443** |
| | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Back | 10mm | Reduced | 1312 | 1712.4 | 19.30 | 20.00 | 1.175 | -0.02 | 0.375 | 0.441 |
| | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Back | 10mm | Reduced | 1513 | 1752.6 | 19.57 | 20.00 | 1.104 | -0.13 | 0.386 | 0.426 |
| | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Back | 13mm | Full | 1413 | 1732.6 | 21.89 | 23.00 | 1.291 | -0.12 | 0.214 | 0.276 |
| 28 | LTE Band 66 | 20M | QPSK | 1 | 0 | - | Front | 10mm | Full | 132322 | 1745 | 22.66 | 24.00 | 1.361 | 0.01 | 0.344 | **0.468** |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | - | Front | 10mm | Full | 132072 | 1720 | 22.55 | 24.00 | 1.396 | 0.02 | 0.324 | 0.452 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | - | Front | 10mm | Full | 132572 | 1770 | 22.52 | 24.00 | 1.406 | -0.01 | 0.332 | 0.467 |
| | LTE Band 66 | 20M | QPSK | 50 | 0 | - | Front | 10mm | Full | 132322 | 1745 | 21.82 | 23.00 | 1.312 | 0.06 | 0.271 | 0.356 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | - | Back | 10mm | Reduced | 132322 | 1745 | 19.44 | 21.00 | 1.432 | -0.07 | 0.264 | 0.378 |
| | LTE Band 66 | 20M | QPSK | 50 | 0 | - | Back | 10mm | Reduced | 132322 | 1745 | 19.40 | 21.00 | 1.445 | 0.06 | 0.269 | 0.389 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | - | Back | 13mm | Full | 132322 | 1745 | 22.66 | 24.00 | 1.361 | -0.12 | 0.213 | 0.290 |
| **1900MHz** | | | | | | | | | | | | | | | | | |
| 29 | WCDMA II | - | - | - | - | RMC 12.2Kbps | Front | 10mm | Full | 9400 | 1880 | 21.99 | 23.00 | 1.262 | -0.02 | 0.372 | **0.469** |
| | WCDMA II | - | - | - | - | RMC 12.2Kbps | Front | 10mm | Full | 9262 | 1852.4 | 21.92 | 23.00 | 1.282 | -0.07 | 0.322 | 0.413 |
| | WCDMA II | - | - | - | - | RMC 12.2Kbps | Front | 10mm | Full | 9538 | 1907.6 | 21.98 | 23.00 | 1.265 | 0.09 | 0.264 | 0.334 |
| | WCDMA II | - | - | - | - | RMC 12.2Kbps | Back | 10mm | Reduced | 9400 | 1880 | 19.10 | 20.00 | 1.230 | 0.03 | 0.299 | 0.368 |
| | WCDMA II | - | - | - | - | RMC 12.2Kbps | Back | 13mm | Full | 9400 | 1880 | 21.99 | 23.00 | 1.262 | -0.12 | 0.226 | 0.285 |
| 30 | LTE Band 2 | 20M | QPSK | 1 | 0 | - | Front | 10mm | Full | 18900 | 1880 | 22.77 | 24.00 | 1.327 | -0.08 | 0.418 | **0.555** |
| | LTE Band 2 | 20M | QPSK | 1 | 0 | - | Front | 10mm | Full | 18700 | 1860 | 22.60 | 24.00 | 1.380 | 0.01 | 0.400 | 0.552 |
| | LTE Band 2 | 20M | QPSK | 1 | 0 | - | Front | 10mm | Full | 19100 | 1900 | 22.56 | 24.00 | 1.393 | 0.03 | 0.385 | 0.536 |
| | LTE Band 2 | 20M | QPSK | 50 | 0 | - | Front | 10mm | Full | 18900 | 1880 | 21.67 | 23.00 | 1.358 | 0.02 | 0.343 | 0.466 |
| | LTE Band 2 | 20M | QPSK | 1 | 0 | - | Back | 10mm | Reduced | 18900 | 1880 | 19.49 | 21.00 | 1.416 | 0.09 | 0.290 | 0.411 |
| | LTE Band 2 | 20M | QPSK | 50 | 0 | - | Back | 10mm | Reduced | 18900 | 1880 | 19.45 | 21.00 | 1.429 | 0.08 | 0.278 | 0.397 |
| | LTE Band 2 | 20M | QPSK | 1 | 0 | - | Back | 13mm | Full | 18900 | 1880 | 22.77 | 24.00 | 1.327 | -0.12 | 0.239 | 0.317 |

| Plot No. | Band | Mode | Test Position | Gap (mm) | Antenna | Power Reduction | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Duty Cycle % | Duty Cycle Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **2450MHz** | | | | | | | | | | | | | | | | |
| 31 | WLAN2.4GHz | 802.11b 1Mbps | Front | 10mm | Ant 1 | Full | 1 | 2412 | 16.72 | 18.00 | 1.343 | 100 | 1.000 | 0.09 | 0.108 | **0.145** |
| | WLAN2.4GHz | 802.11b 1Mbps | Front | 10mm | Ant 1 | Full | 6 | 2437 | 16.63 | 18.00 | 1.371 | 100 | 1.000 | 0.05 | 0.105 | 0.144 |
| | WLAN2.4GHz | 802.11b 1Mbps | Front | 10mm | Ant 1 | Full | 11 | 2462 | 16.66 | 18.00 | 1.361 | 100 | 1.000 | 0.07 | 0.091 | 0.124 |
| | WLAN2.4GHz | 802.11b 1Mbps | Back | 10mm | Ant 1 | Full | 1 | 2412 | 16.72 | 18.00 | 1.343 | 100 | 1.000 | -0.08 | 0.104 | 0.140 |
| | WLAN2.4GHz | 802.11b 1Mbps | Front | 10mm | Ant 2 | Full | 11 | 2462 | 16.87 | 18.00 | 1.297 | 100 | 1.000 | 0.06 | 0.033 | 0.043 |
| | WLAN2.4GHz | 802.11b 1Mbps | Back | 10mm | Ant 2 | Full | 11 | 2462 | 16.87 | 18.00 | 1.297 | 100 | 1.000 | 0.05 | 0.056 | 0.073 |
| | WLAN2.4GHz | 802.11b 1Mbps | Back | 10mm | Ant 2 | Full | 1 | 2412 | 16.82 | 18.00 | 1.312 | 100 | 1.000 | -0.14 | 0.069 | 0.091 |
| | WLAN2.4GHz | 802.11b 1Mbps | Back | 10mm | Ant 2 | Full | 6 | 2437 | 16.76 | 18.00 | 1.330 | 100 | 1.000 | 0.05 | 0.055 | 0.073 |
| 32 | Bluetooth | 1Mbps | Front | 10mm | Ant 1 | Full | 39 | 2441 | 10.25 | 10.50 | 1.059 | 77.05 | 1.298 | 0.01 | 0.016 | **0.022** |
| | Bluetooth | 1Mbps | Front | 10mm | Ant 1 | Full | 0 | 2402 | 9.44 | 10.50 | 1.276 | 77.05 | 1.298 | -0.01 | 0.012 | 0.020 |
| | Bluetooth | 1Mbps | Front | 10mm | Ant 1 | Full | 78 | 2480 | 8.77 | 10.50 | 1.489 | 77.05 | 1.298 | 0.02 | 0.010 | 0.019 |
| **5000MHz** | | | | | | | | | | | | | | | | |
| | WLAN5.3GHz | 802.11a 6Mbps | Front | 10mm | Ant 1 | Full | 56 | 5280 | 12.13 | 13.00 | 1.223 | 98.27 | 1.018 | 0.01 | 0.020 | 0.025 |
| 33 | WLAN5.3GHz | 802.11a 6Mbps | Back | 10mm | Ant 1 | Full | 56 | 5280 | 12.13 | 13.00 | 1.223 | 98.27 | 1.018 | -0.02 | 0.035 | **0.044** |
| | WLAN5.3GHz | 802.11a 6Mbps | Back | 10mm | Ant 1 | Full | 52 | 5260 | 12.03 | 13.00 | 1.250 | 98.27 | 1.018 | -0.05 | 0.032 | 0.041 |
| | WLAN5.3GHz | 802.11a 6Mbps | Back | 10mm | Ant 1 | Full | 64 | 5320 | 12.06 | 13.00 | 1.242 | 98.27 | 1.018 | 0.07 | 0.031 | 0.039 |
| | WLAN5.3GHz | 802.11a 6Mbps | Front | 10mm | Ant 2 | Full | 56 | 5280 | 12.57 | 13.50 | 1.238 | 98.35 | 1.017 | 0.02 | 0.009 | 0.011 |
| | WLAN5.3GHz | 802.11a 6Mbps | Back | 10mm | Ant 2 | Full | 56 | 5280 | 12.57 | 13.50 | 1.238 | 98.35 | 1.017 | 0.08 | 0.010 | 0.013 |
| | WLAN5.3GHz | 802.11a 6Mbps | Back | 10mm | Ant 2 | Full | 52 | 5260 | 12.47 | 13.50 | 1.267 | 98.35 | 1.017 | -0.03 | 0.008 | 0.010 |
| | WLAN5.3GHz | 802.11a 6Mbps | Back | 10mm | Ant 2 | Full | 64 | 5320 | 12.39 | 13.50 | 1.291 | 98.35 | 1.017 | 0.07 | 0.008 | 0.010 |
| | WLAN5.5GHz | 802.11a 6Mbps | Front | 10mm | Ant 1 | Full | 132 | 5660 | 11.96 | 13.00 | 1.272 | 98.27 | 1.018 | 0.1 | 0.014 | 0.018 |
| | WLAN5.5GHz | 802.11a 6Mbps | Back | 10mm | Ant 1 | Full | 132 | 5660 | 11.96 | 13.00 | 1.272 | 98.27 | 1.018 | 0.06 | 0.028 | 0.036 |
| | WLAN5.5GHz | 802.11a 6Mbps | Back | 10mm | Ant 1 | Full | 100 | 5500 | 11.80 | 13.00 | 1.320 | 98.27 | 1.018 | -0.07 | 0.041 | 0.055 |
| | WLAN5.5GHz | 802.11a 6Mbps | Back | 10mm | Ant 1 | Full | 140 | 5700 | 11.48 | 13.00 | 1.420 | 98.27 | 1.018 | -0.03 | 0.026 | 0.038 |
| | WLAN5.5GHz | 802.11a 6Mbps | Front | 10mm | Ant 2 | Full | 132 | 5660 | 12.11 | 13.00 | 1.227 | 98.35 | 1.017 | 0.01 | 0.025 | 0.031 |
| | WLAN5.5GHz | 802.11a 6Mbps | Back | 10mm | Ant 2 | Full | 132 | 5660 | 12.11 | 13.00 | 1.227 | 98.35 | 1.017 | -0.13 | 0.039 | 0.049 |
| | WLAN5.5GHz | 802.11a 6Mbps | Back | 10mm | Ant 2 | Full | 100 | 5500 | 11.97 | 13.00 | 1.267 | 98.35 | 1.017 | 0.05 | 0.033 | 0.043 |
| 34 | WLAN5.5GHz | 802.11a 6Mbps | Back | 10mm | Ant 2 | Full | 140 | 5700 | 11.97 | 13.00 | 1.267 | 98.35 | 1.017 | -0.09 | 0.058 | **0.075** |
| | WLAN5.8GHz | 802.11a 6Mbps | Front | 10mm | Ant 1 | Full | 149 | 5745 | 11.88 | 13.00 | 1.294 | 98.62 | 1.014 | 0.01 | 0.016 | 0.021 |
| | WLAN5.8GHz | 802.11a 6Mbps | Back | 10mm | Ant 1 | Full | 149 | 5745 | 11.88 | 13.00 | 1.294 | 98.62 | 1.014 | 0.05 | 0.018 | 0.024 |
| | WLAN5.8GHz | 802.11a 6Mbps | Back | 10mm | Ant 1 | Full | 157 | 5785 | 11.66 | 13.00 | 1.361 | 98.62 | 1.014 | -0.05 | 0.019 | 0.026 |
| | WLAN5.8GHz | 802.11a 6Mbps | Back | 10mm | Ant 1 | Full | 165 | 5825 | 11.56 | 13.00 | 1.393 | 98.62 | 1.014 | 0.06 | 0.015 | 0.021 |
| | WLAN5.8GHz | 802.11a 6Mbps | Front | 10mm | Ant 2 | Full | 149 | 5745 | 12.19 | 13.00 | 1.204 | 98.35 | 1.017 | 0.09 | 0.064 | 0.078 |
| 35 | WLAN5.8GHz | 802.11a 6Mbps | Back | 10mm | Ant 2 | Full | 149 | 5745 | 12.19 | 13.00 | 1.204 | 98.35 | 1.017 | 0.01 | 0.065 | **0.080** |
| | WLAN5.8GHz | 802.11a 6Mbps | Back | 10mm | Ant 2 | Full | 157 | 5785 | 11.88 | 13.00 | 1.294 | 98.35 | 1.017 | 0.03 | 0.050 | 0.066 |
| | WLAN5.8GHz | 802.11a 6Mbps | Back | 10mm | Ant 2 | Full | 165 | 5825 | 11.46 | 13.00 | 1.425 | 98.35 | 1.017 | 0.05 | 0.055 | 0.080 |

## 15.3 Limbs SAR

| Plot No. | Band | BW (MHz) | Modulation | RB Size | RB offset | Mode | Test Position | Gap (mm) | Power Reduction | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 10g SAR (W/kg) | Reported 10g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **750MHz** | | | | | | | | | | | | | | | | | |
| 12 | LTE Band 12 | 10M | QPSK | 1 | 0 | - | Front | 0mm | Reduced | 23095 | 707.5 | 19.39 | 21.00 | 1.449 | -0.02 | 0.781 | **1.131** |
| | LTE Band 12 | 10M | QPSK | 25 | 0 | - | Front | 0mm | Reduced | 23095 | 707.5 | 19.37 | 21.00 | 1.455 | 0.08 | 0.642 | 0.934 |
| | LTE Band 12 | 10M | QPSK | 1 | 0 | - | Back | 0mm | Reduced | 23095 | 707.5 | 19.39 | 21.00 | 1.449 | 0.03 | 0.512 | 0.742 |
| | LTE Band 12 | 10M | QPSK | 25 | 0 | - | Back | 0mm | Reduced | 23095 | 707.5 | 19.37 | 21.00 | 1.455 | 0.01 | 0.556 | 0.809 |
| | LTE Band 12 | 10M | QPSK | 1 | 0 | - | Left Side | 0mm | Full | 23095 | 707.5 | 22.84 | 24.00 | 1.306 | 0.07 | 0.144 | 0.188 |
| | LTE Band 12 | 10M | QPSK | 25 | 0 | - | Left Side | 0mm | Full | 23095 | 707.5 | 21.83 | 23.00 | 1.309 | -0.02 | 0.120 | 0.157 |
| | LTE Band 12 | 10M | QPSK | 1 | 0 | - | Right Side | 0mm | Full | 23095 | 707.5 | 22.84 | 24.00 | 1.306 | 0.08 | 0.064 | 0.084 |
| | LTE Band 12 | 10M | QPSK | 25 | 0 | - | Right Side | 0mm | Full | 23095 | 707.5 | 21.83 | 23.00 | 1.309 | 0.06 | 0.069 | 0.090 |
| | LTE Band 12 | 10M | QPSK | 1 | 0 | - | Top Side | 0mm | Reduced | 23095 | 707.5 | 19.39 | 21.00 | 1.449 | 0.09 | 0.178 | 0.258 |
| | LTE Band 12 | 10M | QPSK | 25 | 0 | - | Top Side | 0mm | Reduced | 23095 | 707.5 | 19.37 | 21.00 | 1.455 | 0.01 | 0.214 | 0.311 |
| | LTE Band 12 | 10M | QPSK | 1 | 0 | - | Back | 13mm | Full | 23095 | 707.5 | 22.84 | 24.00 | 1.306 | -0.12 | 0.170 | 0.222 |
| | LTE Band 12 | 10M | QPSK | 1 | 0 | - | Top Side | 12mm | Full | 23095 | 707.5 | 22.84 | 24.00 | 1.306 | 0.03 | 0.054 | 0.071 |
| | LTE Band 12 | 10M | QPSK | 1 | 0 | - | Front | 5mm | Full | 23095 | 707.5 | 22.84 | 24.00 | 1.306 | 0.06 | 0.227 | 0.297 |
| | LTE Band 13 | 10M | QPSK | 1 | 0 | - | Front | 0mm | Reduced | 23230 | 782 | 19.65 | 21.00 | 1.365 | 0.09 | 0.527 | 0.719 |
| | LTE Band 13 | 10M | QPSK | 25 | 0 | - | Front | 0mm | Reduced | 23230 | 782 | 19.63 | 21.00 | 1.371 | 0.03 | 0.536 | 0.735 |
| 13 | LTE Band 13 | 10M | QPSK | 1 | 0 | - | Back | 0mm | Reduced | 23230 | 782 | 19.65 | 21.00 | 1.365 | -0.03 | 0.895 | **1.221** |
| | LTE Band 13 | 10M | QPSK | 25 | 0 | - | Back | 0mm | Reduced | 23230 | 782 | 19.63 | 21.00 | 1.371 | 0.02 | 0.864 | 1.184 |
| | LTE Band 13 | 10M | QPSK | 1 | 0 | - | Left Side | 0mm | Full | 23230 | 782 | 23.04 | 24.00 | 1.247 | 0.09 | 0.068 | 0.085 |
| | LTE Band 13 | 10M | QPSK | 25 | 0 | - | Left Side | 0mm | Full | 23230 | 782 | 21.92 | 23.00 | 1.282 | -0.04 | 0.068 | 0.087 |
| | LTE Band 13 | 10M | QPSK | 1 | 0 | - | Right Side | 0mm | Full | 23230 | 782 | 23.04 | 24.00 | 1.247 | -0.05 | 0.207 | 0.258 |
| | LTE Band 13 | 10M | QPSK | 25 | 0 | - | Right Side | 0mm | Full | 23230 | 782 | 21.92 | 23.00 | 1.282 | 0.06 | 0.211 | 0.271 |
| | LTE Band 13 | 10M | QPSK | 1 | 0 | - | Top Side | 0mm | Reduced | 23230 | 782 | 19.65 | 21.00 | 1.365 | -0.07 | 0.584 | 0.797 |
| | LTE Band 13 | 10M | QPSK | 25 | 0 | - | Top Side | 0mm | Reduced | 23230 | 782 | 19.63 | 21.00 | 1.371 | -0.02 | 0.582 | 0.798 |
| | LTE Band 13 | 10M | QPSK | 1 | 0 | - | Back | 13mm | Full | 23230 | 782 | 23.04 | 24.00 | 1.247 | -0.12 | 0.178 | 0.222 |
| | LTE Band 13 | 10M | QPSK | 1 | 0 | - | Top Side | 12mm | Full | 23230 | 782 | 23.04 | 24.00 | 1.247 | 0.03 | 0.082 | 0.102 |
| | LTE Band 13 | 10M | QPSK | 1 | 0 | - | Front | 5mm | Full | 23230 | 782 | 23.04 | 24.00 | 1.247 | 0.06 | 0.498 | 0.621 |
| **835MHz** | | | | | | | | | | | | | | | | | |
| | WCDMA V | - | - | - | - | RMC 12.2Kbps | Front | 0mm | Reduced | 4182 | 836.4 | 19.55 | 20.50 | 1.245 | 0.08 | 0.756 | 0.941 |
| 14 | WCDMA V | - | - | - | - | RMC 12.2Kbps | Back | 0mm | Reduced | 4182 | 836.4 | 19.55 | 20.50 | 1.245 | 0.01 | 0.898 | **1.118** |
| | WCDMA V | - | - | - | - | RMC 12.2Kbps | Left Side | 0mm | Full | 4182 | 836.4 | 22.23 | 23.50 | 1.340 | -0.07 | 0.108 | 0.145 |
| | WCDMA V | - | - | - | - | RMC 12.2Kbps | Right Side | 0mm | Full | 4182 | 836.4 | 22.23 | 23.50 | 1.340 | 0.07 | 0.128 | 0.171 |
| | WCDMA V | - | - | - | - | RMC 12.2Kbps | Top Side | 0mm | Reduced | 4182 | 836.4 | 19.55 | 20.50 | 1.245 | 0.05 | 0.277 | 0.345 |
| | WCDMA V | - | - | - | - | RMC 12.2Kbps | Back | 0mm | Reduced | 4132 | 826.4 | 19.52 | 20.50 | 1.253 | 0.07 | 0.791 | 0.991 |
| | WCDMA V | - | - | - | - | RMC 12.2Kbps | Back | 0mm | Reduced | 4233 | 846.6 | 19.43 | 20.50 | 1.279 | 0.05 | 0.670 | 0.857 |
| | WCDMA V | - | - | - | - | RMC 12.2Kbps | Back | 13mm | Full | 4182 | 836.4 | 22.23 | 23.50 | 1.340 | -0.12 | 0.319 | 0.427 |
| | WCDMA V | - | - | - | - | RMC 12.2Kbps | Top Side | 12mm | Full | 4182 | 836.4 | 22.23 | 23.50 | 1.340 | 0.03 | 0.160 | 0.214 |
| | WCDMA V | - | - | - | - | RMC 12.2Kbps | Front | 5mm | Full | 4182 | 836.4 | 22.23 | 23.50 | 1.340 | 0.06 | 0.622 | 0.833 |

| Plot No. | Band | BW (MHz) | Modulation | RB Size | RB offset | Mode | Test Position | Gap (mm) | Power Reduction | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 10g SAR (W/kg) | Reported 10g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1750MHz** | | | | | | | | | | | | | | | | | |
| | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Front | 0mm | Reduced | 1413 | 1732.6 | 19.60 | 20.00 | 1.096 | 0.05 | 1.030 | 1.129 |
| | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Back | 0mm | Reduced | 1413 | 1732.6 | 19.60 | 20.00 | 1.096 | 0.08 | 1.080 | 1.184 |
| | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Left Side | 0mm | Full | 1413 | 1732.6 | 21.89 | 23.00 | 1.291 | 0.06 | 0.142 | 0.183 |
| | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Right Side | 0mm | Full | 1413 | 1732.6 | 21.89 | 23.00 | 1.291 | -0.07 | 0.309 | 0.399 |
| | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Top Side | 0mm | Reduced | 1413 | 1732.6 | 19.60 | 20.00 | 1.096 | -0.02 | 0.651 | 0.714 |
| 15 | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Back | 0mm | Reduced | 1312 | 1712.4 | 19.30 | 20.00 | 1.175 | -0.04 | 1.230 | **1.445** |
| | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Back | 0mm | Reduced | 1513 | 1752.6 | 19.57 | 20.00 | 1.104 | 0.04 | 1.020 | 1.126 |
| | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Back | 13mm | Full | 1413 | 1732.6 | 21.89 | 23.00 | 1.291 | -0.12 | 0.127 | 0.164 |
| | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Top Side | 12mm | Full | 1413 | 1732.6 | 21.89 | 23.00 | 1.291 | 0.03 | 0.228 | 0.294 |
| | WCDMA IV | - | - | - | - | RMC 12.2Kbps | Front | 5mm | Full | 1413 | 1732.6 | 21.89 | 23.00 | 1.291 | 0.06 | 0.354 | 0.457 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | - | Front | 0mm | Reduced | 132322 | 1745 | 19.44 | 21.00 | 1.432 | 0.06 | 0.804 | 1.151 |
| 16 | LTE Band 66 | 20M | QPSK | 50 | 0 | - | Front | 0mm | Reduced | 132322 | 1745 | 19.40 | 21.00 | 1.445 | 0.09 | 0.903 | **1.305** |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | - | Back | 0mm | Reduced | 132322 | 1745 | 19.44 | 21.00 | 1.432 | -0.01 | 0.852 | 1.220 |
| | LTE Band 66 | 20M | QPSK | 50 | 0 | - | Back | 0mm | Reduced | 132322 | 1745 | 19.40 | 21.00 | 1.445 | 0.02 | 0.902 | 1.304 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | - | Left Side | 0mm | Full | 132322 | 1745 | 22.66 | 24.00 | 1.361 | 0.09 | 0.101 | 0.138 |
| | LTE Band 66 | 20M | QPSK | 50 | 0 | - | Left Side | 0mm | Full | 132322 | 1745 | 21.82 | 23.00 | 1.312 | -0.02 | 0.103 | 0.135 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | - | Right Side | 0mm | Full | 132322 | 1745 | 22.66 | 24.00 | 1.361 | -0.09 | 0.268 | 0.365 |
| | LTE Band 66 | 20M | QPSK | 50 | 0 | - | Right Side | 0mm | Full | 132322 | 1745 | 21.82 | 23.00 | 1.312 | 0.03 | 0.273 | 0.358 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | - | Top Side | 0mm | Reduced | 132322 | 1745 | 19.44 | 21.00 | 1.432 | 0.01 | 0.543 | 0.778 |
| | LTE Band 66 | 20M | QPSK | 50 | 0 | - | Top Side | 0mm | Reduced | 132322 | 1745 | 19.40 | 21.00 | 1.445 | 0.06 | 0.553 | 0.799 |
| | LTE Band 66 | 20M | QPSK | 50 | 0 | - | Front | 0mm | Reduced | 132072 | 1720 | 19.37 | 21.00 | 1.455 | 0.09 | 0.896 | 1.304 |
| | LTE Band 66 | 20M | QPSK | 50 | 0 | - | Front | 0mm | Reduced | 132572 | 1770 | 19.26 | 21.00 | 1.493 | 0.09 | 0.872 | 1.302 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | - | Back | 13mm | Full | 132322 | 1745 | 22.66 | 24.00 | 1.361 | -0.12 | 0.129 | 0.176 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | - | Top Side | 12mm | Full | 132322 | 1745 | 22.66 | 24.00 | 1.361 | 0.03 | 0.253 | 0.344 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | - | Front | 5mm | Full | 132322 | 1745 | 22.66 | 24.00 | 1.361 | 0.06 | 0.327 | 0.445 |
| **1900MHz** | | | | | | | | | | | | | | | | | |
| | WCDMA II | - | - | - | - | RMC 12.2Kbps | Front | 0mm | Reduced | 9400 | 1880 | 19.10 | 20.00 | 1.230 | -0.09 | 1.035 | 1.273 |
| 17 | WCDMA II | - | - | - | - | RMC 12.2Kbps | Back | 0mm | Reduced | 9400 | 1880 | 19.10 | 20.00 | 1.230 | -0.02 | 1.350 | **1.661** |
| | WCDMA II | - | - | - | - | RMC 12.2Kbps | Left Side | 0mm | Full | 9400 | 1880 | 21.99 | 23.00 | 1.262 | -0.02 | 0.261 | 0.329 |
| | WCDMA II | - | - | - | - | RMC 12.2Kbps | Right Side | 0mm | Full | 9400 | 1880 | 21.99 | 23.00 | 1.262 | 0.06 | 0.288 | 0.363 |
| | WCDMA II | - | - | - | - | RMC 12.2Kbps | Top Side | 0mm | Reduced | 9400 | 1880 | 19.10 | 20.00 | 1.230 | -0.07 | 0.388 | 0.477 |
| | WCDMA II | - | - | - | - | RMC 12.2Kbps | Back | 0mm | Reduced | 9262 | 1852.4 | 18.92 | 20.00 | 1.282 | 0.05 | 1.127 | 1.445 |
| | WCDMA II | - | - | - | - | RMC 12.2Kbps | Back | 0mm | Reduced | 9538 | 1907.6 | 18.95 | 20.00 | 1.274 | 0.15 | 1.088 | 1.386 |
| | WCDMA II | - | - | - | - | RMC 12.2Kbps | Back | 13mm | Full | 9400 | 1880 | 21.99 | 23.00 | 1.262 | -0.12 | 0.138 | 0.174 |
| | WCDMA II | - | - | - | - | RMC 12.2Kbps | Top Side | 12mm | Full | 9400 | 1880 | 21.99 | 23.00 | 1.262 | 0.03 | 0.205 | 0.259 |
| | WCDMA II | - | - | - | - | RMC 12.2Kbps | Front | 5mm | Full | 9400 | 1880 | 21.99 | 23.00 | 1.262 | 0.06 | 0.336 | 0.424 |
| | LTE Band 2 | 20M | QPSK | 1 | 0 | - | Front | 0mm | Reduced | 18900 | 1880 | 19.49 | 21.00 | 1.416 | 0.06 | 0.916 | 1.297 |
| | LTE Band 2 | 20M | QPSK | 50 | 0 | - | Front | 0mm | Reduced | 18900 | 1880 | 19.45 | 21.00 | 1.429 | -0.09 | 0.985 | 1.407 |
| | LTE Band 2 | 20M | QPSK | 1 | 0 | - | Back | 0mm | Reduced | 18900 | 1880 | 19.49 | 21.00 | 1.416 | 0.06 | 1.151 | 1.630 |
| 18 | LTE Band 2 | 20M | QPSK | 50 | 0 | - | Back | 0mm | Reduced | 18900 | 1880 | 19.45 | 21.00 | 1.429 | -0.01 | 1.170 | **1.672** |
| | LTE Band 2 | 20M | QPSK | 1 | 0 | - | Left Side | 0mm | Full | 18900 | 1880 | 22.77 | 24.00 | 1.327 | -0.09 | 0.138 | 0.183 |
| | LTE Band 2 | 20M | QPSK | 50 | 0 | - | Left Side | 0mm | Full | 18900 | 1880 | 21.67 | 23.00 | 1.358 | 0.02 | 0.140 | 0.190 |
| | LTE Band 2 | 20M | QPSK | 1 | 0 | - | Right Side | 0mm | Full | 18900 | 1880 | 22.77 | 24.00 | 1.327 | -0.05 | 0.495 | 0.658 |
| | LTE Band 2 | 20M | QPSK | 50 | 0 | - | Right Side | 0mm | Full | 18900 | 1880 | 21.67 | 23.00 | 1.358 | 0.08 | 0.476 | 0.646 |
| | LTE Band 2 | 20M | QPSK | 1 | 0 | - | Top Side | 0mm | Reduced | 18900 | 1880 | 19.49 | 21.00 | 1.416 | 0.06 | 0.518 | 0.733 |
| | LTE Band 2 | 20M | QPSK | 50 | 0 | - | Top Side | 0mm | Reduced | 18900 | 1880 | 19.45 | 21.00 | 1.429 | -0.07 | 0.535 | 0.764 |
| | LTE Band 2 | 20M | QPSK | 50 | 0 | - | Back | 0mm | Reduced | 18700 | 1860 | 19.34 | 21.00 | 1.466 | 0.01 | 1.133 | 1.660 |
| | LTE Band 2 | 20M | QPSK | 50 | 0 | - | Back | 0mm | Reduced | 19100 | 1900 | 19.17 | 21.00 | 1.524 | 0.03 | 1.080 | 1.646 |
| | LTE Band 2 | 20M | QPSK | 1 | 0 | - | Back | 13mm | Full | 18900 | 1880 | 22.77 | 24.00 | 1.327 | -0.12 | 0.147 | 0.195 |
| | LTE Band 2 | 20M | QPSK | 1 | 0 | - | Top Side | 12mm | Full | 18900 | 1880 | 22.77 | 24.00 | 1.327 | 0.03 | 0.234 | 0.311 |
| | LTE Band 2 | 20M | QPSK | 1 | 0 | - | Front | 5mm | Full | 18900 | 1880 | 22.77 | 24.00 | 1.327 | 0.06 | 0.346 | 0.459 |

| Plot No. | Band | Mode | Test Position | Gap (mm) | Antenna | Power Reduction | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Duty Cycle % | Duty Cycle Scaling Factor | Power Drift (dB) | Measured 10g SAR (W/kg) | Reported 10g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **2450MHz** | | | | | | | | | | | | | | | | |
| | WLAN2.4GHz | 802.11b 1Mbps | Front | 0mm | Ant 1 | Full | 1 | 2412 | 16.72 | 18.00 | 1.343 | 100 | 1.000 | -0.09 | 0.169 | 0.227 |
| | WLAN2.4GHz | 802.11b 1Mbps | Back | 0mm | Ant 1 | Full | 1 | 2412 | 16.72 | 18.00 | 1.343 | 100 | 1.000 | -0.09 | 0.139 | 0.187 |
| | WLAN2.4GHz | 802.11b 1Mbps | Left Side | 0mm | Ant 1 | Full | 1 | 2412 | 16.72 | 18.00 | 1.343 | 100 | 1.000 | 0.01 | 0.123 | 0.165 |
| | WLAN2.4GHz | 802.11b 1Mbps | Top Side | 0mm | Ant 1 | Full | 1 | 2412 | 16.72 | 18.00 | 1.343 | 100 | 1.000 | 0.03 | 0.109 | 0.146 |
| | WLAN2.4GHz | 802.11b 1Mbps | Front | 0mm | Ant 1 | Full | 6 | 2437 | 16.63 | 18.00 | 1.371 | 100 | 1.000 | 0.05 | 0.152 | 0.208 |
| | WLAN2.4GHz | 802.11b 1Mbps | Front | 0mm | Ant 1 | Full | 11 | 2462 | 16.66 | 18.00 | 1.361 | 100 | 1.000 | 0.05 | 0.133 | 0.181 |
| | WLAN2.4GHz | 802.11b 1Mbps | Front | 0mm | Ant 2 | Full | 11 | 2462 | 16.87 | 18.00 | 1.297 | 100 | 1.000 | 0.02 | 0.085 | 0.110 |
| | WLAN2.4GHz | 802.11b 1Mbps | Back | 0mm | Ant 2 | Full | 11 | 2462 | 16.87 | 18.00 | 1.297 | 100 | 1.000 | 0.06 | 0.214 | 0.278 |
| | WLAN2.4GHz | 802.11b 1Mbps | Right Side | 0mm | Ant 2 | Full | 11 | 2462 | 16.87 | 18.00 | 1.297 | 100 | 1.000 | -0.02 | 0.120 | 0.156 |
| | WLAN2.4GHz | 802.11b 1Mbps | Bottom Side | 0mm | Ant 2 | Full | 11 | 2462 | 16.87 | 18.00 | 1.297 | 100 | 1.000 | 0.08 | 0.095 | 0.123 |
| 19 | WLAN2.4GHz | 802.11b 1Mbps | Back | 0mm | Ant 2 | Full | 1 | 2412 | 16.82 | 18.00 | 1.312 | 100 | 1.000 | -0.11 | 0.282 | **0.370** |
| | WLAN2.4GHz | 802.11b 1Mbps | Back | 0mm | Ant 2 | Full | 6 | 2437 | 16.76 | 18.00 | 1.330 | 100 | 1.000 | 0.09 | 0.216 | 0.287 |
| 20 | Bluetooth | 1Mbps | Front | 0mm | Ant 1 | Full | 39 | 2441 | 10.25 | 10.50 | 1.059 | 77.05 | 1.298 | 0.05 | 0.029 | **0.040** |
| | Bluetooth | 1Mbps | Front | 0mm | Ant 1 | Full | 0 | 2402 | 9.44 | 10.50 | 1.276 | 77.05 | 1.298 | -0.12 | 0.023 | 0.038 |
| | Bluetooth | 1Mbps | Front | 0mm | Ant 1 | Full | 78 | 2480 | 8.77 | 10.50 | 1.489 | 77.05 | 1.298 | 0.04 | 0.020 | 0.039 |
| **5000MHz** | | | | | | | | | | | | | | | | |
| | WLAN5.3GHz | 802.11a 6Mbps | Front | 0mm | Ant 1 | Full | 56 | 5280 | 12.13 | 13.00 | 1.223 | 98.27 | 1.018 | -0.02 | 0.030 | 0.037 |
| | WLAN5.3GHz | 802.11a 6Mbps | Back | 0mm | Ant 1 | Full | 56 | 5280 | 12.13 | 13.00 | 1.223 | 98.27 | 1.018 | 0.08 | 0.047 | 0.059 |
| 21 | WLAN5.3GHz | 802.11a 6Mbps | Left Side | 0mm | Ant 1 | Full | 56 | 5280 | 12.13 | 13.00 | 1.223 | 98.27 | 1.018 | -0.19 | 0.071 | **0.089** |
| | WLAN5.3GHz | 802.11a 6Mbps | Top Side | 0mm | Ant 1 | Full | 56 | 5280 | 12.13 | 13.00 | 1.223 | 98.27 | 1.018 | 0.01 | 0.020 | 0.025 |
| | WLAN5.3GHz | 802.11a 6Mbps | Left Side | 0mm | Ant 1 | Full | 52 | 5260 | 12.03 | 13.00 | 1.250 | 98.27 | 1.018 | 0.05 | 0.068 | 0.087 |
| | WLAN5.3GHz | 802.11a 6Mbps | Left Side | 0mm | Ant 1 | Full | 64 | 5320 | 12.06 | 13.00 | 1.242 | 98.27 | 1.018 | 0.09 | 0.068 | 0.086 |
| | WLAN5.3GHz | 802.11a 6Mbps | Front | 0mm | Ant 2 | Full | 56 | 5280 | 12.57 | 13.50 | 1.238 | 98.35 | 1.017 | 0.01 | 0.010 | 0.013 |
| | WLAN5.3GHz | 802.11a 6Mbps | Back | 0mm | Ant 2 | Full | 56 | 5280 | 12.57 | 13.50 | 1.238 | 98.35 | 1.017 | 0.06 | 0.024 | 0.030 |
| | WLAN5.3GHz | 802.11a 6Mbps | Right Side | 0mm | Ant 2 | Full | 56 | 5280 | 12.57 | 13.50 | 1.238 | 98.35 | 1.017 | 0.09 | 0.027 | 0.034 |
| | WLAN5.3GHz | 802.11a 6Mbps | Bottom Side | 0mm | Ant 2 | Full | 56 | 5280 | 12.57 | 13.50 | 1.238 | 98.35 | 1.017 | 0.05 | 0.006 | 0.008 |
| | WLAN5.3GHz | 802.11a 6Mbps | Right Side | 0mm | Ant 2 | Full | 52 | 5260 | 12.47 | 13.50 | 1.267 | 98.35 | 1.017 | 0.03 | 0.021 | 0.027 |
| | WLAN5.3GHz | 802.11a 6Mbps | Right Side | 0mm | Ant 2 | Full | 64 | 5320 | 12.39 | 13.50 | 1.291 | 98.35 | 1.017 | -0.04 | 0.028 | 0.037 |
| | WLAN5.5GHz | 802.11a 6Mbps | Front | 0mm | Ant 1 | Full | 132 | 5660 | 11.96 | 13.00 | 1.272 | 98.27 | 1.018 | 0.03 | 0.009 | 0.012 |
| | WLAN5.5GHz | 802.11a 6Mbps | Back | 0mm | Ant 1 | Full | 132 | 5660 | 11.96 | 13.00 | 1.272 | 98.27 | 1.018 | -0.05 | 0.016 | 0.021 |
| | WLAN5.5GHz | 802.11a 6Mbps | Left Side | 0mm | Ant 1 | Full | 132 | 5660 | 11.96 | 13.00 | 1.272 | 98.27 | 1.018 | -0.02 | 0.005 | 0.006 |
| | WLAN5.5GHz | 802.11a 6Mbps | Top Side | 0mm | Ant 1 | Full | 132 | 5660 | 11.96 | 13.00 | 1.272 | 98.27 | 1.018 | 0.05 | 0.010 | 0.013 |
| | WLAN5.5GHz | 802.11a 6Mbps | Back | 0mm | Ant 1 | Full | 100 | 5500 | 11.80 | 13.00 | 1.320 | 98.27 | 1.018 | -0.01 | 0.017 | 0.023 |
| | WLAN5.5GHz | 802.11a 6Mbps | Back | 0mm | Ant 1 | Full | 140 | 5700 | 11.48 | 13.00 | 1.420 | 98.27 | 1.018 | 0.02 | 0.015 | 0.022 |
| | WLAN5.5GHz | 802.11a 6Mbps | Front | 0mm | Ant 2 | Full | 132 | 5660 | 12.11 | 13.00 | 1.227 | 98.35 | 1.017 | 0.08 | 0.028 | 0.035 |
| | WLAN5.5GHz | 802.11a 6Mbps | Back | 0mm | Ant 2 | Full | 132 | 5660 | 12.11 | 13.00 | 1.227 | 98.35 | 1.017 | 0.03 | 0.050 | 0.062 |
| | WLAN5.5GHz | 802.11a 6Mbps | Right Side | 0mm | Ant 2 | Full | 132 | 5660 | 12.11 | 13.00 | 1.227 | 98.35 | 1.017 | 0.06 | 0.101 | 0.126 |
| | WLAN5.5GHz | 802.11a 6Mbps | Bottom Side | 0mm | Ant 2 | Full | 132 | 5660 | 12.11 | 13.00 | 1.227 | 98.35 | 1.017 | 0.09 | 0.005 | 0.006 |
| | WLAN5.5GHz | 802.11a 6Mbps | Right Side | 0mm | Ant 2 | Full | 100 | 5500 | 11.97 | 13.00 | 1.267 | 98.35 | 1.017 | -0.05 | 0.058 | 0.075 |
| 22 | WLAN5.5GHz | 802.11a 6Mbps | Right Side | 0mm | Ant 2 | Full | 140 | 5700 | 11.97 | 13.00 | 1.267 | 98.35 | 1.017 | -0.03 | 0.124 | **0.160** |
| | WLAN5.8GHz | 802.11a 6Mbps | Front | 0mm | Ant 1 | Full | 149 | 5745 | 11.88 | 13.00 | 1.294 | 98.62 | 1.014 | -0.07 | 0.006 | 0.008 |
| | WLAN5.8GHz | 802.11a 6Mbps | Back | 0mm | Ant 1 | Full | 149 | 5745 | 11.88 | 13.00 | 1.294 | 98.62 | 1.014 | 0.05 | 0.009 | 0.012 |
| | WLAN5.8GHz | 802.11a 6Mbps | Left Side | 0mm | Ant 1 | Full | 149 | 5745 | 11.88 | 13.00 | 1.294 | 98.62 | 1.014 | -0.04 | 0.011 | 0.014 |
| | WLAN5.8GHz | 802.11a 6Mbps | Top Side | 0mm | Ant 1 | Full | 149 | 5745 | 11.88 | 13.00 | 1.294 | 98.62 | 1.014 | 0.01 | 0.006 | 0.008 |
| | WLAN5.8GHz | 802.11a 6Mbps | Left Side | 0mm | Ant 1 | Full | 157 | 5785 | 11.66 | 13.00 | 1.361 | 98.62 | 1.014 | 0.05 | 0.009 | 0.012 |
| | WLAN5.8GHz | 802.11a 6Mbps | Left Side | 0mm | Ant 1 | Full | 165 | 5825 | 11.56 | 13.00 | 1.393 | 98.62 | 1.014 | -0.05 | 0.005 | 0.007 |
| | WLAN5.8GHz | 802.11a 6Mbps | Front | 0mm | Ant 2 | Full | 149 | 5745 | 12.19 | 13.00 | 1.204 | 98.35 | 1.017 | 0.09 | 0.041 | 0.050 |
| | WLAN5.8GHz | 802.11a 6Mbps | Back | 0mm | Ant 2 | Full | 149 | 5745 | 12.19 | 13.00 | 1.204 | 98.35 | 1.017 | 0.01 | 0.080 | 0.098 |
| | WLAN5.8GHz | 802.11a 6Mbps | Right Side | 0mm | Ant 2 | Full | 149 | 5745 | 12.19 | 13.00 | 1.204 | 98.35 | 1.017 | -0.04 | 0.194 | 0.238 |
| | WLAN5.8GHz | 802.11a 6Mbps | Bottom Side | 0mm | Ant 2 | Full | 149 | 5745 | 12.19 | 13.00 | 1.204 | 98.35 | 1.017 | -0.02 | 0.005 | 0.006 |
| | WLAN5.8GHz | 802.11a 6Mbps | Right Side | 0mm | Ant 2 | Full | 157 | 5785 | 11.88 | 13.00 | 1.294 | 98.35 | 1.017 | 0.05 | 0.193 | 0.254 |
| 23 | WLAN5.8GHz | 802.11a 6Mbps | Right Side | 0mm | Ant 2 | Full | 165 | 5825 | 11.46 | 13.00 | 1.425 | 98.35 | 1.017 | -0.09 | 0.195 | **0.283** |

# 16. Simultaneous Transmission Analysis

| No. | Simultaneous Transmission Configurations | Handheld wireless data terminal | | |
|---|---|---|---|---|
| | | Hotspot | Body-worn | Limbs |
| 1. | WWAN+WIFI 2.4G SISO | Yes | Yes | Yes |
| 2. | WWAN+WIFI 2.4G MIMO | Yes | Yes | Yes |
| 3. | WWAN+ WLAN5.3/5.5GHz SISO | | Yes | Yes |
| 4. | WWAN + WLAN5.2/5.8GHz SISO | Yes | Yes | Yes |
| 5. | WWAN+ WLAN5.3/5.5GHz MIMO | | Yes | Yes |
| 6. | WWAN + WLAN5.2/5.8GHz MIMO | Yes | Yes | Yes |
| 7. | WWAN+WIFI 2.4G ANT1+ WLAN5.3/5.5GHz ANT2 | | Yes | Yes |
| 8. | WWAN+WIFI 2.4G ANT1+ WLAN5.2/5.8GHz ANT2 | Yes | Yes | Yes |
| 9. | WWAN+BT | Yes | Yes | Yes |
| 10. | BT+ WLAN5.3/5.5GHz SISO | | Yes | Yes |
| 11. | BT+ WLAN5.2/5.8GHz SISO | Yes | Yes | Yes |
| 12. | BT+ WLAN5.3/5.5GHz MIMO | | Yes | Yes |
| 13. | BT+ WLAN5.2/5.8GHz MIMO | Yes | Yes | Yes |
| 14. | WWAN+BT+ WLAN5.3/5.5GHz SISO | | Yes | Yes |
| 15. | WWAN+BT+ WLAN5.2/5.8GHz SISO | Yes | Yes | Yes |
| 16. | WWAN+BT+ WLAN5.3/5.5GHz MIMO | | Yes | Yes |
| 17. | WWAN+BT+ WLAN5.2/5.8GHz MIMO | Yes | Yes | Yes |

**General Note:**

1. EUT will choose each WCDMA and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
2. This device 2.4GHz WLAN/ 5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WLAN Direct (GC/GO), and 5.3GHz / 5.5GHz supports WLAN Direct (GC only).
3. WLAN 2.4GHz and Bluetooth share the same antenna, and cannot transmit simultaneously.
4. According to the characteristic of EUT, WLAN5GHz and Bluetooth can transmit simultaneously.
5. For simultaneously analysis, since the SAR summation of 3 transmitters can cover others combination of 2 transmitters, therefore in this section did not additional to evaluate 2TX combination of simultaneously transmission.
6. The worst case 5 GHz WLAN SAR for each configuration was used for SAR summation.
7. Chose the worst zoom scan SAR of WLAN correspondingly for co-located with WWAN analysis.
8. The reported SAR summation is calculated based on the same configuration and test position.
9. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
   i) 1g Scalar SAR summation < 1.6W/kg and 10g Scalar SAR summation < 4.0W/kg.
   ii) SPLSR = (SAR1 + SAR2)^1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of [(x1-x2)2 + (y1-y2)2 + (z1-z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
   iii) If SPLSR ≤ 0.04 for 1g SAR and SPLSR≤ 0.10 for 10g SAR , simultaneously transmission SAR measurement is not necessary.
   iv) Simultaneously transmission SAR measurement, and the reported multi-band 1g SAR < 1.6W/kg and 10g SAR < 4.0W/kg.

## 16.1 Hotspot Exposure Conditions

| WWAN Band | Exposure Position | 1 | 2 | 3 | 4 | 5 | 6 | 1+2+5 | 1+4+5+6 | 1+2+3 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | WWAN | 2.4GHz WLAN Ant 1 | 2.4GHz WLAN Ant 2 | 5GHz WLAN Ant 1 | 5GHz WLAN Ant 2 | Bluetooth Ant 1 | Summed | Summed | Summed |
| | | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | 10g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) |
| LTE Band 12 | Front | 0.298 | 0.145 | 0.043 | 0.042 | 0.078 | 0.022 | 0.52 | 0.44 | 0.49 |
| | Back | 0.369 | 0.140 | 0.091 | 0.046 | 0.080 | 0.022 | 0.59 | 0.52 | 0.60 |
| | Left side | 0.125 | 0.099 | | 0.106 | | 0.022 | 0.22 | 0.25 | 0.22 |
| | Right side | 0.071 | | 0.042 | | 0.299 | 0.022 | 0.37 | 0.39 | 0.11 |
| | Top side | 0.135 | 0.078 | | 0.045 | | 0.022 | 0.21 | 0.20 | 0.21 |
| | Bottom side | | | 0.038 | | 0.048 | 0.022 | 0.05 | 0.07 | 0.04 |
| LTE Band 13 | Front | 0.293 | 0.145 | 0.043 | 0.042 | 0.078 | 0.022 | 0.52 | 0.44 | 0.48 |
| | Back | 0.360 | 0.140 | 0.091 | 0.046 | 0.080 | 0.022 | 0.58 | 0.51 | 0.59 |
| | Left side | 0.194 | 0.099 | | 0.106 | | 0.022 | 0.29 | 0.32 | 0.29 |
| | Right side | 0.182 | | 0.042 | | 0.299 | 0.022 | 0.48 | 0.50 | 0.22 |
| | Top side | 0.172 | 0.078 | | 0.045 | | 0.022 | 0.25 | 0.24 | 0.25 |
| | Bottom side | | | 0.038 | | 0.048 | 0.022 | 0.05 | 0.07 | 0.04 |
| WCDMA V | Front | 0.610 | 0.145 | 0.043 | 0.042 | 0.078 | 0.022 | 0.83 | 0.75 | 0.80 |
| | Back | 0.766 | 0.140 | 0.091 | 0.046 | 0.080 | 0.022 | **0.99** | 0.91 | **1.00** |
| | Left side | 0.162 | 0.099 | | 0.106 | | 0.022 | 0.26 | 0.29 | 0.26 |
| | Right side | 0.117 | | 0.042 | | 0.299 | 0.022 | 0.42 | 0.44 | 0.16 |
| | Top side | 0.443 | 0.078 | | 0.045 | | 0.022 | 0.52 | 0.51 | 0.52 |
| | Bottom side | | | 0.038 | | 0.048 | 0.022 | 0.05 | 0.07 | 0.04 |
| WCDMA IV | Front | 0.422 | 0.145 | 0.043 | 0.042 | 0.078 | 0.022 | 0.65 | 0.56 | 0.61 |
| | Back | 0.443 | 0.140 | 0.091 | 0.046 | 0.080 | 0.022 | 0.66 | 0.59 | 0.67 |
| | Left side | 0.200 | 0.099 | | 0.106 | | 0.022 | 0.30 | 0.33 | 0.30 |
| | Right side | 0.168 | | 0.042 | | 0.299 | 0.022 | 0.47 | 0.49 | 0.21 |
| | Top side | 0.378 | 0.078 | | 0.045 | | 0.022 | 0.46 | 0.45 | 0.46 |
| | Bottom side | | | 0.038 | | 0.048 | 0.022 | 0.05 | 0.07 | 0.04 |
| LTE Band 66 | Front | 0.468 | 0.145 | 0.043 | 0.042 | 0.078 | 0.022 | 0.69 | 0.61 | 0.66 |
| | Back | 0.389 | 0.140 | 0.091 | 0.046 | 0.080 | 0.022 | 0.61 | 0.54 | 0.62 |
| | Left side | 0.301 | 0.099 | | 0.106 | | 0.022 | 0.40 | 0.43 | 0.40 |
| | Right side | 0.127 | | 0.042 | | 0.299 | 0.022 | 0.43 | 0.45 | 0.17 |
| | Top side | 0.332 | 0.078 | | 0.045 | | 0.022 | 0.41 | 0.40 | 0.41 |
| | Bottom side | | | 0.038 | | 0.048 | 0.022 | 0.05 | 0.07 | 0.04 |
| WCDMA II | Front | 0.469 | 0.145 | 0.043 | 0.042 | 0.078 | 0.022 | 0.69 | 0.61 | 0.66 |
| | Back | 0.368 | 0.140 | 0.091 | 0.046 | 0.080 | 0.022 | 0.59 | 0.52 | 0.60 |
| | Left side | 0.086 | 0.099 | | 0.106 | | 0.022 | 0.19 | 0.21 | 0.19 |
| | Right side | 0.204 | | 0.042 | | 0.299 | 0.022 | 0.50 | 0.53 | 0.25 |
| | Top side | 0.269 | 0.078 | | 0.045 | | 0.022 | 0.35 | 0.34 | 0.35 |
| | Bottom side | | | 0.038 | | 0.048 | 0.022 | 0.05 | 0.07 | 0.04 |
| LTE Band 2 | Front | 0.555 | 0.145 | 0.043 | 0.042 | 0.078 | 0.022 | 0.78 | 0.70 | 0.74 |
| | Back | 0.411 | 0.140 | 0.091 | 0.046 | 0.080 | 0.022 | 0.63 | 0.56 | 0.64 |
| | Left side | 0.098 | 0.099 | | 0.106 | | 0.022 | 0.20 | 0.23 | 0.20 |
| | Right side | 0.201 | | 0.042 | | 0.299 | 0.022 | 0.50 | 0.52 | 0.24 |
| | Top side | 0.293 | 0.078 | | 0.045 | | 0.022 | 0.37 | 0.36 | 0.37 |
| | Bottom side | | | 0.038 | | 0.048 | 0.022 | 0.05 | 0.07 | 0.04 |

**Sensor off**

| WWAN Band | Exposure Position | 1 | 2 | 3 | 4 | 5 | 6 | 1+2+5 | 1+4+5+6 | 1+2+3 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | WWAN | 2.4GHz WLAN Ant 1 | 2.4GHz WLAN Ant 2 | 5GHz WLAN Ant 1 | 5GHz WLAN Ant 2 | Bluetooth Ant 1 | Summed | Summed | Summed |
| | | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | 10g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) |
| LTE Band 12 | Back at 13mm | 0.317 | 0.140 | 0.091 | 0.046 | 0.080 | 0.022 | 0.54 | 0.47 | 0.55 |
| | Top side at 12mm | 0.103 | 0.078 | | 0.045 | | 0.022 | 0.18 | 0.17 | 0.18 |
| LTE Band 13 | Back at 13mm | 0.323 | 0.140 | 0.091 | 0.046 | 0.080 | 0.022 | 0.54 | 0.47 | 0.55 |
| | Top side at 12mm | 0.191 | 0.078 | | 0.045 | | 0.022 | 0.27 | 0.26 | 0.27 |
| WCDMA V | Back at 13mm | 0.639 | 0.140 | 0.091 | 0.046 | 0.080 | 0.022 | 0.86 | 0.79 | 0.87 |
| | Top side at 12mm | 0.328 | 0.078 | | 0.045 | | 0.022 | 0.41 | 0.40 | 0.41 |
| WCDMA IV | Back at 13mm | 0.276 | 0.140 | 0.091 | 0.046 | 0.080 | 0.022 | 0.50 | 0.42 | 0.51 |
| | Top side at 12mm | 0.442 | 0.078 | | 0.045 | | 0.022 | 0.52 | 0.51 | 0.52 |
| LTE Band 66 | Back at 13mm | 0.290 | 0.140 | 0.091 | 0.046 | 0.080 | 0.022 | 0.51 | 0.44 | 0.52 |
| | Top side at 12mm | 0.456 | 0.078 | | 0.045 | | 0.022 | 0.53 | 0.52 | 0.53 |
| WCDMA II | Back at 13mm | 0.285 | 0.140 | 0.091 | 0.046 | 0.080 | 0.022 | 0.51 | 0.43 | 0.52 |
| | Top side at 12mm | 0.432 | 0.078 | | 0.045 | | 0.022 | 0.57 | 0.50 | 0.57 |
| LTE Band 2 | Back at 13mm | 0.317 | 0.140 | 0.091 | 0.046 | 0.080 | 0.022 | 0.54 | 0.47 | 0.55 |
| | Top side at 12mm | 0.522 | 0.078 | | 0.045 | | 0.022 | 0.60 | 0.59 | 0.60 |

Note:
1. Chose WLAN Back/Top at 10mm as Back at 13mm, Top at 12mm SAR to do co-located with WWAN analysis.
2. Chose Bluetooth Front at 10mm as Back at 13mm, Top at 12mm SAR to do co-located with WWAN analysis.

## 16.2 Body-Worn Accessory Exposure Conditions

| WWAN Band | Exposure Position | 1 | 2 | 3 | 4 | 5 | 6 | 1+2+5 | 1+4+5+6 | 1+2+3 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | WWAN | 2.4GHz WLAN Ant 1 | 2.4GHz WLAN Ant 2 | 5GHz WLAN Ant 1 | 5GHz WLAN Ant 2 | Bluetooth Ant 1 | Summed | Summed | Summed |
| | | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) |
| LTE Band 12 | Front | 0.298 | 0.145 | 0.043 | 0.025 | 0.078 | 0.022 | 0.52 | 0.42 | 0.49 |
| | Back | 0.369 | 0.140 | 0.091 | 0.055 | 0.080 | 0.022 | 0.59 | 0.53 | 0.60 |
| LTE Band 13 | Front | 0.293 | 0.145 | 0.043 | 0.025 | 0.078 | 0.022 | 0.52 | 0.42 | 0.48 |
| | Back | 0.360 | 0.140 | 0.091 | 0.055 | 0.080 | 0.022 | 0.58 | 0.52 | 0.59 |
| WCDMA V | Front | 0.610 | 0.145 | 0.043 | 0.025 | 0.078 | 0.022 | 0.83 | 0.74 | 0.80 |
| | Back | 0.766 | 0.140 | 0.091 | 0.055 | 0.080 | 0.022 | 0.99 | 0.92 | 1.00 |
| WCDMA IV | Front | 0.422 | 0.145 | 0.043 | 0.025 | 0.078 | 0.022 | 0.65 | 0.55 | 0.61 |
| | Back | 0.443 | 0.140 | 0.091 | 0.055 | 0.080 | 0.022 | 0.66 | 0.60 | 0.67 |
| LTE Band 66 | Front | 0.468 | 0.145 | 0.043 | 0.025 | 0.078 | 0.022 | 0.69 | 0.59 | 0.66 |
| | Back | 0.389 | 0.140 | 0.091 | 0.055 | 0.080 | 0.022 | 0.61 | 0.55 | 0.62 |
| WCDMA II | Front | 0.469 | 0.145 | 0.043 | 0.025 | 0.078 | 0.022 | 0.69 | 0.59 | 0.66 |
| | Back | 0.368 | 0.140 | 0.091 | 0.055 | 0.080 | 0.022 | 0.59 | 0.53 | 0.60 |
| LTE Band 2 | Front | 0.555 | 0.145 | 0.043 | 0.025 | 0.078 | 0.022 | 0.78 | 0.68 | 0.74 |
| | Back | 0.411 | 0.140 | 0.091 | 0.055 | 0.080 | 0.022 | 0.63 | 0.57 | 0.64 |

**Sensor off**

| WWAN Band | Exposure Position | 1 | 2 | 3 | 4 | 5 | 6 | 1+2+5 | 1+4+5+6 | 1+2+3 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | WWAN | 2.4GHz WLAN Ant 1 | 2.4GHz WLAN Ant 2 | 5GHz WLAN Ant 1 | 5GHz WLAN Ant 2 | Bluetooth Ant 1 | Summed | Summed | Summed |
| | | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) |
| LTE Band 12 | Back at 13mm | 0.317 | 0.140 | 0.091 | 0.055 | 0.080 | 0.022 | 0.54 | 0.47 | 0.55 |
| LTE Band 13 | Back at 13mm | 0.323 | 0.140 | 0.091 | 0.055 | 0.080 | 0.022 | 0.54 | 0.48 | 0.55 |
| WCDMA V | Back at 13mm | 0.639 | 0.140 | 0.091 | 0.055 | 0.080 | 0.022 | 0.86 | 0.80 | 0.87 |
| WCDMA IV | Back at 13mm | 0.276 | 0.140 | 0.091 | 0.055 | 0.080 | 0.022 | 0.50 | 0.43 | 0.51 |
| LTE Band 66 | Back at 13mm | 0.290 | 0.140 | 0.091 | 0.055 | 0.080 | 0.022 | 0.51 | 0.45 | 0.52 |
| WCDMA II | Back at 13mm | 0.285 | 0.140 | 0.091 | 0.055 | 0.080 | 0.022 | 0.51 | 0.44 | 0.52 |
| LTE Band 2 | Back at 13mm | 0.317 | 0.140 | 0.091 | 0.055 | 0.080 | 0.022 | 0.54 | 0.47 | 0.55 |

Note:
1. Chose WLAN Back at 10mm as Back at 13mm SAR to do co-located with WWAN analysis.
2. Chose Bluetooth Front at 10mm as Back at 13mm SAR to do co-located with WWAN analysis.

## 16.3 Limbs Exposure Conditions

| WWAN Band | Exposure Position | 1 | 2 | 3 | 4 | 5 | 6 | 1+2+5 | 1+4+5+6 | 1+2+3 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | WWAN | 2.4GHz WLAN Ant 1 | 2.4GHz WLAN Ant 2 | 5GHz WLAN Ant 1 | 5GHz WLAN Ant 2 | Bluetooth Ant 1 | Summed | Summed | Summed |
| | | 10g SAR (W/kg) | 10g SAR (W/kg) | 10g SAR (W/kg) | 10g SAR (W/kg) | 10g SAR (W/kg) | 10g SAR (W/kg) | 10g SAR (W/kg) | 10g SAR (W/kg) | 10g SAR (W/kg) |
| LTE Band 12 | Front | 1.131 | 0.227 | 0.110 | 0.037 | 0.050 | 0.040 | 1.41 | 1.26 | 1.47 |
| | Back | 0.809 | 0.187 | 0.370 | 0.059 | 0.098 | 0.040 | 1.09 | 1.01 | 1.37 |
| | Left side | 0.188 | 0.165 | | 0.089 | | 0.040 | 0.35 | 0.32 | 0.35 |
| | Right side | 0.090 | | 0.156 | | 0.283 | 0.040 | 0.37 | 0.41 | 0.25 |
| | Top side | 0.311 | 0.146 | | 0.025 | | 0.040 | 0.46 | 0.38 | 0.46 |
| | Bottom side | | | 0.123 | | 0.008 | 0.040 | 0.01 | 0.05 | 0.12 |
| LTE Band 13 | Front | 0.735 | 0.227 | 0.110 | 0.037 | 0.050 | 0.040 | 1.01 | 0.86 | 1.07 |
| | Back | 1.221 | 0.187 | 0.370 | 0.059 | 0.098 | 0.040 | 1.51 | 1.42 | 1.78 |
| | Left side | 0.087 | 0.165 | | 0.089 | | 0.040 | 0.25 | 0.22 | 0.25 |
| | Right side | 0.271 | | 0.156 | | 0.283 | 0.040 | 0.55 | 0.59 | 0.43 |
| | Top side | 0.798 | 0.146 | | 0.025 | | 0.040 | 0.94 | 0.86 | 0.94 |
| | Bottom side | | | 0.123 | | 0.008 | 0.040 | 0.01 | 0.05 | 0.12 |
| WCDMA V | Front | 0.941 | 0.227 | 0.110 | 0.037 | 0.050 | 0.040 | 1.22 | 1.07 | 1.28 |
| | Back | 1.118 | 0.187 | 0.370 | 0.059 | 0.098 | 0.040 | 1.40 | 1.32 | 1.68 |
| | Left side | 0.145 | 0.165 | | 0.089 | | 0.040 | 0.31 | 0.27 | 0.31 |
| | Right side | 0.171 | | 0.156 | | 0.283 | 0.040 | 0.45 | 0.49 | 0.33 |
| | Top side | 0.345 | 0.146 | | 0.025 | | 0.040 | 0.49 | 0.41 | 0.49 |
| | Bottom side | | | 0.123 | | 0.008 | 0.040 | 0.01 | 0.05 | 0.12 |
| WCDMA IV | Front | 1.129 | 0.227 | 0.110 | 0.037 | 0.050 | 0.040 | 1.41 | 1.26 | 1.47 |
| | Back | 1.445 | 0.187 | 0.370 | 0.059 | 0.098 | 0.040 | 1.73 | 1.64 | 2.00 |
| | Left side | 0.183 | 0.165 | | 0.089 | | 0.040 | 0.35 | 0.31 | 0.35 |
| | Right side | 0.399 | | 0.156 | | 0.283 | 0.040 | 0.68 | 0.72 | 0.56 |
| | Top side | 0.714 | 0.146 | | 0.025 | | 0.040 | 0.86 | 0.78 | 0.86 |
| | Bottom side | | | 0.123 | | 0.008 | 0.040 | 0.01 | 0.05 | 0.12 |
| LTE Band 66 | Front | 1.305 | 0.227 | 0.110 | 0.037 | 0.050 | 0.040 | 1.58 | 1.43 | 1.64 |
| | Back | 1.304 | 0.187 | 0.370 | 0.059 | 0.098 | 0.040 | 1.59 | 1.50 | 1.86 |
| | Left side | 0.138 | 0.165 | | 0.089 | | 0.040 | 0.30 | 0.27 | 0.30 |
| | Right side | 0.365 | | 0.156 | | 0.283 | 0.040 | 0.65 | 0.69 | 0.52 |
| | Top side | 0.799 | 0.146 | | 0.025 | | 0.040 | 0.95 | 0.86 | 0.95 |
| | Bottom side | | | 0.123 | | 0.008 | 0.040 | 0.01 | 0.05 | 0.12 |
| WCDMA II | Front | 1.273 | 0.227 | 0.110 | 0.037 | 0.050 | 0.040 | 1.55 | 1.40 | 1.61 |
| | Back | 1.661 | 0.187 | 0.370 | 0.059 | 0.098 | 0.040 | 1.95 | 1.86 | 2.22 |
| | Left side | 0.329 | 0.165 | | 0.089 | | 0.040 | 0.49 | 0.46 | 0.49 |
| | Right side | 0.363 | | 0.156 | | 0.283 | 0.040 | 0.65 | 0.69 | 0.52 |
| | Top side | 0.477 | 0.146 | | 0.025 | | 0.040 | 0.62 | 0.54 | 0.62 |
| | Bottom side | | | 0.123 | | 0.008 | 0.040 | 0.01 | 0.05 | 0.12 |
| LTE Band 2 | Front | 1.407 | 0.227 | 0.110 | 0.037 | 0.050 | 0.040 | 1.68 | 1.53 | 1.74 |
| | Back | 1.672 | 0.187 | 0.370 | 0.059 | 0.098 | 0.040 | **1.96** | **1.87** | **2.23** |
| | Left side | 0.190 | 0.165 | | 0.089 | | 0.040 | 0.36 | 0.32 | 0.36 |
| | Right side | 0.658 | | 0.156 | | 0.283 | 0.040 | 0.94 | 0.98 | 0.81 |
| | Top side | 0.764 | 0.146 | | 0.025 | | 0.040 | 0.91 | 0.83 | 0.91 |
| | Bottom side | | | 0.123 | | 0.008 | 0.040 | 0.01 | 0.05 | 0.12 |

**Sensor off**

| WWAN Band | Exposure Position | 1 | 2 | 3 | 4 | 5 | 6 | 1+2+5 | 1+4+5+6 | 1+2+3 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | WWAN | 2.4GHz WLAN Ant 1 | 2.4GHz WLAN Ant 2 | 5GHz WLAN Ant 1 | 5GHz WLAN Ant 2 | Bluetooth Ant 1 | Summed | Summed | Summed |
| | | 10g SAR (W/kg) | 10g SAR (W/kg) | 10g SAR (W/kg) | 10g SAR (W/kg) | 10g SAR (W/kg) | 10g SAR (W/kg) | 10g SAR (W/kg) | 10g SAR (W/kg) | 10g SAR (W/kg) |
| LTE Band 12 | Front at 5mm | 0.297 | 0.227 | 0.110 | 0.037 | 0.050 | 0.040 | 0.57 | 0.42 | 0.63 |
| | Back at 13mm | 0.222 | 0.187 | 0.370 | 0.059 | 0.098 | 0.040 | 0.51 | 0.42 | 0.78 |
| | Top side at 12mm | 0.071 | 0.146 | | 0.025 | | 0.040 | 0.22 | 0.14 | 0.22 |
| LTE Band 13 | Front at 5mm | 0.621 | 0.227 | 0.110 | 0.037 | 0.050 | 0.040 | 0.90 | 0.75 | 0.96 |
| | Back at 13mm | 0.222 | 0.187 | 0.370 | 0.059 | 0.098 | 0.040 | 0.51 | 0.42 | 0.78 |
| | Top side at 12mm | 0.102 | 0.146 | | 0.025 | | 0.040 | 0.25 | 0.17 | 0.25 |
| WCDMA V | Front at 5mm | 0.833 | 0.227 | 0.110 | 0.037 | 0.050 | 0.040 | 1.11 | 0.96 | 1.17 |
| | Back at 13mm | 0.427 | 0.187 | 0.370 | 0.059 | 0.098 | 0.040 | 0.71 | 0.62 | 0.98 |
| | Top side at 12mm | 0.214 | 0.146 | | 0.025 | | 0.040 | 0.36 | 0.28 | 0.36 |
| WCDMA IV | Front at 5mm | 0.457 | 0.227 | 0.110 | 0.037 | 0.050 | 0.040 | 0.73 | 0.58 | 0.79 |
| | Back at 13mm | 0.164 | 0.187 | 0.370 | 0.059 | 0.098 | 0.040 | 0.45 | 0.36 | 0.72 |
| | Top side at 12mm | 0.294 | 0.146 | | 0.025 | | 0.040 | 0.44 | 0.36 | 0.44 |
| LTE Band 66 | Front at 5mm | 0.445 | 0.227 | 0.110 | 0.037 | 0.050 | 0.040 | 0.72 | 0.57 | 0.78 |
| | Back at 13mm | 0.176 | 0.187 | 0.370 | 0.059 | 0.098 | 0.040 | 0.46 | 0.37 | 0.73 |
| | Top side at 12mm | 0.344 | 0.146 | | 0.025 | | 0.040 | 0.49 | 0.41 | 0.49 |
| WCDMA II | Front at 5mm | 0.424 | 0.227 | 0.110 | 0.037 | 0.050 | 0.040 | 0.70 | 0.55 | 0.76 |
| | Back at 13mm | 0.174 | 0.187 | 0.370 | 0.059 | 0.098 | 0.040 | 0.46 | 0.37 | 0.73 |
| | Top side at 12mm | 0.259 | 0.146 | | 0.025 | | 0.040 | 0.41 | 0.32 | 0.41 |
| LTE Band 2 | Front at 5mm | 0.459 | 0.227 | 0.110 | 0.037 | 0.050 | 0.040 | 0.74 | 0.59 | 0.80 |
| | Back at 13mm | 0.195 | 0.187 | 0.370 | 0.059 | 0.098 | 0.040 | 0.48 | 0.39 | 0.75 |
| | Top side at 12mm | 0.311 | 0.146 | | 0.025 | | 0.040 | 0.46 | 0.38 | 0.46 |

Note:
1. Chose WLAN Front/Back/Top at 0mm as Front at 5mm, Back at 13mm, Top at 12mm SAR to do co-located with WWAN analysis.
2. Chose Bluetooth Front at 0mm as Front at 5mm, Back at 13mm, Top at 12mm SAR to do co-located with WWAN analysis.

**Test Engineer :** Nick Hu, Seven Xu, Bruce Li

# 17. Uncertainty Assessment

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k = 2. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. For this device, the highest measured 1-g SAR is less 1.5W/kg and highest measured 10-g SAR is less 3.75W/kg. Therefore, the measurement uncertainty table is not required in this report.

## 18. References


[1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”

[2] ANSI/IEEE Std. C95.1-1992, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, September 1992

[3] IEEE Std. 1528-2013, “IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, Sep 2013

[4] SPEAG DASY System Handbook

[5] FCC KDB 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.

[6] FCC KDB 616217 D04 v01r02, “SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers”, Oct 2015

[7] FCC KDB 447498 D01 v06, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Oct 2015

[8] FCC KDB 941225 D01 v03r01, “3G SAR MEAUREMENT PROCEDURES”, Oct 2015

[9] FCC KDB 941225 D05 v02r05, “SAR Evaluation Considerations for LTE Devices”, Dec 2015

[10] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.

[11] FCC KDB 865664 D02 v01r02, “RF Exposure Compliance Reporting and Documentation Considerations” Oct 2015.


------THE END------

# Appendix A. Plots of System Performance Check

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.7.25

**System Check_Head_750MHz**

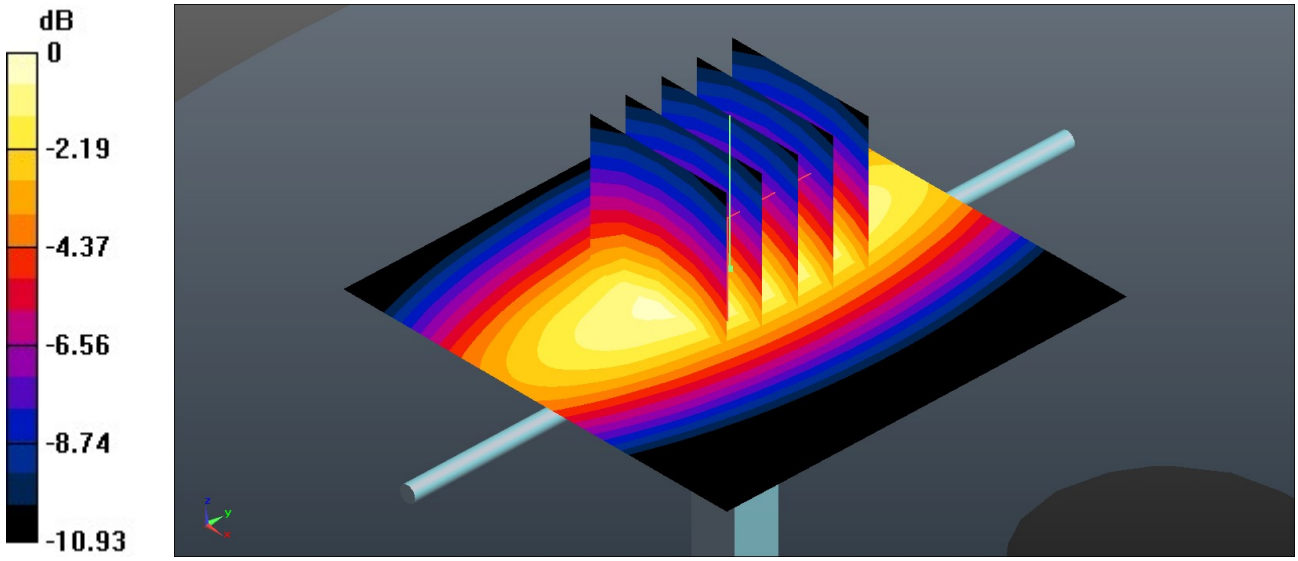
**DUT: D750V3 - SN:1087**

Communication System: UID 0, CW (0); Frequency: 750 MHz;Duty Cycle: 1:1
Medium: HSL_750 Medium parameters used: f = 750 MHz; $\sigma$ = 0.919 S/m; $\varepsilon_r$ = 43.619; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.3 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(9.06, 9.06, 9.06); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn799; Calibrated: 2021.3.26
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1754
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Pin=50mW/Area Scan (61x61x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.573 W/kg

**Pin=50mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.10 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.669 W/kg
**SAR(1 g) = 0.438 W/kg; SAR(10 g) = 0.285 W/kg**
Maximum value of SAR (measured) = 0.592 W/kg




0 dB = 0.592 W/kg = -2.28 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.7.27

**System Check_Head_835MHz**

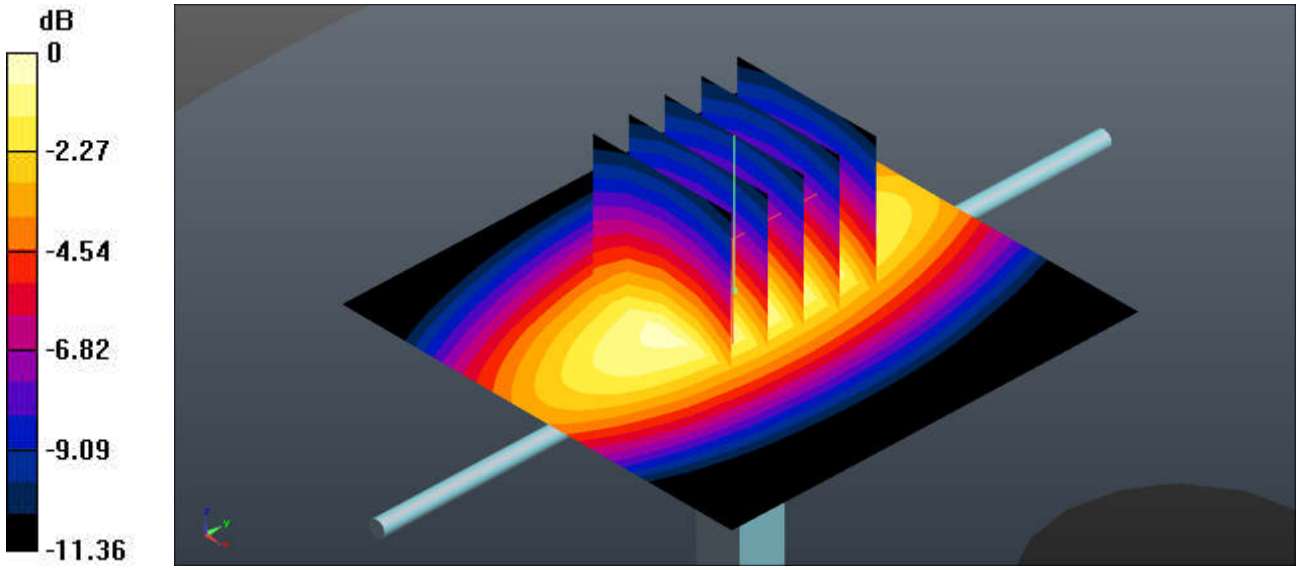
**DUT: D835V2 - SN:4d258**

Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_835 Medium parameters used: f = 835 MHz; $\sigma$ = 0.935 S/m; $\varepsilon_r$ = 42.53; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.3 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(8.69, 8.69, 8.69); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn799; Calibrated: 2021.3.26
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1754
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Pin=50mW/Area Scan (61x61x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.720 W/kg

**Pin=50mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.41 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.833 W/kg
**SAR(1 g) = 0.453 W/kg; SAR(10 g) = 0.295 W/kg**
Maximum value of SAR (measured) = 0.730 W/kg




0 dB = 0.730 W/kg = -1.37 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.7.29

**System Check_Head_1750MHz**

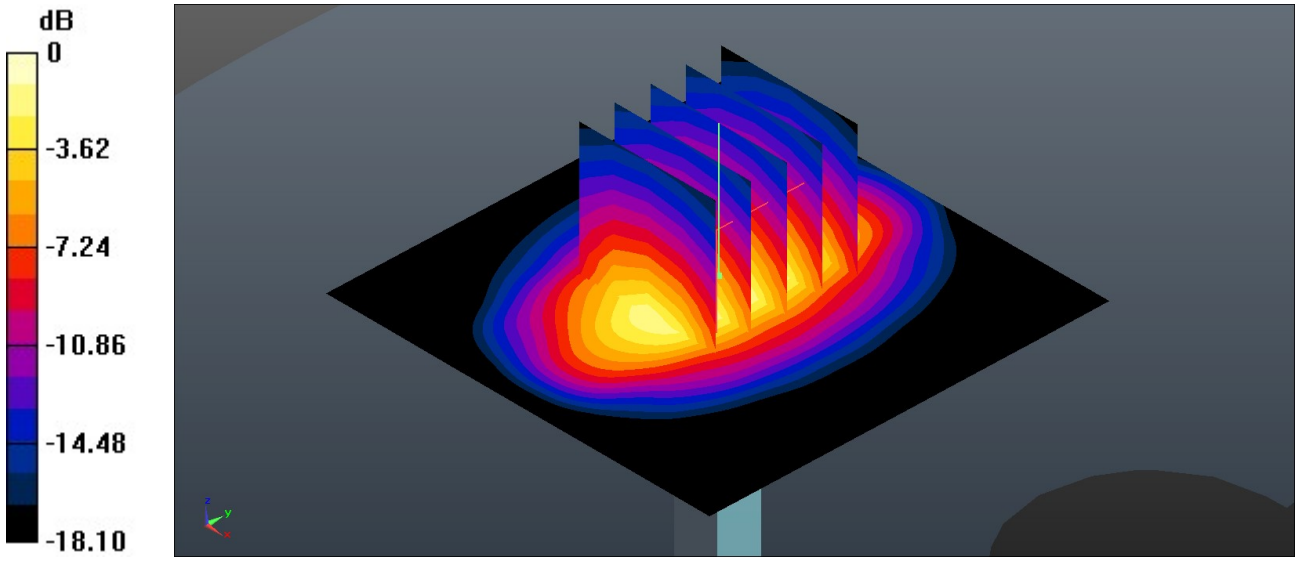
**DUT: D1750V2 - SN:1090**

Communication System: UID 0, CW (0); Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: HSL_1750 Medium parameters used: f = 1750 MHz; $\sigma$ = 1.345 S/m; $\varepsilon_r$ = 40.533; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.1 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(7.72, 7.72, 7.72); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn799; Calibrated: 2021.3.26
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1754
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Pin=50mW/Area Scan (61x61x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.91 W/kg

**Pin=50mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 45.43 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 3.59 W/kg
**SAR(1 g) = 1.89 W/kg; SAR(10 g) = 0.988 W/kg**
Maximum value of SAR (measured) = 2.98 W/kg




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

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.7.31

**System Check_Head_1900MHz**

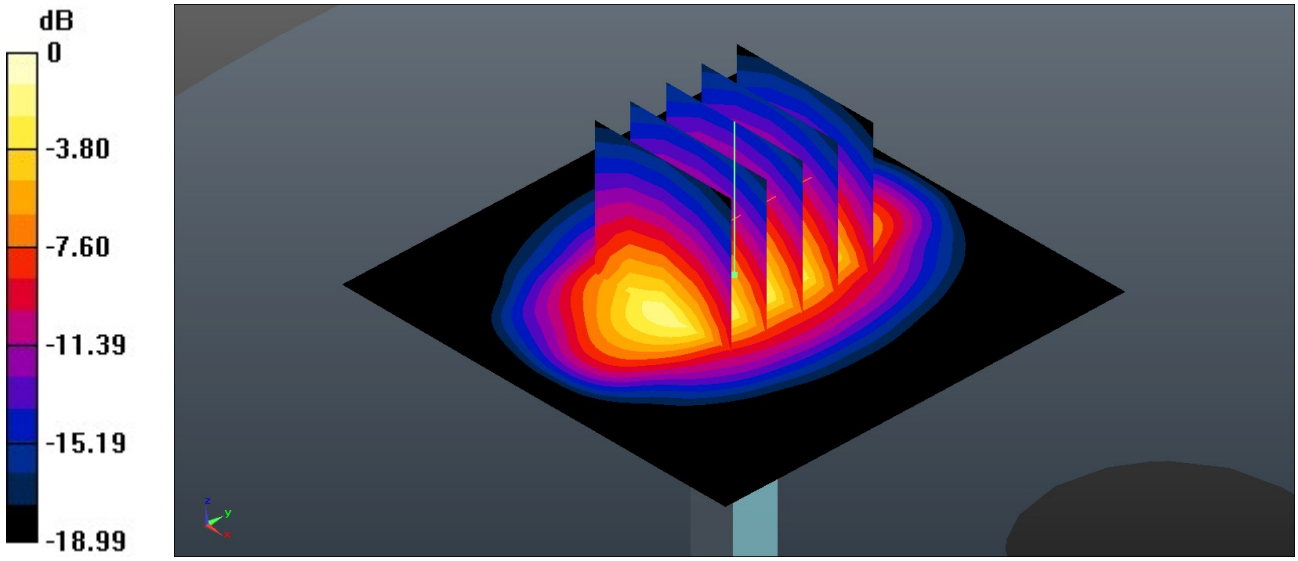
**DUT: D1900V2 - SN:5d170**

Communication System: UID 0, CW (0); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1900 MHz; $\sigma$ = 1.44 S/m; $\varepsilon_r$ = 40.287; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.4 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(7.41, 7.41, 7.41); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn799; Calibrated: 2021.3.26
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1754
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Pin=50mW/Area Scan (61x61x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.43 W/kg

**Pin=50mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 47.81 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 4.31 W/kg
**SAR(1 g) = 2.10 W/kg; SAR(10 g) = 1.09 W/kg**
Maximum value of SAR (measured) = 3.53 W/kg




0 dB = 3.53 W/kg = 5.48 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.8.2

**System Check_Head_2450MHz**

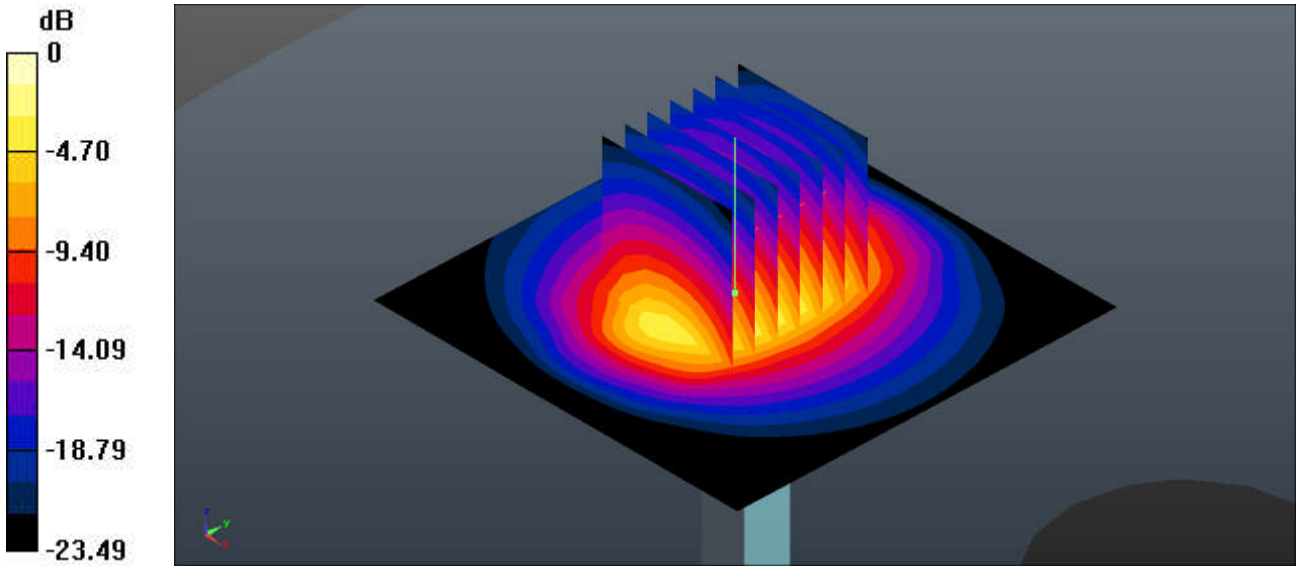
**DUT: D2450V2 - SN:908**

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL_2450 Medium parameters used: f = 2450 MHz; $\sigma$ = 1.87 S/m; $\varepsilon_r$ = 40.62; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.2 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(6.85, 6.85, 6.85); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn799; Calibrated: 2021.3.26
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1754
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Pin=50mW/Area Scan (71x71x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 5.17 W/kg

**Pin=50mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 50.06 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 6.49 W/kg
**SAR(1 g) = 2.81 W/kg; SAR(10 g) = 1.28 W/kg**
Maximum value of SAR (measured) = 5.10 W/kg




0 dB = 5.10 W/kg = 7.08 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.8.4

**System Check_Head_5250MHz**

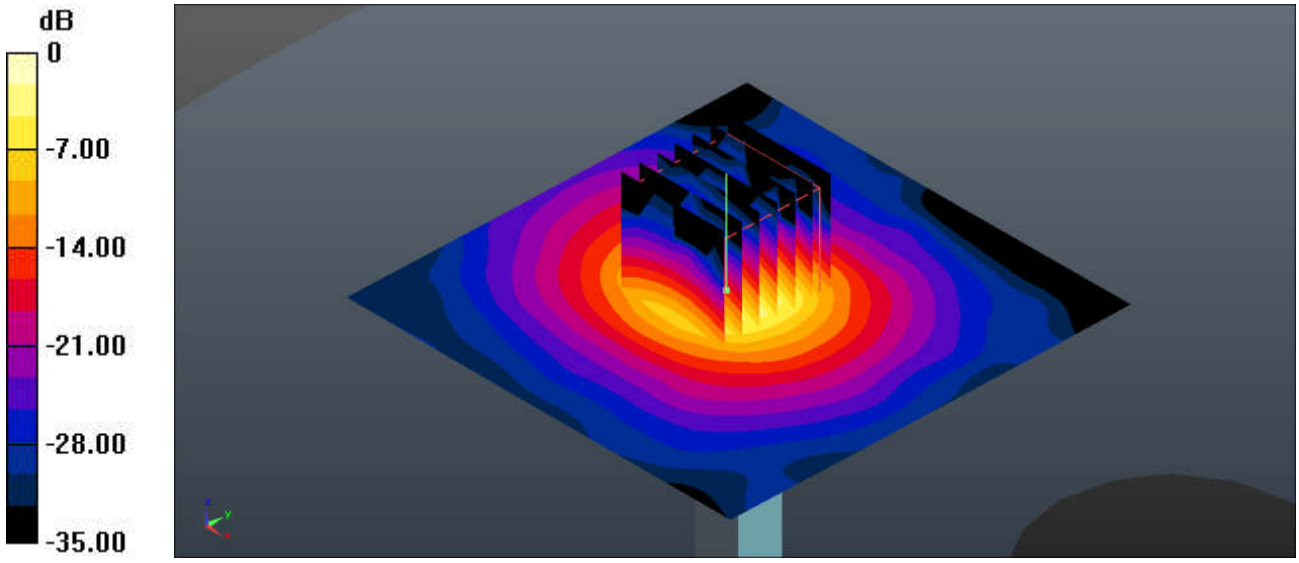
**DUT: D5GHzV2 - SN:1113**

Communication System: UID 0, CW (0); Frequency: 5250 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5250 MHz; $\sigma$ = 4.603 S/m; $\varepsilon_r$ = 36.241; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.3 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(4.66, 4.66, 4.66); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn799; Calibrated: 2021.3.26
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1754
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Pin=50mW/Area Scan (91x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 10.6 W/kg

**Pin=50mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 48.76 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 17.9 W/kg
**SAR(1 g) = 4.34 W/kg; SAR(10 g) = 1.24 W/kg**
Maximum value of SAR (measured) = 11.3 W/kg




0 dB = 11.3 W/kg = 10.53 dBW/kg

**System Check_Head_5600MHz**

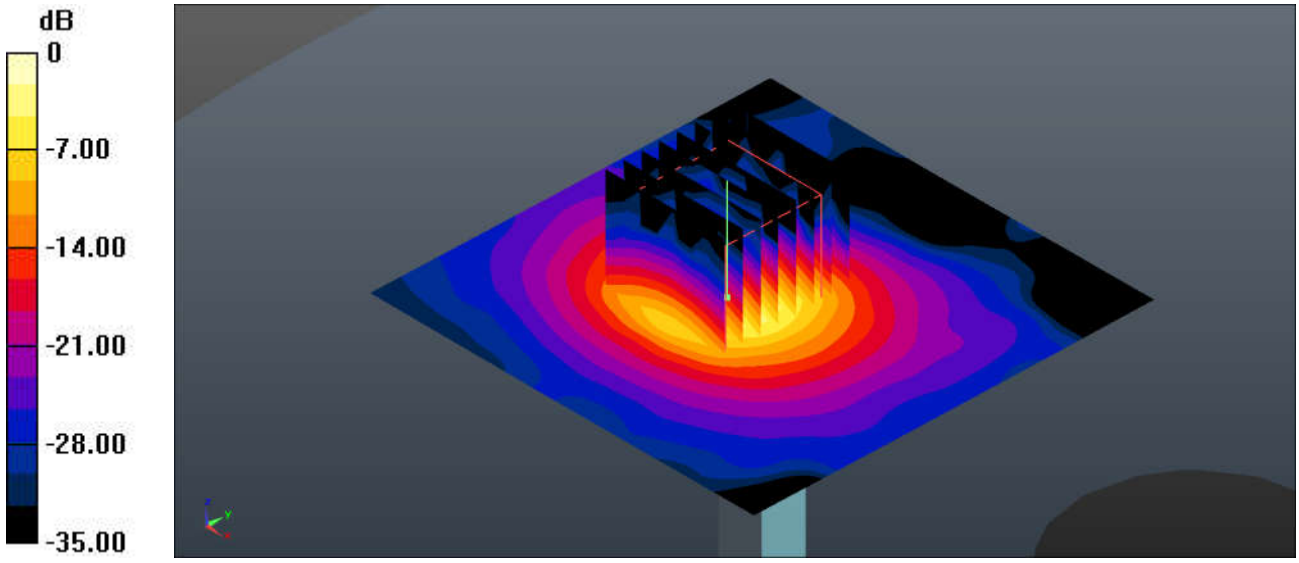
**DUT: D5GHzV2 - SN:1113**

Communication System: UID 0, CW (0); Frequency: 5600 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5600 MHz; $\sigma$ = 4.982 S/m; $\varepsilon_r$ = 35.683; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.2 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(4.3, 4.3, 4.3); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn799; Calibrated: 2021.3.26
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1754
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Pin=50mW/Area Scan (91x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 11.1 W/kg

**Pin=50mW/Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 43.53 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 19.1 W/kg
**SAR(1 g) = 4.45 W/kg; SAR(10 g) = 1.27 W/kg**
Maximum value of SAR (measured) = 11.3 W/kg




0 dB = 11.3 W/kg = 10.53 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.8.8

**System Check_Head_5750MHz**

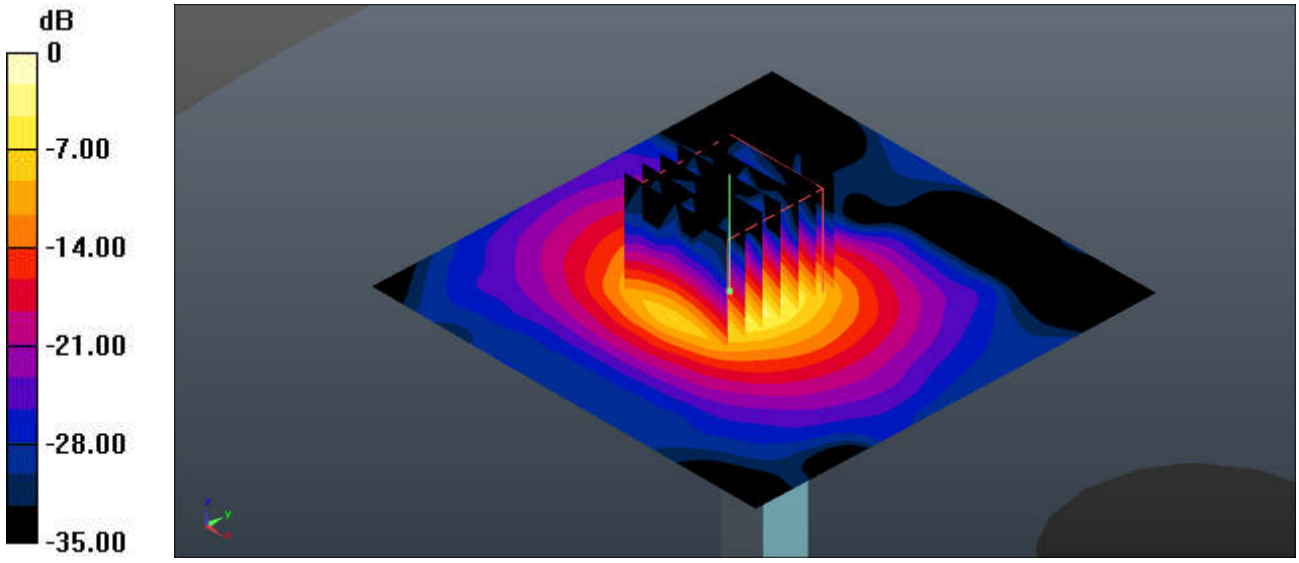
**DUT: D5GHzV2 - SN:1113**

Communication System: UID 0, CW (0); Frequency: 5750 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5750 MHz; $\sigma$ = 5.155 S/m; $\varepsilon_r$ = 35.527; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.1 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(4.35, 4.35, 4.35); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn799; Calibrated: 2021.3.26
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1754
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Pin=50mW/Area Scan (91x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 10.7 W/kg

**Pin=50mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 41.77 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 18.9 W/kg
**SAR(1 g) = 4.29 W/kg; SAR(10 g) = 1.23 W/kg**
Maximum value of SAR (measured) = 10.8 W/kg




0 dB = 10.8 W/kg = 10.33 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.9.13

**System Check_Head_5250MHz**

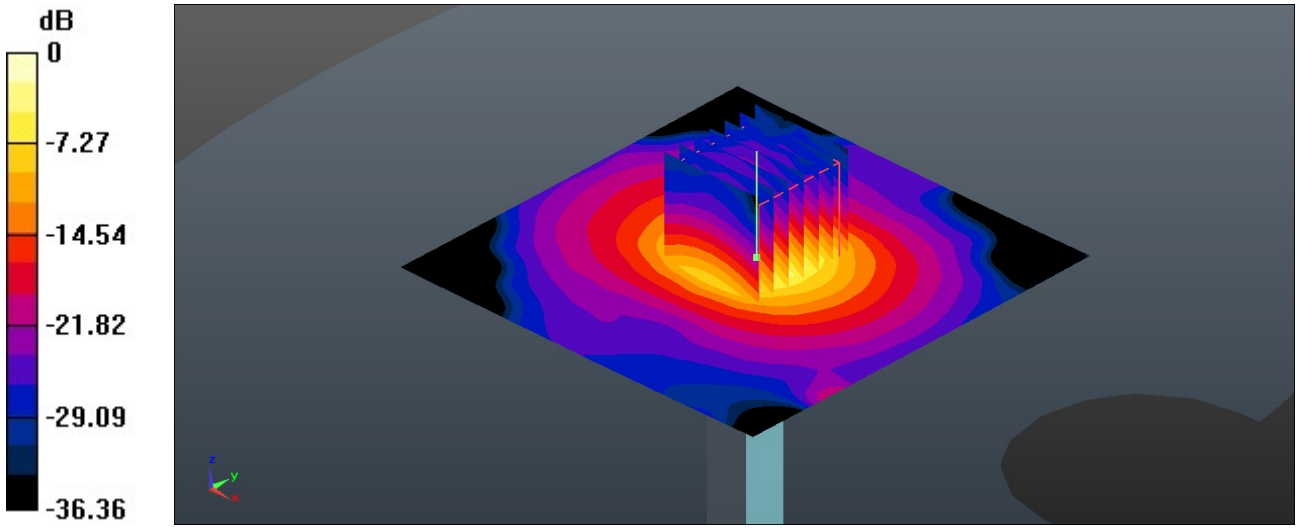
**DUT: D5GHzV2 - SN:1113**

Communication System: UID 0, CW (0); Frequency: 5250 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5250 MHz; $\sigma$ = 4.594 S/m; $\varepsilon_r$ = 36.251; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.2 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7592; ConvF(5.38, 5.38, 5.38); Calibrated: 2021.6.24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2021.6.18
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Pin=50mW/Area Scan (91x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 8.52 W/kg

**Pin=50mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 46.57 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 15.3 W/kg
**SAR(1 g) = 3.84 W/kg; SAR(10 g) = 1.1 W/kg**
Maximum value of SAR (measured) = 9.63 W/kg




0 dB = 9.63 W/kg = 9.84 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.9.13

**System Check_Head_5600MHz**

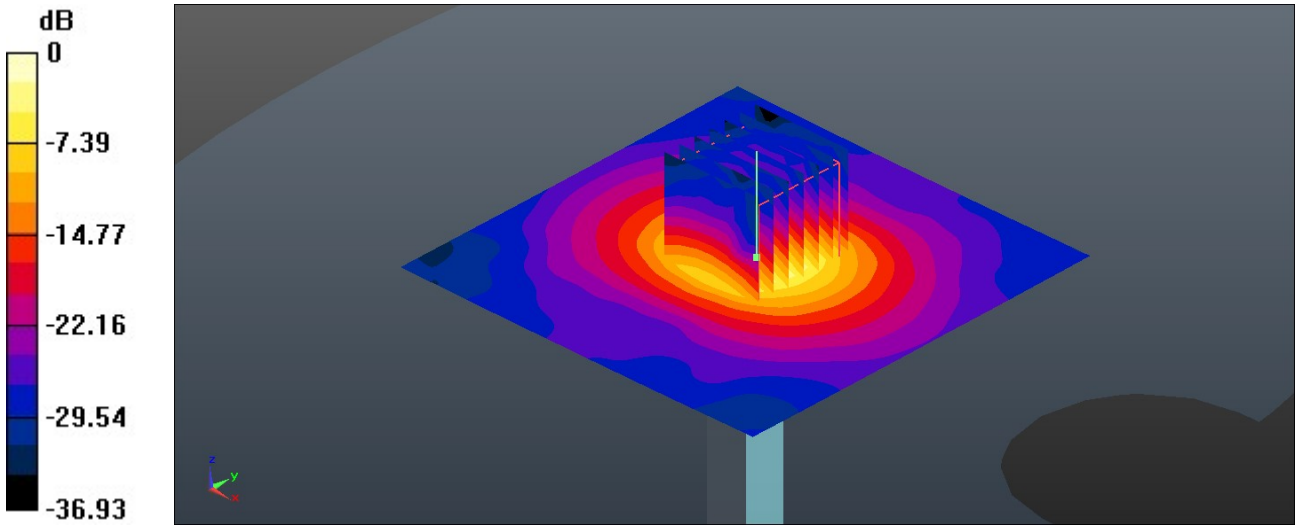
**DUT: D5GHzV2 - SN:1113**

Communication System: UID 0, CW (0); Frequency: 5600 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5600 MHz; $\sigma$ = 4.973 S/m; $\varepsilon_r$ = 35.717; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.3 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7592; ConvF(4.68, 4.68, 4.68); Calibrated: 2021.6.24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2021.6.18
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Pin=50mW/Area Scan (91x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 10.0 W/kg

**Pin=50mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 48.75 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 18.9 W/kg
**SAR(1 g) = 4.28 W/kg; SAR(10 g) = 1.22 W/kg**
Maximum value of SAR (measured) = 11.1 W/kg




0 dB = 11.1 W/kg = 10.45 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.9.14

**System Check_Head_5750MHz**

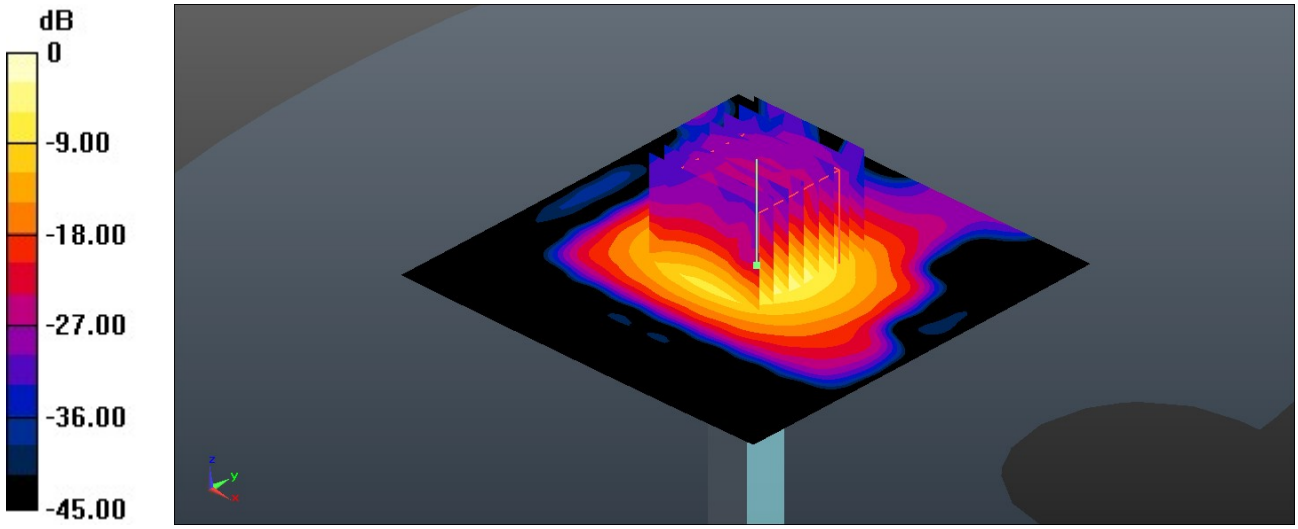
**DUT: D5GHzV2 - SN:1113**

Communication System: UID 0, CW (0); Frequency: 5750 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5750 MHz; $\sigma$ = 5.148 S/m; $\varepsilon_r$ = 35.533; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.3 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7592; ConvF(4.82, 4.82, 4.82); Calibrated: 2021.6.24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2021.6.18
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Pin=50mW/Area Scan (91x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 9.37 W/kg

**Pin=50mW/Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 46.81 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 18.4 W/kg
**SAR(1 g) = 4.06 W/kg; SAR(10 g) = 1.11 W/kg**
Maximum value of SAR (measured) = 10.6 W/kg




0 dB = 10.6 W/kg = 10.25 dBW/kg

# Appendix B. Plots of High SAR Measurement

The plots are shown as follows.

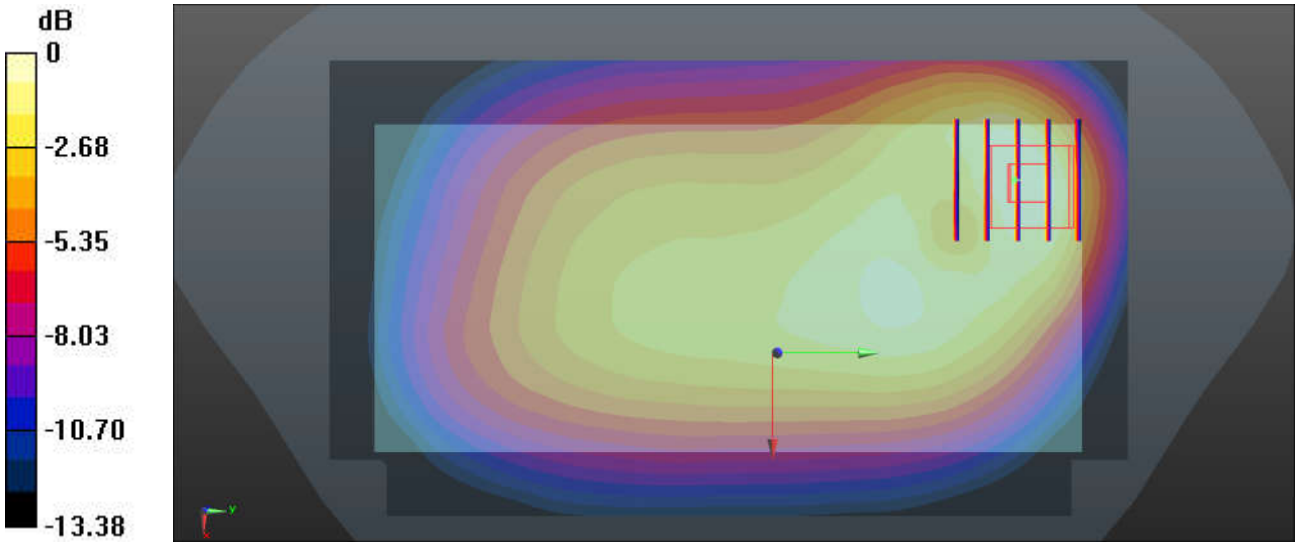
**01_LTE Band 12_10M_QPSK_1RB_0Offset_Back_10mm_Ch23095**

Communication System: UID 0, LTE-FDD (0); Frequency: 707.5 MHz;Duty Cycle: 1:1
Medium: HSL_750 Medium parameters used: f = 707.5 MHz; $\sigma$ = 0.908 S/m; $\varepsilon_r$ = 43.779; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.3 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(9.06, 9.06, 9.06); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn799; Calibrated: 2021.3.26
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1754
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Area Scan (81x141x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.360 W/kg

**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.69 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.435 W/kg
**SAR(1 g) = 0.255 W/kg; SAR(10 g) = 0.151 W/kg**
Maximum value of SAR (measured) = 0.352 W/kg




0 dB = 0.352 W/kg = -4.53 dBW/kg

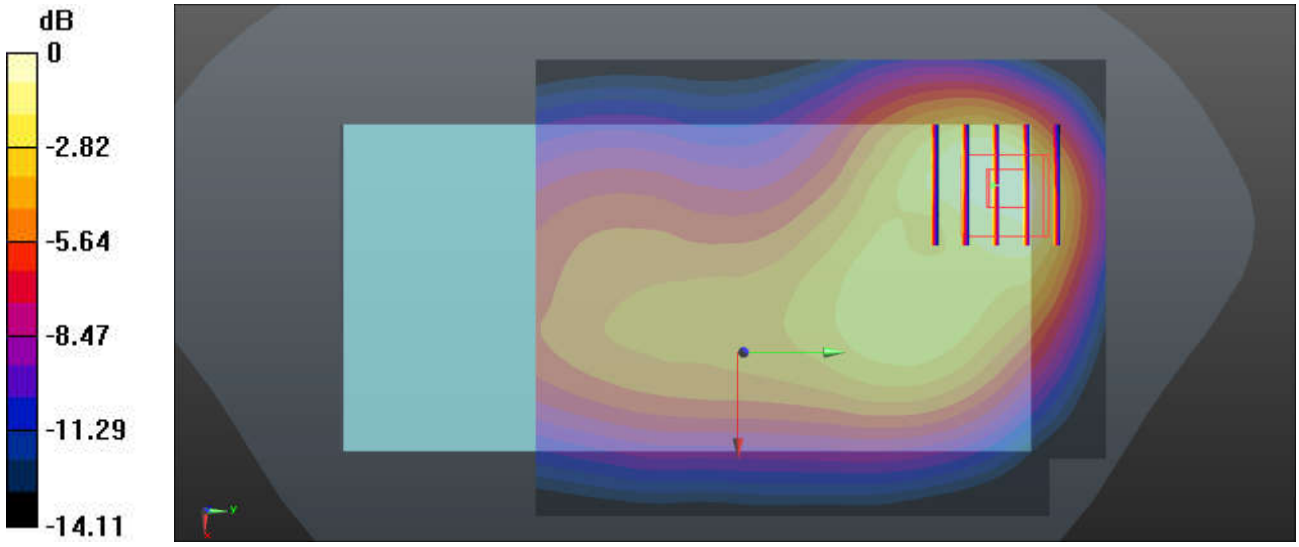
**02_LTE Band 13_10M_QPSK_1RB_0Offset_Back_10mm_Ch23230**

Communication System: UID 0, LTE-FDD (0); Frequency: 782 MHz;Duty Cycle: 1:1
Medium: HSL_750 Medium parameters used: f = 782 MHz; $\sigma$ = 0.932 S/m; $\varepsilon_r$ = 43.602; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.3 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(9.06, 9.06, 9.06); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn799; Calibrated: 2021.3.26
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1754
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Area Scan (81x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.372 W/kg

**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.21 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.444 W/kg
**SAR(1 g) = 0.264 W/kg; SAR(10 g) = 0.158 W/kg**
Maximum value of SAR (measured) = 0.370 W/kg




0 dB = 0.370 W/kg = -4.32 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.7.27

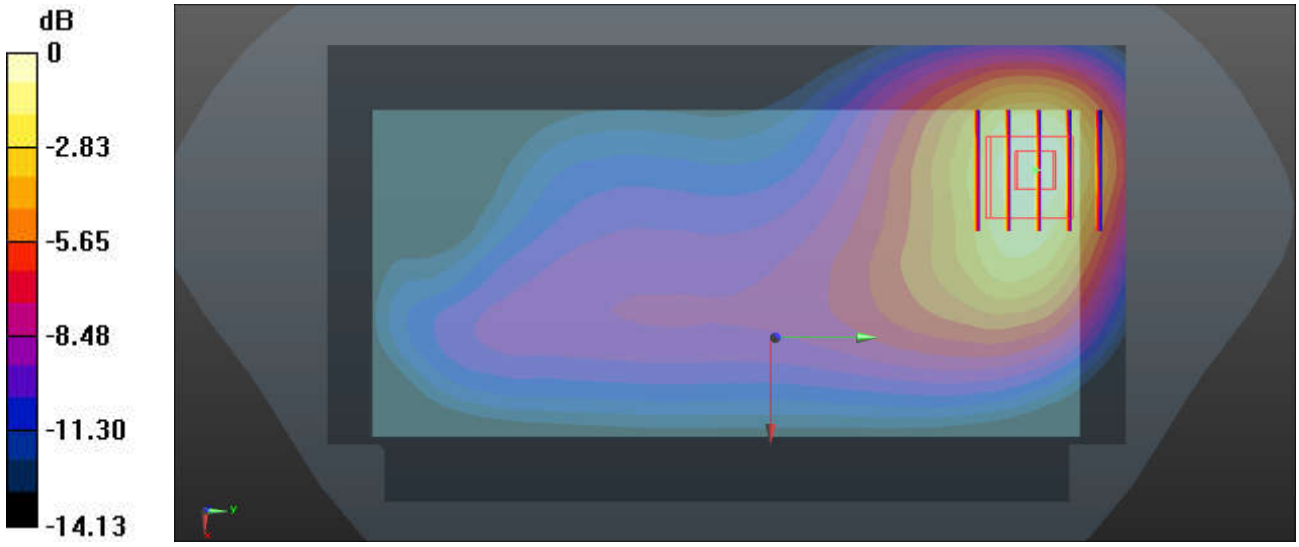
**03_WCDMA V_RMC 12.2Kbps_Back_10mm_Ch4233**

Communication System: UID 0, WCDMA (0); Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium: HSL_835 Medium parameters used: f = 847 MHz; $\sigma$ = 0.941 S/m; $\varepsilon_r$ = 42.501; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.3 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(8.69, 8.69, 8.69); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn799; Calibrated: 2021.3.26
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1754
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Area Scan (81x141x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.814 W/kg

**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 30.18 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.955 W/kg
**SAR(1 g) = 0.599 W/kg; SAR(10 g) = 0.376 W/kg**
Maximum value of SAR (measured) = 0.825 W/kg




0 dB = 0.825 W/kg = -0.84 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.7.29

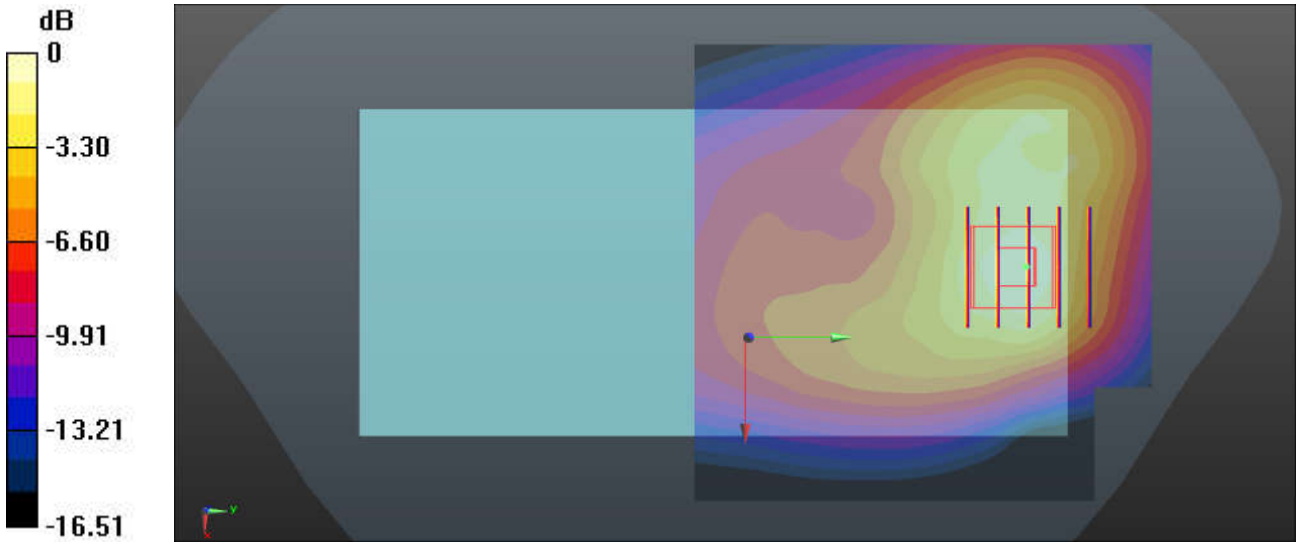
**04_WCDMA IV_RMC 12.2Kbps_Back_10mm_Ch1413**

Communication System: UID 0, WCDMA (0); Frequency: 1732.6 MHz;Duty Cycle: 1:1
Medium: HSL_1750 Medium parameters used: f = 1733 MHz; $\sigma$ = 1.333 S/m; $\varepsilon_r$ = 40.556; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.1 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(7.72, 7.72, 7.72); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn799; Calibrated: 2021.3.26
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1754
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Area Scan (81x81x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.588 W/kg

**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.90 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.725 W/kg
**SAR(1 g) = 0.404 W/kg; SAR(10 g) = 0.231 W/kg**
Maximum value of SAR (measured) = 0.595 W/kg




0 dB = 0.595 W/kg = -2.25 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.7.29

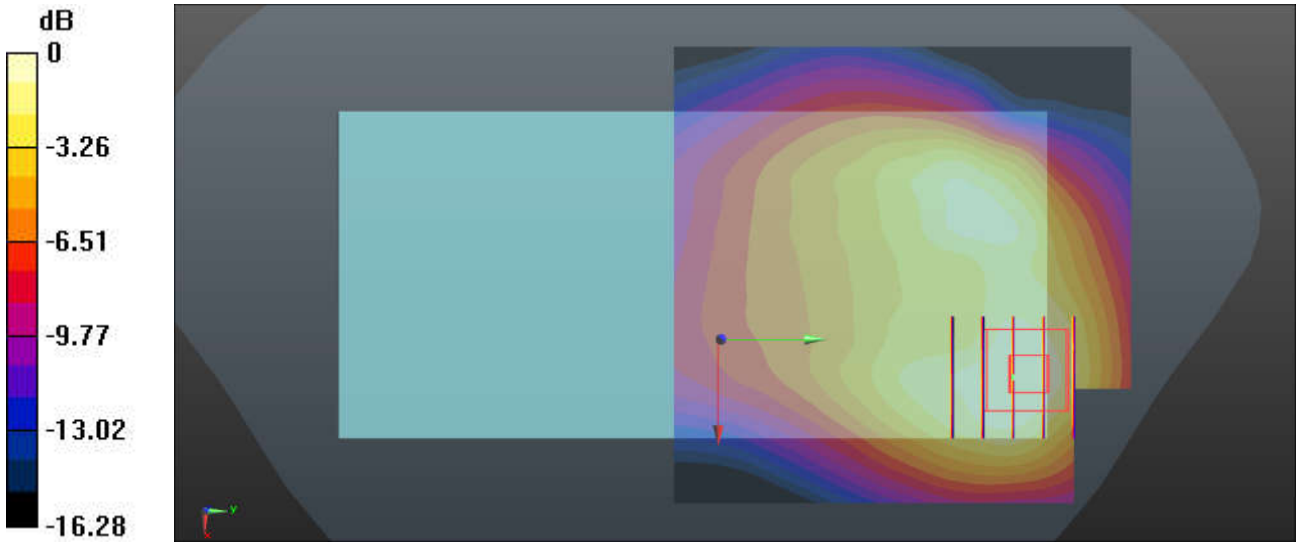
**05_LTE Band 66_20M_QPSK_1RB_0Offset_Front_10mm_Ch132322**

Communication System: UID 0, LTE-FDD (0); Frequency: 1745 MHz;Duty Cycle: 1:1
Medium: HSL_1750 Medium parameters used: f = 1745 MHz; $\sigma$ = 1.341 S/m; $\varepsilon_r$ = 40.536; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.1 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(7.72, 7.72, 7.72); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn799; Calibrated: 2021.3.26
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1754
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Area Scan (81x81x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.506 W/kg

**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.22 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.575 W/kg
**SAR(1 g) = 0.344 W/kg; SAR(10 g) = 0.200 W/kg**
Maximum value of SAR (measured) = 0.471 W/kg




0 dB = 0.471 W/kg = -3.27 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.7.31

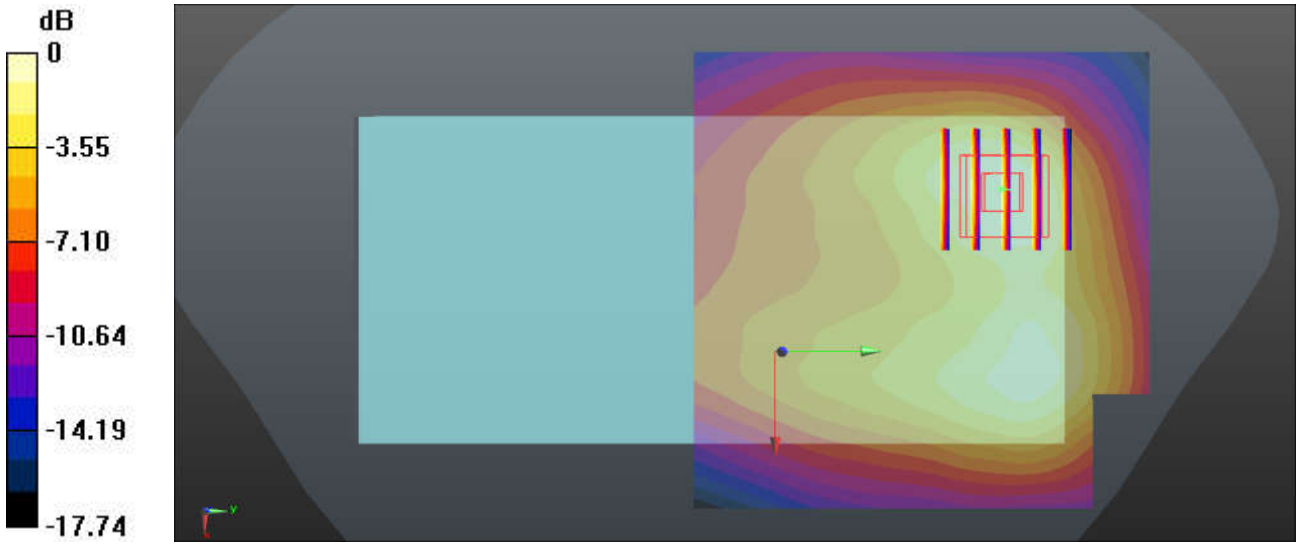
**06_WCDMA II_RMC 12.2Kbps_Front_10mm_Ch9400**

Communication System: UID 0, WCDMA (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1880 MHz; $\sigma$ = 1.428 S/m; $\varepsilon_r$ = 40.32; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.4 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(7.41, 7.41, 7.41); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn799; Calibrated: 2021.3.26
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1754
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Area Scan (81x81x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.524 W/kg

**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.69 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.625 W/kg
**SAR(1 g) = 0.372 W/kg; SAR(10 g) = 0.218 W/kg**
Maximum value of SAR (measured) = 0.531 W/kg




0 dB = 0.531 W/kg = -2.75 dBW/kg

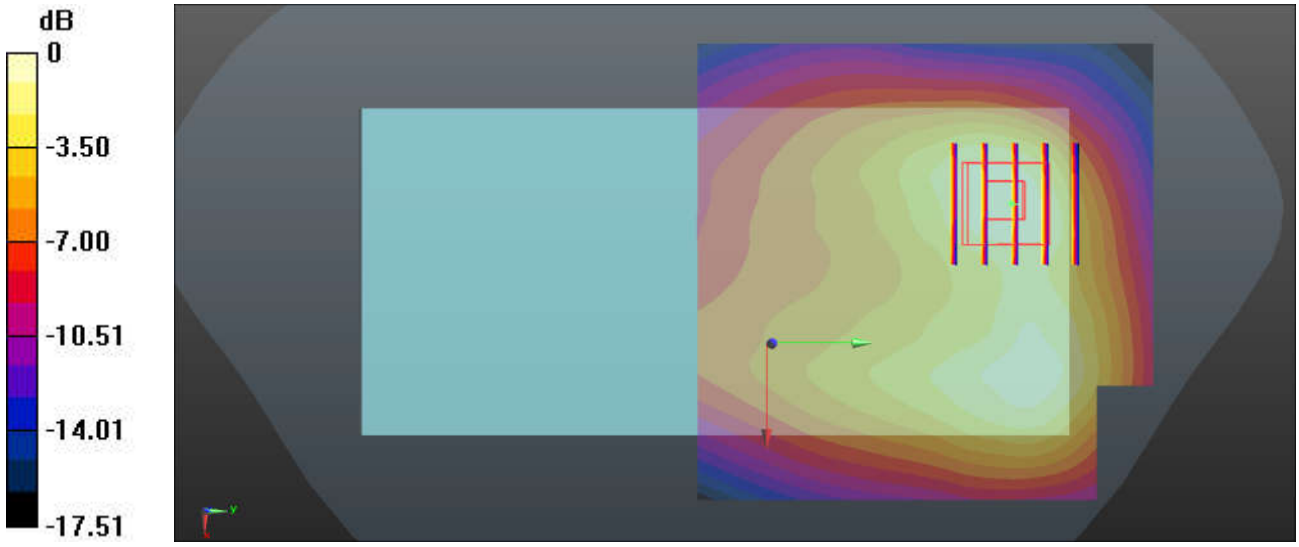
**07_LTE Band 2_20M_QPSK_1RB_0Offset_Front_10mm_Ch18900**

Communication System: UID 0, LTE-FDD (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1880 MHz; $\sigma$ = 1.428 S/m; $\varepsilon_r$ = 40.32; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.4 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(7.41, 7.41, 7.41); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn799; Calibrated: 2021.3.26
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1754
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Area Scan (81x81x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.580 W/kg

**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.08 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.710 W/kg
**SAR(1 g) = 0.418 W/kg; SAR(10 g) = 0.245 W/kg**
Maximum value of SAR (measured) = 0.600 W/kg




0 dB = 0.600 W/kg = -2.22 dBW/kg