# FCC SAR Test Report

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|---|---|
| APPLICANT | : ZTE CORPORATION |
| EQUIPMENT | : CDMA / LTE Multi-Mode Digital Mobile Phone |
| BRAND NAME | : ZTE |
| MODEL NAME | : N9518 |
| FCC ID | : SRQ-ZTEN9518 |
| STANDARD | : FCC 47 CFR Part 2 (2.1093)<br>ANSI/IEEE C95.1-1992<br>IEEE 1528-2003 |

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

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

**Reviewed by: Eric Huang / Deputy Manager**

**Approved by: Jones Tsai / Manager**

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# Table of Contents

**1. Statement of Compliance ....4**
**2. Administration Data ....5**
**3. Guidance Standard ....5**
**4. Equipment Under Test (EUT) ....6**
4.1 General Information ....6
4.2 Maximum Tune-up Limit ....7
4.3 General LTE SAR Test and Reporting Considerations ....10
**5. RF Exposure Limits ....11**
5.1 Uncontrolled Environment ....11
5.2 Controlled Environment ....11
**6. Specific Absorption Rate (SAR) ....12**
6.1 Introduction ....12
6.2 SAR Definition ....12
**7. System Description and Setup ....13**
**8. Measurement Procedures ....14**
8.1 Spatial Peak SAR Evaluation ....14
8.2 Power Reference Measurement ....15
8.3 Area Scan ....15
8.4 Zoom Scan ....16
8.5 Volume Scan Procedures ....16
8.6 Power Drift Monitoring ....16
**9. Test Equipment List ....17**
**10. System Verification ....18**
10.1 Tissue Verification ....18
10.2 System Performance Check Results ....19
**11. RF Exposure Positions ....20**
11.1 Ear and handset reference point ....20
11.2 Definition of the cheek position ....21
11.3 Definition of the tilt position ....22
11.4 Body Worn Accessory ....23
11.5 Extremity Exposure ....23
11.6 Wireless Router ....24
**12. Conducted RF Output Power (Unit: dBm) ....25**
**13. Bluetooth Exclusions Applied ....36**
**14. Antenna Location ....37**
**15. SAR Test Results ....38**
15.1 Head SAR ....39
15.2 Hotspot SAR ....41
15.3 Body Worn Accessory SAR ....44
15.4 Extremity SAR ....46
15.5 Repeated SAR Measurement ....46
**16. Simultaneous Transmission Analysis ....47**
16.1 Head Exposure Conditions ....48
16.2 Hotspot Exposure Conditions ....50
16.3 Body-Worn Accessory Exposure Conditions ....52
**17. Uncertainty Assessment ....53**
**18. References ....55**
**Appendix A. Plots of System Performance Check**
**Appendix B. Plots of High SAR Measurement**
**Appendix C. DASY Calibration Certificate**
**Appendix D. Test Setup Photos**

# Revision History

| REPORT NO. | VERSION | DESCRIPTION | ISSUED DATE |
|---|---|---|---|
| FA533001 | Rev. 01 | Initial issue of report | May 11, 2015 |
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# 1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **ZTE CORPORATION, CDMA / LTE Multi-Mode Digital Mobile Phone, N9518** are as follows.

| Equipment Class | Frequency Band | Highest SAR Summary | | | |
|---|---|---|---|---|---|
| | | Head (Separation 0mm) 1g SAR (W/kg) | Body-worn (Separation 10mm) 1g SAR (W/kg) | Wireless Router (Separation 10mm) 1g SAR (W/kg) | Highest Simultaneous Transmission 1g SAR (W/kg) |
| PCE | CDMA 2000 BC10 | 0.57 | 0.63 | 0.63 | 1.44 |
| | CDMA 2000 BC 0 | 0.55 | 0.69 | 0.68 | |
| | CDMA 2000 BC1 | 0.59 | **1.27** | **1.26** | |
| | LTE Band 26 | 0.48 | 0.61 | 0.61 | |
| | LTE Band 25 | 0.64 | 1.20 | 1.20 | |
| | LTE Band 41 | 0.30 | 0.82 | 0.82 | |
| DTS | WLAN 2.4GHz Band | **0.74** | 0.18 | 0.18 | 1.44 |
| Date of Testing: | | Apr. 05, 2015 ~ Apr. 30, 2015 | | | |

| Frequency Band | Highest SAR Summary |
|---|---|
| | Extremity 10g SAR (W/kg) (Gap 0mm) |
| CDMA 2000 BC1 | 2.45 |

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6W/kg as averaged over any 1 gram of tissue; 4.0W/kg as averaged over any 10 gram of tissue for extremity 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 1528-2003.

## 2. Administration Data

| Testing Laboratory | |
|---|---|
| Test Site | SPORTON INTERNATIONAL (XI'AN) INC. |
| Test Site Location | 1F, Building A3, No. 39 Chuangye Rd., Xi'an Hi-tech Zone, Shanxi Province, P. R. C.<br>TEL: +86-029-8860-8767<br>FAX: +86-029-8860-8791 |

| Applicant | |
|---|---|
| Company Name | ZTE CORPORATION |
| Address | ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P. R. China |

| Manufacturer | |
|---|---|
| Company Name | ZTE CORPORATION |
| Address | ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P. R. China |

## 3. Guidance Standard

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 1528-2003
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r03
- FCC KDB 865664 D02 SAR Reporting v01r01
- FCC KDB 447498 D01 General RF Exposure Guidance v05r02
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r02
- FCC KDB 248227 D01 SAR meas for 802 11abg v01r02
- FCC KDB 941225 D01 3G SAR Procedures v03
- FCC KDB 941225 D05 SAR for LTE Devices v02r03
- FCC KDB 941225 D06 Hotspot Mode SAR v02

# 4. Equipment Under Test (EUT)

## 4.1 General Information

| Product Feature & Specification | |
|---|---|
| **Equipment Name** | CDMA / LTE Multi-Mode Digital Mobile Phone |
| **Brand Name** | ZTE |
| **Model Name** | N9518 |
| **FCC ID** | SRQ-ZTEN9518 |
| **MEID Code** | 99000609680572 |
| **Wireless Technology and Frequency Range** | CDMA2000 BC0: 824.7 MHz ~ 848.31 MHz<br>CDMA 2000 BC10: 817.9 MHz ~ 823.1 MHz<br>CDMA 2000 BC1: 1851.25 MHz ~ 1908.75 MHz<br>LTE Band 26: 814.7 MHz ~ 848.3 MHz<br>LTE Band 25: 1850.7 MHz ~ 1914.3 MHz<br>LTE Band 41: 2498.5 MHz ~ 2687.5 MHz<br>WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz<br>Bluetooth: 2402 MHz ~ 2480 MHz |
| **Mode** | •CDMA2000 : 1xRTT/1xEv-Do(Rev.0)/1xEv-Do(Rev.A)<br>•LTE: QPSK, 16QAM<br>•802.11b/g/n HT20<br>•Bluetooth v3.0+EDR, Bluetooth v4.0 LE |
| **HW Version** | cwxA |
| **SW Version** | N9518V1.0.0B01 |
| **EUT Stage** | Identical Prototype |
| **Remark:** 802.11n-HT40 is not supported in 2.4GHz WLAN and this device 2.4GHz WLAN supports hotspot operation. | |

## 4.2 Maximum Tune-up Limit

| Average Power (dBm) | | | |
|---|---|---|---|
| Band | CDMA2000 BC0 | CDMA2000 BC1 | CDMA2000 BC10 |
| 1xRTT RC1 SO55 | 24.0 | 23.5 | 24.0 |
| 1xRTT RC3 SO55 | 24.0 | 23.5 | 24.0 |
| 1xRTT RC3 SO32 (+ F-SCH) | 24.0 | 23.5 | 24.0 |
| 1xRTT RC3 SO32 (+SCH) | 24.0 | 23.5 | 24.0 |
| 1xEV-DO Rev 0 (RTAP 153.6kbps) | 24.0 | 23.5 | 24.0 |
| 1xEV-DO Rev A (RETAP 4096bits) | 24.0 | 23.5 | 24.0 |

| LTE Band 25 | | | | |
|---|---|---|---|---|
| Modulation | BW (MHz) | RB size | Target MPR | Target Power (dBm) |
| QPSK | 20 | ≤ 18 | 0 | 24.0 |
| QPSK | 20 | > 18 | 1 | 23.0 |
| 16QAM | 20 | ≤ 18 | 1 | 23.0 |
| 16QAM | 20 | > 18 | 2 | 22.0 |
| QPSK | 15 | ≤ 16 | 0 | 24.0 |
| QPSK | 15 | > 16 | 1 | 23.0 |
| 16QAM | 15 | ≤ 16 | 1 | 23.0 |
| 16QAM | 15 | > 16 | 2 | 22.0 |
| QPSK | 10 | ≤ 12 | 0 | 24.0 |
| QPSK | 10 | > 12 | 1 | 23.0 |
| 16QAM | 10 | ≤ 12 | 1 | 23.0 |
| 16QAM | 10 | > 12 | 2 | 22.0 |
| QPSK | 5 | ≤ 8 | 0 | 24.0 |
| QPSK | 5 | > 8 | 1 | 23.0 |
| 16QAM | 5 | ≤ 8 | 1 | 23.0 |
| 16QAM | 5 | > 8 | 2 | 22.0 |
| QPSK | 3 | ≤ 4 | 0 | 24.0 |
| QPSK | 3 | > 4 | 1 | 23.0 |
| 16QAM | 3 | ≤ 4 | 1 | 23.0 |
| 16QAM | 3 | > 4 | 2 | 22.0 |
| QPSK | 1.4 | ≤ 5 | 0 | 24.0 |
| QPSK | 1.4 | > 5 | 1 | 23.0 |
| 16QAM | 1.4 | ≤ 5 | 1 | 23.0 |
| 16QAM | 1.4 | > 5 | 2 | 22.0 |

| LTE Band 26 | | | | |
|---|---|---|---|---|
| Modulation | BW (MHz) | RB size | Target MPR | Target Power (dBm) |
| QPSK | 15 | ≤ 16 | 0 | 24.0 |
| QPSK | 15 | > 16 | 1 | 23.0 |
| 16QAM | 15 | ≤ 16 | 1 | 23.0 |
| 16QAM | 15 | > 16 | 2 | 22.0 |
| QPSK | 10 | ≤ 12 | 0 | 24.0 |
| QPSK | 10 | > 12 | 1 | 23.0 |
| 16QAM | 10 | ≤ 12 | 1 | 23.0 |
| 16QAM | 10 | > 12 | 2 | 22.0 |
| QPSK | 5 | ≤ 8 | 0 | 24.0 |
| QPSK | 5 | > 8 | 1 | 23.0 |
| 16QAM | 5 | ≤ 8 | 1 | 23.0 |
| 16QAM | 5 | > 8 | 2 | 22.0 |
| QPSK | 3 | ≤ 4 | 0 | 24.0 |
| QPSK | 3 | > 4 | 1 | 23.0 |
| 16QAM | 3 | ≤ 4 | 1 | 23.0 |
| 16QAM | 3 | > 4 | 2 | 22.0 |
| QPSK | 1.4 | ≤ 5 | 0 | 24.0 |
| QPSK | 1.4 | > 5 | 1 | 23.0 |
| 16QAM | 1.4 | ≤ 5 | 1 | 23.0 |
| 16QAM | 1.4 | > 5 | 2 | 22.0 |

| LTE Band 41 | | | | |
|---|---|---|---|---|
| Modulation | BW (MHz) | RB size | Target MPR | Target Power (dBm) |
| QPSK | 20 | ≤ 18 | 0 | 24.0 |
| QPSK | 20 | > 18 | 1 | 23.0 |
| 16QAM | 20 | ≤ 18 | 1 | 23.0 |
| 16QAM | 20 | > 18 | 2 | 22.0 |
| QPSK | 15 | ≤ 16 | 0 | 24.0 |
| QPSK | 15 | > 16 | 1 | 23.0 |
| 16QAM | 15 | ≤ 16 | 1 | 23.0 |
| 16QAM | 15 | > 16 | 2 | 22.0 |
| QPSK | 10 | ≤ 12 | 0 | 24.0 |
| QPSK | 10 | > 12 | 1 | 23.0 |
| 16QAM | 10 | ≤ 12 | 1 | 23.0 |
| 16QAM | 10 | > 12 | 2 | 22.0 |
| QPSK | 5 | ≤ 8 | 0 | 24.0 |
| QPSK | 5 | > 8 | 1 | 23.0 |
| 16QAM | 5 | ≤ 8 | 1 | 23.0 |
| 16QAM | 5 | > 8 | 2 | 22.0 |

| Mode | | Average Power (dBm) |
|---|---|---|
| 2.4GHz | 802.11b | 15.5 |
| | 802.11g | 13.5 |
| | 802.11n-HT20 | 12.5 |
| Bluetooth v3.0+EDR | | 2.5 |
| Bluetooth v4.0 LE | | -2.0 |

## 4.3 General LTE SAR Test and Reporting Considerations

| Summarized necessary items addressed in KDB 941225 D05 v02r03 | |
|---|---|
| FCC ID | SRQ-ZTEN9518 |
| Equipment Name | CDMA / LTE Multi-Mode Digital Mobile Phone |
| Operating Frequency Range of each LTE transmission band | LTE Band 26: 814.7 MHz ~ 848.3 MHz<br>LTE Band 25: 1850.7 MHz ~ 1914.3 MHz<br>LTE Band 41: 2498.5 MHz ~ 2687.5 MHz |
| Channel Bandwidth | 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz (LTE Band 25)<br>1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz (LTE Band 26)<br>5MHz, 10MHz, 15MHz, 20MHz (LTE Band 41) |
| uplink modulations used | QPSK, and 16QAM |
| LTE Voice / Data requirements | Data only |
| LTE MPR permanently built-in by design | Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3 |

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

| | |
|---|---|
| LTE A-MPR | In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI) |
| Spectrum plots for RB configuration | A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report. |

**Transmission (H, M, L) channel numbers and frequencies in each LTE band**

LTE Band 26

| | Bandwidth 1.4 MHz | | Bandwidth 3 MHz | | Bandwidth 5 MHz | | Bandwidth 10 MHz | | Bandwidth 15 MHz | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) |
| L | 26697 | 814.7 | 26705 | 815.5 | 26715 | 816.5 | 26740 | 819 | 26765 | 821.5 |
| M | 26865 | 831.5 | 26865 | 831.5 | 26865 | 831.5 | 26865 | 831.5 | 26865 | 831.5 |
| H | 27033 | 848.3 | 27025 | 847.5 | 27015 | 846.5 | 26990 | 844 | 26965 | 841.5 |

LTE Band 25

| | Bandwidth 1.4 MHz | | Bandwidth 3 MHz | | Bandwidth 5 MHz | | Bandwidth 10 MHz | | Bandwidth 15 MHz | | Bandwidth 20 MHz | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) |
| L | 26047 | 1850.7 | 26055 | 1851.5 | 26065 | 1852.5 | 26090 | 1855 | 26115 | 1857.5 | 26140 | 1860 |
| M | 26340 | 1880 | 26340 | 1880 | 26340 | 1880 | 26340 | 1880 | 26340 | 1880 | 26340 | 1880 |
| H | 26683 | 1914.3 | 26675 | 1913.5 | 26665 | 1912.5 | 26640 | 1910 | 26615 | 1907.5 | 26590 | 1905 |

LTE Band 41

| | Bandwidth 5 MHz | | Bandwidth 10 MHz | | Bandwidth 15 MHz | | Bandwidth 20 MHz | |
|---|---|---|---|---|---|---|---|---|
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) |
| L | 39675 | 2498.5 | 39700 | 2501 | 39725 | 2503.5 | 39750 | 2506 |
| LM | 40148 | 2545.8 | 40160 | 2547 | 40173 | 2548.3 | 40185 | 2549.5 |
| M | 40620 | 2593 | 40620 | 2590 | 40620 | 2593 | 40620 | 2593 |
| HM | 41093 | 2640.3 | 41080 | 2639 | 41068 | 2637.8 | 41055 | 2636.5 |
| H | 41565 | 2687.5 | 41540 | 2685 | 41515 | 2682.5 | 41490 | 2680 |

# 5. RF Exposure Limits

## 5.1 Uncontrolled Environment

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

## 5.2 Controlled Environment

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

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

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

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

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

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

# 6. Specific Absorption Rate (SAR)

## 6.1 Introduction

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

## 6.2 SAR Definition

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

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

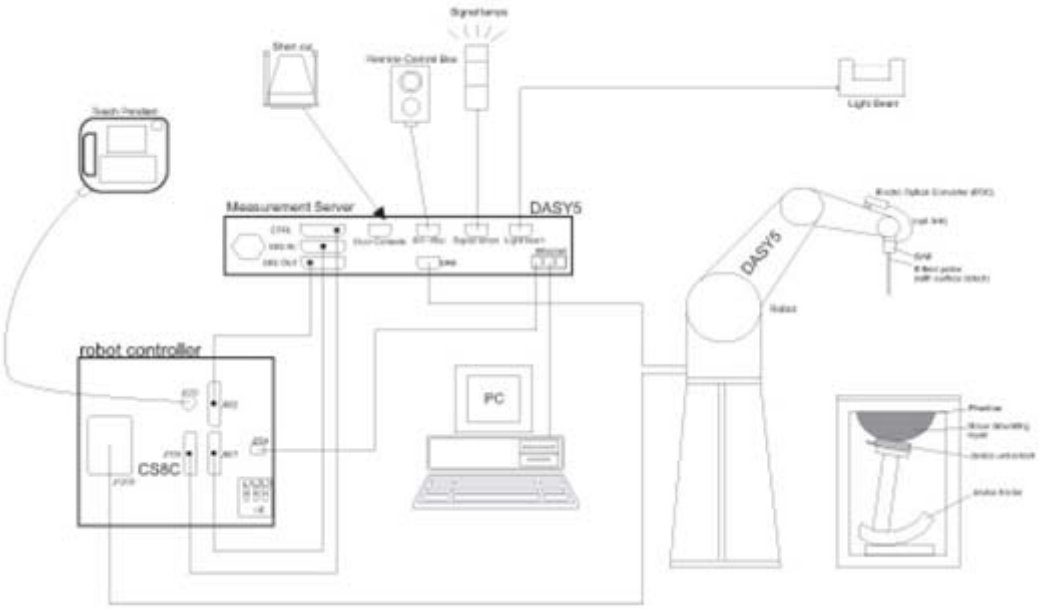
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

# 7. System Description and Setup

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




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

# 8. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

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

<SAR measurement>

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

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

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

## 8.1 Spatial Peak SAR Evaluation

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

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

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

(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values 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

## 8.2 Power Reference Measurement

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

## 8.3 Area Scan

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

Area scan parameters extracted from FCC KDB 865664 D01v01r03 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. | |

## 8.4 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 D01v01r03 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 | $\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$ | |
| 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.

## 8.5 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.

## 8.6 Power Drift Monitoring

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

# 9. Test Equipment List

| Manufacturer | Name of Equipment | Type/Model | Serial Number | Calibration | |
|---|---|---|---|---|---|
| | | | | Last Cal. | Due Date |
| SPEAG | 835MHz System Validation Kit | D835V2 | 4d091 | Nov. 21, 2014 | Nov. 20, 2015 |
| SPEAG | 1900MHz System Validation Kit | D1900V2 | 5d118 | Nov. 21, 2014 | Nov. 20, 2015 |
| SPEAG | 2450MHz System Validation Kit | D2450V2 | 840 | Nov. 19, 2014 | Nov. 18, 2015 |
| SPEAG | 2600MHz System Validation Kit | D2600V2 | 1061 | Nov. 19, 2014 | Nov. 18, 2015 |
| SPEAG | Data Acquisition Electronics | DAE4 | 1358 | Apr. 30, 2014 | Apr. 29, 2015 |
| SPEAG | Data Acquisition Electronics | DAE4 | 1210 | May 19, 2014 | May 18, 2015 |
| SPEAG | Dosimetric E-Field Probe | EX3DV4 | 3911 | Oct. 02, 2014 | Oct. 01, 2015 |
| SPEAG | Dosimetric E-Field Probe | EX3DV4 | 3857 | May 23, 2014 | May 22, 2015 |
| SPEAG | SAM Twin Phantom | QD 000 P40 CD | TP-1753 | NCR | NCR |
| SPEAG | SAM Twin Phantom | QD 000 P40 CD | TP-1754 | NCR | NCR |
| SPEAG | SAM Twin Phantom | QD 000 P40 CB | TP-1477 | NCR | NCR |
| SPEAG | SAM Twin Phantom | QD 000 P40 CB | TP-1479 | NCR | NCR |
| SPEAG | Phone Positioner | N/A | N/A | NCR | NCR |
| Agilent | Wireless Communication Test Set | E5515C | MY52102600 | Dec. 09, 2014 | Dec. 08, 2015 |
| Anritus | Radio communication analyzer | MT8820C | 6201091028 | Dec. 09, 2014 | Dec. 08, 2015 |
| Agilent | ENA Series Network Analyzer | E5071C | MY46317418 | Dec. 09, 2014 | Dec. 08, 2015 |
| Agilent | Dielectric Probe Kit | 85070E | MY44300751 | NCR | NCR |
| Agilent | Dielectric Probe Kit | 85070E | MY44300475 | NCR | NCR |
| Anritsu | Power Senor | MA2411B | 0917070 | Jan. 23, 2015 | Jan. 22, 2016 |
| Anritsu | Power Meter | ML2495A | 1218010 | Jan. 23, 2015 | Jan. 22, 2016 |
| R&S | Spectrum Analyzer | FSP7 | 101045 | Dec. 09, 2014 | Dec. 08, 2015 |
| R&S | Spectrum Analyzer | FSP40 | 100319 | Oct. 28, 2014 | Oct. 27, 2015 |
| R&S | Signal Generator | SMBV100A | 258305 | Jan. 23, 2015 | Jan. 22, 2016 |
| ARRA | Power Divider | A3200-2 | NCR | NCR | NCR |
| R&S | CBT BLUETOOTH TESTER | CBT | 100783 | Aug. 11, 2014 | Aug. 10, 2015 |
| Agilent | Dual Directional Coupler | 778D | 50422 | Note1 | |
| Woken | Attenuator 1 | WK0602-XX | N/A | Note1 | |
| PE | Attenuator 2 | PE7005-10 | N/A | Note1 | |
| PE | Attenuator 3 | PE7005- 3 | N/A | Note1 | |
| AR | Power Amplifier | 5S1G4M2 | 0328767 | Note1 | |
| Mini-Circuits | Power Amplifier | ZVE-3W | 162601250 | Note1 | |
| Mini-Circuits | Power Amplifier | ZHL-42W+ | 13440021344 | Note1 | |

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

# 10. System Verification

## 10.1 Tissue 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 | | | | | | | | |
| 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 |
| 2600 | 54.8 | 0 | 0 | 0.1 | 0 | 45.1 | 1.96 | 39.0 |
| For Body | | | | | | | | |
| 835 | 50.8 | 48.2 | 0 | 0.9 | 0.1 | 0 | 0.97 | 55.2 |
| 1800, 1900, 2000 | 70.2 | 0 | 0 | 0.4 | 0 | 29.4 | 1.52 | 53.3 |
| 2450 | 68.6 | 0 | 0 | 0 | 0 | 31.4 | 1.95 | 52.7 |
| 2600 | 68.1 | 0 | 0 | 0.1 | 0 | 31.8 | 2.16 | 52.5 |

**<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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 835 | Head | 22.5 | 0.936 | 42.591 | 0.9 | 41.5 | 4.00 | 2.63 | ±5 | Apr. 08, 2015 |
| 1900 | Head | 22.6 | 1.456 | 40.84 | 1.4 | 40 | 4.00 | 2.10 | ±5 | Apr. 08, 2015 |
| 1900 | Head | 22.8 | 1.422 | 39.011 | 1.4 | 40 | 1.57 | -2.47 | ±5 | Apr. 30, 2015 |
| 2450 | Head | 22.5 | 1.81 | 37.626 | 1.8 | 39.2 | 0.56 | -4.02 | ±5 | Apr. 18, 2015 |
| 2600 | Head | 22.4 | 2.053 | 37.984 | 1.96 | 39 | 4.74 | -2.61 | ±5 | Apr. 08, 2015 |
| 835 | Body | 22.5 | 0.997 | 55.416 | 0.97 | 55.2 | 2.78 | 0.39 | ±5 | Apr. 07, 2015 |
| 1900 | Body | 22.6 | 1.558 | 55.398 | 1.52 | 53.3 | 2.50 | 3.94 | ±5 | Apr. 05, 2015 |
| 1900 | Body | 22.9 | 1.55 | 53.2 | 1.52 | 53.3 | 1.97 | -0.19 | ±5 | Apr. 29, 2015 |
| 2450 | Body | 22.6 | 1.948 | 51.097 | 1.95 | 52.7 | -0.10 | -3.04 | ±5 | Apr. 18, 2015 |
| 2600 | Body | 22.5 | 2.209 | 51.123 | 2.16 | 52.5 | 2.27 | -2.62 | ±5 | Apr. 05, 2015 |

## 10.2 System Performance Check Results

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

| Date | Frequency (MHz) | Tissue Type | Input Power (mW) | Dipole S/N | Probe S/N | DAE S/N | Measured SAR (W/kg) | Targeted SAR (W/kg) | Normalized SAR (W/kg) | Deviation (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| Apr. 08, 2015 | 835 | Head | 250 | 4d091 | 3911 | 1358 | 2.36 | 9.11 | 9.44 | 3.62 |
| Apr. 08, 2015 | 1900 | Head | 250 | 5d118 | 3911 | 1358 | 10.6 | 40.1 | 42.4 | 5.74 |
| Apr. 30, 2015 | 1900 | Head | 250 | 5d118 | 3857 | 1210 | 10.2 | 40.1 | 40.8 | 1.75 |
| Apr. 18, 2015 | 2450 | Head | 250 | 840 | 3911 | 1358 | 13.6 | 52.3 | 54.4 | 4.02 |
| Apr. 08, 2015 | 2600 | Head | 250 | 1061 | 3911 | 1358 | 14.8 | 56.9 | 59.2 | 4.04 |
| Apr. 07, 2015 | 835 | Body | 250 | 4d091 | 3911 | 1358 | 2.38 | 9.6 | 9.52 | -0.83 |
| Apr. 05, 2015 | 1900 | Body | 250 | 5d118 | 3911 | 1358 | 10.4 | 40 | 41.6 | 4.00 |
| Apr. 29, 2015 | 1900 | Body | 250 | 5d118 | 3857 | 1210 | 10.4 | 40 | 41.6 | 4.00 |
| Apr. 18, 2015 | 2450 | Body | 250 | 840 | 3911 | 1358 | 12.8 | 51 | 51.2 | 0.39 |
| Apr. 05, 2015 | 2600 | Body | 250 | 1061 | 3911 | 1358 | 13.58 | 54.9 | 54.32 | -1.06 |

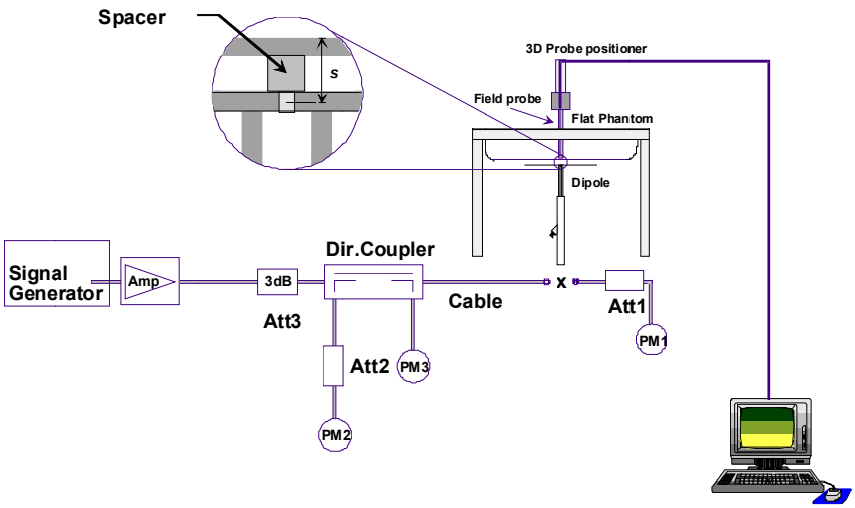



Fig 8.3.1 System Performance Check Setup

Fig 8.3.2 Setup Photo

# 11. RF Exposure Positions

## 11.1 Ear and handset reference point

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

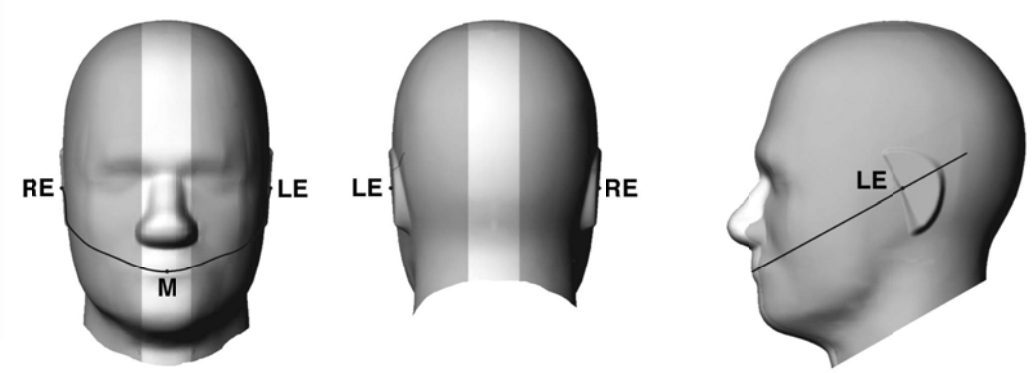



**Fig 9.1.1 Front, back, and side views of SAM twin phantom**

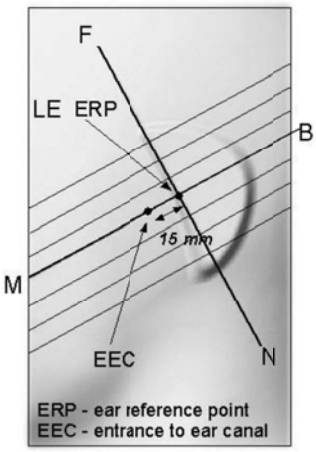



**Fig 9.1.2 Close-up side view of phantom showing the ear region.**

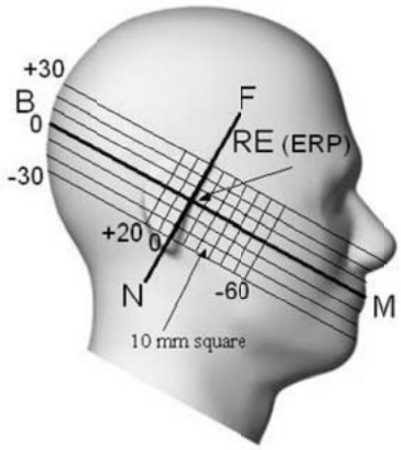



**Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations**

## 11.2 Definition of the cheek position

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

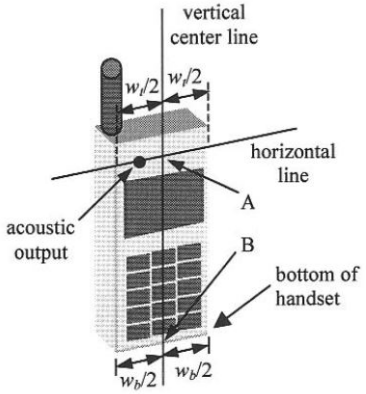



**Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case**

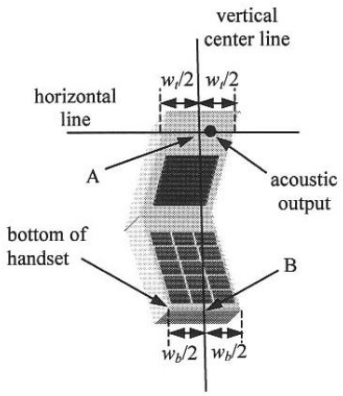



**Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"**

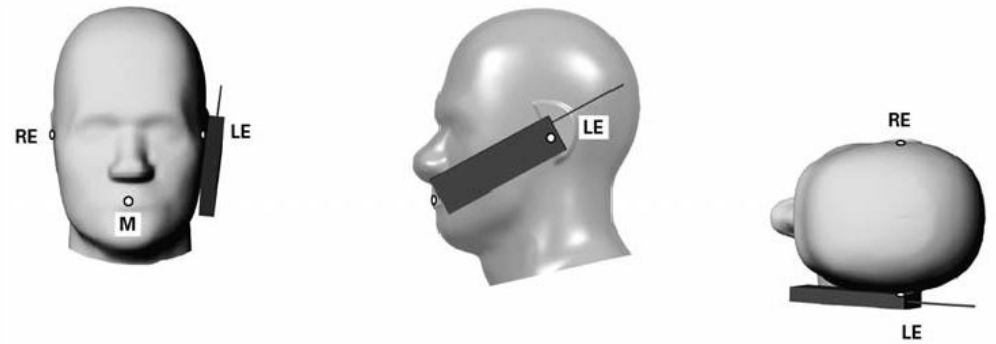



**Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.**

## 11.3 Definition of the tilt position

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

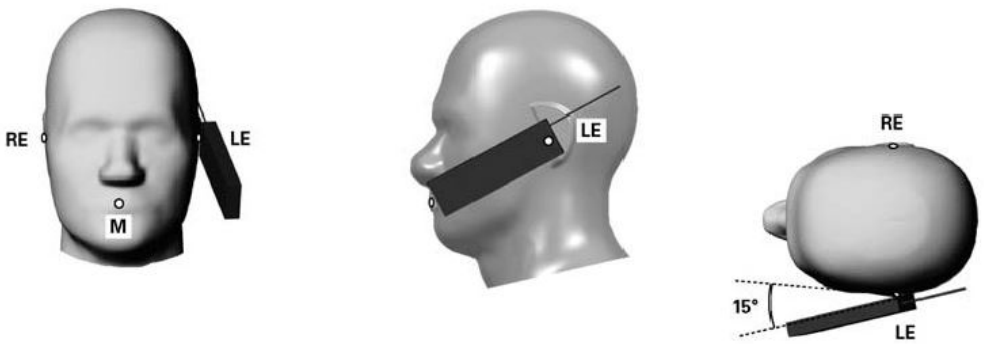



**Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.**

## 11.4 Body Worn Accessory

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 9.4). Per KDB 648474 D04v01r02, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 D01v05r02 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is < 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a handset attached to the handset.

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

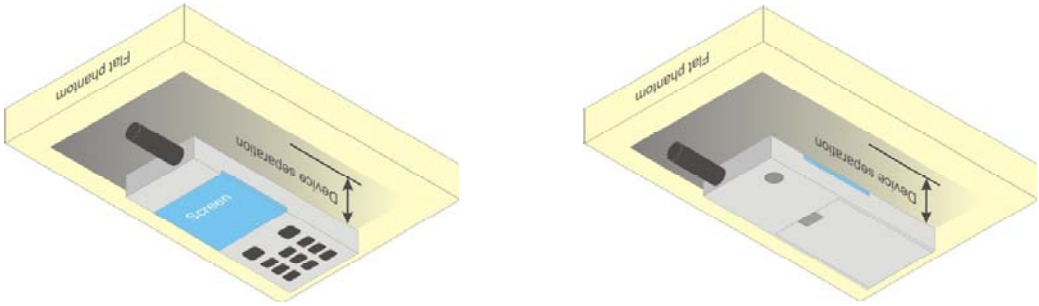



**Fig 9.4 Body Worn Position**

## 11.5 Extremity Exposure

For smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, According to KDB648474D04v01r02, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.

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

## 11.6 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC HDB Publication 941225 D06 v02 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 D01v05r02 publication procedures. The “Portable Hotspot” feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

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

## <CDMA2000 Conducted Power>

**General Note:**

1. Per KDB 941225 D01v03, SAR for head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55.
2. Per KDB 941225 D01v03, in Hotspot mode EUT is treated as data device and SAR is tested with Ev-Do Rev 0 (RTAP 153.6kbps) as the primary mode.
3. Per KDB 941225 D01v03, for Body-worn accessory SAR is measured in RC3 with the handset configured in TDSO/SO32 to transmit at full rate on FCH only with all other code channels disabled. The body-worn accessory procedures in KDB Publication 447498 are applied. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCH), with FCH only as the primary mode.

| Band | CDMA2000 BC10 | | | CDMA2000 BC0 | | | CDMA2000 BC1 | | |
|---|---|---|---|---|---|---|---|---|---|
| TX Channel | 476 | 580 | 684 | 1013 | 384 | 777 | 25 | 600 | 1175 |
| Frequency (MHz) | 817.9 | 820.5 | 823.1 | 824.7 | 836.52 | 848.31 | 1851.25 | 1880 | 1908.75 |
| 1xRTT RC1 SO55 | **23.81** | 23.80 | 23.77 | 23.75 | **23.77** | 23.53 | 22.96 | 22.92 | **23.20** |
| 1xRTT RC3 SO55 | 23.78 | 23.76 | 23.74 | 23.69 | 23.70 | 23.49 | 22.90 | 22.90 | 23.12 |
| 1xRTT RC3 SO32(+ F-SCH) | 23.77 | 23.74 | 23.73 | 23.64 | 23.68 | 23.37 | 22.94 | 22.92 | 23.19 |
| 1xRTT RC3 SO32(+SCH) | 23.76 | 23.73 | 23.71 | 23.69 | 23.73 | 23.48 | 22.92 | 22.90 | 23.11 |
| 1xEVDO RTAP 153.6Kbps | 23.74 | 23.72 | 23.70 | 23.68 | 23.72 | 23.47 | 22.92 | 22.89 | 23.15 |
| 1xEVDO RETAP 4096Bits | 23.80 | 23.77 | 23.73 | 23.73 | 23.75 | 23.51 | 22.88 | 22.90 | 23.10 |

## <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 D05v02r03, 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 D05v02r03, 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 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r03, 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 D05v02r03, 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 D05v02r03, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r03, 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 D05v02r03, smaller bandwidth SAR testing is not required.

**<LTE Band 26>**

| BW [MHz] | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune up Limit (dBm) | MPR (dB) |
|---|---|---|---|---|---|---|---|---|
| Channel | | | | 26765 | 26865 | 26965 | | |
| Frequency (MHz) | | | | 821.5 | 831.5 | 841.5 | | |
| 15 | QPSK | 1 | 0 | 22.90 | 22.97 | 22.90 | 24.0 | 0 |
| 15 | QPSK | 1 | 37 | 22.94 | **23.30** | 22.91 | | |
| 15 | QPSK | 1 | 74 | 22.77 | 23.09 | 22.79 | | |
| 15 | QPSK | 36 | 0 | 22.12 | 21.99 | 22.16 | 23.0 | 0-1 |
| 15 | QPSK | 36 | 18 | 21.89 | 22.18 | 22.03 | | |
| 15 | QPSK | 36 | 37 | 21.93 | 22.11 | 21.99 | | |
| 15 | QPSK | 75 | 0 | 22.06 | 22.19 | 21.98 | | |
| 15 | 16QAM | 1 | 0 | 22.07 | 22.57 | 22.68 | 23.0 | 0-1 |
| 15 | 16QAM | 1 | 37 | 22.25 | 22.38 | 21.83 | | |
| 15 | 16QAM | 1 | 74 | 22.11 | 22.40 | 22.31 | | |
| 15 | 16QAM | 36 | 0 | 21.07 | 21.04 | 21.07 | 22.0 | 0-2 |
| 15 | 16QAM | 36 | 18 | 20.94 | 21.20 | 20.98 | | |
| 15 | 16QAM | 36 | 37 | 20.85 | 21.19 | 20.95 | | |
| 15 | 16QAM | 75 | 0 | 20.88 | 21.08 | 20.96 | | |
| Channel | | | | 26740 | 26865 | 26990 | Tune up Limit (dBm) | MPR (dB) |
| Frequency (MHz) | | | | 819 | 831.5 | 844 | | |
| 10 | QPSK | 1 | 0 | 22.95 | 22.86 | 23.26 | 24.0 | 0 |
| 10 | QPSK | 1 | 24 | 23.28 | 23.29 | 22.97 | | |
| 10 | QPSK | 1 | 49 | 22.78 | 23.27 | 22.81 | | |
| 10 | QPSK | 25 | 0 | 22.08 | 21.98 | 22.03 | 23.0 | 0-1 |
| 10 | QPSK | 25 | 12 | 21.95 | 22.11 | 21.94 | | |
| 10 | QPSK | 25 | 24 | 21.99 | 22.04 | 21.90 | | |
| 10 | QPSK | 50 | 0 | 21.98 | 22.12 | 21.96 | | |
| 10 | 16QAM | 1 | 0 | 22.04 | 21.80 | 22.36 | 23.0 | 0-1 |
| 10 | 16QAM | 1 | 24 | 22.27 | 22.43 | 21.81 | | |
| 10 | 16QAM | 1 | 49 | 22.15 | 22.04 | 22.15 | | |
| 10 | 16QAM | 25 | 0 | 21.13 | 21.03 | 20.95 | 22.0 | 0-2 |
| 10 | 16QAM | 25 | 12 | 21.03 | 21.10 | 20.96 | | |
| 10 | 16QAM | 25 | 24 | 21.03 | 21.13 | 20.87 | | |
| 10 | 16QAM | 50 | 0 | 20.84 | 21.12 | 20.76 | | |
| Channel | | | | 26715 | 26865 | 27015 | Tune up Limit (dBm) | MPR (dB) |
| Frequency (MHz) | | | | 816.5 | 831.5 | 846.5 | | |
| 5 | QPSK | 1 | 0 | 22.92 | 22.80 | 23.03 | 24.0 | 0 |
| 5 | QPSK | 1 | 12 | 23.25 | 23.11 | 22.95 | | |
| 5 | QPSK | 1 | 24 | 22.91 | 23.05 | 22.61 | | |
| 5 | QPSK | 12 | 0 | 22.00 | 21.91 | 21.96 | 23.0 | 0-1 |
| 5 | QPSK | 12 | 6 | 22.09 | 22.00 | 21.96 | | |
| 5 | QPSK | 12 | 11 | 22.03 | 22.11 | 21.96 | | |
| 5 | QPSK | 25 | 0 | 22.02 | 22.08 | 21.89 | | |
| 5 | 16QAM | 1 | 0 | 22.10 | 21.96 | 22.26 | 23.0 | 0-1 |
| 5 | 16QAM | 1 | 12 | 22.57 | 22.49 | 21.99 | | |
| 5 | 16QAM | 1 | 24 | 22.41 | 22.31 | 21.49 | | |
| 5 | 16QAM | 12 | 0 | 20.87 | 20.98 | 20.99 | 22.0 | 0-2 |
| 5 | 16QAM | 12 | 6 | 21.06 | 21.22 | 20.90 | | |
| 5 | 16QAM | 12 | 11 | 20.97 | 21.13 | 20.87 | | |
| 5 | 16QAM | 25 | 0 | 21.00 | 21.21 | 20.88 | | |

| Channel | | | | 26705 | 26865 | 27025 | Tune up Limit (dBm) | MPR (dB) |
|---|---|---|---|---|---|---|---|---|
| Frequency (MHz) | | | | 815.5 | 831.5 | 847.5 | | |
| 3 | QPSK | 1 | 0 | 23.03 | 22.88 | 23.13 | 24.0 | 0 |
| 3 | QPSK | 1 | 7 | 23.06 | 23.03 | 22.73 | | |
| 3 | QPSK | 1 | 14 | 23.10 | 23.21 | 22.68 | | |
| 3 | QPSK | 8 | 0 | 22.00 | 21.91 | 21.86 | 23.0 | 0-1 |
| 3 | QPSK | 8 | 4 | 22.07 | 22.04 | 21.88 | | |
| 3 | QPSK | 8 | 7 | 22.15 | 22.06 | 21.86 | | |
| 3 | QPSK | 15 | 0 | 22.10 | 21.99 | 21.93 | | |
| 3 | 16QAM | 1 | 0 | 22.04 | 22.11 | 22.37 | 23.0 | 0-1 |
| 3 | 16QAM | 1 | 7 | 22.57 | 22.00 | 22.10 | | |
| 3 | 16QAM | 1 | 14 | 22.46 | 22.35 | 22.39 | | |
| 3 | 16QAM | 8 | 0 | 21.11 | 20.94 | 20.92 | 22.0 | 0-2 |
| 3 | 16QAM | 8 | 4 | 21.12 | 21.05 | 20.80 | | |
| 3 | 16QAM | 8 | 7 | 21.11 | 21.09 | 20.99 | | |
| 3 | 16QAM | 15 | 0 | 21.25 | 21.10 | 20.72 | | |
| Channel | | | | 26697 | 26865 | 27033 | Tune up Limit (dBm) | MPR (dB) |
| Frequency (MHz) | | | | 814.7 | 831.5 | 848.3 | | |
| 1.4 | QPSK | 1 | 0 | 22.83 | 23.00 | 22.73 | 24.0 | 0 |
| 1.4 | QPSK | 1 | 2 | 23.08 | 23.04 | 22.85 | | |
| 1.4 | QPSK | 1 | 5 | 22.91 | 22.99 | 22.74 | | |
| 1.4 | QPSK | 3 | 0 | 22.93 | 22.91 | 22.74 | | |
| 1.4 | QPSK | 3 | 1 | 23.22 | 22.99 | 22.91 | | |
| 1.4 | QPSK | 3 | 2 | 23.15 | 22.91 | 22.87 | | |
| 1.4 | QPSK | 6 | 0 | 22.03 | 21.87 | 21.93 | 23.0 | 0-1 |
| 1.4 | 16QAM | 1 | 0 | 22.09 | 22.10 | 22.11 | 23.0 | 0-1 |
| 1.4 | 16QAM | 1 | 2 | 22.53 | 22.39 | 22.33 | | |
| 1.4 | 16QAM | 1 | 5 | 22.06 | 22.08 | 22.00 | | |
| 1.4 | 16QAM | 3 | 0 | 21.82 | 21.64 | 21.84 | | |
| 1.4 | 16QAM | 3 | 1 | 22.16 | 21.98 | 22.03 | | |
| 1.4 | 16QAM | 3 | 2 | 22.14 | 22.11 | 21.98 | | |
| 1.4 | 16QAM | 6 | 0 | 20.55 | 21.00 | 20.96 | 22.0 | 0-2 |

**<LTE Band 25>**

| BW [MHz] | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune up Limit (dBm) | MPR (dB) |
|---|---|---|---|---|---|---|---|---|
| Channel | | | | 26140 | 26340 | 26590 | | |
| Frequency (MHz) | | | | 1860 | 1880 | 1905 | | |
| 20 | QPSK | 1 | 0 | 23.38 | **23.43** | 23.34 | 24.0 | 0 |
| 20 | QPSK | 1 | 49 | 23.18 | 23.28 | 23.31 | | |
| 20 | QPSK | 1 | 99 | 23.09 | 23.34 | 23.22 | | |
| 20 | QPSK | 50 | 0 | 22.17 | 22.26 | 22.23 | 23.0 | 0-1 |
| 20 | QPSK | 50 | 24 | 22.1 | 22.04 | 22.16 | | |
| 20 | QPSK | 50 | 49 | 22.14 | 22.05 | 22.21 | | |
| 20 | QPSK | 100 | 0 | 22.11 | 22.14 | 22.23 | | |
| 20 | 16QAM | 1 | 0 | 22.77 | 22.31 | 22.77 | 23.0 | 0-1 |
| 20 | 16QAM | 1 | 49 | 22.18 | 21.99 | 22.4 | | |
| 20 | 16QAM | 1 | 99 | 22.47 | 22.50 | 22.36 | | |
| 20 | 16QAM | 50 | 0 | 21.12 | 21.18 | 21.32 | 22.0 | 0-2 |
| 20 | 16QAM | 50 | 24 | 21.01 | 21.05 | 21.18 | | |
| 20 | 16QAM | 50 | 49 | 21.08 | 21.02 | 21.26 | | |
| 20 | 16QAM | 100 | 0 | 21.10 | 21.07 | 21.15 | | |
| Channel | | | | 26115 | 26340 | 26615 | Tune up Limit (dBm) | MPR (dB) |
| Frequency (MHz) | | | | 1857.5 | 1880 | 1907.5 | | |
| 15 | QPSK | 1 | 0 | 23.37 | 23.24 | 23.27 | 24.0 | 0 |
| 15 | QPSK | 1 | 37 | 22.79 | 23.19 | 23.14 | | |
| 15 | QPSK | 1 | 74 | 22.98 | 22.90 | 23.20 | | |
| 15 | QPSK | 36 | 0 | 22.12 | 22.13 | 22.17 | 23.0 | 0-1 |
| 15 | QPSK | 36 | 18 | 22.05 | 22.05 | 22.24 | | |
| 15 | QPSK | 36 | 37 | 22.04 | 22.07 | 22.20 | | |
| 15 | QPSK | 75 | 0 | 22.03 | 22.03 | 22.27 | | |
| 15 | 16QAM | 1 | 0 | 22.80 | 22.75 | 22.20 | 23.0 | 0-1 |
| 15 | 16QAM | 1 | 37 | 22.34 | 21.91 | 22.38 | | |
| 15 | 16QAM | 1 | 74 | 22.18 | 22.08 | 22.64 | | |
| 15 | 16QAM | 36 | 0 | 20.98 | 21.12 | 21.21 | 22.0 | 0-2 |
| 15 | 16QAM | 36 | 18 | 20.91 | 21.05 | 21.20 | | |
| 15 | 16QAM | 36 | 37 | 21.01 | 21.12 | 21.14 | | |
| 15 | 16QAM | 75 | 0 | 21.00 | 20.97 | 21.26 | | |
| Channel | | | | 26090 | 26340 | 26640 | Tune up Limit (dBm) | MPR (dB) |
| Frequency (MHz) | | | | 1855 | 1880 | 1910 | | |
| 10 | QPSK | 1 | 0 | 23.31 | 23.07 | 23.40 | 24.0 | 0 |
| 10 | QPSK | 1 | 24 | 23.02 | 23.02 | 23.09 | | |
| 10 | QPSK | 1 | 49 | 23.06 | 22.97 | 23.27 | | |
| 10 | QPSK | 25 | 0 | 22.04 | 22.05 | 22.18 | 23.0 | 0-1 |
| 10 | QPSK | 25 | 12 | 22.07 | 21.99 | 22.19 | | |
| 10 | QPSK | 25 | 24 | 22.03 | 22.03 | 22.28 | | |
| 10 | QPSK | 50 | 0 | 22.04 | 22.01 | 22.18 | | |
| 10 | 16QAM | 1 | 0 | 22.40 | 22.33 | 22.19 | 23.0 | 0-1 |
| 10 | 16QAM | 1 | 24 | 22.50 | 22.14 | 22.32 | | |
| 10 | 16QAM | 1 | 49 | 22.33 | 22.23 | 22.24 | | |
| 10 | 16QAM | 25 | 0 | 20.90 | 21.12 | 21.15 | 22.0 | 0-2 |
| 10 | 16QAM | 25 | 12 | 20.75 | 20.91 | 21.18 | | |
| 10 | 16QAM | 25 | 24 | 21.01 | 20.98 | 21.25 | | |
| 10 | 16QAM | 50 | 0 | 20.80 | 21.03 | 21.11 | | |

| Channel | | | | 26065 | 26340 | 26665 | Tune up Limit (dBm) | MPR (dB) |
|---|---|---|---|---|---|---|---|---|
| Frequency (MHz) | | | | 1852.5 | 1880 | 1912.5 | | |
| 5 | QPSK | 1 | 0 | 23.20 | 22.90 | 23.17 | 24.0 | 0 |
| 5 | QPSK | 1 | 12 | 23.03 | 22.84 | 23.34 | | |
| 5 | QPSK | 1 | 24 | 22.89 | 22.89 | 22.87 | | |
| 5 | QPSK | 12 | 0 | 22.09 | 21.94 | 22.13 | 23.0 | 0-1 |
| 5 | QPSK | 12 | 6 | 22.05 | 21.93 | 22.22 | | |
| 5 | QPSK | 12 | 11 | 21.91 | 22.01 | 22.15 | | |
| 5 | QPSK | 25 | 0 | 22.10 | 22.00 | 22.23 | | |
| 5 | 16QAM | 1 | 0 | 22.51 | 22.28 | 22.49 | 23.0 | 0-1 |
| 5 | 16QAM | 1 | 12 | 21.94 | 22.51 | 22.26 | | |
| 5 | 16QAM | 1 | 24 | 22.44 | 22.12 | 22.40 | | |
| 5 | 16QAM | 12 | 0 | 20.99 | 20.82 | 21.19 | 22.0 | 0-2 |
| 5 | 16QAM | 12 | 6 | 21.11 | 20.83 | 21.30 | | |
| 5 | 16QAM | 12 | 11 | 20.81 | 21.07 | 21.43 | | |
| 5 | 16QAM | 25 | 0 | 21.05 | 21.13 | 21.36 | | |
| Channel | | | | 26055 | 26340 | 26675 | Tune up Limit (dBm) | MPR (dB) |
| Frequency (MHz) | | | | 1851.5 | 1880 | 1913.5 | | |
| 3 | QPSK | 1 | 0 | 23.23 | 22.89 | 23.26 | 24.0 | 0 |
| 3 | QPSK | 1 | 7 | 23.07 | 22.90 | 23.22 | | |
| 3 | QPSK | 1 | 14 | 23.04 | 22.88 | 23.09 | | |
| 3 | QPSK | 8 | 0 | 22.18 | 21.93 | 22.18 | 23.0 | 0-1 |
| 3 | QPSK | 8 | 4 | 22.11 | 22.08 | 22.12 | | |
| 3 | QPSK | 8 | 7 | 22.11 | 22.00 | 22.13 | | |
| 3 | QPSK | 15 | 0 | 22.13 | 21.99 | 22.11 | | |
| 3 | 16QAM | 1 | 0 | 22.58 | 22.22 | 22.81 | 23.0 | 0-1 |
| 3 | 16QAM | 1 | 7 | 22.50 | 22.49 | 22.34 | | |
| 3 | 16QAM | 1 | 14 | 21.98 | 22.37 | 22.66 | | |
| 3 | 16QAM | 8 | 0 | 21.23 | 20.82 | 21.37 | 22.0 | 0-2 |
| 3 | 16QAM | 8 | 4 | 21.07 | 20.90 | 21.34 | | |
| 3 | 16QAM | 8 | 7 | 21.28 | 20.87 | 21.25 | | |
| 3 | 16QAM | 15 | 0 | 21.10 | 20.64 | 21.09 | | |
| Channel | | | | 26047 | 26340 | 26683 | Tune up Limit (dBm) | MPR (dB) |
| Frequency (MHz) | | | | 1850.7 | 1880 | 1914.3 | | |
| 1.4 | QPSK | 1 | 0 | 23.07 | 22.91 | 22.97 | 24.0 | 0 |
| 1.4 | QPSK | 1 | 2 | 23.16 | 23.05 | 22.99 | | |
| 1.4 | QPSK | 1 | 5 | 22.99 | 22.82 | 22.90 | | |
| 1.4 | QPSK | 3 | 0 | 23.09 | 22.86 | 23.05 | | |
| 1.4 | QPSK | 3 | 1 | 23.18 | 22.87 | 23.02 | | |
| 1.4 | QPSK | 3 | 2 | 23.23 | 23.00 | 23.18 | | |
| 1.4 | QPSK | 6 | 0 | 22.15 | 21.88 | 22.14 | 23.0 | 0-1 |
| 1.4 | 16QAM | 1 | 0 | 22.49 | 22.01 | 22.28 | 23.0 | 0-1 |
| 1.4 | 16QAM | 1 | 2 | 22.23 | 22.49 | 22.59 | | |
| 1.4 | 16QAM | 1 | 5 | 22.50 | 22.41 | 22.51 | | |
| 1.4 | 16QAM | 3 | 0 | 22.04 | 22.13 | 22.23 | | |
| 1.4 | 16QAM | 3 | 1 | 22.22 | 22.16 | 22.13 | | |
| 1.4 | 16QAM | 3 | 2 | 22.20 | 22.15 | 22.27 | | |
| 1.4 | 16QAM | 6 | 0 | 21.20 | 20.55 | 21.19 | 22.0 | 0-2 |

**<TDD LTE SAR Measurement>**

TDD LTE configuration setup for SAR measurement

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

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

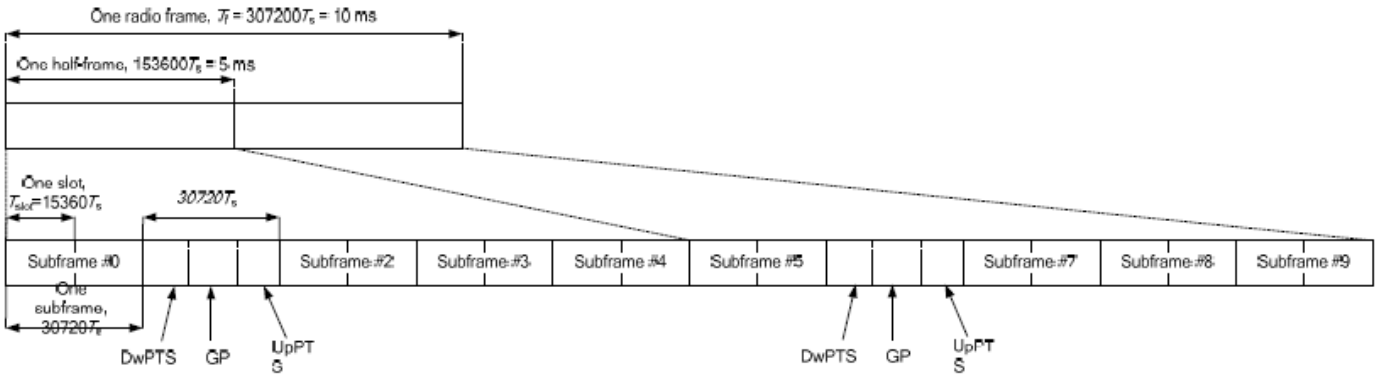



**Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).**

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

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

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

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

| Special subframe (30720·$T_s$): Normal cyclic prefix in downlink (UpPTS) | | | |
|---|---|---|---|
| | **Special subframe configuration** | **Normal cyclic prefix in uplink** | **Extended cyclic prefix in uplink** |
| **Uplink duty factor in one special subframe** | **0~4** | 7.13% | 8.33% |
| | **5~9** | 14.3% | 16.7% |

| Special subframe(30720·$T_s$): Extended cyclic prefix in downlink (UpPTS) | | | |
|---|---|---|---|
| | **Special subframe configuration** | **Normal cyclic prefix in uplink** | **Extended cyclic prefix in uplink** |
| **Uplink duty factor in one special subframe** | **0~3** | 7.13% | 8.33% |
| | **4~7** | 14.3% | 16.7% |

The highest duty factor is resulted from:

i. Uplink-downlink configuration: 0. In a half-frame consisted of 5 subfames, uplink operation is in 3 uplink subframes and 1 special subframe.

ii. special subframe configuration: 5-9 for normal cyclic prefix in downlink, 4-7 for extended cyclic prefix in downlink

iii. for special subframe with extended cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (3+0.167)/5 = 63.3%

iv. for special subframe with normal cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (3+0.143)/5 = 62.9%

v. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The scaled TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.

**<LTE Band 41>**

| BW [MHz] | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Low Middle Ch. / Freq. | Power Middle Ch. / Freq. | Power Middle High Ch. / Freq. | Power High Ch. / Freq. | Tune up Limit (dBm) | MPR (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| Channel | | | | 39750 | 40185 | 40620 | 41055 | 41490 | | |
| Frequency (MHz) | | | | 2506 | 2549.5 | 2593 | 2636.5 | 2680 | | |
| 20 | QPSK | 1 | 0 | 23.60 | 23.43 | 22.98 | 22.97 | 23.42 | 24.0 | 0 |
| 20 | QPSK | 1 | 49 | 23.45 | 23.18 | 22.80 | 22.95 | 23.40 | | |
| 20 | QPSK | 1 | 99 | 23.40 | 23.10 | 22.67 | 22.96 | 23.40 | | |
| 20 | QPSK | 50 | 0 | 22.63 | 22.40 | 22.12 | 22.19 | 22.59 | 23.0 | 1 |
| 20 | QPSK | 50 | 24 | 22.45 | 22.24 | 21.98 | 22.18 | 22.49 | | |
| 20 | QPSK | 50 | 49 | 22.35 | 22.18 | 21.98 | 22.16 | 22.46 | | |
| 20 | QPSK | 100 | 0 | 22.48 | 22.30 | 22.07 | 22.16 | 22.43 | | |
| 20 | 16QAM | 1 | 0 | 22.74 | 22.43 | 22.31 | 22.68 | 22.85 | 23.0 | 1 |
| 20 | 16QAM | 1 | 49 | 22.71 | 22.37 | 22.10 | 22.46 | 22.79 | | |
| 20 | 16QAM | 1 | 99 | 22.54 | 22.31 | 22.00 | 22.26 | 22.46 | | |
| 20 | 16QAM | 50 | 0 | 21.46 | 21.41 | 21.17 | 21.32 | 21.63 | 22.0 | 2 |
| 20 | 16QAM | 50 | 24 | 21.50 | 21.27 | 21.05 | 21.00 | 21.62 | | |
| 20 | 16QAM | 50 | 49 | 21.39 | 21.24 | 20.99 | 21.4 | 21.51 | | |
| 20 | 16QAM | 100 | 0 | 21.43 | 21.25 | 21.07 | 21.3 | 21.67 | | |
| Channel | | | | 39725 | 40173 | 40620 | 41068 | 41515 | Tune up Limit (dBm) | MPR (dB) |
| Frequency (MHz) | | | | 2503.5 | 2548.3 | 2593 | 2637.8 | 2682.5 | | |
| 15 | QPSK | 1 | 0 | 23.41 | 23.35 | 23.14 | 23.10 | 23.38 | 24.0 | 0 |
| 15 | QPSK | 1 | 37 | 23.32 | 23.15 | 22.91 | 23.08 | 23.36 | | |
| 15 | QPSK | 1 | 74 | 23.31 | 23.11 | 22.87 | 23.22 | 23.41 | | |
| 15 | QPSK | 36 | 0 | 22.57 | 22.40 | 22.01 | 22.18 | 22.52 | 23.0 | 1 |
| 15 | QPSK | 36 | 18 | 22.46 | 22.28 | 21.94 | 22.25 | 22.50 | | |
| 15 | QPSK | 36 | 37 | 22.42 | 22.15 | 21.97 | 22.28 | 22.47 | | |
| 15 | QPSK | 75 | 0 | 22.45 | 22.23 | 22.01 | 22.24 | 22.47 | | |
| 15 | 16QAM | 1 | 0 | 22.77 | 22.55 | 22.38 | 22.41 | 22.61 | 23.0 | 1 |
| 15 | 16QAM | 1 | 37 | 22.66 | 22.35 | 22.10 | 22.42 | 22.37 | | |
| 15 | 16QAM | 1 | 74 | 22.89 | 22.37 | 22.01 | 22.53 | 22.60 | | |
| 15 | 16QAM | 36 | 0 | 21.28 | 21.36 | 21.04 | 21.02 | 21.61 | 22.0 | 2 |
| 15 | 16QAM | 36 | 18 | 21.47 | 21.28 | 20.92 | 20.95 | 21.59 | | |
| 15 | 16QAM | 36 | 37 | 21.24 | 21.27 | 20.77 | 21.11 | 21.57 | | |
| 15 | 16QAM | 75 | 0 | 21.42 | 21.20 | 21.03 | 21.11 | 21.41 | | |
| Channel | | | | 39700 | 40160 | 40620 | 41080 | 41540 | Tune up Limit (dBm) | MPR (dB) |
| Frequency (MHz) | | | | 2501 | 2547 | 2593 | 2639 | 2685 | | |
| 10 | QPSK | 1 | 0 | 23.31 | 23.17 | 23.12 | 23.01 | 23.58 | 24.0 | 0 |
| 10 | QPSK | 1 | 24 | 23.46 | 22.93 | 22.69 | 22.86 | 23.48 | | |
| 10 | QPSK | 1 | 49 | 23.24 | 23.14 | 22.69 | 22.93 | 23.38 | | |
| 10 | QPSK | 25 | 0 | 22.51 | 22.28 | 22.06 | 22.12 | 22.51 | 23.0 | 1 |
| 10 | QPSK | 25 | 12 | 22.44 | 22.17 | 21.97 | 22.08 | 22.54 | | |
| 10 | QPSK | 25 | 24 | 22.40 | 22.23 | 21.92 | 22.03 | 22.41 | | |
| 10 | QPSK | 50 | 0 | 22.45 | 22.17 | 22.02 | 22.12 | 22.47 | | |
| 10 | 16QAM | 1 | 0 | 22.76 | 22.52 | 22.42 | 22.33 | 22.57 | 23.0 | 1 |
| 10 | 16QAM | 1 | 24 | 22.72 | 22.12 | 22.1 | 22.57 | 22.41 | | |
| 10 | 16QAM | 1 | 49 | 22.73 | 22.27 | 22.03 | 22.37 | 22.37 | | |
| 10 | 16QAM | 25 | 0 | 21.48 | 21.24 | 21.13 | 21.21 | 21.76 | 22.0 | 2 |
| 10 | 16QAM | 25 | 12 | 21.41 | 21.15 | 21.07 | 21.17 | 21.89 | | |
| 10 | 16QAM | 25 | 24 | 21.39 | 21.11 | 21.03 | 21.15 | 21.54 | | |
| 10 | 16QAM | 50 | 0 | 21.35 | 21.26 | 21.04 | 21.15 | 21.61 | | |

| Channel | | | | 39675 | 40148 | 40620 | 41093 | 41565 | Tune up Limit (dBm) | MPR (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| Frequency (MHz) | | | | 2498.5 | 2545.8 | 2593 | 2640.3 | 2687.5 | | |
| 5 | QPSK | 1 | 0 | 23.18 | 22.85 | 22.92 | 22.83 | 23.47 | 24.0 | 0 |
| 5 | QPSK | 1 | 12 | 23.48 | 23.29 | 23.09 | 23.19 | 23.55 | | |
| 5 | QPSK | 1 | 24 | 23.19 | 23.01 | 22.8 | 22.97 | 23.36 | | |
| 5 | QPSK | 12 | 0 | 22.36 | 22.15 | 21.98 | 22.01 | 22.60 | 23.0 | 1 |
| 5 | QPSK | 12 | 6 | 22.42 | 22.12 | 21.95 | 22.05 | 22.48 | | |
| 5 | QPSK | 12 | 11 | 22.40 | 22.12 | 22.02 | 22.09 | 22.45 | | |
| 5 | QPSK | 25 | 0 | 22.36 | 22.15 | 21.96 | 21.96 | 22.53 | | |
| 5 | 16QAM | 1 | 0 | 22.45 | 22.25 | 22.21 | 22.12 | 22.61 | 23.0 | 1 |
| 5 | 16QAM | 1 | 12 | 22.54 | 22.33 | 22.11 | 22.17 | 22.41 | | |
| 5 | 16QAM | 1 | 24 | 22.33 | 22.24 | 22.07 | 22.14 | 22.38 | | |
| 5 | 16QAM | 12 | 0 | 21.60 | 21.24 | 20.75 | 21.03 | 21.65 | 22.0 | 2 |
| 5 | 16QAM | 12 | 6 | 21.60 | 21.26 | 20.93 | 20.98 | 21.62 | | |
| 5 | 16QAM | 12 | 11 | 21.56 | 21.27 | 20.93 | 21.17 | 21.66 | | |
| 5 | 16QAM | 25 | 0 | 21.67 | 21.22 | 20.99 | 21.31 | 21.76 | | |

**Note:**

TDD LTE Band41 has 5 required test channels was according to KDB 447498 D01v05r02.

## <WLAN Conducted Power>

**General Note:**
For 2.4GHz WLAN SAR testing, highest average RF output power channel for the lowest data rate for 802.11b was selected for SAR evaluation. 802.11g/n HT20 were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of 802.11b mode.

## <2.4GHz WLAN>

| WLAN 2.4GHz 802.11b Average Power (dBm) | | | | | | |
|---|---|---|---|---|---|---|
| Power vs. Channel | | | Power vs. Data Rate | | | |
| Channel | Frequency (MHz) | Data Rate 1Mbps | Channel | 2Mbps | 5.5Mbps | 11Mbps |
| CH 01 | 2412 | 14.68 | CH 11 | 14.91 | 15.12 | 15.15 |
| CH 06 | 2437 | 14.84 | | | | |
| CH 11 | 2462 | **15.16** | | | | |

| WLAN 2.4GHz 802.11g Average Power (dBm) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Power vs. Channel | | | Power vs. Data Rate | | | | | | | |
| Channel | Frequency (MHz) | Data Rate 6Mbps | Channel | 9Mbps | 12Mbps | 18Mbps | 24Mbps | 36Mbps | 48Mbps | 54Mbps |
| CH 01 | 2412 | **13.17** | CH 01 | 13.01 | 12.94 | 13.14 | 13.02 | 13.12 | 13.15 | 13.08 |
| CH 06 | 2437 | 12.75 | | | | | | | | |
| CH 11 | 2462 | 12.62 | | | | | | | | |

| WLAN 2.4GHz 802.11n HT20 Average Power (dBm) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Power vs. Channel | | | Power vs. MCS Index | | | | | | | |
| Channel | Frequency (MHz) | MCS Index MCS0 | Channel | MCS1 | MCS2 | MCS3 | MCS4 | MCS5 | MCS6 | MCS7 |
| CH 01 | 2412 | **12.31** | CH 01 | 12.17 | 12.25 | 12.24 | 12.26 | 12.29 | 12.28 | 12.30 |
| CH 06 | 2437 | 11.77 | | | | | | | | |
| CH 11 | 2462 | 11.65 | | | | | | | | |

# 13. Bluetooth Exclusions Applied

| Mode Band | Average power(dBm) | |
|---|---|---|
| | Bluetooth v3.0+EDR | Bluetooth v4.0 LE |
| 2.4GHz Bluetooth | 2.5 | -2.0 |

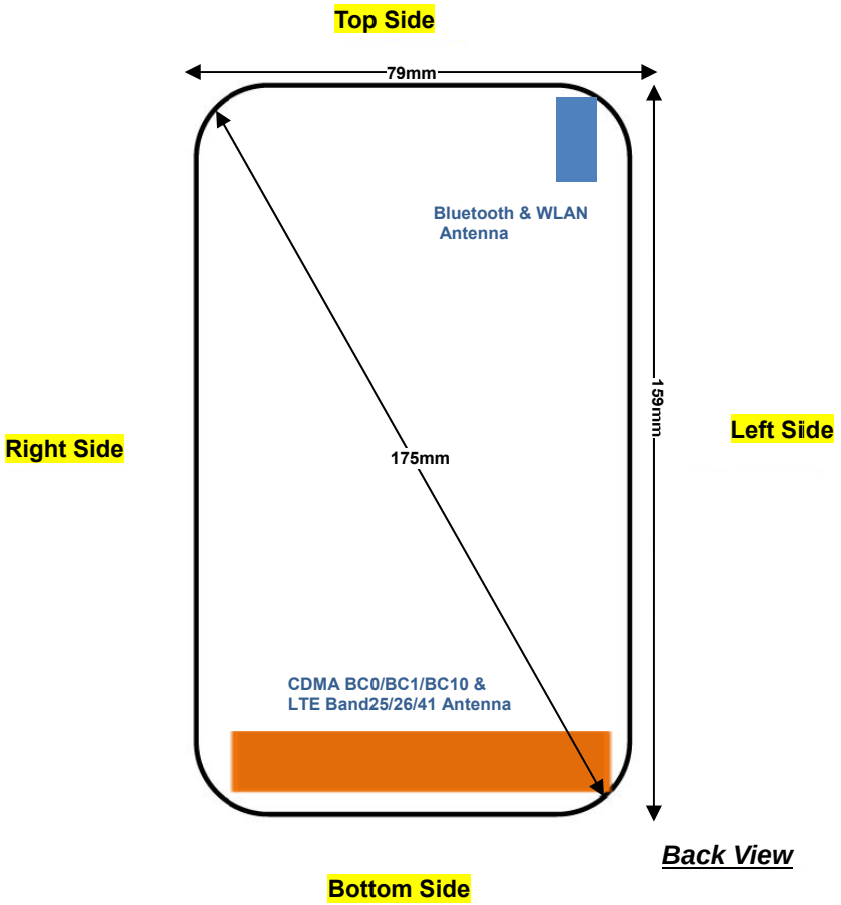
**Note:**

1. Per KDB 447498 D01v05r02, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
   - f(GHz) is the RF channel transmit frequency in GHz
   - Power and distance are rounded to the nearest mW and mm before calculation
   - The result is rounded to one decimal place for comparison

| Bluetooth Max Power (dBm) | Separation Distance (mm) | Frequency (GHz) | exclusion thresholds |
|---|---|---|---|
| 2.5 | < 5 | 2.48 | 0.6 |

**Note:**
Per KDB 447498 D01v05r02, when the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion. The test exclusion threshold is 0.6 which is <= 3, SAR testing is not required.

# 14. Antenna Location




| Distance of the Antenna to the EUT surface/edge | | | | | | |
|---|---|---|---|---|---|---|
| Antennas | Back | Front | Top Side | Bottom Side | Right Side | Left Side |
| CDMA BC0/BC1/BC10& LTE Band25/26/41 | ≤ 25mm | ≤ 25mm | 146mm | ≤ 25mm | ≤ 25mm | ≤ 25mm |
| BT&WLAN | ≤ 25mm | ≤ 25mm | ≤ 25mm | 141mm | 69mm | ≤ 25mm |

| Positions for SAR tests; Hotspot mode | | | | | | |
|---|---|---|---|---|---|---|
| Antennas | Back | Front | Top Side | Bottom Side | Right Side | Left Side |
| CDMA BC0/BC1/BC10& LTE Band25/26/41 | Yes | Yes | No | Yes | Yes | Yes |
| BT&WLAN | Yes | Yes | Yes | No | No | Yes |

**General Note:**
Referring to KDB 941225 D06 v02, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge

# 15. SAR Test Results

**General Note:**

1. Per KDB 447498 D01v05r02, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. Duty cycle of TDD was fixed, therefore not require scaled to 100% of duty cycle. For SAR system, the crest factor 1:1.59 (62.9%) was used perform testing. Considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result.
   d. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   e. For WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
   f. For TDD LTE Band: Reported SAR(W/kg)= Measured SAR(W/kg)* scaling factor for extended cyclic prefix * Tune-up scaling factor
2. Per KDB 447498 D01v05r02, 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. Pre KDB648474 D04v01r02, when the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.
4. Per KDB 941225 D01v03, SAR for next to the ear head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55.
5. Per KDB 941225 D01v03, in Hotspot mode EUT is treated as data device and SAR is tested with Ev-Do Rev 0 (RTAP 153.6kbps) as the primary mode.
6. Per KDB 941225 D01v03, for Body-worn accessory SAR is measured in RC3 with the handset configured in TDSO/SO32 to transmit at full rate on FCH only with all other code channels disabled. The body-worn accessory procedures in KDB Publication 447498 are applied. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCH), with FCH only as the primary mode.
7. Per KDB 941225 D05v02r03, 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.
8. Per KDB 941225 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
9. Per KDB 941225 D05v02r03, 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.
10. Per KDB 941225 D05v02r03, 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 D05v02r03, 16QAM SAR testing is not required.
11. Per KDB 941225 D05v02r03, 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 D05v02r03, smaller bandwidth SAR testing is not required.
12. This device 2.4GHz WLAN supports Hotspot operation.
13. Additional WLAN SAR with headset testing was performed for simultaneous transmission analysis.
14. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g SAR > 1.2 W/kg, and the limit for extremity SAR is 4.0W/kg as averaged over any 10 gram of tissue.

## 15.1 Head SAR

### <CDMA SAR>

| Plot No. | Band | Mode | Test Position | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | CDMA2000 BC10 | RC3 SO55 | Right Cheek | 476 | 817.9 | 23.78 | 24 | 1.052 | 0.05 | 0.434 | 0.457 |
| | CDMA2000 BC10 | RC3 SO55 | Right Tilted | 476 | 817.9 | 23.78 | 24 | 1.052 | 0.01 | 0.292 | 0.307 |
| **#01** | **CDMA2000 BC10** | **RC3 SO55** | **Left Cheek** | **476** | **817.9** | **23.78** | **24** | **1.052** | **0.06** | **0.537** | **0.565** |
| | CDMA2000 BC10 | RC3 SO55 | Left Tilted | 476 | 817.9 | 23.78 | 24 | 1.052 | 0.05 | 0.329 | 0.346 |
| | CDMA2000 BC0 | RC3 SO55 | Right Cheek | 384 | 836.52 | 23.7 | 24 | 1.072 | 0.03 | 0.408 | 0.437 |
| | CDMA2000 BC0 | RC3 SO55 | Right Tilted | 384 | 836.52 | 23.7 | 24 | 1.072 | 0.05 | 0.278 | 0.298 |
| **#02** | **CDMA2000 BC0** | **RC3 SO55** | **Left Cheek** | **384** | **836.52** | **23.7** | **24** | **1.072** | **0.06** | **0.515** | **0.552** |
| | **CDMA2000 BC0** | RC3 SO55 | Left Tilted | 384 | 836.52 | 23.7 | 24 | 1.072 | 0.01 | 0.319 | 0.342 |
| | CDMA2000 BC1 | RC3 SO55 | Right Cheek | 1175 | 1908.75 | 23.15 | 23.5 | 1.084 | 0.09 | 0.271 | 0.294 |
| | CDMA2000 BC1 | RC3 SO55 | Right Tilted | 1175 | 1908.75 | 23.15 | 23.5 | 1.084 | -0.04 | 0.204 | 0.221 |
| **#03** | **CDMA2000 BC1** | **RC3 SO55** | **Left Cheek** | **1175** | **1908.75** | **23.15** | **23.5** | **1.084** | **-0.06** | **0.548** | **0.594** |
| | CDMA2000 BC1 | RC3 SO55 | Left Tilted | 1175 | 1908.75 | 23.15 | 23.5 | 1.084 | 0.02 | 0.246 | 0.267 |

### <LTE SAR>

| Plot No. | Band | BW (MHz) | Mode | RB Size | RB offest | Test Position | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LTE Band 26 | 15M | QPSK | 1 | 37 | Right Cheek | 26865 | 831.5 | 23.3 | 24 | 1.175 | -0.07 | 0.357 | 0.419 |
| | LTE Band 26 | 15M | QPSK | 1 | 37 | Right Tilted | 26865 | 831.5 | 23.3 | 24 | 1.175 | 0.03 | 0.238 | 0.28 |
| **#04** | **LTE Band 26** | **15M** | **QPSK** | **1** | **37** | **Left Cheek** | **26865** | **831.5** | **23.3** | **24** | **1.175** | **0.06** | **0.412** | **0.484** |
| | LTE Band 26 | 15M | QPSK | 1 | 37 | Left Tilted | 26865 | 831.5 | 23.3 | 24 | 1.175 | -0.01 | 0.254 | 0.298 |
| | LTE Band 26 | 15M | **QPSK** | 36 | 18 | Right Cheek | 26865 | 831.5 | 22.18 | 23 | 1.208 | 0.04 | 0.273 | 0.33 |
| | LTE Band 26 | 15M | QPSK | 36 | 18 | Right Tilted | 26865 | 831.5 | 22.18 | 23 | 1.208 | 0.14 | 0.175 | 0.211 |
| | LTE Band 26 | 15M | QPSK | 36 | 18 | Left Cheek | 26865 | 831.5 | 22.18 | 23 | 1.208 | 0.05 | 0.33 | 0.399 |
| | LTE Band 26 | 15M | QPSK | 36 | 18 | Left Tilted | 26865 | 831.5 | 22.18 | 23 | 1.208 | 0.07 | 0.204 | 0.246 |
| | LTE Band 25 | 20M | **QPSK** | 1 | 0 | Right Cheek | 26340 | 1880 | 23.43 | 24 | 1.140 | -0.03 | 0.307 | 0.350 |
| | LTE Band 25 | 20M | QPSK | 1 | 0 | Right Tilted | 26340 | 1880 | 23.43 | 24 | 1.140 | 0.08 | 0.227 | 0.259 |
| **#05** | **LTE Band 25** | **20M** | **QPSK** | **1** | **0** | **Left Cheek** | **26340** | **1880** | **23.43** | **24** | **1.140** | **0.04** | **0.559** | **0.637** |
| | LTE Band 25 | 20M | QPSK | 1 | 0 | Left Tilted | 26340 | 1880 | 23.43 | 24 | 1.140 | 0.06 | 0.247 | 0.282 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Right Cheek | 26340 | 1880 | 22.26 | 23 | 1.186 | 0.12 | 0.226 | 0.268 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Right Tilted | 26340 | 1880 | 22.26 | 23 | 1.186 | 0.03 | 0.17 | 0.202 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Left Cheek | 26340 | 1880 | 22.26 | 23 | 1.186 | 0.11 | 0.428 | 0.508 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Left Tilted | 26340 | 1880 | 22.26 | 23 | 1.186 | -0.01 | 0.188 | 0.223 |

| Plot No. | Band | BW (MHz) | Mode | RB Size | RB offset | Test Position | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **#06** | **LTE Band 41** | **20M** | **QPSK** | **1** | **0** | **Right Cheek** | **39750** | **2506** | **23.6** | **24** | **1.096** | **62.9** | **1.006** | **0.1** | **0.267** | **0.295** |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Right Tilted | 39750 | 2506 | 23.6 | 24 | 1.096 | 62.9 | 1.006 | -0.08 | 0.125 | 0.138 |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Left Cheek | 39750 | 2506 | 23.6 | 24 | 1.096 | 62.9 | 1.006 | 0.09 | 0.145 | 0.160 |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Left Tilted | 39750 | 2506 | 23.6 | 24 | 1.096 | 62.9 | 1.006 | 0.04 | 0.122 | 0.135 |
| | LTE Band 41 | 20M | QPSK | 50 | 0 | Right Cheek | 39750 | 2506 | 22.63 | 23 | 1.089 | 62.9 | 1.006 | 0.02 | 0.220 | 0.241 |
| | LTE Band 41 | 20M | QPSK | 50 | 0 | Right Tilted | 39750 | 2506 | 22.63 | 23 | 1.089 | 62.9 | 1.006 | 0.09 | 0.105 | 0.115 |
| | LTE Band 41 | 20M | QPSK | 50 | 0 | Left Cheek | 39750 | 2506 | 22.63 | 23 | 1.089 | 62.9 | 1.006 | 0.02 | 0.117 | 0.128 |
| | LTE Band 41 | 20M | QPSK | 50 | 0 | Left Tilted | 39750 | 2506 | 22.63 | 23 | 1.089 | 62.9 | 1.006 | 0.06 | 0.093 | 0.102 |

## <DTS WLAN SAR>

| Plot No. | Band | Mode | Test Position | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **#07** | **WLAN 2.4GHz** | **802.11b 1Mbps** | **Right Cheek** | **11** | **2462** | **15.16** | **15.5** | **1.081** | **97.59** | **1.025** | **-0.01** | **0.668** | **0.740** |
| | WLAN 2.4GHz | 802.11b 1Mbps | Right Tilted | 11 | 2462 | 15.16 | 15.5 | 1.081 | 97.59 | 1.025 | 0.01 | 0.424 | 0.470 |
| | WLAN 2.4GHz | 802.11b 1Mbps | Left Cheek | 11 | 2462 | 15.16 | 15.5 | 1.081 | 97.59 | 1.025 | 0.01 | 0.363 | 0.402 |
| | WLAN 2.4GHz | 802.11b 1Mbps | Left Tilted | 11 | 2462 | 15.16 | 15.5 | 1.081 | 97.59 | 1.025 | 0.01 | 0.355 | 0.394 |

## 15.2 Hotspot SAR

| Distance of the Antenna to the EUT surface/edge | | | | | | |
|---|---|---|---|---|---|---|
| Antennas | Back | Front | Top Side | Bottom Side | Right Side | Left Side |
| CDMA BC0/BC1/BC10& LTE Band25/26/41 | ≤ 25mm | ≤ 25mm | 146mm | ≤ 25mm | ≤ 25mm | ≤ 25mm |
| BT&WLAN | ≤ 25mm | ≤ 25mm | ≤ 25mm | 141mm | 69mm | ≤ 25mm |

| Positions for SAR tests; Hotspot mode | | | | | | |
|---|---|---|---|---|---|---|
| Antennas | Back | Front | Top Side | Bottom Side | Right Side | Left Side |
| CDMA BC0/BC1/BC10& LTE Band25/26/41 | Yes | Yes | No | Yes | Yes | Yes |
| BT&WLAN | Yes | Yes | Yes | No | No | Yes |

**General Note:**
Referring to KDB 941225 D06 v02, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge

**<CDMA SAR>**

| Plot No. | Band | Mode | Test Position | Gap (cm) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CDMA2000 BC10 | RTAP 153.6 | Front | 1 | 476 | 817.9 | 23.74 | 24 | 1.062 | 0.02 | 0.468 | 0.497 |
| **#08** | **CDMA2000 BC10** | **RTAP 153.6** | **Back** | **1** | **476** | **817.9** | **23.74** | **24** | **1.062** | **0.05** | **0.591** | **0.627** |
| | CDMA2000 BC10 | RTAP 153.6 | Left side | 1 | 476 | 817.9 | 23.74 | 24 | 1.062 | 0.05 | 0.590 | 0.626 |
| | CDMA2000 BC10 | RTAP 153.6 | Right side | 1 | 476 | 817.9 | 23.74 | 24 | 1.062 | -0.03 | 0.411 | 0.436 |
| | CDMA2000 BC10 | RTAP 153.6 | Bottom side | 1 | 476 | 817.9 | 23.74 | 24 | 1.062 | 0.05 | 0.193 | 0.205 |
| | CDMA2000 BC0 | RTAP 153.6 | Front | 1 | 384 | 836.52 | 23.72 | 24 | 1.067 | -0.06 | 0.386 | 0.412 |
| **#09** | **CDMA2000 BC0** | **RTAP 153.6** | **Back** | **1** | **384** | **836.52** | **23.72** | **24** | **1.067** | **-0.04** | **0.639** | **0.682** |
| | CDMA2000 BC0 | RTAP 153.6 | Left side | 1 | 384 | 836.52 | 23.72 | 24 | 1.067 | 0.01 | 0.504 | 0.538 |
| | CDMA2000 BC0 | RTAP 153.6 | Right side | 1 | 384 | 836.52 | 23.72 | 24 | 1.067 | -0.02 | 0.320 | 0.341 |
| | CDMA2000 BC0 | RTAP 153.6 | Bottom side | 1 | 384 | 836.52 | 23.72 | 24 | 1.067 | 0.06 | 0.215 | 0.229 |
| | CDMA2000 BC1 | RTAP 153.6 | Front | 1 | 1175 | 1908.75 | 23.15 | 23.5 | 1.084 | 0.08 | 1.100 | 1.192 |
| | CDMA2000 BC1 | RTAP 153.6 | Back | 1 | 1175 | 1908.75 | 23.15 | 23.5 | 1.084 | -0.06 | 1.040 | 1.127 |
| | CDMA2000 BC1 | RTAP 153.6 | Left side | 1 | 1175 | 1908.75 | 23.15 | 23.5 | 1.084 | -0.01 | 0.673 | 0.729 |
| | CDMA2000 BC1 | RTAP 153.6 | Right side | 1 | 1175 | 1908.75 | 23.15 | 23.5 | 1.084 | -0.06 | 0.319 | 0.346 |
| | CDMA2000 BC1 | RTAP 153.6 | Bottom side | 1 | 1175 | 1908.75 | 23.15 | 23.5 | 1.084 | -0.04 | 0.639 | 0.693 |
| **#10** | **CDMA2000 BC1** | **RTAP 153.6** | **Front** | **1** | **25** | **1851.25** | **22.92** | **23.5** | **1.143** | **0.00051** | **1.100** | **1.257** |
| | CDMA2000 BC1 | RTAP 153.6 | Front | 1 | 600 | 1880 | 22.89 | 23.5 | 1.151 | 0.01 | 1.080 | 1.243 |
| | CDMA2000 BC1 | RTAP 153.6 | Back | 1 | 25 | 1851.25 | 22.92 | 23.5 | 1.143 | -0.07 | 1.020 | 1.166 |
| | CDMA2000 BC1 | RTAP 153.6 | Back | 1 | 600 | 1880 | 22.89 | 23.5 | 1.151 | -0.02 | 1.020 | 1.174 |

## <LTE SAR>

| Plot No. | Band | BW (MHz) | Mode | RB Size | RB offset | Test Position | Gap (cm) | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LTE Band 26 | 15M | QPSK | 1 | 37 | Front | 1 | 26865 | 831.5 | 23.3 | 24 | 1.175 | 0.05 | 0.314 | 0.369 |
| **#11** | **LTE Band 26** | **15M** | **QPSK** | **1** | **37** | **Back** | **1** | **26865** | **831.5** | **23.3** | **24** | **1.175** | **-0.05** | **0.516** | **0.606** |
| | LTE Band 26 | 15M | QPSK | 1 | 37 | Left side | 1 | 26865 | 831.5 | 23.3 | 24 | 1.175 | 0.02 | 0.421 | 0.495 |
| | LTE Band 26 | 15M | QPSK | 1 | 37 | Right side | 1 | 26865 | 831.5 | 23.3 | 24 | 1.175 | 0.01 | 0.281 | 0.33 |
| | LTE Band 26 | 15M | QPSK | 1 | 37 | Bottom side | 1 | 26865 | 831.5 | 23.3 | 24 | 1.175 | 0.06 | 0.181 | 0.213 |
| | LTE Band 26 | 15M | QPSK | 36 | 18 | Front | 1 | 26865 | 831.5 | 22.18 | 23 | 1.208 | 0.03 | 0.250 | 0.302 |
| | LTE Band 26 | 15M | QPSK | 36 | 18 | Back | 1 | 26865 | 831.5 | 22.18 | 23 | 1.208 | -0.07 | 0.411 | 0.496 |
| | LTE Band 26 | 15M | QPSK | 36 | 18 | Left side | 1 | 26865 | 831.5 | 22.18 | 23 | 1.208 | 0.06 | 0.343 | 0.414 |
| | LTE Band 26 | 15M | QPSK | 36 | 18 | Right side | 1 | 26865 | 831.5 | 22.18 | 23 | 1.208 | 0.05 | 0.205 | 0.248 |
| | LTE Band 26 | 15M | QPSK | 36 | 18 | Bottom side | 1 | 26865 | 831.5 | 22.18 | 23 | 1.208 | 0.01 | 0.141 | 0.17 |
| **#12** | **LTE Band 25** | **20M** | **QPSK** | **1** | **0** | **Front** | **1** | **26340** | **1880** | **23.43** | **24** | **1.140** | **-0.04** | **1.050** | **1.197** |
| | LTE Band 25 | 20M | QPSK | 1 | 0 | Back | 1 | 26340 | 1880 | 23.43 | 24 | 1.140 | -0.07 | 0.894 | 1.019 |
| | LTE Band 25 | 20M | QPSK | 1 | 0 | Left side | 1 | 26340 | 1880 | 23.43 | 24 | 1.140 | 0.07 | 0.624 | 0.712 |
| | LTE Band 25 | 20M | QPSK | 1 | 0 | Right side | 1 | 26340 | 1880 | 23.43 | 24 | 1.140 | 0.09 | 0.354 | 0.404 |
| | LTE Band 25 | 20M | QPSK | 1 | 0 | Bottom side | 1 | 26340 | 1880 | 23.43 | 24 | 1.140 | 0.17 | 0.619 | 0.706 |
| | LTE Band 25 | 20M | QPSK | 1 | 0 | Front | 1 | 26140 | 1860 | 23.38 | 24 | 1.153 | 0.04 | 1.020 | 1.177 |
| | LTE Band 25 | 20M | QPSK | 1 | 0 | Front | 1 | 26590 | 1905 | 23.34 | 24 | 1.164 | 0.06 | 0.997 | 1.161 |
| | LTE Band 25 | 20M | QPSK | 1 | 0 | Back | 1 | 26140 | 1860 | 23.38 | 24 | 1.153 | 0.02 | 0.966 | 1.114 |
| | LTE Band 25 | 20M | QPSK | 1 | 0 | Back | 1 | 26590 | 1905 | 23.34 | 24 | 1.164 | -0.04 | 1.020 | 1.187 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Front | 1 | 26340 | 1880 | 22.26 | 23 | 1.186 | 0.13 | 0.797 | 0.945 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Back | 1 | 26340 | 1880 | 22.26 | 23 | 1.186 | 0.07 | 0.721 | 0.855 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Left side | 1 | 26340 | 1880 | 22.26 | 23 | 1.186 | 0.04 | 0.473 | 0.561 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Right side | 1 | 26340 | 1880 | 22.26 | 23 | 1.186 | 0.06 | 0.262 | 0.311 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Bottom side | 1 | 26340 | 1880 | 22.26 | 23 | 1.186 | -0.06 | 0.490 | 0.581 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Front | 1 | 26140 | 1860 | 22.17 | 23 | 1.211 | 0.09 | 0.804 | 0.973 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Front | 1 | 26590 | 1905 | 22.23 | 23 | 1.194 | 0.06 | 0.799 | 0.954 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Back | 1 | 26140 | 1860 | 22.17 | 23 | 1.211 | -0.04 | 0.760 | 0.92 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Back | 1 | 26590 | 1905 | 22.23 | 23 | 1.194 | -0.06 | 0.713 | 0.851 |
| | LTE Band 25 | 20M | QPSK | 100 | 0 | Front | 1 | 26590 | 1905 | 22.23 | 23 | 1.194 | 0.09 | 0.771 | 0.921 |
| | LTE Band 25 | 20M | QPSK | 100 | 0 | Back | 1 | 26590 | 1905 | 22.23 | 23 | 1.194 | 0.02 | 0.714 | 0.853 |

| Plot No. | Band | BW (MHz) | Mode | RB Size | RB offset | Test Position | Gap (cm) | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Duty Cycle % | Duty Cycle Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Front | 1 | 39750 | 2506 | 23.6 | 24 | 1.096 | 62.9 | 1.006 | 0.01 | 0.289 | 0.319 |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Back | 1 | 39750 | 2506 | 23.6 | 24 | 1.096 | 62.9 | 1.006 | 0.13 | 0.646 | 0.713 |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Left side | 1 | 39750 | 2506 | 23.6 | 24 | 1.096 | 62.9 | 1.006 | 0.02 | 0.071 | 0.078 |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Right side | 1 | 39750 | 2506 | 23.6 | 24 | 1.096 | 62.9 | 1.006 | -0.01 | 0.160 | 0.176 |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Bottom side | 1 | 39750 | 2506 | 23.6 | 24 | 1.096 | 62.9 | 1.006 | -0.16 | 0.511 | 0.564 |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Back | 1 | 40620 | 2593 | 22.98 | 24 | 1.265 | 62.9 | 1.006 | -0.04 | 0.511 | 0.650 |
| **#13** | **LTE Band 41** | **20M** | **QPSK** | **1** | **0** | **Back** | **1** | **41490** | **2680** | **23.42** | **24** | **1.143** | **62.9** | **1.006** | **-0.02** | **0.709** | **0.815** |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Back | 1 | 40185 | 2549.5 | 23.43 | 24 | 1.140 | 62.9 | 1.006 | -0.03 | 0.578 | 0.663 |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Back | 1 | 41055 | 2636.5 | 22.97 | 24 | 1.268 | 62.9 | 1.006 | -0.01 | 0.572 | 0.729 |
| | LTE Band 41 | 20M | QPSK | 50 | 0 | Front | 1 | 39750 | 2506 | 22.63 | 23 | 1.089 | 62.9 | 1.006 | 0.05 | 0.232 | 0.254 |
| | LTE Band 41 | 20M | QPSK | 50 | 0 | Back | 1 | 39750 | 2506 | 22.63 | 23 | 1.089 | 62.9 | 1.006 | 0.01 | 0.507 | 0.555 |
| | LTE Band 41 | 20M | QPSK | 50 | 0 | Left side | 1 | 39750 | 2506 | 22.63 | 23 | 1.089 | 62.9 | 1.006 | 0.01 | 0.060 | 0.066 |
| | LTE Band 41 | 20M | QPSK | 50 | 0 | Right side | 1 | 39750 | 2506 | 22.63 | 23 | 1.089 | 62.9 | 1.006 | 0.13 | 0.123 | 0.135 |
| | LTE Band 41 | 20M | QPSK | 50 | 0 | Bottom side | 1 | 39750 | 2506 | 22.63 | 23 | 1.089 | 62.9 | 1.006 | -0.05 | 0.427 | 0.468 |
| | LTE Band 41 | 20M | QPSK | 100 | 0 | Back | 1 | 39750 | 2506 | 22.48 | 23 | 1.127 | 62.9 | 1.006 | -0.03 | 0.484 | 0.549 |

## <DTS WLAN SAR>

| Plot No. | Band | Mode | Test Position | Gap (cm) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | WLAN 2.4GHz | 802.11b 1Mbps | Front | 1 | 11 | 2462 | 15.16 | 15.5 | 1.081 | 97.59 | 1.025 | 0.08 | 0.082 | 0.091 |
| **#14** | **WLAN 2.4GHz** | **802.11b 1Mbps** | **Back** | **1** | **11** | **2462** | **15.16** | **15.5** | **1.081** | **97.59** | **1.025** | **-0.19** | **0.165** | **0.183** |
| | WLAN 2.4GHz | 802.11b 1Mbps | Left side | 1 | 11 | 2462 | 15.16 | 15.5 | 1.081 | 97.59 | 1.025 | 0.06 | 0.039 | 0.043 |
| | WLAN 2.4GHz | 802.11b 1Mbps | Top side | 1 | 11 | 2462 | 15.16 | 15.5 | 1.081 | 97.59 | 1.025 | 0.09 | 0.099 | 0.110 |

## 15.3 Body Worn Accessory SAR

### <CDMA SAR>

| Plot No. | Band | Mode | Test Position | Gap (cm) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CDMA2000 BC10 | RC3 SO32 | Front | 1 | 476 | 817.9 | 23.77 | 24 | 1.054 | -0.01 | 0.428 | 0.451 |
| **#15** | **CDMA2000 BC10** | **RC3 SO32** | **Back** | **1** | **476** | **817.9** | **23.77** | **24** | **1.054** | **0.05** | **0.593** | **0.625** |
| | CDMA2000 BC0 | RC3 SO32 | Front | 1 | 384 | 836.52 | 23.68 | 24 | 1.076 | 0.01 | 0.353 | 0.380 |
| **#16** | **CDMA2000 BC0** | **RC3 SO32** | **Back** | **1** | **384** | **836.52** | **23.68** | **24** | **1.076** | **0.05** | **0.636** | **0.685** |
| | CDMA2000 BC1 | RC3 SO32 | Front | 1 | 1175 | 1908.75 | 23.19 | 23.5 | 1.074 | -0.03 | 1.090 | 1.171 |
| | CDMA2000 BC1 | RC3 SO32 | Back | 1 | 1175 | 1908.75 | 23.19 | 23.5 | 1.074 | -0.05 | 1.030 | 1.106 |
| | CDMA2000 BC1 | RC3 SO32 | Front | 1 | 25 | 1851.25 | 22.94 | 23.5 | 1.138 | -0.0015 | 1.090 | 1.240 |
| | CDMA2000 BC1 | RC3 SO32 | Front | 1 | 600 | 1880 | 22.92 | 23.5 | 1.143 | 0.02 | 1.070 | 1.223 |
| **#17** | **CDMA2000 BC1** | **RC3 SO32** | **Front with headset** | **1** | **25** | **1851.25** | **22.94** | **23.5** | **1.138** | **0.12** | **1.120** | **1.274** |
| | CDMA2000 BC1 | RC3 SO32 | Front with headset | 1 | 1175 | 1908.75 | 23.19 | 23.5 | 1.074 | 0.07 | 1.120 | 1.203 |
| | CDMA2000 BC1 | RC3 SO32 | Front with headset | 1 | 600 | 1880 | 22.92 | 23.5 | 1.143 | -0.01 | 1.110 | 1.269 |
| | CDMA2000 BC1 | RC3 SO32 | Back | 1 | 25 | 1851.25 | 22.94 | 23.5 | 1.138 | -0.12 | 1.030 | 1.172 |
| | CDMA2000 BC1 | RC3 SO32 | Back | 1 | 600 | 1880 | 22.92 | 23.5 | 1.143 | -0.12 | 1.030 | 1.177 |

### <LTE SAR>

| Plot No. | Band | BW (MHz) | Mode | RB Size | RB offset | Test Position | Gap (cm) | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LTE Band 26 | 15M | QPSK | 1 | 37 | Front | 1 | 26865 | 831.5 | 23.3 | 24 | 1.175 | 0.05 | 0.314 | 0.369 |
| **#11** | **LTE Band 26** | **15M** | **QPSK** | **1** | **37** | **Back** | **1** | **26865** | **831.5** | **23.3** | **24** | **1.175** | **-0.05** | **0.516** | **0.606** |
| | LTE Band 26 | 15M | QPSK | 36 | 18 | Front | 1 | 26865 | 831.5 | 22.18 | 23 | 1.208 | 0.03 | 0.250 | 0.302 |
| | LTE Band 26 | 15M | QPSK | 36 | 18 | Back | 1 | 26865 | 831.5 | 22.18 | 23 | 1.208 | -0.07 | 0.411 | 0.496 |
| **#12** | **LTE Band 25** | **20M** | **QPSK** | **1** | **0** | **Front** | **1** | **26340** | **1880** | **23.43** | **24** | **1.140** | **-0.04** | **1.050** | **1.197** |
| | LTE Band 25 | 20M | QPSK | 1 | 0 | Back | 1 | 26340 | 1880 | 23.43 | 24 | 1.140 | -0.07 | 0.894 | 1.019 |
| | LTE Band 25 | 20M | QPSK | 1 | 0 | Front | 1 | 26140 | 1860 | 23.38 | 24 | 1.153 | 0.04 | 1.020 | 1.177 |
| | LTE Band 25 | 20M | QPSK | 1 | 0 | Front | 1 | 26590 | 1905 | 23.34 | 24 | 1.164 | 0.06 | 0.997 | 1.161 |
| | LTE Band 25 | 20M | QPSK | 1 | 0 | Back | 1 | 26140 | 1860 | 23.38 | 24 | 1.153 | 0.02 | 0.966 | 1.114 |
| | LTE Band 25 | 20M | QPSK | 1 | 0 | Back | 1 | 26590 | 1905 | 23.34 | 24 | 1.164 | -0.04 | 1.020 | 1.187 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Front | 1 | 26340 | 1880 | 22.26 | 23 | 1.186 | 0.13 | 0.797 | 0.945 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Back | 1 | 26340 | 1880 | 22.26 | 23 | 1.186 | 0.07 | 0.721 | 0.855 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Front | 1 | 26140 | 1860 | 22.17 | 23 | 1.211 | 0.09 | 0.804 | 0.973 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Front | 1 | 26590 | 1905 | 22.23 | 23 | 1.194 | 0.06 | 0.799 | 0.954 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Back | 1 | 26140 | 1860 | 22.17 | 23 | 1.211 | -0.04 | 0.760 | 0.92 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Back | 1 | 26590 | 1905 | 22.23 | 23 | 1.194 | -0.06 | 0.713 | 0.851 |
| | LTE Band 25 | 20M | QPSK | 100 | 0 | Front | 1 | 26590 | 1905 | 22.23 | 23 | 1.194 | 0.09 | 0.771 | 0.921 |
| | LTE Band 25 | 20M | QPSK | 100 | 0 | Back | 1 | 26590 | 1905 | 22.23 | 23 | 1.194 | 0.02 | 0.714 | 0.853 |

| Plot No. | Band | BW (MHz) | Mode | RB Size | RB offset | Test Position | Gap (cm) | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Duty Cycle % | Duty Cycle Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Front | 1 | 39750 | 2506 | 23.6 | 24 | 1.096 | 62.9 | 1.006 | 0.01 | 0.289 | 0.319 |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Back | 1 | 39750 | 2506 | 23.6 | 24 | 1.096 | 62.9 | 1.006 | 0.13 | 0.646 | 0.713 |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Back | 1 | 40620 | 2593 | 22.98 | 24 | 1.265 | 62.9 | 1.006 | -0.04 | 0.511 | 0.650 |
| **#13** | **LTE Band 41** | **20M** | **QPSK** | **1** | **0** | **Back** | **1** | **41490** | **2680** | **23.42** | **24** | **1.143** | **62.9** | **1.006** | **-0.02** | **0.709** | **0.815** |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Back | 1 | 40185 | 2549.5 | 23.43 | 24 | 1.140 | 62.9 | 1.006 | -0.03 | 0.578 | 0.663 |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Back | 1 | 41055 | 2636.5 | 22.97 | 24 | 1.268 | 62.9 | 1.006 | -0.01 | 0.572 | 0.729 |
| | LTE Band 41 | 20M | QPSK | 50 | 0 | Front | 1 | 39750 | 2506 | 22.63 | 23 | 1.089 | 62.9 | 1.006 | 0.05 | 0.232 | 0.254 |
| | LTE Band 41 | 20M | QPSK | 50 | 0 | Back | 1 | 39750 | 2506 | 22.63 | 23 | 1.089 | 62.9 | 1.006 | 0.01 | 0.507 | 0.555 |
| | LTE Band 41 | 20M | QPSK | 100 | 0 | Back | 1 | 39750 | 2506 | 22.48 | 23 | 1.127 | 62.9 | 1.006 | -0.03 | 0.484 | 0.549 |

**<DTS WLAN SAR>**

| Plot No. | Band | Mode | Test Position | Gap (cm) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | WLAN 2.4GHz | 802.11b 1Mbps | Front | 1 | 11 | 2462 | 15.16 | 15.5 | 1.081 | 97.59 | 1.025 | 0.08 | 0.082 | 0.091 |
| | WLAN 2.4GHz | 802.11b 1Mbps | Front with headset | 1 | 11 | 2462 | 15.16 | 15.5 | 1.081 | 97.59 | 1.025 | -0.11 | 0.150 | 0.166 |
| **#14** | **WLAN 2.4GHz** | **802.11b 1Mbps** | **Back** | **1** | **11** | **2462** | **15.16** | **15.5** | **1.081** | **97.59** | **1.025** | **-0.19** | **0.165** | **0.183** |

## 15.4 Extremity SAR

**<CDMA SAR>**

| Plot No. | Band | Mode | Test Position | Gap (cm) | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CDMA2000 BC1 | RTAP 153.6 | Front | 0 | 25 | 1851.25 | 22.92 | 23.5 | 1.143 | -0.03 | 2.08 | 2.377 |
| | CDMA2000 BC1 | RTAP 153.6 | Front | 0 | 1175 | 1908.75 | 23.15 | 23.5 | 1.084 | -0.013 | 2.25 | 2.439 |
| **#18** | **CDMA2000 BC1** | **RTAP 153.6** | **Front** | **0** | **600** | **1880** | **22.89** | **23.5** | **1.151** | **-0.19** | **2.13** | **2.451** |

## 15.5 Repeated SAR Measurement

| No. | Band | Modulation | Test Position | Gap (cm) | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Ratio | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1st | CDMA2000 BC1 | RC3 SO32 | Front with headset | 1 | 25 | 1851.25 | 22.94 | 23.5 | 1.138 | 0.12 | 1.120 | 1 | 1.274 |
| 2nd | CDMA2000 BC1 | RC3 SO32 | Front with headset | 1 | 25 | 1851.25 | 22.94 | 23.5 | 1.138 | 0.05 | 1.090 | 1.027 | 1.240 |

| No. | Band | Modulation | Test Position | Gap (cm) | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 10g SAR (W/kg) | Ratio | Reported 10g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1st | CDMA2000 BC1 | RTAP 153.6 | Front | 0 | 1175 | 1908.75 | 23.15 | 23.5 | 1.084 | -0.013 | 2.25 | 1 | 2.416 |
| 2nd | CDMA2000 BC1 | RTAP 153.6 | Front | 0 | 1175 | 1908.75 | 23.15 | 23.5 | 1.084 | -0.01 | 2.18 | 1.032 | 2.363 |

**General Note:**

1. Per KDB 865664 D01v01r03, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg for 1g SAR and ≥2.0W/kg for 10g SAR
2. Per KDB 865664 D01v01r03, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR <1.45W/kg for 1g SAR, <3.625W/kg for 10g SAR, only one repeated measurement is required.
3. The ratio is the difference in percentage between original and repeated *measured SAR*.
4. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

# 16. Simultaneous Transmission Analysis

| No. | Simultaneous Transmission Configurations | Portable Handset | | | Note |
|---|---|---|---|---|---|
| | | Head | Body-worn | Hotspot | |
| 1. | CDMA(Voice) + WLAN2.4GHz(data) | Yes | Yes | | |
| 2. | CDMA((Voice) + Bluetooth(data) | Yes | Yes | | |
| 3. | CDMA(Data) + WLAN2.4GHz(data) | Yes | Yes | Yes | 2.4GHz Hotspot |
| 4. | LTE(Data) + WLAN2.4GHz(data) | Yes | Yes | Yes | 2.4GHz Hotspot |
| 5. | CDMA(Data) + Bluetooth(data) | Yes | Yes | Yes | Bluetooth Tethering |
| 6. | LTE(Data) + Bluetooth(data) | Yes | Yes | Yes | Bluetooth Tethering |

**General Note:**

1. This device supported VoIP in CDMA and LTE (e.g. 3rd party VoIP).
2. This device 2.4GHz WLAN supports hotspot operation.
3. WLAN and Bluetooth share the same antenna, and cannot transmit simultaneously.
4. CDMA 2000 and LTE share the same antenna, EUT will choose either CDMA2000 or LTE according to the network signal condition; therefore, they will not transmit simultaneously.
5. The reported SAR summation is calculated based on the same configuration and test position.
6. Per KDB 447498 D01v05r02, simultaneous transmission SAR is compliant if,
   i) Scalar SAR summation < 1.6W/kg.
   ii) SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (*min. separation distance, mm*), and the peak separation distance is determined from the square root of $[(x_1-x_2)^2 + (y_1-y_2)^2 + (z_1-z_2)^2]$, where $(x_1, y_1, z_1)$ and $(x_2, y_2, z_2)$ are the coordinates of the extrapolated peak SAR locations in the zoom scan.
   iii) If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.
   iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.
7. For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01v05r02 based on the formula below.
   i) (*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)]·[$\sqrt{f(GHz)}/x$] W/kg for *test separation distances* ≤ 50 mm; where $x$ = 7.5 for 1-g SAR, and $x$ = 18.75 for 10-g SAR.
   ii) When the minimum separation distance is < 5mm, the distance is used 5mm to determine SAR test exclusion.
   iii) 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the *test separation distances* is > 50 mm.

| Bluetooth Max Power | Exposure Position | Head | Hotspot | Body worn |
|---|---|---|---|---|
| | Test separation | 0 mm | 10 mm | 10 mm |
| 2.5 dBm | Estimated SAR (W/kg) | 0.084 | 0.042 | 0.042 |

## 16.1 Head Exposure Conditions

**<WWAN + WLAN>**

| WWAN Band | | Exposure Position | WWAN PCE Max. WWAN SAR (W/kg) | WLAN DTS Max. WLAN SAR (W/kg) | Summed SAR (W/kg) | SPLSR | Case No |
|---|---|---|---|---|---|---|---|
| CDMA2000 | BC10 | Right Cheek | 0.457 | 0.740 | 1.20 | | |
| | | Right Tilted | 0.307 | 0.470 | 0.78 | | |
| | | Left Cheek | 0.565 | 0.402 | 0.97 | | |
| | | Left Tilted | 0.346 | 0.394 | 0.74 | | |
| | BC0 | Right Cheek | 0.437 | 0.740 | 1.18 | | |
| | | Right Tilted | 0.298 | 0.470 | 0.77 | | |
| | | Left Cheek | 0.552 | 0.402 | 0.95 | | |
| | | Left Tilted | 0.342 | 0.394 | 0.74 | | |
| | BC1 | Right Cheek | 0.294 | 0.740 | 1.03 | | |
| | | Right Tilted | 0.221 | 0.470 | 0.69 | | |
| | | Left Cheek | 0.594 | 0.402 | 1.00 | | |
| | | Left Tilted | 0.267 | 0.394 | 0.66 | | |
| LTE | Band 26 | Right Cheek | 0.419 | 0.740 | 1.16 | | |
| | | Right Tilted | 0.280 | 0.470 | 0.75 | | |
| | | Left Cheek | 0.484 | 0.402 | 0.89 | | |
| | | Left Tilted | 0.298 | 0.394 | 0.69 | | |
| | Band 25 | Right Cheek | 0.350 | 0.740 | 1.09 | | |
| | | Right Tilted | 0.259 | 0.470 | 0.73 | | |
| | | Left Cheek | 0.637 | 0.402 | 1.04 | | |
| | | Left Tilted | 0.282 | 0.394 | 0.68 | | |
| | Band 41 | Right Cheek | 0.295 | 0.740 | 1.04 | | |
| | | Right Tilted | 0.138 | 0.470 | 0.61 | | |
| | | Left Cheek | 0.160 | 0.402 | 0.56 | | |
| | | Left Tilted | 0.135 | 0.394 | 0.53 | | |

**<WWAN + Bluetooth>**

| WWAN Band | | Exposure Position | WWAN PCE Max. WWAN SAR (W/kg) | Bluetooth DSS Estimated 1g SAR (W/kg) | Summed SAR (W/kg) | SPLSR | Case No |
|---|---|---|---|---|---|---|---|
| CDMA2000 | BC10 | Right Cheek | 0.457 | 0.084 | 0.54 | | |
| | | Right Tilted | 0.307 | 0.084 | 0.39 | | |
| | | Left Cheek | 0.565 | 0.084 | 0.65 | | |
| | | Left Tilted | 0.346 | 0.084 | 0.43 | | |
| | BC0 | Right Cheek | 0.437 | 0.084 | 0.52 | | |
| | | Right Tilted | 0.298 | 0.084 | 0.38 | | |
| | | Left Cheek | 0.552 | 0.084 | 0.64 | | |
| | | Left Tilted | 0.342 | 0.084 | 0.43 | | |
| | BC1 | Right Cheek | 0.294 | 0.084 | 0.38 | | |
| | | Right Tilted | 0.221 | 0.084 | 0.31 | | |
| | | Left Cheek | 0.594 | 0.084 | 0.68 | | |
| | | Left Tilted | 0.267 | 0.084 | 0.35 | | |
| LTE | Band 26 | Right Cheek | 0.419 | 0.084 | 0.50 | | |
| | | Right Tilted | 0.280 | 0.084 | 0.36 | | |
| | | Left Cheek | 0.484 | 0.084 | 0.57 | | |
| | | Left Tilted | 0.298 | 0.084 | 0.38 | | |
| | Band 25 | Right Cheek | 0.350 | 0.084 | 0.43 | | |
| | | Right Tilted | 0.259 | 0.084 | 0.34 | | |
| | | Left Cheek | 0.637 | 0.084 | 0.72 | | |
| | | Left Tilted | 0.282 | 0.084 | 0.37 | | |
| | Band 41 | Right Cheek | 0.295 | 0.084 | 0.38 | | |
| | | Right Tilted | 0.138 | 0.084 | 0.22 | | |
| | | Left Cheek | 0.160 | 0.084 | 0.24 | | |
| | | Left Tilted | 0.135 | 0.084 | 0.22 | | |

## 16.2 Hotspot Exposure Conditions

**<WWAN + WLAN>**

| WWAN Band | | Exposure Position | WWAN PCE Max. WWAN SAR (W/kg) | WLAN DTS Max. WLAN SAR (W/kg) | Summed SAR (W/kg) | SPLSR | Case No |
|---|---|---|---|---|---|---|---|
| CDMA2000 | BC10 | Front | 0.497 | 0.091 | 0.59 | | |
| | | Back | 0.627 | 0.183 | 0.81 | | |
| | | Left side | 0.626 | 0.043 | 0.67 | | |
| | | Right side | 0.436 | | 0.44 | | |
| | | Top side | | 0.110 | 0.11 | | |
| | | Bottom side | 0.205 | | 0.21 | | |
| | BC0 | Front | 0.412 | 0.091 | 0.50 | | |
| | | Back | 0.682 | 0.183 | 0.87 | | |
| | | Left side | 0.538 | 0.043 | 0.58 | | |
| | | Right side | 0.341 | | 0.34 | | |
| | | Top side | | 0.110 | 0.11 | | |
| | | Bottom side | 0.229 | | 0.23 | | |
| | BC1 | Front | 1.257 | 0.091 | 1.35 | | |
| | | Back | 1.174 | 0.183 | 1.36 | | |
| | | Left side | 0.729 | 0.043 | 0.77 | | |
| | | Right side | 0.346 | | 0.35 | | |
| | | Top side | | 0.110 | 0.11 | | |
| | | Bottom side | 0.693 | | 0.69 | | |
| LTE | Band 26 | Front | 0.369 | 0.091 | 0.46 | | |
| | | Back | 0.606 | 0.183 | 0.79 | | |
| | | Left side | 0.495 | 0.043 | 0.54 | | |
| | | Right side | 0.330 | | 0.33 | | |
| | | Top side | | 0.110 | 0.11 | | |
| | | Bottom side | 0.213 | | 0.21 | | |
| | Band 25 | Front | 1.197 | 0.091 | 1.29 | | |
| | | Back | 1.187 | 0.183 | 1.37 | | |
| | | Left side | 0.712 | 0.043 | 0.76 | | |
| | | Right side | 0.404 | | 0.40 | | |
| | | Top side | | 0.110 | 0.11 | | |
| | | Bottom side | 0.706 | | 0.71 | | |
| | Band 41 | Front | 0.319 | 0.091 | 0.41 | | |
| | | Back | 0.815 | 0.183 | 1.00 | | |
| | | Left side | 0.078 | 0.043 | 0.12 | | |
| | | Right side | 0.176 | | 0.18 | | |
| | | Top side | | 0.110 | 0.11 | | |
| | | Bottom side | 0.564 | | 0.56 | | |

**<WWAN + Bluetooth>**

| WWAN Band | | Exposure Position | WWAN PCE Max. WWAN SAR (W/kg) | Bluetooth DSS Estimated 1g SAR (W/kg) | Summed SAR (W/kg) | SPLSR | Case No |
|---|---|---|---|---|---|---|---|
| CDMA2000 | BC10 | Front | 0.497 | 0.042 | 0.54 | | |
| | | Back | 0.627 | 0.042 | 0.67 | | |
| | | Left side | 0.626 | 0.042 | 0.67 | | |
| | | Right side | 0.436 | | 0.44 | | |
| | | Top side | | 0.042 | 0.04 | | |
| | | Bottom side | 0.205 | | 0.21 | | |
| | BC0 | Front | 0.412 | 0.042 | 0.45 | | |
| | | Back | 0.682 | 0.042 | 0.72 | | |
| | | Left side | 0.538 | 0.042 | 0.58 | | |
| | | Right side | 0.341 | | 0.34 | | |
| | | Top side | | 0.042 | 0.04 | | |
| | | Bottom side | 0.229 | | 0.23 | | |
| | BC1 | Front | 1.257 | 0.042 | 1.30 | | |
| | | Back | 1.174 | 0.042 | 1.22 | | |
| | | Left side | 0.729 | 0.042 | 0.77 | | |
| | | Right side | 0.346 | | 0.35 | | |
| | | Top side | | 0.042 | 0.04 | | |
| | | Bottom side | 0.693 | | 0.69 | | |
| LTE | Band 26 | Front | 0.369 | 0.042 | 0.41 | | |
| | | Back | 0.606 | 0.042 | 0.65 | | |
| | | Left side | 0.495 | 0.042 | 0.54 | | |
| | | Right side | 0.330 | | 0.33 | | |
| | | Top side | | 0.042 | 0.04 | | |
| | | Bottom side | 0.213 | | 0.21 | | |
| | Band 25 | Front | 1.197 | 0.042 | 1.24 | | |
| | | Back | 1.187 | 0.042 | 1.23 | | |
| | | Left side | 0.712 | 0.042 | 0.75 | | |
| | | Right side | 0.404 | | 0.40 | | |
| | | Top side | | 0.042 | 0.04 | | |
| | | Bottom side | 0.706 | | 0.71 | | |
| | Band 41 | Front | 0.319 | 0.042 | 0.36 | | |
| | | Back | 0.815 | 0.042 | 0.86 | | |
| | | Left side | 0.078 | 0.042 | 0.12 | | |
| | | Right side | 0.176 | | 0.18 | | |
| | | Top side | | 0.042 | 0.04 | | |
| | | Bottom side | 0.564 | | 0.56 | | |

## 16.3 Body-Worn Accessory Exposure Conditions

**<WWAN + WLAN>**

| WWAN Band | | Exposure Position | WWAN PCE Max. WWAN SAR (W/kg) | WLAN DTS Max. WLAN SAR (W/kg) | Summed SAR (W/kg) | SPLSR | Case No |
|---|---|---|---|---|---|---|---|
| CDMA2000 | BC10 | Front | 0.451 | 0.091 | 0.54 | | |
| | | Back | 0.625 | 0.183 | 0.81 | | |
| | BC0 | Front | 0.380 | 0.091 | 0.47 | | |
| | | Back | 0.685 | 0.183 | 0.87 | | |
| | BC1 | Front | 1.240 | 0.091 | 1.33 | | |
| | | Back | 1.177 | 0.183 | 1.36 | | |
| | | Front with Headset | 1.274 | 0.166 | **1.44** | | |
| LTE | Band 26 | Front | 0.369 | 0.091 | 0.46 | | |
| | | Back | 0.606 | 0.183 | 0.79 | | |
| | Band 25 | Front | 1.197 | 0.091 | 1.29 | | |
| | | Back | 1.187 | 0.183 | 1.37 | | |
| | Band 41 | Front | 0.319 | 0.091 | 0.41 | | |
| | | Back | 0.815 | 0.183 | 1.00 | | |

**<WWAN + Bluetooth>**

| WWAN Band | | Exposure Position | WWAN PCE Max. WWAN SAR (W/kg) | Bluetooth DSS Estimated 1g SAR (W/kg) | Summed SAR (W/kg) | SPLSR | Case No |
|---|---|---|---|---|---|---|---|
| CDMA2000 | BC10 | Front | 0.451 | 0.042 | 0.49 | | |
| | | Back | 0.625 | 0.042 | 0.67 | | |
| | BC0 | Front | 0.380 | 0.042 | 0.42 | | |
| | | Back | 0.685 | 0.042 | 0.73 | | |
| | BC1 | Front | 1.240 | 0.042 | 1.28 | | |
| | | Back | 1.177 | 0.042 | 1.22 | | |
| | | Front with Headset | 1.274 | 0.042 | 1.32 | | |
| LTE | Band 26 | Front | 0.369 | 0.042 | 0.41 | | |
| | | Back | 0.606 | 0.042 | 0.65 | | |
| | Band 25 | Front | 1.197 | 0.042 | 1.24 | | |
| | | Back | 1.187 | 0.042 | 1.23 | | |
| | Band 41 | Front | 0.319 | 0.042 | 0.36 | | |
| | | Back | 0.815 | 0.042 | 0.86 | | |

**Test Engineer：** Kat Yin

# 17. Uncertainty Assessment

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

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

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

| Uncertainty Distributions | Normal | Rectangular | Triangular | U-Shape |
|---|---|---|---|---|
| Multi-plying Factor[(a)] | 1/k[(b)] | 1/√3 | 1/√6 | 1/√2 |

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

(b) $\kappa$ is the coverage factor

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

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

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

| Error Description | Uncertainty Value (±%) | Probability Distribution | Divisor | Ci (1g) | Ci (10g) | Standard Uncertainty (1g) | Standard Uncertainty (10g) |
|---|---|---|---|---|---|---|---|
| **Measurement System** | | | | | | | |
| Probe Calibration | 6.0 | Normal | 1 | 1 | 1 | ± 6.0 % | ± 6.0 % |
| Axial Isotropy | 4.7 | Rectangular | √3 | 0.7 | 0.7 | ± 1.9 % | ± 1.9 % |
| Hemispherical Isotropy | 9.6 | Rectangular | √3 | 0.7 | 0.7 | ± 3.9 % | ± 3.9 % |
| Boundary Effects | 1.0 | Rectangular | √3 | 1 | 1 | ± 0.6 % | ± 0.6 % |
| Linearity | 4.7 | Rectangular | √3 | 1 | 1 | ± 2.7 % | ± 2.7 % |
| System Detection Limits | 1.0 | Rectangular | √3 | 1 | 1 | ± 0.6 % | ± 0.6 % |
| Readout Electronics | 0.3 | Normal | 1 | 1 | 1 | ± 0.3 % | ± 0.3 % |
| Response Time | 0.8 | Rectangular | √3 | 1 | 1 | ± 0.5 % | ± 0.5 % |
| Integration Time | 2.6 | Rectangular | √3 | 1 | 1 | ± 1.5 % | ± 1.5 % |
| RF Ambient Noise | 3.0 | Rectangular | √3 | 1 | 1 | ± 1.7 % | ± 1.7 % |
| RF Ambient Reflections | 3.0 | Rectangular | √3 | 1 | 1 | ± 1.7 % | ± 1.7 % |
| Probe Positioner | 0.4 | Rectangular | √3 | 1 | 1 | ± 0.2 % | ± 0.2 % |
| Probe Positioning | 2.9 | Rectangular | √3 | 1 | 1 | ± 1.7 % | ± 1.7 % |
| Max. SAR Eval. | 1.0 | Rectangular | √3 | 1 | 1 | ± 0.6 % | ± 0.6 % |
| **Test Sample Related** | | | | | | | |
| Device Positioning | 2.9 | Normal | 1 | 1 | 1 | ± 2.9 % | ± 2.9 % |
| Device Holder | 3.6 | Normal | 1 | 1 | 1 | ± 3.6 % | ± 3.6 % |
| Power Drift | 5.0 | Rectangular | √3 | 1 | 1 | ± 2.9 % | ± 2.9 % |
| **Phantom and Setup** | | | | | | | |
| Phantom Uncertainty | 4.0 | Rectangular | √3 | 1 | 1 | ± 2.3 % | ± 2.3 % |
| Liquid Conductivity (Target) | 5.0 | Rectangular | √3 | 0.64 | 0.43 | ± 1.8 % | ± 1.2 % |
| Liquid Conductivity (Meas.) | 2.5 | Normal | 1 | 0.64 | 0.43 | ± 1.6 % | ± 1.1 % |
| Liquid Permittivity (Target) | 5.0 | Rectangular | √3 | 0.6 | 0.49 | ± 1.7 % | ± 1.4 % |
| Liquid Permittivity (Meas.) | 2.5 | Normal | 1 | 0.6 | 0.49 | ± 1.5 % | ± 1.2 % |
| **Combined Standard Uncertainty** | | | | | | ± 11.0 % | ± 10.8 % |
| **Coverage Factor for 95 %** | | | | | | K=2 | |
| **Expanded Uncertainty** | | | | | | **± 22.0 %** | **± 21.5 %** |

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

# 18. References


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

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

[3] IEEE Std. 1528-2003, “Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, December 2003

[4] SPEAG DASY System Handbook

[5] FCC KDB 248227 D01 v01r02, “SAR Measurement Procedures for 802.11 a/b/g Transmitters”, May 2007

[6] FCC KDB 447498 D01 v05r02, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Feb 2014

[7] FCC KDB 648474 D04 v01r02, “SAR Evaluation Considerations for Wireless Handsets”, Dec 2013.

[8] FCC KDB 941225 D01 v03, “3G SAR MEAUREMENT PROCEDURES”, Oct 2014

[9] FCC KDB 941225 D05 v02r03, “SAR Evaluation Considerations for LTE Devices”, Dec 2013

[10] FCC KDB 941225 D06 v02, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2014.

[11] FCC KDB 865664 D01 v01r03, "SAR Measurement Requirements for 100 MHz to 6 GHz", Feb 2014.

[12] FCC KDB 865664 D02 v01r01, “RF Exposure Compliance Reporting and Documentation Considerations” May 2013.

# Appendix A. Plots of System Performance Check

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/4/8

**System Check_Head_835MHz_150408**

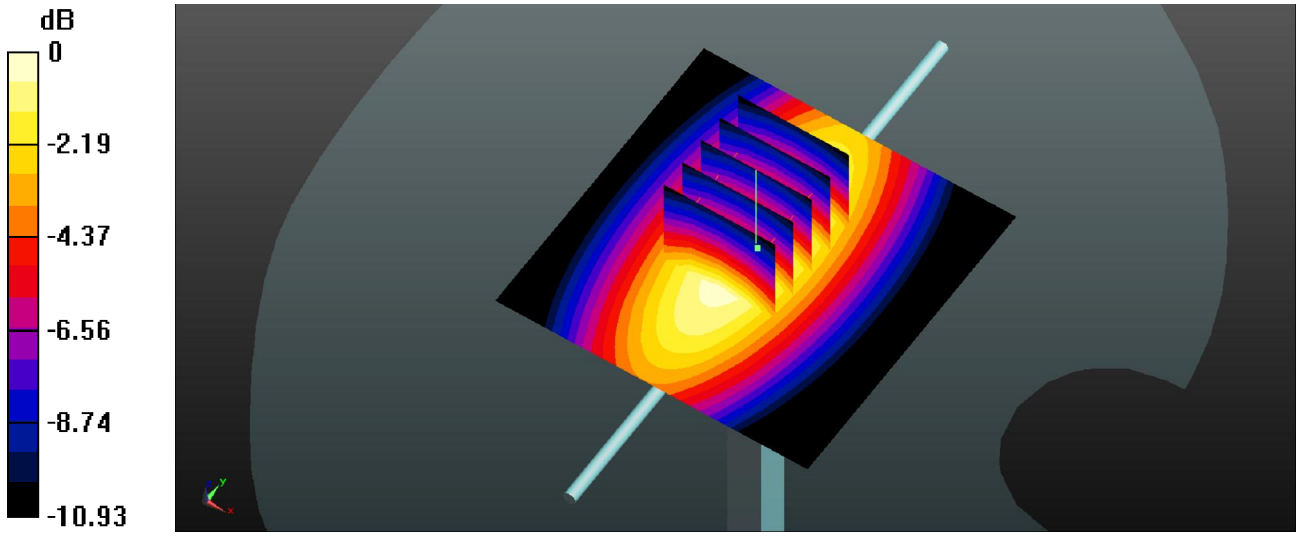
**DUT: D835V2-SN:4d091**

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_835_150408 Medium parameters used: f = 835 MHz; $\sigma$ = 0.936 S/m; $\varepsilon_r$ = 42.591; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.6 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(9.62, 9.62, 9.62); Calibrated: 2014/10/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014/4/30
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Pin=250mW/Area Scan (61x61x1):** Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 3.00 W/kg

**Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 54.19 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 3.58 W/kg
**SAR(1 g) = 2.36 W/kg; SAR(10 g) = 1.53 W/kg**
Maximum value of SAR (measured) = 3.01 W/kg




0 dB = 3.01 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/4/8

**System Check_Head_1900MHz_150408**

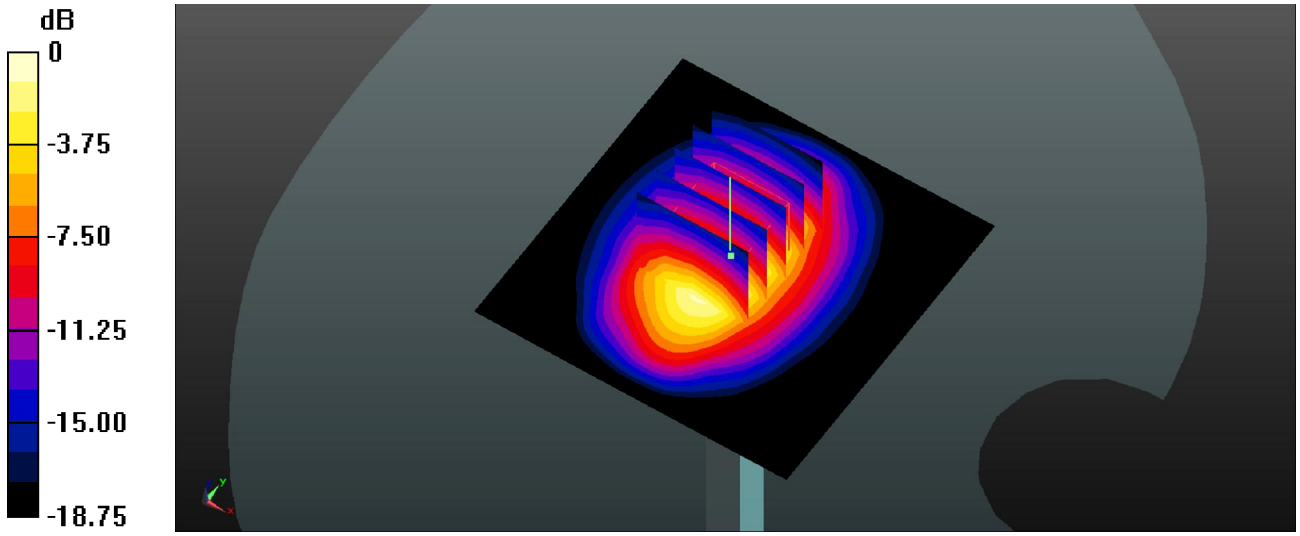
**DUT: D1900V2-SN:5d118**

Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900_150408 Medium parameters used: f = 1900 MHz; $\sigma$ = 1.456 S/m; $\varepsilon_r$ = 40.84; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(7.95, 7.95, 7.95); Calibrated: 2014/10/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014/4/30
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Pin=250mW/Area Scan (61x61x1):** Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 15.3 W/kg

**Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 100.7 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 19.4 W/kg
**SAR(1 g) = 10.6 W/kg; SAR(10 g) = 5.49 W/kg**
Maximum value of SAR (measured) = 15.0 W/kg




0 dB = 15.0 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.04.30

**System Check_Head_150430**

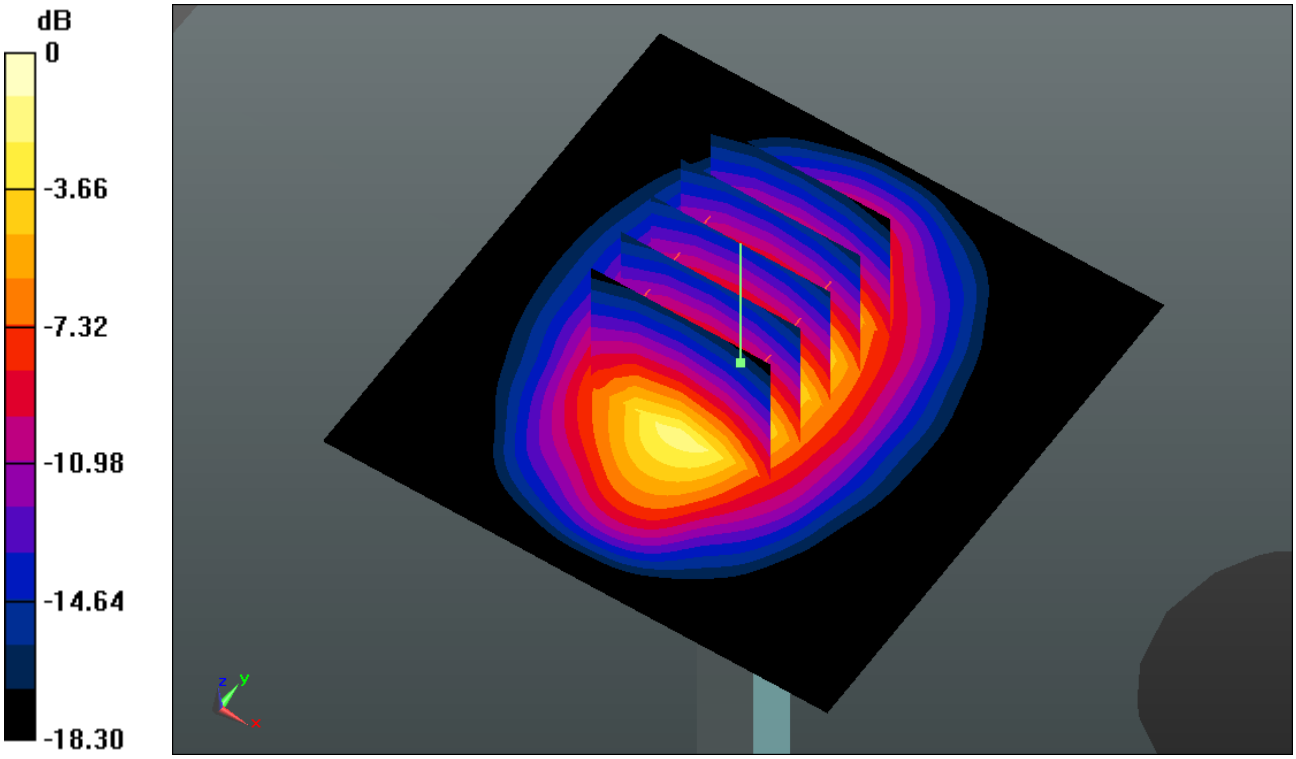
**DUT: D1900V2 - SN:5d118**

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900_150430 Medium parameters used: f = 1900 MHz; $\sigma$ = 1.422 mho/m; $\varepsilon_r$ = 39.011; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.7 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(8.4, 8.4, 8.4); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

**Pin=250mW/Area Scan (61x61x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 14.737 mW/g

**Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 88.944 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 18.991 W/kg
**SAR(1 g) = 10.2 mW/g; SAR(10 g) = 5.23 mW/g**
Maximum value of SAR (measured) = 14.837 mW/g




0 dB = 14.840mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/4/18

**System Check_Head_2450MHz_150418**

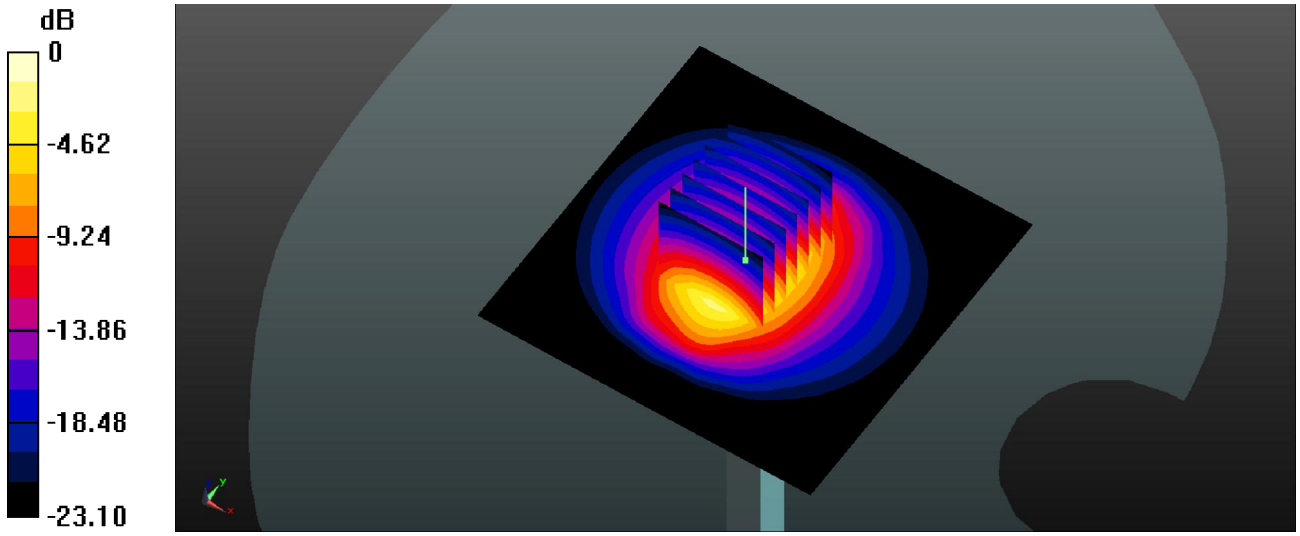
**DUT: D2450V2-SN:840**

Communication System: UID 0, CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL_2450_150418 Medium parameters used: f = 2450 MHz; $\sigma$ = 1.81 S/m; $\varepsilon_r$ = 37.626; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.7 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(7.05, 7.05, 7.05); Calibrated: 2014/10/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014/4/30
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1753
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Pin=250mW/Area Scan (81x81x1):** Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 20.9 W/kg

**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 89.90 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 29.0 W/kg
**SAR(1 g) = 13.6 W/kg; SAR(10 g) = 6.18 W/kg**
Maximum value of SAR (measured) = 21.0 W/kg




0 dB = 21.0 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/4/8

**System Check_Head_2600MHz_150408**

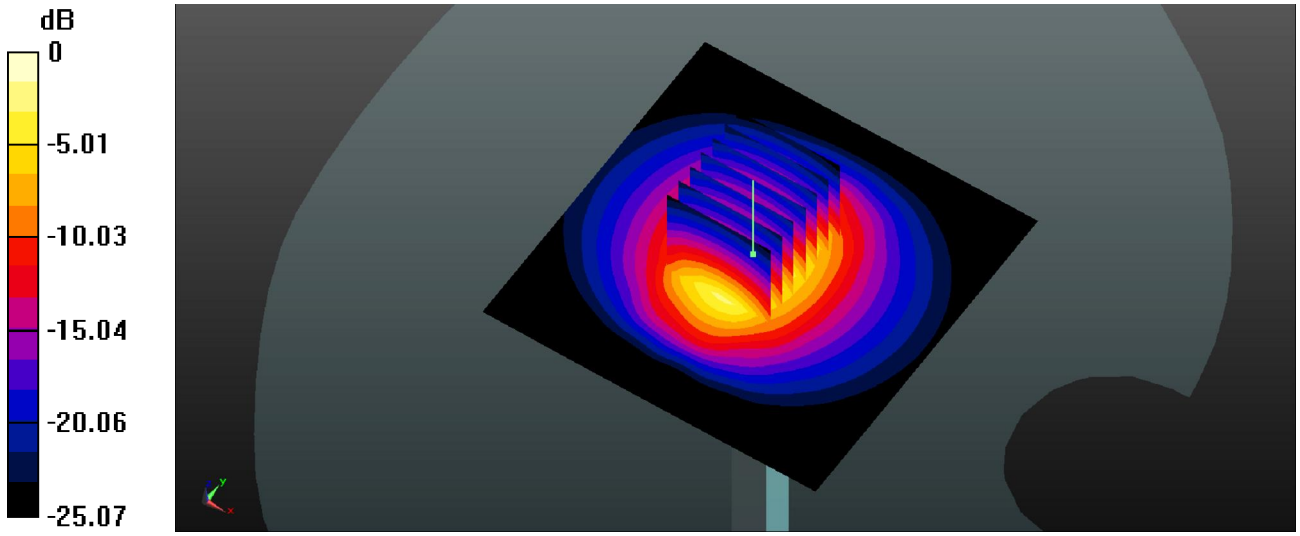
**DUT: D2600V2-SN:1061**

Communication System: UID 0, CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: HSL_2600_150408 Medium parameters used: f = 2600 MHz; $\sigma$ = 2.053 S/m; $\varepsilon_r$ = 37.984; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.4 ℃; Liquid Temperature ：22.4 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(6.92, 6.92, 6.92); Calibrated: 2014/10/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014/4/30
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Pin=250mW/Area Scan (81x81x1):** Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 23.7 W/kg

**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 87.79 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 33.4 W/kg
**SAR(1 g) = 14.8 W/kg; SAR(10 g) = 6.48 W/kg**
Maximum value of SAR (measured) = 23.7 W/kg




0 dB = 23.7 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/4/7

**System Check_Body_835MHz_150407**

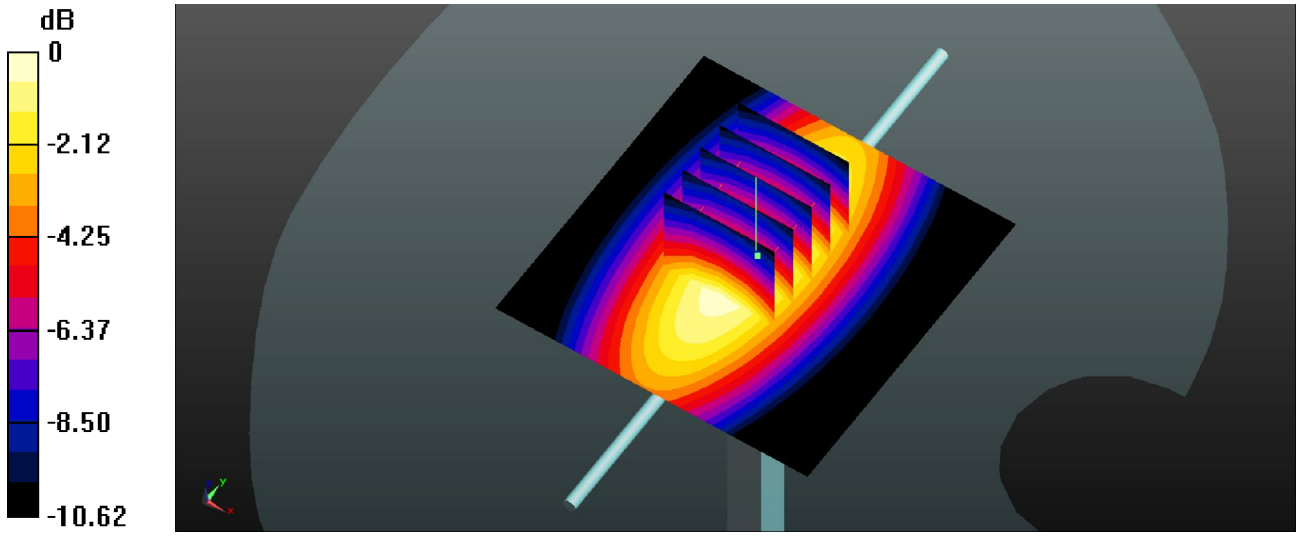
**DUT: D835V2-SN:4d091**

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_835_150407 Medium parameters used: f = 835 MHz; $\sigma$ = 0.997 S/m; $\varepsilon_r$ = 55.416; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(9.66, 9.66, 9.66); Calibrated: 2014/10/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014/4/30
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Pin=250mW/Area Scan (61x61x1):** Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 3.03 W/kg

**Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 50.42 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.58 W/kg
**SAR(1 g) = 2.38 W/kg; SAR(10 g) = 1.56 W/kg**
Maximum value of SAR (measured) = 3.02 W/kg




0 dB = 3.02 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/4/5

**System Check_Body_1900MHz_150405**

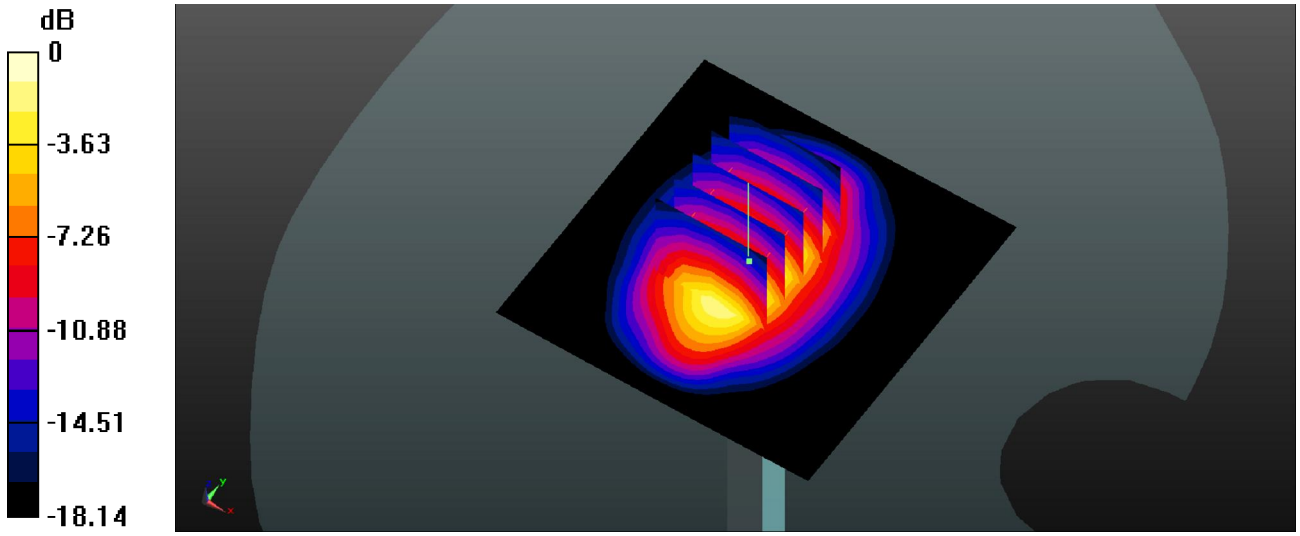
**DUT: D1900V2-SN:5d118**

Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150405 Medium parameters used: f = 1900 MHz; $\sigma$ = 1.558 S/m; $\varepsilon_r$ = 55.398; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(7.57, 7.57, 7.57); Calibrated: 2014/10/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014/4/30
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Pin=250mW/Area Scan (61x61x1):** Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 14.7 W/kg

**Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 84.79 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 18.6 W/kg
**SAR(1 g) = 10.4 W/kg; SAR(10 g) = 5.41 W/kg**
Maximum value of SAR (measured) = 14.7 W/kg




0 dB = 14.7 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.04.29

**System Check_Body_150429**

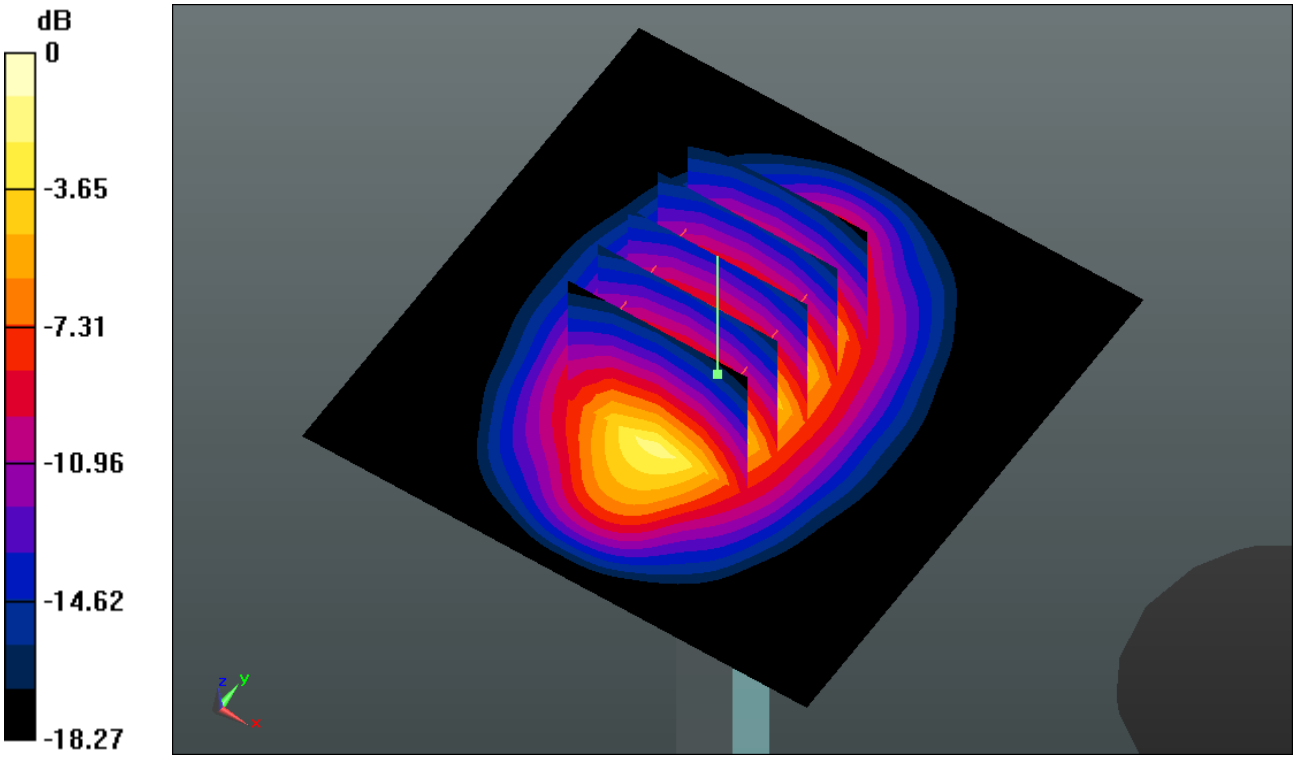
**DUT: D1900V2 - SN:5d118**

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150429 Medium parameters used: f = 1900 MHz; $\sigma$ = 1.55 mho/m; $\varepsilon_r$ = 53.2; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.6 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.56, 7.56, 7.56); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

**Pin=250mW/Area Scan (61x61x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 15.189 mW/g

**Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 87.679 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 19.030 W/kg
**SAR(1 g) = 10.4 mW/g; SAR(10 g) = 5.34 mW/g**
Maximum value of SAR (measured) = 15.093 mW/g




0 dB = 15.090mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/4/18

**System Check_Body_2450MHz_150418**

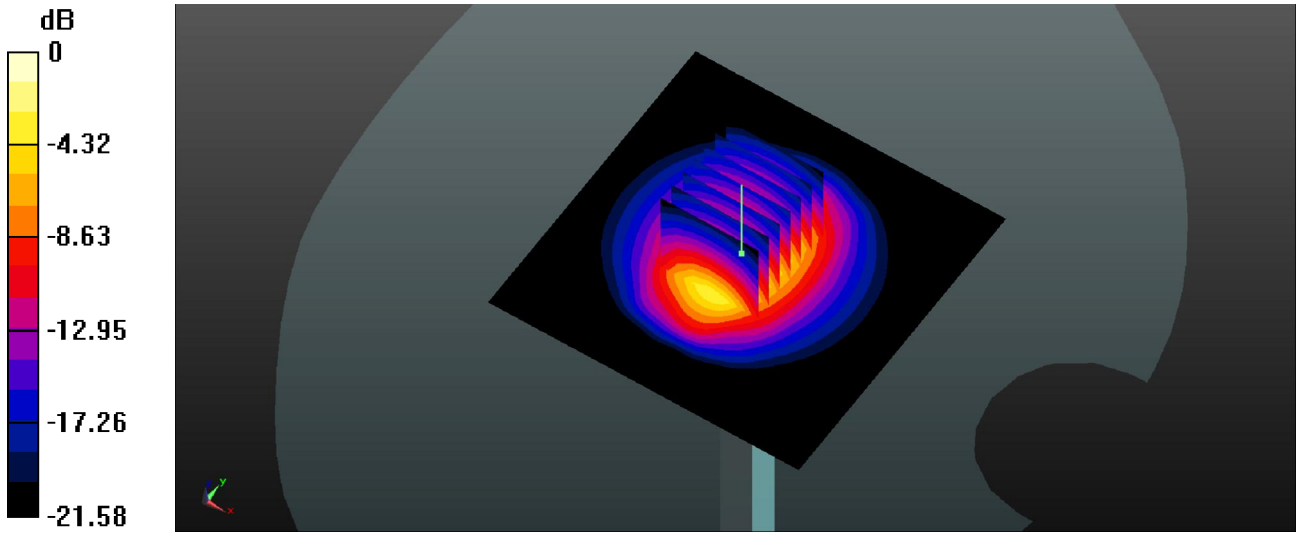
**DUT: D2450V2-SN:840**

Communication System: UID 0, CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL_2450_150418 Medium parameters used: f = 2450 MHz; $\sigma$ = 1.948 S/m; $\varepsilon_r$ = 51.097; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(7.18, 7.18, 7.18); Calibrated: 2014/10/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014/4/30
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Pin=250mW/Area Scan (81x81x1):** Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 19.5 W/kg

**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 85.32 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 26.3 W/kg
**SAR(1 g) = 12.8 W/kg; SAR(10 g) = 5.88 W/kg**
Maximum value of SAR (measured) = 19.6 W/kg




0 dB = 19.6 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/4/5

**System Check_Body_2600MHz_150405**

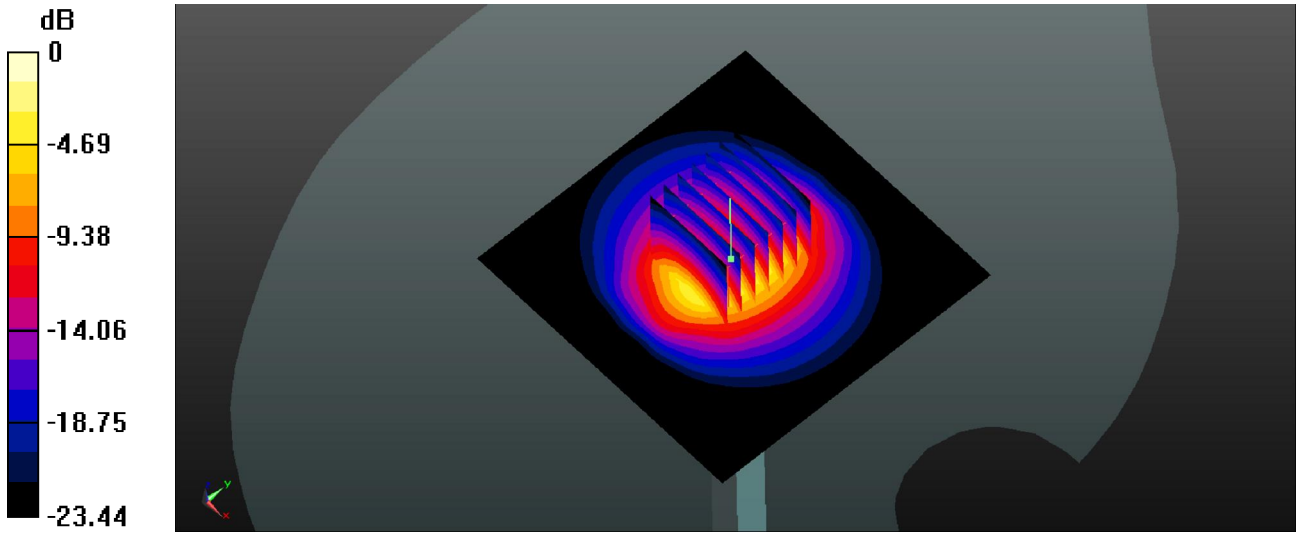
**DUT: D2600V2-SN:1061**

Communication System: UID 0, CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: MSL_2600_150405 Medium parameters used: f = 2600 MHz; $\sigma$ = 2.209 S/m; $\varepsilon_r$ = 51.123; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.8 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(7.03, 7.03, 7.03); Calibrated: 2014/10/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014/4/30
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Pin=250mW/Area Scan (81x81x1):** Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 22.3 W/kg

**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 86.50 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 32.7 W/kg
**SAR(1 g) = 13.58 W/kg; SAR(10 g) = 6.52 W/kg**
Maximum value of SAR (measured) = 22.5 W/kg




0 dB = 22.5 W/kg

# Appendix B. Plots of High SAR Measurement

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/4/8

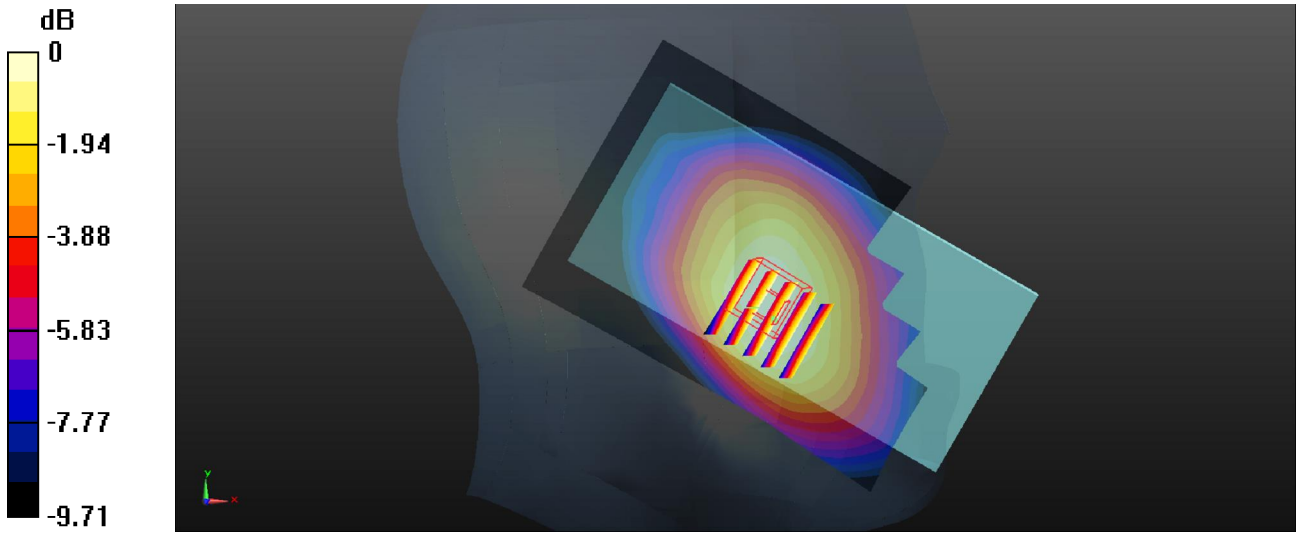
**#01 CDMA2000 BC10_RC3 SO55_Left Cheek_Ch476**

Communication System: UID 0, CDMA2000 (0); Frequency: 817.9 MHz;Duty Cycle: 1:1
Medium: HSL_835_150408 Medium parameters used: f = 817.9 MHz; $\sigma$ = 0.919 S/m; $\varepsilon_r$ = 42.718; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.6 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(9.62, 9.62, 9.62); Calibrated: 2014/10/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014/4/30
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch476/Area Scan (71x121x1):** Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.624 W/kg

**Ch476/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.462 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.677 W/kg
**SAR(1 g) = 0.537 W/kg; SAR(10 g) = 0.411 W/kg**
Maximum value of SAR (measured) = 0.607 W/kg




0 dB = 0.607 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/4/8

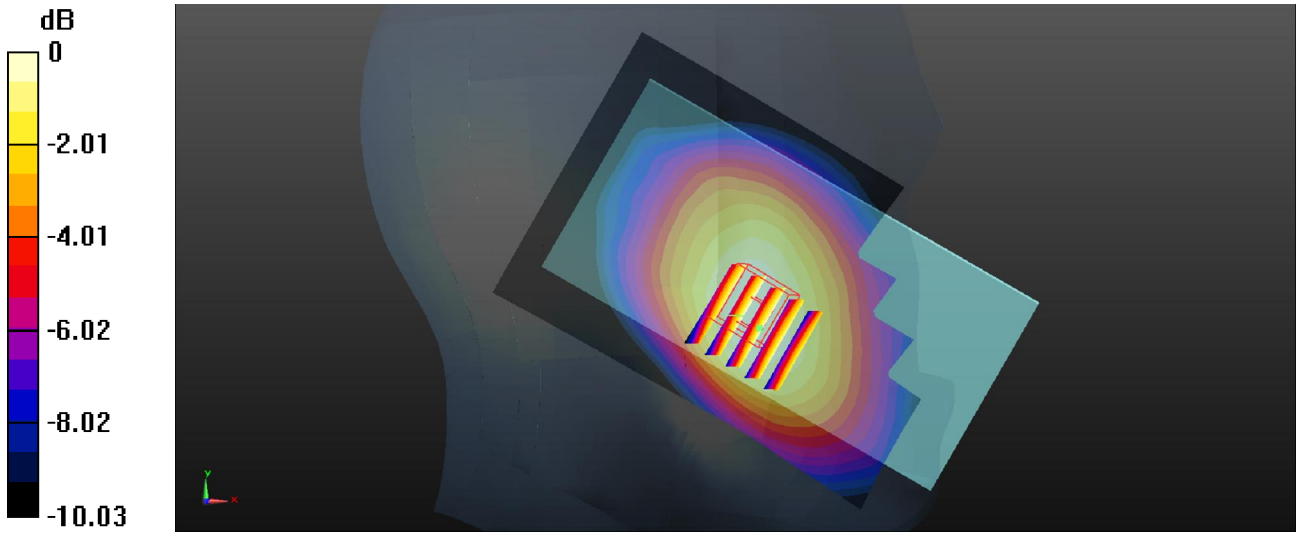
**#02 CDMA2000 BC0_RC3 SO55_Left Cheek_Ch384**

Communication System: UID 0, CDMA2000 (0); Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: HSL_835_150408 Medium parameters used: f = 836.52 MHz; $\sigma$ = 0.937 S/m; $\varepsilon_r$ = 42.574; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.6 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(9.62, 9.62, 9.62); Calibrated: 2014/10/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014/4/30
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch384/Area Scan (71x121x1):** Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.600 W/kg

**Ch384/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.229 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.654 W/kg
**SAR(1 g) = 0.515 W/kg; SAR(10 g) = 0.390 W/kg**
Maximum value of SAR (measured) = 0.584 W/kg




0 dB = 0.584 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.04.30

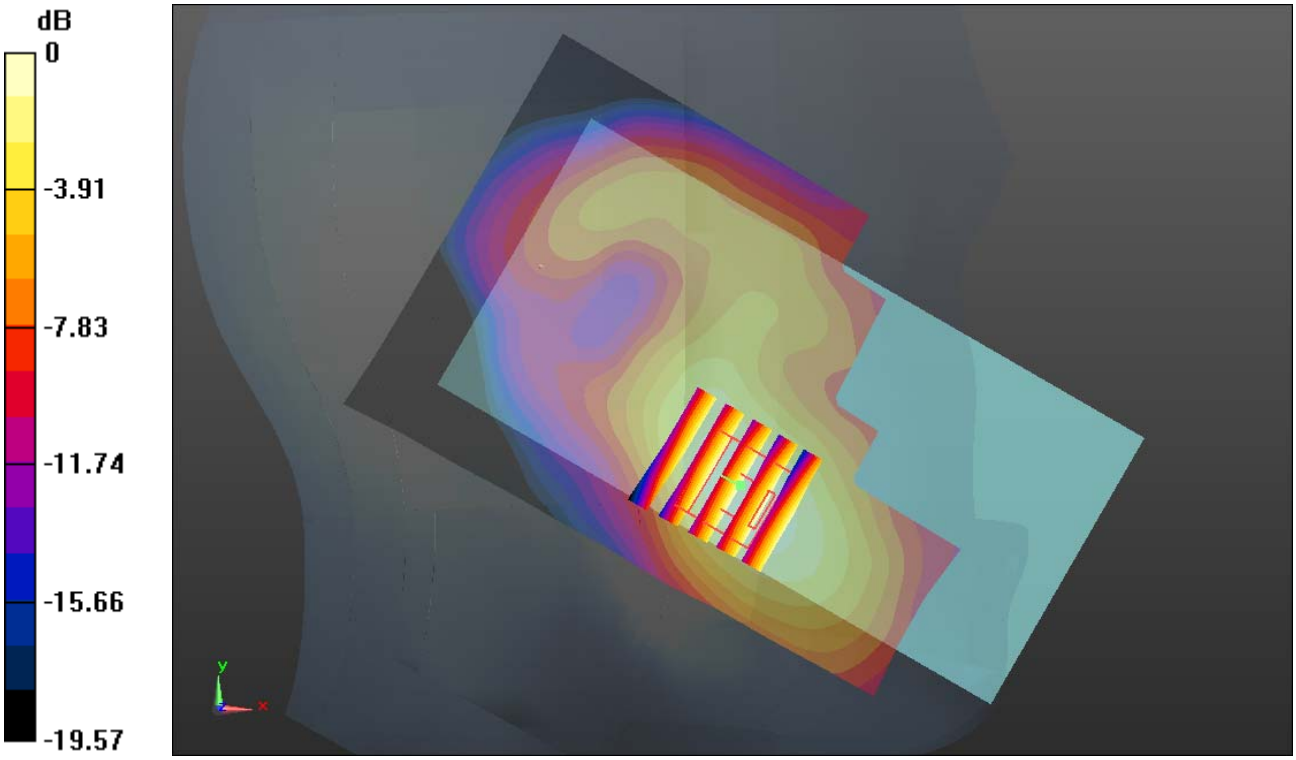
**#03_CDMA2000 BC1_RC3 SO55_Left Cheek _Ch1175**

Communication System: CDMA2000 (0); Frequency: 1908.75 MHz;Duty Cycle: 1:1
Medium: HSL_1900_150430 Medium parameters used: f = 1908.75 MHz; $\sigma$ = 1.432 mho/m; $\varepsilon_r$ = 38.969; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.7 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(8.4, 8.4, 8.4); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

**Ch1175/Area Scan (71x131x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.700 mW/g

**Ch1175/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.648 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.874 W/kg
**SAR(1 g) = 0.548 mW/g; SAR(10 g) = 0.329 mW/g**
Maximum value of SAR (measured) = 0.691 mW/g




0 dB = 0.690mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/4/8

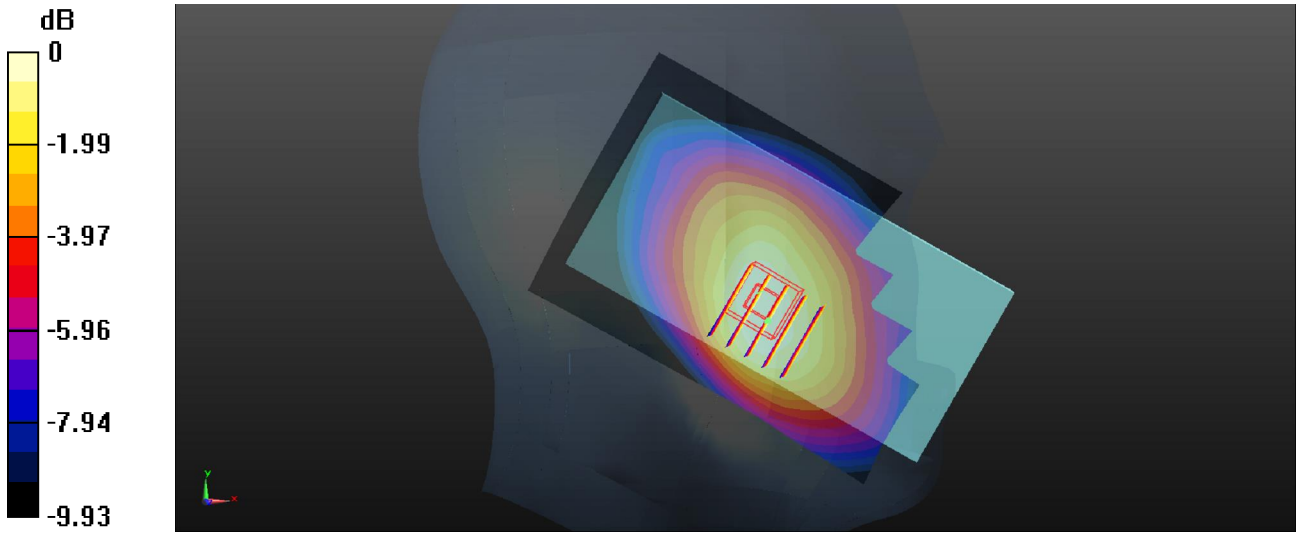
**#04 LTE Band 26_QPSK_15M(1,37)_Left Cheek_Ch26865**

Communication System: UID 0, FDD-LTE (0); Frequency: 831.5 MHz;Duty Cycle: 1:1
Medium: HSL_835_150408 Medium parameters used: f = 831.5 MHz; $\sigma$ = 0.933 S/m; $\varepsilon_r$ = 42.609; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.6 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(9.62, 9.62, 9.62); Calibrated: 2014/10/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014/4/30
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch26865/Area Scan (71x121x1):** Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.480 W/kg

**Ch26865/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.338 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.524 W/kg
**SAR(1 g) = 0.412 W/kg; SAR(10 g) = 0.313 W/kg**
Maximum value of SAR (measured) = 0.471 W/kg




0 dB = 0.471 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/4/8

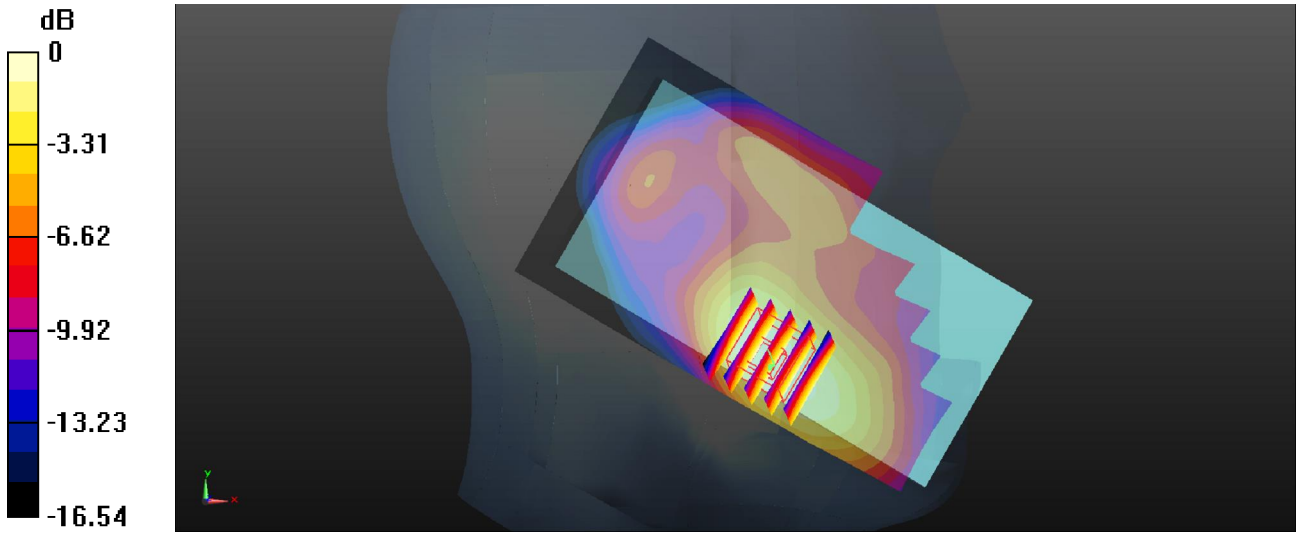
**#05 LTE Band 25_QPSK_20M(1,0)_Left Cheek_Ch26340**

Communication System: UID 0, FDD-LTE (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: HSL_1900_150408 Medium parameters used: f = 1880 MHz; $\sigma$ = 1.435 S/m; $\varepsilon_r$ = 40.928; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(7.95, 7.95, 7.95); Calibrated: 2014/10/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014/4/30
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch26340/Area Scan (81x151x1):** Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.728 W/kg

**Ch26340/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.016 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.857 W/kg
**SAR(1 g) = 0.559 W/kg; SAR(10 g) = 0.348 W/kg**
Maximum value of SAR (measured) = 0.706 W/kg




0 dB = 0.706 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/4/8

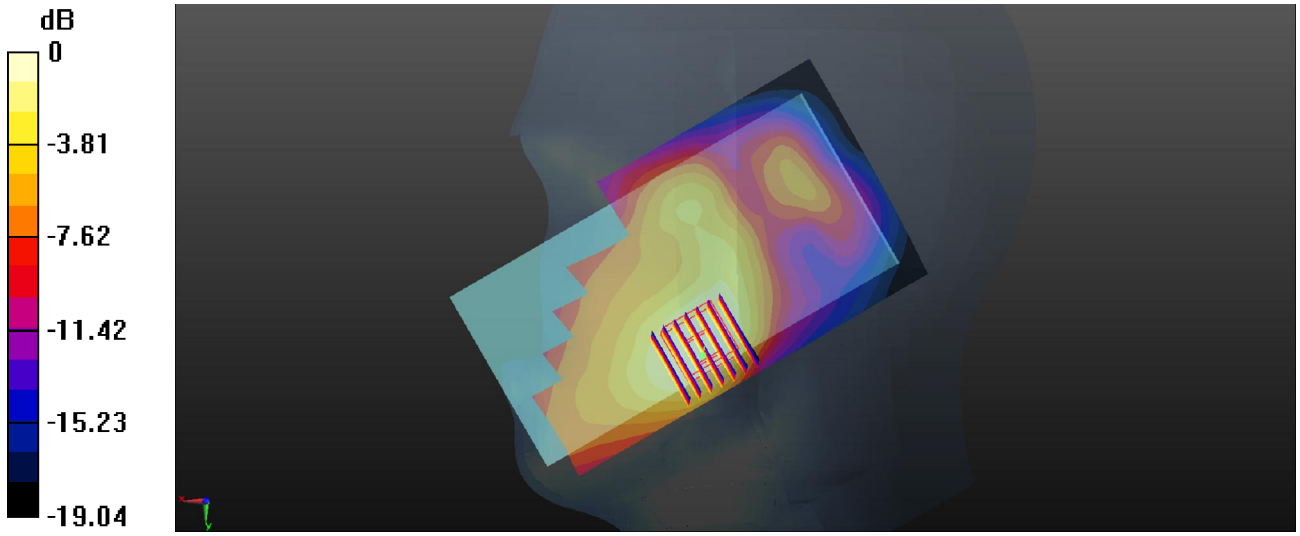
**#06 LTE Band 41_QPSK_20M(1,0)_Right Cheek_Ch39750**

Communication System: UID 0, TDD-LTE (0); Frequency: 2506 MHz;Duty Cycle: 1:1.59
Medium: HSL_2600_150408 Medium parameters used: f = 2506 MHz; $\sigma$ = 1.944 S/m; $\varepsilon_r$ = 38.331; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.4 ℃; Liquid Temperature ：22.4 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(6.92, 6.92, 6.92); Calibrated: 2014/10/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014/4/30
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch39750/Area Scan (81x151x1):** Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.382 W/kg

**Ch39750/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.836 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.464 W/kg
**SAR(1 g) = 0.267 W/kg; SAR(10 g) = 0.148 W/kg**
Maximum value of SAR (measured) = 0.365 W/kg




0 dB = 0.365 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/4/18

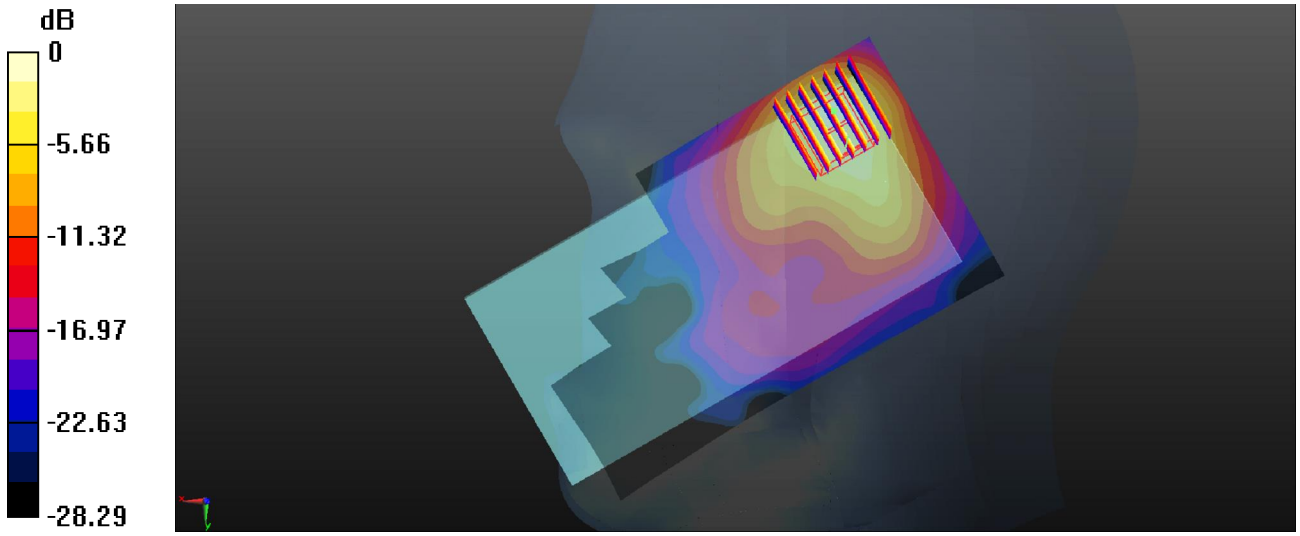
**#07 WLAN 2.4GHz_802.11b 1Mbps_Right Cheek_Ch11**

Communication System: UID 0, 802.11b (0); Frequency: 2462 MHz;Duty Cycle: 1:1.025
Medium: HSL_2450_150418 Medium parameters used: f = 2462 MHz; $\sigma$ = 1.824 S/m; $\varepsilon_r$ = 37.585; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.7 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(7.05, 7.05, 7.05); Calibrated: 2014/10/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014/4/30
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1753
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch11/Area Scan (81x151x1):** Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.870 W/kg

**Ch11/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.69 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.59 W/kg
**SAR(1 g) = 0.668 W/kg; SAR(10 g) = 0.276 W/kg**
Maximum value of SAR (measured) = 1.13 W/kg




0 dB = 1.13 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/4/7

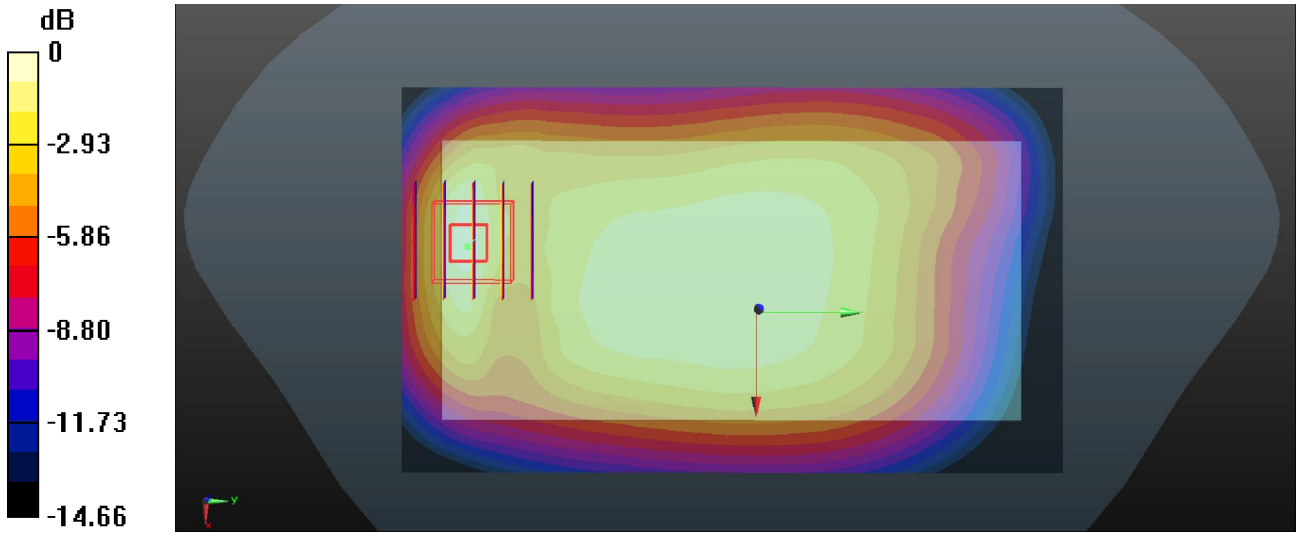
**#08 CDMA2000 BC10_RTAP 153.6_Back_1.0cm_Ch476**

Communication System: UID 0, CDMA2000 (0); Frequency: 817.9 MHz;Duty Cycle: 1:1
Medium: MSL_835_150407 Medium parameters used: f = 817.9 MHz; $\sigma$ = 0.98 S/m; $\varepsilon_r$ = 55.531; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(9.66, 9.66, 9.66); Calibrated: 2014/10/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014/4/30
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch476/Area Scan (71x121x1):** Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.755 W/kg

**Ch476/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.41 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.03 W/kg
**SAR(1 g) = 0.591 W/kg; SAR(10 g) = 0.332 W/kg**
Maximum value of SAR (measured) = 0.834 W/kg




0 dB = 0.834 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/4/7

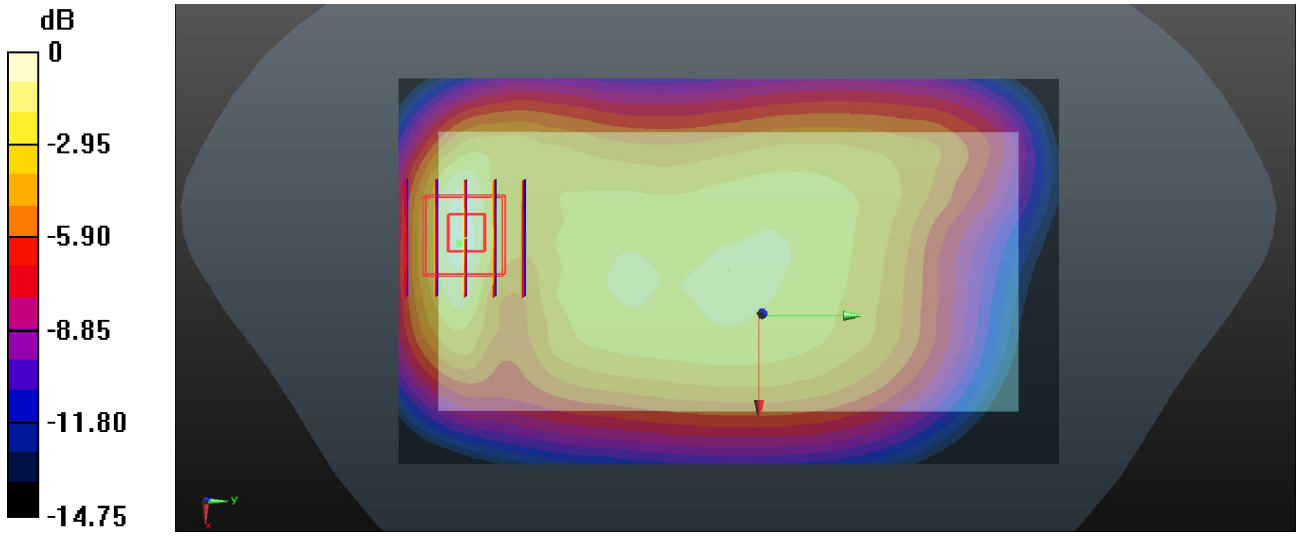
**#09 CDMA2000 BC0_RTAP 153.6_Back_1.0cm_Ch384**

Communication System: UID 0, CDMA2000 (0); Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: MSL_835_150407 Medium parameters used: f = 836.52 MHz; $\sigma$ = 0.999 S/m; $\varepsilon_r$ = 55.403; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(9.66, 9.66, 9.66); Calibrated: 2014/10/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014/4/30
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch384/Area Scan (71x121x1):** Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.818 W/kg

**Ch384/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.78 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.11 W/kg
**SAR(1 g) = 0.639 W/kg; SAR(10 g) = 0.358 W/kg**
Maximum value of SAR (measured) = 0.876 W/kg




0 dB = 0.876 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.04.29

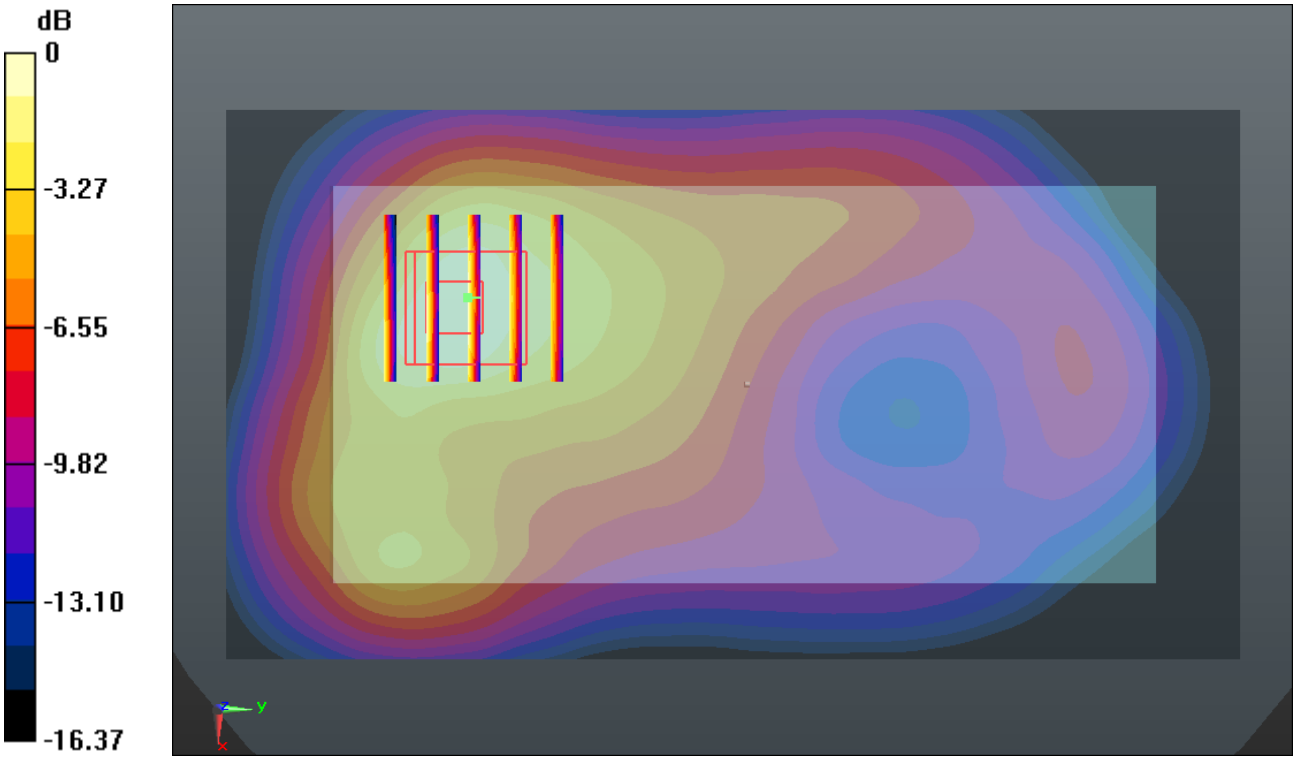
**#10_CDMA2000 BC1_RTAP 153.6_Front 1cm_Ch25**

Communication System: CDMA2000 (0); Frequency: 1851.25 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150429 Medium parameters used: f = 1851.25 MHz; $\sigma$ = 1.492 mho/m; $\varepsilon_r$ = 53.311; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.6 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.56, 7.56, 7.56); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

**Ch25/Area Scan (71x131x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.405 mW/g

**Ch25/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.960 V/m; Power Drift = 0.00051 dB
Peak SAR (extrapolated) = 1.728 W/kg
**SAR(1 g) = 1.1 mW/g; SAR(10 g) = 0.657 mW/g**
Maximum value of SAR (measured) = 1.352 mW/g




0 dB = 1.350mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/4/7

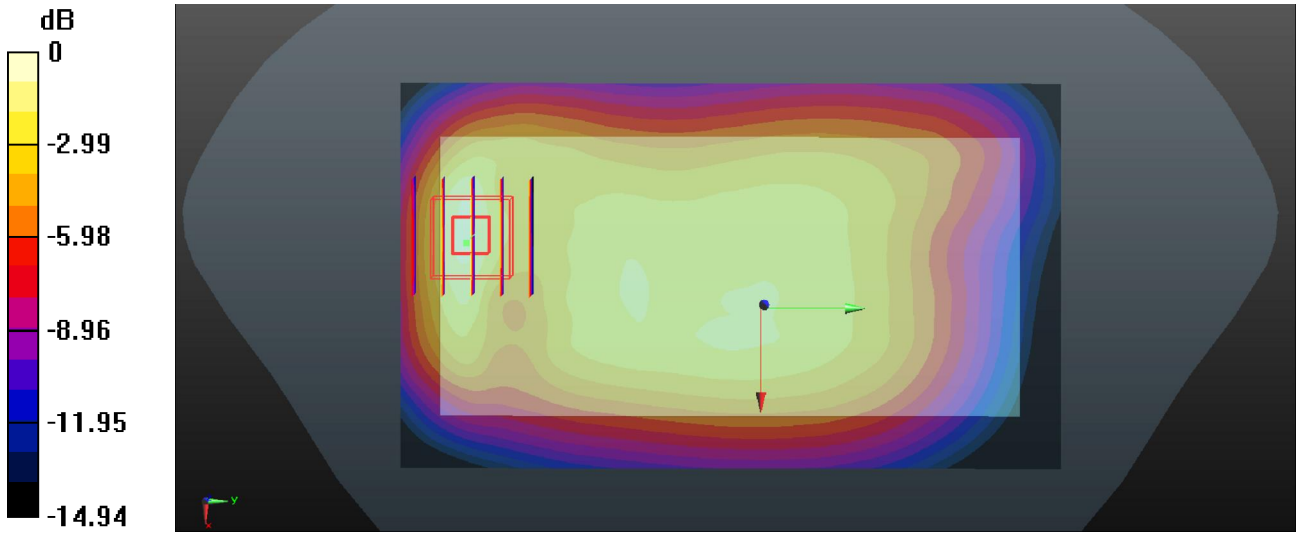
**#11 LTE Band 26_QPSK_15M(1,37)_Back_1.0cm_Ch26865**

Communication System: UID 0, FDD-LTE (0); Frequency: 831.5 MHz;Duty Cycle: 1:1
Medium: MSL_835_150407 Medium parameters used: f = 831.5 MHz; $\sigma$ = 0.994 S/m; $\varepsilon_r$ = 55.437; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(9.66, 9.66, 9.66); Calibrated: 2014/10/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014/4/30
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch26865/Area Scan (71x121x1):** Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.633 W/kg

**Ch26865/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.51 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.906 W/kg
**SAR(1 g) = 0.516 W/kg; SAR(10 g) = 0.289 W/kg**
Maximum value of SAR (measured) = 0.722 W/kg




0 dB = 0.722 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/4/5

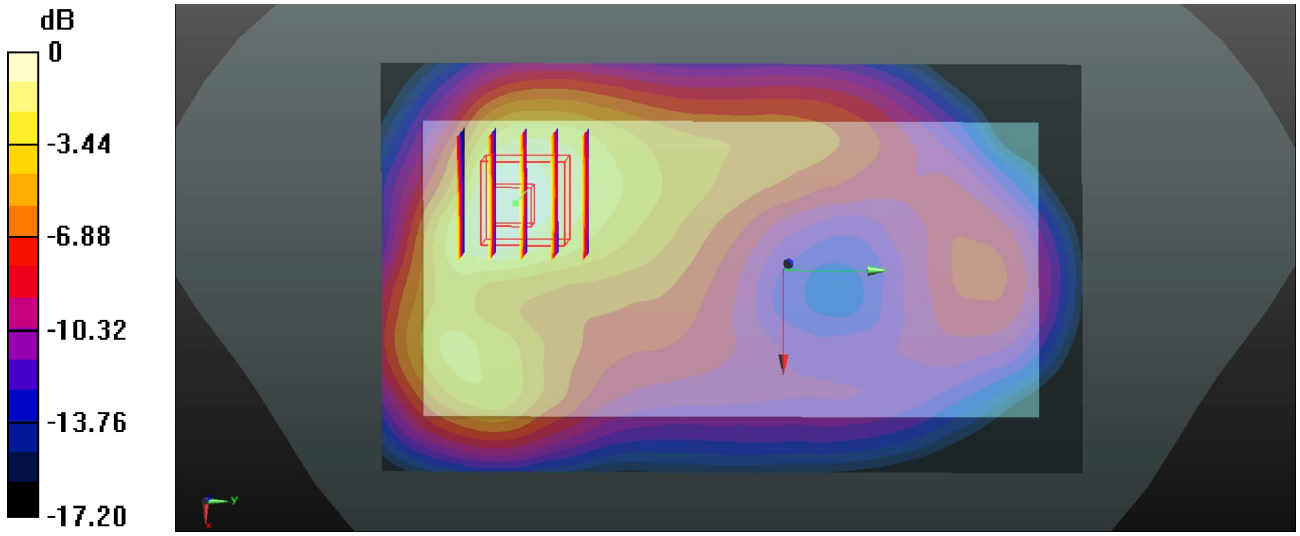
**#12 LTE Band 25_QPSK_20M(1,0)_Front_1.0cm_Ch26340**

Communication System: UID 0, FDD-LTE (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150405 Medium parameters used: f = 1880 MHz; $\sigma$ = 1.541 S/m; $\varepsilon_r$ = 55.518; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(7.57, 7.57, 7.57); Calibrated: 2014/10/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014/4/30
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch26340/Area Scan (71x121x1):** Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.42 W/kg

**Ch26340/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.37 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.63 W/kg
**SAR(1 g) = 1.05 W/kg; SAR(10 g) = 0.620 W/kg**
Maximum value of SAR (measured) = 1.34 W/kg




0 dB = 1.34 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/4/5

**#13 LTE Band 41_QPSK_20M(1,0)_Back_1.0cm_Ch41490**

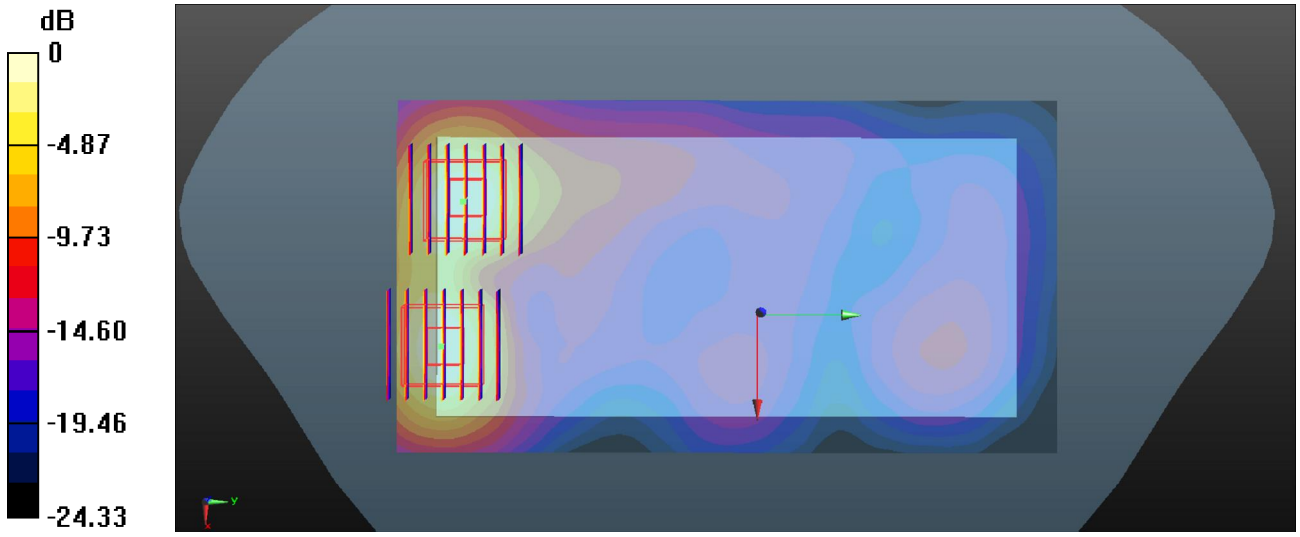
Communication System: UID 0, TDD-LTE (0); Frequency: 2680 MHz;Duty Cycle: 1:1.59
Medium: MSL_2600_150405 Medium parameters used: f = 2680 MHz; $\sigma$ = 2.246 S/m; $\varepsilon_r$ = 50.872; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.8 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(7.03, 7.03, 7.03); Calibrated: 2014/10/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014/4/30
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch41490/Area Scan (81x151x1):** Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 1.18 W/kg

**Ch41490/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.999 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.61 W/kg
**SAR(1 g) = 0.709 W/kg; SAR(10 g) = 0.302 W/kg**
Maximum value of SAR (measured) = 1.13 W/kg

**Ch41490/Zoom Scan (7x7x7)/Cube 1:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.999 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.48 W/kg
**SAR(1 g) = 0.683 W/kg; SAR(10 g) = 0.298 W/kg**
Maximum value of SAR (measured) = 1.04 W/kg




0 dB = 1.04 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/4/18

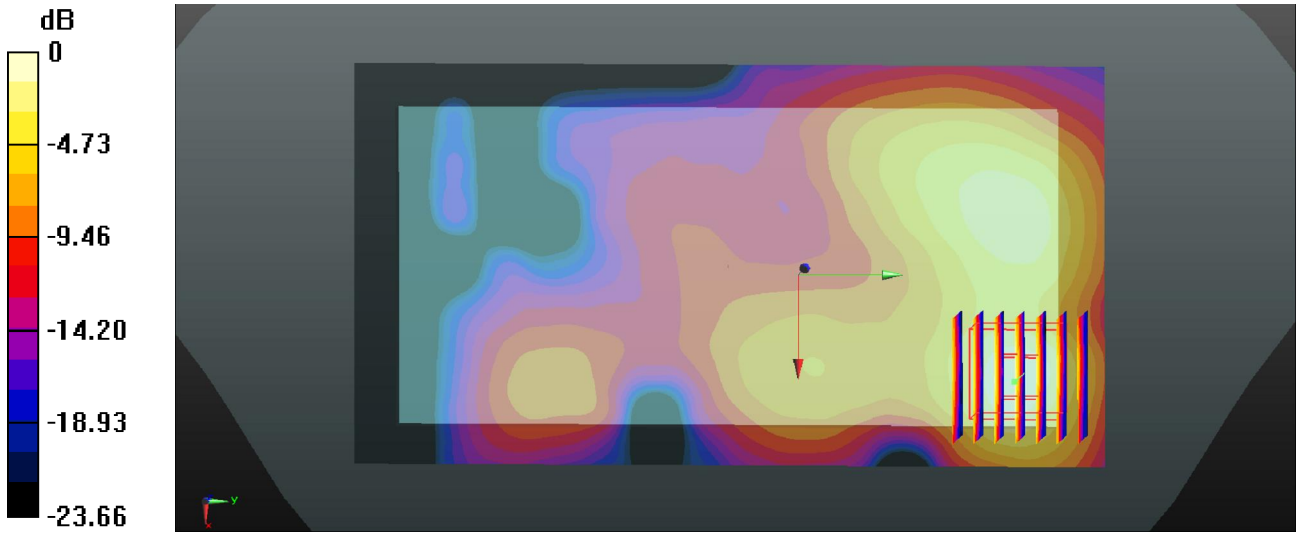
**#14 WLAN 2.4GHz_802.11b 1Mbps_Back_1.0cm_Ch11**

Communication System: UID 0, 802.11b (0); Frequency: 2462 MHz;Duty Cycle: 1:1.025
Medium: MSL_2450_150418 Medium parameters used: f = 2462 MHz; $\sigma$ = 1.966 S/m; $\varepsilon_r$ = 51.05; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(7.18, 7.18, 7.18); Calibrated: 2014/10/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014/4/30
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch11/Area Scan (81x151x1):** Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.239 W/kg

**Ch11/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.015 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 0.349 W/kg
**SAR(1 g) = 0.165 W/kg; SAR(10 g) = 0.073 W/kg**
Maximum value of SAR (measured) = 0.254 W/kg




0 dB = 0.254 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/4/7

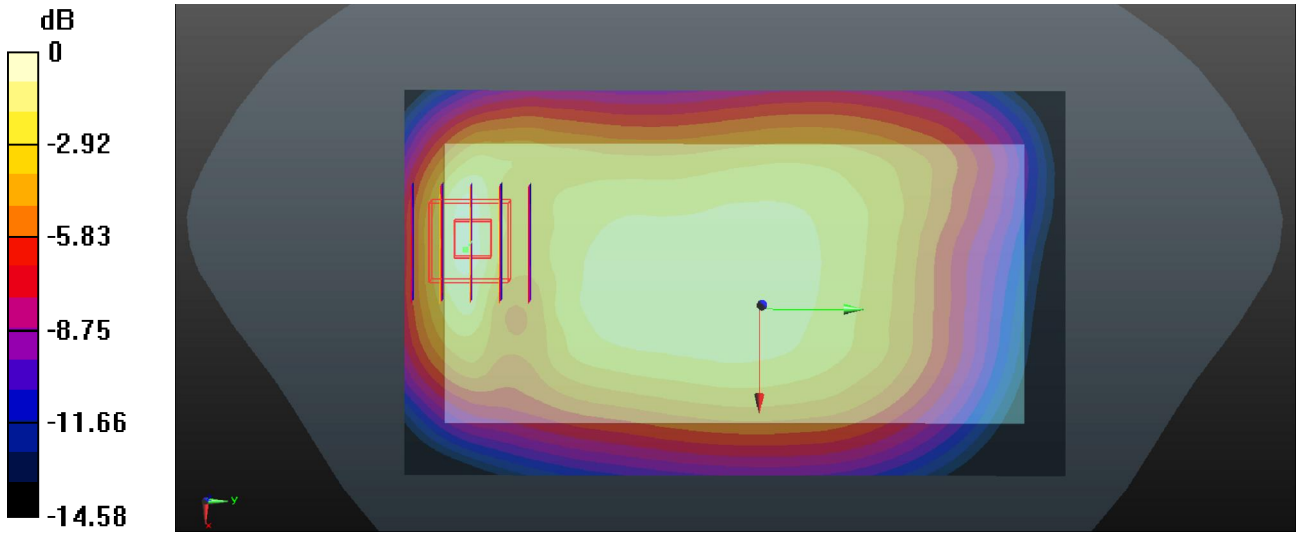
**#15 CDMA2000 BC10_RC3 SO32_Back_1.0cm_Ch476**

Communication System: UID 0, CDMA2000 (0); Frequency: 817.9 MHz;Duty Cycle: 1:1
Medium: MSL_835_150407 Medium parameters used: f = 817.9 MHz; $\sigma$ = 0.98 S/m; $\varepsilon_r$ = 55.531; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(9.66, 9.66, 9.66); Calibrated: 2014/10/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014/4/30
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch476/Area Scan (71x121x1):** Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.752 W/kg

**Ch476/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.53 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.04 W/kg
**SAR(1 g) = 0.593 W/kg; SAR(10 g) = 0.334 W/kg**
Maximum value of SAR (measured) = 0.822 W/kg




0 dB = 0.822 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/4/7

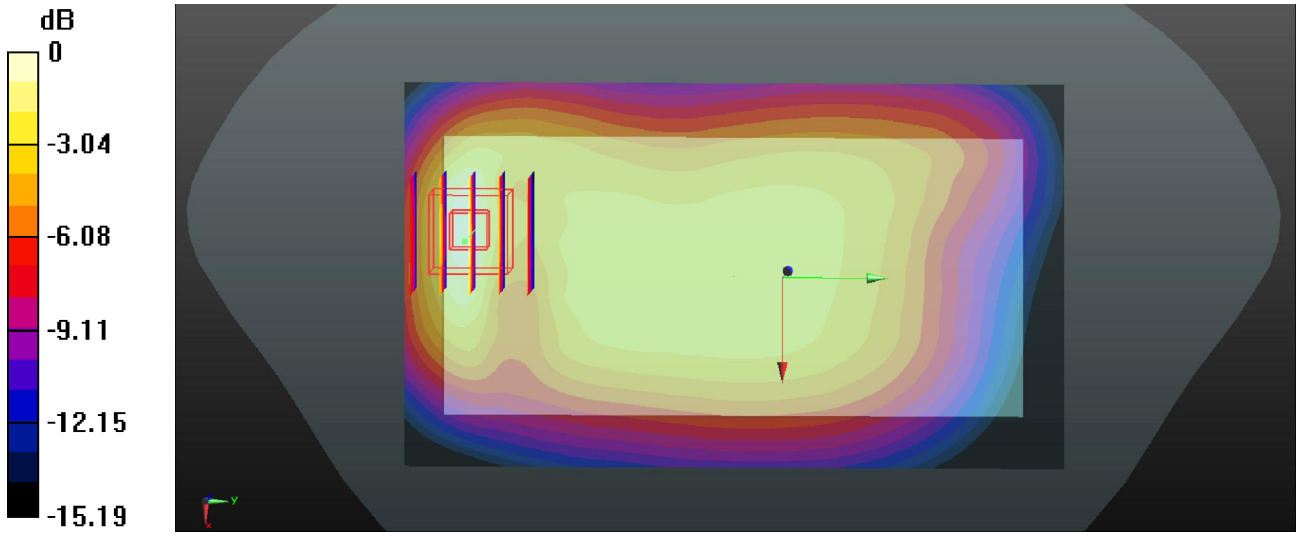
**#16 CDMA2000 BC0_RC3 SO32_Back_1.0cm_Ch384**

Communication System: UID 0, CDMA2000 (0); Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: MSL_835_150407 Medium parameters used: f = 836.52 MHz; $\sigma$ = 0.999 S/m; $\varepsilon_r$ = 55.403; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(9.66, 9.66, 9.66); Calibrated: 2014/10/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014/4/30
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch384/Area Scan (71x121x1):** Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.815 W/kg

**Ch384/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.00 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.11 W/kg
**SAR(1 g) = 0.636 W/kg; SAR(10 g) = 0.354 W/kg**
Maximum value of SAR (measured) = 0.887 W/kg




0 dB = 0.887 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.04.29

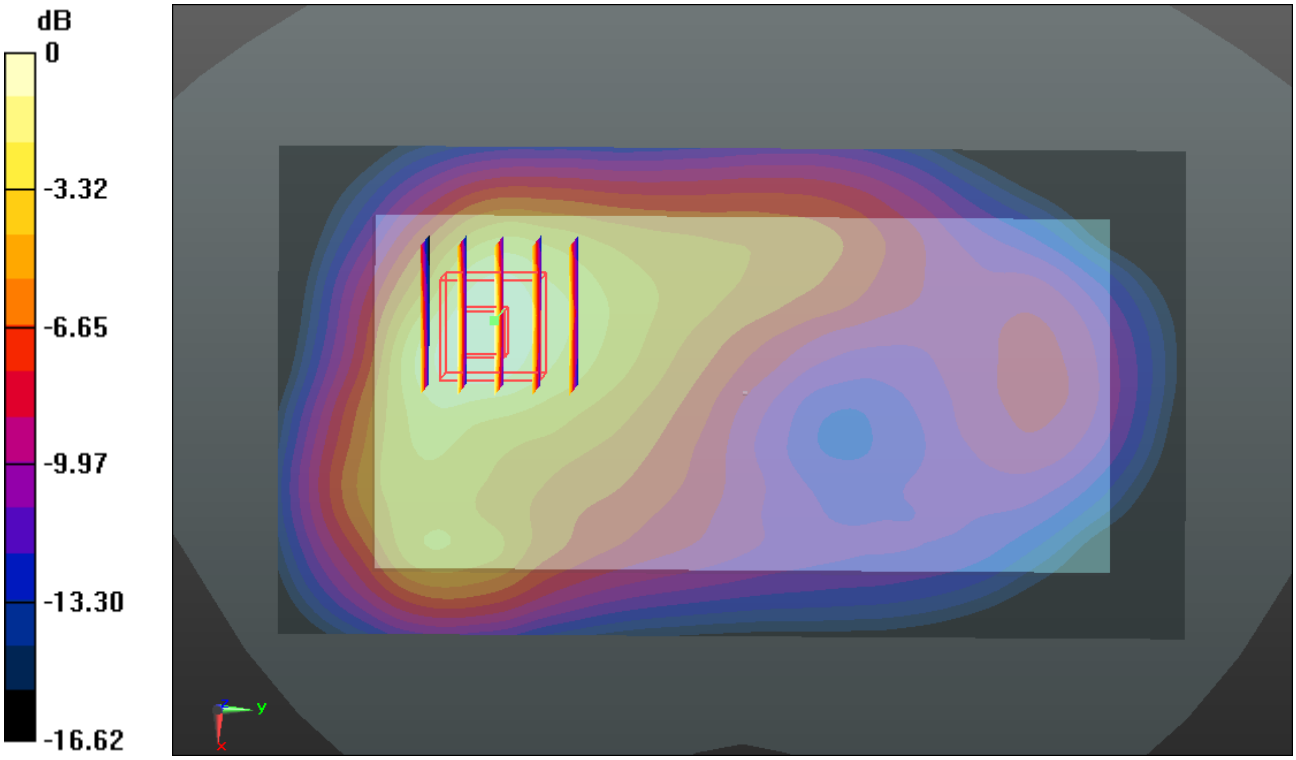
**#17_CDMA2000 BC1_RC3 SO32_Front 1cm_Ch25_Headset**

Communication System: CDMA2000 (0); Frequency: 1851.25 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150429 Medium parameters used: f = 1851.25 MHz; $\sigma$ = 1.492 mho/m; $\varepsilon_r$ = 53.311; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.6 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.56, 7.56, 7.56); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

**Ch25/Area Scan (71x131x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.450 mW/g

**Ch25/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.559 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 1.737 W/kg
**SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.670 mW/g**
Maximum value of SAR (measured) = 1.385 mW/g




0 dB = 1.380mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.04.29

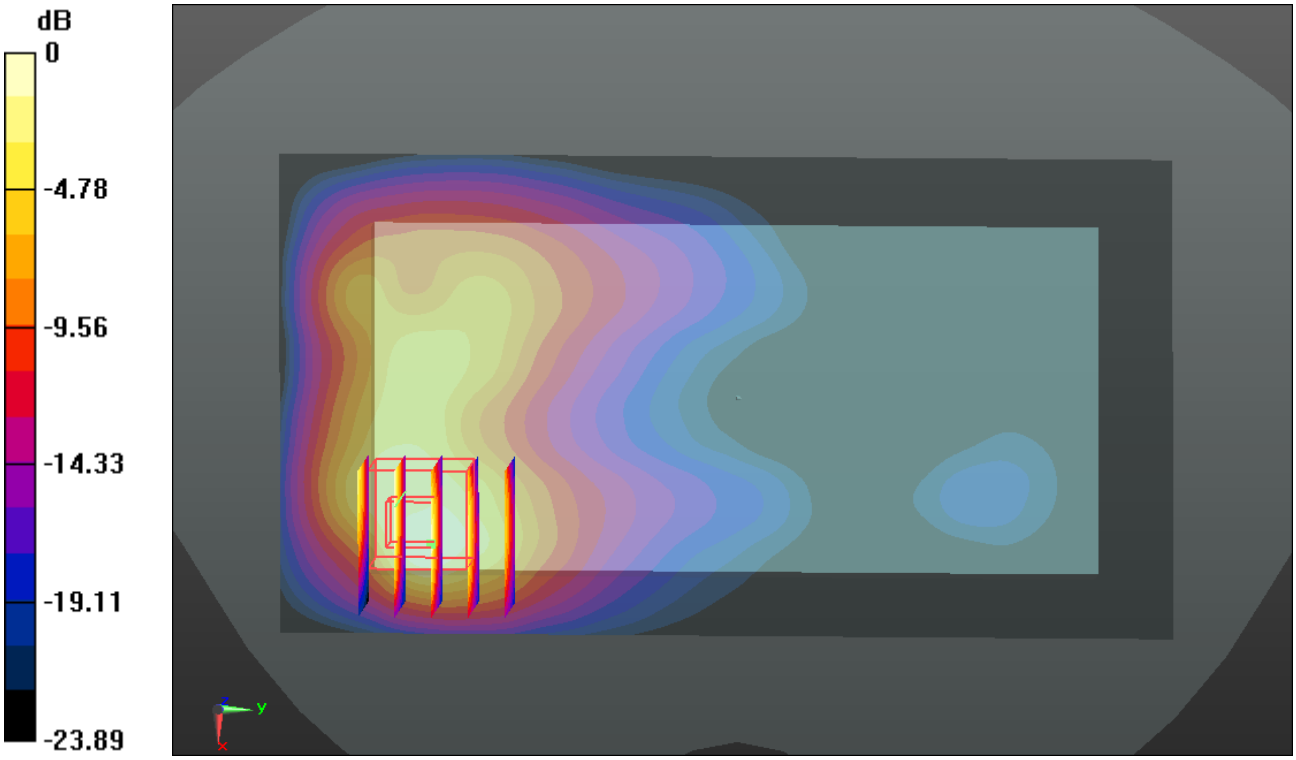
**#18_CDMA2000 BC1_RTAP 153.6_Front 0cm_Ch600**

Communication System: CDMA2000 (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150429 Medium parameters used: f = 1880 MHz; $\sigma$ = 1.526 mho/m; $\varepsilon_r$ = 53.252; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.6 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.56, 7.56, 7.56); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

**Ch600/Area Scan (71x131x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 6.550 mW/g

**Ch600/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.944 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 9.390 W/kg
**SAR(1 g) = 4.45 mW/g; SAR(10 g) = 2.13 mW/g**
Maximum value of SAR (measured) = 6.214 mW/g




0 dB = 6.210mW/g