FCC SAR Test Report

APPLICANT	:	**CT Asia**
EQUIPMENT	:	**Smart phone**
BRAND NAME	:	**BLU**
MODEL NAME	:	**Studio 6.0 LTE**
FCC ID	:	**YHLBLUSTUD60LTE**
STANDARD	:	**FCC 47 CFR Part 2 (2.1093)** **ANSI/IEEE C95.1-1992** **IEEE 1528-2003**

We, SPORTON INTERNATIONAL (SHENZHEN) 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 (SHENZHEN) INC., the test report shall not be reproduced except in full.

Reviewed by: Eric Huang / Deputy Manager

Approved by: Jones Tsai / Manager

Testing Laboratory
2353

SPORTON INTERNATIONAL (SHENZHEN) INC.
No. 101, Complex Building C, Guanlong Village, Xili Town, Nanshan District, Shenzhen, Guangdong, P.R.C.

Table of Contents

Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA492904	Rev. 01	Initial issue of report	Nov. 14, 2014

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **CT Asia, Smart phone, Studio 6.0 LTE,** are as follows.

Equipment Class	Frequency Band	Operating Mode	Highest SAR Summary			
			Head 1g SAR (W/kg) Gap(0cm)	Body-worn 1g SAR (W/kg) Gap(1cm)	Wireless Router 1g SAR (W/kg) Gap(1cm)	Simultaneous Transmission SAR (W/kg)
PCE	GSM850	Voice/Data	0.29	0.48	0.48	1.28
	GSM1900	Voice/Data	0.17	0.83	0.83	
	WCDMA Band V	Voice/Data	0.10	0.32	0.32	
	WCDMA Band II	Voice/Data	0.14	**1.09**	**1.10**	
	LTE Band 4	Data	0.27	1.09	1.09	
	LTE Band 7	Data	0.10	1.09	1.09	
DTS	WLAN 2.4GHz Band	Data	**0.42**	0.19	0.19	1.28
DSS	Bluetooth	Data				1.18
Date of Testing:			10/22/2014 ~ 10/25/2014			

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2003.

2. Administration Data

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.
Test Site Location	No. 101, Complex Building C, Guanlong Village, Xili Town, Nanshan District, Shenzhen, Guangdong, P. R. C. TEL:+86-755-8637-9589 FAX: +86-755-8637-9595

Applicant	
Company Name	CT Asia
Address	Unit 01, 15/F, Seaview Centre, 139-141 Hoi bun road, Kwun Tong, Kowloon, Hongkong

Manufacturer	
Company Name	BEIJING BENYWAVE TECHNOLOGY CO., LTD.
Address	NO. 55 Jiachang 2 road, OPTO-Mechatronics Industrial Park, Tongzhou district, Beijing 101111

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 v01r01

4. Equipment Under Test (EUT)

4.1 General Information

Product Feature & Specification	
Equipment Name	Smart phone
Brand Name	BLU
Model Name	Studio 6.0 LTE
FCC ID	YHLBLUSTUD60LTE
IMEI Code	865061010100242
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	• GSM/GPRS/EGPRS • RMC/AMR 12.2Kbps • HSDPA • HSUPA • HSPA+ (Downlink Only) • LTE: QPSK, 16QAM • 802.11b/g/n HT20 • Bluetooth v3.0+EDR, Bluetooth v4.0 LE
HW Version	TBW5992_P2_001
SW Version	BLU_Y650Q_V04_GENERIC
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Pre-Production

Remark:
1. 802.11n-HT40 is not supported in 2.4GHz WLAN.
2. This device 2.4GHz WLAN supports Hotspot operation.
3. This device supported VoIP in GPRS/EGPRS, WCDMA, LTE (e.g. 3rd party VoIP).
4. This device supports GRPS/EGPRS mode up to multi-slot class12.
5. The EUT do not support DTM function.
6. This device has 2 SIM slots and supports dual SIM dual Standby. The WWAN radio transmission will be enabled by either one SIM at a time (Single active). SIM1 supports GSM and WCDMA functions, and SIM2 only supports GSM function.

4.2 Maximum Tune-up Limit

Mode	Burst average power(dBm)	
	GSM 850	GSM 1900
GSM (GMSK, 1 Tx slot)	33.5	30.5
GPRS (GMSK, 1 Tx slot)	33.5	30.5
GPRS (GMSK, 2 Tx slots)	29.5	28
GPRS (GMSK, 3 Tx slots)	28.5	26.5
GPRS (GMSK, 4 Tx slots)	27.5	25
EDGE (8PSK, 1 Tx slot)	27	25.5
EDGE (8PSK, 2 Tx slots)	27	25
EDGE (8PSK, 3 Tx slots)	27	25
EDGE (8PSK, 4 Tx slots)	27	24.5

Mode	Average power(dBm)	
	WCDMA Band V	WCDMA Band II
AMR 12.2Kbps	23.5	23.5
RMC 12.2Kbps	23.5	23.5
HSDPA Subtest-1	22	22.5
HSDPA Subtest-2	22	22.5
HSDPA Subtest-3	22	22
HSDPA Subtest-4	22	22
HSUPA Subtest-1	22	22.5
HSUPA Subtest-2	21	21
HSUPA Subtest-3	21	21
HSUPA Subtest-4	21.5	22
HSUPA Subtest-5	22.5	22

LTE Band 4				
Average Power (dBm)				
Modulation	BW (MHz)	RB size	MPR	Power
QPSK	20	≤ 18	0	24
QPSK	20	> 18	1	23
16QAM	20	≤ 18	1	23
16QAM	20	> 18	2	22
QPSK	15	≤ 16	0	24
QPSK	15	> 16	1	23
16QAM	15	≤ 16	1	23
16QAM	15	> 16	2	22
QPSK	10	≤ 12	0	24
QPSK	10	> 12	1	23
16QAM	10	≤ 12	1	23
16QAM	10	> 12	2	22
QPSK	5	≤ 8	0	24
QPSK	5	> 8	1	23
16QAM	5	≤ 8	1	23
16QAM	5	> 8	2	22
QPSK	3	≤ 4	0	24
QPSK	3	> 4	1	23
16QAM	3	≤ 4	1	23
16QAM	3	> 4	2	22
QPSK	1.4	≤ 5	0	24
QPSK	1.4	> 5	1	23
16QAM	1.4	≤ 5	1	23
16QAM	1.4	> 5	2	22

LTE Band 7				
Average Power (dBm)				
Modulation	BW (MHz)	RB size	MPR	Power
QPSK	20	≤ 18	0	23
QPSK	20	> 18	1	22
16QAM	20	≤ 18	1	22
16QAM	20	> 18	1.5	21.5
QPSK	15	≤ 16	0	23
QPSK	15	> 16	1	22
16QAM	15	≤ 16	1	22
16QAM	15	> 16	1.5	21.5
QPSK	10	≤ 12	0	23
QPSK	10	> 12	1	22
16QAM	10	≤ 12	1	22
16QAM	10	> 12	1.5	21.5
QPSK	5	≤ 8	0	23
QPSK	5	> 8	1	22
16QAM	5	≤ 8	1	22
16QAM	5	> 8	1.5	21.5

Mode			Maximum Average Power (dBm)
2.4GHz	802.11b	CH1	10
		CH6	10
		CH11	13
	802.11g	CH1	6
		CH6	6
		CH11	8
	802.11n-HT20	CH1	6
		CH6	6
		CH11	8
Bluetooth v3.0+EDR			6.5
Bluetooth v4.0 LE			-2

4.3 General LTE SAR Test and Reporting Considerations

<table>
<tr><th colspan="2">Summarized necessary items addressed in KDB 941225 D05 v02r03</th></tr>
<tr><td>FCC ID</td><td>YHLBLUSTUD60LTE</td></tr>
<tr><td>Equipment Name</td><td>Smart phone</td></tr>
<tr><td>Operating Frequency Range of each LTE transmission band</td><td>LTE Band 4: 1710.7 MHz ~ 1754.3 MHz
LTE Band 7: 2502.5 MHz ~ 2567.5 MHz</td></tr>
<tr><td>Channel Bandwidth</td><td>1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz (LTE Band 4)
5MHz, 10MHz, 15MHz, 20MHz (LTE Band 7)</td></tr>
<tr><td>uplink modulations used</td><td>QPSK, and 16QAM</td></tr>
<tr><td>LTE Voice / Data requirements</td><td>Data only</td></tr>
<tr><td>LTE MPR permanently built-in by design</td><td>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3
<table>
<tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (RB)</th><th rowspan="2">MPR (dB)</th></tr>
<tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr>
<tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr>
</table></td></tr>
<tr><td>LTE A-MPR</td><td>In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)</td></tr>
<tr><td>Spectrum plots for RB configuration</td><td>A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.</td></tr>
</table>

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

LTE Band 4

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745

LTE Band 7

	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510
M	21100	2535	21100	2535	21100	2535	21100	2535
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560

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:

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

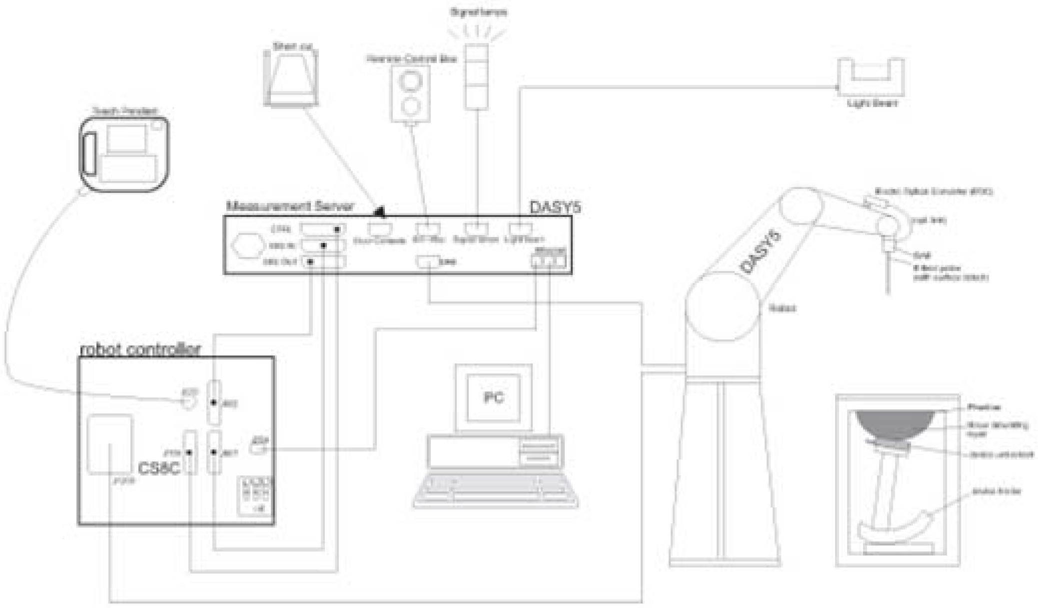
SAR is expressed in units of Watts per kilogram (W/kg)

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

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	$\frac{1}{2}\cdot\delta\cdot\ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 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.

<table>
<tr><td colspan="3"></td><td>≤ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}</td><td>≤ 2 GHz: ≤ 8 mm
2 – 3 GHz: ≤ 5 mm*</td><td>3 – 4 GHz: ≤ 5 mm*
4 – 6 GHz: ≤ 4 mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">uniform grid: $\Delta z_{Zoom}(n)$</td><td>≤ 5 mm</td><td>3 – 4 GHz: ≤ 4 mm
4 – 5 GHz: ≤ 3 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface</td><td>≤ 4 mm</td><td>3 – 4 GHz: ≤ 3 mm
4 – 5 GHz: ≤ 2.5 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td>$\Delta z_{Zoom}(n>1)$: between subsequent points</td><td colspan="2">$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>≥ 30 mm</td><td>3 – 4 GHz: ≥ 28 mm
4 – 5 GHz: ≥ 25 mm
5 – 6 GHz: ≥ 22 mm</td></tr>
<tr><td colspan="5">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 <u>reported</u> 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.</td></tr>
</table>

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	4d151	Mar. 25, 2013	Mar. 23, 2015
SPEAG	1750MHz System Validation Kit	D1750V2	1090	Mar. 27, 2013	Mar. 25, 2015
SPEAG	1900MHz System Validation Kit	D1900V2	5d170	Mar. 27, 2013	Mar. 25, 2015
SPEAG	2450MHz System Validation Kit	D2450V2	908	Mar. 26, 2013	Mar. 24, 2015
SPEAG	2600MHz System Validation Kit	D2600V2	1061	Mar. 26, 2013	Mar. 24, 2015
SPEAG	Data Acquisition Electronics	DAE4	910	Jul. 22, 2014	Jul. 21, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3661	Mar. 10, 2014	Mar. 09, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3753	Mar. 26, 2014	Mar. 25, 2015
SPEAG	SAM Twin Phantom	QD 000 P40 CD	TP-1670	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CD	TP-1671	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio communication analyzer	MT8820C	6201300653	Jul. 17, 2014	Jul. 16, 2015
R&S	Network Analyzer	ZVB8	100106	Nov. 07, 2013	Nov. 06, 2014
SPEAG	Dielectric Assessment KIT	DAK-3.5	1032	NCR	NCR
Anritsu	Power Meter	ML2495A	1218010	Mar. 03. 2014	Mar. 02, 2015
Anritsu	Power Sensor	MA2411B	1207253	Mar. 03. 2014	Mar. 02, 2015
R&S	Spectrum Analyzer	FSP30	101362	Sep. 29, 2014	Sep. 28, 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:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.
2. Referring to KDB 865664 D01v01r03, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.
3. The justification data of dipole D835V2, SN: 4d151, D1750V2, SN: 1090, D1900V2, SN: 5d170, D2450V2, SN: 908, D2600V2, SN: 1061 can be found in appendix C. The return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration.

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
1750	55.2	0	0	0.3	0	44.5	1.37	40.1
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
1750	70.2	0	0	0.4	0	29.4	1.49	53.4
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 (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
835	Head	22.6	0.900	42.153	0.90	41.50	0.00	1.57	±5	2014/10/25
1750	Head	22.7	1.373	41.392	1.37	40.10	0.22	3.22	±5	2014/10/25
1900	Head	22.7	1.422	40.315	1.40	40.00	1.57	0.79	±5	2014/10/25
2450	Head	22.6	1.878	40.464	1.80	39.20	4.33	3.22	±5	2014/10/24
2600	Head	22.8	2.049	37.739	1.96	39.00	4.54	-3.23	±5	2014/10/24
835	Body	22.8	1.011	56.243	0.97	55.20	4.23	1.89	±5	2014/10/23
1750	Body	22.7	1.527	52.039	1.49	53.40	2.48	-2.55	±5	2014/10/22
1900	Body	22.6	1.545	53.535	1.52	53.30	1.64	0.44	±5	2014/10/22
2450	Body	22.7	1.992	52.319	1.95	52.70	2.15	-0.72	±5	2014/10/24
2600	Body	22.6	2.165	53.823	2.16	52.50	0.23	2.52	±5	2014/10/23

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 (%)
2014/10/25	835	Head	250	4d151	3661	910	2.42	9.49	9.68	2.00
2014/10/25	1750	Head	250	1090	3661	910	8.45	36.90	33.8	-8.40
2014/10/25	1900	Head	250	5d170	3661	910	9.27	40.20	37.08	-7.76
2014/10/24	2450	Head	250	908	3661	910	12.70	54.00	50.8	-5.93
2014/10/24	2600	Head	250	1061	3661	910	14.20	58.60	56.8	-3.07
2014/10/23	835	Body	250	4d151	3753	910	2.25	9.43	9.0	-4.56
2014/10/22	1750	Body	250	1090	3753	910	9.30	38.10	37.2	-2.36
2014/10/22	1900	Body	250	5d170	3753	910	9.69	41.20	38.76	-5.92
2014/10/24	2450	Body	250	908	3753	910	11.50	50.40	46.0	-8.73
2014/10/23	2600	Body	250	1061	3753	910	12.90	55.60	51.6	-7.19

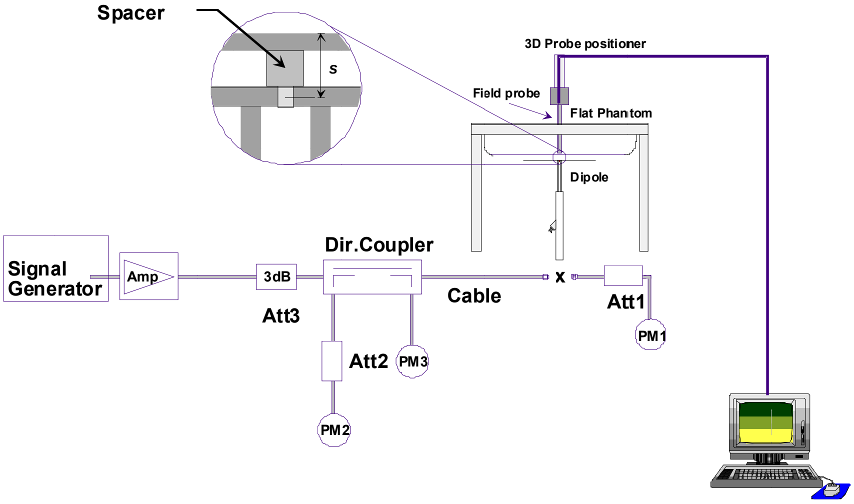


Fig 8.3.1 System Performance Check Setup

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.

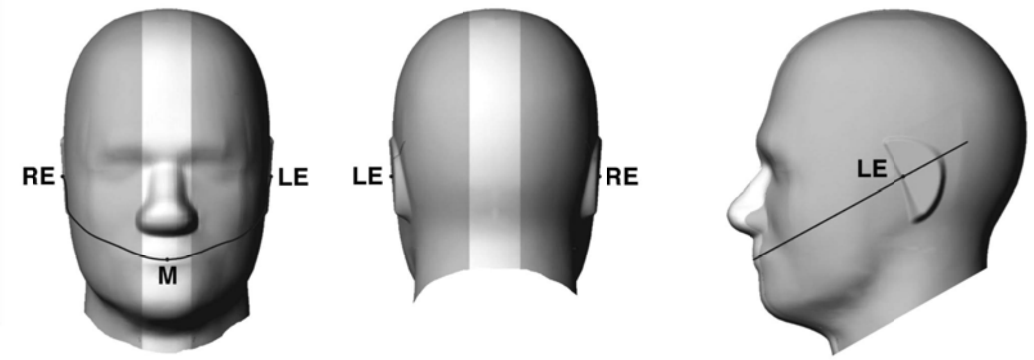


Fig 9.1.1 Front, back, and side views of SAM twin phantom

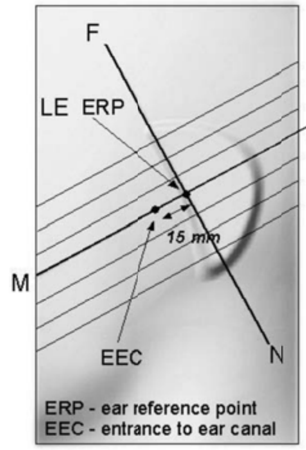


Fig 9.1.2 Close-up side view of phantom showing the ear region.

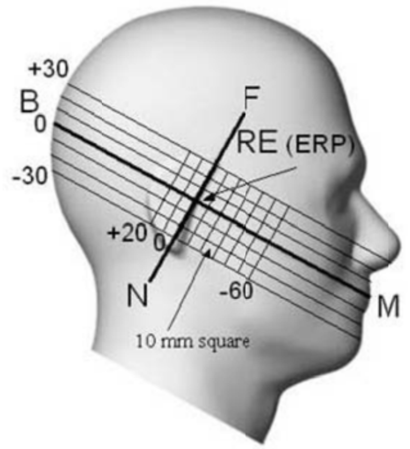


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

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.

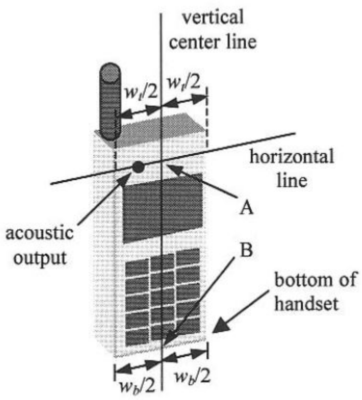


Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case

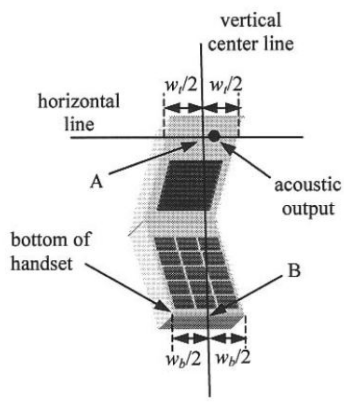


Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

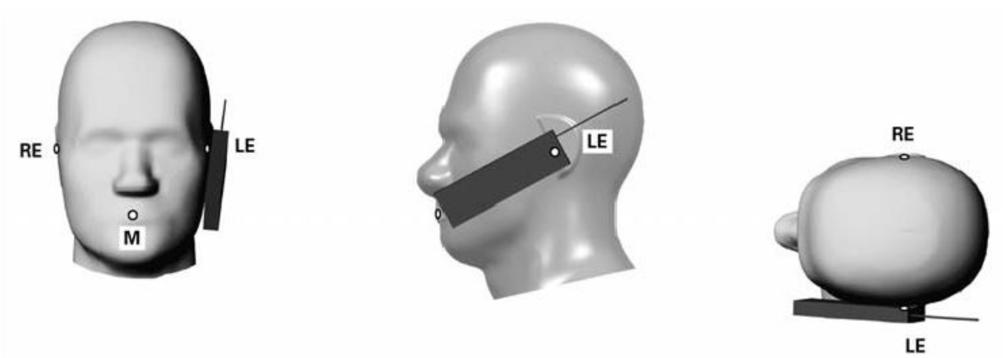


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

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

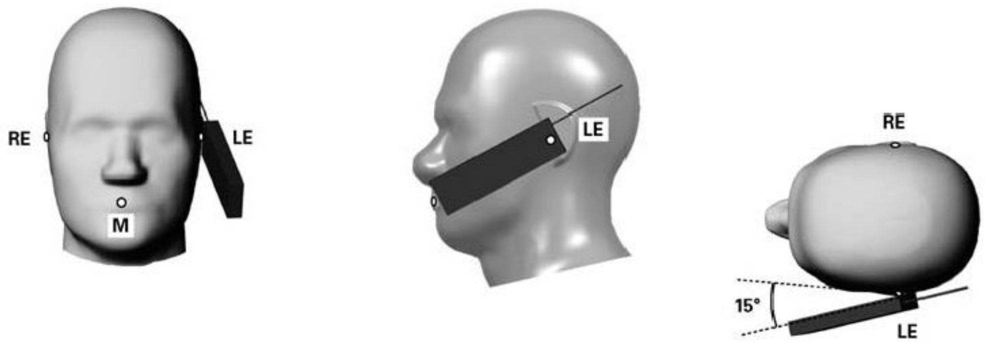


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

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.

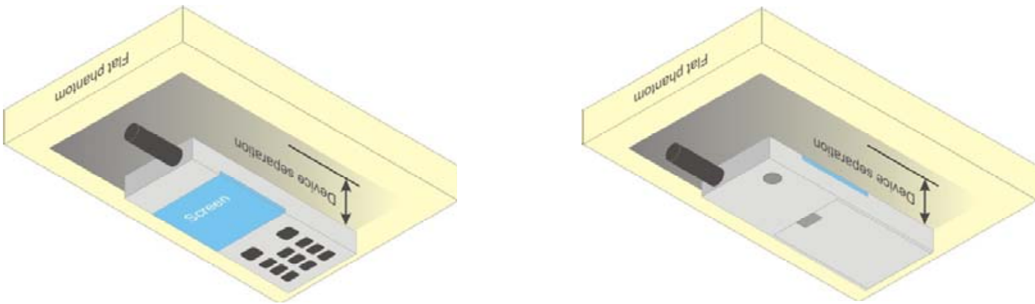


Fig 9.4 Body Worn Position

11.5 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 D06v01r01 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)

<GSM Conducted Power>

General Note:

1. Per KDB 447498 D01v05r02, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03, considering the possibility of e.g. 3rd party VoIP operation for Head and body-worn SAR test reduction for GSM and GPRS and EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the EUT was set in GPRS (4Tx slots) for GSM850 and set in GPRS (3Tx slots) for GSM1900.
3. Per KDB 941225 D01v03, for Hotspot SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance, for modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested, therefore, the EUT was set in GPRS (4Tx slots) for GSM850 and set in GPRS (3Tx slots) for GSM1900.

SIM 1:

Band GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM (GMSK, 1 Tx slot)	32.82	32.83	**33.18**	33.5	23.82	23.83	24.18	24.5
GPRS (GMSK, 1 Tx slot) – CS1	32.75	32.77	33.14	33.5	23.75	23.77	24.14	24.5
GPRS (GMSK, 2 Tx slots) – CS1	28.96	29.32	29.34	29.5	22.96	23.32	23.34	23.5
GPRS (GMSK, 3 Tx slots) – CS1	27.93	28.21	28.23	28.5	23.67	23.95	23.97	24.24
GPRS (GMSK, 4 Tx slots) – CS1	26.80	27.13	27.25	27.5	23.80	24.13	**24.25**	24.5
EDGE (8PSK, 1 Tx slot) – MCS5	26.57	26.58	26.73	27	17.57	17.58	17.73	18
EDGE (8PSK, 2 Tx slots) – MCS5	26.38	26.39	26.53	27	20.38	20.39	20.53	21
EDGE (8PSK, 3 Tx slots) – MCS5	26.22	26.24	26.30	27	21.96	21.98	22.04	22.74
EDGE (8PSK, 4 Tx slots) – MCS5	26.04	26.07	26.12	27	23.04	23.07	23.12	24
Band GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM (GMSK, 1 Tx slot)	30.09	**30.12**	30.10	30.5	21.09	21.12	21.10	21.5
GPRS (GMSK, 1 Tx slot) – CS1	30.08	30.10	30.09	30.5	21.08	21.10	21.09	21.5
GPRS (GMSK, 2 Tx slots) – CS1	27.49	27.58	27.52	28	21.49	21.58	21.52	22
GPRS (GMSK, 3 Tx slots) – CS1	25.97	26.14	26.12	26.5	21.71	**21.88**	21.86	22.24
GPRS (GMSK, 4 Tx slots) – CS1	24.56	24.74	24.72	25	21.56	21.74	21.72	22
EDGE (8PSK, 1 Tx slot) – MCS5	25.14	25.22	25.21	25.5	16.14	16.22	16.21	16.5
EDGE (8PSK, 2 Tx slots) – MCS5	24.92	24.98	24.96	25	18.92	18.98	18.96	19
EDGE (8PSK, 3 Tx slots) – MCS5	24.65	24.82	24.80	25	20.39	20.56	20.54	20.74
EDGE (8PSK, 4 Tx slots) – MCS5	23.97	24.10	24.09	24.5	20.97	21.10	21.09	21.5

Remark: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.
The calculated method are shown as below:
Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB
Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB
Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB
Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

SIM 2:

Band GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM (GMSK, 1 Tx slot)	32.72	32.76	**33.09**	33.5	23.72	23.76	24.09	24.5
GPRS (GMSK, 1 Tx slot) – CS1	32.68	32.72	33.05	33.5	23.68	23.72	24.05	24.5
GPRS (GMSK, 2 Tx slots) – CS1	28.94	29.24	29.29	29.5	22.94	23.24	23.29	23.5
GPRS (GMSK, 3 Tx slots) – CS1	27.88	28.18	28.21	28.5	23.62	23.92	23.95	24.24
GPRS (GMSK, 4 Tx slots) – CS1	26.77	27.10	27.22	27.5	23.77	24.10	**24.22**	24.5
EDGE (8PSK, 1 Tx slot) – MCS5	26.50	26.56	26.71	27	17.50	17.56	17.71	18
EDGE (8PSK, 2 Tx slots) – MCS5	26.30	26.32	26.45	27	20.30	20.32	20.45	21
EDGE (8PSK, 3 Tx slots) – MCS5	26.18	26.19	26.22	27	21.92	21.93	21.96	22.74
EDGE (8PSK, 4 Tx slots) – MCS5	26.01	26.02	26.10	27	23.01	23.02	23.10	24
Band GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM (GMSK, 1 Tx slot)	29.98	**30.01**	30.00	30.5	20.98	21.01	21.00	21.5
GPRS (GMSK, 1 Tx slot) – CS1	29.96	29.98	29.97	30.5	20.96	20.98	20.97	21.5
GPRS (GMSK, 2 Tx slots) – CS1	27.45	27.53	27.51	28	21.45	21.53	21.51	22
GPRS (GMSK, 3 Tx slots) – CS1	25.92	26.09	26.01	26.5	21.66	**21.83**	21.75	22.24
GPRS (GMSK, 4 Tx slots) – CS1	24.52	24.68	24.64	25	21.52	21.68	21.64	22
EDGE (8PSK, 1 Tx slot) – MCS5	25.08	25.17	25.15	25.5	16.08	16.17	16.15	16.5
EDGE (8PSK, 2 Tx slots) – MCS5	24.88	24.96	24.93	25	18.88	18.96	18.93	19
EDGE (8PSK, 3 Tx slots) – MCS5	24.62	24.80	24.77	25	20.36	20.54	20.51	20.74
EDGE (8PSK, 4 Tx slots) – MCS5	23.89	24.05	24.03	24.5	20.89	21.05	21.03	21.5

Remark: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.
The calculated method are shown as below:
Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB
Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB
Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB
Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

<WCDMA Conducted Power>

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 D01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

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

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

Sub-test	β_c	β_d	β_d *(SF)*	β_c/β_d	β_{HS} *(Note1, Note 2)*	CM (dB) *(Note 3)*	MPR (dB) *(Note 3)*
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 *(Note 4)*	15/15 *(Note 4)*	64	12/15 *(Note 4)*	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

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

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

Note 3: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

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

Setup Configuration

HSUPA Setup Configuration:

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

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

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (Note 5) (Note 6)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 6)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed}1: 47/15 β_{ed}2: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with $\beta_{hs} = 30/15 * \beta_c$.
Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.
Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.
Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 14/15 and β_d = 15/15.
Note 5: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.
Note 6: β_{ed} can not be set directly, it is set by Absolute Grant Value.

Setup Configuration

<WCDMA Conducted Power>

General Note:

1. Per KDB 941225 D01v03, SAR for Head / Hotspot / Body-worn exposure is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.
2. Per KDB 941225 D01v03, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA.

SIM 1:

Band			WCDMA Band V				WCDMA Band II			
Tx Channel			4132	4182	4233	Tune-up Limit (dBm)	9262	9400	9538	Tune-up Limit (dBm)
Rx Channel			4357	4407	4458		9662	9800	9938	
Frequency (MHz)			826.4	836.4	846.6		1852.4	1880	1907.6	
MPR (dB)	3GPP Rel 99	AMR 12.2Kbps	22.85	22.54	22.76	23.5	22.94	22.98	22.81	23.5
	3GPP Rel 99	RMC 12.2Kbps	**22.86**	22.55	22.77	23.5	22.96	**23.00**	22.82	23.5
0	3GPP Rel 6	HSDPA Subtest-1	21.77	21.62	21.66	22	22.03	21.91	21.83	22.5
0	3GPP Rel 6	HSDPA Subtest-2	21.89	21.61	21.66	22	22.01	21.99	21.98	22.5
0.5	3GPP Rel 6	HSDPA Subtest-3	21.36	21.20	21.15	22	21.59	21.49	21.50	22
0.5	3GPP Rel 6	HSDPA Subtest-4	21.34	21.19	21.08	22	21.58	21.48	21.57	22
0	3GPP Rel 6	HSUPA Subtest-1	21.60	21.29	21.67	22	22.12	21.44	21.85	22.5
2	3GPP Rel 6	HSUPA Subtest-2	20.88	20.57	20.52	21	20.81	20.92	20.61	21
1	3GPP Rel 6	HSUPA Subtest-3	20.58	20.17	20.40	21	20.68	20.59	20.49	21
2	3GPP Rel 6	HSUPA Subtest-4	20.79	20.88	21.01	21.5	21.15	21.22	21.01	22
0	3GPP Rel 6	HSUPA Subtest-5	22.00	21.50	21.70	22.5	21.90	21.90	21.70	22

<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 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	23.12	22.92	23.37	24	0
20	QPSK	1	49	22.95	23.13	23.39		
20	QPSK	1	99	23.14	23.46	**23.48**		
20	QPSK	50	0	22.10	22.00	22.36	23	0-1
20	QPSK	50	24	22.00	22.07	22.42		
20	QPSK	50	49	22.13	22.36	22.45		
20	QPSK	100	0	21.95	22.24	22.37		
20	16QAM	1	0	21.82	21.87	22.26	23	0-1
20	16QAM	1	49	21.78	22.02	22.38		
20	16QAM	1	99	22.21	22.41	22.22		
20	16QAM	50	0	21.04	21.02	21.38	22	0-2
20	16QAM	50	24	20.92	21.05	21.35		
20	16QAM	50	49	20.95	21.21	21.31		
20	16QAM	100	0	21.17	21.19	21.41		
Channel				20025	20175	20325	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	23.07	22.98	23.41	24	0
15	QPSK	1	37	22.95	23.22	23.22		
15	QPSK	1	74	22.91	23.42	23.35		
15	QPSK	36	0	22.15	22.05	22.56	23	0-1
15	QPSK	36	18	21.99	22.15	22.37		
15	QPSK	36	37	21.94	22.35	22.45		
15	QPSK	75	0	22.04	22.24	22.39		
15	16QAM	1	0	21.94	21.76	22.23	23	0-1
15	16QAM	1	37	21.70	21.91	22.05		
15	16QAM	1	74	22.00	22.06	22.10		
15	16QAM	36	0	21.12	20.98	21.49	22	0-2
15	16QAM	36	18	20.99	21.05	21.29		
15	16QAM	36	37	20.80	21.16	21.40		
15	16QAM	75	0	20.85	21.23	21.47		
Channel				20000	20175	20350	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	23.07	22.95	23.28	24	0
10	QPSK	1	24	22.99	22.93	23.24		
10	QPSK	1	49	22.96	23.27	23.39		
10	QPSK	25	0	22.16	21.99	22.40	23	0-1
10	QPSK	25	12	22.09	22.06	22.43		
10	QPSK	25	24	22.11	22.20	22.40		
10	QPSK	50	0	22.07	22.12	22.41		
10	16QAM	1	0	22.40	22.40	22.30	23	0-1
10	16QAM	1	24	22.23	22.37	22.25		
10	16QAM	1	49	22.16	22.58	22.36		
10	16QAM	25	0	21.16	21.10	21.43	22	0-2
10	16QAM	25	12	21.06	21.06	21.43		
10	16QAM	25	24	21.01	21.30	21.33		
10	16QAM	50	0	21.05	21.09	21.42		

Channel				19975	20175	20375	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	23.10	22.94	23.44	24	0
5	QPSK	1	12	23.08	23.18	23.28		
5	QPSK	1	24	22.99	23.30	23.46		
5	QPSK	12	0	22.16	22.07	22.48	23	0-1
5	QPSK	12	6	22.10	22.12	22.44		
5	QPSK	12	11	22.07	22.20	22.35		
5	QPSK	25	0	22.05	22.11	22.39		
5	16QAM	1	0	21.83	21.94	22.59	23	0-1
5	16QAM	1	12	21.96	22.05	22.56		
5	16QAM	1	24	21.78	22.01	22.56		
5	16QAM	12	0	21.21	21.01	21.46	22	0-2
5	16QAM	12	6	21.12	21.16	21.58		
5	16QAM	12	11	21.22	21.22	21.58		
5	16QAM	25	0	21.15	21.00	21.45		
Channel				19965	20175	20385	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	22.93	22.99	23.43	24	0
3	QPSK	1	7	22.98	23.06	23.34		
3	QPSK	1	14	23.02	23.11	23.45		
3	QPSK	8	0	22.05	22.05	22.49	23	0-1
3	QPSK	8	4	22.03	22.13	22.40		
3	QPSK	8	7	22.09	22.21	22.43		
3	QPSK	15	0	22.14	22.03	22.34		
3	16QAM	1	0	22.18	21.77	22.09	23	0-1
3	16QAM	1	7	21.93	21.94	22.18		
3	16QAM	1	14	22.03	22.00	22.30		
3	16QAM	8	0	21.06	20.88	21.40	22	0-2
3	16QAM	8	4	21.14	20.95	21.33		
3	16QAM	8	7	21.05	20.99	21.24		
3	16QAM	15	0	21.13	20.98	21.31		
Channel				19957	20175	20393	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	22.97	22.92	23.26	24	0
1.4	QPSK	1	2	23.00	22.93	23.30		
1.4	QPSK	1	5	22.95	23.12	23.46		
1.4	QPSK	3	0	22.92	23.03	23.37		
1.4	QPSK	3	1	23.00	23.04	23.38		
1.4	QPSK	3	2	22.96	23.07	23.45		
1.4	QPSK	6	0	22.06	22.09	22.35	23	0-1
1.4	16QAM	1	0	22.26	22.21	22.51	23	0-1
1.4	16QAM	1	2	22.19	22.22	22.55		
1.4	16QAM	1	5	22.18	22.32	22.51		
1.4	16QAM	3	0	22.11	22.08	22.44		
1.4	16QAM	3	1	22.09	22.08	22.45		
1.4	16QAM	3	2	22.11	22.20	22.40		
1.4	16QAM	6	0	21.36	21.26	21.56	22	0-2

<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	21.96	22.41	22.34	23	0
20	QPSK	1	49	22.37	22.46	22.44		
20	QPSK	1	99	22.22	22.19	22.30		
20	QPSK	50	0	21.27	21.30	21.26	22	0-1
20	QPSK	50	24	21.29	21.42	21.40		
20	QPSK	50	49	21.24	21.37	21.23		
20	QPSK	100	0	21.30	21.33	21.27		
20	16QAM	1	0	20.99	21.14	21.10	22	0-1
20	16QAM	1	49	21.16	21.33	21.17		
20	16QAM	1	99	21.31	21.34	21.21		
20	16QAM	50	0	20.39	20.56	20.81	21.5	0-2
20	16QAM	50	24	20.27	20.59	20.74		
20	16QAM	50	49	20.29	20.60	21.20		
20	16QAM	100	0	20.41	20.54	20.73		
Channel				20825	21100	21375	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	22.02	22.13	22.31	23	0
15	QPSK	1	37	22.35	22.37	22.42		
15	QPSK	1	74	22.34	22.38	22.29		
15	QPSK	36	0	21.56	21.36	21.33	22	0-1
15	QPSK	36	18	21.16	21.31	21.53		
15	QPSK	36	37	21.20	21.41	21.41		
15	QPSK	75	0	21.21	21.40	21.18		
15	16QAM	1	0	21.20	21.42	21.55	22	0-1
15	16QAM	1	37	21.33	21.57	21.77		
15	16QAM	1	74	21.37	21.68	21.53		
15	16QAM	36	0	20.71	20.56	20.45	21.5	0-2
15	16QAM	36	18	20.37	20.53	20.56		
15	16QAM	36	37	20.31	20.61	21.44		
15	16QAM	75	0	20.42	20.46	21.06		
Channel				20800	21100	21400	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	22.02	22.17	22.09	23	0
10	QPSK	1	24	22.07	22.37	22.19		
10	QPSK	1	49	22.19	22.42	22.35		
10	QPSK	25	0	21.80	21.48	21.74	22	0-1
10	QPSK	25	12	21.23	21.43	21.34		
10	QPSK	25	24	21.22	21.39	21.21		
10	QPSK	50	0	21.32	21.37	21.22		
10	16QAM	1	0	21.03	21.14	21.40	22	0-1
10	16QAM	1	24	21.05	21.14	21.42		
10	16QAM	1	49	21.11	21.15	21.43		
10	16QAM	25	0	20.78	20.49	20.66	21.5	0-2
10	16QAM	25	12	20.28	20.28	21.27		
10	16QAM	25	24	20.33	20.33	21.46		
10	16QAM	50	0	20.43	20.40	21.14		

Channel				20775	21100	21425	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	22.21	22.16	22.02	23	0
5	QPSK	1	12	22.11	22.34	22.24		
5	QPSK	1	24	22.09	22.42	22.27		
5	QPSK	12	0	20.93	21.49	21.22	22	0-1
5	QPSK	12	6	20.76	21.37	21.32		
5	QPSK	12	11	21.70	21.28	21.32		
5	QPSK	25	0	21.93	21.37	21.36		
5	16QAM	1	0	21.19	21.12	21.52	22	0-1
5	16QAM	1	12	21.10	21.18	21.21		
5	16QAM	1	24	21.15	21.31	21.24		
5	16QAM	12	0	20.05	20.48	21.43	21.5	0-2
5	16QAM	12	6	20.04	20.56	20.58		
5	16QAM	12	11	20.73	20.47	20.61		
5	16QAM	25	0	20.99	20.50	21.33		

<WLAN Conducted Power>

General Note:

1. For 2.4GHz WLAN SAR testing, highest average RF output power channel for the lowest data rate for 802.11b were 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 Antenna>

WLAN 2.4GHz 802.11b Average Power (dBm)					
Power vs. Channel			Power vs. Data Rate		
Channel	Frequency (MHz)	Data Rate 1Mbps	2Mbps	5.5Mbps	11Mbps
CH 1	2412	9.59	12.50	12.54	12.49
CH 6	2437	9.13			
CH 11	2462	**12.56**			

WLAN 2.4GHz 802.11g Average Power (dBm)									
Power vs. Channel			Power vs. Data Rate						
Channel	Frequency (MHz)	Data Rate 6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
CH 1	2412	5.78	7.56	7.56	7.66	7.64	7.65	7.64	7.63
CH 6	2437	5.04							
CH 11	2462	**7.70**							

WLAN 2.4GHz 802.11n-HT20 Average Power (dBm)									
Power vs. Channel			Power vs. MCS Index						
Channel	Frequency (MHz)	MCS Index MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 1	2412	5.44	7.00	6.93	6.97	6.98	6.96	6.97	6.94
CH 6	2437	4.54							
CH 11	2462	**7.05**							

13. Bluetooth Exclusions Applied

Mode Band	Average power(dBm)	
	Bluetooth v3.0+EDR	Bluetooth v4.0 LE
2.4GHz Bluetooth	6.5	-2

Note:

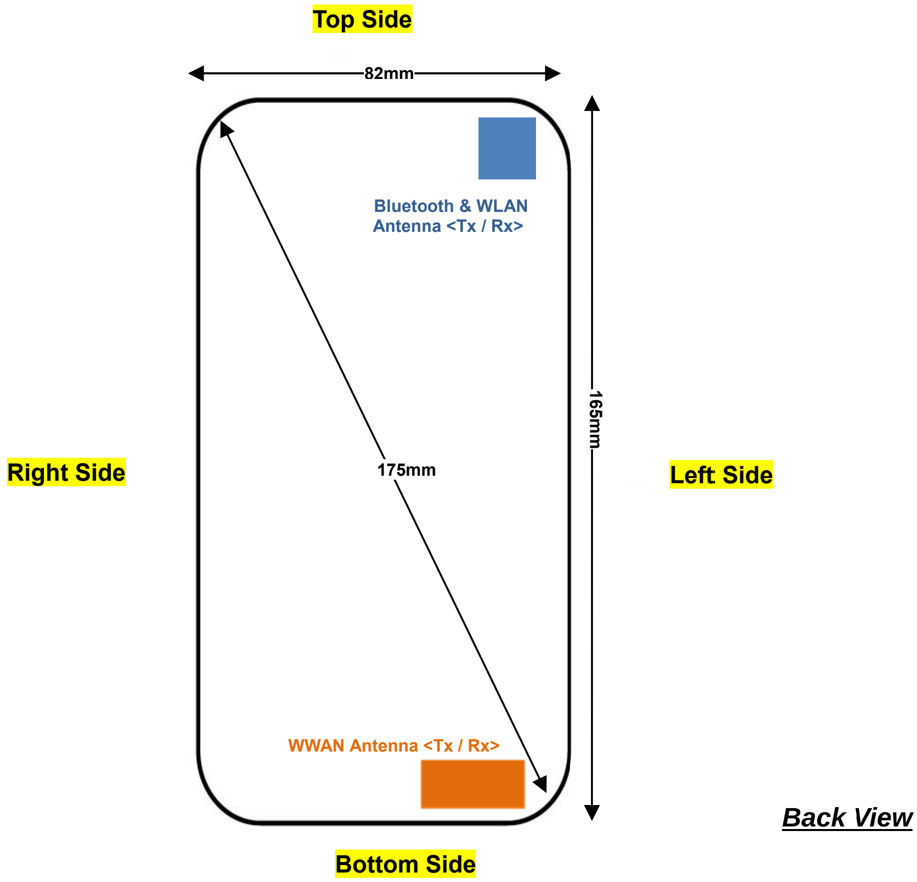
1. Per KDB 447498 D01v05r02, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] ·[$\sqrt{f(GHz)}$] ≤ 3.0 for 1-g SAR and ≤ 7.5 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
6.5	< 5	2.48	1.3

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 1.3 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
WWAN	≤ 25mm	≤ 25mm	151mm	≤ 25mm	48mm	≤ 25mm
BT&WLAN	≤ 25mm	≤ 25mm	≤ 25mm	149mm	68mm	≤ 25mm

Positions for SAR tests; Hotspot mode						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN	Yes	Yes	No	Yes	No	Yes
BT&WLAN	Yes	Yes	Yes	No	No	Yes

General Note:

1. Referring to KDB 941225 D06 v01r01, 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. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * 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. Per KDB 941225 D01v03, considering the possibility of e.g. 3rd party VoIP operation for Head and body-worn SAR test reduction for GSM and GPRS and EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the EUT was set in GPRS (4Tx slots) for GSM850 and set in GPRS (3Tx slots) for GSM1900.
4. Per KDB 941225 D01v03, for Hotspot SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance, for modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested, therefore, the EUT was set in GPRS (4Tx slots) for GSM850 and set in GPRS (3Tx slots) for GSM1900.
5. Per KDB 941225 D01v03, SAR for next to the ear head / Hotspot / Body-worn exposure is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.
6. Per KDB 941225 D01v03, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA.
7. Per KDB 648474 D04v01r02, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.
8. 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.
9. Per KDB 941225 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
10. 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.
11. 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.
12. 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.
13. This device 2.4GHz WLAN supports Hotspot operation.

15.1 Head SAR

<GSM 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)
01	**GSM850**	**GPRS(4 Tx slots)**	**Right Cheek**	**251**	**848.8**	**27.25**	**27.50**	**1.059**	**0.03**	**0.269**	**0.285**
	GSM850	GPRS(4 Tx slots)	Right Tilted	251	848.8	27.25	27.50	1.059	0.06	0.120	0.127
	GSM850	GPRS(4 Tx slots)	Left Cheek	251	848.8	27.25	27.50	1.059	0.05	0.232	0.246
	GSM850	GPRS(4 Tx slots)	Left Tilted	251	848.8	27.25	27.50	1.059	-0.08	0.117	0.124
	GSM1900	GPRS(3 Tx slots)	Right Cheek	661	1880	26.14	26.50	1.086	0.01	0.145	0.158
	GSM1900	GPRS(3 Tx slots)	Right Tilted	661	1880	26.14	26.50	1.086	0.04	0.072	0.078
02	**GSM1900**	**GPRS(3 Tx slots)**	**Left Cheek**	**661**	**1880**	**26.14**	**26.50**	**1.086**	**-0.09**	**0.157**	**0.171**
	GSM1900	GPRS(3 Tx slots)	Left Tilted	661	1880	26.14	26.50	1.086	0.04	0.059	0.064

<WCDMA 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)
03	**WCDMA Band V**	**RMC 12.2K**	**Right Cheek**	**4132**	**826.4**	**22.86**	**23.50**	**1.159**	**0.01**	**0.086**	**0.100**
	WCDMA Band V	RMC 12.2K	Right Tilted	4132	826.4	22.86	23.50	1.159	-0.05	0.039	0.045
	WCDMA Band V	RMC 12.2K	Left Cheek	4132	826.4	22.86	23.50	1.159	0.02	0.079	0.092
	WCDMA Band V	RMC 12.2K	Left Tilted	4132	826.4	22.86	23.50	1.159	0.02	0.039	0.045
	WCDMA Band II	RMC 12.2K	Right Cheek	9400	1880	23.00	23.50	1.122	0.02	0.101	0.113
	WCDMA Band II	RMC 12.2K	Right Tilted	9400	1880	23.00	23.50	1.122	0.03	0.06	0.067
04	**WCDMA Band II**	**RMC 12.2K**	**Left Cheek**	**9400**	**1880**	**23.00**	**23.50**	**1.122**	**0.05**	**0.127**	**0.142**
	WCDMA Band II	RMC 12.2K	Left Tilted	9400	1880	23.00	23.50	1.122	0.03	0.046	0.052

<LTE SAR>

Plot No.	Band	Modulation	BW (MHz)	RB Size	RB offset	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 4	QPSK	20	1	99	Right Cheek	20300	1745	23.48	24.00	1.127	0.02	0.177	0.200
	LTE Band 4	QPSK	20	1	99	Right Tilted	20300	1745	23.48	24.00	1.127	0.02	0.108	0.122
05	**LTE Band 4**	**QPSK**	**20**	**1**	**99**	**Left Cheek**	**20300**	**1745**	**23.48**	**24.00**	**1.127**	**0.05**	**0.235**	**0.265**
	LTE Band 4	QPSK	20	1	99	Left Tilted	20300	1745	23.48	24.00	1.127	0.05	0.074	0.083
	LTE Band 4	QPSK	20	50	49	Right Cheek	20300	1745	22.45	23.00	1.135	0.03	0.146	0.166
	LTE Band 4	QPSK	20	50	49	Right Tilted	20300	1745	22.45	23.00	1.135	0.03	0.092	0.104
	LTE Band 4	QPSK	20	50	49	Left Cheek	20300	1745	22.45	23.00	1.135	0.04	0.191	0.217
	LTE Band 4	QPSK	20	50	49	Left Tilted	20300	1745	22.45	23.00	1.135	0.05	0.065	0.074
06	**LTE Band 7**	**QPSK**	**20**	**1**	**49**	**Right Cheek**	**21100**	**2535**	**22.46**	**23.00**	**1.132**	**0.03**	**0.085**	**0.096**
	LTE Band 7	QPSK	20	1	49	Right Tilted	21100	2535	22.46	23.00	1.132	-0.07	0.063	0.071
	LTE Band 7	QPSK	20	1	49	Left Cheek	21100	2535	22.46	23.00	1.132	-0.09	0.072	0.082
	LTE Band 7	QPSK	20	1	49	Left Tilted	21100	2535	22.46	23.00	1.132	0.02	0.029	0.033
	LTE Band 7	QPSK	20	50	24	Right Cheek	21100	2535	21.42	22.00	1.143	0.03	0.066	0.075
	LTE Band 7	QPSK	20	50	24	Right Tilted	21100	2535	21.42	22.00	1.143	0.02	0.048	0.055
	LTE Band 7	QPSK	20	50	24	Left Cheek	21100	2535	21.42	22.00	1.143	-0.05	0.055	0.063
	LTE Band 7	QPSK	20	50	24	Left Tilted	21100	2535	21.42	22.00	1.143	-0.09	0.022	0.025

<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	**WLAN2.4GHz**	**802.11b 1Mbps**	**Right Cheek**	**11**	**2462**	**12.56**	**13.00**	**1.107**	**97.63**	**1.024**	**0.02**	**0.369**	**0.418**
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	11	2462	12.56	13.00	1.107	97.63	1.024	0.01	0.285	0.323
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	11	2462	12.56	13.00	1.107	97.63	1.024	-0.05	0.147	0.167
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	11	2462	12.56	13.00	1.107	97.63	1.024	-0.06	0.112	0.127

15.2 Hotspot SAR

Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN	≤ 25mm	≤ 25mm	151mm	≤ 25mm	48mm	≤ 25mm
BT&WLAN	≤ 25mm	≤ 25mm	≤ 25mm	149mm	68mm	≤ 25mm

Positions for SAR tests; Hotspot mode						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN	Yes	Yes	No	Yes	No	Yes
BT&WLAN	Yes	Yes	Yes	No	No	Yes

General Note:

1. Referring to KDB 941225 D06 v01r01, 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

<GSM 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)
	GSM850	GPRS(4 Tx slots)	Front	1	251	848.8	27.25	27.50	1.059	-0.01	0.319	0.338
08	**GSM850**	**GPRS(4 Tx slots)**	**Back**	**1**	**251**	**848.8**	**27.25**	**27.50**	**1.059**	**0.08**	**0.448**	**0.475**
	GSM850	GPRS(4 Tx slots)	Left side	1	251	848.8	27.25	27.50	1.059	0.02	0.232	0.246
	GSM850	GPRS(4 Tx slots)	Bottom side	1	251	848.8	27.25	27.50	1.059	-0.06	0.313	0.332
	GSM1900	GPRS(3 Tx slots)	Front	1	661	1880	26.14	26.50	1.086	0.07	0.745	0.809
	GSM1900	GPRS(3 Tx slots)	Back	1	661	1880	26.14	26.50	1.086	0.05	0.737	0.801
	GSM1900	GPRS(3 Tx slots)	Left side	1	661	1880	26.14	26.50	1.086	0.07	0.163	0.177
	GSM1900	GPRS(3 Tx slots)	Bottom side	1	661	1880	26.14	26.50	1.086	0.04	0.734	0.797
09	**GSM1900**	**GPRS(3 Tx slots)**	**Front**	**1**	**512**	**1850.2**	**25.97**	**26.50**	**1.130**	**0.13**	**0.736**	**0.832**
	GSM1900	GPRS(3 Tx slots)	Front	1	810	1909.8	26.12	26.50	1.091	0.1	0.675	0.737
	GSM1900	GPRS(3 Tx slots)	Back	1	512	1850.2	25.97	26.50	1.130	0.05	0.710	0.802
	GSM1900	GPRS(3 Tx slots)	Back	1	810	1909.8	26.12	26.50	1.091	0.08	0.673	0.735

<WCDMA 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)
	WCDMA Band V	RMC 12.2K	Front	1	4132	826.4	22.86	23.50	1.159	0.05	0.196	0.227
10	**WCDMA Band V**	**RMC 12.2K**	**Back**	**1**	**4132**	**826.4**	**22.86**	**23.50**	**1.159**	**0.05**	**0.275**	**0.319**
	WCDMA Band V	RMC 12.2K	Left side	1	4132	826.4	22.86	23.50	1.159	0.05	0.164	0.190
	WCDMA Band V	RMC 12.2K	Bottom side	1	4132	826.4	22.86	23.50	1.159	-0.09	0.189	0.219
	WCDMA Band II	RMC 12.2K	Front	1	9400	1880	23.00	23.50	1.122	0.06	0.963	1.081
	WCDMA Band II	RMC 12.2K	Back	1	9400	1880	23.00	23.50	1.122	0.07	0.878	0.985
	WCDMA Band II	RMC 12.2K	Left side	1	9400	1880	23.00	23.50	1.122	-0.03	0.213	0.239
11	**WCDMA Band II**	**RMC 12.2K**	**Bottom side**	**1**	**9400**	**1880**	**23.00**	**23.50**	**1.122**	**0.02**	**0.980**	**1.100**
	WCDMA Band II	RMC 12.2K	Front	1	9262	1852.4	22.96	23.50	1.132	0.1	0.960	1.087
	WCDMA Band II	RMC 12.2K	Front	1	9538	1907.6	22.82	23.50	1.169	0.09	0.859	1.005
	WCDMA Band II	RMC 12.2K	Back	1	9262	1852.4	22.96	23.50	1.132	-0.13	0.881	0.998
	WCDMA Band II	RMC 12.2K	Back	1	9538	1907.6	22.82	23.50	1.169	0.05	0.751	0.878
	WCDMA Band II	RMC 12.2K	Bottom side	1	9262	1852.4	22.96	23.50	1.132	0.07	0.951	1.077
	WCDMA Band II	RMC 12.2K	Bottom side	1	9538	1907.6	22.82	23.50	1.169	0.07	0.811	0.948

<LTE SAR>

Plot No.	Band	Modulation	BW (MHz)	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 4	QPSK	20	1	99	Front	1	20300	1745	23.48	24.00	1.127	0.13	0.873	0.984
	LTE Band 4	QPSK	20	1	99	Back	1	20300	1745	23.48	24.00	1.127	0.03	0.691	0.779
	LTE Band 4	QPSK	20	1	99	Left side	1	20300	1745	23.48	24.00	1.127	-0.06	0.22	0.248
	LTE Band 4	QPSK	20	1	99	Bottom side	1	20300	1745	23.48	24.00	1.127	-0.03	0.792	0.893
	LTE Band 4	QPSK	20	1	99	Front	1	20050	1720	23.14	24.00	1.219	0.02	0.619	0.755
12	**LTE Band 4**	**QPSK**	**20**	**1**	**99**	**Front**	**1**	**20175**	**1732.5**	**23.46**	**24.00**	**1.132**	**0.09**	**0.961**	**1.088**
	LTE Band 4	QPSK	20	1	99	Bottom side	1	20050	1720	23.14	24.00	1.219	-0.04	0.552	0.673
	LTE Band 4	QPSK	20	1	99	Bottom side	1	20175	1732.5	23.46	24.00	1.132	0.11	0.889	1.007
	LTE Band 4	QPSK	20	50	49	Front	1	20300	1745	22.45	23.00	1.135	0.02	0.777	0.882
	LTE Band 4	QPSK	20	50	49	Back	1	20300	1745	22.45	23.00	1.135	0.07	0.574	0.651
	LTE Band 4	QPSK	20	50	49	Left side	1	20300	1745	22.45	23.00	1.135	0.15	0.192	0.218
	LTE Band 4	QPSK	20	50	49	Bottom side	1	20300	1745	22.45	23.00	1.135	-0.03	0.717	0.814
	LTE Band 4	QPSK	20	50	49	Front	1	20050	1720	22.13	23.00	1.222	0.06	0.626	0.765
	LTE Band 4	QPSK	20	50	49	Front	1	20175	1732.5	22.36	23.00	1.159	0.05	0.723	0.838
	LTE Band 4	QPSK	20	50	49	Bottom side	1	20050	1720	22.13	23.00	1.222	0.09	0.584	0.714
	LTE Band 4	QPSK	20	50	49	Bottom side	1	20175	1732.5	22.36	23.00	1.159	0.14	0.665	0.771
	LTE Band 4	QPSK	20	100	0	Front	1	20300	1745	22.37	23.00	1.156	0.04	0.768	0.888
	LTE Band 4	QPSK	20	100	0	Back	1	20300	1745	22.37	23.00	1.156	0.01	0.565	0.653
	LTE Band 4	QPSK	20	100	0	Bottom side	1	20300	1745	22.37	23.00	1.156	0.09	0.713	0.824
	LTE Band 7	QPSK	20	1	49	Front	1	21100	2535	22.46	23.00	1.132	-0.1	0.706	0.799
13	**LTE Band 7**	**QPSK**	**20**	**1**	**49**	**Back**	**1**	**21100**	**2535**	**22.46**	**23.00**	**1.132**	**0.09**	**0.965**	**1.093**
	LTE Band 7	QPSK	20	1	49	Left side	1	21100	2535	22.46	23.00	1.132	-0.1	0.156	0.177
	LTE Band 7	QPSK	20	1	49	Bottom side	1	21100	2535	22.46	23.00	1.132	-0.1	0.843	0.955
	LTE Band 7	QPSK	20	1	49	Back	1	20850	2510	22.37	23.00	1.156	0.09	0.893	1.032
	LTE Band 7	QPSK	20	1	49	Back	1	21350	2560	22.44	23.00	1.138	0.02	0.961	1.093
	LTE Band 7	QPSK	20	1	49	Bottom side	1	20850	2510	22.37	23.00	1.156	-0.03	0.773	0.894
	LTE Band 7	QPSK	20	1	49	Bottom side	1	21350	2560	22.44	23.00	1.138	-0.17	0.888	1.010
	LTE Band 7	QPSK	20	50	24	Front	1	21100	2535	21.42	22.00	1.143	0.07	0.517	0.591
	LTE Band 7	QPSK	20	50	24	Back	1	21100	2535	21.42	22.00	1.143	0.02	0.75	0.857
	LTE Band 7	QPSK	20	50	24	Left side	1	21100	2535	21.42	22.00	1.143	0.01	0.12	0.137
	LTE Band 7	QPSK	20	50	24	Bottom side	1	21100	2535	21.42	22.00	1.143	0.11	0.666	0.761
	LTE Band 7	QPSK	20	50	24	Back	1	20850	2510	21.29	22.00	1.178	0.06	0.702	0.827
	LTE Band 7	QPSK	20	50	24	Back	1	21350	2560	21.40	22.00	1.148	-0.03	0.781	0.897
	LTE Band 7	QPSK	20	100	0	Back	1	21100	2535	21.33	22.00	1.167	0.02	0.769	0.897
	LTE Band 7	QPSK	20	100	0	Bottom side	1	21100	2535	21.33	22.00	1.167	-0.08	0.648	0.756

<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)
	WLAN2.4GHz	802.11b 1Mbps	Front	1	11	2462	12.56	13.00	1.107	97.63	1.024	0.08	0.089	0.101
14	**WLAN2.4GHz**	**802.11b 1Mbps**	**Back**	**1**	**11**	**2462**	**12.56**	**13.00**	**1.107**	**97.63**	**1.024**	**0.08**	**0.164**	**0.186**
	WLAN2.4GHz	802.11b 1Mbps	Left side	1	11	2462	12.56	13.00	1.107	97.63	1.024	-0.06	0.120	0.136
	WLAN2.4GHz	802.11b 1Mbps	Top side	1	11	2462	12.56	13.00	1.107	97.63	1.024	0.02	0.050	0.057

15.3 Body Worn Accessory SAR

<GSM 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)
	GSM850	GPRS(4 Tx slots)	Front	1	251	848.8	27.25	27.50	1.059	-0.01	0.319	0.338
08	**GSM850**	**GPRS(4 Tx slots)**	**Back**	**1**	**251**	**848.8**	**27.25**	**27.50**	**1.059**	**0.08**	**0.448**	**0.475**
	GSM1900	GPRS(3 Tx slots)	Front	1	661	1880	26.14	26.50	1.086	0.07	0.745	0.809
	GSM1900	GPRS(3 Tx slots)	Back	1	661	1880	26.14	26.50	1.086	0.05	0.737	0.801
09	**GSM1900**	**GPRS(3 Tx slots)**	**Front**	**1**	**512**	**1850.2**	**25.97**	**26.50**	**1.130**	**0.13**	**0.736**	**0.832**
	GSM1900	GPRS(3 Tx slots)	Front	1	810	1909.8	26.12	26.50	1.091	0.1	0.675	0.737
	GSM1900	GPRS(3 Tx slots)	Back	1	512	1850.2	25.97	26.50	1.130	0.05	0.710	0.802
	GSM1900	GPRS(3 Tx slots)	Back	1	810	1909.8	26.12	26.50	1.091	0.08	0.673	0.735

<WCDMA 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)
	WCDMA Band V	RMC 12.2K	Front	1	4132	826.4	22.86	23.50	1.159	0.05	0.196	0.227
10	**WCDMA Band V**	**RMC 12.2K**	**Back**	**1**	**4132**	**826.4**	**22.86**	**23.50**	**1.159**	**0.05**	**0.275**	**0.319**
	WCDMA Band II	RMC 12.2K	Front	1	9400	1880	23.00	23.50	1.122	0.06	0.963	1.081
	WCDMA Band II	RMC 12.2K	Back	1	9400	1880	23.00	23.50	1.122	0.07	0.878	0.985
15	**WCDMA Band II**	**RMC 12.2K**	**Front**	**1**	**9262**	**1852.4**	**22.96**	**23.50**	**1.132**	**0.1**	**0.960**	**1.087**
	WCDMA Band II	RMC 12.2K	Front	1	9538	1907.6	22.82	23.50	1.169	0.09	0.859	1.005
	WCDMA Band II	RMC 12.2K	Back	1	9262	1852.4	22.96	23.50	1.132	-0.13	0.881	0.998
	WCDMA Band II	RMC 12.2K	Back	1	9538	1907.6	22.82	23.50	1.169	0.05	0.751	0.878

<LTE SAR>

Plot No.	Band	Modulation	BW (MHz)	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 4	QPSK	20	1	99	Front	1	20300	1745	23.48	24.00	1.127	0.13	0.873	0.984
	LTE Band 4	QPSK	20	1	99	Back	1	20300	1745	23.48	24.00	1.127	0.03	0.691	0.779
	LTE Band 4	QPSK	20	1	99	Front	1	20050	1720	23.14	24.00	1.219	0.02	0.619	0.755
12	**LTE Band 4**	**QPSK**	**20**	**1**	**99**	**Front**	**1**	**20175**	**1732.5**	**23.46**	**24.00**	**1.132**	**0.09**	**0.961**	**1.088**
	LTE Band 4	QPSK	20	50	49	Front	1	20300	1745	22.45	23.00	1.135	0.02	0.777	0.882
	LTE Band 4	QPSK	20	50	49	Back	1	20300	1745	22.45	23.00	1.135	0.07	0.574	0.651
	LTE Band 4	QPSK	20	50	49	Front	1	20050	1720	22.13	23.00	1.222	0.06	0.626	0.765
	LTE Band 4	QPSK	20	50	49	Front	1	20175	1732.5	22.36	23.00	1.159	0.05	0.723	0.838
	LTE Band 4	QPSK	20	100	0	Front	1	20300	1745	22.37	23.00	1.156	0.04	0.768	0.888
	LTE Band 4	QPSK	20	100	0	Back	1	20300	1745	22.37	23.00	1.156	0.01	0.565	0.653
	LTE Band 7	QPSK	20	1	49	Front	1	21100	2535	22.46	23.00	1.132	-0.1	0.706	0.799
13	**LTE Band 7**	**QPSK**	**20**	**1**	**49**	**Back**	**1**	**21100**	**2535**	**22.46**	**23.00**	**1.132**	**0.09**	**0.965**	**1.093**
	LTE Band 7	QPSK	20	1	49	Back	1	20850	2510	22.37	23.00	1.156	0.09	0.893	1.032
	LTE Band 7	QPSK	20	1	49	Back	1	21350	2560	22.44	23.00	1.138	0.02	0.961	1.093
	LTE Band 7	QPSK	20	50	24	Front	1	21100	2535	21.42	22.00	1.143	0.07	0.517	0.591
	LTE Band 7	QPSK	20	50	24	Back	1	21100	2535	21.42	22.00	1.143	0.02	0.75	0.857
	LTE Band 7	QPSK	20	50	24	Back	1	20850	2510	21.29	22.00	1.178	0.06	0.702	0.827
	LTE Band 7	QPSK	20	50	24	Back	1	21350	2560	21.40	22.00	1.148	-0.03	0.781	0.897
	LTE Band 7	QPSK	20	100	0	Back	1	21100	2535	21.33	22.00	1.167	0.02	0.769	0.897

<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)
	WLAN2.4GHz	802.11b 1Mbps	Front	1	11	2462	12.56	13.00	1.107	97.63	1.024	0.08	0.089	0.101
14	**WLAN2.4GHz**	**802.11b 1Mbps**	**Back**	**1**	**11**	**2462**	**12.56**	**13.00**	**1.107**	**97.63**	**1.024**	**0.08**	**0.164**	**0.186**

15.4 Repeated SAR Measurement

No.	Band	Modulation	BW (MHz)	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)	Ratio	Reported 1g SAR (W/kg)
1st	WCDMA Band II	RMC 12.2K	-	-	-	Bottom side	1	9400	1880	23.00	23.50	1.122	0.02	0.980	1	1.100
2nd	WCDMA Band II	RMC 12.2K	-	-	-	Bottom side	1	9400	1880	23.00	23.50	1.122	-0.02	0.977	1.004	1.096
1st	LTE Band 4	QPSK	20	1	99	Front	1	20175	1732.5	23.46	24.00	1.132	0.09	0.961	1	1.088
2nd	LTE Band 4	QPSK	20	1	99	Front	1	20175	1732.5	23.46	24.00	1.132	0.05	0.944	1.017	1.069
1st	LTE Band 7	QPSK	20	1	49	Back	1	21100	2535	22.46	23.00	1.132	0.09	0.965	1	1.093
2nd	LTE Band 7	QPSK	20	1	49	Back	1	21100	2535	22.46	23.00	1.132	0.07	0.910	1.058	1.030

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
2. Per KDB 865664 D01v01r03, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR <1.45W/kg, 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	Mobile Phone			Note
		Head	Body-worn	Hotspot	
1.	GSM(Voice) + WLAN2.4GHz(data)	Yes	Yes		
2.	WCDMA(Voice) + WLAN2.4GHz(data)	Yes	Yes		
3.	GSM(Voice) + Bluetooth(data)	Yes	Yes		
4.	WCDMA((Voice) + Bluetooth(data)	Yes	Yes		
5.	GPRS/EDGE(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	2.4GHz Hotspot
6.	WCDMA(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	2.4GHz Hotspot
7.	LTE(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	2.4GHz Hotspot
8.	GPRS/EDGE(Data) + Bluetooth(data)	Yes	Yes	Yes	Bluetooth Tethering
9.	WCDMA(Data) + Bluetooth(data)	Yes	Yes	Yes	Bluetooth Tethering
10.	LTE(Data) + Bluetooth(data)	Yes	Yes	Yes	Bluetooth Tethering

General Note:

1. This device supported VoIP in GPRS/EGPRS, WCDMA, 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. EUT will choose each GSM or WCDMA or LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
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 = (SAR1 + SAR2)^1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of [(x1-x2)2 + (y1-y2)2 + (z1-z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
   iii) If SPLSR ≤ 0.04, 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
6.5 dBm	Estimated SAR (W/kg)	0.168 W/kg	0.084 W/kg	0.084 W/kg

16.1 Head Exposure Conditions

<WWAN + WLAN>

WWAN Band		Exposure Position	WWAN SAR (W/kg)	WLAN DTS SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Right Cheek	0.285	0.418	0.70		
		Right Tilted	0.127	0.323	0.45		
		Left Cheek	0.246	0.167	0.41		
		Left Tilted	0.124	0.127	0.25		
	GSM1900	Right Cheek	0.158	0.418	0.58		
		Right Tilted	0.078	0.323	0.40		
		Left Cheek	0.171	0.167	0.34		
		Left Tilted	0.064	0.127	0.19		
WCDMA	Band V	Right Cheek	0.100	0.418	0.52		
		Right Tilted	0.045	0.323	0.37		
		Left Cheek	0.092	0.167	0.26		
		Left Tilted	0.045	0.127	0.17		
	Band II	Right Cheek	0.113	0.418	0.53		
		Right Tilted	0.067	0.323	0.39		
		Left Cheek	0.142	0.167	0.31		
		Left Tilted	0.052	0.127	0.18		
LTE	Band 4	Right Cheek	0.200	0.418	0.62		
		Right Tilted	0.122	0.323	0.45		
		Left Cheek	0.265	0.167	0.43		
		Left Tilted	0.083	0.127	0.21		
	Band 7	Right Cheek	0.096	0.418	0.51		
		Right Tilted	0.071	0.323	0.39		
		Left Cheek	0.082	0.167	0.25		
		Left Tilted	0.033	0.127	0.16		

<WWAN + Bluetooth>

WWAN Band		Exposure Position	WWAN SAR (W/kg)	Bluetooth DSS SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Right Cheek	0.285	0.168	0.45		
		Right Tilted	0.127	0.168	0.30		
		Left Cheek	0.246	0.168	0.41		
		Left Tilted	0.124	0.168	0.29		
	GSM1900	Right Cheek	0.158	0.168	0.33		
		Right Tilted	0.078	0.168	0.25		
		Left Cheek	0.171	0.168	0.34		
		Left Tilted	0.064	0.168	0.23		
WCDMA	Band V	Right Cheek	0.100	0.168	0.27		
		Right Tilted	0.045	0.168	0.21		
		Left Cheek	0.092	0.168	0.26		
		Left Tilted	0.045	0.168	0.21		
	Band II	Right Cheek	0.113	0.168	0.28		
		Right Tilted	0.067	0.168	0.24		
		Left Cheek	0.142	0.168	0.31		
		Left Tilted	0.052	0.168	0.22		
LTE	Band 4	Right Cheek	0.200	0.168	0.37		
		Right Tilted	0.122	0.168	0.29		
		Left Cheek	0.265	0.168	0.43		
		Left Tilted	0.083	0.168	0.25		
	Band 7	Right Cheek	0.096	0.168	0.26		
		Right Tilted	0.071	0.168	0.24		
		Left Cheek	0.082	0.168	0.25		
		Left Tilted	0.033	0.168	0.20		

16.2 Hotspot Exposure Conditions

<WWAN + WLAN>

WWAN Band		Exposure Position	WWAN SAR (W/kg)	WLAN DTS SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Front	0.338	0.101	0.44		
		Back	0.475	0.186	0.66		
		Left side	0.246	0.136	0.38		
		Top side		0.057	0.06		
		Bottom side	0.332		0.33		
	GSM1900	Front	0.832	0.101	0.93		
		Back	0.802	0.186	0.99		
		Left side	0.177	0.136	0.31		
		Top side		0.057	0.06		
		Bottom side	0.797		0.80		
WCDMA	Band V	Front	0.227	0.101	0.33		
		Back	0.319	0.186	0.51		
		Left side	0.190	0.136	0.33		
		Top side		0.057	0.06		
		Bottom side	0.219		0.22		
	Band II	Front	1.087	0.101	1.19		
		Back	0.998	0.186	1.18		
		Left side	0.239	0.136	0.38		
		Top side		0.057	0.06		
		Bottom side	1.100		1.10		
LTE	Band 4	Front	1.088	0.101	1.19		
		Back	0.779	0.186	0.97		
		Left side	0.248	0.136	0.38		
		Top side		0.057	0.06		
		Bottom side	1.007		1.01		
	Band 7	Front	0.799	0.101	0.90		
		Back	1.093	0.186	1.28		
		Left side	0.177	0.136	0.31		
		Top side		0.057	0.06		
		Bottom side	1.010		1.01		

<WWAN + Bluetooth>

WWAN Band		Exposure Position	WWAN SAR (W/kg)	Bluetooth DSS SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Front	0.338	0.084	0.42		
		Back	0.475	0.084	0.56		
		Left side	0.246	0.084	0.33		
		Top side		0.084	0.08		
		Bottom side	0.332		0.33		
	GSM1900	Front	0.832	0.084	0.92		
		Back	0.802	0.084	0.89		
		Left side	0.177	0.084	0.26		
		Top side		0.084	0.08		
		Bottom side	0.797		0.80		
WCDMA	Band V	Front	0.227	0.084	0.31		
		Back	0.319	0.084	0.40		
		Left side	0.190	0.084	0.27		
		Top side		0.084	0.08		
		Bottom side	0.219		0.22		
	Band II	Front	1.087	0.084	1.17		
		Back	0.998	0.084	1.08		
		Left side	0.239	0.084	0.32		
		Top side		0.084	0.08		
		Bottom side	1.100		1.10		
LTE	Band 4	Front	1.088	0.084	1.17		
		Back	0.779	0.084	0.86		
		Left side	0.248	0.084	0.33		
		Top side		0.084	0.08		
		Bottom side	1.007		1.01		
	Band 7	Front	0.799	0.084	0.88		
		Back	1.093	0.084	**1.18**		
		Left side	0.177	0.084	0.26		
		Top side		0.084	0.08		
		Bottom side	1.010		1.01		

16.3 Body-Worn Accessory Exposure Conditions

<WWAN + WLAN >

WWAN Band		Exposure Position	WWAN SAR (W/kg)	WLAN DTS SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Front	0.338	0.101	0.44		
		Back	0.475	0.186	0.66		
	GSM1900	Front	0.832	0.101	0.93		
		Back	0.802	0.186	0.99		
WCDMA	Band V	Front	0.227	0.101	0.33		
		Back	0.319	0.186	0.51		
	Band II	Front	1.087	0.101	1.19		
		Back	0.998	0.186	1.18		
LTE	Band 4	Front	1.088	0.101	1.19		
		Back	0.779	0.186	0.97		
	Band 7	Front	0.799	0.101	0.90		
		Back	1.093	0.186	1.28		

<WWAN + Bluetooth>

WWAN Band		Exposure Position	WWAN SAR (W/kg)	Bluetooth DSS SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Front	0.338	0.084	0.42		
		Back	0.475	0.084	0.56		
	GSM1900	Front	0.832	0.084	0.92		
		Back	0.802	0.084	0.89		
WCDMA	Band V	Front	0.227	0.084	0.31		
		Back	0.319	0.084	0.40		
	Band II	Front	1.087	0.084	1.17		
		Back	0.998	0.084	1.08		
LTE	Band 4	Front	1.088	0.084	1.17		
		Back	0.779	0.084	0.86		
	Band 7	Front	0.799	0.084	0.88		
		Back	1.093	0.084	1.18		

Test Engineer： Luke Lu

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)]	$1/\sqrt{3}$	$1/\sqrt{6}$	$1/\sqrt{2}$

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

(b) κ is the coverage factor

Table 16.1. 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 16.2. 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 v01r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", May 2013.

[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: 2014.10.25

System Check_Head_835MHz_141025

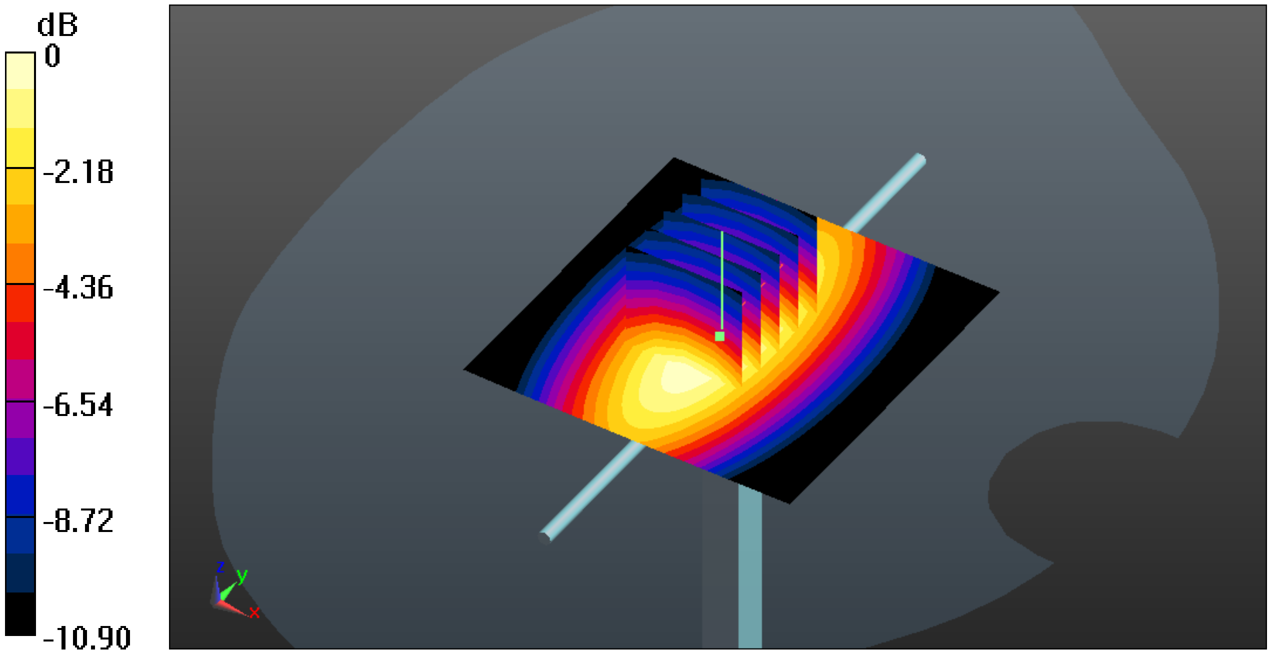
DUT: D835V2-SN:4d151

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_835_141025 Medium parameters used: f = 835 MHz; σ = 0.9 S/m; ε_r = 42.153; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3661; ConvF(9.5, 9.5, 9.5); Calibrated: 2014.03.10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 3.11 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 59.076 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.72 W/kg
SAR(1 g) = 2.42 W/kg; SAR(10 g) = 1.58 W/kg
Maximum value of SAR (measured) = 3.08 W/kg



0 dB = 3.08 W/kg

System Check_Head_1750MHz_141025

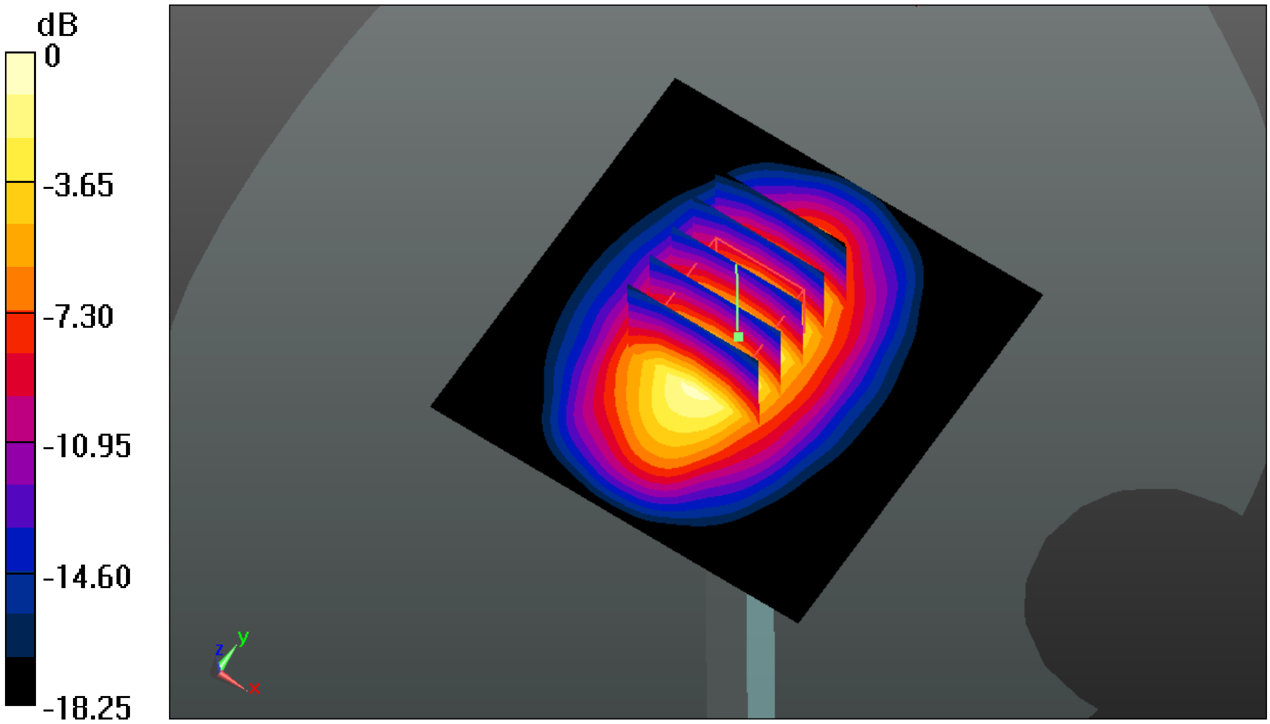
DUT: D1750V2-SN:1090

Communication System: UID 0, CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: HSL_1800_141025 Medium parameters used: f = 1750 MHz; σ = 1.373 S/m; ε_r = 41.392; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3661; ConvF(8.29, 8.29, 8.29); Calibrated: 2014.03.10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 12.0 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 94.786 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 15.2 W/kg
SAR(1 g) = 8.45 W/kg; SAR(10 g) = 4.46 W/kg
Maximum value of SAR (measured) = 11.9 W/kg



0 dB = 11.9 W/kg

System Check_Head_1900MHz_141025

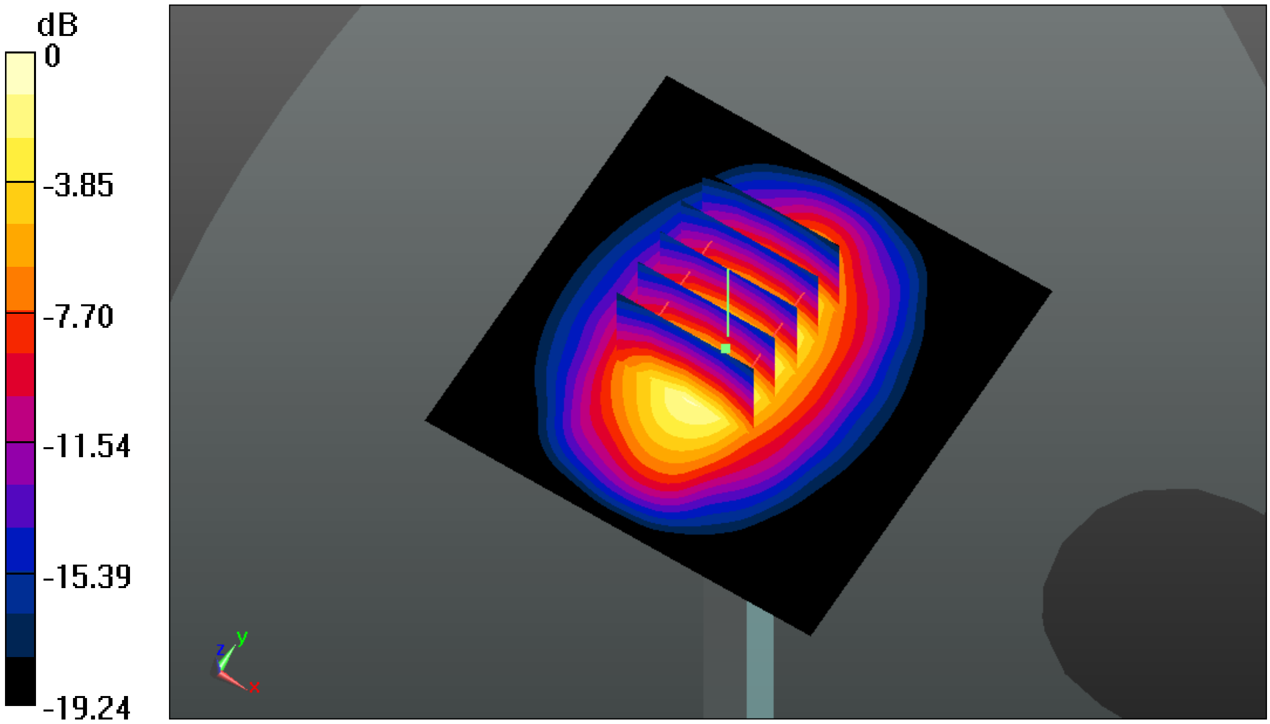
DUT: D1900V2-SN:5d170

Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900_141025 Medium parameters used: f = 1900 MHz; σ = 1.422 S/m; ε_r = 40.315; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3661; ConvF(8.18, 8.18, 8.18); Calibrated: 2014.03.10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 13.0 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 96.799 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 16.7 W/kg
SAR(1 g) = 9.27 W/kg; SAR(10 g) = 4.67 W/kg
Maximum value of SAR (measured) = 12.7 W/kg



0 dB = 12.7 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab   Date: 2014.10.24

System Check_Head_2450MHz_141024

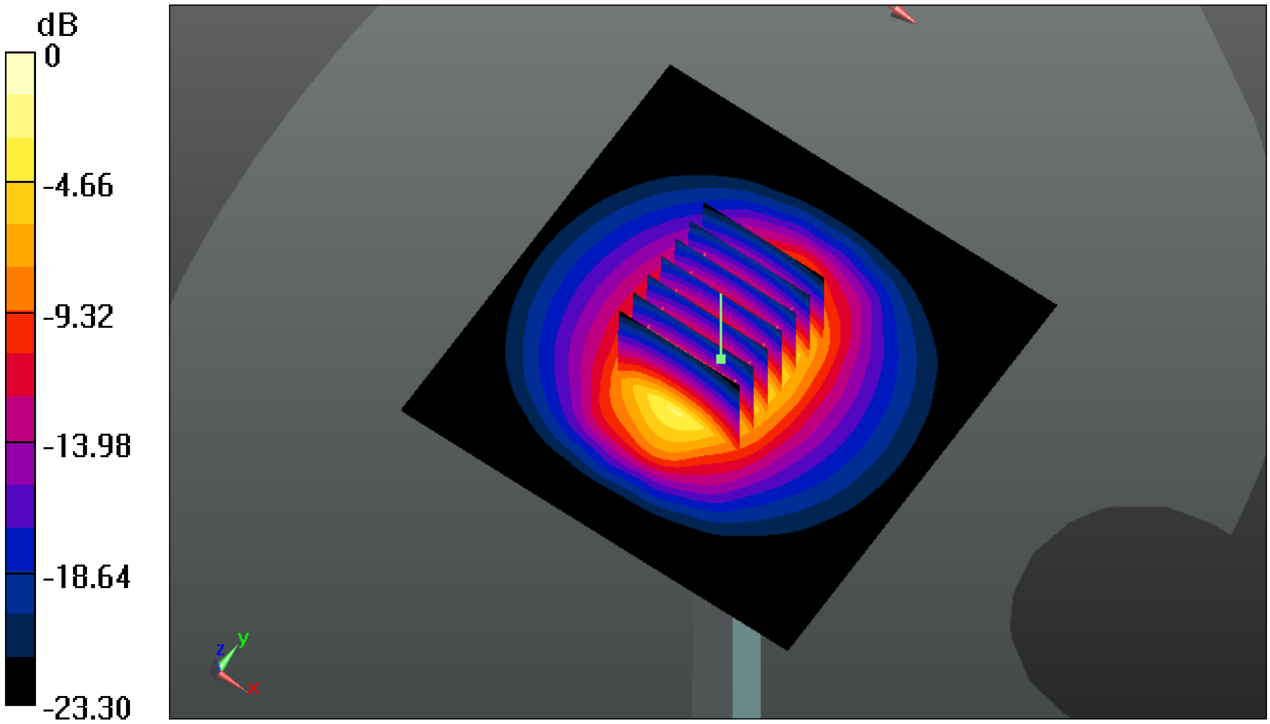
DUT: D2450V2-SN:908

Communication System: UID 0, CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL_2450_141024 Medium parameters used: f = 2450 MHz; σ = 1.878 S/m; ε_r = 40.464; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3661; ConvF(7.59, 7.59, 7.59); Calibrated: 2014.03.10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 19.7 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 87.351 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 27.5 W/kg
SAR(1 g) = 12.7 W/kg; SAR(10 g) = 5.77 W/kg
Maximum value of SAR (measured) = 19.9 W/kg



0 dB = 19.9 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab   Date: 2014.10.24

System Check_Head_2600MHz_141024

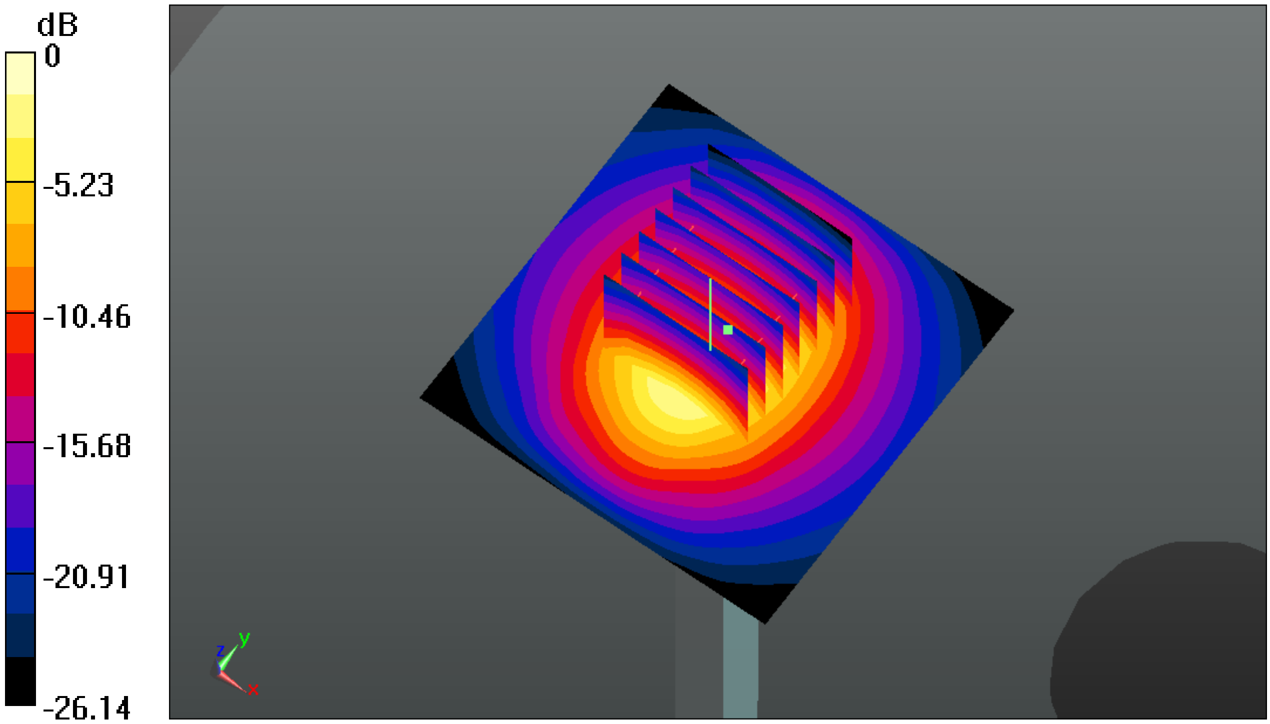
DUT: D2600V2-SN:1061

Communication System: UID 0, CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: HSL_2600_141024 Medium parameters used: f = 2600 MHz; σ = 2.049 S/m; ε_r = 37.739; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3661; ConvF(7.38, 7.38, 7.38); Calibrated: 2014.03.10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 23.8 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 105.3 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 32.5 W/kg
SAR(1 g) = 14.2 W/kg; SAR(10 g) = 6.23 W/kg
Maximum value of SAR (measured) = 22.4 W/kg



0 dB = 22.4 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.10.23

System Check_Body_835MHz_141023

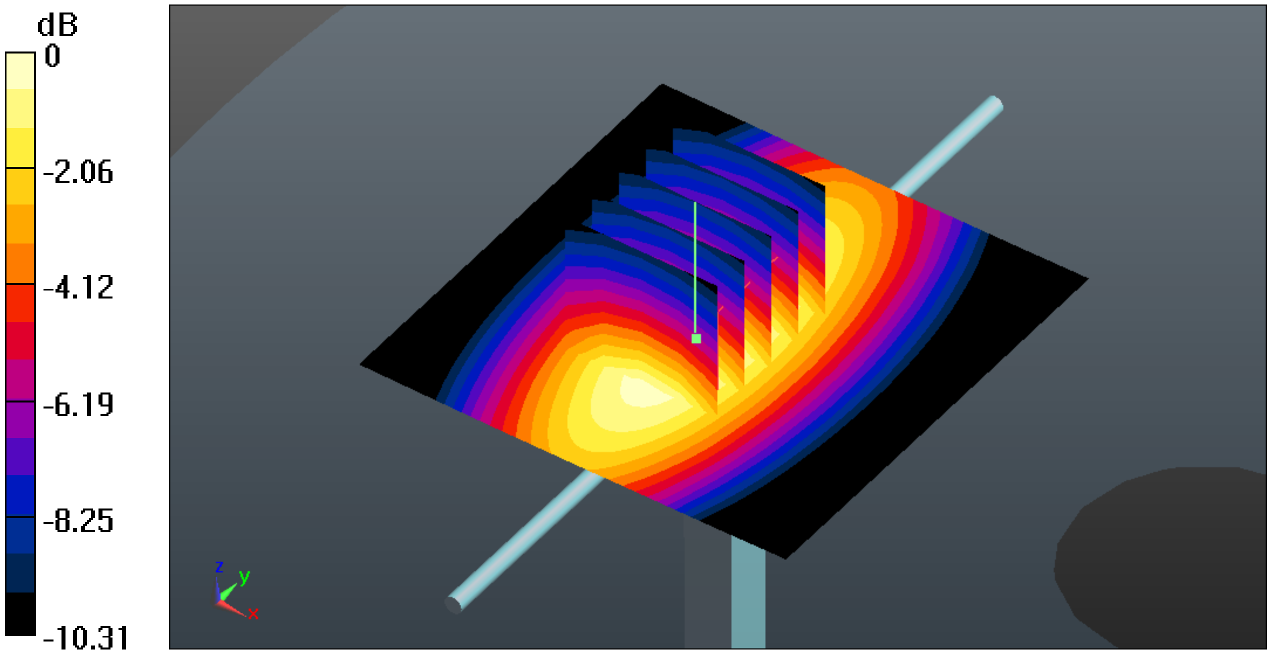
DUT: D835V2-SN:4d151

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_835_141023 Medium parameters used: f = 835 MHz; σ = 1.011 S/m; ε_r = 56.243; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3753; ConvF(9.14, 9.14, 9.14); Calibrated: 2014.03.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.43 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 48.806 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 3.29 W/kg
SAR(1 g) = 2.25 W/kg; SAR(10 g) = 1.48 W/kg
Maximum value of SAR (measured) = 2.42 W/kg



0 dB = 2.42 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.10.22

System Check_Body_1750MHz_141022

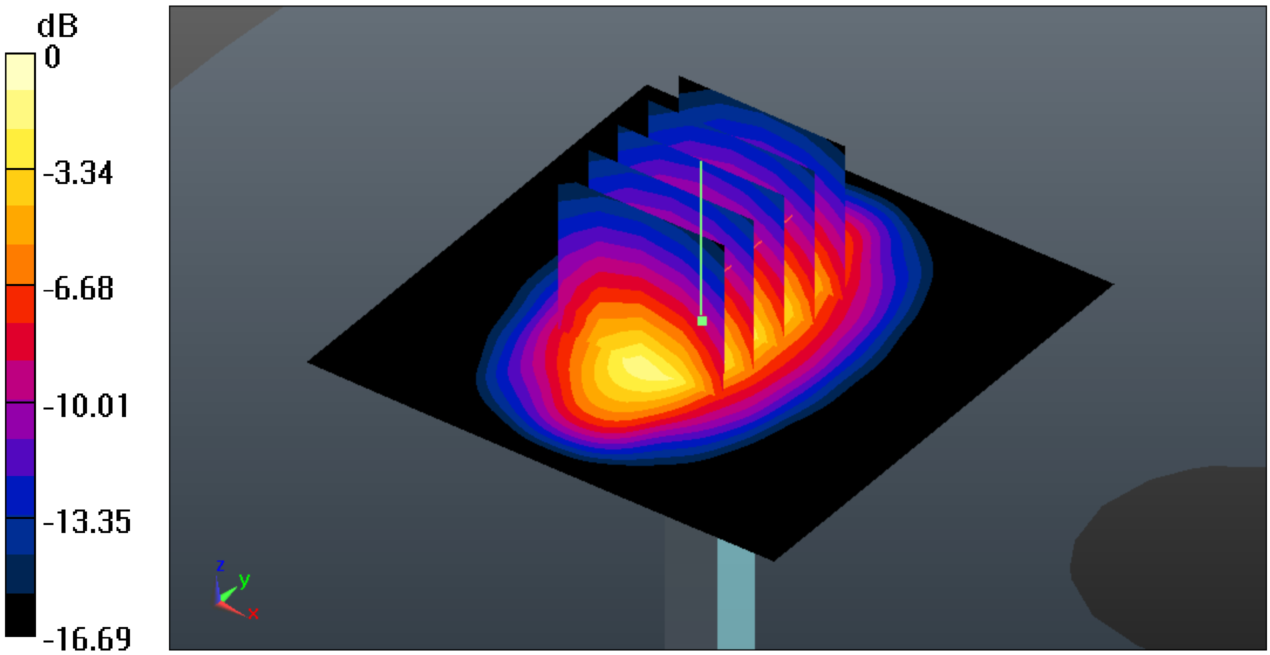
DUT: D1750V2-SN:1090

Communication System: UID 0, CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: MSL_1800_141022 Medium parameters used: f = 1750 MHz; σ = 1.527 S/m; ε_r = 52.039; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3753; ConvF(7.8, 7.8, 7.8); Calibrated: 2014.03.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 13.1 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 93.745 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 16.1 W/kg
SAR(1 g) = 9.3 W/kg; SAR(10 g) = 4.98 W/kg
Maximum value of SAR (measured) = 12.9 W/kg



0 dB = 12.9 W/kg

System Check_Body_1900MHz_141022

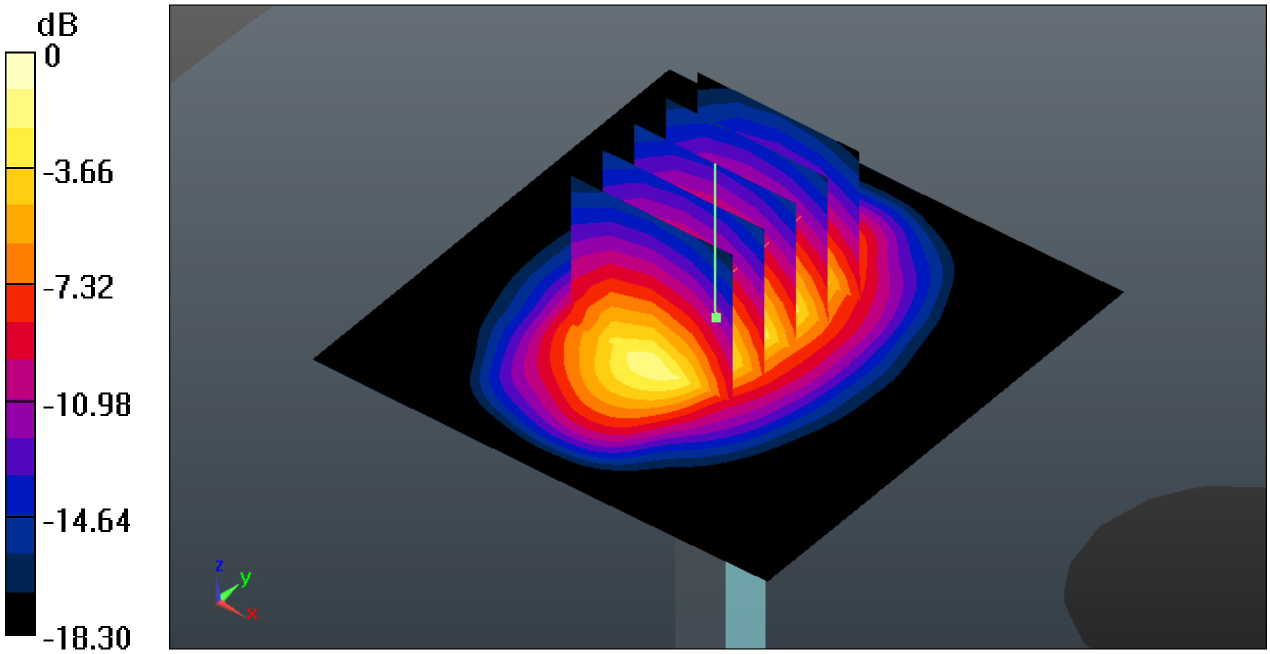
DUT: D1900V2-SN:5d170

Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_141022 Medium parameters used: f = 1900 MHz; σ = 1.545 S/m; ε_r = 53.535; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3753; ConvF(7.49, 7.49, 7.49); Calibrated: 2014.03.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 13.4 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 82.809 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 16.7 W/kg
SAR(1 g) = 9.69 W/kg; SAR(10 g) = 4.93 W/kg
Maximum value of SAR (measured) = 13.4 W/kg



0 dB = 13.4 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab   Date: 2014.10.24

System Check_Body_2450MHz_141024

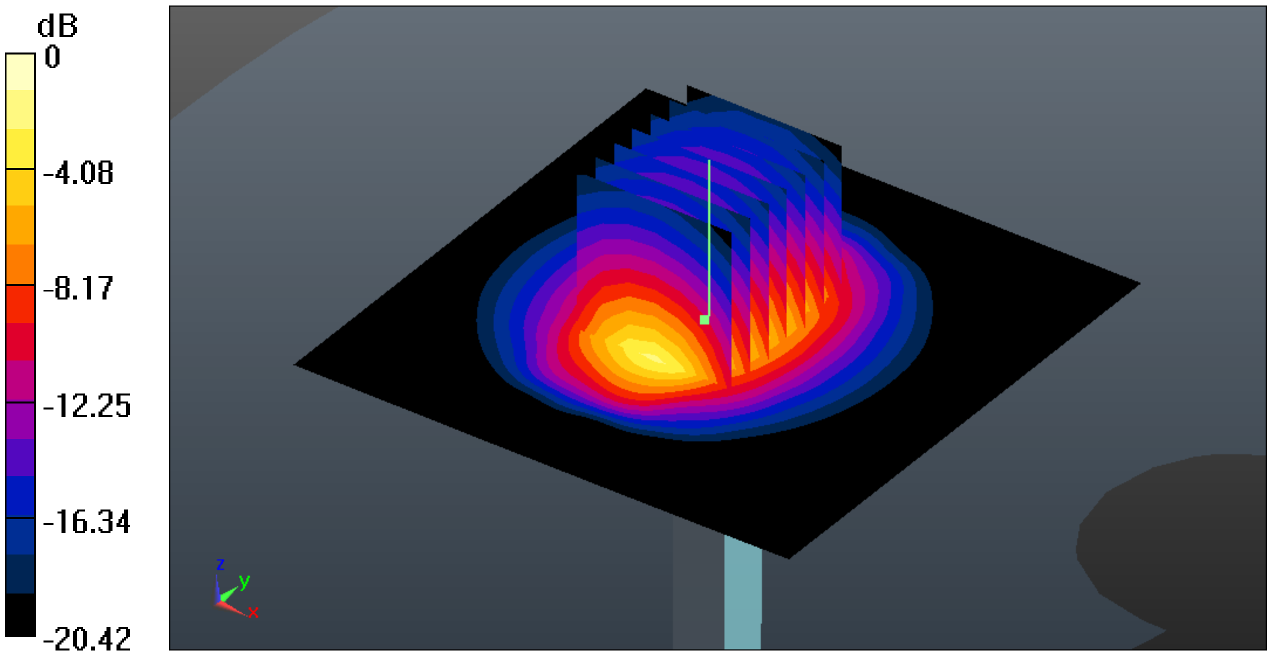
DUT: D2450V2-SN:908

Communication System: UID 0, CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL_2450_141024 Medium parameters used: f = 2450 MHz; σ = 1.992 S/m; ε_r = 52.319; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3753; ConvF(7.31, 7.31, 7.31); Calibrated: 2014.03.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 17.1 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 79.404 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 22.6 W/kg
SAR(1 g) = 11.5 W/kg; SAR(10 g) = 5.41 W/kg
Maximum value of SAR (measured) = 17.2 W/kg



0 dB = 17.2 W/kg

System Check_Body_2600MHz_141023

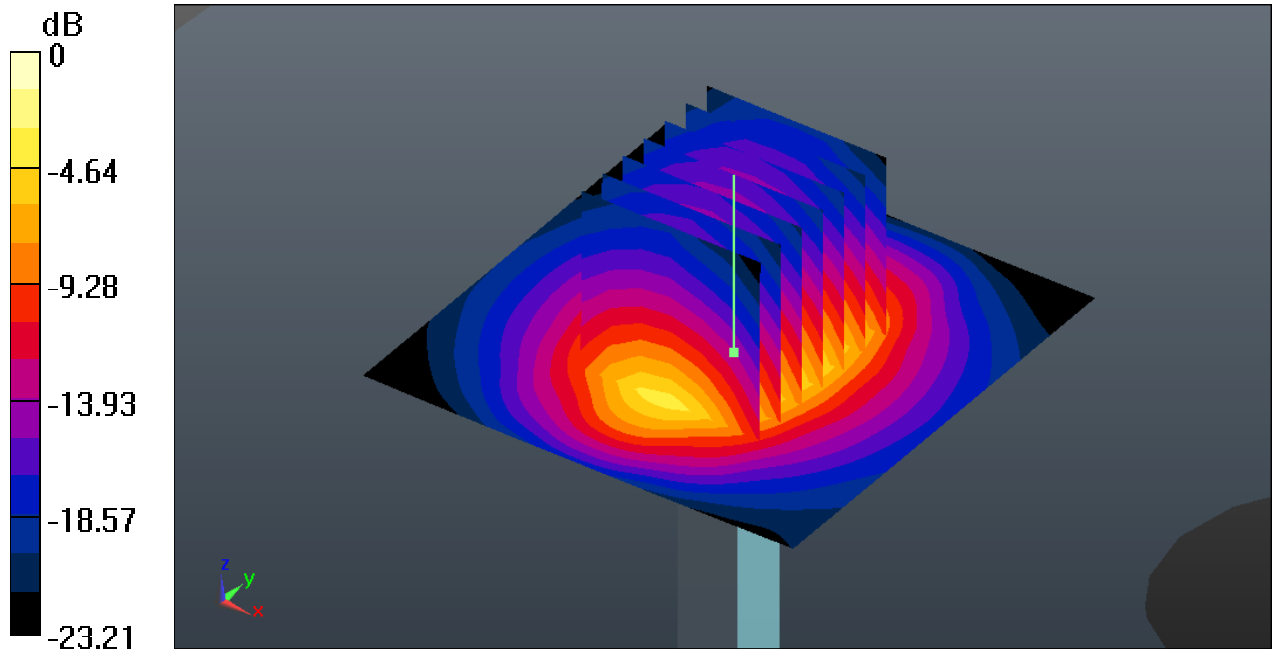
DUT: D2600V2-SN:1061

Communication System: UID 0, CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: MSL_2600_141023 Medium parameters used: f = 2600 MHz; σ = 2.165 S/m; ε_r = 53.823; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3753; ConvF(6.93, 6.93, 6.93); Calibrated: 2014.01.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 19.8 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.201 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 26.8 W/kg
SAR(1 g) = 12.9 W/kg; SAR(10 g) = 5.89 W/kg
Maximum value of SAR (measured) = 19.4 W/kg



0 dB = 19.4 W/kg

Appendix B. Plots of SAR Measurement

The plots are shown as follows.

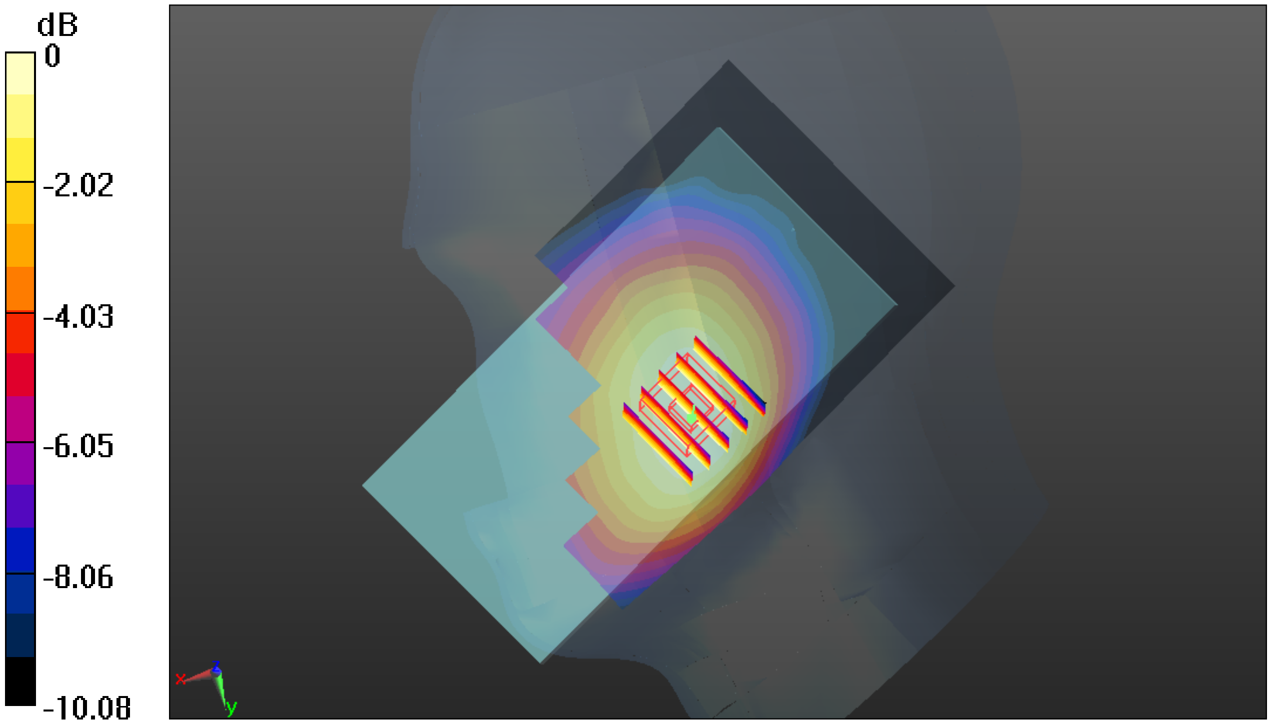
01_GSM850_GPRS(4 Tx slots)_Right Cheek_Ch251

Communication System: UID 0, GPRS/EDGE12 (0); Frequency: 848.8 MHz;Duty Cycle: 1:2.08
Medium: HSL_835_141025 Medium parameters used: f = 848.8 MHz; σ = 0.915 S/m; ε_r = 41.999; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3661; ConvF(9.5, 9.5, 9.5); Calibrated: 2014.03.10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Ch251/Area Scan (71x131x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.317 W/kg

Ch251/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.703 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.340 W/kg
SAR(1 g) = 0.269 W/kg; SAR(10 g) = 0.208 W/kg
Maximum value of SAR (measured) = 0.305 W/kg



0 dB = 0.305 W/kg

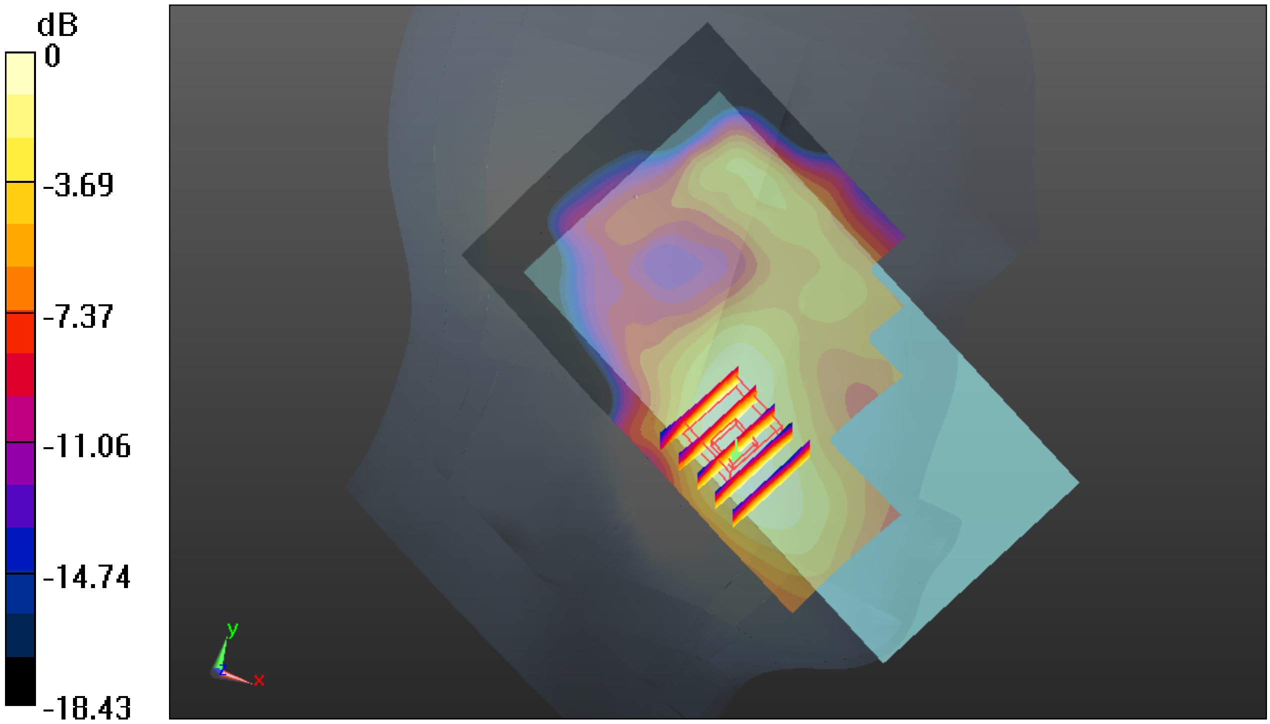
02_GSM1900_GPRS(3 Tx slots)_Left Cheek_Ch661

Communication System: UID 0, GPRS/EDGE11 (0); Frequency: 1880 MHz;Duty Cycle: 1:2.77
Medium: HSL_1900_141025 Medium parameters used: f = 1880 MHz; $\sigma = 1.402$ S/m; $\varepsilon_r = 40.407$; $\rho = 1000$ kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3661; ConvF(8.18, 8.18, 8.18); Calibrated: 2014.03.10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Ch661/Area Scan (71x131x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.199 W/kg

Ch661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.383 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.236 W/kg
SAR(1 g) = 0.157 W/kg; SAR(10 g) = 0.101 W/kg
Maximum value of SAR (measured) = 0.200 W/kg



0 dB = 0.200 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.10.25

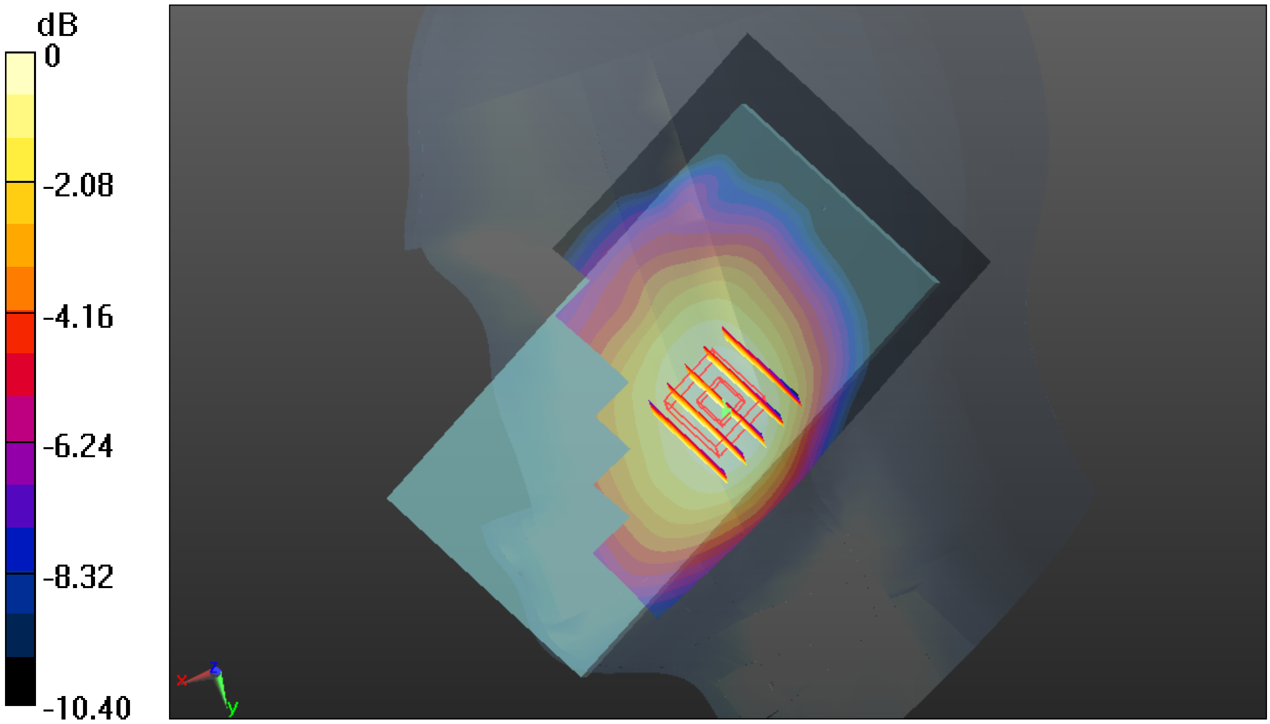
03_WCDMA V_RMC 12.2K_Right Cheek_Ch4132

Communication System: UID 0, UMTS (0); Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium: HSL_835_141025 Medium parameters used: f = 826.4 MHz; σ = 0.891 S/m; ε_r = 42.265; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3661; ConvF(9.5, 9.5, 9.5); Calibrated: 2014.03.10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Ch4132/Area Scan (71x131x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.104 W/kg

Ch4132/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.107 W/kg
SAR(1 g) = 0.086 W/kg; SAR(10 g) = 0.067 W/kg
Maximum value of SAR (measured) = 0.0966 W/kg



0 dB = 0.0966 W/kg

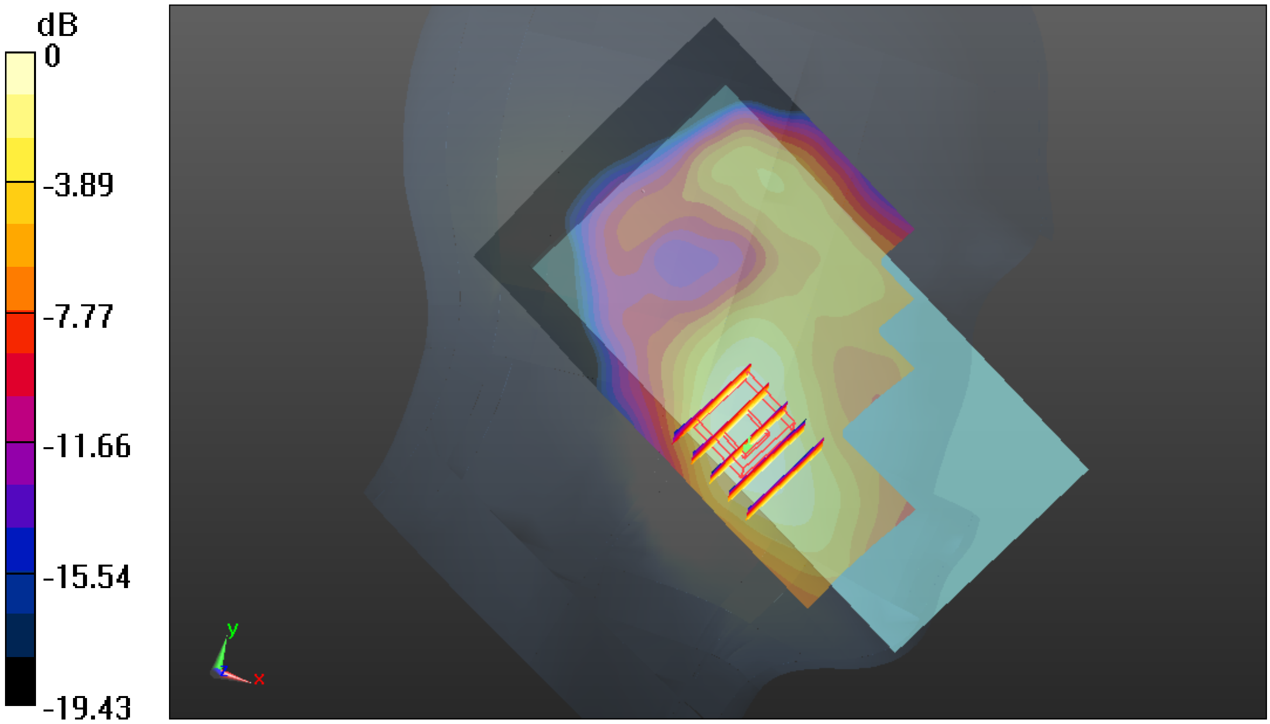
04_WCDMA II_RMC 12.2K_Left Cheek_Ch9400

Communication System: UID 0, UMTS (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: HSL_1900_141025 Medium parameters used: f = 1880 MHz; σ = 1.402 S/m; ε_r = 40.407; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3661; ConvF(8.18, 8.18, 8.18); Calibrated: 2014.03.10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Ch9400/Area Scan (71x131x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.169 W/kg

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.189 W/kg
SAR(1 g) = 0.127 W/kg; SAR(10 g) = 0.080 W/kg
Maximum value of SAR (measured) = 0.162 W/kg



0 dB = 0.162 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.10.25

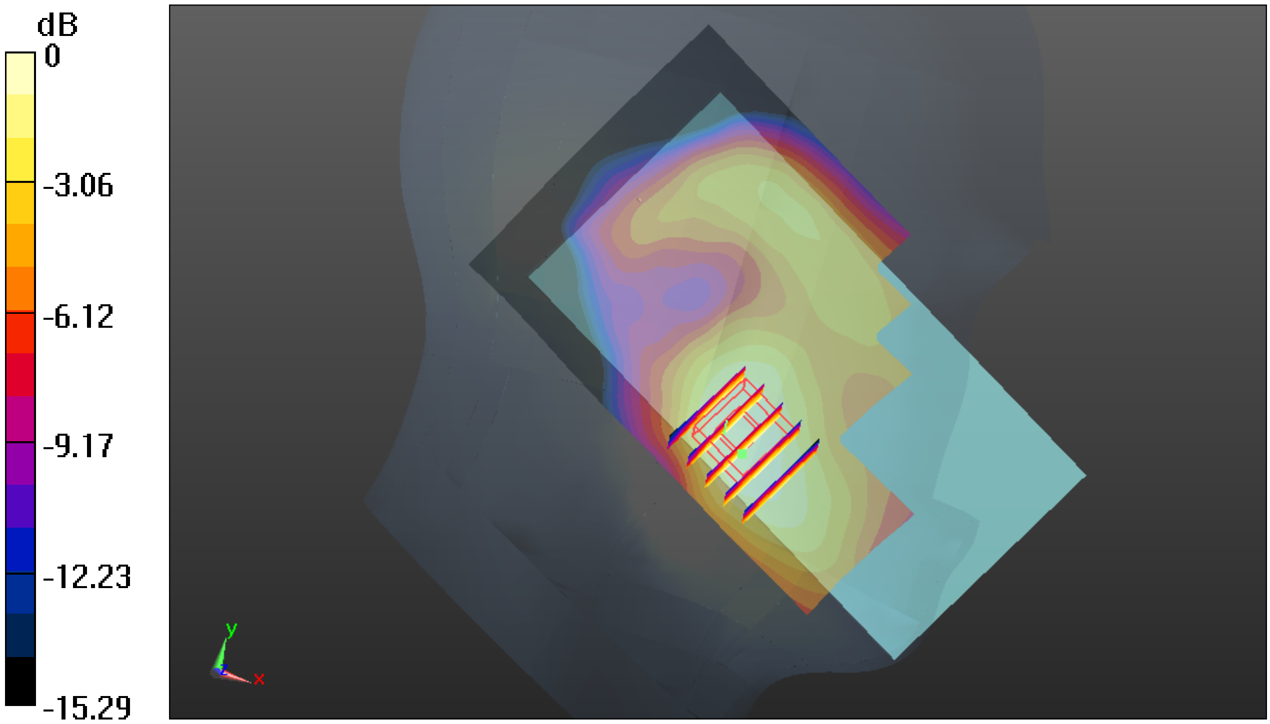
05_LTE Band 4_20M_QPSK_1RB_99Offset_Left Cheek_Ch20300

Communication System: UID 0, LTE (0); Frequency: 1745 MHz;Duty Cycle: 1:1
Medium: HSL_1800_141025 Medium parameters used: f = 1745 MHz; σ = 1.368 S/m; ε_r = 41.418; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3661; ConvF(8.29, 8.29, 8.29); Calibrated: 2014.03.10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Ch20300/Area Scan (71x131x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.300 W/kg

Ch20300/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.003 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.328 W/kg
SAR(1 g) = 0.235 W/kg; SAR(10 g) = 0.155 W/kg
Maximum value of SAR (measured) = 0.281 W/kg



0 dB = 0.281 W/kg

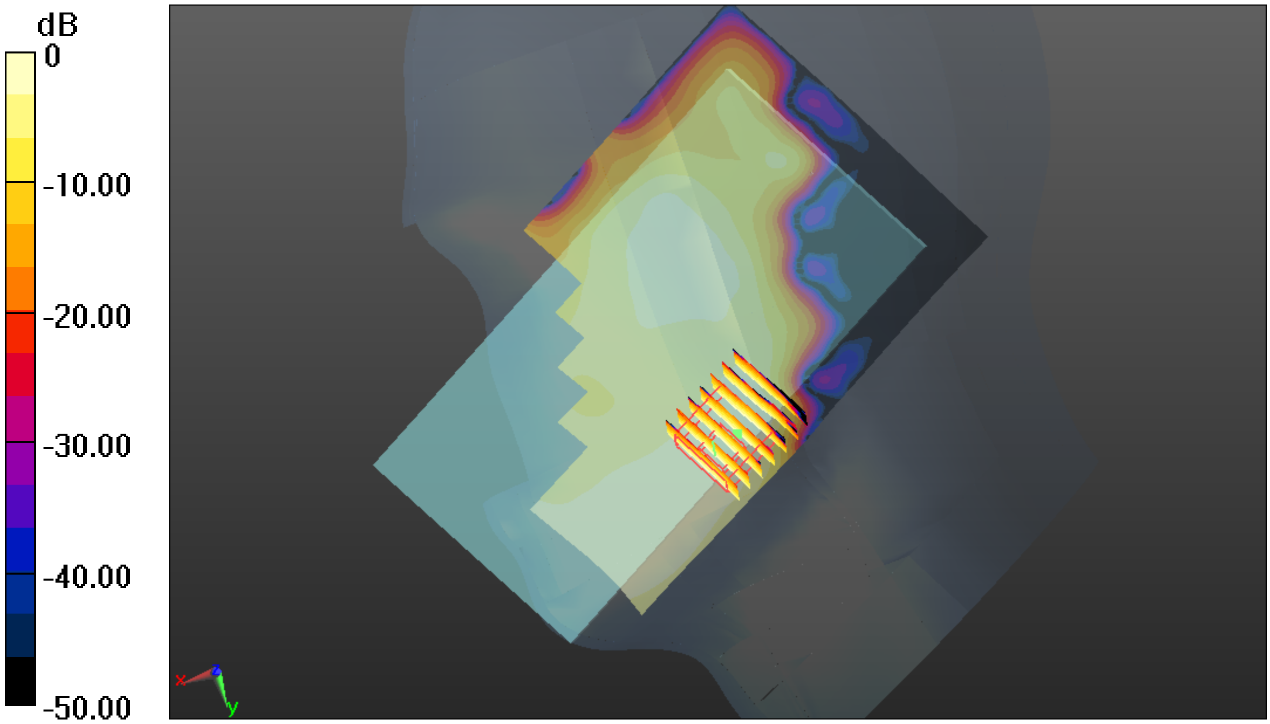
06_LTE Band 7_20M_QPSK_1RB_49Offset_Right Cheek_Ch21100

Communication System: UID 0, LTE (0); Frequency: 2535 MHz;Duty Cycle: 1:1
Medium: HSL_2600_141024 Medium parameters used: f = 2535 MHz; σ = 1.973 S/m; ε_r = 38.013; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3661; ConvF(7.38, 7.38, 7.38); Calibrated: 2014.03.10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Ch21100/Area Scan (91x161x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.148 W/kg

Ch21100/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.166 W/kg
SAR(1 g) = 0.085 W/kg; SAR(10 g) = 0.042 W/kg
Maximum value of SAR (measured) = 0.126 W/kg



0 dB = 0.126 W/kg

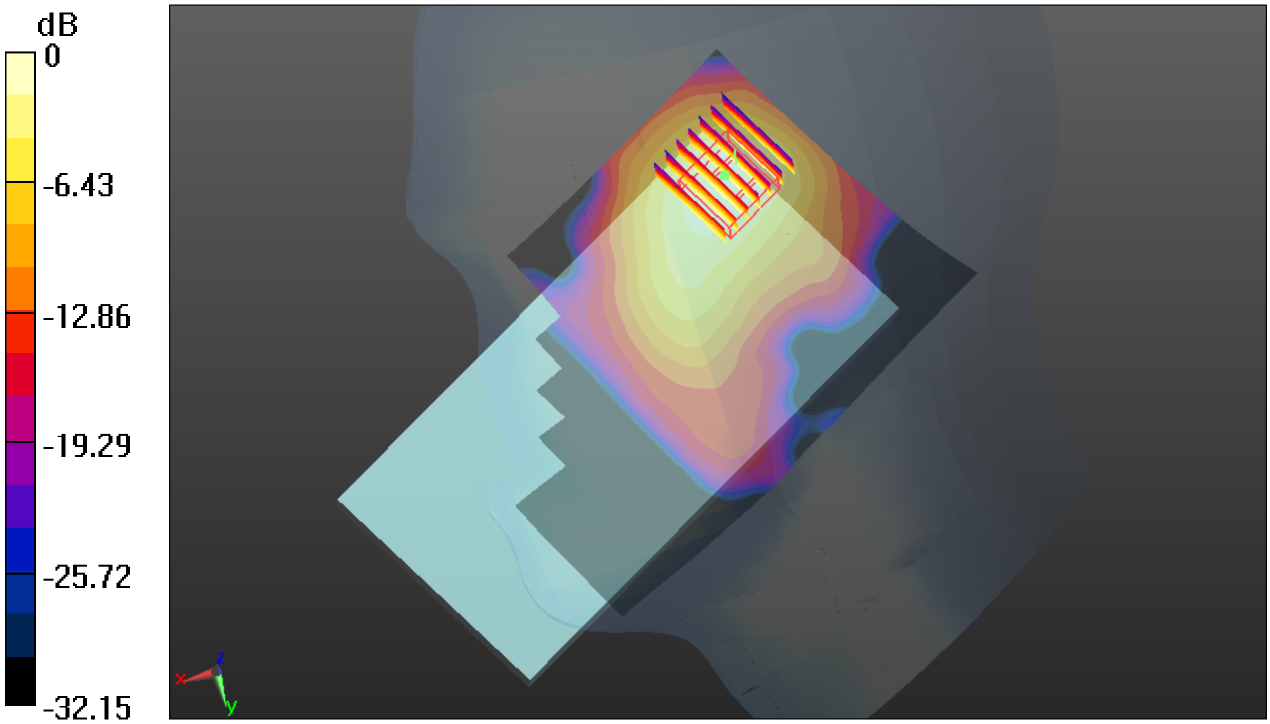
07_WLAN2.4GHz_802.11b 1Mbps_Right Cheek_Ch11

Communication System: UID 0, WIFI (0); Frequency: 2462 MHz;Duty Cycle: 1:1.024
Medium: HSL_2450_141024 Medium parameters used: f = 2462 MHz; σ = 1.892 S/m; ε_r = 40.41; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3661; ConvF(7.59, 7.59, 7.59); Calibrated: 2014.03.10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Ch11/Area Scan (91x161x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.581 W/kg

Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.751 W/kg
SAR(1 g) = 0.369 W/kg; SAR(10 g) = 0.187 W/kg
Maximum value of SAR (measured) = 0.528 W/kg



0 dB = 0.528 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.10.23

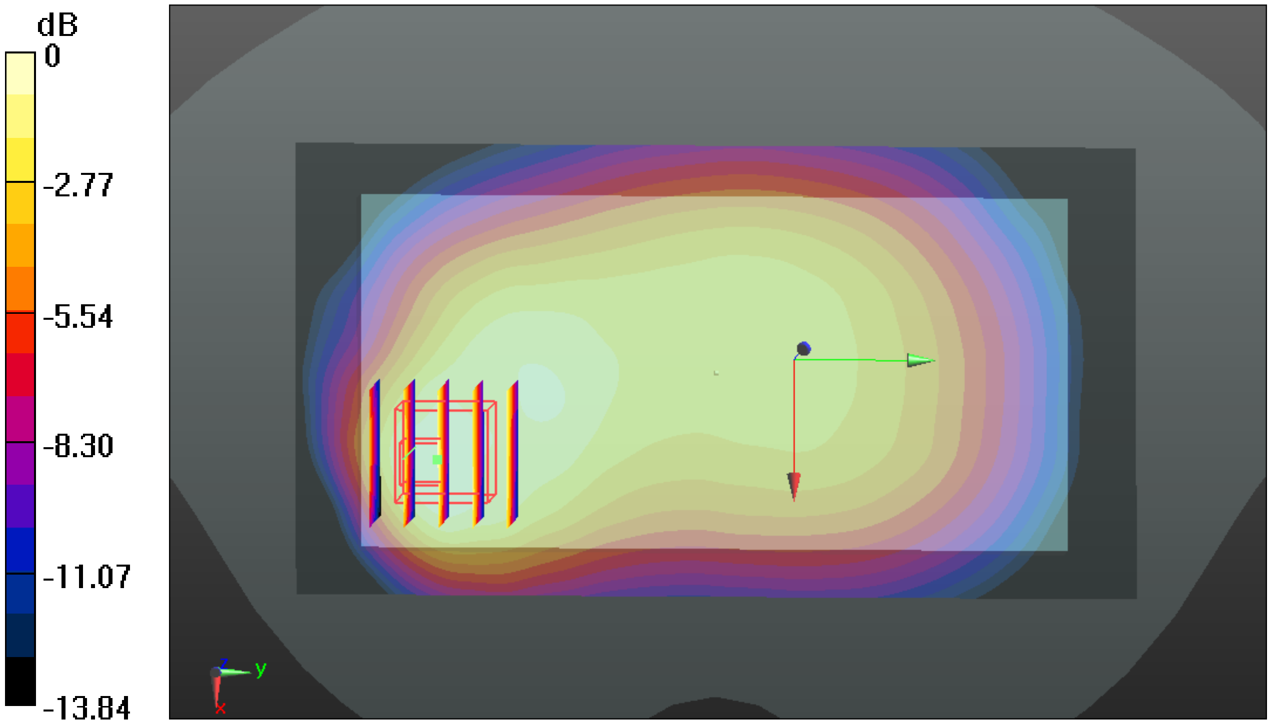
08_GSM850_GPRS(4 Tx slots)_Back_1cm_Ch251

Communication System: UID 0, GPRS/EDGE12 (0); Frequency: 848.8 MHz;Duty Cycle: 1:2.08
Medium: MSL_835_141023 Medium parameters used: f = 848.8 MHz; σ = 1.026 S/m; ε_r = 56.11; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3753; ConvF(9.14, 9.14, 9.14); Calibrated: 2014.03.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Ch251/Area Scan (71x131x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.651 W/kg

Ch251/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.157 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.774 W/kg
SAR(1 g) = 0.448 W/kg; SAR(10 g) = 0.271 W/kg
Maximum value of SAR (measured) = 0.575 W/kg



0 dB = 0.575 W/kg

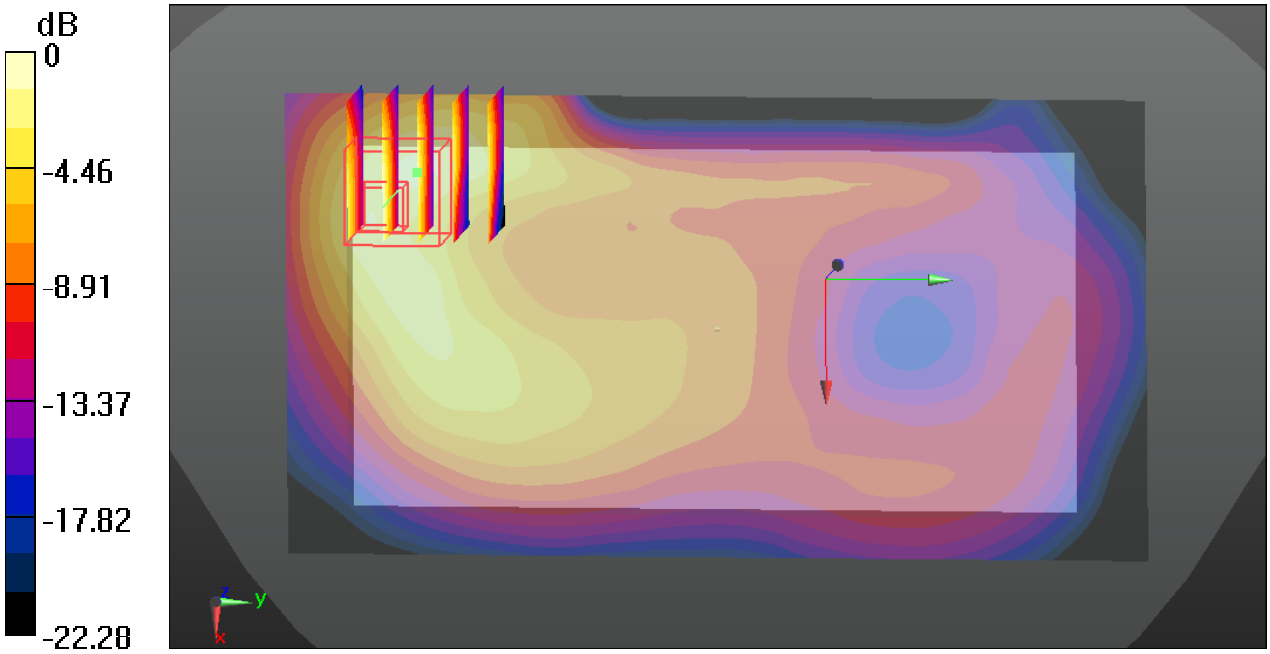
09_GSM1900_GPRS(3 Tx slots)_Front_1cm_Ch512

Communication System: UID 0, GPRS/EDGE11 (0); Frequency: 1850.2 MHz;Duty Cycle: 1:2.77
Medium: MSL_1900_141022 Medium parameters used: f = 1850.2 MHz; σ = 1.487 S/m; ε_r = 53.637; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3753; ConvF(7.49, 7.49, 7.49); Calibrated: 2014.03.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Ch512/Area Scan (71x131x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.826 W/kg

Ch512/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.657 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 1.25 W/kg
SAR(1 g) = 0.736 W/kg; SAR(10 g) = 0.379 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: 2014.10.23

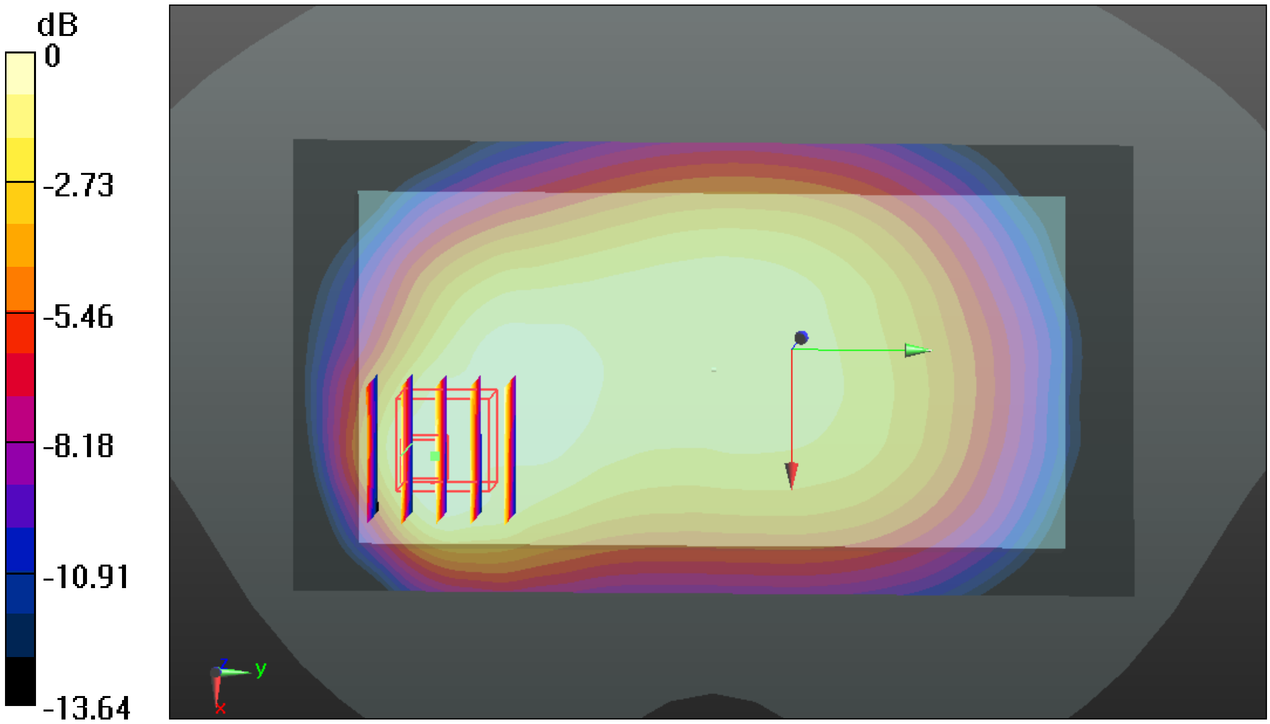
10_WCDMA V_RMC 12.2K_Back_1cm_Ch4132

Communication System: UID 0, UMTS (0); Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium: MSL_835_141023 Medium parameters used: f = 826.4 MHz; σ = 1.002 S/m; ε_r = 56.337; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3753; ConvF(9.14, 9.14, 9.14); Calibrated: 2014.03.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Ch4132/Area Scan (71x131x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.411 W/kg

Ch4132/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.169 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.472 W/kg
SAR(1 g) = 0.275 W/kg; SAR(10 g) = 0.172 W/kg
Maximum value of SAR (measured) = 0.351 W/kg



0 dB = 0.351 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab   Date: 2014.10.22

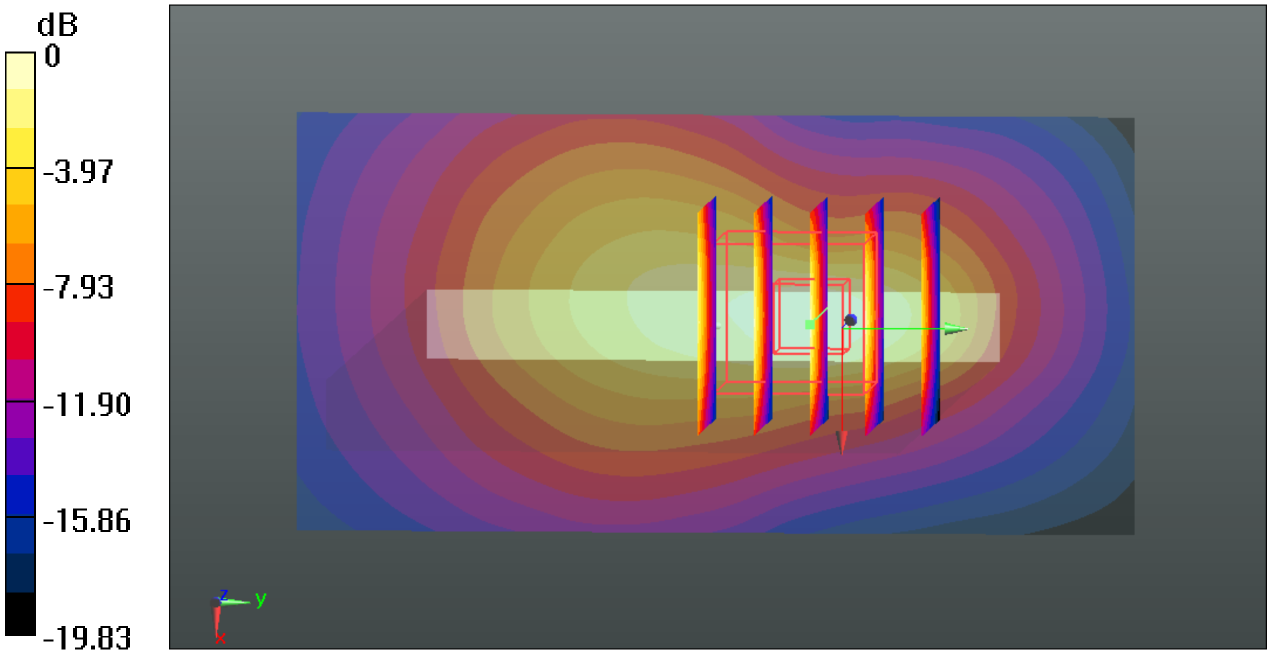
11_WCDMA II_RMC 12.2K_Bottom side_1cm_Ch9400_Repeat SAR

Communication System: UID 0, UMTS (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_141022 Medium parameters used: f = 1880 MHz; σ = 1.521 S/m; ε_r = 53.575; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3753; ConvF(7.49, 7.49, 7.49); Calibrated: 2014.03.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Ch9400/Area Scan (41x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.60 W/kg

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.513 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.88 W/kg
SAR(1 g) = 0.980 W/kg; SAR(10 g) = 0.548 W/kg
Maximum value of SAR (measured) = 1.55 W/kg



0 dB = 1.55 W/kg

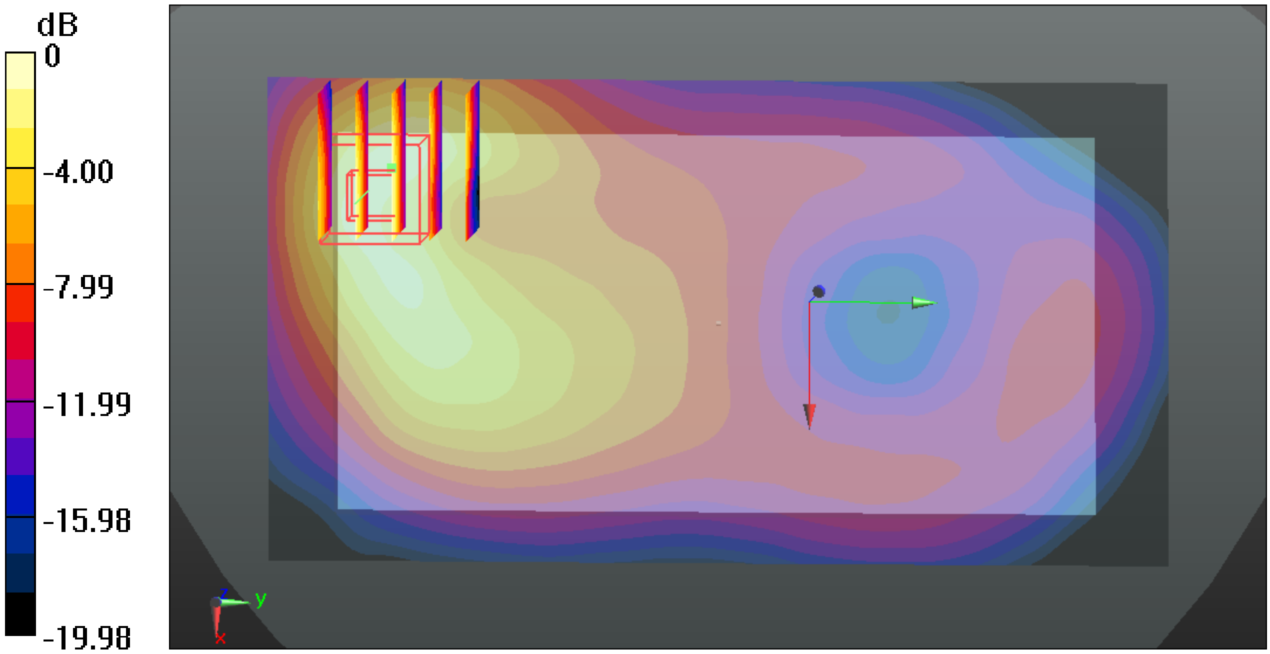
12_LTE Band 4_20M_QPSK_1RB_99Offset_Front_1cm_Ch20175

Communication System: UID 0, LTE (0); Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium: MSL_1800_141022 Medium parameters used: f = 1732.5 MHz; σ = 1.507 S/m; ε_r = 52.114; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3753; ConvF(7.8, 7.8, 7.8); Calibrated: 2014.03.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Ch20175/Area Scan (71x131x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.03 W/kg

Ch20175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.374 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.58 W/kg
SAR(1 g) = 0.961 W/kg; SAR(10 g) = 0.502 W/kg
Maximum value of SAR (measured) = 1.18 W/kg



0 dB = 1.18 W/kg

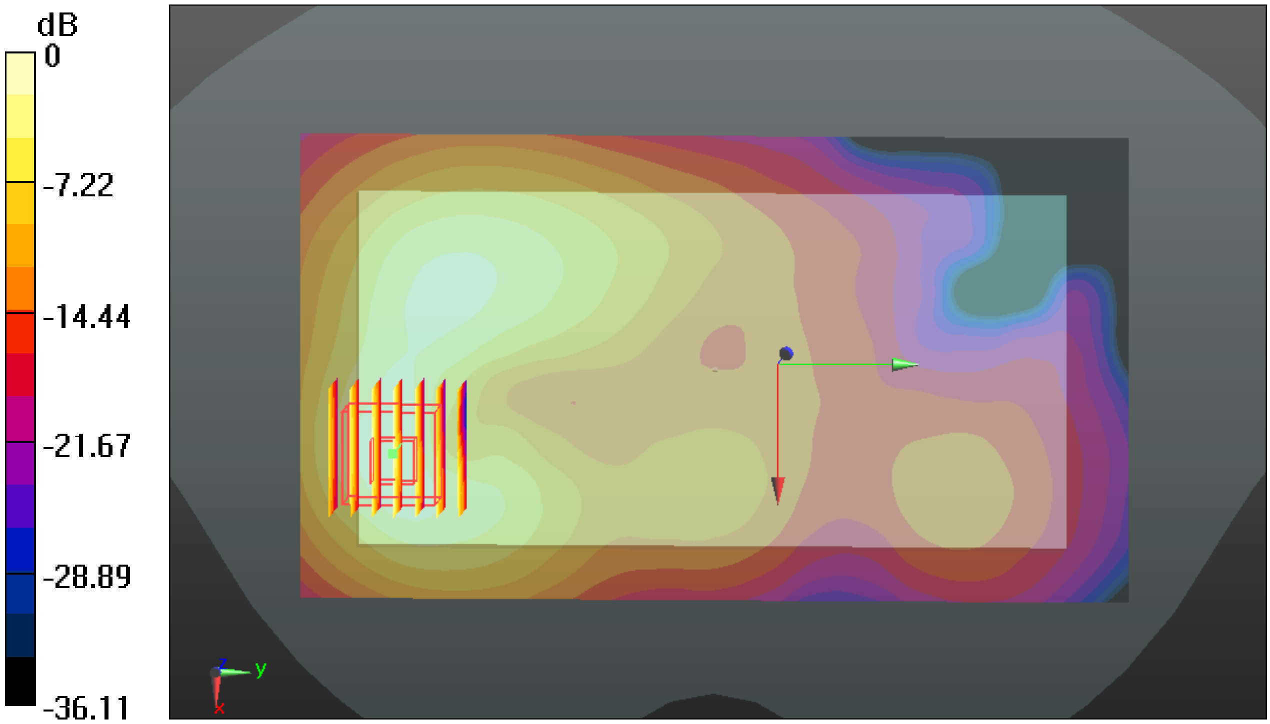
13_LTE Band 7_20M_QPSK_1RB_49Offset_Back_1cm_Ch21100

Communication System: UID 0, LTE (0); Frequency: 2535 MHz;Duty Cycle: 1:1
Medium: MSL_2600_141023 Medium parameters used: f = 2535 MHz; $\sigma = 2.091$ S/m; $\varepsilon_r = 53.894$; $\rho = 1000$ kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3753; ConvF(6.93, 6.93, 6.93); Calibrated: 2014.01.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Ch21100/Area Scan (91x161x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 1.36 W/kg

Ch21100/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.848 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.89 W/kg
SAR(1 g) = 0.965 W/kg; SAR(10 g) = 0.440 W/kg
Maximum value of SAR (measured) = 1.43 W/kg



0 dB = 1.43 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.10.24

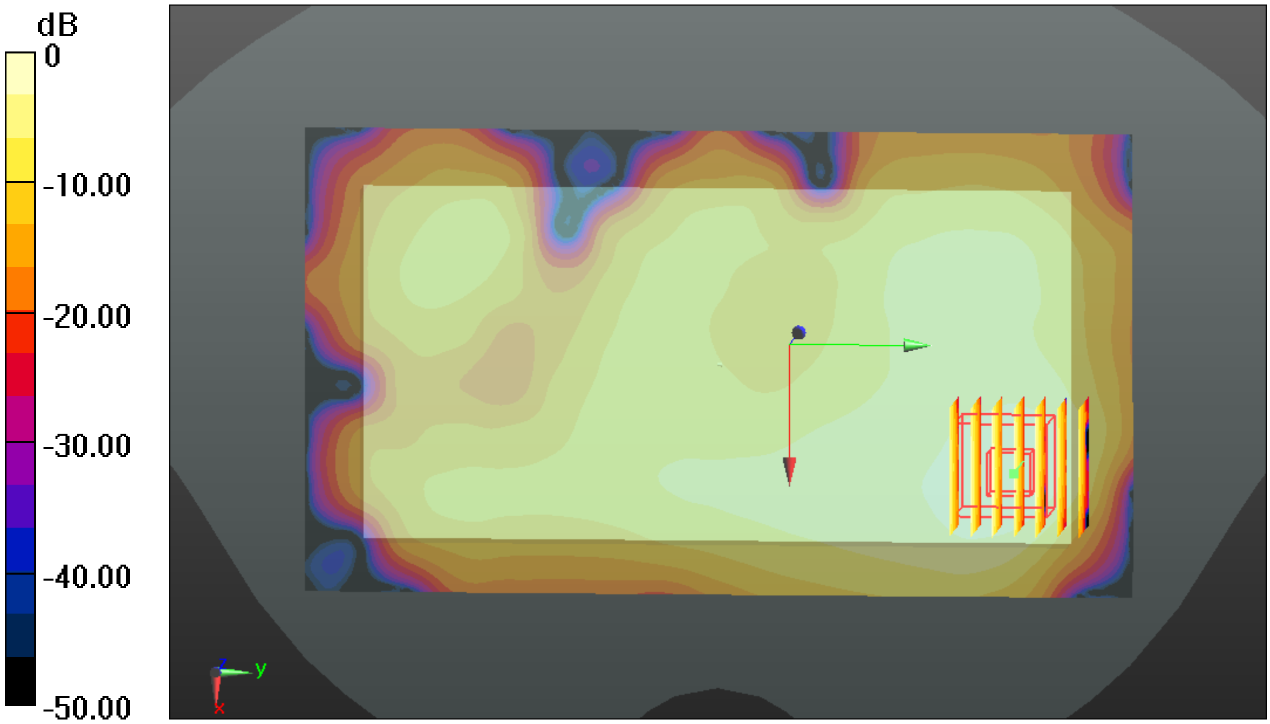
14_WLAN2.4GHz_802.11b 1Mbps_Back_1cm_Ch11

Communication System: UID 0, WIFI (0); Frequency: 2462 MHz;Duty Cycle: 1:1.024
Medium: MSL_2450_141024 Medium parameters used: f = 2462 MHz; σ = 2.012 S/m; ε_r = 52.245; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3753; ConvF(7.31, 7.31, 7.31); Calibrated: 2014.03.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Ch11/Area Scan (91x161x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.271 W/kg

Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.406 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.332 W/kg
SAR(1 g) = 0.164 W/kg; SAR(10 g) = 0.080 W/kg
Maximum value of SAR (measured) = 0.245 W/kg



0 dB = 0.245 W/kg

15_WCDMA II_RMC 12.2K_Front_1cm_Ch9262

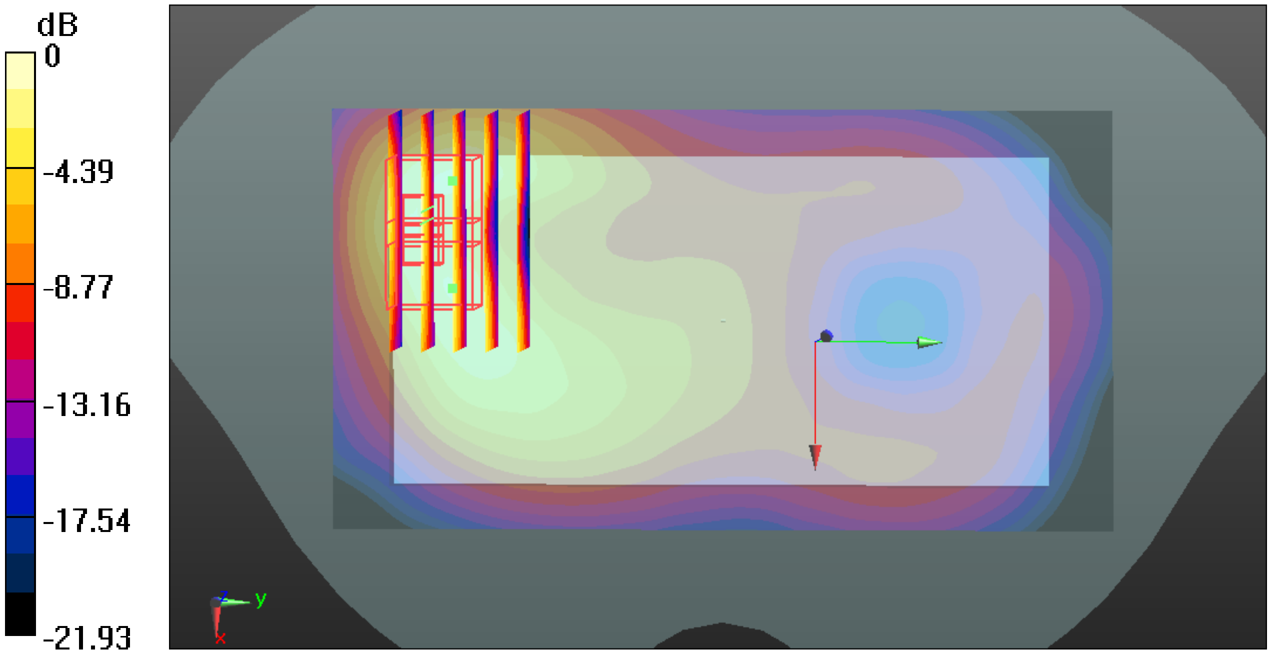
Communication System: UID 0, UMTS (0); Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: MSL_1900_141022 Medium parameters used: f = 1852.4 MHz; σ = 1.49 S/m; ε_r = 53.632; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3753; ConvF(7.49, 7.49, 7.49); Calibrated: 2014.03.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2014.07.22
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Ch9262/Area Scan (71x131x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.05 W/kg

Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.746 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 1.62 W/kg
SAR(1 g) = 0.960 W/kg; SAR(10 g) = 0.491 W/kg
Maximum value of SAR (measured) = 1.35 W/kg

Ch9262/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.746 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 1.66 W/kg
SAR(1 g) = 0.909 W/kg; SAR(10 g) = 0.467 W/kg
Maximum value of SAR (measured) = 1.37 W/kg



0 dB = 1.37 W/kg