FCC SAR Test Report

APPLICANT	:	Huawei TechnologiesCo., Ltd.
EQUIPMENT	:	Mobile Tablet PC
BRAND NAME	:	HUAWEI
MODEL NAME	:	S10-232L
MARKETING NAME	:	HUAWEI MediaPad 10 Link+
FCC ID	:	QISS10-232L
STANDARD	:	FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2003

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

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

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Approved by: Jones Tsai / Manager

Testing Laboratory 2627

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA440418	Rev. 01	Initial issue of report	Apr. 25, 2014

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Huawei TechnologiesCo., Ltd., Mobile Tablet PC, S10-232L** are as follows.

Equipment Class	Frequency Band	Operating Mode	Highest SAR Summary	
			Body 1g SAR (W/kg) (Gap 0cm)	Simultaneous Transmission SAR (W/kg)
PCB	GSM850	Data	0.79	1.59
	GSM1900	Data	0.71	
	WCDMA Band V	Data	1.06	
	WCDMA Band IV	Data	1.18	
	WCDMA Band II	Data	1.45	
	LTE Band 4	Data	0.69	
	LTE Band 7	Data	1.43	
	LTE Band 17	Data	0.99	
DTS	WLAN 2.4GHz Band	Data	0.75	1.59
DSS	Bluetooth	Data		1.58
Date of Testing:			Apr. 07, 2014 ~ Apr. 20, 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

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Applicant	
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Manufacturer	
Company Name	Huawei Technologies Co., Ltd.
Address	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

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 248227 D01 SAR meas for 802 11abg v01r02
- FCC KDB 616217 D04 SAR for laptop and tablets v01r01
- FCC KDB 941225 D01 SAR test for 3G devices v02
- FCC KDB 941225 D02 HSPA and 1x Advanced v02r02
- FCC KDB 941225 D03 SAR Test Reduction GSM GPRS EDGE v01
- FCC KDB 941225 D05 SAR for LTE Devices v02r03

4. Equipment Under Test (EUT)

4.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Tablet PC
Brand Name	HUAWEI
Model Name	S10-232L
Marketing Name	HUAWEI MediaPad 10 Link+
FCC ID	QISS10-232L
IMEI Code	864761020000966
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 IV: 1712.4 MHz ~ 1752.6 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 LTE Band 17 : 706.5 MHz ~ 713.5 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	• GPRS/EGPRS • RMC 12.2Kbps • HSDPA • HSUPA • DC-HSDPA • HSPA+ (16QAM Downlink Only) • LTE: QPSK, 16QAM • 802.11b/g/n HT20 • Bluetooth v3.0+EDR, Bluetooth v4.0 LE
HW Version	SH1S10231LM
SW Version	S10-232LV100R001C001
EUT Stage	Identical Prototype
Remark: 1. 802.11n-HT40 is not supported in 2.4GHz WLAN. 2. This device supports GRPS/EGPRS mode up to multi-slot class 12.	

4.2 Maximum Tune-up Limit

Mode	Burst Average Power (dBm)	
	GSM 850	GSM 1900
GPRS (GMSK, 1 Tx slot)	33.5	30.5
GPRS (GMSK, 2 Tx slots)	31.5	28.5
GPRS (GMSK, 3 Tx slots)	29.5	26.0
GPRS (GMSK, 4 Tx slots)	27.5	23.5
EDGE (8PSK, 1 Tx slot)	27.5	26.5
EDGE (8PSK, 2 Tx slots)	25.5	24.5
EDGE (8PSK, 3 Tx slots)	23.5	22.5
EDGE (8PSK, 4 Tx slots)	21.5	20.5

Mode	Average Power (dBm)		
	WCDMA Band V	WCDMA Band II	WCDMA Band IV
RMC 12.2K	23.5	23.5	23.5
HSDPA Subtest-1	23.5	23.5	23.5
HSDPA Subtest-2	23.5	23.5	23.5
HSDPA Subtest-3	23.0	23.0	23.0
HSDPA Subtest-4	23.0	23.0	23.0
DC-HSDPA Subtest-1	23.5	23.5	23.5
DC-HSDPA Subtest-2	23.5	23.5	23.5
DC-HSDPA Subtest-3	23.0	23.0	23.0
DC-HSDPA Subtest-4	23.0	23.0	23.0
HSUPA Subtest-1	22.0	22.0	22.0
HSUPA Subtest-2	20.0	20.0	20.0
HSUPA Subtest-3	21.0	21.0	21.0
HSUPA Subtest-4	20.0	20.0	20.0
HSUPA Subtest-5	22.0	22.0	22.0

LTE Band 4				
Average Power (dBm)				
Modulation	BW (MHz)	RB size	MPR	Target Power
QPSK	20	≤ 18	0	23.5
QPSK	20	> 18	0.5	23.0
16QAM	20	≤ 18	0.5	23.0
16QAM	20	> 18	2	21.5
QPSK	15	≤ 16	0	23.5
QPSK	15	> 16	0.5	23.0
16QAM	15	≤ 16	0.5	23.0
16QAM	15	> 16	2	21.5
QPSK	10	≤ 12	0	23.5
QPSK	10	> 12	0.5	23.0
16QAM	10	≤ 12	0.5	23.0
16QAM	10	> 12	2	21.5
QPSK	5	≤ 8	0	23.5
QPSK	5	> 8	0.5	23.0
16QAM	5	≤ 8	0.5	23.0
16QAM	5	> 8	2	21.5
QPSK	3	≤ 4	0	23.5
QPSK	3	> 4	0.5	23.0
16QAM	3	≤ 4	0.5	23.0
16QAM	3	> 4	2	21.5
QPSK	1.4	≤ 5	0	23.5
QPSK	1.4	> 5	0.5	23.0
16QAM	1.4	≤ 5	0.5	23.0
16QAM	1.4	> 5	2	21.5

LTE Band 7				
Average Power (dBm)				
Modulation	BW (MHz)	RB size	MPR	Target Power
QPSK	20	≤ 18	0	23.5
QPSK	20	> 18	1	22.5
16QAM	20	≤ 18	1	22.5
16QAM	20	> 18	2	21.5
QPSK	15	≤ 16	0	23.5
QPSK	15	> 16	1	22.5
16QAM	15	≤ 16	1	22.5
16QAM	15	> 16	2	21.5
QPSK	10	≤ 12	0	23.5
QPSK	10	> 12	1	22.5
16QAM	10	≤ 12	1	22.5
16QAM	10	> 12	2	21.5
QPSK	5	≤ 8	0	23.5
QPSK	5	> 8	1	22.5
16QAM	5	≤ 8	1	22.5
16QAM	5	> 8	2	21.5

LTE Band 17				
Average Power (dBm)				
Modulation	BW (MHz)	RB size	MPR	Target Power
QPSK	10	≤ 12	0	23.5
QPSK	10	> 12	0.5	23.0
16QAM	10	≤ 12	0.5	23.0
16QAM	10	> 12	1	22.5
QPSK	5	≤ 8	0	23.5
QPSK	5	> 8	0.5	23.0
16QAM	5	≤ 8	0.5	23.0
16QAM	5	> 8	1	22.5

Mode		Maximum Average Power (dBm)
2.4GHz	802.11b	15.0
	802.11g	14.0
	802.11n HT20	14.0
Bluetooth v3.0+EDR		4.0
Bluetooth v4.0 LE		4.0

4.3 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r03	
FCC ID	QISS10-232L
Equipment Name	Mobile Tablet PC
Operating Frequency Range of each LTE transmission band	LTE Band 4 : 1710.7 MHz ~ 1754.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 17 : 706.5 MHz ~ 713.5 MHz
Channel Bandwidth	1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz (LTE Band 4) 5MHz, 10MHz, 15MHz, 20MHz (LTE Band 7) 5MHz, 10MHz (LTE Band 17)
uplink modulations used	QPSK, and 16QAM
LTE transmitter and antenna implementation (standalone or sharing hardware components / antennas)	A antenna is used for LTE and other wireless interfaces (GSM/WCDMA) for transmitting and receiving. LTE and other wireless interfaces (GSM/WCDMA) share the same antenna, and cannot transmit simultaneously.
LTE Voice / Data requirements	Data only
LTE MPR permanently built-in by design	Yes, per 3GPP TS 36.101 **Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3**

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

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

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

LTE Band 17

	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq. (MHz)
L	23755	706.5	23780	709
M	23790	710	23790	710
H	23825	713.5	23800	711

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

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:

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

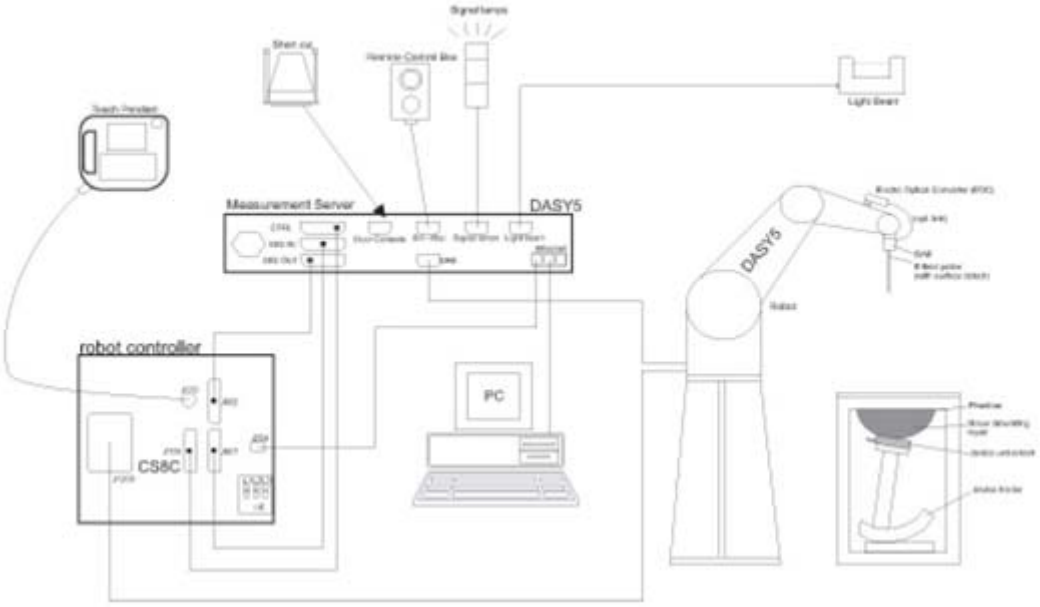
SAR is expressed in units of Watts per kilogram (W/kg)

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

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	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: 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.

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

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

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

8.5 Volume Scan Procedures

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

8.6 Power Drift Monitoring

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

9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1099	Nov. 11, 2013	Nov. 10, 2014
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	1353	Jan. 30, 2014	Jan. 29, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3898	Mar. 10, 2014	Mar. 09, 2015
SPEAG	SAM Twin Phantom	QD OVA 002 AA	TP-1201	NCR	NCR
Agilent	Wireless Communication Test Set	E5515C	MY52102600	Dec. 30, 2013	Dec. 29, 2014
Agilent	Wireless Communication Test Set	E5515C	MY50266977	May 06, 2013	May 05, 2014
Anritsu	Radio Communication Analyzer	MT8820C	6201074235	Nov. 05, 2013	Nov. 04, 2014
Agilent	ENA Series Network Analyzer	E5071C	MY46111157	Dec. 30, 2013	Dec. 29, 2014
Agilent	Dielectric Probe Kit	85070E	MY44300751	NCR	NCR
Anritsu	Power Meter	ML2495A	1005002	Feb. 27, 2014	Feb. 26, 2015
Anritsu	Power Sensor	MA2411B	917070	Feb. 27, 2014	Feb. 26, 2015
R&S	Spectrum Analyzer	FSP7	101045	Dec. 30, 2013	Dec. 29, 2014
Agilent	Dual Directional Coupler	778D	50422	*CBT	
Woken	Attenuator	WK0602-XX	N/A	*CBT	
PE	Attenuator	PE7005-10	N/A	*CBT	
PE	Attenuator	PE7005- 3	N/A	*CBT	
AR	Power Amplifier	5S1G4M2	0328767	*CBT	
Mini-Circuits	Power Amplifier	ZVE-3W	162601250	*CBT	
Mini-Circuits	Power Amplifier	ZHL-42W+	13440021344	*CBT	

General Note:

1. The calibration certificate of DASY can be referred to appendix C of this report.
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 and 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.
4. CBT (Calibrated Before Testing). Prior to testing, the measurement paths containing an amplifier, coupler and attenuator were connected to a calibrated source (i.e. a signal generator) to determine the losses of the measurement path. The power meter offset was then adjusted to compensate for the measurement system losses. This level offset is stored within the power meter before measurements are made. The calibrated reading is then taken directly from the power meter after compensation of the losses for all final power measurement.

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 Body								
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
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
750	Body	22.3	0.967	53.993	0.96	55.50	0.73	-2.72	±5	Apr. 10, 2014
835	Body	22.6	0.974	54.252	0.97	55.20	0.41	-1.72	±5	Apr. 07, 2014
1750	Body	22.7	1.539	54.578	1.49	53.40	3.29	2.21	±5	Apr. 08, 2014
1900	Body	22.5	1.501	53.849	1.52	53.30	-1.25	1.03	±5	Apr. 20, 2014
2450	Body	22.8	1.989	51.267	1.95	52.70	2.00	-2.72	±5	Apr. 15, 2014
2600	Body	22.5	2.165	53.823	2.16	52.50	0.23	2.52	±5	Apr. 11, 2014

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 %. Table 8.3.1 shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured SAR (W/kg)	Targeted SAR (W/kg)	Normalized SAR (W/kg)	Deviation (%)
Apr. 10, 2014	750	Body	250	1099	3898	1353	2.06	8.56	8.24	-3.74
Apr. 07, 2014	835	Body	250	4d151	3898	1353	2.27	9.43	9.08	-3.71
Apr. 08, 2014	1750	Body	250	1090	3898	1353	9.17	38.10	36.68	-3.73
Apr. 20, 2014	1900	Body	250	5d170	3898	1353	10.30	41.20	41.2	0.00
Apr. 15, 2014	2450	Body	250	908	3898	1353	12.20	50.40	48.8	-3.17
Apr. 11, 2014	2600	Body	250	1061	3898	1353	14.70	55.60	58.8	5.76

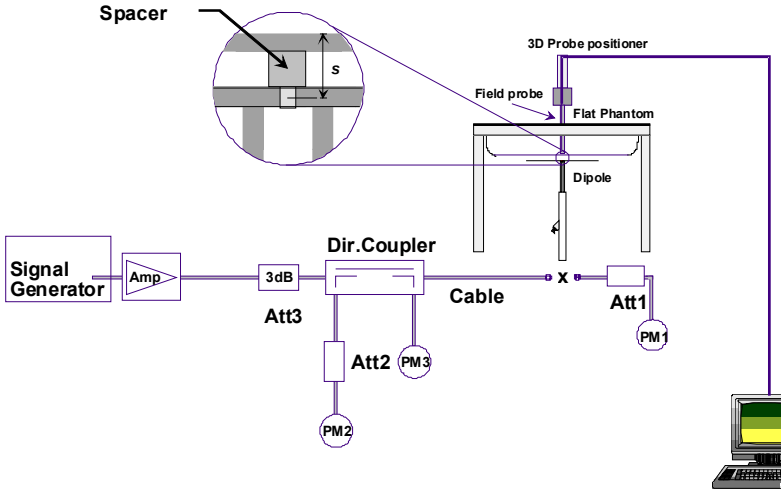


Fig 8.3.1 System Performance Check Setup

Fig 8.3.2 Setup Photo

11. RF Exposure Positions

11.1 SAR Testing for Tablet

This device can be used also in full sized tablet exposure conditions, due to its size. Per FCC KDB 616217, the back surface and edges of the tablet should be tested for SAR compliance with the tablet touching the phantom. The SAR exclusion threshold in KDB 447498 D01v05r02 can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an adjacent tablet edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned against the phantom and the edge containing the antenna positioned perpendicular to the phantom.

12. Conducted RF Output Power (Unit: dBm)

<GSM Conducted Power>

1. Per KDB 447498 D01v05r02, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. For GSM850 and GSM1900 Body SAR testing was following KDB 941225 D03v01, the GPRS 2Tx slots modes was selected according to the highest frame-average power.

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	
GPRS (GMSK, 1 Tx slot) – CS1	33.27	33.23	33.16	33.5	24.27	24.23	24.16	24.50
GPRS (GMSK, 2 Tx slots) – CS1	31.03	30.87	30.68	31.5	**25.03**	24.87	24.68	25.50
GPRS (GMSK, 3 Tx slots) – CS1	28.82	28.63	28.43	29.5	24.56	24.37	24.17	25.24
GPRS (GMSK, 4 Tx slots) – CS1	26.84	26.65	26.45	27.5	23.84	23.65	23.45	24.50
EDGE (8PSK, 1 Tx slot) – MCS5	27.17	27.19	27.30	27.5	18.17	18.19	18.30	18.50
EDGE (8PSK, 2 Tx slots) – MCS5	24.49	24.45	24.55	25.5	18.49	18.45	18.55	19.50
EDGE (8PSK, 3 Tx slots) – MCS5	22.52	22.44	22.59	23.5	18.26	18.18	18.33	19.24
EDGE (8PSK, 4 Tx slots) – MCS5	20.88	20.83	20.85	21.5	17.88	17.83	17.85	18.50
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	
GPRS (GMSK, 1 Tx slot) – CS1	30.12	30.05	29.90	30.5	21.12	21.05	20.90	21.50
GPRS (GMSK, 2 Tx slots) – CS1	27.79	27.61	27.78	28.5	**21.79**	21.61	21.78	22.50
GPRS (GMSK, 3 Tx slots) – CS1	25.54	25.29	24.93	26.0	21.28	21.03	20.67	21.74
GPRS (GMSK, 4 Tx slots) – CS1	23.44	23.17	22.92	23.5	20.44	20.17	19.92	20.50
EDGE (8PSK, 1 Tx slot) – MCS5	25.35	25.28	25.29	26.5	16.35	16.28	16.29	17.50
EDGE (8PSK, 2 Tx slots) – MCS5	23.22	23.17	23.11	24.5	17.22	17.17	17.11	18.50
EDGE (8PSK, 3 Tx slots) – MCS5	21.20	21.20	21.24	22.5	16.94	16.94	16.98	18.24
EDGE (8PSK, 4 Tx slots) – MCS5	19.15	19.14	19.12	20.5	16.15	16.14	16.12	17.50

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>

The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.

A summary of these settings are illustrated below:

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 β_{hs} = 30/15 * β_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 β_{hs} = 30/15 * β_c, and Δ_{CQI} = 24/15 with β_{hs} = 24/15 * β_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 β_{hs} = 30/15 * β_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

DC-HSDPA 3GPP release 8 Setup Configuration:

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

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

C.8.1.12 Fixed Reference Channel Definition H-Set 12

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

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

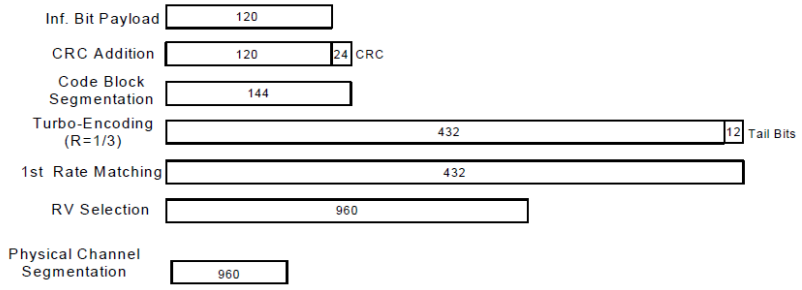


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

<WCDMA Conducted Power>

General Note:

1. Applying the subtest setup in Table C10.1.4 and Table C.11.1.3 of 3GPP TS 34.121-1 V9.1.0 to Rel. 6 HSPA, and the subtest setup in Table C10.1.4 for DC-HSDPA. Rel.8.
2. By design, HSDPA/HSUPA/DC-HSDPA RF power will not be larger than RMC 12.2kbps, detailed information is included in Tune-up Procure exhibit.
3. It is expected by the manufacturer that MPR for some HSDPA/HSUPA/DC-HSDPA subtests may differ from the specification of 3GPP, according to the chipset implementation in this model. The implementation and expected deviation are detailed in tune-up procedure exhibit.
4. Per KDB 941225 D02v02r02, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA/HSUPA/DC-HSDPA output power is < 0.25dB higher than RMC, or reported SAR with RMC 12.2kbps setting is ≤ 1.2W/kg, HSDPA/HSUPA/DC-HSDPA SAR evaluation can be excluded.

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	
MPR (dB)	Frequency (MHz)		826.4	836.4	846.4		1852.4	1880	1907.6	
	3GPP Rel 99	RMC 12.2Kbps	**22.53**	22.52	22.46	23.5	22.51	**22.53**	22.45	23.5
0	3GPP Rel 6	HSDPA Subtest-1	22.38	22.26	22.39	23.5	22.34	22.24	22.27	23.5
0	3GPP Rel 6	HSDPA Subtest-2	22.33	22.34	22.32	23.5	22.38	22.02	22.29	23.5
0.5	3GPP Rel 6	HSDPA Subtest-3	21.43	21.72	21.22	23.0	21.84	21.44	21.24	23.0
0.5	3GPP Rel 6	HSDPA Subtest-4	21.43	21.72	21.22	23.0	21.83	21.43	21.23	23.0
0	3GPP Rel 8	DC-HSDPA Subtest-1	22.42	22.44	22.12	23.5	22.39	22.46	22.41	23.5
0	3GPP Rel 8	DC-HSDPA Subtest-2	22.14	22.22	22.29	23.5	22.16	22.21	22.25	23.5
0.5	3GPP Rel 8	DC-HSDPA Subtest-3	21.26	21.23	21.21	23.0	21.24	21.26	21.29	23.0
0.5	3GPP Rel 8	DC-HSDPA Subtest-4	21.36	21.49	21.39	23.0	21.26	21.48	21.35	23.0
0	3GPP Rel 6	HSUPA Subtest-1	20.95	20.63	20.73	22.0	20.83	20.54	20.18	22.0
2	3GPP Rel 6	HSUPA Subtest-2	19.33	19.24	19.46	20.0	19.32	19.23	19.17	20.0
1	3GPP Rel 6	HSUPA Subtest-3	20.55	20.81	20.59	21.0	20.24	20.50	20.44	21.0
2	3GPP Rel 6	HSUPA Subtest-4	19.63	19.77	19.45	20.0	19.49	19.05	19.13	20.0
0	3GPP Rel 6	HSUPA Subtest-5	20.74	20.90	20.79	22.0	20.76	20.84	20.70	22.0

Band			WCDMA Band IV			
TX Channel			1312	1413	1513	Tune-up Limit (dBm)
Rx Channel			1537	1638	1738	
MPR (dB)	Frequency (MHz)		1712.4	1732.6	1752.6	
	3GPP Rel 99	RMC 12.2Kbps	22.51	**22.53**	22.45	23.5
0	3GPP Rel 6	HSDPA Subtest-1	22.39	22.42	22.37	23.5
0	3GPP Rel 6	HSDPA Subtest-2	22.49	22.43	22.41	23.5
0.5	3GPP Rel 6	HSDPA Subtest-3	21.67	21.85	21.55	23.0
0.5	3GPP Rel 6	HSDPA Subtest-4	21.64	21.74	21.54	23.0
0	3GPP Rel 8	DC-HSDPA Subtest-1	22.43	22.42	22.22	23.5
0	3GPP Rel 8	DC-HSDPA Subtest-2	22.19	22.26	22.27	23.5
0.5	3GPP Rel 8	DC-HSDPA Subtest-3	21.23	21.26	21.24	23.0
0.5	3GPP Rel 8	DC-HSDPA Subtest-4	21.33	21.44	21.37	23.0
0	3GPP Rel 6	HSUPA Subtest-1	20.95	20.81	20.68	22.0
2	3GPP Rel 6	HSUPA Subtest-2	19.43	19.93	19.63	20.0
1	3GPP Rel 6	HSUPA Subtest-3	19.93	19.72	19.94	21.0
2	3GPP Rel 6	HSUPA Subtest-4	19.87	19.61	19.82	20.0
0	3GPP Rel 6	HSUPA Subtest-5	20.95	20.77	20.89	22.0

<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, 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, 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	22.89	22.71	23.07	23.5	0
20	QPSK	1	49	23.41	23.15	23.09		
20	QPSK	1	99	23.39	23.32	22.81		
20	QPSK	50	0	22.18	21.77	22.10	23.0	0-1
20	QPSK	50	24	22.38	21.84	21.94		
20	QPSK	50	49	22.31	21.98	22.16		
20	QPSK	100	0	22.25	21.87	22.20		
20	16QAM	1	0	22.07	22.00	22.27	23.0	0-1
20	16QAM	1	49	22.79	22.48	22.33		
20	16QAM	1	99	22.66	22.64	22.10		
20	16QAM	50	0	21.08	20.72	21.16	21.5	0-2
20	16QAM	50	24	21.26	20.78	20.91		
20	16QAM	50	49	21.13	20.91	21.21		
20	16QAM	100	0	21.11	20.79	21.16		
Channel				20025	20175	20325	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	22.79	22.61	23.04	23.5	0
15	QPSK	1	37	23.44	23.12	23.05		
15	QPSK	1	74	23.40	23.22	22.87		
15	QPSK	36	0	22.00	21.86	22.07	23.0	0-1
15	QPSK	36	18	22.27	22.05	22.00		
15	QPSK	36	37	22.23	22.03	22.28		
15	QPSK	75	0	22.18	21.93	22.21		
15	16QAM	1	0	21.99	21.95	22.23	23.0	0-1
15	16QAM	1	37	22.64	22.48	22.33		
15	16QAM	1	74	22.64	22.59	22.20		
15	16QAM	36	0	21.01	20.69	20.94	21.5	0-2
15	16QAM	36	18	21.26	20.86	20.92		
15	16QAM	36	37	21.22	20.83	21.26		
15	16QAM	75	0	21.18	20.72	21.09		
Channel				20000	20175	20350	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	22.58	22.36	22.54	23.5	0
10	QPSK	1	24	23.29	23.12	22.89		
10	QPSK	1	49	23.30	23.26	22.84		
10	QPSK	25	0	21.87	21.57	21.76	23.0	0-1
10	QPSK	25	12	22.13	21.89	22.02		
10	QPSK	25	24	21.99	21.74	21.92		
10	QPSK	50	0	21.93	21.59	21.96		
10	16QAM	1	0	21.80	21.89	21.86	23.0	0-1
10	16QAM	1	24	22.53	22.54	22.24		
10	16QAM	1	49	22.53	22.51	22.10		
10	16QAM	25	0	20.76	20.52	20.77	21.5	0-2
10	16QAM	25	12	21.14	20.83	21.06		
10	16QAM	25	24	20.98	20.65	20.97		
10	16QAM	50	0	20.94	20.54	21.04		

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				19975	20175	20375		
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	22.79	22.51	22.64	23.5	0
5	QPSK	1	12	23.25	23.08	22.90		
5	QPSK	1	24	22.95	22.73	22.57		
5	QPSK	12	0	21.98	21.80	22.06	23.0	0-1
5	QPSK	12	6	22.16	21.98	22.07		
5	QPSK	12	11	22.00	21.81	21.96		
5	QPSK	25	0	22.05	21.86	22.06		
5	16QAM	1	0	21.86	21.69	21.78	23.0	0-1
5	16QAM	1	12	22.30	22.20	22.04		
5	16QAM	1	24	21.96	21.75	21.72		
5	16QAM	12	0	20.92	20.74	21.14	21.5	0-2
5	16QAM	12	6	21.08	20.91	21.16		
5	16QAM	12	11	20.90	20.73	21.04		
5	16QAM	25	0	20.95	20.79	21.13		
Channel				19965	20175	20385	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	22.82	22.73	22.67	23.5	0
3	QPSK	1	7	23.20	23.20	22.89		
3	QPSK	1	14	23.04	22.76	22.61		
3	QPSK	8	0	21.99	21.90	22.08	23.0	0-1
3	QPSK	8	4	22.09	22.01	22.06		
3	QPSK	8	7	22.09	21.95	22.06		
3	QPSK	15	0	22.04	21.92	22.01		
3	16QAM	1	0	22.24	21.87	22.19	23.0	0-1
3	16QAM	1	7	22.53	22.58	22.42		
3	16QAM	1	14	22.38	22.11	22.15		
3	16QAM	8	0	20.97	20.88	21.17	21.5	0-2
3	16QAM	8	4	21.06	21.02	21.14		
3	16QAM	8	7	21.02	20.96	21.13		
3	16QAM	15	0	21.01	20.90	21.11		
Channel				19957	20175	20393	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	22.92	22.98	22.75	23.5	0
1.4	QPSK	1	2	23.18	23.12	22.88		
1.4	QPSK	1	5	23.07	22.97	22.74		
1.4	QPSK	3	0	23.04	22.97	22.98		
1.4	QPSK	3	1	23.11	23.05	22.98		
1.4	QPSK	3	2	23.07	23.00	22.92		
1.4	QPSK	6	0	22.07	22.00	22.14	23.0	0-1
1.4	16QAM	1	0	22.03	22.09	22.06	23.0	0-1
1.4	16QAM	1	2	22.21	22.28	22.20		
1.4	16QAM	1	5	22.27	22.12	22.06		
1.4	16QAM	3	0	21.91	22.04	22.03		
1.4	16QAM	3	1	21.98	22.02	21.91		
1.4	16QAM	3	2	21.94	21.97	21.97		
1.4	16QAM	6	0	21.01	20.87	21.21	21.5	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	22.37	22.13	22.49	23.5	0
20	QPSK	1	49	22.58	22.87	22.92		
20	QPSK	1	99	22.35	22.74	22.87		
20	QPSK	50	0	21.55	21.48	21.79	22.5	0-1
20	QPSK	50	24	21.48	21.79	22.01		
20	QPSK	50	49	21.31	21.74	21.80		
20	QPSK	100	0	21.51	21.67	21.89		
20	16QAM	1	0	21.60	21.37	21.87	22.5	0-1
20	16QAM	1	49	21.80	22.09	22.22		
20	16QAM	1	99	21.62	22.04	22.45		
20	16QAM	50	0	20.32	20.27	20.57	21.5	0-2
20	16QAM	50	24	20.29	20.60	20.79		
20	16QAM	50	49	20.14	20.56	20.56		
20	16QAM	100	0	20.31	20.47	20.69		
Channel				20825	21100	21375	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	22.30	22.16	22.34	23.5	0
15	QPSK	1	37	22.60	22.86	22.94		
15	QPSK	1	74	22.38	22.64	22.94		
15	QPSK	36	0	21.64	21.67	21.65	22.5	0-1
15	QPSK	36	18	21.60	21.93	21.91		
15	QPSK	36	37	21.41	21.86	21.84		
15	QPSK	75	0	21.54	21.69	21.87		
15	16QAM	1	0	21.40	21.44	21.59	22.5	0-1
15	16QAM	1	37	21.79	22.15	22.16		
15	16QAM	1	74	21.52	21.97	22.19		
15	16QAM	36	0	20.37	20.46	20.41	21.5	0-2
15	16QAM	36	18	20.38	20.75	20.69		
15	16QAM	36	37	20.20	20.69	20.73		
15	16QAM	75	0	20.30	20.46	20.66		
Channel				20800	21100	21400	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	21.97	22.22	22.39	23.5	0
10	QPSK	1	24	22.39	22.83	23.06		
10	QPSK	1	49	22.28	22.75	22.74		
10	QPSK	25	0	21.32	21.53	21.62	22.5	0-1
10	QPSK	25	12	21.43	21.76	21.98		
10	QPSK	25	24	21.26	21.65	21.74		
10	QPSK	50	0	21.40	21.53	21.66		
10	16QAM	1	0	21.05	21.41	21.28	22.5	0-1
10	16QAM	1	24	21.56	22.11	22.00		
10	16QAM	1	49	21.45	22.03	21.92		
10	16QAM	25	0	20.04	20.34	20.37	21.5	0-2
10	16QAM	25	12	20.19	20.57	20.74		
10	16QAM	25	24	20.04	20.46	20.60		
10	16QAM	50	0	20.16	20.33	20.51		

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				20775	21100	21425		
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	22.18	22.59	22.84	23.5	0
5	QPSK	1	12	22.57	22.88	23.23		
5	QPSK	1	24	22.28	22.66	22.90		
5	QPSK	12	0	21.70	21.92	22.10	22.5	0-1
5	QPSK	12	6	21.79	22.07	22.26		
5	QPSK	12	11	21.67	21.91	22.21		
5	QPSK	25	0	21.66	21.83	22.04		
5	16QAM	1	0	21.05	21.40	21.74	22.5	0-1
5	16QAM	1	12	21.48	21.73	22.15		
5	16QAM	1	24	21.20	21.48	21.80		
5	16QAM	12	0	20.19	20.63	20.91	21.5	0-2
5	16QAM	12	6	20.31	20.81	21.08		
5	16QAM	12	11	20.22	20.65	21.05		
5	16QAM	25	0	20.19	20.50	20.85		

<LTE Band 17>

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				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	21.87	22.08	21.64	23.5	0
10	QPSK	1	24	22.21	22.61	22.46		
10	QPSK	1	49	21.86	22.24	22.36		
10	QPSK	25	0	21.76	22.18	21.92	23.0	0-1
10	QPSK	25	12	22.02	22.44	22.25		
10	QPSK	25	24	21.71	22.17	22.05		
10	QPSK	50	0	21.68	22.24	21.99		
10	16QAM	1	0	21.88	22.23	21.73	23.0	0-1
10	16QAM	1	24	22.19	22.69	22.48		
10	16QAM	1	49	21.96	22.36	22.38		
10	16QAM	25	0	21.52	21.96	21.72	22.5	0-2
10	16QAM	25	12	21.80	22.21	22.04		
10	16QAM	25	24	21.51	21.95	21.83		
10	16QAM	50	0	21.42	21.97	21.74		
Channel				23755	23790	23825	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	22.27	22.37	22.07	23.5	0
5	QPSK	1	12	22.27	22.67	22.38		
5	QPSK	1	24	21.89	22.32	22.25		
5	QPSK	12	0	22.21	22.49	22.30	23.0	0-1
5	QPSK	12	6	22.24	22.55	22.38		
5	QPSK	12	11	22.09	22.47	22.29		
5	QPSK	25	0	22.12	22.51	22.27		
5	16QAM	1	0	21.90	22.16	21.99	23.0	0-1
5	16QAM	1	12	21.98	22.44	22.26		
5	16QAM	1	24	21.63	22.12	22.13		
5	16QAM	12	0	21.80	22.14	21.99	22.5	0-2
5	16QAM	12	6	21.85	22.20	22.06		
5	16QAM	12	11	21.73	22.13	21.98		
5	16QAM	25	0	21.82	22.18	21.97		

<WLAN Conducted Power>

General Note:

1. Per KDB 248227 D01 v01r02, choose the highest output power channel to test SAR and determine further SAR exclusion.
2. For each frequency band, testing at higher data rates and higher order modulations is not required when the maximum average output power for each of these configurations is less than 1/4dB higher than those measured at the lowest data rate.
3. Following KDB 248227 D01 v01r02, 802.11g/11n-HT20 output power is less than 1/4dB higher than 11b mode, thus the SAR can be excluded.

802.11b Average Power (dBm)						Tune up Limit (dBm)
Channel	Frequency (MHz)	Data Rate (bps)				
		1M bps	2M bps	5.5M bps	11M bps	
CH 01	2412	**14.33**	14.16	14.08	14.10	15.0
CH 06	2437	14.30	14.26	14.16	14.32	15.0
CH 11	2462	14.16	14.01	13.83	13.93	15.0

802.11g Average Power (dBm)										Tune up Limit (dBm)
Channel	Frequency (MHz)	Data Rate (bps)								
		6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps	
CH 01	2412	13.33	13.14	13.21	13.23	13.16	13.15	13.31	13.12	14.0
CH 06	2437	13.21	13.27	13.29	13.35	13.13	13.21	13.42	13.14	14.0
CH 11	2462	13.06	**13.61**	13.37	13.07	13.48	13.38	13.01	13.09	14.0

802.11n HT20 Average Power (dBm)										Tune up Limit (dBm)
Channel	Frequency (MHz)	MCS Index								
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	
CH 01	2412	13.51	13.53	13.21	13.06	13.19	13.21	13.11	13.61	14.0
CH 06	2437	**13.66**	13.52	13.23	13.03	13.61	13.32	13.21	13.05	14.0
CH 11	2462	13.59	13.26	13.31	13.58	13.36	13.02	13.38	13.19	14.0

13. Bluetooth Exclusions Applied

Mode Band	Average Power (dBm)	
	Bluetooth v3.0+EDR	Bluetooth v4.0 LE
2.4GHz Bluetooth	4.0	4.0

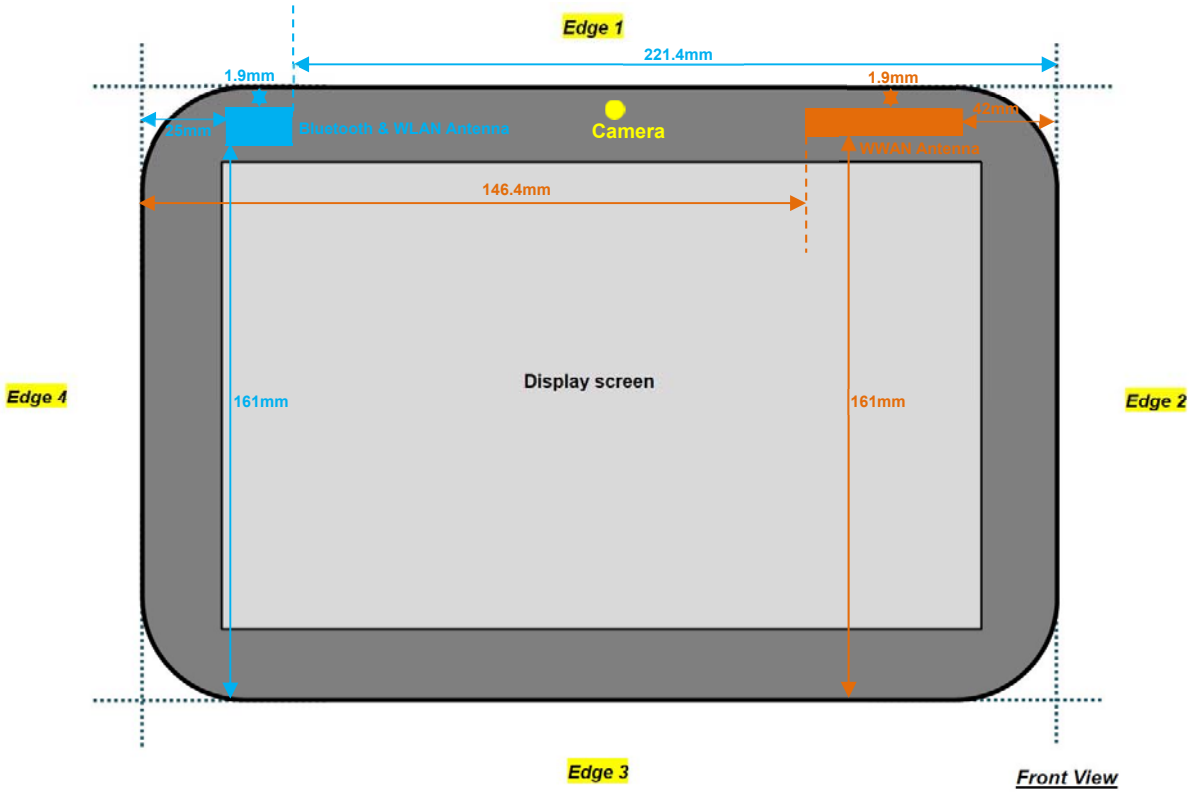
Note:

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

Bluetooth Max Power (dBm)	mW	Separation Distance (mm)	Frequency (GHz)	Exclusion Thresholds
4	3.00	0	2.48	0.94

Note: Per KDB 447498 D01v05r02, when the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion. The test exclusion threshold is 0.94 which is <= 3, SAR testing is not required.

14. Antenna Location



General Note:

1. Above the table, when the distance is < 50 mm exclusion threshold is "Ratio", when the distance is > 50 mm exclusion threshold is "mW"
2. Maximum power is the source-based time-average power and represents the maximum RF output power among production units
3. Per KDB 447498 D01v05r02, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
4. Per KDB 447498 D01v05r02, standalone SAR test exclusion threshold is applied; If the test separation distance is < 5mm, 5mm is used to determine SAR exclusion threshold.
5. Per KDB 447498 D01v05r02, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
   - f(GHz) is the RF channel transmit frequency in GHz
   - Power and distance are rounded to the nearest mW and mm before calculation
   - The result is rounded to one decimal place for comparison
   - For < 50 mm distance, we just calculate mW of the exclusion threshold value (3.0) to do compare. This formula is [3.0] / [√f(GHz)] ·[(*min. test separation distance, mm*)] = exclusion threshold of mW.
6. Per KDB 447498 D01v05r02, at 100 MHz to 6 GHz and for *test separation distances* > 50 mm, the SAR test exclusion threshold is determined according to the following
   a) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·(f(MHz)/150)] mW, at 100 MHz to 1500 MHz
   b) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz

SAR test exclusion table distance is ≤ 50mm

Exposure Position	Wireless Interface	GPRS850 2 Tx slots	GPRS1900 2 Tx slots	WCDMA Band V	WCDMA Band IV	WCDMA Band II	LTE Band 4	LTE Band 7	LTE Band 17	802.11b
	Tune-up Maximum power (dBm)	25.5	22.5	23.5	23.5	23.5	23.5	23.5	23.5	15.0
Bottom Face	Antenna to user (mm)	0								0
	SAR exclusion threshold	65	49	41	59	62	59	72	38	10
	SAR testing required?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Edge 1	Antenna to user (mm)	1.9								1.9
	SAR exclusion threshold	65	49	41	59	62	59	72	38	10
	SAR testing required?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Edge 2	Antenna to user (mm)	42								
	SAR exclusion threshold	8	6	5	7	7	7	9	5	
	SAR testing required?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	
Edge 4	Antenna to user (mm)									25
	SAR exclusion threshold									2
	SAR testing required?									**No**

SAR test exclusion table distance is > 50mm

Exposure Position	Wireless Interface	GPRS850 2 Tx slots	GPRS1900 2 Tx slots	WCDMA Band V	WCDMA Band IV	WCDMA Band II	LTE Band 4	LTE Band 7	LTE Band 17	802.11b
	Tune-up Maximum power (dBm)	25.5	22.5	23.5	23.5	23.5	23.5	23.5	23.5	15.0
	Tune-up Maximum rated power (mW)	355	178	224	224	224	224	224	224	32
Edge 2	Antenna to user (mm)									221.4
	SAR exclusion threshold (mW)									1810
	SAR testing required?									**No**
Edge 3	Antenna to user (mm)	161								161
	SAR exclusion threshold (mW)	790	1219	789	1223	1219	1223	1204	705	1206
	SAR testing required?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Edge 4	Antenna to user (mm)	146.4								
	SAR exclusion threshold (mW)	708	1073	707	1077	1073	1077	1058	636	
	SAR testing required?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	

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. Reported SAR(W/kg)= Measured SAR(W/kg)*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 D02v02r02, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA/HSUPA/DC-HSDPA output power is < 0.25dB higher than RMC, or reported SAR with RMC 12.2kbps setting is ≤ 1.2W/kg, HSDPA/HSUPA/DC-HSDPA SAR evaluation can be excluded.
4. 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.
5. Per KDB 941225 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
6. 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.
7. 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, 16QAM SAR testing is not required.
8. 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, smaller bandwidth SAR testing is not required.
9. According to the setup photo radius dimension (X =4.7mm, Y=4.0mm, Z=1.6mm), for X>Z and Y>Z, that complied curved test condition. Per KDB 616217 D04v01r01, SAR at the curved surface is necessary.
10. For SAR testing of the curved region of the device, the device was placed directly against the phantom at the point where the distance between the antenna and device exterior is a minimum.

15.1 Body 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)
#01	GSM850	GPRS(2 Tx slots)	Bottom Face	0	128	824.2	31.03	31.5	1.114	-0.02	0.710	**0.791**
	GSM850	GPRS(2 Tx slots)	Edge 1	0	128	824.2	31.03	31.5	1.114	0.08	0.573	0.638
	GSM850	GPRS(2 Tx slots)	Edge 2	0	128	824.2	31.03	31.5	1.114	0.01	0.192	0.214
	GSM850	GPRS(2 Tx slots)	Curved surface of Edge1	0	128	824.2	31.03	31.5	1.114	0.1	0.654	0.729
	GSM1900	GPRS(2 Tx slots)	Bottom Face	0	512	1850.2	27.79	28.5	1.178	-0.04	0.280	0.330
	GSM1900	GPRS(2 Tx slots)	Edge 1	0	512	1850.2	27.79	28.5	1.178	-0.01	0.440	0.518
	GSM1900	GPRS(2 Tx slots)	Edge 2	0	512	1850.2	27.79	28.5	1.178	0.06	0.027	0.032
#02	GSM1900	GPRS(2 Tx slots)	Curved surface of Edge1	0	512	1850.2	27.79	28.5	1.178	0.12	0.600	**0.707**

<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	Bottom Face	0	4132	826.4	22.53	23.5	1.250	0.04	0.775	0.969
	WCDMA Band V	RMC 12.2K	Edge 1	0	4132	826.4	22.53	23.5	1.250	0.04	0.461	0.576
	WCDMA Band V	RMC 12.2K	Edge 2	0	4132	826.4	22.53	23.5	1.250	0.03	0.133	0.166
	WCDMA Band V	RMC 12.2K	Bottom Face	0	4182	836.4	22.52	23.5	1.253	-0.04	0.761	0.954
#03	WCDMA Band V	RMC 12.2K	Bottom Face	0	4233	846.6	22.46	23.5	1.271	0.06	0.834	**1.060**
	WCDMA Band V	RMC 12.2K	Curved surface of Edge1	0	4233	846.6	22.46	23.5	1.271	0.15	0.659	0.837
	WCDMA Band V	RMC 12.2K	Curved surface of Edge1	0	4132	826.4	22.53	23.5	1.250	0.14	0.566	0.708
	WCDMA Band V	RMC 12.2K	Curved surface of Edge1	0	4182	836.4	22.52	23.5	1.253	0.09	0.586	0.734
	WCDMA Band IV	RMC 12.2K	Bottom Face	0	1413	1732.6	22.53	23.5	1.250	0.04	0.871	1.089
	WCDMA Band IV	RMC 12.2K	Edge 1	0	1413	1732.6	22.53	23.5	1.250	0.09	0.537	0.671
	WCDMA Band IV	RMC 12.2K	Edge 2	0	1413	1732.6	22.53	23.5	1.250	0.11	0.046	0.058
#04	WCDMA Band IV	RMC 12.2K	Bottom Face	0	1312	1712.4	22.51	23.5	1.256	0.02	0.938	**1.178**
	WCDMA Band IV	RMC 12.2K	Bottom Face	0	1513	1752.6	22.45	23.5	1.274	0.09	0.799	1.018
	WCDMA Band IV	RMC 12.2K	Curved surface of Edge1	0	1312	1712.4	22.51	23.5	1.256	0.06	0.610	0.766
	WCDMA Band II	RMC 12.2K	Bottom Face	0	9400	1880	22.53	23.5	1.250	0.07	0.496	0.620
	WCDMA Band II	RMC 12.2K	Edge 1	0	9400	1880	22.53	23.5	1.250	0.08	0.919	1.149
	WCDMA Band II	RMC 12.2K	Edge 2	0	9400	1880	22.53	23.5	1.250	0.02	0.024	0.030
	WCDMA Band II	RMC 12.2K	Edge 1	0	9262	1852.4	22.51	23.5	1.256	0.03	0.633	0.795
	WCDMA Band II	RMC 12.2K	Edge 1	0	9538	1907.6	22.45	23.5	1.274	0.02	0.956	1.217
	WCDMA Band II	RMC 12.2K	Curved surface of Edge1	0	9538	1907.6	22.45	23.5	1.274	0.04	1.130	1.439
	WCDMA Band II	RMC 12.2K	Curved surface of Edge1	0	9262	1852.4	22.51	23.5	1.256	-0.01	0.876	1.100
#05	WCDMA Band II	RMC 12.2K	Curved surface of Edge1	0	9400	1880	22.53	23.5	1.250	-0.07	1.160	**1.450**

<LTE SAR>

Plot No.	Band	BW (MHz)	Mode	RB Size	RB offset	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 4	20M	QPSK	1	49	Bottom Face	0	20050	1720	23.41	23.5	1.021	-0.07	0.361	0.369
	LTE Band 4	20M	QPSK	1	49	Edge 1	0	20050	1720	23.41	23.5	1.021	-0.12	0.466	0.476
	LTE Band 4	20M	QPSK	1	49	Edge 2	0	20050	1720	23.41	23.5	1.021	0.05	0.043	0.044
	LTE Band 4	20M	QPSK	1	49	Curved surface of Edge1	0	20050	1720	23.41	23.5	1.021	0.02	0.608	0.621
	LTE Band 4	20M	QPSK	50	24	Bottom Face	0	20050	1720	22.38	23	1.153	-0.01	0.332	0.383
	LTE Band 4	20M	QPSK	50	24	Edge 1	0	20050	1720	22.38	23	1.153	0.06	0.482	0.556
	LTE Band 4	20M	QPSK	50	24	Edge 2	0	20050	1720	22.38	23	1.153	0.11	0.041	0.047
#06	LTE Band 4	20M	QPSK	50	24	Curved surface of Edge1	0	20050	1720	22.38	23	1.153	0.03	0.602	**0.694**
	LTE Band 7	20M	QPSK	1	49	Bottom Face	0	21350	2560	22.92	23.5	1.143	0.08	0.686	0.784
	LTE Band 7	20M	QPSK	1	49	Edge 1	0	21350	2560	22.92	23.5	1.143	0.07	0.713	0.815
	LTE Band 7	20M	QPSK	1	49	Edge 2	0	21350	2560	22.92	23.5	1.143	0.01	0.016	0.018
	LTE Band 7	20M	QPSK	1	49	Edge 1	0	20850	2510	22.58	23.5	1.236	0.08	0.945	1.168
	LTE Band 7	20M	QPSK	1	49	Edge 1	0	21100	2535	22.87	23.5	1.156	0.14	0.936	1.082
	LTE Band 7	20M	QPSK	1	49	Curved surface of Edge1	0	20850	2510	22.58	23.5	1.236	0.09	1.140	1.409
#07	LTE Band 7	20M	QPSK	1	49	Curved surface of Edge1	0	21100	2535	22.87	23.5	1.156	0.14	1.240	**1.434**
	LTE Band 7	20M	QPSK	1	49	Curved surface of Edge1	0	21350	2560	22.92	23.5	1.143	0.17	1.010	1.154
	LTE Band 7	20M	QPSK	50	24	Bottom Face	0	21350	2560	22.01	22.5	1.119	0.03	0.663	0.742
	LTE Band 7	20M	QPSK	50	24	Edge 1	0	21350	2560	22.01	22.5	1.119	0.04	0.719	0.805
	LTE Band 7	20M	QPSK	50	24	Edge 2	0	21350	2560	22.01	22.5	1.119	-0.04	0.016	0.018
	LTE Band 7	20M	QPSK	50	24	Edge 1	0	20850	2510	21.48	22.5	1.265	0.04	0.902	1.141
	LTE Band 7	20M	QPSK	50	24	Edge 1	0	21100	2535	21.79	22.5	1.178	0.03	0.895	1.054
	LTE Band 7	20M	QPSK	50	24	Curved surface of Edge1	0	20850	2510	21.48	22.5	1.265	0.12	1.120	1.417
	LTE Band 7	20M	QPSK	50	24	Curved surface of Edge1	0	21100	2535	21.79	22.5	1.178	0.16	1.160	1.366
	LTE Band 7	20M	QPSK	50	24	Curved surface of Edge1	0	21350	2560	22.01	22.5	1.119	0.09	0.990	1.108
	LTE Band 7	20M	QPSK	100	0	Bottom Face	0	21350	2560	21.89	22.5	1.151	0.01	0.725	0.834
	LTE Band 7	20M	QPSK	100	0	Edge 1	0	21350	2560	21.89	22.5	1.151	0.05	0.779	0.896
	LTE Band 7	20M	QPSK	100	0	Edge 2	0	21350	2560	21.89	22.5	1.151	-0.06	0.017	0.020
	LTE Band 7	20M	QPSK	100	0	Curved surface of Edge1	0	21350	2560	21.89	22.5	1.151	0.06	1.090	1.254
	LTE Band 17	10M	QPSK	1	24	Bottom Face	0	23790	710	22.61	23.5	1.227	0.07	0.765	0.939
	LTE Band 17	10M	QPSK	1	24	Edge 1	0	23790	710	22.61	23.5	1.227	0.03	0.299	0.367
	LTE Band 17	10M	QPSK	1	24	Edge 2	0	23790	710	22.61	23.5	1.227	0.07	0.112	0.137
	LTE Band 17	10M	QPSK	1	24	Bottom Face	0	23780	709	22.21	23.5	1.346	0.05	0.624	0.840
	LTE Band 17	10M	QPSK	1	24	Bottom Face	0	23800	711	22.46	23.5	1.271	0.08	0.762	0.968
	LTE Band 17	10M	QPSK	1	24	Curved surface of Edge1	0	23800	710	22.46	23.5	1.271	0.09	0.403	0.512
	LTE Band 17	10M	QPSK	25	12	Bottom Face	0	23790	710	22.44	23	1.138	0.06	0.732	0.833
	LTE Band 17	10M	QPSK	25	12	Edge 1	0	23790	710	22.44	23	1.138	0.05	0.270	0.307
	LTE Band 17	10M	QPSK	25	12	Edge 2	0	23790	710	22.44	23	1.138	0.07	0.103	0.117
#08	LTE Band 17	10M	QPSK	25	12	Bottom Face	0	23780	709	22.02	23	1.253	0.08	0.786	**0.985**
	LTE Band 17	10M	QPSK	25	12	Bottom Face	0	23800	711	22.25	23	1.189	0.01	0.774	0.920
	LTE Band 17	10M	QPSK	25	12	Curved surface of Edge1	0	23780	709	22.02	23	1.253	0.07	0.394	0.494
	LTE Band 17	10M	QPSK	50	0	Bottom Face	0	23790	710	22.24	23	1.191	-0.02	0.711	0.847
	LTE Band 17	10M	QPSK	50	0	Edge 1	0	23790	710	22.24	23	1.191	0.05	0.246	0.293
	LTE Band 17	10M	QPSK	50	0	Edge 2	0	23790	710	22.24	23	1.191	0.08	0.087	0.104
	LTE Band 17	10M	QPSK	50	0	Curved surface of Edge1	0	23790	710	22.24	23	1.191	0.09	0.389	0.463

<DTS WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
#09	WLAN 2.4GHz	802.11b, 1Mbps	Bottom Face	0	1	2412	14.33	15	1.167	0.05	0.645	**0.753**
	WLAN 2.4GHz	802.11b, 1Mbps	Edge1	0	1	2412	14.33	15	1.167	-0.05	0.250	0.292
	WLAN 2.4GHz	802.11b, 1Mbps	Curved surface of Edge1	0	1	2412	14.33	15	1.167	0.08	0.314	0.366

15.2 Repeated SAR Measurement

No.	Band	BW (MHz)	Mode	RB Size	RB offset	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WCDMA Band V		RMC 12.2K			Bottom Face	0	4233	846.6	22.46	23.5	1.271	0.06	0.834	1	1.060
2nd	WCDMA Band V		RMC 12.2K			Bottom Face	0	4233	846.6	22.46	23.5	1.271	0.09	0.799	1.044	1.015
1st	WCDMA Band IV		RMC 12.2K			Bottom Face	0	1312	1712.4	22.51	23.5	1.256	0.02	0.938	1	1.178
2nd	WCDMA Band IV		RMC 12.2K			Bottom Face	0	1312	1712.4	22.51	23.5	1.256	0.12	0.909	1.032	1.142
1st	WCDMA Band II		RMC 12.2K			Curved surface of Edge1	0	9400	1880	22.53	23.5	1.250	-0.07	1.160	1	1.450
2nd	WCDMA Band II		RMC 12.2K			Curved surface of Edge1	0	9400	1880	22.53	23.5	1.250	0.05	1.150	1.009	1.438
1st	LTE Band 7	20M	QPSK	1	49	Curved surface of Edge1	0	21100	2535	22.87	23.5	1.156	0.14	1.240	1	1.434
2nd	LTE Band 7	20M	QPSK	1	49	Curved surface of Edge1	0	21100	2535	22.87	23.5	1.156	-0.08	1.230	1.008	1.422

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	Tablet	Note
		Body	
1.	GPRS/EDGE(data) + WLAN2.4GHz(data)	Yes	2.4GHz Hotspot
2.	WCDMA(data) + WLAN2.4GHz(data)	Yes	2.4GHz Hotspot
3.	LTE(data) + WLAN2.4GHz(data)	Yes	2.4GHz Hotspot
4.	GPRS/EDGE(data) + Bluetooth(data)	Yes	Bluetooth Tethering
5.	WCDMA(data) + Bluetooth(data)	Yes	Bluetooth Tethering
6.	LTE(data) + Bluetooth(data)	Yes	Bluetooth Tethering

General Note:

1. WLAN2.4GHz and Bluetooth share the same antenna, and cannot transmit simultaneously.
2. EUT will choose each of GSM, WCDMA and LTE according to the network signal condition; therefore, they will not transmit simultaneously at any moment.
3. The Reported SAR summation is calculated based on the same configuration and test position.
4. Per KDB 447498 D01v05r02, simultaneous transmission SAR is compliant if,
   i) Scalar SAR summation < 1.6W/kg.
   ii) SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (*min. separation distance, mm*), and the peak separation distance is determined from the square root of $[(x_1-x_2)^2 + (y_1-y_2)^2 + (z_1-z_2)^2]$, where (x_1, y_1, z_1) and (x_2, y_2, z_2) are the coordinates of the extrapolated peak SAR locations in the zoom scan
   iii) If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary
   iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg
5. 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.
   iv) Bluetooth estimated SAR is conservatively determined by 5mm separation, for all applicable exposure positions.

Bluetooth Max Power	Exposure Position	All Positions
4.0 dBm	Estimated SAR (W/kg)	0.126 W/kg

16.1 Tablet Body Exposure Conditions

<WWAN + WLAN>

WWAN Band		Exposure Position	WWAN PCB Max. WWAN SAR (W/kg)	WLAN DTS Max. WLAN SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Bottom Face	0.791	0.753	1.54		
		Edge1	0.638	0.292	0.93		
		Edge2	0.214		0.21		
		Curved surface of Edge1	0.729	0.366	1.10		
	GSM1900	Bottom Face	0.330	0.753	1.08		
		Edge1	0.518	0.292	0.81		
		Edge2	0.032		0.03		
		Curved surface of Edge1	0.707	0.366	1.07		
WCDMA	Band V	Bottom Face	1.060	0.753	**1.81**	**0.02**	**#1**
		Edge1	0.576	0.292	0.87		
		Edge2	0.166		0.17		
		Curved surface of Edge1	0.837	0.366	1.20		
	Band IV	Bottom Face	1.178	0.753	**1.93**	**0.02**	**#2**
		Edge1	0.671	0.292	0.96		
		Edge2	0.058		0.06		
		Curved surface of Edge1	0.766	0.366	1.13		
	Band II	Bottom Face	0.620	0.753	1.37		
		Edge1	1.217	0.292	1.51		
		Edge2	0.030		0.03		
		Curved surface of Edge1	1.450	0.366	**1.82**	**0.02**	**#3**
LTE	Band 4	Bottom Face	0.383	0.753	1.14		
		Edge1	0.556	0.292	0.85		
		Edge2	0.047		0.05		
		Curved surface of Edge1	0.694	0.366	1.06		
	Band 7	Bottom Face	0.834	0.753	**1.59**		
		Edge1	1.168	0.292	1.46		
		Edge2	0.020		0.02		
		Curved surface of Edge1	1.434	0.366	**1.80**	**0.02**	**#4**
	Band 17	Bottom Face	0.985	0.753	**1.74**	**0.02**	**#5**
		Edge1	0.367	0.292	0.66		
		Edge2	0.137		0.14		
		Curved surface of Edge1	0.512	0.366	0.88		

<WWAN + Bluetooth>

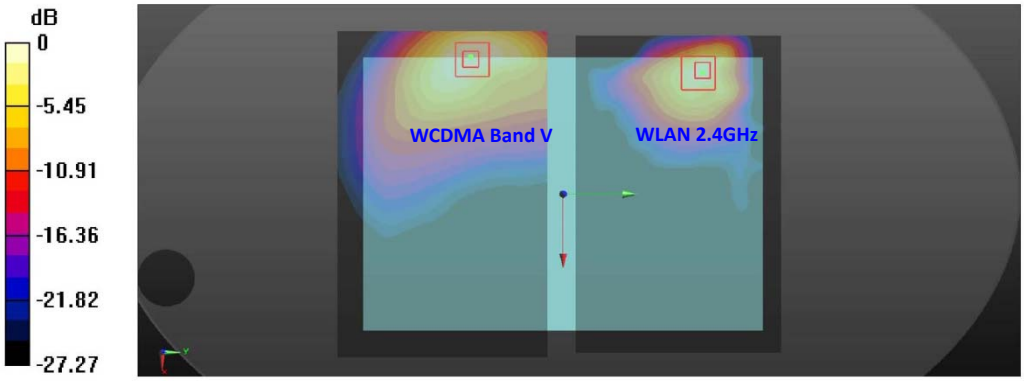
WWAN Band		Exposure Position	WWAN PCB Max. WWAN SAR (W/kg)	Bluetooth DSS Estimated SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Bottom Face	0.791	0.126	0.92		
		Edge1	0.638	0.126	0.76		
		Edge2	0.214	0.126	0.34		
		Curved surface of Edge1	0.729	0.126	0.86		
	GSM1900	Bottom Face	0.330	0.126	0.46		
		Edge1	0.518	0.126	0.64		
		Edge2	0.032	0.126	0.16		
		Curved surface of Edge1	0.707	0.126	0.83		
WCDMA	Band V	Bottom Face	1.060	0.126	1.19		
		Edge1	0.576	0.126	0.70		
		Edge2	0.166	0.126	0.29		
		Curved surface of Edge1	0.837	0.126	0.96		
	Band IV	Bottom Face	1.178	0.126	1.30		
		Edge1	0.671	0.126	0.80		
		Edge2	0.058	0.126	0.18		
		Curved surface of Edge1	0.766	0.126	0.89		
	Band II	Bottom Face	0.620	0.126	0.75		
		Edge1	1.217	0.126	1.34		
		Edge2	0.030	0.126	0.16		
		Curved surface of Edge1	1.450	0.126	**1.58**		
LTE	Band 4	Bottom Face	0.383	0.126	0.51		
		Edge1	0.556	0.126	0.68		
		Edge2	0.047	0.126	0.17		
		Curved surface of Edge1	0.694	0.126	0.82		
	Band 7	Bottom Face	0.834	0.126	0.96		
		Edge1	1.168	0.126	1.29		
		Edge2	0.020	0.126	0.15		
		Curved surface of Edge1	1.434	0.126	1.56		
	Band 17	Bottom Face	0.985	0.126	1.11		
		Edge1	0.367	0.126	0.49		
		Edge2	0.137	0.126	0.26		
		Curved surface of Edge1	0.512	0.126	0.64		

16.2 SPLSR Evaluation and Analysis

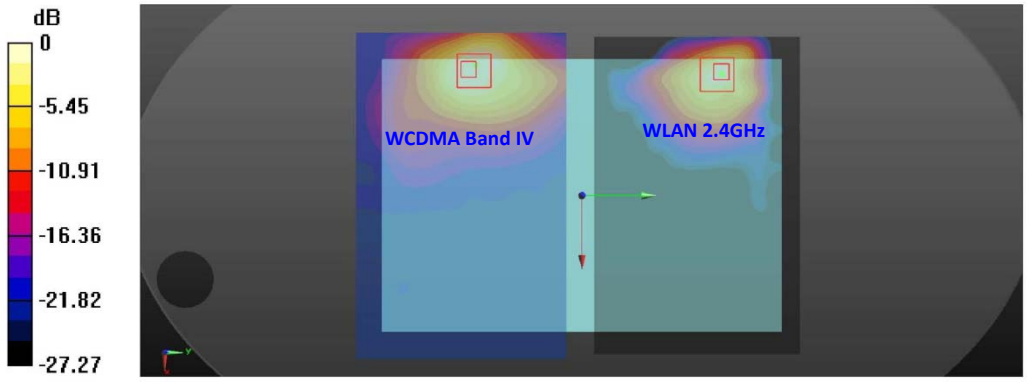
General Note:

SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (*min. separation distance, mm*). If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary

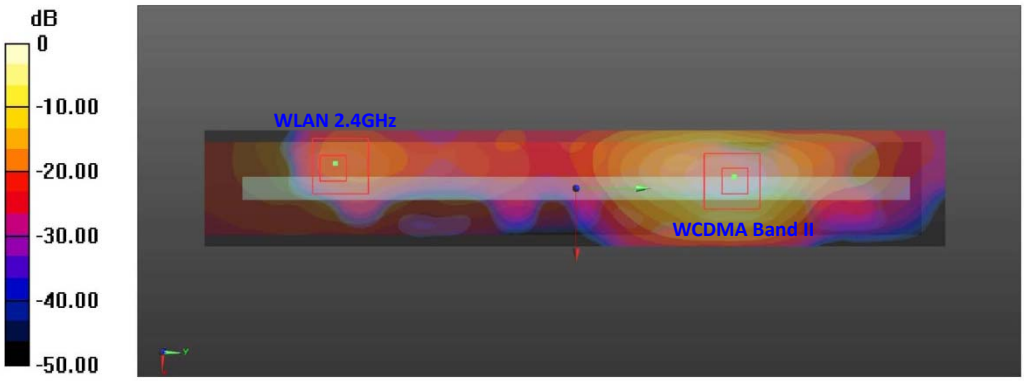
Case No #1 / Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
Bottom Face	WCDMA Band V	1.060	0	-0.0895	-0.0585	-0.179	148.5	1.81	0.02	Not required
	WLAN2.4GHz	0.753	0	-0.078	0.0896	-0.179				



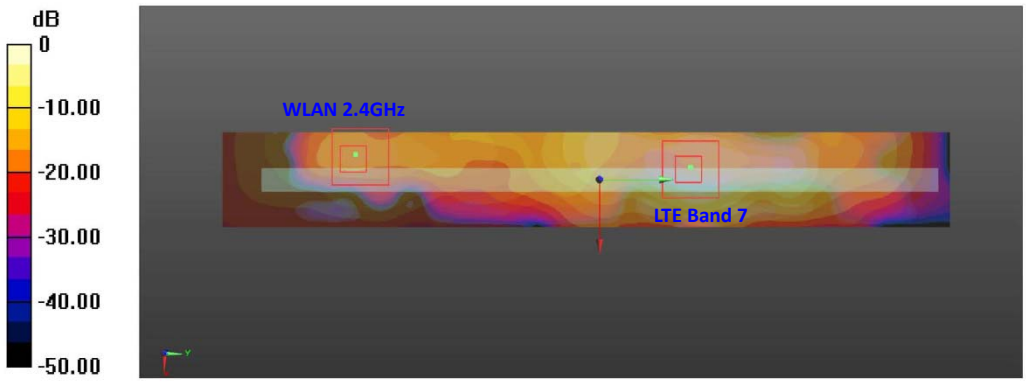
Case No #2 / Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
Bottom Face	WCDMA Band IV	1.178	0	-0.077	-0.0755	-0.179	165.1	1.93	0.02	Not required
	WLAN2.4GHz	0.753	0	-0.078	0.0896	-0.179				



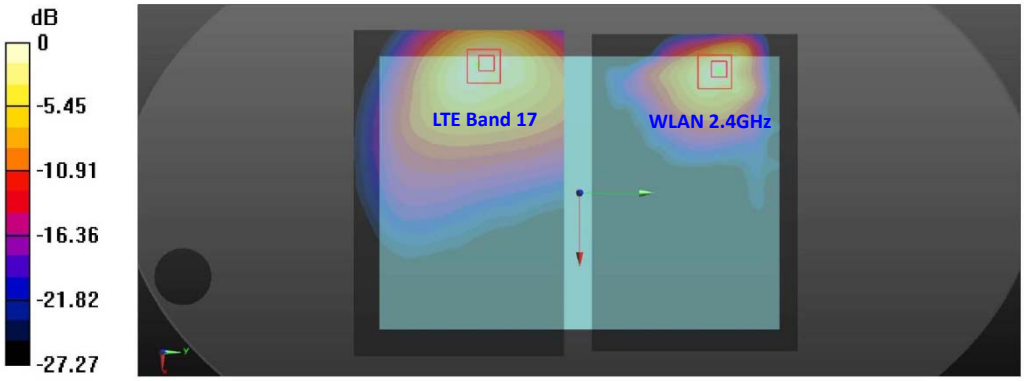
Case No #3 / Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
Curved surface of Edge1	WCDMA Band II	1.450	0	-0.0055	0.062	-0.18	159.7	1.82	0.02	Not required
	WLAN2.4GHz	0.366	0	-0.0096	-0.0976	-0.18				



Case No #4 / Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
Curved surface of Edge1	LTE Band 7	1.434	0	-0.0048	0.0346	-0.18	132.3	1.80	0.02	Not required
	WLAN2.4GHz	0.366	0	-0.0096	-0.0976	-0.18				



Case No #5 Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
				X	Y	Z				
Bottom Face	LTE Band 17	0.985	0	-0.0835	-0.0565	-0.18	146.2	1.74	0.02	Not required
	WLAN2.4GHz	0.753	0	-0.078	0.0896	-0.179				



Test Engineer : Kat Yin

17. Uncertainty Assessment

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

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

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in Table 14.1

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

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

(b) κ is the coverage factor

Table 17.1. Standard Uncertainty for Assumed Distribution

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

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

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

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

18. References

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

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

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

[4] SPEAG DASY System Handbook

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

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

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

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

[9] FCC KDB 616217 D04 v01r01, “SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers”, May 2013

[10] FCC KDB 941225 D01 v02, “SAR Measurement Procedures for 3G Devices – CDMA 2000 / Ev-Do / WCDMA / HSDPA / HSPA”, October 2007

[11] FCC KDB 941225 D02 v02r02, “SAR Guidance for HSPA, HSPA+, DC-HSDPA and 1x-Advanced”, May 2013

[12] FCC KDB 941225 D03 v01, “Recommended SAR Test Reduction Procedures for GSM / GPRS / EDGE”, December 2008

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

Appendix A. Plots of System Performance Check

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014/4/10

System Check_Body_750MHz_140410

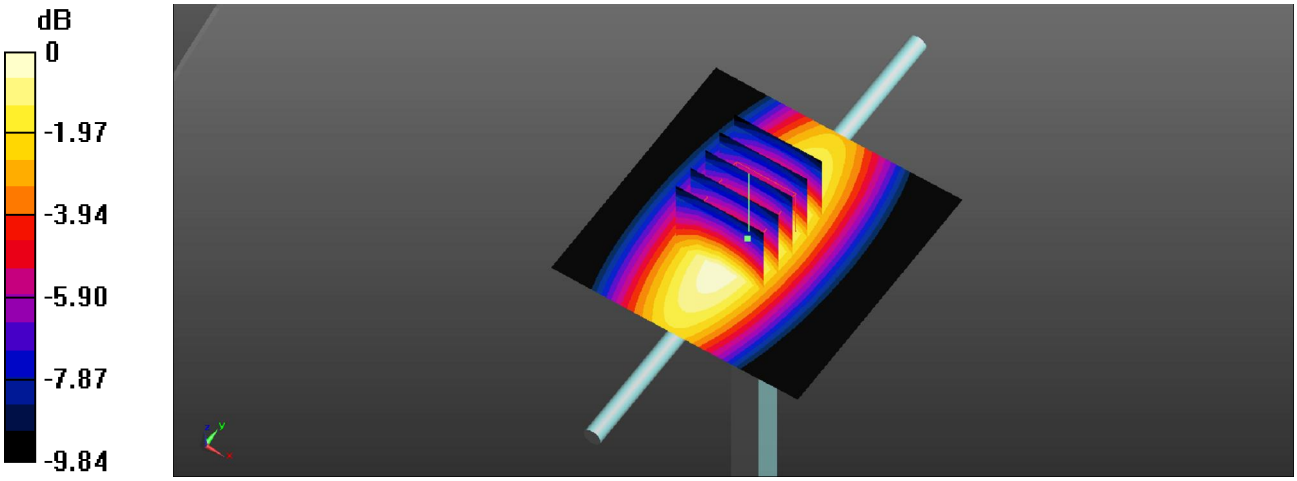
DUT: D750V3 - SN: 1099

Communication System: CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium: MSL_750_140410 Medium parameters used: f = 750 MHz; σ = 0.967 S/m; ε_r = 53.993; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3898; ConvF(10.18, 10.18, 10.18); Calibrated: 2014/3/10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1353; Calibrated: 2014/1/30
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1201
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.8 (7028)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.57 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 47.797 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 2.97 W/kg
SAR(1 g) = 2.06 W/kg; SAR(10 g) = 1.38 W/kg
Maximum value of SAR (measured) = 2.55 W/kg



0 dB = 2.55 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014/4/7

System Check_Body_835MHz_140407

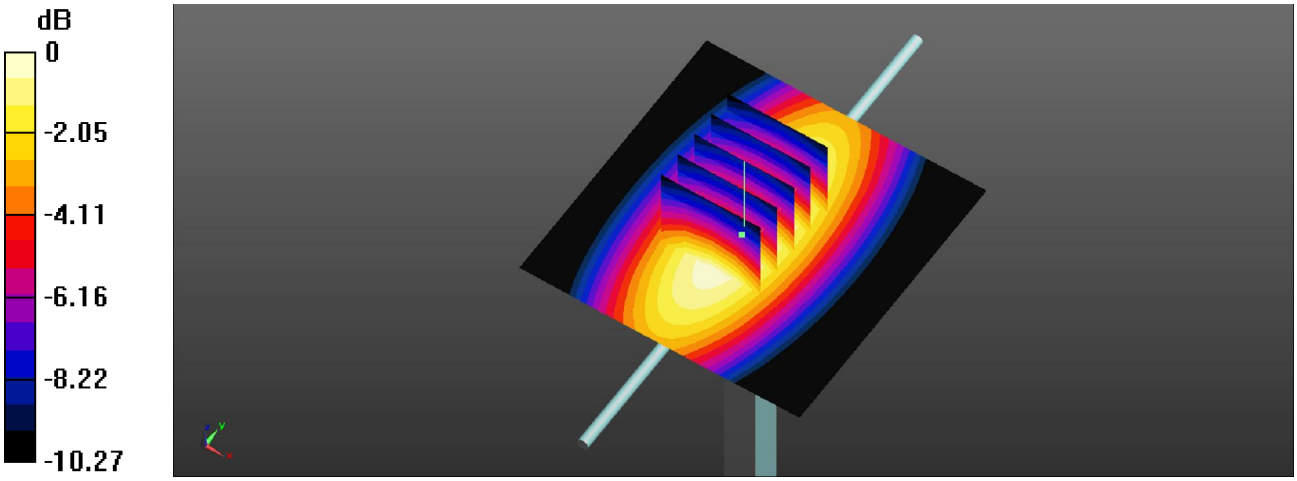
DUT: D835V2 - SN: 4d151

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_835_140407 Medium parameters used: f = 835 MHz; σ = 0.974 S/m; ε_r = 54.252; ρ = 1000 kg/m^3
Ambient Temperature：23.1 ℃; Liquid Temperature ：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3898; ConvF(9.63, 9.63, 9.63); Calibrated: 2014/3/10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1353; Calibrated: 2014/1/30
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1201
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.8 (7028)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.45 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 50.121 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.31 W/kg
SAR(1 g) = 2.27 W/kg; SAR(10 g) = 1.5 W/kg
Maximum value of SAR (measured) = 2.43 W/kg



0 dB = 2.43 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014/4/8

System Check_Body_1750MHz_140408

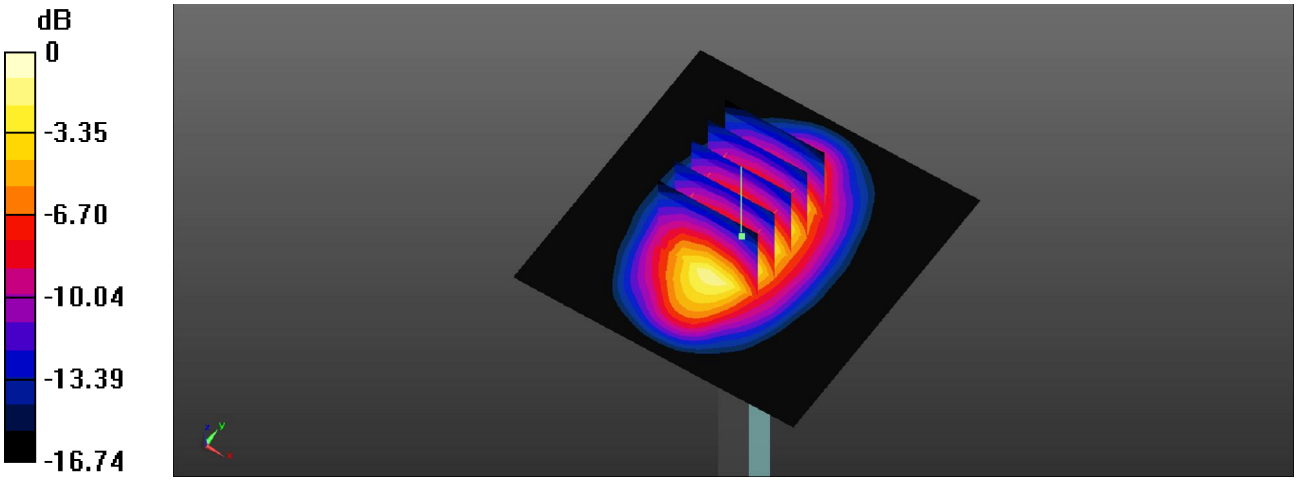
DUT: D1750V2 - SN: 1090

Communication System: CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: MSL_1750_140408 Medium parameters used: f = 1750 MHz; σ = 1.539 S/m; ε_r = 54.578; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3898; ConvF(8.16, 8.16, 8.16); Calibrated: 2014/3/10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1353; Calibrated: 2014/1/30
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1201
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.8 (7028)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 12.9 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 94.701 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 16.0 W/kg
SAR(1 g) = 9.17 W/kg; SAR(10 g) = 4.9 W/kg
Maximum value of SAR (measured) = 12.8 W/kg



0 dB = 12.8 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014/4/20

System Check_Body_1900MHz_140420

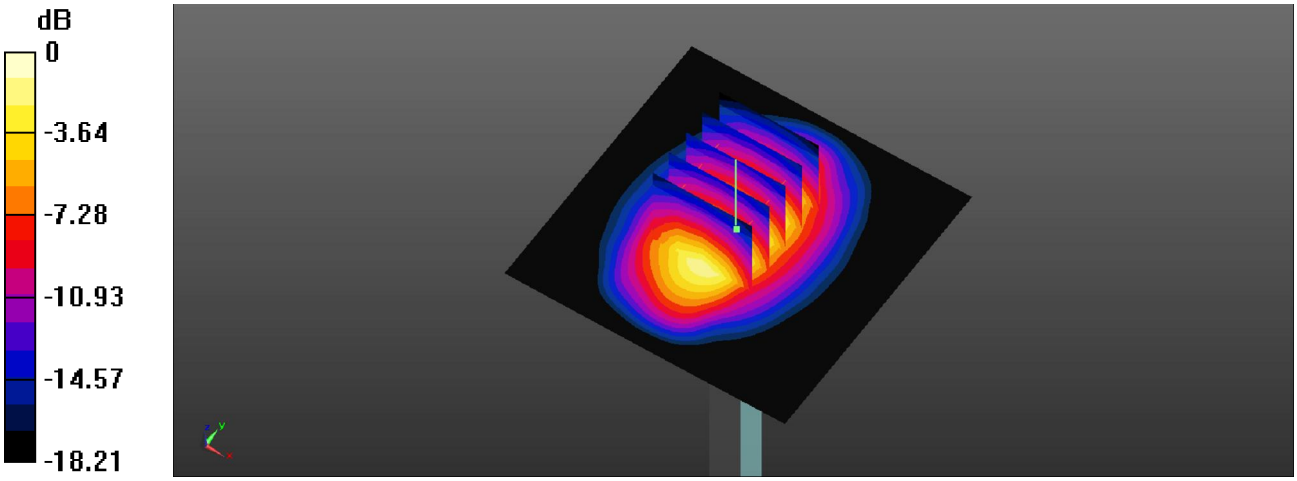
DUT: D1900V2 - SN: 5d170

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_140420 Medium parameters used: f = 1900 MHz; σ = 1.501 S/m; ε_r = 53.849; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3898; ConvF(7.83, 7.83, 7.83); Calibrated: 2014/3/10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1353; Calibrated: 2014/1/30
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1201
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.8 (7028)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 14.6 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 85.872 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 18.6 W/kg
SAR(1 g) = 10.3 W/kg; SAR(10 g) = 5.32 W/kg
Maximum value of SAR (measured) = 14.7 W/kg



0 dB = 14.7 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014/4/15

System Check_Body_2450MHz_140415

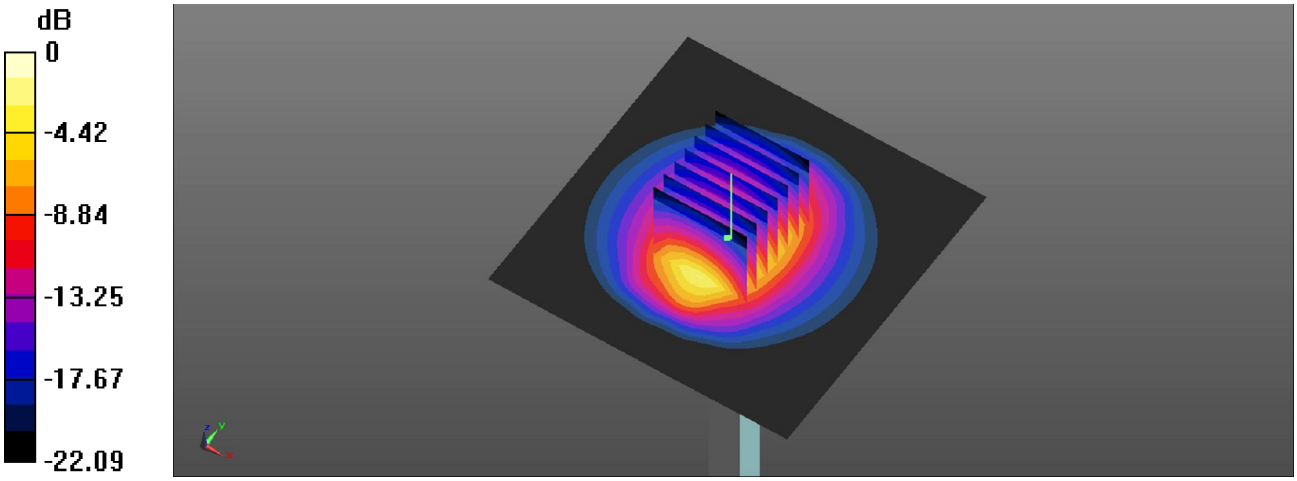
DUT: D2450V2 - SN: 908

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL_2450_140415 Medium parameters used: f = 2450 MHz; σ = 1.989 S/m; ε_r = 51.267; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3898; ConvF(7.49, 7.49, 7.49); Calibrated: 2014/3/10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1353; Calibrated: 2014/1/30
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1201
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.8 (7028)

Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 18.6 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 83.546 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 24.8 W/kg
SAR(1 g) = 12.2 W/kg; SAR(10 g) = 5.61 W/kg
Maximum value of SAR (measured) = 18.5 W/kg



0 dB = 18.5 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014/4/11

System Check_Body_2600MHz_140411

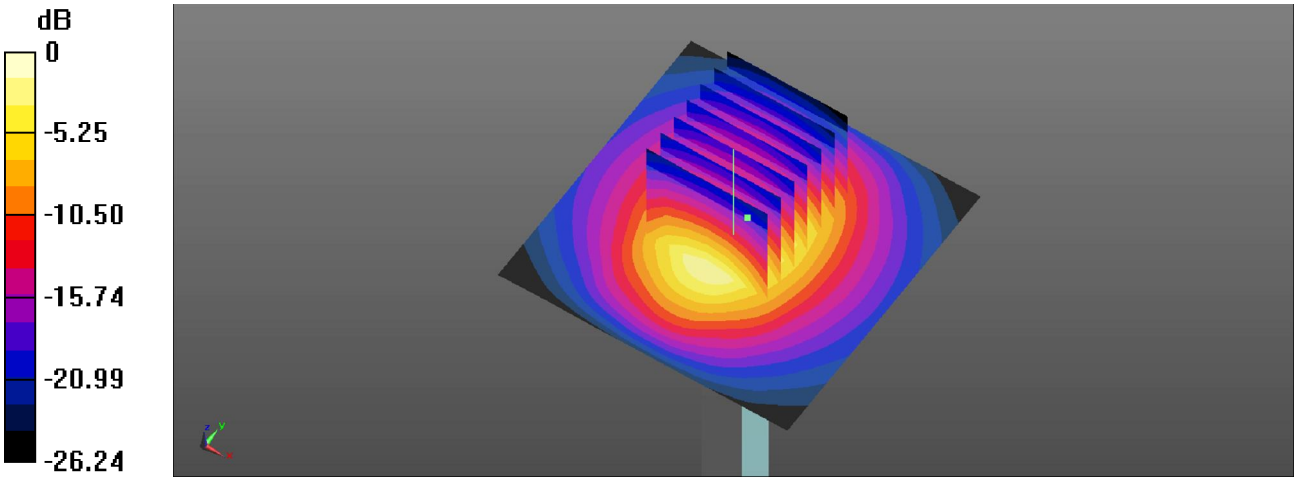
DUT: D2600V2 - SN: 1061

Communication System: CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: MSL_2600_140411 Medium parameters used: f = 2600 MHz; σ = 2.165 S/m; ε_r = 53.823; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3898; ConvF(7.06, 7.06, 7.06); Calibrated: 2014/3/10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1353; Calibrated: 2014/1/30
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1201
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.8 (7028)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 25.1 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 104.4 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 34.0 W/kg
SAR(1 g) = 14.7 W/kg; SAR(10 g) = 6.48 W/kg
Maximum value of SAR (measured) = 23.2 W/kg



0 dB = 23.2 W/kg

Appendix B. Plots of High SAR Measurement

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014/4/7

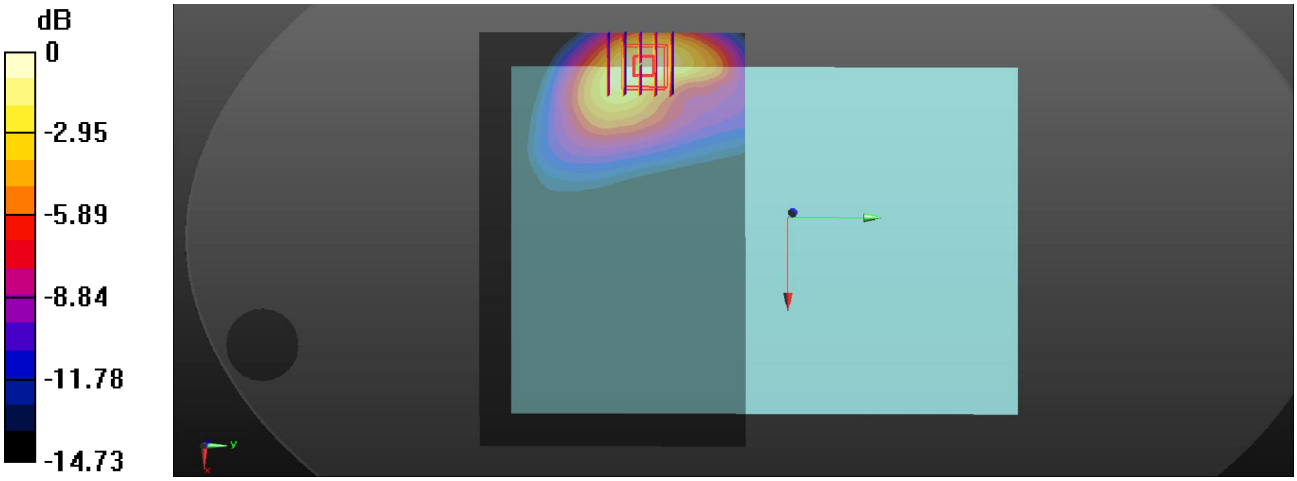
#01 GSM850_GPRS (2 Tx slots)_Bottom Face_0cm_Ch128

Communication System: GPRS (GMSK 2 Tx slot); Frequency: 824.2 MHz;Duty Cycle: 1:4.15
Medium: MSL_835_140407 Medium parameters used: f = 824.2 MHz; σ = 0.964 S/m; ε_r = 54.331; ρ = 1000 kg/m^3
Ambient Temperature：23.1 ℃; Liquid Temperature ：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3898; ConvF(9.63, 9.63, 9.63); Calibrated: 2014/3/10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1353; Calibrated: 2014/1/30
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1201
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.8 (7028)

Ch128/Area Scan (141x91x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.980 W/kg

Ch128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.388 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.27 W/kg
SAR(1 g) = 0.710 W/kg; SAR(10 g) = 0.405 W/kg
Maximum value of SAR (measured) = 1.00 W/kg



0 dB = 1.00 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014/4/20

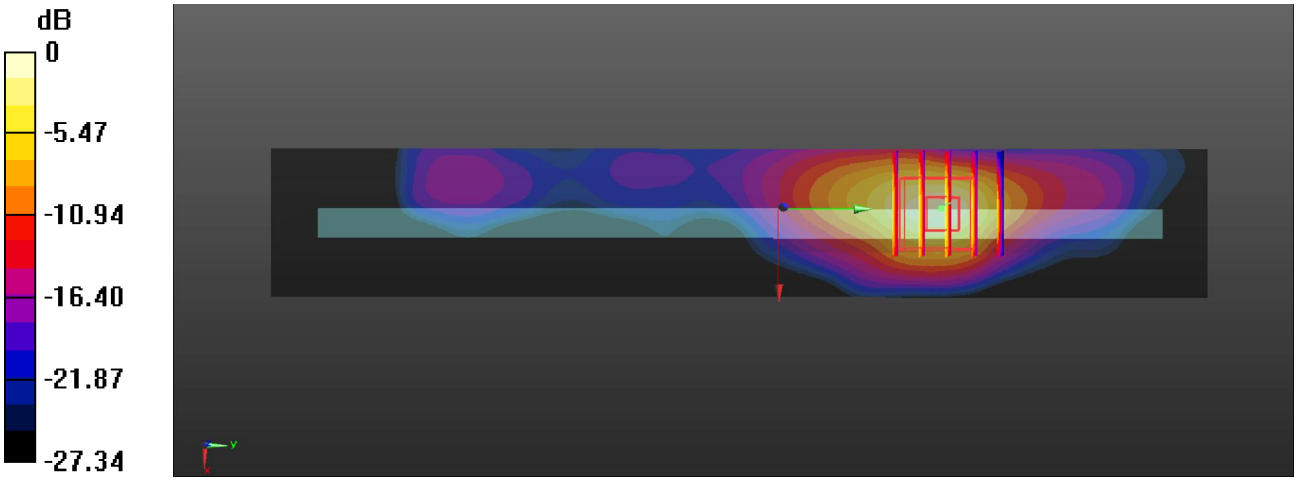
#02 GSM1900_GPRS (2 Tx slots)_Curved surface of Edge1_0cm_Ch512

Communication System: GPRS (GMSK 2 Tx slot); Frequency: 1850.2 MHz;Duty Cycle: 1:4.15
Medium: MSL_1900_140420 Medium parameters used: f = 1850.2 MHz; σ = 1.44 S/m; ε_r = 53.854; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3898; ConvF(7.83, 7.83, 7.83); Calibrated: 2014/3/10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1353; Calibrated: 2014/1/30
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1201
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.8 (7028)

Ch512/Area Scan (31x191x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.881 W/kg

Ch512/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.905 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 1.25 W/kg
SAR(1 g) = 0.600 W/kg; SAR(10 g) = 0.263 W/kg
Maximum value of SAR (measured) = 0.905 W/kg



0 dB = 0.905 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014/4/7

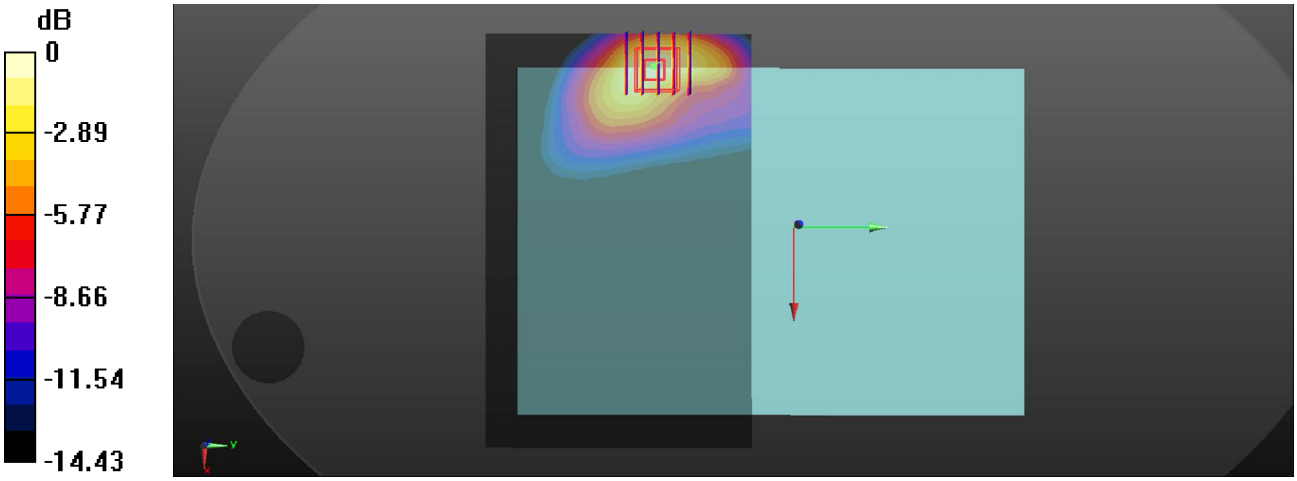
#03 WCDMA Band V_RMC 12.2K_Bottom Face_0cm_Ch4233

Communication System: WCDMA ; Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium: MSL_835_140407 Medium parameters used: f = 846.6 MHz; σ = 0.986 S/m; ε_r = 54.145; ρ = 1000 kg/m^3
Ambient Temperature：23.1 ℃; Liquid Temperature ：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3898; ConvF(9.63, 9.63, 9.63); Calibrated: 2014/3/10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1353; Calibrated: 2014/1/30
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1201
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.8 (7028)

Ch4233/Area Scan (141x91x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.11 W/kg

Ch4233/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.237 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.50 W/kg
SAR(1 g) = 0.834 W/kg; SAR(10 g) = 0.472 W/kg
Maximum value of SAR (measured) = 1.12 W/kg



0 dB = 1.12 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014/4/8

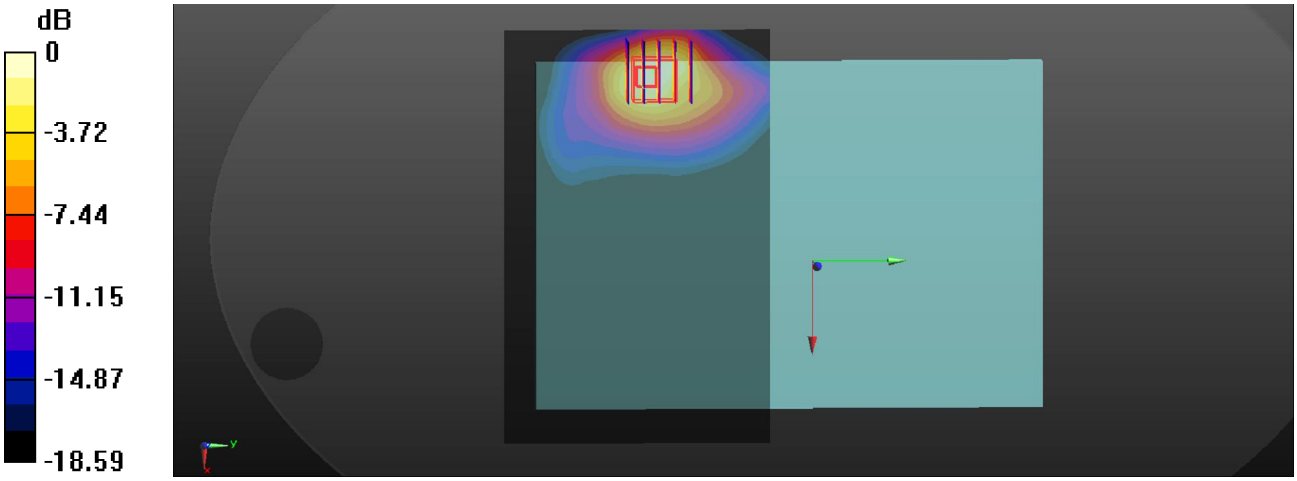
#04 WCDMA Band IV_RMC 12.2K_Bottom Face_0cm_Ch1312

Communication System: WCDMA ; Frequency: 1712.4 MHz;Duty Cycle: 1:1
Medium: MSL_1750_140408 Medium parameters used: f = 1712.4 MHz; σ = 1.487 S/m; ε_r = 54.734; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3898; ConvF(8.16, 8.16, 8.16); Calibrated: 2014/3/10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1353; Calibrated: 2014/1/30
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1201
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.8 (7028)

Ch1312/Area Scan (141x91x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.38 W/kg

Ch1312/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.132 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.92 W/kg
SAR(1 g) = 0.938 W/kg; SAR(10 g) = 0.478 W/kg
Maximum value of SAR (measured) = 1.30 W/kg



0 dB = 1.30 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014/4/20

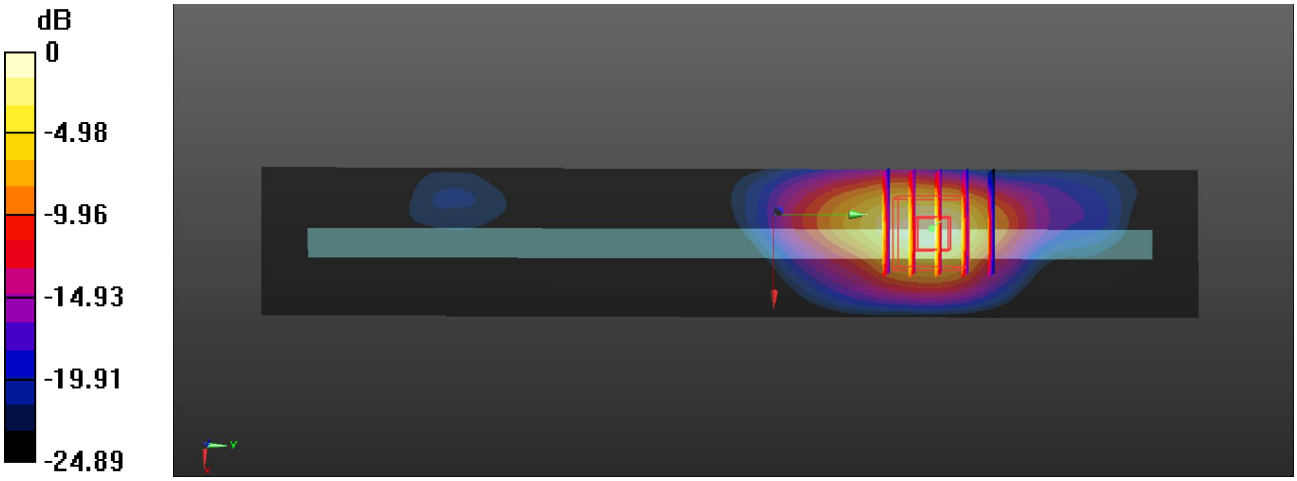
#05 WCDMA Band II_RMC 12.2K_Curved surface of Edge1_0cm_Ch9400

Communication System: WCDMA ; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_140420 Medium parameters used: f = 1880 MHz; σ = 1.479 S/m; ε_r = 53.835; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3898; ConvF(7.83, 7.83, 7.83); Calibrated: 2014/3/10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1353; Calibrated: 2014/1/30
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1201
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.8 (7028)

Ch9400/Area Scan (31x191x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.78 W/kg

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.563 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 2.43 W/kg
SAR(1 g) = 1.16 W/kg; SAR(10 g) = 0.509 W/kg
Maximum value of SAR (measured) = 1.75 W/kg



0 dB = 1.75 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014/4/8

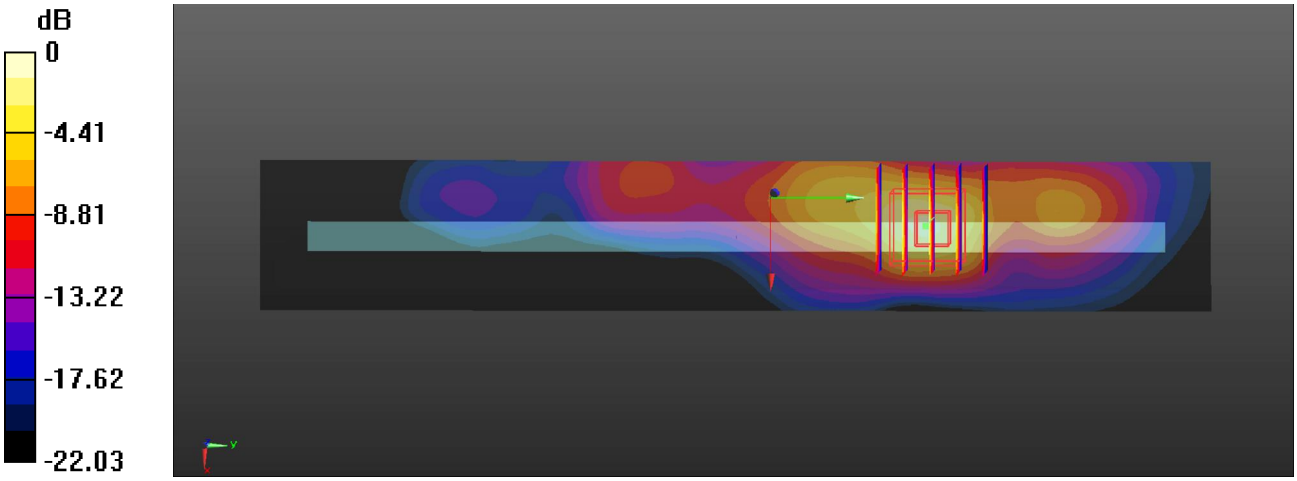
#06 LTE Band 4 _QPSK_20M(50,24)_Curved surface of Edge1_0cm_Ch20050

Communication System: LTE; Frequency: 1720 MHz;Duty Cycle: 1:1
Medium: MSL_1750_140408 Medium parameters used: f = 1720 MHz; σ = 1.494 S/m; ε_r = 54.683; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3898; ConvF(8.16, 8.16, 8.16); Calibrated: 2014/3/10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1353; Calibrated: 2014/1/30
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1201
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.8 (7028)

Ch20050/Area Scan (31x191x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.716 W/kg

Ch20050/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.234 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.25 W/kg
SAR(1 g) = 0.602 W/kg; SAR(10 g) = 0.269 W/kg
Maximum value of SAR (measured) = 0.922 W/kg



0 dB = 0.922 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014/4/11

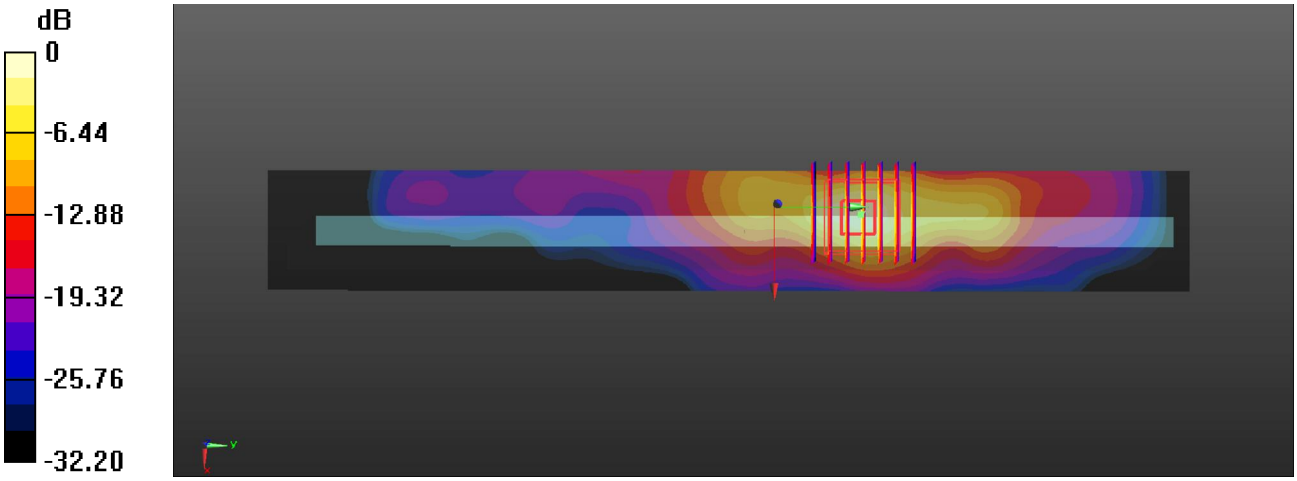
#07 LTE Band 7 _QPSK_20M(1,49)_Curved surface of Edge1_0cm_Ch21100

Communication System: LTE; Frequency: 2535 MHz;Duty Cycle: 1:1
Medium: MSL_2600_140411 Medium parameters used: f = 2535 MHz; σ = 2.091 S/m; ε_r = 53.894; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3898; ConvF(7.06, 7.06, 7.06); Calibrated: 2014/3/10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1353; Calibrated: 2014/1/30
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1201
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.8 (7028)

Ch21100/Area Scan (31x231x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 1.98 W/kg

Ch21100/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.399 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 3.35 W/kg
SAR(1 g) = 1.24 W/kg; SAR(10 g) = 0.428 W/kg
Maximum value of SAR (measured) = 2.18 W/kg



0 dB = 2.18 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014/4/10

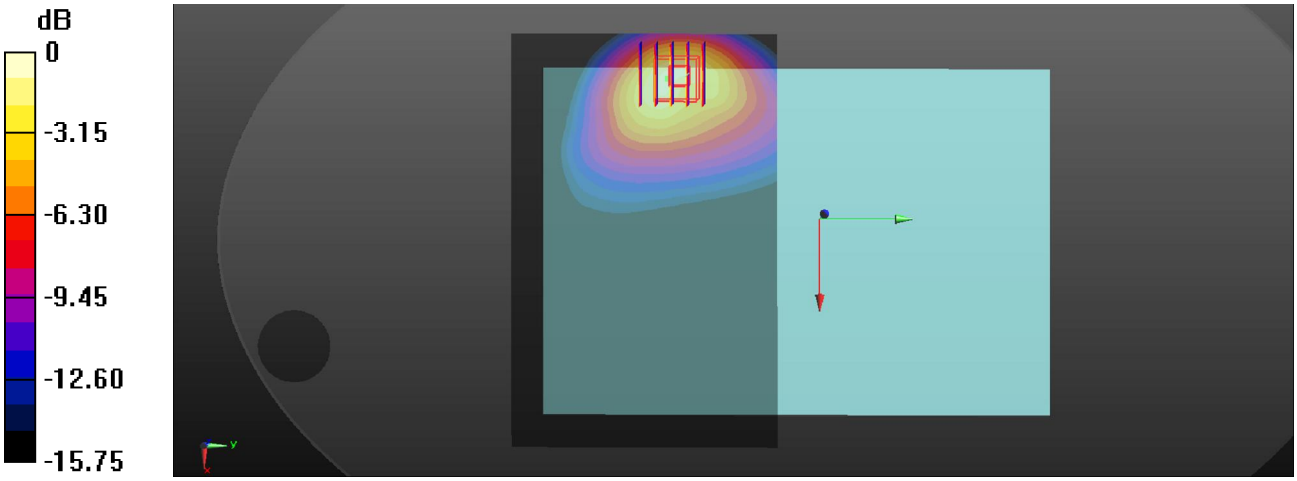
#08 LTE Band 17 _QPSK_10M(25,12)_Bottom Face_0cm_Ch23780

Communication System: LTE; Frequency: 709 MHz;Duty Cycle: 1:1
Medium: MSL_750_140410 Medium parameters used: f = 709 MHz; σ = 0.935 S/m; ε_r = 54.904; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3898; ConvF(10.18, 10.18, 10.18); Calibrated: 2014/3/10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1353; Calibrated: 2014/1/30
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1201
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.8 (7028)

Ch23780/Area Scan (141x91x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.999 W/kg

Ch23780/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.133 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 1.54 W/kg
SAR(1 g) = 0.786 W/kg; SAR(10 g) = 0.436 W/kg
Maximum value of SAR (measured) = 1.19 W/kg



0 dB = 1.19 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014/4/15

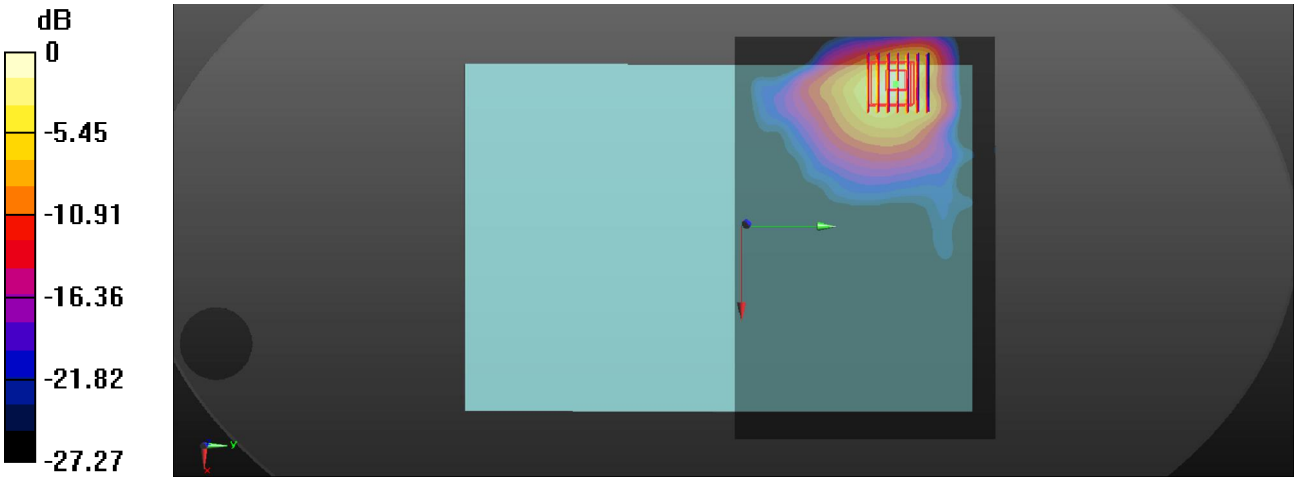
#09 WLAN 2.4GHz_802.11b 1Mbps_Bottom Face_0cm_Ch1

Communication System: 802.11b; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450_140415 Medium parameters used: f = 2412 MHz; σ = 1.937 S/m; ε_r = 51.408; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3898; ConvF(7.49, 7.49, 7.49); Calibrated: 2014/3/10;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1353; Calibrated: 2014/1/30
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1201
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.8 (7028)

Ch1/Area Scan (171x111x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 1.10 W/kg

Ch1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.173 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.65 W/kg
SAR(1 g) = 0.645 W/kg; SAR(10 g) = 0.268 W/kg
Maximum value of SAR (measured) = 1.07 W/kg



0 dB = 1.07 W/kg