FCC SAR Test Report

APPLICANT	:	ZTE CORPORATION
EQUIPMENT	:	CDMA/LTE Multi-mode Digital Mobile Phone
BRAND NAME	:	ZTE
MODEL NAME	:	ZTE N9515
FCC ID	:	SRQ-ZTEN9515
STANDARD	:	FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2003

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

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

Reviewed by: Eric Huang / Deputy Manager

Approved by: Jones Tsai / Manager

Testing Laboratory
2627

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA450908	Rev. 01	Initial issue of report	Jul. 09, 2014

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **ZTE CORPORATION, CDMA/LTE Multi-mode Digital Mobile Phone, ZTE N9515,** are as follows.

Equipment Class	Frequency Band	Operating Mode	Highest SAR Summary			
			Head 1g SAR (W/kg)	Body-worn 1g SAR (W/kg) (Gap 1cm)	Wireless Router 1g SAR (W/kg) (Gap 1cm)	Simultaneous Transmission SAR (W/kg)
PCE	CDMA 2000 BC0	Voice/Data	0.48	0.74	0.83	1.55
	CDMA 2000 BC10	Voice/Data	0.40	0.89	0.90	
	CDMA 2000 BC1	Voice/Data	0.53	1.10	1.14	
	LTE Band 26	Data	0.33	0.61	0.61	
	LTE Band 25	Data	0.48	0.96	0.96	
	LTE Band 41	Data	0.16	1.29	1.29	
DTS	WLAN 2.4GHz Band	Data	< 0.10	0.10	0.10	1.39
NII	WLAN 5.2GHz Band	Data	< 0.10	0.33	-	1.55
	WLAN 5.8GHz Band	Data	< 0.10	< 0.10	-	
DSS	Bluetooth	Data				1.33
Date of Testing:			05/27/2014 ~ 06/21/2014			

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

2. Administration Data

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958

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

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

3. Guidance Standard

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

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2003
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r03
- FCC KDB 865664 D02 SAR Reporting v01r01
- FCC KDB 447498 D01 General RF Exposure Guidance v05r02
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r02
- FCC KDB 248227 D01 SAR meas for 802 11abg v01r02
- FCC KDB 941225 D01 SAR test for 3G devices v02
- FCC KDB 941225 D05 SAR for LTE Devices v02r03
- FCC KDB 941225 D06 Hotspot Mode SAR v01r01

4. Equipment Under Test (EUT)

4.1 General Information

Product Feature & Specification	
Equipment Name	CDMA/LTE Multi-mode Digital Mobile Phone
Brand Name	ZTE
Model Name	ZTE N9515
FCC ID	SRQ-ZTEN9515
IMEI Code	99000142424864
Wireless Technology and Frequency Range	CDMA2000 BC0: 824.7 MHz ~ 848.31 MHz CDMA 2000 BC10: 817.9 MHz ~ 823.1 MHz CDMA 2000 BC1: 1851.25 MHz ~ 1908.75 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 25: 1850.7 MHz ~ 1914.3 MHz LTE Band 41 : 2498.5 MHz ~ 2687.5 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	• CDMA2000 : 1xRTT/1xEv-Do(Rev.0)/1xEv-Do(Rev.A) • LTE: QPSK, 16QAM • 802.11a/b/g/n HT20 • Bluetooth v3.0+EDR，Bluetooth v4.0 LE
HW Version	cwcA
SW Version	N9515V1.0.0B01
EUT Stage	Identical Prototype

Remark:
1. This device 2.4GHz WLAN supports Hotspot operation and 5.2GHz / 5.8GHz supports WiFi Direct (GC only).
2. This device supported VoIP in Ev-Do Rev A (RETAP 4096 bits)/LTE (e.g. 3rd party VoIP).
3. 802.11n-HT40 is not supported in 2.4GHz/5.8GHz WLAN.

4.2 Maximum Tune-up Limit

Average Power (dBm)			
Band	CDMA2000 BC0	CDMA2000 BC1	CDMA2000 BC10
1xRTT RC1 SO55	24.5	24.5	24.5
1xRTT RC3 SO55	24.5	24.5	24.5
1xRTT RC3 SO32 (+ F-SCH)	24.5	24.5	24.5
1xRTT RC3 SO32 (+SCH)	24.5	24.5	24.5
1xEV-DO Rev 0 (RTAP 153.6kbps)	24.5	24.5	24.5
1xEV-DO Rev A (RETAP 4096bits)	24.5	24.5	24.5

LTE Band 25				
Modulation	BW (MHz)	RB size	Target MPR	Target Power (dBm)
QPSK	20	≤ 18	0	23
QPSK	20	> 18	1	22
16QAM	20	≤ 18	1	22
16QAM	20	> 18	2	21
QPSK	15	≤ 16	0	23
QPSK	15	> 16	1	22
16QAM	15	≤ 16	1	22
16QAM	15	> 16	2	21
QPSK	10	≤ 12	0	23
QPSK	10	> 12	1	22
16QAM	10	≤ 12	1	22
16QAM	10	> 12	2	21
QPSK	5	≤ 8	0	23
QPSK	5	> 8	1	22
16QAM	5	≤ 8	1	22
16QAM	5	> 8	2	21
QPSK	3	≤ 4	0	23
QPSK	3	> 4	1	22
16QAM	3	≤ 4	1	22
16QAM	3	> 4	2	21
QPSK	1.4	≤ 5	0	23
QPSK	1.4	> 5	1	22
16QAM	1.4	≤ 5	1	22
16QAM	1.4	> 5	2	21

LTE Band 26				
Modulation	BW (MHz)	RB size	Target MPR	Target Power (dBm)
QPSK	15	≤ 16	0	23
QPSK	15	> 16	1	22
16QAM	15	≤ 16	1	22
16QAM	15	> 16	2	21
QPSK	10	≤ 12	0	23
QPSK	10	> 12	1	22
16QAM	10	≤ 12	1	22
16QAM	10	> 12	2	21
QPSK	5	≤ 8	0	23
QPSK	5	> 8	1	22
16QAM	5	≤ 8	1	22
16QAM	5	> 8	2	21
QPSK	3	≤ 4	0	23
QPSK	3	> 4	1	22
16QAM	3	≤ 4	1	22
16QAM	3	> 4	2	21
QPSK	1.4	≤ 5	0	23
QPSK	1.4	> 5	1	22
16QAM	1.4	≤ 5	1	22
16QAM	1.4	> 5	2	21

LTE Band 41				
Modulation	BW (MHz)	RB size	Target MPR	Target Power (dBm)
QPSK	20	≤ 18	0	22.5
QPSK	20	> 18	1	21.5
16QAM	20	≤ 18	1	21.5
16QAM	20	> 18	2	20.5
QPSK	15	≤ 16	0	22.5
QPSK	15	> 16	1	21.5
16QAM	15	≤ 16	1	21.5
16QAM	15	> 16	2	20.5
QPSK	10	≤ 12	0	22.5
QPSK	10	> 12	1	21.5
16QAM	10	≤ 12	1	21.5
16QAM	10	> 12	2	20.5
QPSK	5	≤ 8	0	22.5
QPSK	5	> 8	1	21.5
16QAM	5	≤ 8	1	21.5
16QAM	5	> 8	2	20.5

Average Power (dBm)				
Mode / Band	IEEE 802.11			
	11a	11b	11g	11n-HT20
WLAN 2.4 GHz Band		15		
WLAN 5.2 GHz Band	14.5			13.5
WLAN 5.8 GHz Band	14			13

Average Power (dBm)						
Mode / Band	IEEE 802.11					
	11g			11n-HT20		
Channel	CH 1	CH 6	CH 11	CH 1	CH 6	CH 11
WLAN 2.4 GHz Band	13	14	14	12	13	13

Average Power (dBm)		
Mode / Band	v3.0+EDR	BT v4.0 LE
Bluetooth	2	2

4.3 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r03	
FCC ID	SRQ-ZTEN9515
Equipment Name	CDMA/LTE Multi-mode Digital Mobile Phone
Operating Frequency Range of each LTE transmission band	LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 25: 1850.7 MHz ~ 1914.3 MHz LTE Band 41 : 2498.5 MHz ~ 2687.5 MHz
Channel Bandwidth	1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz (LTE Band 25) 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz (LTE Band 26) 5MHz, 10MHz, 15MHz, 20MHz (LTE Band 41)
uplink modulations used	QPSK, and 16QAM
LTE transmitter and antenna implementation (standalone or sharing hardware components / antennas)	A primary antenna is used for LTE and other wireless interfaces (CDMA) for transmitting and receiving. LTE and other wireless interfaces (CDMA) share the same antenna, and cannot transmit simultaneously A 2nd antenna is used for LTE and other wireless interfaces (CDMA) for receiving only
LTE Voice / Data requirements	Data only
LTE MPR permanently built-in by design	**Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3**

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

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

Transmission (H, M, L) channel numbers and frequencies in each LTE band												
LTE Band 25												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905

LTE Band 26										
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5

LTE Band 41								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506
L M	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5
M	40620	2593	40620	2593	40620	2593	40620	2593
M H	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680

5. RF Exposure Limits

5.1 Uncontrolled Environment

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

5.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

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

6. Specific Absorption Rate (SAR)

6.1 Introduction

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

6.2 SAR Definition

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

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

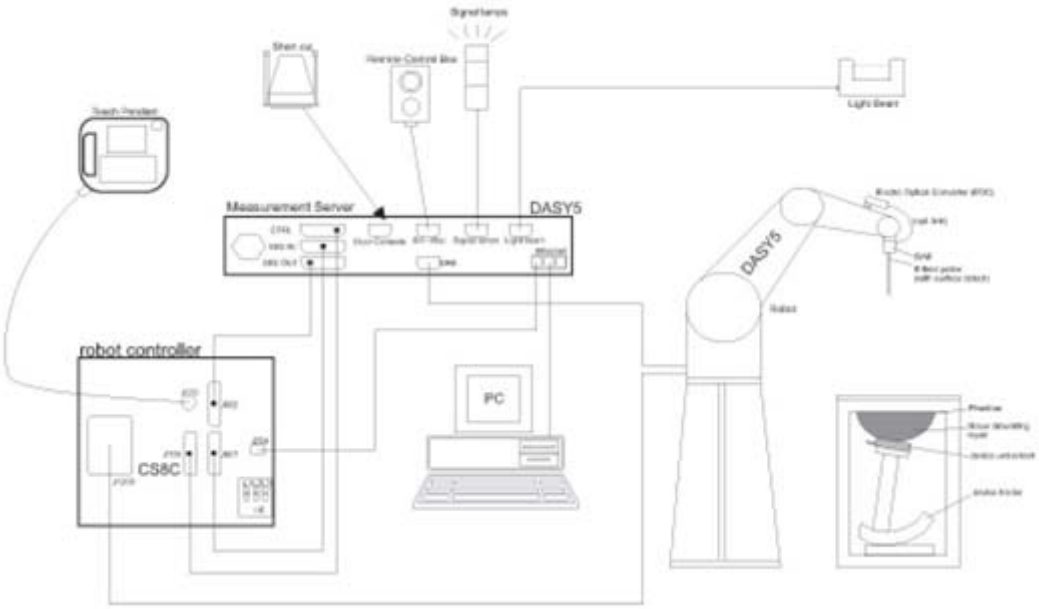
SAR is expressed in units of Watts per kilogram (W/kg)

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

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	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
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	835MHz System Validation Kit	D835V2	4d091	Nov. 18, 2011	Nov. 14, 2014
SPEAG	1900MHz System Validation Kit	D1900V2	5d118	Nov. 21, 2011	Nov. 14, 2014
SPEAG	2450MHz System Validation Kit	D2450V2	736	Aug. 23, 2013	Aug. 22, 2014
SPEAG	2600MHz System Validation Kit	D2600V2	1061	Mar. 26. 2013	Mar. 24. 2015
SPEAG	5GHz System Validation Kit	D5GHzV2	1006	Sep. 23, 2013	Sep. 22, 2014
SPEAG	Data Acquisition Electronics	DAE4	1358	Apr. 30, 2014	Apr. 29, 2015
SPEAG	Data Acquisition Electronics	DAE4	1210	May 19, 2014	May 18, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3911	Apr. 22, 2014	Apr. 21, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3857	May 23, 2014	May 22, 2015
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1477	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1479	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio communication analyzer	MT8820C	6201091028	Jul. 11, 2013	Jul. 10, 2014
Agilent	Wireless Communication Test Set	E5515C	MY52102706	May 03, 2014	May 02, 2015
Agilent	ENA Series Network Analyzer	E5071C	MY46111157	Dec. 30, 2013	Dec. 29, 2014
Agilent	Dielectric Probe Kit	85070E	MY44300475	NCR	NCR
R&S	Signal Generator	SMR40	100455	Jan. 17, 2014	Jan. 16, 2015
Anritsu	Power Senor	MA2411B	0917070	Feb. 27, 2014	Feb. 26, 2015
Anritsu	Power Meter	ML2495A	1005002	Feb. 27. 2014	Feb. 26, 2015
R&S	Spectrum Analyzer	FSP30	101399	May 22, 2014	May 21, 2015
Agilent	Dual Directional Coupler	778D	50422	Note 1	
Woken	Attenuator	WK0602-XX	N/A	Note 1	
PE	Attenuator	PE7005-10	N/A	Note 1	
PE	Attenuator	PE7005- 3	N/A	Note 1	
AR	Power Amplifier	5S1G4M2	0328767	Note 1	
Mini-Circuits	Power Amplifier	ZVE-3W	162601250	Note 1	
Mini-Circuits	Power Amplifier	ZHL-42W+	13440021344	Note 1	

General Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.
2. Referring to KDB 865664 D01v01r03, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.
3. The justification data of dipole D835V2, SN: 4d091, D1900V2, SN: 5d118, D2600V2, SN: 1061 can be found in appendix C. The return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration.

10. System Verification

10.1 Tissue Verification

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

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (εr)
For Head								
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0
For Body								
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7
2600	68.1	0	0	0.1	0	31.8	2.16	52.5

Simulating Liquid for 5GHz, Manufactured by SPEAG

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

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
835	Head	22.8	0.878	40.796	0.90	41.50	-2.44	-1.70	±5	2014.6.2
1900	Head	22.7	1.423	39.015	1.40	40.00	1.64	-2.46	±5	2014.6.3
2450	Head	22.8	1.822	39.194	1.80	39.20	1.22	-0.02	±5	2014.6.21
2600	Head	22.6	1.974	38.204	1.96	39.00	0.71	-2.04	±5	2014.6.19
5200	Head	22.9	4.811	35.433	4.66	36.00	3.24	-1.58	±5	2014.6.21
5800	Head	22.9	5.420	34.323	5.27	35.30	2.85	-2.77	±5	2014.6.21
835	Body	22.6	0.980	54.483	0.97	55.20	1.03	-1.30	±5	2014.5.31
1900	Body	22.9	1.551	53.396	1.52	53.30	2.04	0.18	±5	2014.5.27
2450	Body	22.5	1.942	50.952	1.95	52.70	-0.41	-3.32	±5	2014.6.21
2600	Body	22.5	2.209	51.123	2.16	52.50	2.27	-2.62	±5	2014.6.19
5200	Body	22.7	5.297	49.185	5.30	49.00	-0.06	0.38	±5	2014.6.21
5800	Body	22.7	6.127	47.784	6.00	48.20	2.12	-0.86	±5	2014.6.21

10.2 System Performance Check Results

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

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured SAR (W/kg)	Targeted SAR (W/kg)	Normalized SAR (W/kg)	Deviation (%)
2014.6.2	835	Head	250	4d091	3911	1358	2.36	9.40	9.44	0.43
2014.6.3	1900	Head	250	5d118	3911	1358	10.30	40.30	41.2	2.23
2014.6.21	2450	Head	250	736	3857	1210	12.80	53.20	51.2	-3.76
2014.6.19	2600	Head	250	1061	3857	1210	15.60	58.60	62.4	6.48
2014.6.21	5200	Head	100	1006	3857	1210	8.03	76.60	80.3	4.83
2014.6.21	5800	Head	100	1006	3857	1210	7.72	76.30	77.2	1.18
2014.5.31	835	Body	250	4d091	3911	1358	2.35	9.42	9.4	-0.21
2014.5.27	1900	Body	250	5d118	3911	1358	10.30	41.80	41.2	-1.44
2014.6.21	2450	Body	250	736	3857	1210	12.90	51.30	51.6	0.58
2014.6.19	2600	Body	250	1061	3857	1210	13.40	55.60	53.6	-3.60
2014.6.21	5200	Body	100	1006	3857	1210	7.25	71.50	72.5	1.40
2014.6.21	5800	Body	100	1006	3857	1210	7.06	72.30	70.6	-2.35

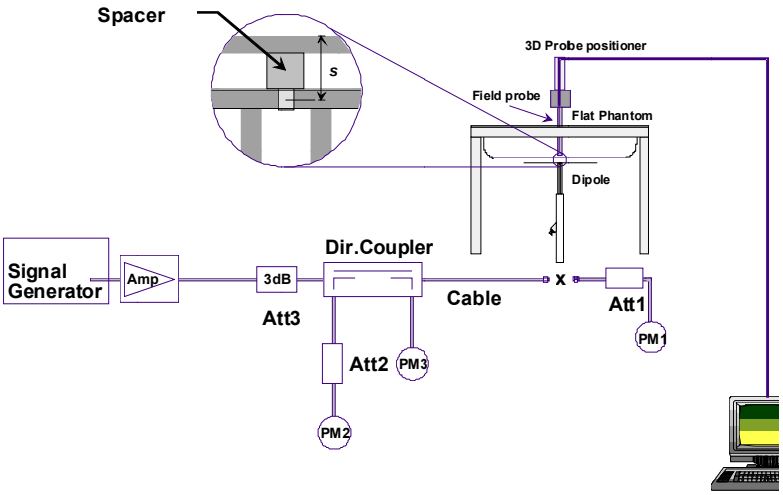


Fig 8.3.1 System Performance Check Setup

Fig 8.3.2 Setup Photo

11. RF Exposure Positions

11.1 Ear and handset reference point

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

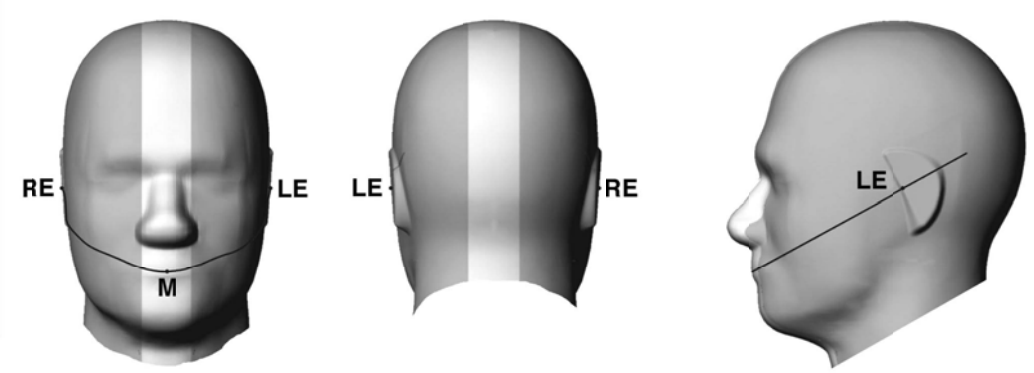


Fig 9.1.1 Front, back, and side views of SAM twin phantom

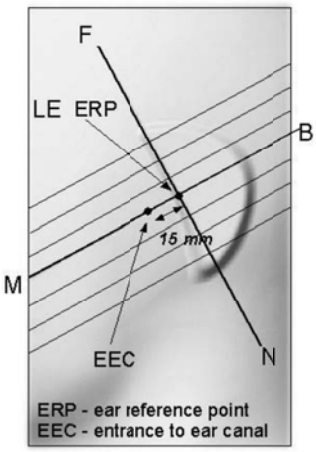


Fig 9.1.2 Close-up side view of phantom showing the ear region.

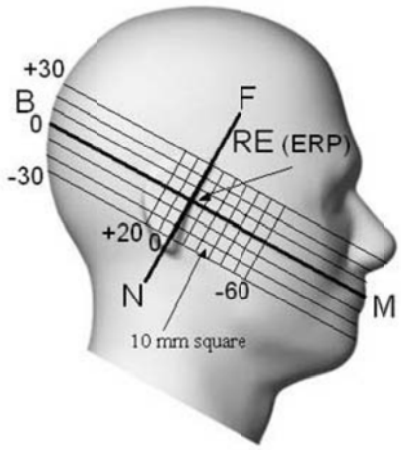


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

11.2 Definition of the cheek position

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

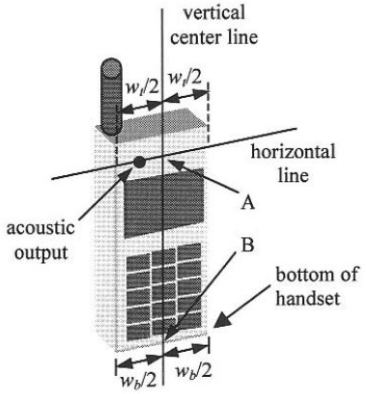


Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case

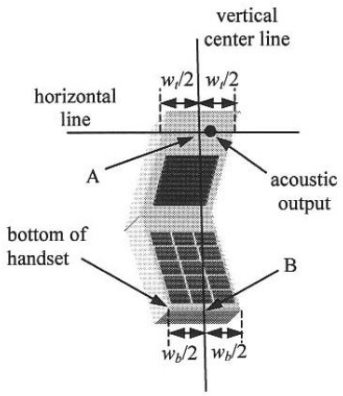


Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

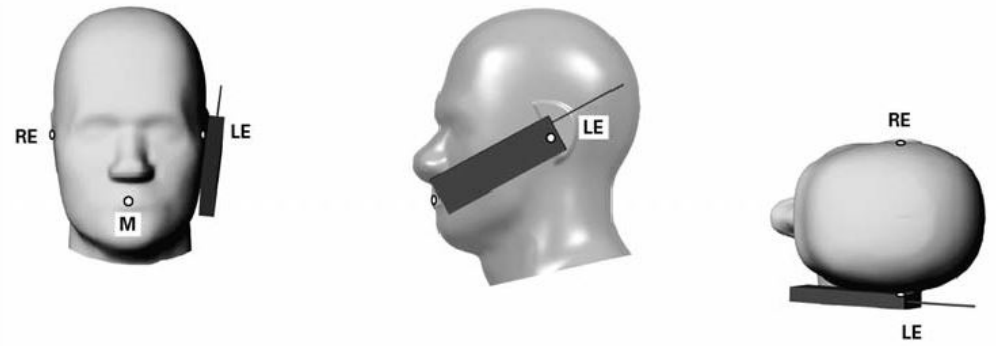


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

11.3 Definition of the tilt position

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

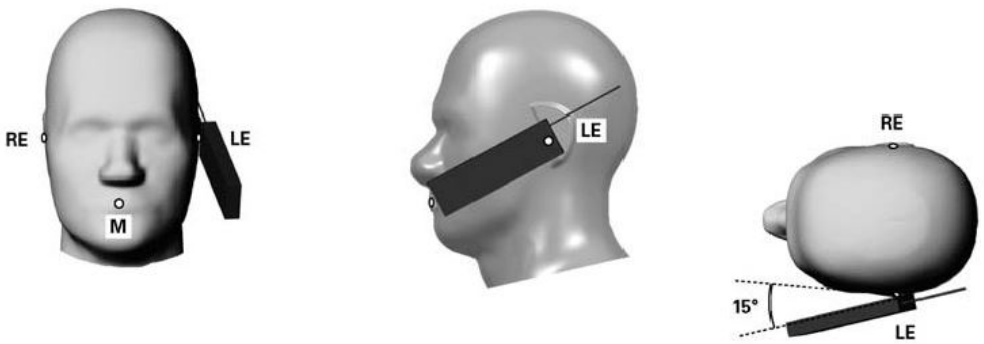


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

11.4 Body Worn Accessory

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

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

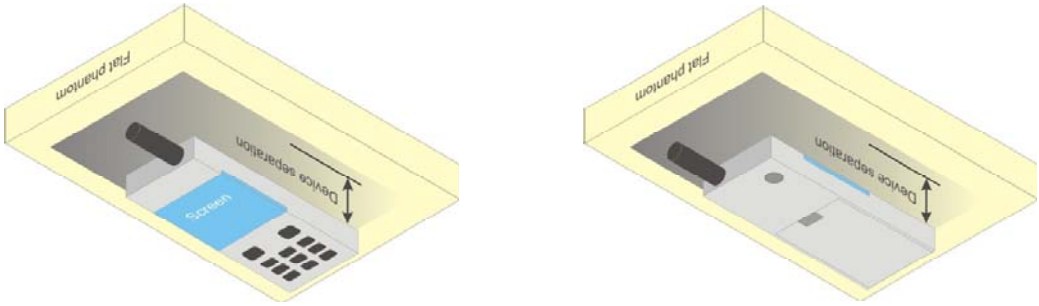


Fig 9.4 Body Worn Position

11.5 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC HDB Publication 941225 D06v01r01 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined form general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v05r02 publication procedures. The “Portable Hotspot” feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

12. Conducted RF Output Power (Unit: dBm)

<CDMA2000 Conducted Power>

General Note:

1. Per KDB 941225 D01v02, Head SAR for RC1+SO55 is not required because the maximum average output power of RC1 is less than 1/4 dB higher than RC3+SO55.
2. Per KDB 941225 D01v02, in Hotspot mode EUT is treated as data device and SAR is tested with Ev-Do Rev 0 (RTAP 153.6kbps). If 1xRTT and Ev-Do Rev A (RETAP 4096 bits) power is high than 1/4dB higher than Re v0, SAR tests with those settings are necessary.
3. Per KDB 941225 D01v02, SAR for body-worn exposure configurations is measured in RC3 with the DUT configured to transmit at full rate on FCH with all other code channels disabled using TDSO / SO32. SAR for multiple code channels (FCH + SCH) is not required when the maximum average output of each RF channel is less than ¼ dB higher than that measured with FCH only.

Band	CDMA2000 BC10			CDMA2000 BC0			CDMA2000 BC1		
TX Channel	476	580	684	1013	384	777	25	600	1175
Frequency (MHz)	817.9	820.5	823.1	824.7	836.52	848.31	1851.25	1880	1908.75
1xRTT RC1 SO55	24.26	24.23	**24.30**	24.06	**24.19**	24.10	24.05	24.06	**24.23**
1xRTT RC3 SO55	24.17	24.16	24.23	23.99	24.15	24.06	23.99	23.94	24.19
1xRTT RC3 SO32(+ F-SCH)	24.19	24.15	24.24	23.98	24.12	24.04	23.97	23.93	24.18
1xRTT RC3 SO32(+SCH)	24.17	24.15	24.23	24.01	24.11	24.03	23.98	23.91	24.16
1xEVDO RTAP 153.6Kbps	24.18	24.16	24.27	24.00	24.14	24.06	23.99	23.95	24.21
1xEVDO RETAP 4096Bits	24.27	24.22	24.28	24.07	24.18	24.11	24.03	24.03	24.20

<LTE Conducted Power>

General Note:

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r03, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r03, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r03, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r03, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r03, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, smaller bandwidth SAR testing is not required.

<LTE Band 26>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				26765	26865	26965		
Frequency (MHz)				821.5	831.5	841.5		
15	QPSK	1	0	22.75	**22.83**	22.76	23	0
15	QPSK	1	37	22.74	22.50	22.54		
15	QPSK	1	74	22.69	22.63	22.22		
15	QPSK	36	0	21.77	21.79	21.72	22	0-1
15	QPSK	36	18	21.76	21.70	21.71		
15	QPSK	36	37	21.75	21.73	21.63		
15	QPSK	75	0	21.81	21.83	21.82		
15	16QAM	1	0	21.80	21.81	21.86	22	0-1
15	16QAM	1	37	21.27	21.43	21.54		
15	16QAM	1	74	21.53	21.78	21.36		
15	16QAM	36	0	20.70	20.70	20.65	21	0-2
15	16QAM	36	18	20.76	20.74	20.66		
15	16QAM	36	37	20.70	20.75	20.55		
15	16QAM	75	0	20.89	20.71	20.76		
Channel				26740	26865	26990	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	22.73	22.57	22.60	23	0
10	QPSK	1	24	22.64	22.55	22.56		
10	QPSK	1	49	22.71	22.56	22.26		
10	QPSK	25	0	21.68	21.61	21.61	22	0-1
10	QPSK	25	12	21.70	21.56	21.53		
10	QPSK	25	24	21.65	21.65	21.49		
10	QPSK	50	0	21.73	21.77	21.69		
10	16QAM	1	0	21.64	21.61	21.86	22	0-1
10	16QAM	1	24	21.63	21.22	21.66		
10	16QAM	1	49	21.57	21.41	21.56		
10	16QAM	25	0	20.70	20.58	20.59	21	0-2
10	16QAM	25	12	20.71	20.77	20.51		
10	16QAM	25	24	20.73	20.74	20.51		
10	16QAM	50	0	20.70	20.70	20.66		
Channel				26715	26865	27015	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	22.72	22.49	22.56	23	0
5	QPSK	1	12	22.65	22.45	22.49		
5	QPSK	1	24	22.60	22.72	22.23		
5	QPSK	12	0	21.75	21.54	21.58	22	0-1
5	QPSK	12	6	21.69	21.65	21.49		
5	QPSK	12	11	21.67	21.60	21.32		
5	QPSK	25	0	21.67	21.66	21.40		
5	16QAM	1	0	21.73	21.73	21.84	22	0-1
5	16QAM	1	12	21.60	21.33	21.54		
5	16QAM	1	24	21.69	21.38	21.34		
5	16QAM	12	0	20.84	20.71	20.66	21	0-2
5	16QAM	12	6	20.80	20.74	20.60		
5	16QAM	12	11	20.63	20.72	20.50		
5	16QAM	25	0	20.66	20.74	20.45		

Channel				26705	26865	27025	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	22.82	22.63	22.49	23	0
3	QPSK	1	7	22.71	22.54	22.22		
3	QPSK	1	14	22.66	22.61	22.21		
3	QPSK	8	0	21.66	21.69	21.42	22	0-1
3	QPSK	8	4	21.71	21.58	21.34		
3	QPSK	8	7	21.69	21.59	21.24		
3	QPSK	15	0	21.75	21.54	21.35		
3	16QAM	1	0	21.81	21.43	21.71	22	0-1
3	16QAM	1	7	21.60	21.38	21.26		
3	16QAM	1	14	21.80	21.48	21.35		
3	16QAM	8	0	20.75	20.64	20.50	21	0-2
3	16QAM	8	4	20.75	20.65	20.53		
3	16QAM	8	7	20.73	20.64	20.24		
3	16QAM	15	0	20.67	20.57	20.37		
Channel				26697	26865	27033	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	22.78	22.60	22.32	23	0
1.4	QPSK	1	2	22.68	22.57	22.20		
1.4	QPSK	1	5	22.69	22.53	22.24		
1.4	QPSK	3	0	22.74	22.55	22.28		
1.4	QPSK	3	1	22.76	22.54	22.26		
1.4	QPSK	3	2	22.74	22.52	22.27		
1.4	QPSK	6	0	21.67	21.60	21.22	22	0-1
1.4	16QAM	1	0	21.87	21.74	21.62	22	0-1
1.4	16QAM	1	2	21.84	21.34	21.43		
1.4	16QAM	1	5	21.63	21.32	21.29		
1.4	16QAM	3	0	21.67	21.58	21.24		
1.4	16QAM	3	1	21.70	21.53	21.23		
1.4	16QAM	3	2	21.77	21.51	21.27		
1.4	16QAM	6	0	20.74	20.37	20.26	21	0-2

<LTE Band 25>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				26140	26340	26590		
Frequency (MHz)				1860	1880	1905		
20	QPSK	1	0	22.06	22.04	22.24	23	0
20	QPSK	1	49	22.30	**22.45**	22.25		
20	QPSK	1	99	22.06	22.37	22.17		
20	QPSK	50	0	21.42	21.35	21.16	22	0-1
20	QPSK	50	24	21.42	21.54	21.39		
20	QPSK	50	49	21.44	21.53	21.44		
20	QPSK	100	0	21.41	21.43	21.25		
20	16QAM	1	0	20.79	20.86	21.16	22	0-1
20	16QAM	1	49	21.25	21.50	21.32		
20	16QAM	1	99	20.66	20.95	21.10		
20	16QAM	50	0	20.42	20.26	20.21	21	0-2
20	16QAM	50	24	20.39	20.39	20.23		
20	16QAM	50	49	20.28	20.45	20.41		
20	16QAM	100	0	20.46	20.49	20.33		
Channel				26115	26340	26615	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	21.99	22.00	22.15	23	0
15	QPSK	1	37	22.25	22.44	22.29		
15	QPSK	1	74	22.24	22.22	22.18		
15	QPSK	36	0	21.27	21.29	21.14	22	0-1
15	QPSK	36	18	21.30	21.40	21.31		
15	QPSK	36	37	21.39	21.48	21.44		
15	QPSK	75	0	21.41	21.45	21.44		
15	16QAM	1	0	20.85	20.82	20.73	22	0-1
15	16QAM	1	37	21.02	21.46	21.50		
15	16QAM	1	74	20.98	21.36	21.06		
15	16QAM	36	0	20.17	20.18	20.22	21	0-2
15	16QAM	36	18	20.28	20.38	20.38		
15	16QAM	36	37	20.33	20.45	20.44		
15	16QAM	75	0	20.42	20.41	20.37		
Channel				26090	26340	26640	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	21.95	22.12	22.11	23	0
10	QPSK	1	24	22.25	22.38	22.22		
10	QPSK	1	49	22.29	22.39	22.40		
10	QPSK	25	0	21.14	21.29	21.33	22	0-1
10	QPSK	25	12	21.09	21.30	21.29		
10	QPSK	25	24	21.15	21.41	21.41		
10	QPSK	50	0	21.27	21.49	21.43		
10	16QAM	1	0	21.15	20.96	21.06	22	0-1
10	16QAM	1	24	20.96	20.91	21.41		
10	16QAM	1	49	21.44	21.36	21.63		
10	16QAM	25	0	20.15	20.37	20.43	21	0-2
10	16QAM	25	12	20.14	20.36	20.36		
10	16QAM	25	24	20.10	20.45	20.53		
10	16QAM	50	0	20.15	20.46	20.38		

Channel				26065	26340	26665	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	22.01	22.15	22.32	23	0
5	QPSK	1	12	21.98	22.32	22.34		
5	QPSK	1	24	22.30	22.35	22.35		
5	QPSK	12	0	21.07	21.36	21.47	22	0-1
5	QPSK	12	6	21.11	21.30	21.56		
5	QPSK	12	11	21.14	21.31	21.48		
5	QPSK	25	0	21.09	21.33	21.39		
5	16QAM	1	0	21.12	21.27	21.58	22	0-1
5	16QAM	1	12	21.11	21.20	21.55		
5	16QAM	1	24	21.24	21.29	21.73		
5	16QAM	12	0	20.07	20.32	20.57	21	0-2
5	16QAM	12	6	20.11	20.28	20.58		
5	16QAM	12	11	20.06	20.39	20.47		
5	16QAM	25	0	20.27	20.35	20.49		
Channel				26055	26340	26675	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	22.08	22.27	22.32	23	0
3	QPSK	1	7	22.09	22.42	22.44		
3	QPSK	1	14	21.98	22.25	22.07		
3	QPSK	8	0	20.98	21.32	21.46	22	0-1
3	QPSK	8	4	21.14	21.43	21.41		
3	QPSK	8	7	21.01	21.37	21.28		
3	QPSK	15	0	21.10	21.33	21.41		
3	16QAM	1	0	20.95	21.42	21.13	22	0-1
3	16QAM	1	7	20.96	21.45	21.26		
3	16QAM	1	14	20.85	21.34	21.10		
3	16QAM	8	0	20.02	20.33	20.43	21	0-2
3	16QAM	8	4	19.95	20.37	20.38		
3	16QAM	8	7	19.97	20.43	20.35		
3	16QAM	15	0	19.99	20.10	20.37		
Channel				26047	26340	26683	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	21.96	22.23	22.03	23	0
1.4	QPSK	1	2	22.00	22.26	22.12		
1.4	QPSK	1	5	22.06	22.39	22.40		
1.4	QPSK	3	0	21.97	22.31	22.22		
1.4	QPSK	3	1	21.99	22.30	22.14		
1.4	QPSK	3	2	21.94	22.29	22.09		
1.4	QPSK	6	0	21.03	21.40	21.25	22	0-1
1.4	16QAM	1	0	20.90	21.38	20.93	22	0-1
1.4	16QAM	1	2	20.87	21.37	21.27		
1.4	16QAM	1	5	21.22	21.59	21.35		
1.4	16QAM	3	0	21.02	21.24	21.31		
1.4	16QAM	3	1	20.98	21.20	21.18		
1.4	16QAM	3	2	20.91	21.31	21.17		
1.4	16QAM	6	0	19.89	20.38	20.11	21	0-2

TDD LTE configuration setup for SAR measurement

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

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

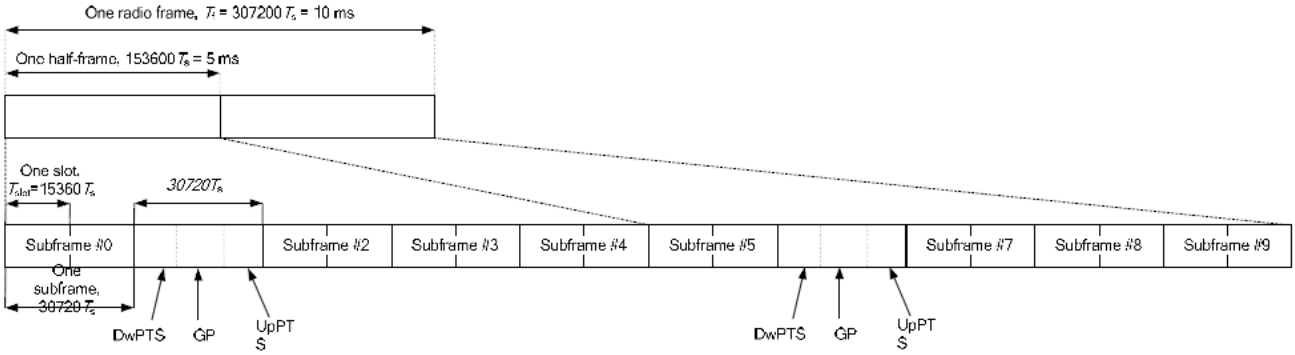


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity)

Table 4.2-2: Uplink-downlink configurations.

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

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

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

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

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

The highest duty factor is resulted from:

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

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

iii. for special subframe with extended cyclic prefix in uplink, the total uplink duty factor in one half-frame is:

(3+0.167)/5 = 63.3%

iv. for special subframe with normal cyclic prefix in uplink, the total uplink duty factor in one half-frame is:

(3+0.143)/5 = 62.9%

v. Considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The scaled TDD LTE SAR = (measured SAR) * (scaling factor for extended cyclic prefix).

<LTE Band 41>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power Middle High Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				39750	40185	40620	41055	41490		
Frequency (MHz)				2506	2549.5	2593	2636.5	2680		
20	QPSK	1	0	21.90	21.84	21.85	21.82	21.99	22.5	0
20	QPSK	1	49	21.92	21.88	**22.15**	22.06	22.12		
20	QPSK	1	99	21.91	21.85	21.76	21.89	21.56		
20	QPSK	50	0	21.01	20.83	20.78	20.89	20.95	21.5	0-1
20	QPSK	50	24	21.02	20.92	21.06	20.91	20.98		
20	QPSK	50	49	20.95	20.83	20.83	20.90	20.97		
20	QPSK	100	0	20.92	20.96	20.99	20.88	20.97		
20	16QAM	1	0	20.48	20.62	20.54	20.47	20.73	21.5	0-1
20	16QAM	1	49	20.61	20.66	20.58	20.65	20.87		
20	16QAM	1	99	20.60	20.60	20.50	20.57	20.65		
20	16QAM	50	0	19.84	19.74	19.71	19.77	20.10	20.5	0-2
20	16QAM	50	24	19.86	19.87	19.72	19.72	20.25		
20	16QAM	50	49	19.89	19.88	19.64	19.82	20.03		
20	16QAM	100	0	19.94	19.91	19.84	19.78	20.14		
Channel				39725	40173	40620	41068	41515	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5		
15	QPSK	1	0	21.77	21.87	21.71	21.87	22.09	22.5	0
15	QPSK	1	37	21.99	21.95	21.75	21.81	21.97		
15	QPSK	1	74	21.98	21.99	21.54	21.88	21.68		
15	QPSK	36	0	20.98	20.86	20.72	20.78	21.06	21.5	0-1
15	QPSK	36	18	20.91	20.92	20.74	20.85	21.00		
15	QPSK	36	37	20.86	20.94	20.79	20.89	20.77		
15	QPSK	75	0	20.98	20.90	20.86	20.91	20.99		
15	16QAM	1	0	20.54	20.60	20.93	20.56	20.87	21.5	0-1
15	16QAM	1	37	20.76	20.64	20.47	20.46	20.74		
15	16QAM	1	74	20.67	20.70	20.41	20.55	20.52		
15	16QAM	36	0	19.93	19.84	19.65	19.62	20.04	20.5	0-2
15	16QAM	36	18	19.83	19.92	19.70	19.72	20.05		
15	16QAM	36	37	19.86	19.84	19.64	19.75	19.88		
15	16QAM	75	0	19.92	19.96	19.76	19.81	20.01		

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power Middle High Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				39700	40160	40620	41080	41540		
Frequency (MHz)				2501	2547	2593	2639	2685		
10	QPSK	1	0	21.76	21.93	21.68	21.82	22.12	22.5	0
10	QPSK	1	24	22.10	21.98	21.80	21.92	21.96		
10	QPSK	1	49	21.82	22.02	21.78	21.98	21.43		
10	QPSK	25	0	20.90	20.91	20.68	20.78	21.09	21.5	0-1
10	QPSK	25	12	21.03	20.94	20.73	20.89	20.82		
10	QPSK	25	24	20.93	20.92	20.69	20.91	20.69		
10	QPSK	50	0	20.92	20.96	20.78	20.89	20.94		
10	16QAM	1	0	20.60	20.59	20.47	20.52	20.88	21.5	0-1
10	16QAM	1	24	20.73	20.61	20.55	20.63	20.68		
10	16QAM	1	49	20.56	20.62	20.42	20.64	20.42		
10	16QAM	25	0	19.95	19.97	19.70	19.80	20.15	20.5	0-2
10	16QAM	25	12	20.05	20.02	19.76	19.92	19.99		
10	16QAM	25	24	19.96	19.99	19.74	19.87	19.73		
10	16QAM	50	0	19.88	19.92	19.66	19.79	19.90		
Channel				39675	40148	40620	41093	41565	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2498.5	2545.8	2593	2640.3	2687.5		
5	QPSK	1	0	21.85	22.02	21.87	21.91	22.07	22.5	0
5	QPSK	1	12	22.05	21.94	22.00	21.99	21.84		
5	QPSK	1	24	22.07	21.91	21.82	22.04	21.37		
5	QPSK	12	0	20.78	20.98	20.66	20.86	20.67	21.5	0-1
5	QPSK	12	6	20.91	20.96	20.74	20.82	20.54		
5	QPSK	12	11	20.96	20.90	20.79	20.87	20.50		
5	QPSK	25	0	20.85	20.98	20.76	20.93	20.53		
5	16QAM	1	0	20.51	20.73	20.48	20.60	20.58	21.5	0-1
5	16QAM	1	12	20.58	20.67	20.50	20.64	20.38		
5	16QAM	1	24	20.82	20.64	20.49	20.73	20.40		
5	16QAM	12	0	19.73	20.01	19.67	19.79	19.81	20.5	0-2
5	16QAM	12	6	19.82	19.99	19.77	19.83	19.54		
5	16QAM	12	11	19.86	20.02	19.70	19.88	19.52		
5	16QAM	25	0	19.89	20.03	19.82	19.90	19.70		

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

<WLAN Conducted Power>

General Note:

1. For 2.4GHz WLAN SAR testing, highest average RF output power channel for the lowest data rate for 802.11b were selected for SAR evaluation. 802.11g/n HT20 were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of 802.11b mode.
2. For 5 GHz WLAN SAR testing, highest average RF output power channel for the lowest data rate for 802.11a were selected for SAR evaluation. 802.11n HT20 modes were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of 802.11a mode.

<2.4GHz WLAN>

WLAN 2.4GHz 802.11b Average Power (dBm)					
Power vs. Channel			Power vs. Data Rate		
Channel	Frequency (MHz)	Data Rate 1Mbps	2Mbps	5.5Mbps	11Mbps
CH 1	2412	13.98	14.72	14.77	14.78
CH 6	2437	14.51			
CH 11	2462	**14.79**			

WLAN 2.4GHz 802.11g Average Power (dBm)									
Power vs. Channel			Power vs. Data Rate						
Channel	Frequency (MHz)	Data Rate 6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
CH 1	2412	11.35	13.51	13.46	13.48	13.44	13.46	13.46	13.49
CH 6	2437	12.34							
CH 11	2462	**13.53**							

WLAN 2.4GHz 802.11n-HT20 Average Power (dBm)									
Power vs. Channel			Power vs. MCS Index						
Channel	Frequency (MHz)	MCS Index MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 1	2412	11.00	12.49	12.35	12.40	12.38	12.37	12.36	12.41
CH 6	2437	11.89							
CH 11	2462	**12.50**							

<5GHz WLAN>

WLAN 5GHz 802.11a Average Power (dBm)									
Power vs. Channel			Power vs. Data Rate						
Channel	Frequency (MHz)	Data Rate	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
		6Mbps							
CH 36	5180	**13.89**	13.54	12.38	12.72	13.61	13.30	13.85	13.26
CH 40	5200	13.62							
CH 44	5220	13.57							
CH 48	5240	13.47							
CH 149	5745	13.01	13.51	13.21	13.19	13.54	13.33	13.45	13.42
CH 153	5765	13.24							
CH 157	5785	13.25							
CH 161	5805	**13.56**							

WLAN 5GHz 802.11n-HT20 Average Power (dBm)									
Power vs. Channel			Power vs. MCS Index						
Channel	Frequency (MHz)	MCS Index	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
		MCS0							
CH 36	5180	**13.09**	12.97	13.08	12.91	13.06	12.95	13.03	13.03
CH 40	5200	12.63							
CH 44	5220	12.74							
CH 48	5240	12.85							
CH 149	5745	12.18	12.28	12.24	12.27	12.24	12.41	12.31	12.36
CH 153	5765	12.22							
CH 157	5785	11.94							
CH 161	5805	**12.39**							

13. Bluetooth Exclusions Applied

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

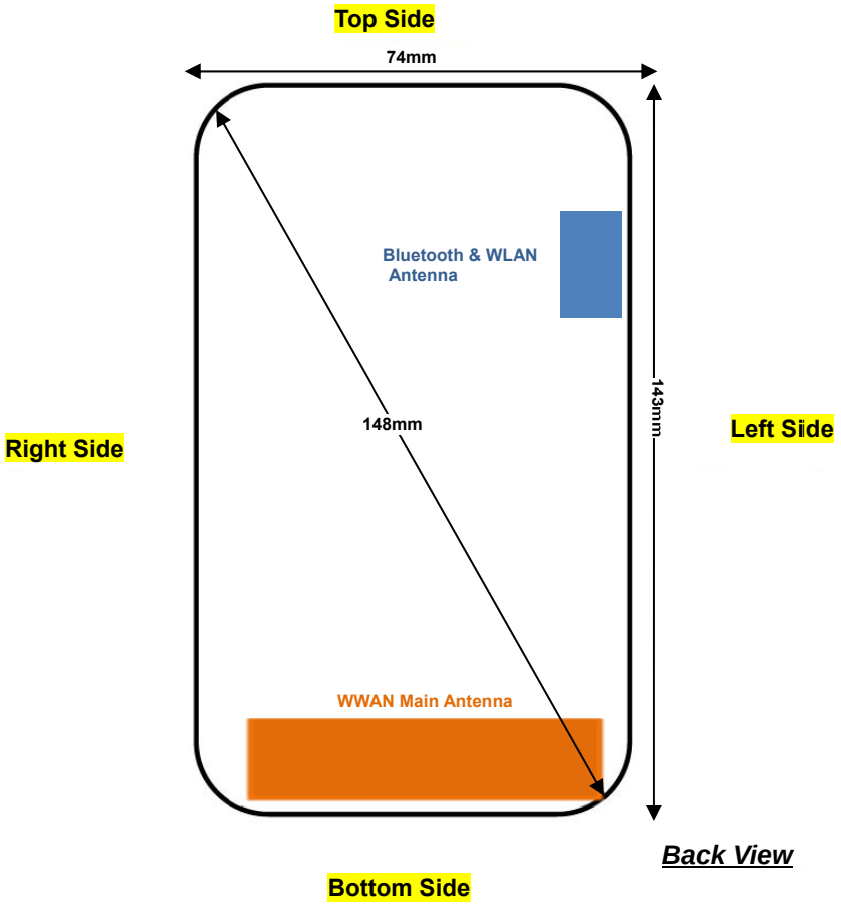
Note:

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

Bluetooth Max Power (dBm)	Separation Distance (mm)	Frequency (GHz)	exclusion thresholds
2	0	2.48	0.63

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 0.63 which is <= 3, SAR testing is not required.

14. Antenna Location



Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Main	≤ 25mm	≤ 25mm	131mm	≤ 25mm	≤ 25mm	≤ 25mm
BT&WLAN	≤ 25mm	≤ 25mm	26mm	96.5mm	61mm	≤ 25mm

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

General Note:

1. Referring to KDB 941225 D06 v01r01, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge

15. SAR Test Results

General Note:

1. Per KDB 447498 D01v05r02, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. Duty cycle of TDD was fixed, therefore not require scaled to 100% of duty cycle. For SAR system, the crest factor 1:1.59 (62.9%) was used perform testing. Considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result.
   d. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   e. For WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
   f. For TDD LTE Band: Reported SAR(W/kg)= Measured SAR(W/kg)* scaling factor for extended cyclic prefix * Tune-up scaling factor
2. Per KDB 447498 D01v05r02, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 941225 D01v02, Head SAR for RC1+SO55 is not required because the maximum average output power of RC1 is less than 1/4 dB higher than RC3+SO55.
4. Per KDB 941225 D01v02, in Hotspot mode EUT is treated as data device and SAR is tested with Ev-Do Rev 0 (RTAP 153.6kbps). If 1xRTT and Ev-Do Rev A (RETAP 4096 bits) power is high than 1/4dB higher than Re v0, SAR tests with those settings are necessary.
5. Per KDB 941225 D01v02, SAR for body-worn exposure configurations is measured in RC3 with the DUT configured to transmit at full rate on FCH with all other code channels disabled using TDSO / SO32. SAR for multiple code channels (FCH + SCH) is not required when the maximum average output of each RF channel is less than ¼ dB higher than that measured with FCH only. To account for VOIP operation, Ev-Do Rev. A (RETAP 4096 bits) SAR testing was performed at the worst position identified by 1xRTT SAR test results, for both head and body-worn accessory exposure conditions.
6. Pre KDB648474 D04v01r02, when the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset. Additional WLAN SAR with headset testing was performed for simultaneous transmission analysis.
7. Per KDB 941225 D05v02r03, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
8. Per KDB 941225 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
9. Per KDB 94122 D05v02r03, when reported SAR of 1RB and 50%RB allocation for QPSK ≤0.8W/kg, and 100%RB with QPSK output power is less than 1RB and 50%RB, 100%RB allocation for QPSK is not required.
10. Per KDB 941225 D05v02r03, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, 16QAM SAR testing is not required.
11. Per KDB 941225 D05v02r03, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, smaller bandwidth SAR testing is not required.
12. LTE TDD is tested at the highest duty factor using UL-DL configuration 0 with special subframe configuration 5 and applying the FDD LTE procedures in KDB941225 D05v02r03. SAR testing was performed using the extended cyclic prefix listed in 3GPP TS36.211 Section 4.
13. This device 2.4GHz WLAN supports Hotspot operation, and 5.2G/5.8GHz supports WiFi Direct (Group Client only).

15.1 Head SAR

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	CDMA2000 BC0	RC3 SO55	Right Cheek	384	836.52	24.15	24.5	1.084	0.06	0.429	0.465
	CDMA2000 BC0	RC3 SO55	Right Tilted	384	836.52	24.15	24.5	1.084	0.06	0.320	0.347
	CDMA2000 BC0	RC3 SO55	Left Cheek	384	836.52	24.15	24.5	1.084	0.11	0.428	0.464
	CDMA2000 BC0	RC3 SO55	Left Tilted	384	836.52	24.15	24.5	1.084	0.03	0.349	0.378
01	**CDMA2000 BC0**	**RETAP 4096**	**Right Cheek**	**384**	**836.52**	**24.18**	**24.5**	**1.076**	**0.17**	**0.446**	**0.480**
	CDMA2000 BC10	RC3 SO55	Right Cheek	684	823.1	24.23	24.5	1.064	0.07	0.366	0.389
	CDMA2000 BC10	RC3 SO55	Right Tilted	684	823.1	24.23	24.5	1.064	0.03	0.256	0.272
02	**CDMA2000 BC10**	**RC3 SO55**	**Left Cheek**	**684**	**823.1**	**24.23**	**24.5**	**1.064**	**0.14**	**0.379**	**0.403**
	CDMA2000 BC10	RC3 SO55	Left Tilted	684	823.1	24.23	24.5	1.064	-0.02	0.291	0.310
	CDMA2000 BC10	RETAP 4096	Left Cheek	684	823.1	24.28	24.5	1.052	0.07	0.372	0.391
	CDMA2000 BC1	RC3 SO55	Right Cheek	1175	1908.75	24.19	24.5	1.074	-0.03	0.463	0.497
	CDMA2000 BC1	RC3 SO55	Right Tilted	1175	1908.75	24.19	24.5	1.074	-0.03	0.225	0.242
	CDMA2000 BC1	RC3 SO55	Left Cheek	1175	1908.75	24.19	24.5	1.074	0.04	0.475	0.510
	CDMA2000 BC1	RC3 SO55	Left Tilted	1175	1908.75	24.19	24.5	1.074	0.02	0.239	0.257
03	**CDMA2000 BC1**	**RETAP 4096**	**Left Cheek**	**1175**	**1908.75**	**24.2**	**24.5**	**1.072**	**0.06**	**0.497**	**0.533**

<LTE SAR>

Plot No.	Band	BW (MHz)	Mode	RB Size	RB offest	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
04	**LTE Band 26**	**15**	**QPSK**	**1**	**0**	**Right Cheek**	**26865**	**831.5**	**22.83**	**23**	**1.040**	**0.19**	**0.319**	**0.332**
	LTE Band 26	15	QPSK	1	0	Right Tilted	26865	831.5	22.83	23	1.040	0.06	0.206	0.214
	LTE Band 26	15	QPSK	1	0	Left Cheek	26865	831.5	22.83	23	1.040	0.18	0.316	0.329
	LTE Band 26	15	QPSK	1	0	Left Tilted	26865	831.5	22.83	23	1.040	0.11	0.215	0.224
	LTE Band 26	15	QPSK	36	0	Right Cheek	26865	831.5	21.79	22	1.050	0.18	0.287	0.301
	LTE Band 26	15	QPSK	36	0	Right Tilted	26865	831.5	21.79	22	1.050	0.09	0.186	0.195
	LTE Band 26	15	QPSK	36	0	Left Cheek	26865	831.5	21.79	22	1.050	0.17	0.282	0.296
	LTE Band 26	15	QPSK	36	0	Left Tilted	26865	831.5	21.79	22	1.050	0.08	0.198	0.208
05	**LTE Band 25**	**20**	**QPSK**	**1**	**49**	**Right Cheek**	**26340**	**1880**	**22.45**	**23**	**1.135**	**-0.02**	**0.423**	**0.480**
	LTE Band 25	20	QPSK	1	49	Right Tilted	26340	1880	22.45	23	1.135	-0.07	0.199	0.226
	LTE Band 25	20	QPSK	1	49	Left Cheek	26340	1880	22.45	23	1.135	0.07	0.403	0.457
	LTE Band 25	20	QPSK	1	49	Left Tilted	26340	1880	22.45	23	1.135	0.0098	0.198	0.225
	LTE Band 25	20	QPSK	50	24	Right Cheek	26340	1880	21.54	22	1.112	-0.00033	0.313	0.348
	LTE Band 25	20	QPSK	50	24	Right Tilted	26340	1880	21.54	22	1.112	-0.08	0.165	0.183
	LTE Band 25	20	QPSK	50	24	Left Cheek	26340	1880	21.54	22	1.112	0.08	0.328	0.365
	LTE Band 25	20	QPSK	50	24	Left Tilted	26340	1880	21.54	22	1.112	-0.02	0.166	0.185

Plot No.	Band	BW (MHz)	Mode	RB Size	RB offset	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41	20	QPSK	1	49	Right Cheek	40620	2593	22.15	22.5	1.084	62.9	1.006	0.05	0.080	0.087
	LTE Band 41	20	QPSK	1	49	Right Tilted	40620	2593	22.15	22.5	1.084	62.9	1.006	0.07	0.069	0.075
06	**LTE Band 41**	**20**	**QPSK**	**1**	**49**	**Left Cheek**	**40620**	**2593**	**22.15**	**22.5**	**1.084**	**62.9**	**1.006**	**0.06**	**0.146**	**0.159**
	LTE Band 41	20	QPSK	1	49	Left Tilted	40620	2593	22.15	22.5	1.084	62.9	1.006	0.1	0.048	0.052
	LTE Band 41	20	QPSK	50	24	Right Cheek	40620	2593	21.06	21.5	1.107	62.9	1.006	0.07	0.065	0.072
	LTE Band 41	20	QPSK	50	24	Right Tilted	40620	2593	21.06	21.5	1.107	62.9	1.006	0.07	0.051	0.057
	LTE Band 41	20	QPSK	50	24	Left Cheek	40620	2593	21.06	21.5	1.107	62.9	1.006	0.04	0.116	0.129
	LTE Band 41	20	QPSK	50	24	Left Tilted	40620	2593	21.06	21.5	1.107	62.9	1.006	0.08	0.036	0.040

<DTS WLAN SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
07	**WLAN 2.4GHz**	**802.11b 1Mbps**	**Right Cheek**	**11**	**2462**	**14.79**	**15**	**1.050**	**97.62**	**1.024**	**0.09**	**0.040**	**0.043**
	WLAN 2.4GHz	802.11b 1Mbps	Right Tilted	11	2462	14.79	15	1.050	97.62	1.024	0.03	0.025	0.027
	WLAN 2.4GHz	802.11b 1Mbps	Left Cheek	11	2462	14.79	15	1.050	97.62	1.024	0.05	0.023	0.025
	WLAN 2.4GHz	802.11b 1Mbps	Left Tilted	11	2462	14.79	15	1.050	97.62	1.024	0.02	0.00926	0.010

<NII WLAN SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
08	**WLAN 5.2GHz**	**802.11a, 6Mbps**	**Right Cheek**	**36**	**5180**	**13.89**	**14.5**	**1.151**	**87.44**	**1.144**	**0.05**	**0.028**	**0.037**
	WLAN 5.2GHz	802.11a, 6Mbps	Right Tilted	36	5180	13.89	14.5	1.151	87.44	1.144	0.1	0.012	0.016
	WLAN 5.2GHz	802.11a, 6Mbps	Left Cheek	36	5180	13.89	14.5	1.151	87.44	1.144	0.05	0.013	0.017
	WLAN 5.2GHz	802.11a, 6Mbps	Left Tilted	36	5180	13.89	14.5	1.151	87.44	1.144	0.09	0.00767	0.010
21	**WLAN 5.8GHz**	**802.11a, 6Mbps**	**Right Cheek**	**161**	**5805**	**13.56**	**14**	**1.107**	**87.44**	**1.144**	**-0.03**	**0.023**	**0.029**
	WLAN 5.8GHz	802.11a, 6Mbps	Right Tilted	161	5805	13.56	14	1.107	87.44	1.144	-	n/a	-
	WLAN 5.8GHz	802.11a, 6Mbps	Left Cheek	161	5805	13.56	14	1.107	87.44	1.144	-	n/a	-
	WLAN 5.8GHz	802.11a, 6Mbps	Left Tilted	161	5805	13.56	14	1.107	87.44	1.144	-	n/a	-

Note: “n.a” stands for there is no cube to be found with the highest averaged SAR value.

15.2 Hotspot SAR

Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Main	≤ 25mm	≤ 25mm	131mm	≤ 25mm	≤ 25mm	≤ 25mm
BT&WLAN	≤ 25mm	≤ 25mm	26mm	96.5mm	61mm	≤ 25mm

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

General Note:

1. Referring to KDB 941225 D06 v01r01, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	CDMA2000 BC0	RTAP 153.6	Front	1	384	836.52	24.14	24.5	1.086	-0.04	0.556	0.604
	CDMA2000 BC0	RTAP 153.6	Back	1	384	836.52	24.14	24.5	1.086	0.06	0.681	0.740
	CDMA2000 BC0	RTAP 153.6	Left Side	1	384	836.52	24.14	24.5	1.086	0.06	0.558	0.606
09	**CDMA2000 BC0**	**RTAP 153.6**	**Right Side**	**1**	**384**	**836.52**	**24.14**	**24.5**	**1.086**	**0.1**	**0.766**	**0.832**
	CDMA2000 BC0	RTAP 153.6	Bottom Side	1	384	836.52	24.14	24.5	1.086	0.18	0.102	0.111
	CDMA2000 BC0	RTAP 153.6	Right Side	1	777	848.31	24.06	24.5	1.107	0.02	0.636	0.704
	CDMA2000 BC0	RTAP 153.6	Right Side	1	1013	824.7	24	24.5	1.122	-0.002	0.615	0.690
	CDMA2000 BC10	RTAP 153.6	Front	1	684	823.1	24.27	24.5	1.054	-0.11	0.559	0.589
	CDMA2000 BC10	RTAP 153.6	Back	1	684	823.1	24.27	24.5	1.054	0.03	0.795	0.838
	CDMA2000 BC10	RTAP 153.6	Left Side	1	684	823.1	24.27	24.5	1.054	0.04	0.581	0.613
	CDMA2000 BC10	RTAP 153.6	Right Side	1	684	823.1	24.27	24.5	1.054	0.06	0.775	0.817
	CDMA2000 BC10	RTAP 153.6	Bottom Side	1	684	823.1	24.27	24.5	1.054	0.19	0.101	0.106
	CDMA2000 BC10	RTAP 153.6	Back	1	476	817.9	24.18	24.5	1.076	0.02	0.829	0.892
	CDMA2000 BC10	RTAP 153.6	Back	1	580	820.5	24.16	24.5	1.081	0.03	0.794	0.859
10	**CDMA2000 BC10**	**RTAP 153.6**	**Right Side**	**1**	**476**	**817.9**	**24.18**	**24.5**	**1.076**	**0.08**	**0.840**	**0.904**
	CDMA2000 BC10	RTAP 153.6	Right Side	1	580	820.5	24.16	24.5	1.081	0.07	0.786	0.850
	CDMA2000 BC1	RTAP 153.6	Front		1175	1908.75	24.21	24.5	1.069	-0.01	0.753	0.805
	CDMA2000 BC1	RTAP 153.6	Back		1175	1908.75	24.21	24.5	1.069	-0.05	1.030	1.101
	CDMA2000 BC1	RTAP 153.6	Left Side		1175	1908.75	24.21	24.5	1.069	-0.01	0.543	0.580
	CDMA2000 BC1	RTAP 153.6	Right Side		1175	1908.75	24.21	24.5	1.069	-0.01	0.550	0.588
	CDMA2000 BC1	RTAP 153.6	Bottom Side		1175	1908.75	24.21	24.5	1.069	0.15	0.982	1.050
	CDMA2000 BC1	RTAP 153.6	Front		25	1851.25	23.99	24.5	1.125	-0.03	0.670	0.753
	CDMA2000 BC1	RTAP 153.6	Front		600	1880	23.95	24.5	1.135	-0.03	0.689	0.782
	CDMA2000 BC1	RTAP 153.6	Back		25	1851.25	23.99	24.5	1.125	-0.11	0.979	1.101
11	**CDMA2000 BC1**	**RTAP 153.6**	**Back**		**600**	**1880**	**23.95**	**24.5**	**1.135**	**-0.12**	**1.000**	**1.135**
	CDMA2000 BC1	RTAP 153.6	Bottom Side		25	1851.25	23.99	24.5	1.125	0.07	0.845	0.950
	CDMA2000 BC1	RTAP 153.6	Bottom Side		600	1880	23.95	24.5	1.135	0.07	0.904	1.026

<LTE SAR>

Plot No.	Band	BW (MHz)	Mode	RB Size	RB offset	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 26	15	QPSK	1	0	Front	1	26865	831.5	22.83	23	1.040	-0.02	0.492	0.512
12	**LTE Band 26**	**15**	**QPSK**	**1**	**0**	**Back**	**1**	**26865**	**831.5**	**22.83**	**23**	**1.040**	**0.03**	**0.587**	**0.610**
	LTE Band 26	15	QPSK	1	0	Left Side	1	26865	831.5	22.83	23	1.040	-0.0064	0.460	0.478
	LTE Band 26	15	QPSK	1	0	Right Side	1	26865	831.5	22.83	23	1.040	-0.0057	0.577	0.600
	LTE Band 26	15	QPSK	1	0	Bottom Side	1	26865	831.5	22.83	23	1.040	0.18	0.085	0.088
	LTE Band 26	15	QPSK	36	0	Front	1	26865	831.5	21.79	22	1.050	-0.07	0.373	0.391
	LTE Band 26	15	QPSK	36	0	Back	1	26865	831.5	21.79	22	1.050	0.01	0.444	0.466
	LTE Band 26	15	QPSK	36	0	Left Side	1	26865	831.5	21.79	22	1.050	-0.06	0.360	0.378
	LTE Band 26	15	QPSK	36	0	Right Side	1	26865	831.5	21.79	22	1.050	0.02	0.464	0.487
	LTE Band 26	15	QPSK	36	0	Bottom Side	1	26865	831.5	21.79	22	1.050	0.13	0.066	0.069
	LTE Band 25	20	QPSK	1	49	Front	1	26340	1880	22.45	23	1.135	-0.1	0.535	0.607
	LTE Band 25	20	QPSK	1	49	Back	1	26340	1880	22.45	23	1.135	-0.1	0.826	0.938
	LTE Band 25	20	QPSK	1	49	Left Side	1	26340	1880	22.45	23	1.135	-0.04	0.369	0.419
	LTE Band 25	20	QPSK	1	49	Right Side	1	26340	1880	22.45	23	1.135	-0.1	0.283	0.321
	LTE Band 25	20	QPSK	1	49	Bottom Side	1	26340	1880	22.45	23	1.135	-0.12	0.737	0.837
	LTE Band 25	20	QPSK	1	49	Back	1	26140	1860	22.3	23	1.175	-0.15	0.664	0.780
13	**LTE Band 25**	**20**	**QPSK**	**1**	**49**	**Back**	**1**	**26590**	**1905**	**22.25**	**23**	**1.189**	**-0.09**	**0.810**	**0.963**
	LTE Band 25	20	QPSK	1	49	Bottom Side	1	26140	1860	22.3	23	1.175	0.1	0.551	0.647
	LTE Band 25	20	QPSK	1	49	Bottom Side	1	26590	1905	22.25	23	1.189	0.12	0.755	0.897
	LTE Band 25	20	QPSK	50	24	Front	1	26340	1880	21.54	22	1.112	-0.08	0.423	0.470
	LTE Band 25	20	QPSK	50	24	Back	1	26340	1880	21.54	22	1.112	-0.09	0.635	0.706
	LTE Band 25	20	QPSK	50	24	Left Side	1	26340	1880	21.54	22	1.112	0.06	0.330	0.367
	LTE Band 25	20	QPSK	50	24	Right Side	1	26340	1880	21.54	22	1.112	-0.07	0.246	0.273
	LTE Band 25	20	QPSK	50	24	Bottom Side	1	26340	1880	21.54	22	1.112	0.11	0.571	0.635
	LTE Band 25	20	QPSK	100	0	Front	1	26340	1880	21.43	22	1.140	0.02	0.442	0.504
	LTE Band 25	20	QPSK	100	0	Back	1	26340	1880	21.43	22	1.140	-0.1	0.689	0.786
	LTE Band 25	20	QPSK	100	0	Left Side	1	26340	1880	21.43	22	1.140	-0.07	0.342	0.390
	LTE Band 25	20	QPSK	100	0	Right Side	1	26340	1880	21.43	22	1.140	0.01	0.257	0.293
	LTE Band 25	20	QPSK	100	0	Bottom Side	1	26340	1880	21.43	22	1.140	0.15	0.604	0.689

Plot No.	Band	BW (MHz)	Mode	RB Size	RB offset	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41	20	QPSK	1	49	Front	1	40620	2593	22.15	22.5	1.084	62.9	1.006	0.02	0.249	0.272
	LTE Band 41	20	QPSK	1	49	Back	1	40620	2593	22.15	22.5	1.084	62.9	1.006	-0.13	0.822	0.896
	LTE Band 41	20	QPSK	1	49	Left Side	1	40620	2593	22.15	22.5	1.084	62.9	1.006	0.009	0.104	0.113
	LTE Band 41	20	QPSK	1	49	Right Side	1	40620	2593	22.15	22.5	1.084	62.9	1.006	-0.17	0.099	0.108
	LTE Band 41	20	QPSK	1	49	Bottom Side	1	40620	2593	22.15	22.5	1.084	62.9	1.006	0.19	0.663	0.723
14	**LTE Band 41**	**20**	**QPSK**	**1**	**49**	**Back**	**1**	**39750**	**2506**	**21.92**	**22.5**	**1.143**	**62.9**	**1.006**	**-0.19**	**1.120**	**1.288**
	LTE Band 41	20	QPSK	1	49	Back	1	40185	2549.5	21.88	22.5	1.153	62.9	1.006	-0.08	0.988	1.146
	LTE Band 41	20	QPSK	1	49	Back	1	41055	2636.5	22.06	22.5	1.107	62.9	1.006	-0.08	0.898	1.000
	LTE Band 41	20	QPSK	1	49	Back	1	41490	2680	22.12	22.5	1.091	62.9	1.006	-0.07	0.881	0.967
	LTE Band 41	20	QPSK	1	49	Bottom Side	1	39750	2506	21.92	22.5	1.143	62.9	1.006	0.07	1.04	1.196
	LTE Band 41	20	QPSK	1	49	Bottom Side	1	40185	2549.5	21.88	22.5	1.153	62.9	1.006	0.08	0.871	1.011
	LTE Band 41	20	QPSK	1	49	Bottom Side	1	41055	2636.5	22.06	22.5	1.107	62.9	1.006	0.08	0.828	0.922
	LTE Band 41	20	QPSK	1	49	Bottom Side	1	41490	2680	22.12	22.5	1.091	62.9	1.006	0.09	0.978	1.074
	LTE Band 41	20	QPSK	50	24	Front	1	40620	2593	21.06	21.5	1.107	62.9	1.006	-0.16	0.198	0.220
	LTE Band 41	20	QPSK	50	24	Back	1	40620	2593	21.06	21.5	1.107	62.9	1.006	-0.05	0.669	0.745
	LTE Band 41	20	QPSK	50	24	Left Side	1	40620	2593	21.06	21.5	1.107	62.9	1.006	-0.08	0.078	0.087
	LTE Band 41	20	QPSK	50	24	Right Side	1	40620	2593	21.06	21.5	1.107	62.9	1.006	-0.01	0.076	0.085
	LTE Band 41	20	QPSK	50	24	Bottom Side	1	40620	2593	21.06	21.5	1.107	62.9	1.006	0.02	0.513	0.571
	LTE Band 41	20	QPSK	50	24	Back	1	39750	2506	21.02	21.5	1.117	62.9	1.006	-0.04	0.948	1.065
	LTE Band 41	20	QPSK	50	24	Back	1	40185	2549.5	20.92	21.5	1.143	62.9	1.006	0.16	0.839	0.965
	LTE Band 41	20	QPSK	50	24	Back	1	41055	2636.5	20.91	21.5	1.146	62.9	1.006	-0.08	0.903	1.041
	LTE Band 41	20	QPSK	50	24	Back	1	41490	2680	20.98	21.5	1.127	62.9	1.006	-0.09	0.936	1.061
	LTE Band 41	20	QPSK	100	0	Front	1	40620	2593	20.99	21.5	1.125	62.9	1.006	0.03	0.207	0.234
	LTE Band 41	20	QPSK	100	0	Back	1	40620	2593	20.99	21.5	1.125	62.9	1.006	-0.08	0.679	0.768
	LTE Band 41	20	QPSK	100	0	Left Side	1	40620	2593	20.99	21.5	1.125	62.9	1.006	-0.13	0.084	0.095
	LTE Band 41	20	QPSK	100	0	Right Side	1	40620	2593	20.99	21.5	1.125	62.9	1.006	0.08	0.077	0.087
	LTE Band 41	20	QPSK	100	0	Bottom Side	1	40620	2593	20.99	21.5	1.125	62.9	1.006	0.06	0.529	0.598

<DTS WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN 2.4GHz	802.11b 1Mbps	Front	1	11	2462	14.79	15	1.050	97.62	1.024	0.04	0.010	0.011
15	**WLAN 2.4GHz**	**802.11b 1Mbps**	**Back**	**1**	**11**	**2462**	**14.79**	**15**	**1.050**	**97.62**	**1.024**	**-0.17**	**0.093**	**0.100**
	WLAN 2.4GHz	802.11b 1Mbps	Left Side	1	11	2462	14.79	15	1.050	97.62	1.024	0.03	0.033	0.035

15.3 Body Worn Accessory SAR

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Headset	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	CDMA2000 BC0	RC3 SO32	Front	1	-	384	836.52	24.12	24.5	1.091	-0.03	0.562	0.613
16	**CDMA2000 BC0**	**RC3 SO32**	**Back**	**1**	**-**	**384**	**836.52**	**24.12**	**24.5**	**1.091**	**-0.03**	**0.682**	**0.744**
	CDMA2000 BC0	RETAP 4096	Back	1	-	384	836.52	24.18	24.5	1.076	0.03	0.684	0.736
	CDMA2000 BC10	RC3 SO32	Front	1	-	684	823.1	24.24	24.5	1.062	-0.05	0.580	0.616
	CDMA2000 BC10	RC3 SO32	Back	1	-	684	823.1	24.24	24.5	1.062	-0.00097	0.774	0.822
	CDMA2000 BC10	RC3 SO32	Back	1	-	476	817.9	24.19	24.5	1.074	0.04	0.790	0.848
	CDMA2000 BC10	RC3 SO32	Back	1	-	580	820.5	24.15	24.5	1.084	0.03	0.757	0.821
	CDMA2000 BC10	RETAP 4096	Back	1	-	684	823.1	24.28	24.5	1.052	0.03	0.823	0.866
17	CDMA2000 BC10	RETAP 4096	Back	1	-	476	817.9	24.27	24.5	1.054	0.02	0.844	**0.890**
	CDMA2000 BC10	RETAP 4096	Back	1	-	580	820.5	24.22	24.5	1.067	0.02	0.809	0.863
	CDMA2000 BC1	RC3 SO32	Front	1	-	1175	1908.75	24.18	24.5	1.076	0.01	0.738	0.794
	CDMA2000 BC1	RC3 SO32	Back	1	-	1175	1908.75	24.18	24.5	1.076	-0.08	0.999	1.075
	CDMA2000 BC1	RC3 SO32	Back	1	-	25	1851.25	23.97	24.5	1.130	-0.1	0.945	1.068
	CDMA2000 BC1	RC3 SO32	Back	1	-	600	1880	23.93	24.5	1.140	-0.09	0.962	1.097
18	**CDMA2000 BC1**	**RETAP 4096**	**Back**	**1**	**-**	**600**	**1880**	**24.03**	**24.5**	**1.114**	**-0.16**	**0.989**	**1.102**
	CDMA2000 BC1	RETAP 4096	Back	1	-	25	1851.25	24.03	24.5	1.114	-0.16	0.957	1.066
	CDMA2000 BC1	RETAP 4096	Back	1	-	1175	1908.75	24.2	24.5	1.072	-0.09	1.020	1.093

<LTE SAR>

Plot No.	Band	BW (MHz)	Mode	RB Size	RB offset	Test Position	Gap (cm)	Headset	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 26	15	QPSK	1	0	Front	1	-	26865	831.5	22.83	23	1.040	-0.02	0.492	0.512
12	**LTE Band 26**	**15**	**QPSK**	**1**	**0**	**Back**	**1**	-	**26865**	**831.5**	**22.83**	**23**	**1.040**	**0.03**	**0.587**	**0.610**
	LTE Band 26	15	QPSK	36	0	Front	1	-	26865	831.5	21.79	22	1.050	-0.07	0.373	0.391
	LTE Band 26	15	QPSK	36	0	Back	1	-	26865	831.5	21.79	22	1.050	0.01	0.444	0.466
	LTE Band 25	20	QPSK	1	49	Front	1	-	26340	1880	22.45	23	1.135	-0.1	0.535	0.607
	LTE Band 25	20	QPSK	1	49	Back	1	-	26340	1880	22.45	23	1.135	-0.1	0.826	0.938
	LTE Band 25	20	QPSK	1	49	Back	1	-	26140	1860	22.3	23	1.175	-0.15	0.664	0.780
13	**LTE Band 25**	**20**	**QPSK**	**1**	**49**	**Back**	**1**	-	**26590**	**1905**	**22.25**	**23**	**1.189**	**-0.09**	**0.810**	**0.963**
	LTE Band 25	20	QPSK	50	24	Front	1	-	26340	1880	21.54	22	1.112	-0.08	0.423	0.470
	LTE Band 25	20	QPSK	50	24	Back	1	-	26340	1880	21.54	22	1.112	-0.09	0.635	0.706
	LTE Band 25	20	QPSK	100	0	Front	1	-	26340	1880	21.43	22	1.140	0.02	0.442	0.504
	LTE Band 25	20	QPSK	100	0	Back	1	-	26340	1880	21.43	22	1.140	-0.1	0.689	0.786

Plot No.	Band	BW (MHz)	Mode	RB Size	RB offset	Test Position	Gap (cm)	Headset	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41	20	QPSK	1	49	Front	1	-	40620	2593	22.15	22.5	1.084	62.9	1.006	0.02	0.249	0.272
	LTE Band 41	20	QPSK	1	49	Back	1	-	40620	2593	22.15	22.5	1.084	62.9	1.006	-0.13	0.822	0.896
14	**LTE Band 41**	**20**	**QPSK**	**1**	**49**	**Back**	**1**	**-**	**39750**	**2506**	**21.92**	**22.5**	**1.143**	**62.9**	**1.006**	**-0.19**	**1.120**	**1.288**
	LTE Band 41	20	QPSK	1	49	Back	1	-	40185	2549.5	21.88	22.5	1.153	62.9	1.006	-0.08	0.988	1.146
	LTE Band 41	20	QPSK	1	49	Back	1	-	41055	2636.5	22.06	22.5	1.107	62.9	1.006	-0.08	0.898	1.000
	LTE Band 41	20	QPSK	1	49	Back	1	-	41490	2680	22.12	22.5	1.091	62.9	1.006	-0.07	0.881	0.967
	LTE Band 41	20	QPSK	1	49	Back	1	Headset	40620	2593	22.15	22.5	1.084	62.9	1.006	-0.07	0.818	0.892
	LTE Band 41	20	QPSK	1	49	Back	1	Headset	39750	2506	21.92	22.5	1.143	62.9	1.006	-0.09	0.773	0.889
	LTE Band 41	20	QPSK	1	49	Back	1	Headset	40185	2549.5	21.88	22.5	1.153	62.9	1.006	-0.09	1.000	1.160
	LTE Band 41	20	QPSK	1	49	Back	1	Headset	41055	2636.5	22.06	22.5	1.107	62.9	1.006	-0.12	0.929	1.034
	LTE Band 41	20	QPSK	1	49	Back	1	Headset	41490	2680	22.12	22.5	1.091	62.9	1.006	-0.07	0.918	1.008
	LTE Band 41	20	QPSK	50	24	Front	1	-	40620	2593	21.06	21.5	1.107	62.9	1.006	-0.16	0.198	0.220
	LTE Band 41	20	QPSK	50	24	Back	1	-	40620	2593	21.06	21.5	1.107	62.9	1.006	-0.05	0.669	0.745
	LTE Band 41	20	QPSK	50	24	Back	1		39750	2506	21.02	21.5	1.117	62.9	1.006	-0.04	0.948	1.065
	LTE Band 41	20	QPSK	50	24	Back	1		40185	2549.5	20.92	21.5	1.143	62.9	1.006	0.16	0.839	0.965
	LTE Band 41	20	QPSK	50	24	Back	1		41055	2636.5	20.91	21.5	1.146	62.9	1.006	-0.08	0.903	1.041
	LTE Band 41	20	QPSK	50	24	Back	1		41490	2680	20.98	21.5	1.127	62.9	1.006	-0.09	0.936	1.061
	LTE Band 41	20	QPSK	100	0	Front	1	-	40620	2593	20.99	21.5	1.125	62.9	1.006	0.03	0.207	0.234
	LTE Band 41	20	QPSK	100	0	Back	1	-	40620	2593	20.99	21.5	1.125	62.9	1.006	-0.08	0.679	0.768

<DTS WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Headset	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN 2.4GHz	802.11b 1Mbps	Front	1	-	11	2462	14.79	15	1.050	97.62	1.024	0.04	0.010	0.011
15	**WLAN 2.4GHz**	**802.11b 1Mbps**	**Back**	**1**	**-**	**11**	**2462**	**14.79**	**15**	**1.050**	**97.62**	**1.024**	**-0.17**	**0.093**	**0.100**
	WLAN 2.4GHz	802.11b 1Mbps	Back	1	Headset	11	2462	14.79	15	1.050	97.62	1.024	0.07	0.082	0.088

<NII WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Headset	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN 5.2GHz	802.11a, 6Mbps	Front	1	-	36	5180	13.89	14.5	1.151	87.44	1.144	0.03	0.00894	0.012
	WLAN 5.2GHz	802.11a, 6Mbps	Back	1	-	36	5180	13.89	14.5	1.151	87.44	1.144	0.09	0.200	0.263
19	**WLAN 5.2GHz**	**802.11a, 6Mbps**	**Back**	**1**	**Headset**	**36**	**5180**	**13.89**	**14.5**	**1.151**	**87.44**	**1.144**	**-0.05**	**0.254**	**0.334**
	WLAN 5.8GHz	802.11a, 6Mbps	Front	1	-	161	5805	13.56	14	1.107	87.44	1.144	-	n/a	-
	WLAN 5.8GHz	802.11a, 6Mbps	Back	1	-	161	5805	13.56	14	1.107	87.44	1.144	0.08	0.027	0.034
20	**WLAN 5.8GHz**	**802.11a, 6Mbps**	**Back**	**1**	**Headset**	161	5805	13.56	14	1.107	**87.44**	**1.144**	**0.1**	**0.028**	**0.035**

Note: "n.a" stands for there is no cube to be found with the highest averaged SAR value.

15.4 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	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	CDMA2000 BC10	-	RETAP 4096	-	-	Back	1	476	817.9	24.27	24.5	1.054	-	-	0.02	0.844	1	0.890
2nd	CDMA2000 BC10	-	RETAP 4096	-	-	Back	1	476	817.9	24.27	24.5	1.054	-		0.12	0.840	1.005	0.886
1st	CDMA2000 BC1	-	RTAP 153.6	-	-	Back	1	1175	1908.75	24.21	24.5	1.069			-0.05	1.030	1	1.101
2nd	CDMA2000 BC1	-	RTAP 153.6	-	-	Back	1	1175	1908.75	24.21	24.5	1.069			-0.1	1.010	1.019	1.080
1st	LTE Band 41	20	QPSK	1	49	Back	1	39750	2506	21.92	22.5	1.143	62.9	1.006	-0.19	1.120	1	1.288
2nd	LTE Band 41	20	QPSK	1	49	Back	1	39750	2506	21.92	22.5	1.143	62.9	1.006	-0.09	1.100	1.018	1.265

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	Portable Handset			Note
		Head	Body-worn	Hotspot	
1.	CDMA(Voice) + WLAN2.4GHz(data)	Yes	Yes		
2.	CDMA((Voice) + Bluetooth(data)	Yes	Yes		
3.	CDMA((Voice) + WLAN5GHz(data)	Yes	Yes		
4.	CDMA(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	2.4GHz Hotspot
5.	LTE(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	2.4GHz Hotspot
6.	CDMA(Data) + Bluetooth(data)	Yes	Yes	Yes	Bluetooth Tethering
7.	LTE(Data) + Bluetooth(data)	Yes	Yes	Yes	Bluetooth Tethering
8.	CDMA(data) + WLAN5 GHz(data)	Yes	Yes		Group Client
9.	LTE(data) + WLAN5GHz(data)	Yes	Yes		Group Client

General Note:

1. This device supported VoIP in CDMA, (e.g. 3rd party VoIP)/LTE.
2. This device 2.4GHz WLAN supports Hotspot operation, and 5.2GHz/5.8GHz supports WiFi Direct (Group Client only).
3. EUT will choose either CDMA2000 or LTE according to the network signal condition; therefore, they will not transmit simultaneously.
4. EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, they will not transmit simultaneously.
5. WLAN and Bluetooth share the same antenna, and cannot transmit simultaneously.
6. The reported SAR summation is calculated based on the same configuration and test position.
7. Per KDB 447498 D01v05r02, simultaneous transmission SAR is compliant if,
   i) Scalar SAR summation < 1.6W/kg.
   ii) SPLSR = (SAR1 + SAR2)^1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of [(x1-x2)2 + (y1-y2)2 + (z1-z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
   iii) If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.
   iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.
8. For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01v05r02 based on the formula below.
   i) (*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)]·[$\sqrt{f(GHz)}/x$] W/kg for *test separation distances* ≤ 50 mm; where x = 7.5 for 1-g SAR, and x = 18.75 for 10-g SAR.
   ii) When the minimum separation distance is < 5mm, the distance is used 5mm to determine SAR test exclusion.
   iii) 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the *test separation distances* is > 50 mm.

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

16.1 Head Exposure Conditions

<WWAN + WLAN>

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	WLAN DTS Max. WLAN SAR (W/kg)	Summed SAR (W/kg)
CDMA	BC0	Right Cheek	0.480	0.043	0.52
		Right Tilted	0.347	0.027	0.37
		Left Cheek	0.464	0.025	0.49
		Left Tilted	0.378	0.010	0.39
	BC10	Right Cheek	0.389	0.043	0.43
		Right Tilted	0.272	0.027	0.30
		Left Cheek	0.403	0.025	0.43
		Left Tilted	0.310	0.010	0.32
	BC1	Right Cheek	0.497	0.043	0.54
		Right Tilted	0.242	0.027	0.27
		Left Cheek	0.533	0.025	0.56
		Left Tilted	0.257	0.010	0.27
LTE	Band 25	Right Cheek	0.480	0.043	0.52
		Right Tilted	0.226	0.027	0.25
		Left Cheek	0.457	0.025	0.48
		Left Tilted	0.225	0.010	0.24
	Band 26	Right Cheek	0.332	0.043	0.38
		Right Tilted	0.214	0.027	0.24
		Left Cheek	0.329	0.025	0.35
		Left Tilted	0.224	0.010	0.23
	Band 41	Right Cheek	0.087	0.043	0.13
		Right Tilted	0.075	0.027	0.10
		Left Cheek	0.159	0.025	0.18
		Left Tilted	0.052	0.010	0.06

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	WLAN NII Max. WLAN SAR (W/kg)	Summed SAR (W/kg)
CDMA	BC0	Right Cheek	0.480	0.037	0.52
		Right Tilted	0.347	0.016	0.36
		Left Cheek	0.464	0.017	0.48
		Left Tilted	0.378	0.010	0.39
	BC10	Right Cheek	0.389	0.037	0.43
		Right Tilted	0.272	0.016	0.29
		Left Cheek	0.403	0.017	0.42
		Left Tilted	0.310	0.010	0.32
	BC1	Right Cheek	0.497	0.037	0.53
		Right Tilted	0.242	0.016	0.26
		Left Cheek	0.533	0.017	0.55
		Left Tilted	0.257	0.010	0.27
LTE	Band 25	Right Cheek	0.480	0.037	0.52
		Right Tilted	0.226	0.016	0.24
		Left Cheek	0.457	0.017	0.47
		Left Tilted	0.225	0.010	0.24
	Band 26	Right Cheek	0.332	0.037	0.37
		Right Tilted	0.214	0.016	0.23
		Left Cheek	0.329	0.017	0.35
		Left Tilted	0.224	0.010	0.23
	Band 41	Right Cheek	0.087	0.037	0.12
		Right Tilted	0.075	0.016	0.09
		Left Cheek	0.159	0.017	0.18
		Left Tilted	0.052	0.010	0.06

<WWAN + Bluetooth>

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	Bluetooth DSS Max. Bluetooth SAR (W/kg)	Summed SAR (W/kg)
CDMA	BC0	Right Cheek	0.480	0.084	0.56
		Right Tilted	0.347	0.084	0.43
		Left Cheek	0.464	0.084	0.55
		Left Tilted	0.378	0.084	0.46
	BC10	Right Cheek	0.389	0.084	0.47
		Right Tilted	0.272	0.084	0.36
		Left Cheek	0.403	0.084	0.49
		Left Tilted	0.310	0.084	0.39
	BC1	Right Cheek	0.497	0.084	0.58
		Right Tilted	0.242	0.084	0.33
		Left Cheek	0.533	0.084	0.62
		Left Tilted	0.257	0.084	0.34
LTE	Band 25	Right Cheek	0.480	0.084	0.56
		Right Tilted	0.226	0.084	0.31
		Left Cheek	0.457	0.084	0.54
		Left Tilted	0.225	0.084	0.31
	Band 26	Right Cheek	0.332	0.084	0.42
		Right Tilted	0.214	0.084	0.30
		Left Cheek	0.329	0.084	0.41
		Left Tilted	0.224	0.084	0.31
	Band 41	Right Cheek	0.087	0.084	0.17
		Right Tilted	0.075	0.084	0.16
		Left Cheek	0.159	0.084	0.24
		Left Tilted	0.052	0.084	0.14

16.2 Hotspot Exposure Conditions

<WWAN + WLAN>

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	WLAN DTS Max. WLAN SAR (W/kg)	Summed SAR (W/kg)
CDMA	BC0	Front	0.604	0.011	0.62
		Back	0.740	0.100	0.84
		Left side	0.606	0.035	0.64
		Right side	0.832		0.83
		Bottom side	0.111		0.11
	BC10	Front	0.589	0.011	0.60
		Back	0.892	0.100	0.99
		Left side	0.613	0.035	0.65
		Right side	0.904		0.90
		Bottom side	0.106		0.11
	BC1	Front	0.805	0.011	0.82
		Back	1.135	0.100	1.24
		Left side	0.580	0.035	0.62
		Right side	0.588		0.59
		Bottom side	1.050		1.05
LTE	Band 26	Front	0.512	0.011	0.52
		Back	0.610	0.100	0.71
		Left side	0.478	0.035	0.51
		Right side	0.600		0.60
		Bottom side	0.088		0.09
	Band 25	Front	0.607	0.011	0.62
		Back	0.963	0.100	1.06
		Left side	0.419	0.035	0.45
		Right side	0.321		0.32
		Bottom side	0.897		0.90
	Band 41	Front	0.272	0.011	0.28
		Back	1.288	0.100	1.39
		Left side	0.113	0.035	0.15
		Right side	0.108		0.11
		Bottom side	1.196		1.20

<WWAN + Bluetooth>

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	Bluetooth DSS Max. Bluetooth SAR (W/kg)	Summed SAR (W/kg)
CDMA	BC0	Front	0.604	0.042	0.65
		Back	0.740	0.042	0.78
		Left side	0.606	0.042	0.65
		Right side	0.832		0.83
		Bottom side	0.111		0.11
	BC10	Front	0.589	0.042	0.63
		Back	0.892	0.042	0.93
		Left side	0.613	0.042	0.66
		Right side	0.904		0.90
		Bottom side	0.106		0.11
	BC1	Front	0.805	0.042	0.85
		Back	1.135	0.042	1.18
		Left side	0.580	0.042	0.62
		Right side	0.588		0.59
		Bottom side	1.050		1.05
LTE	Band 26	Front	0.512	0.042	0.55
		Back	0.610	0.042	0.65
		Left side	0.478	0.042	0.52
		Right side	0.600		0.60
		Bottom side	0.088		0.09
	Band 25	Front	0.607	0.042	0.65
		Back	0.963	0.042	1.01
		Left side	0.419	0.042	0.46
		Right side	0.321		0.32
		Bottom side	0.897		0.90
	Band 41	Front	0.272	0.042	0.31
		Back	1.288	0.042	1.33
		Left side	0.113	0.042	0.16
		Right side	0.108		0.11
		Bottom side	1.196		1.20

16.3 Body-Worn Accessory Exposure Conditions

<WWAN + WLAN>

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	WLAN DTS Max. WLAN SAR (W/kg)	Summed SAR (W/kg)
CDMA	BC0	Front	0.613	0.011	0.62
		Back	0.744	0.100	0.84
		Back with Headset		0.088	0.09
	BC10	Front	0.616	0.011	0.63
		Back	0.890	0.100	0.99
		Back with Headset		0.088	0.09
	BC1	Front	0.794	0.011	0.81
		Back	1.102	0.100	1.20
		Back with Headset		0.088	0.09
LTE	Band 26	Front	0.512	0.011	0.52
		Back	0.610	0.100	0.71
		Back with Headset		0.088	0.09
	Band 25	Front	0.607	0.011	0.62
		Back	0.963	0.100	1.06
		Back with Headset		0.088	0.09
	Band 41	Front	0.272	0.011	0.28
		Back	1.288	0.100	**1.39**
		Back with Headset	1.160	0.088	1.25

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	WLAN NII Max. WLAN SAR (W/kg)	Summed SAR (W/kg)
CDMA	BC0	Front	0.613	0.012	0.63
		Back	0.744	0.263	1.01
		Back with Headset		0.334	0.33
	BC10	Front	0.616	0.012	0.63
		Back	0.890	0.263	1.15
		Back with Headset		0.334	0.33
	BC1	Front	0.794	0.012	0.81
		Back	1.102	0.263	1.37
		Back with Headset		0.334	0.33
LTE	Band 26	Front	0.512	0.012	0.52
		Back	0.610	0.263	0.87
		Back with Headset		0.334	0.33
	Band 25	Front	0.607	0.012	0.62
		Back	0.963	0.263	1.23
		Back with Headset		0.334	0.33
	Band 41	Front	0.272	0.012	0.28
		Back	1.288	0.263	**1.55**
		Back with Headset	1.160	0.334	1.49

<WWAN + Bluetooth>

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	Bluetooth DSS Max. Bluetooth SAR (W/kg)	Summed SAR (W/kg)
CDMA	BC0	Front	0.613	0.042	0.66
		Back	0.744	0.042	0.79
		Back with Headset		0.042	0.04
	BC10	Front	0.616	0.042	0.66
		Back	0.890	0.042	0.93
		Back with Headset		0.042	0.04
	BC1	Front	0.794	0.042	0.84
		Back	1.102	0.042	1.14
		Back with Headset		0.042	0.04
LTE	Band 26	Front	0.512	0.042	0.55
		Back	0.610	0.042	0.65
		Back with Headset		0.042	0.04
	Band 25	Front	0.607	0.042	0.65
		Back	0.963	0.042	1.01
		Back with Headset		0.042	0.04
	Band 41	Front	0.272	0.042	0.31
		Back	1.288	0.042	**1.33**
		Back with Headset	1.160	0.042	1.20

Test Engineer： Fulu Hu

17. Uncertainty Assessment

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

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

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

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

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

(b) κ is the coverage factor

Table 14.1. 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 14.2. Uncertainty Budget for frequency range 300 MHz to 3 GHz

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)
Measurement System							
Probe Calibration	6.55	Normal	1	1	1	± 6.55 %	± 6.55 %
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	2.0	Rectangular	√3	1	1	± 1.2 %	± 1.2 %
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	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Probe Positioning	9.9	Rectangular	√3	1	1	± 5.7 %	± 5.7 %
Max. SAR Eval.	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
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						± 12.8 %	± 12.6 %
Coverage Factor for 95 %						K=2	
Expanded Uncertainty						**± 25.6 %**	**± 25.2 %**

Table 14.3. Uncertainty Budget for frequency range 3 GHz to 6 GHz

18. References

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

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

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

[4] SPEAG DASY System Handbook

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

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

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

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

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

[10] FCC KDB 941225 D06 v01r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", May 2013.

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

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

Appendix A. Plots of System Performance Check

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.06.02

System Check_Head_835MHz_140602

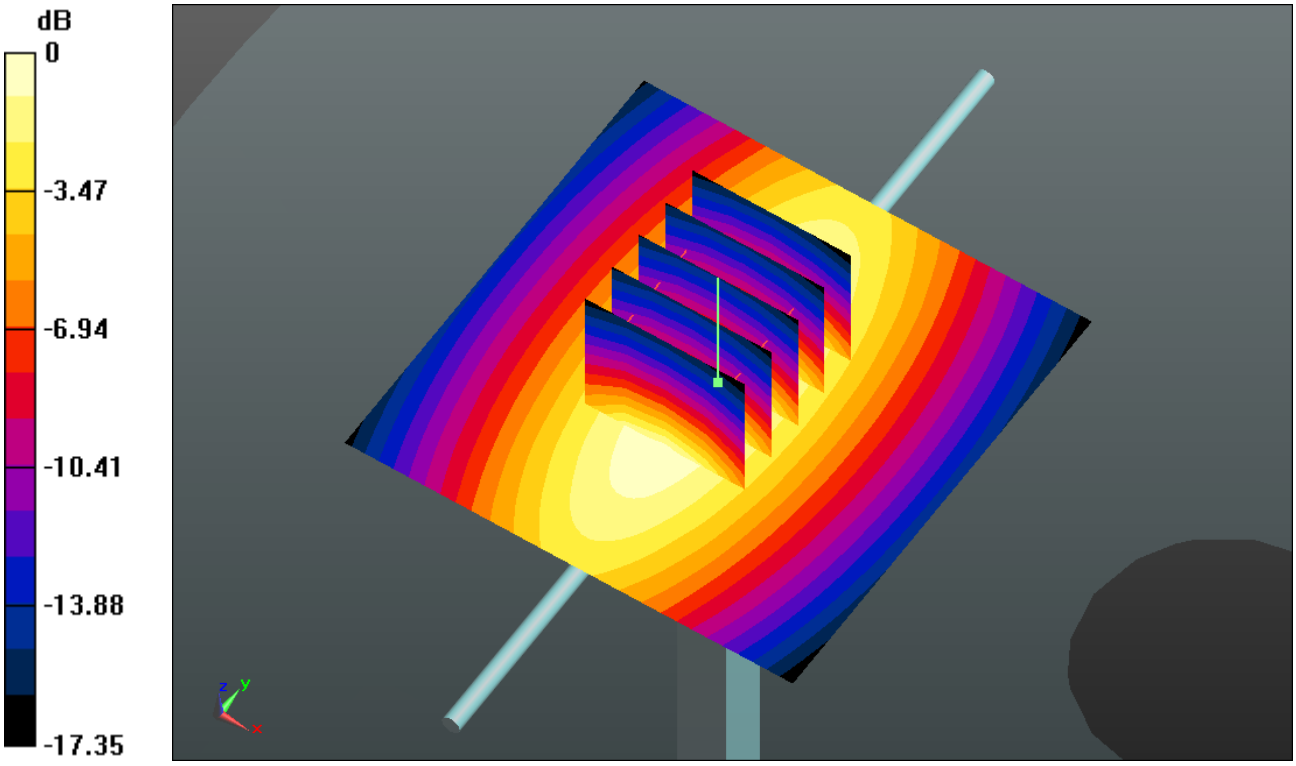
DUT: D835V2 - SN:4d091

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_835_140602 Medium parameters used: f = 835 MHz; σ = 0.878 mho/m; ε_r = 40.796; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(9.84, 9.84, 9.84); Calibrated: 2014.04.22
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014.04.30
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.868 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 52.428 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 3.529 W/kg
SAR(1 g) = 2.36 mW/g; SAR(10 g) = 1.54 mW/g
Maximum value of SAR (measured) = 2.989 mW/g



0 dB = 2.870mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.06.03

System Check_Head_1900MHz_140603

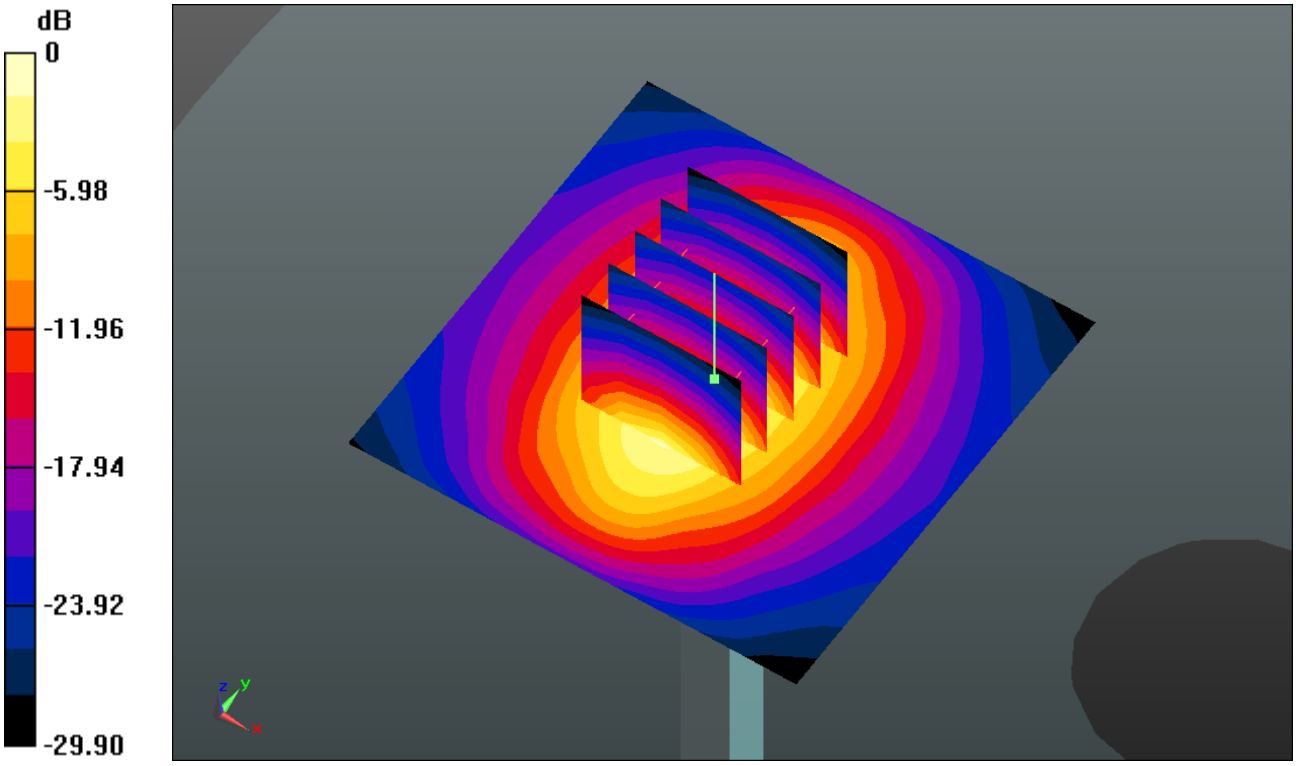
DUT: D1900V2 - SN:5d118

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900_140603 Medium parameters used: f = 1900 MHz; σ = 1.423 mho/m; ε_r = 39.015; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(8.09, 8.09, 8.09); Calibrated: 2014.04.22
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014.04.30
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 14.927 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 89.650 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 19.051 W/kg
SAR(1 g) = 10.3 mW/g; SAR(10 g) = 5.39 mW/g
Maximum value of SAR (measured) = 14.953 mW/g



0 dB = 14.930mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.06.21

System Check_Head_2450MHz_140621

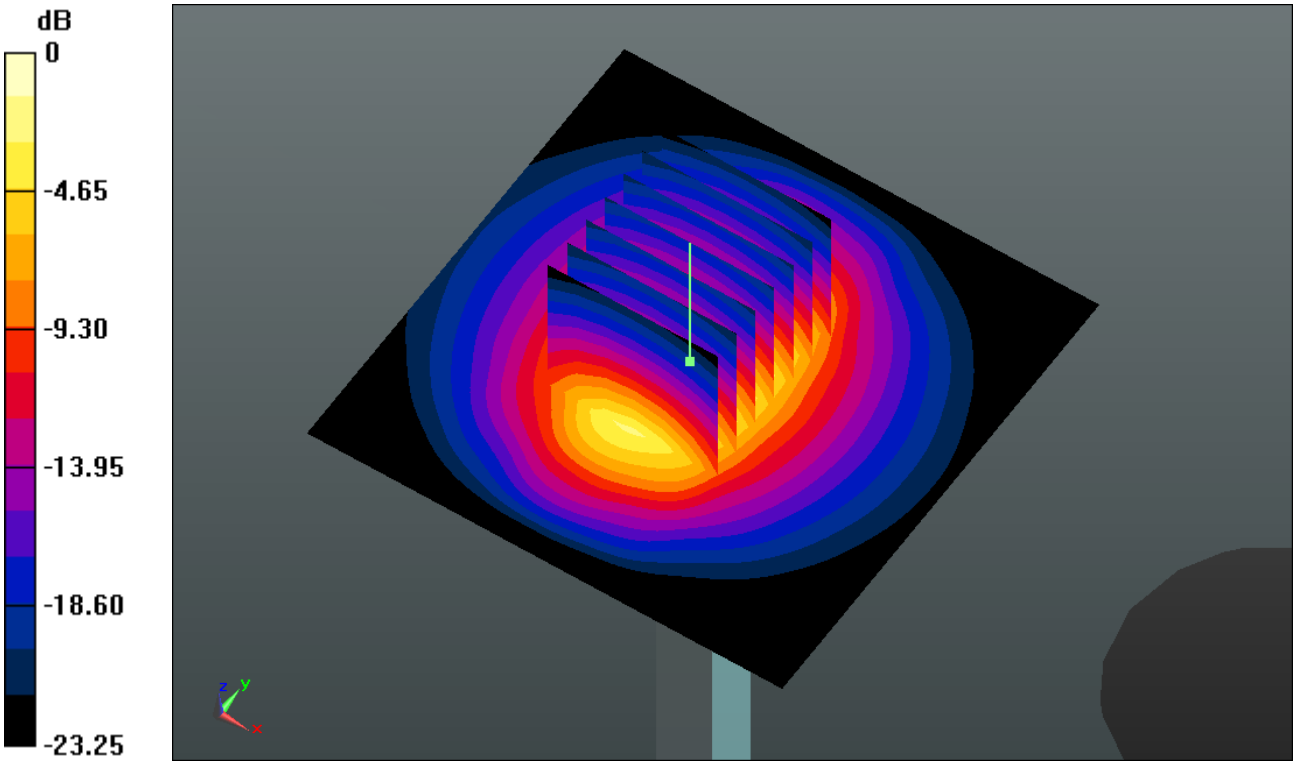
DUT: D2450V2 - SN:736

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL_2450_140621 Medium parameters used: f = 2450 MHz; σ = 1.822 mho/m; ε_r = 39.194; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.48, 7.48, 7.48); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (71x71x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 20.980 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.808 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 27.880 W/kg
SAR(1 g) = 12.8 mW/g; SAR(10 g) = 5.81 mW/g
Maximum value of SAR (measured) = 20.170 mW/g



0 dB = 20.170mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.06.19

System Check_Head_2600MHz_140619

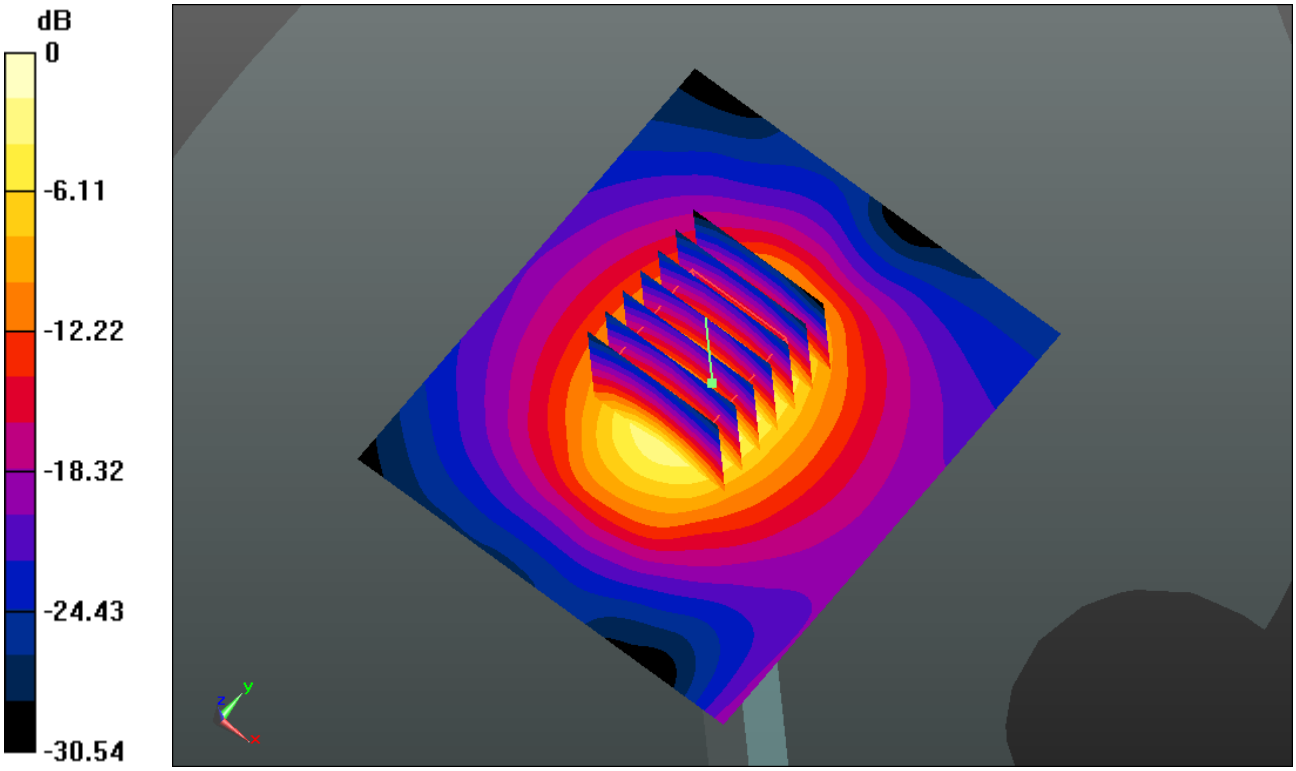
DUT: D2600V2 - SN:1061

Communication System: UID 0, CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: HSL_2600_140619 Medium parameters used: f = 2600 MHz; σ = 1.974 S/m; ε_r = 38.204; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.3, 7.3, 7.3); Calibrated: 2014.05.23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (71x81x1): 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 = 113.4 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 33.9 W/kg
SAR(1 g) = 15.6 W/kg; SAR(10 g) = 6.94 W/kg
Maximum value of SAR (measured) = 24.1 W/kg



0 dB = 25.1 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.06.21

System Check_Head_5200MHz_140621

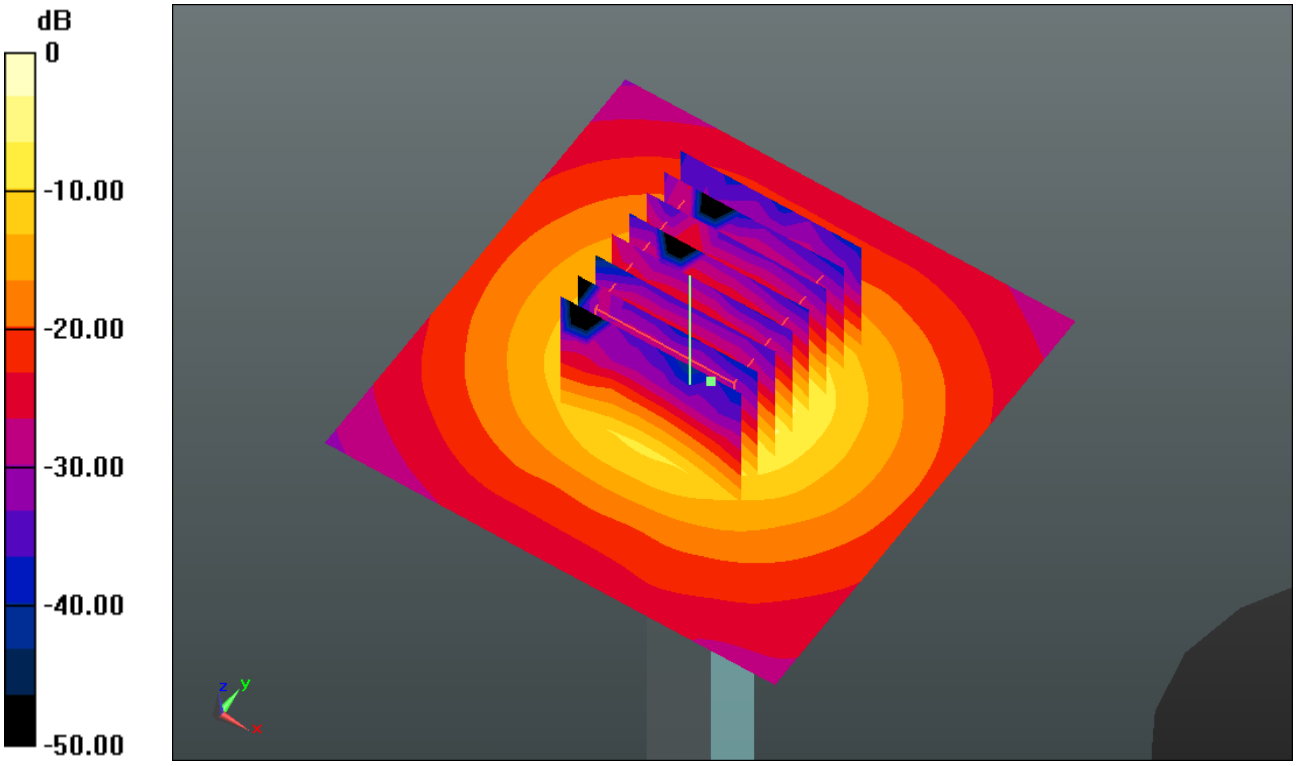
DUT: D5GHzV2-SN:1006

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: HSL_5000_140621 Medium parameters used: f = 5200 MHz; σ = 4.811 mho/m; ε_r = 35.433; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(5.35, 5.35, 5.35); Calibrated: 2014.05.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Pin=100mW/Area Scan (71x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 19.131 mW/g

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 43.463 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 33.832 W/kg
SAR(1 g) = 8.03 mW/g; SAR(10 g) = 2.3 mW/g
Maximum value of SAR (measured) = 18.884 mW/g



0 dB = 18.880mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.06.21

System Check_Head_5800MHz_140621

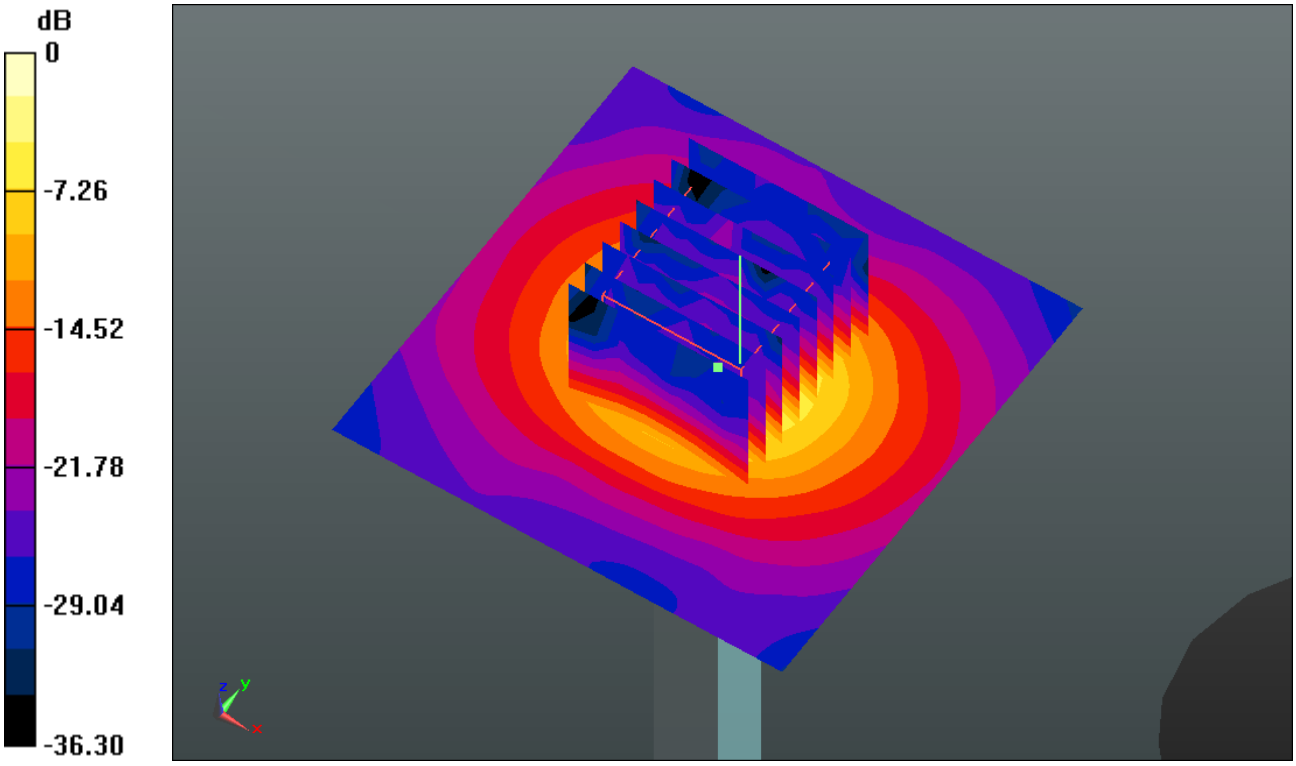
DUT: D5GHzV2-SN:1006

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: HSL_5000_140621 Medium parameters used: f = 5800 MHz; σ = 5.42 mho/m; ε_r = 34.323; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(4.79, 4.79, 4.79); Calibrated: 2014.05.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Pin=100mW/Area Scan (71x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 19.108 mW/g

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 39.556 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 34.768 W/kg
SAR(1 g) = 7.72 mW/g; SAR(10 g) = 2.2 mW/g
Maximum value of SAR (measured) = 18.704 mW/g



0 dB = 18.700mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.05.31

System Check_Body_835MHz_140531

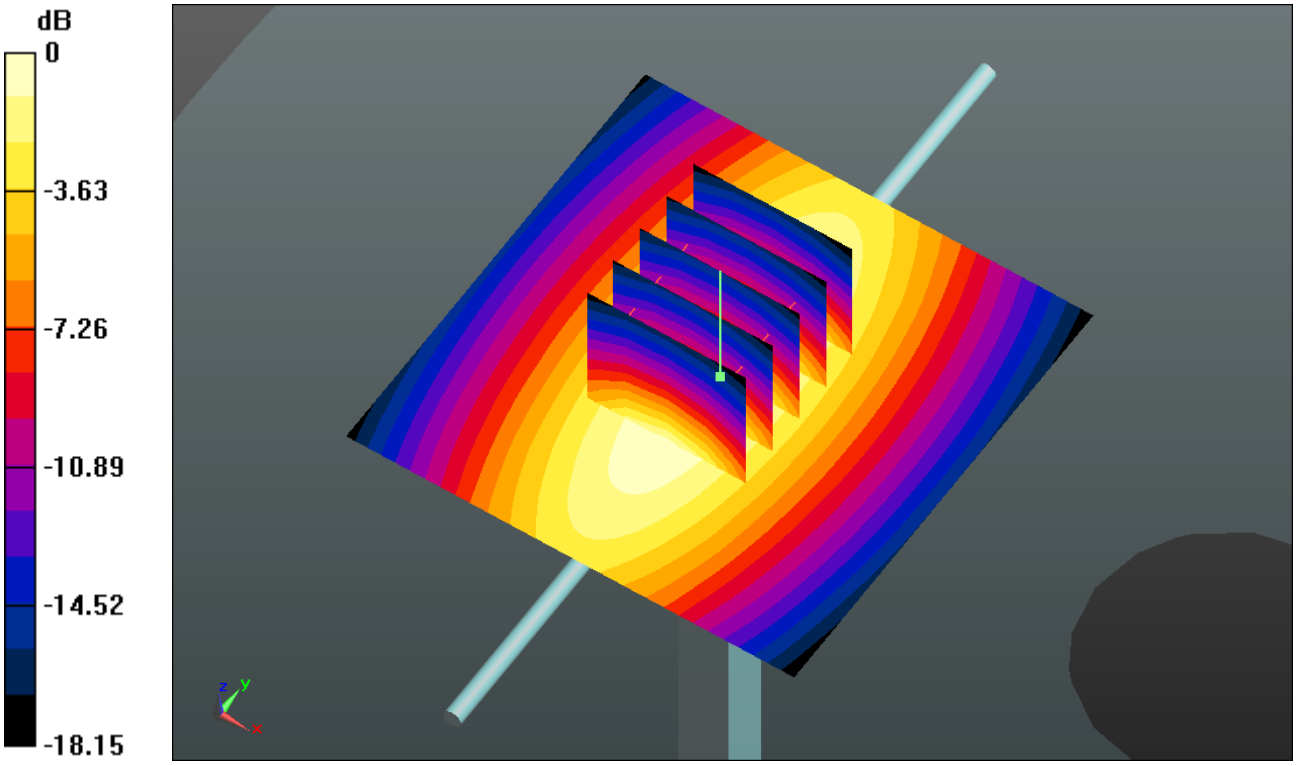
DUT: D835V2 - SN:4d091

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_835_140531 Medium parameters used: f = 835 MHz; σ = 0.98 mho/m; ε_r = 54.483; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(10.02, 10.02, 10.02); Calibrated: 2014.04.22
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014.04.30
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.928 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 50.791 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 3.449 W/kg
SAR(1 g) = 2.35 mW/g; SAR(10 g) = 1.54 mW/g
Maximum value of SAR (measured) = 2.969 mW/g



0 dB = 2.930mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.05.27

System Check_Body_1900MHz_140527

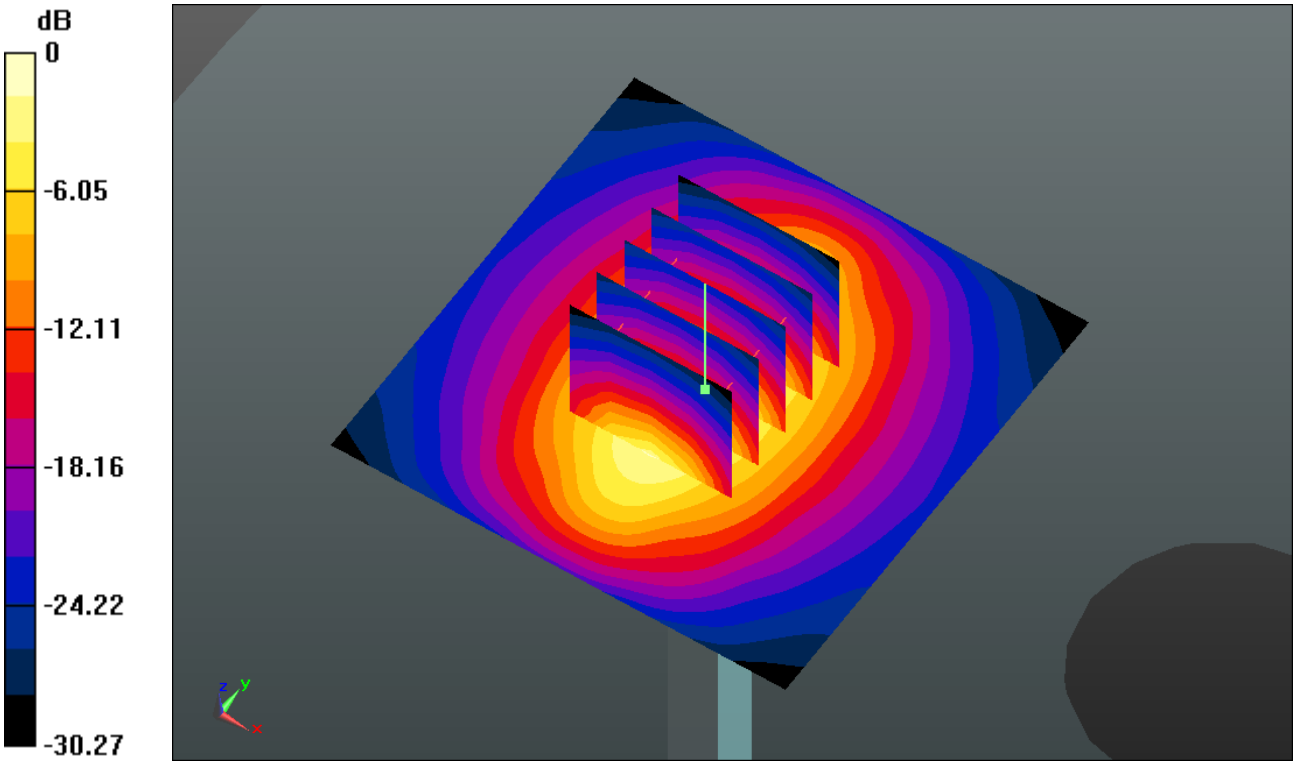
DUT: D1900V2 - SN:5d118

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_140527 Medium parameters used: f = 1900 MHz; σ = 1.551 mho/m; ε_r = 53.396; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(7.83, 7.83, 7.83); Calibrated: 2014.04.22
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014.04.30
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 14.280 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 86.962 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 18.201 W/kg
SAR(1 g) = 10.3 mW/g; SAR(10 g) = 5.29 mW/g
Maximum value of SAR (measured) = 14.701 mW/g



0 dB = 14.280mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.06.21

System Check_Body_2450MHz_140621

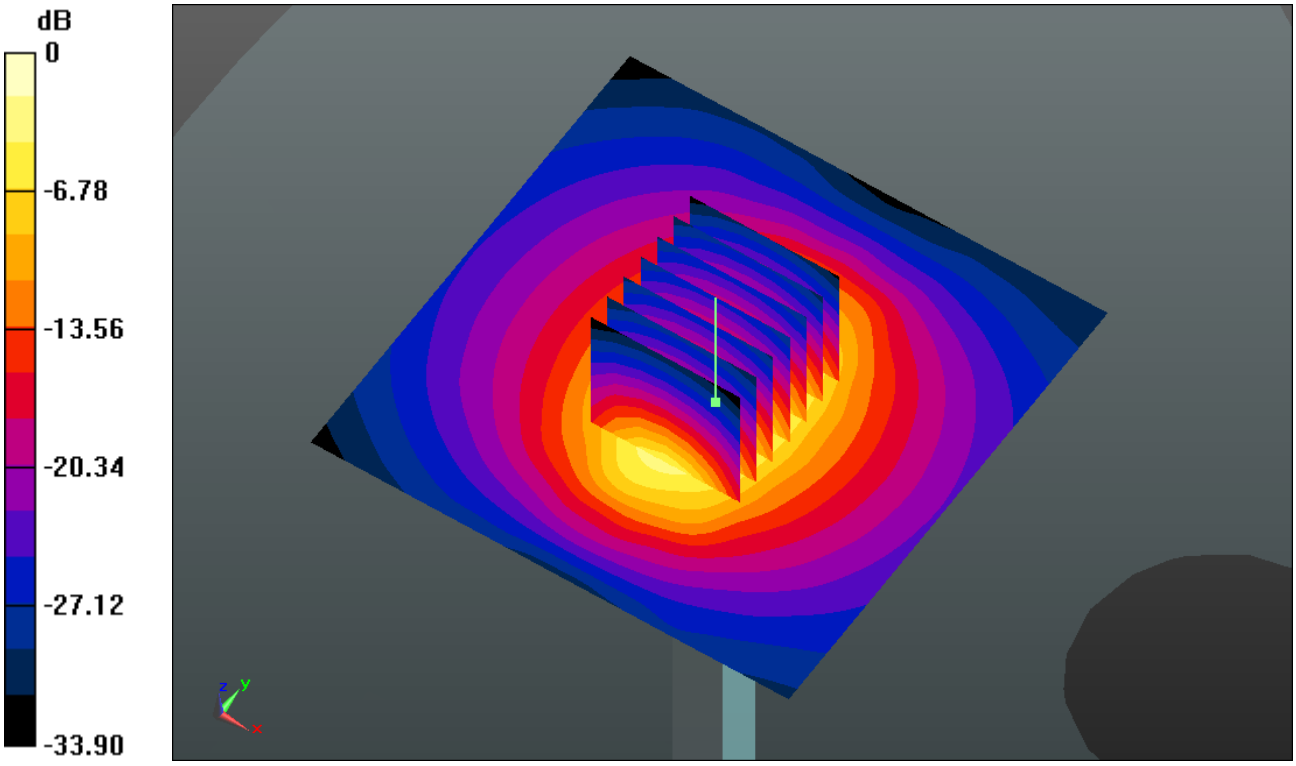
DUT: D2450V2 - SN:736

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL_2450_140621 Medium parameters used: f = 2450 MHz; σ = 1.942 mho/m; ε_r = 50.952; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.14, 7.14, 7.14); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (81x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 19.634 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 87.416 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 26.579 W/kg
SAR(1 g) = 12.9 mW/g; SAR(10 g) = 5.93 mW/g
Maximum value of SAR (measured) = 19.697 mW/g



0 dB = 19.630mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.06.19

System Check_Body_2600MHz_140619

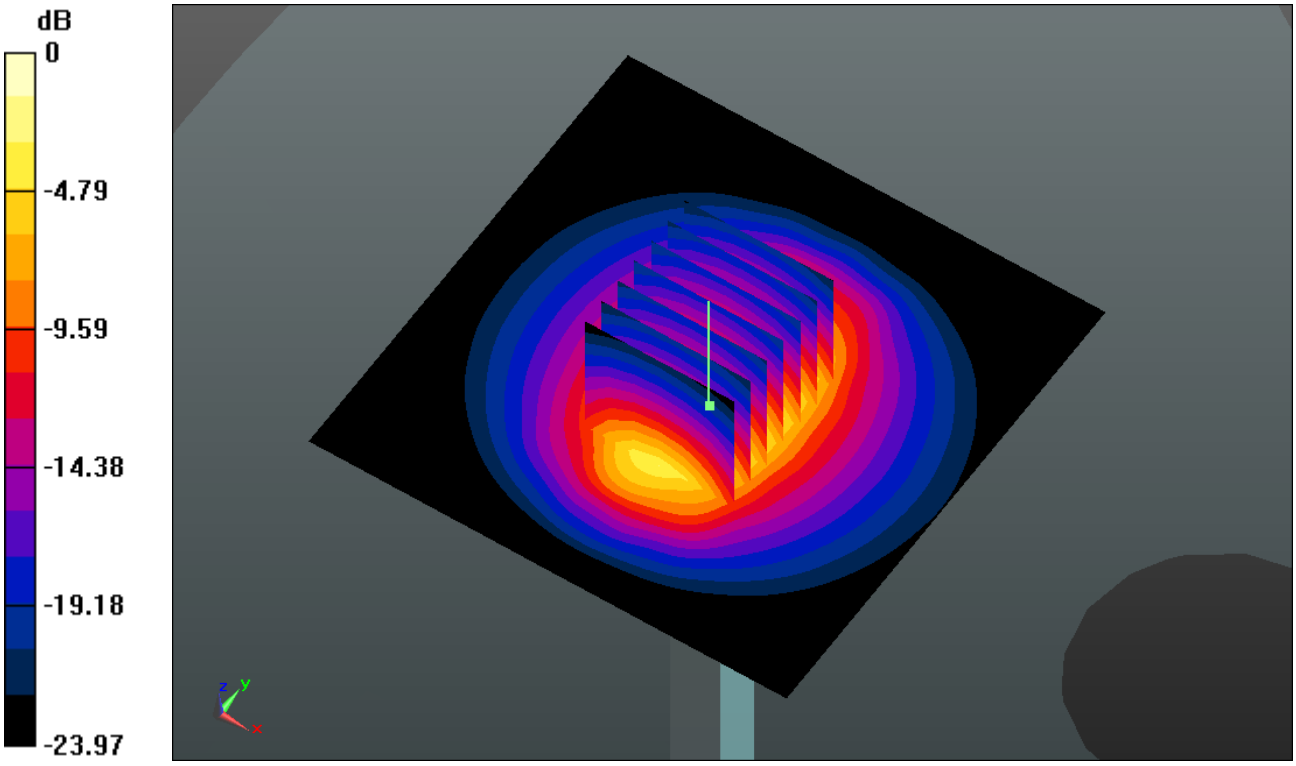
DUT: D2600V2 - SN:1061

Communication System: CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: MSL_2600_140619 Medium parameters used: f = 2600 MHz; σ = 2.209 mho/m; ε_r = 51.123; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(6.82, 6.82, 6.82); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (81x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 20.727 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 83.247 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 28.978 W/kg
SAR(1 g) = 13.4 mW/g; SAR(10 g) = 6.03 mW/g
Maximum value of SAR (measured) = 20.804 mW/g



0 dB = 20.800mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.06.21

System Check_Body_5200MHz_140621

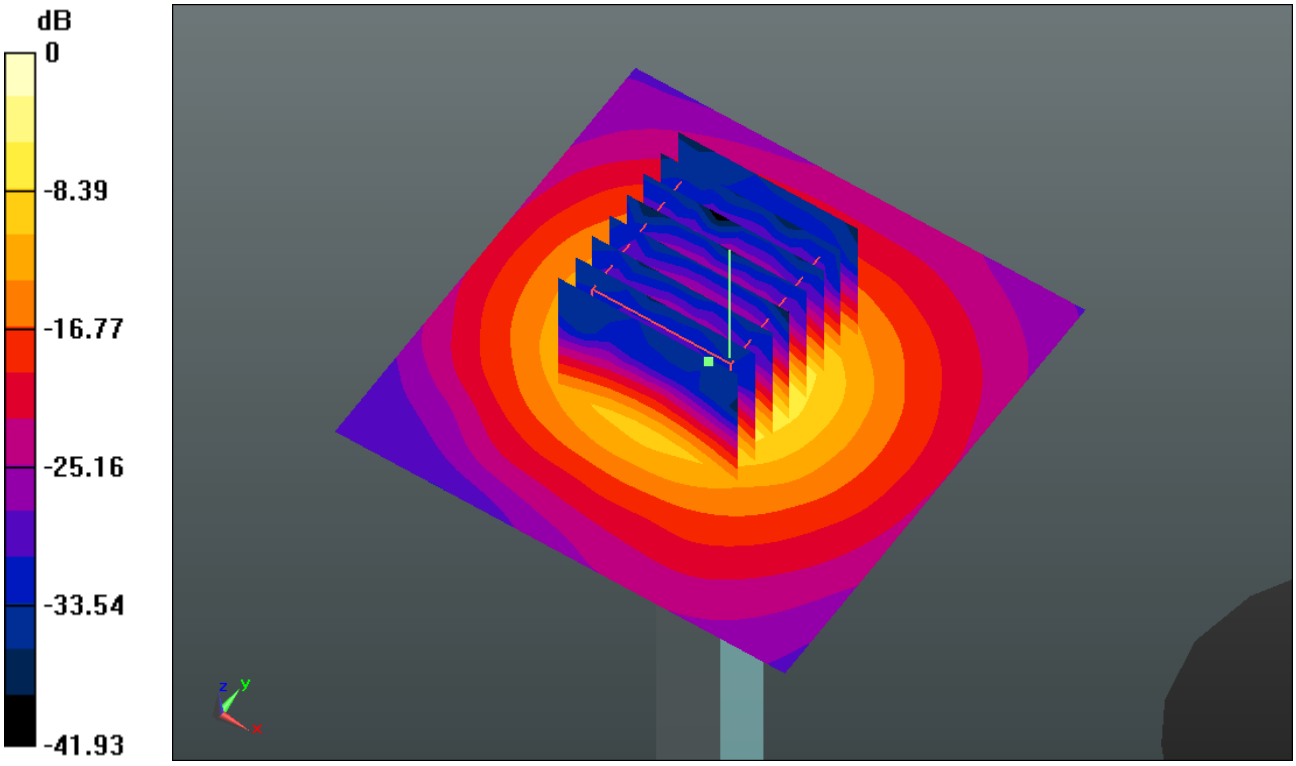
DUT: D5GHzV2-SN:1006

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: MSL_5000_140621 Medium parameters used: f = 5200 MHz; σ = 5.297 mho/m; ε_r = 49.185; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(4.54, 4.54, 4.54); Calibrated: 2014.05.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Pin=100mW/Area Scan (71x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 17.036 mW/g

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 40.432 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 30.015 W/kg
SAR(1 g) = 7.25 mW/g; SAR(10 g) = 2.03 mW/g
Maximum value of SAR (measured) = 16.899 mW/g



0 dB = 16.900mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.06.21

System Check_Body_5800MHz_140621

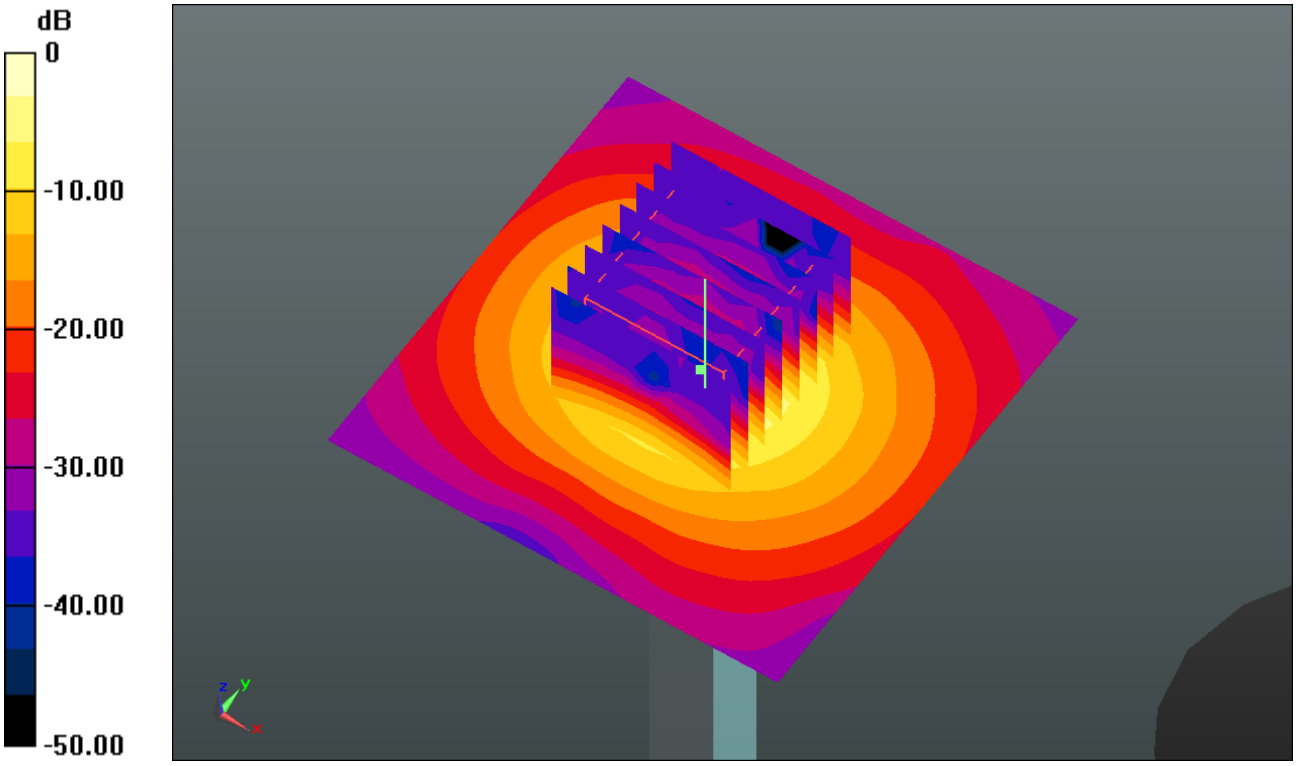
DUT: D5GHzV2-SN:1006

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: MSL_5000_140621 Medium parameters used: f = 5800 MHz; σ = 6.127 mho/m; ε_r = 47.784; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(4.21, 4.21, 4.21); Calibrated: 2014.05.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Pin=100mW/Area Scan (71x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 17.650 mW/g

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 36.555 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 32.030 W/kg
SAR(1 g) = 7.06 mW/g; SAR(10 g) = 1.96 mW/g
Maximum value of SAR (measured) = 17.282 mW/g



0 dB = 17.280mW/g

Appendix B. Plots of SAR Measurement

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.06.02

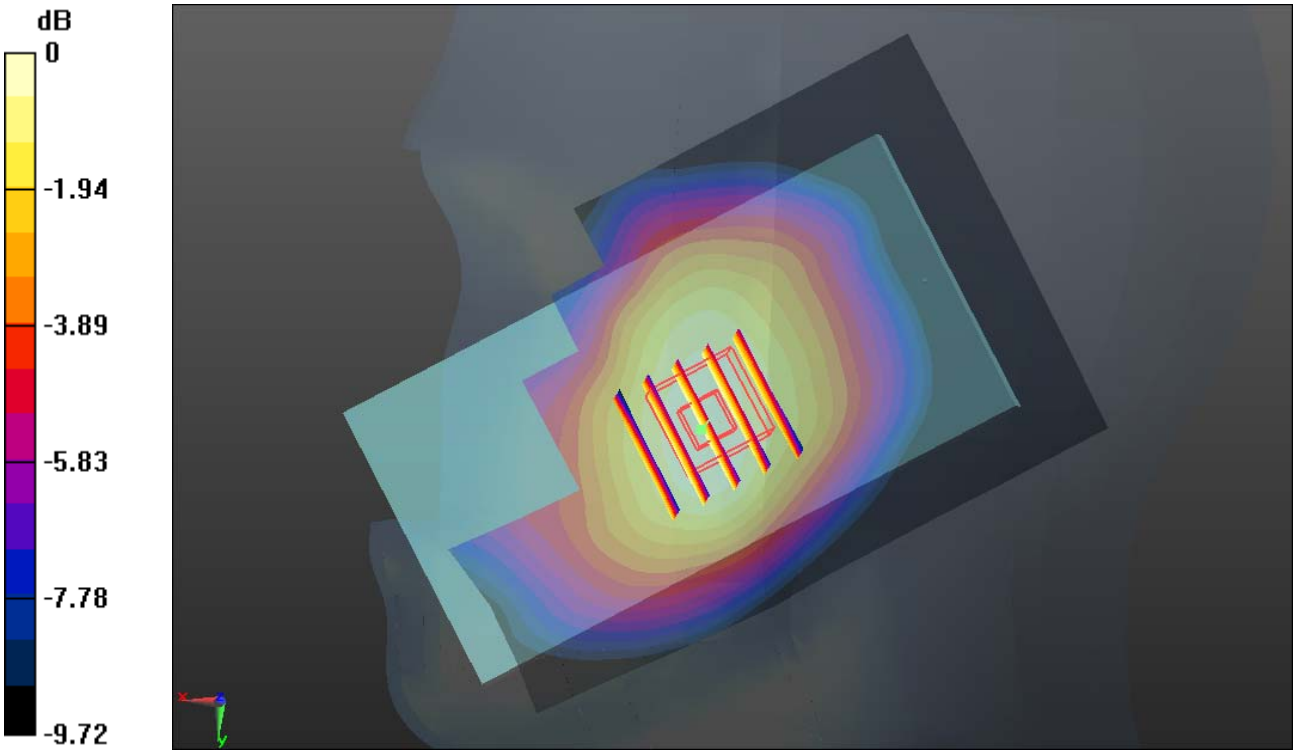
#01_CDMA2000 BC0_RETAP 4096_Right Cheek_Ch384

Communication System: CDMA2000 (0); Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: HSL_835_140602 Medium parameters used: f = 836.52 MHz; σ = 0.879 mho/m; ε_r = 40.773; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(9.84, 9.84, 9.84); Calibrated: 2014.04.22
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014.04.30
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Ch384/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.503 mW/g

Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.214 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 0.551 W/kg
SAR(1 g) = 0.446 mW/g; SAR(10 g) = 0.344 mW/g
Maximum value of SAR (measured) = 0.506 mW/g



0 dB = 0.510mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.06.02

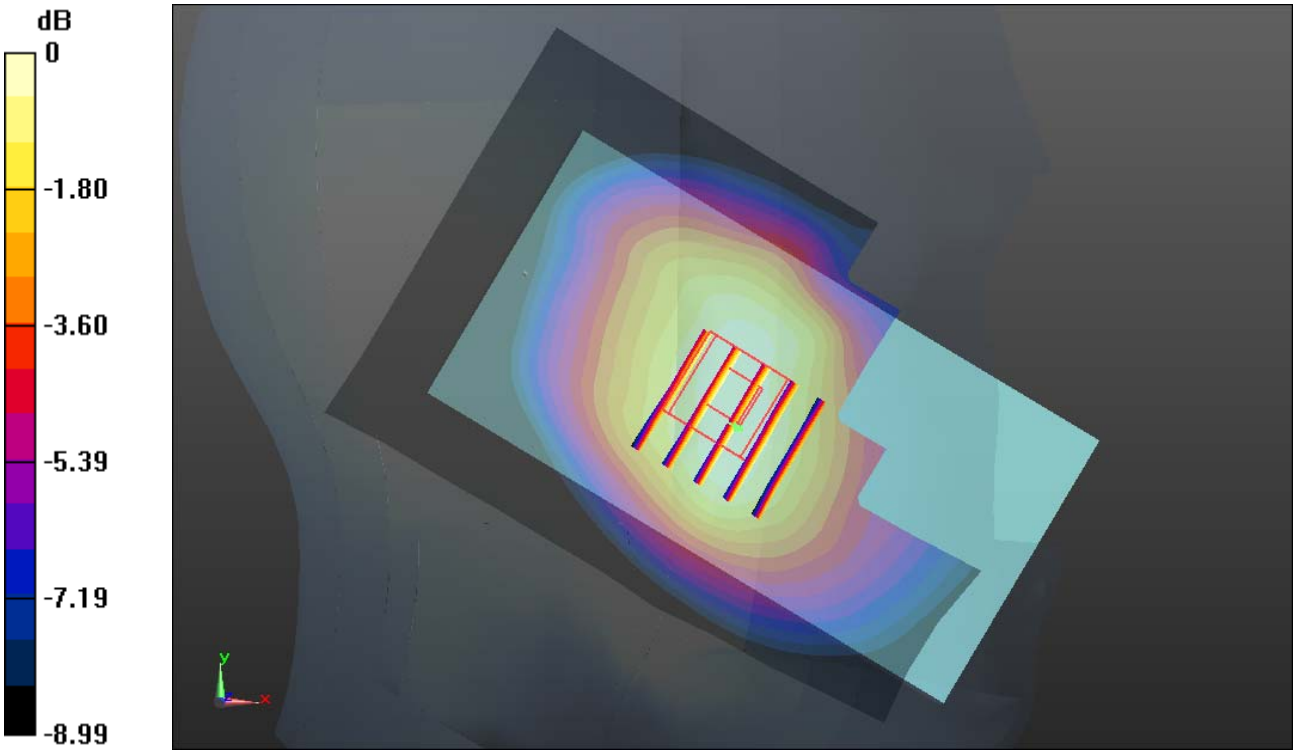
#02_CDMA2000 BC10_RC3 SO55_Left Cheek_Ch684

Communication System: CDMA2000 (0); Frequency: 823.1 MHz;Duty Cycle: 1:1
Medium: HSL_835_140602 Medium parameters used : f = 823.1 MHz; σ = 0.867 mho/m; ε_r = 40.934; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(9.84, 9.84, 9.84); Calibrated: 2014.04.22
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014.04.30
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Ch684/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.417 mW/g

Ch684/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.401 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.466 W/kg
SAR(1 g) = 0.379 mW/g; SAR(10 g) = 0.293 mW/g
Maximum value of SAR (measured) = 0.425 mW/g



0 dB = 0.430mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.06.03

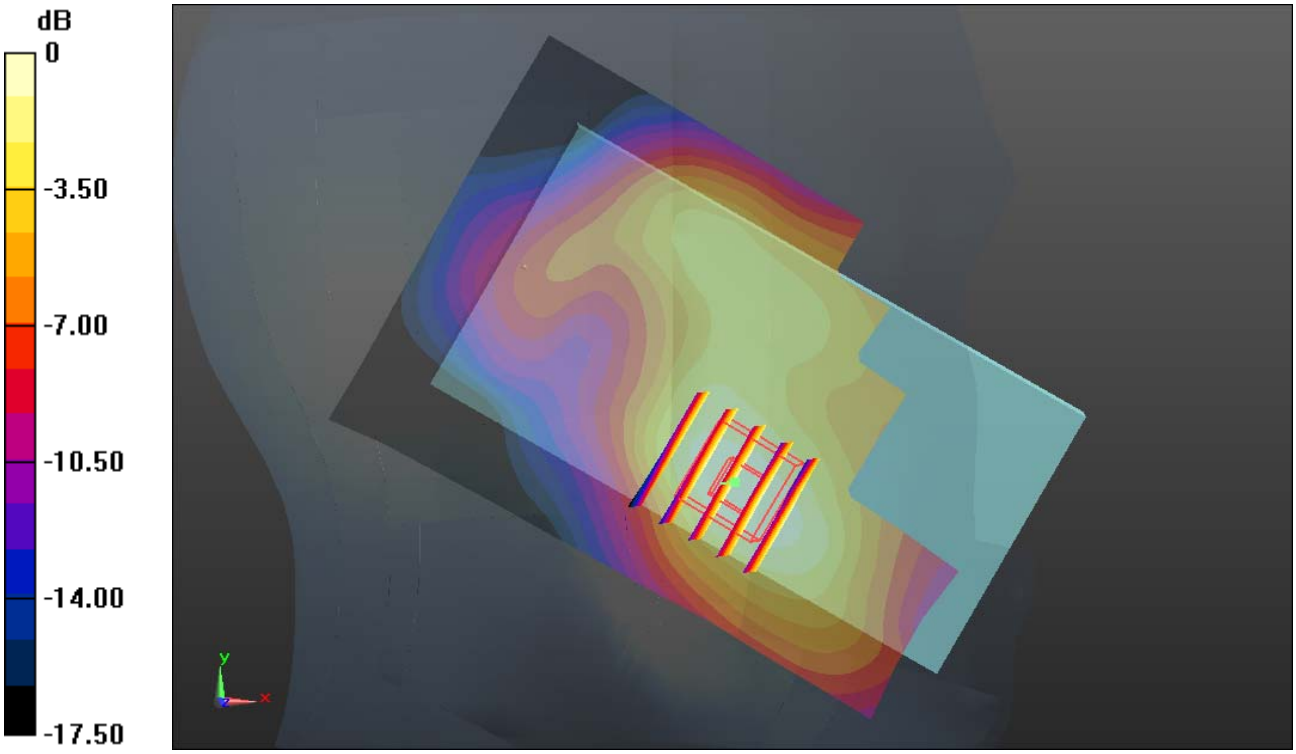
#03_CDMA2000 BC1_RETAP 4096_Left Cheek_Ch1175

Communication System: CDMA2000 (0); Frequency: 1908.75 MHz;Duty Cycle: 1:1
Medium: HSL_1900_140603 Medium parameters used: f = 1908.75 MHz; σ = 1.432 mho/m; ε_r = 38.974; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(8.09, 8.09, 8.09); Calibrated: 2014.04.22
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014.04.30
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Ch1175/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.690 mW/g

Ch1175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.265 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.771 W/kg
SAR(1 g) = 0.497 mW/g; SAR(10 g) = 0.309 mW/g
Maximum value of SAR (measured) = 0.642 mW/g



0 dB = 0.640mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.06.02

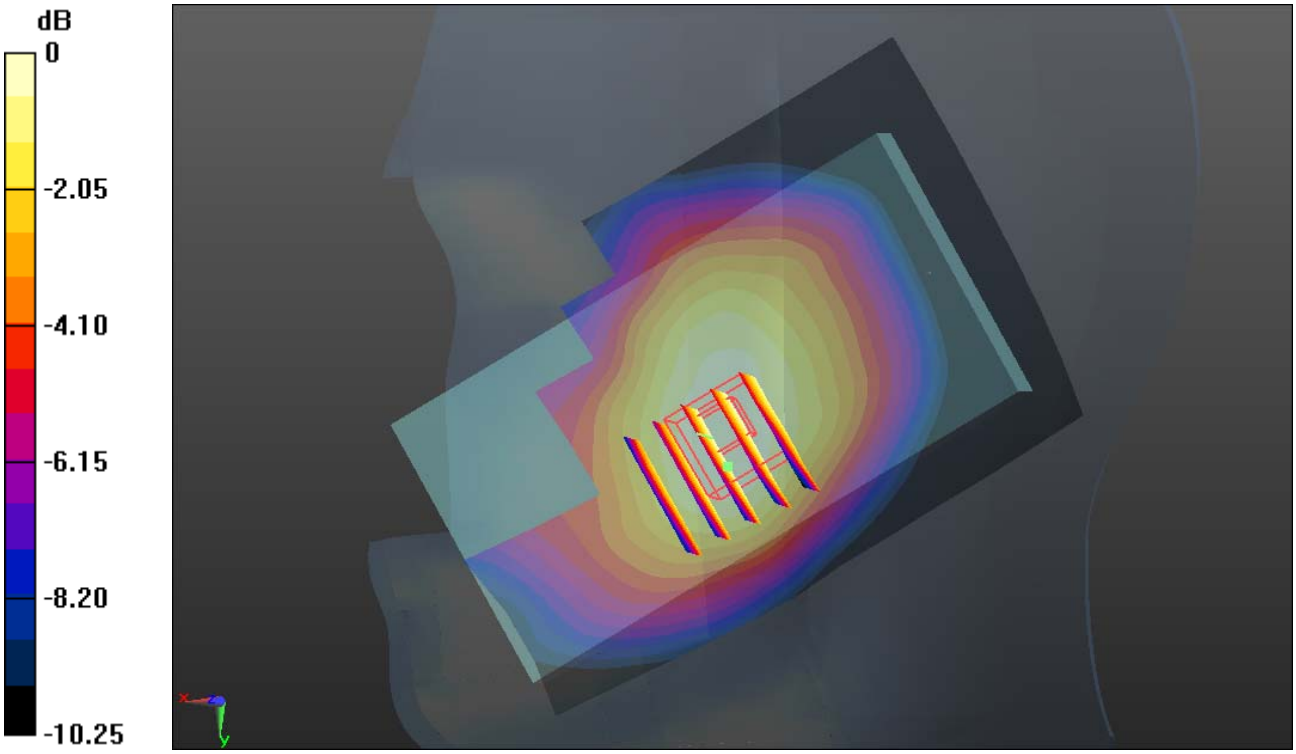
#04_LTE Band 26_15M_QPSK(1,0)_Right Cheek_Ch26865

Communication System: FDD_LTE (0); Frequency: 831.5 MHz;Duty Cycle: 1:1
Medium: HSL_835_140602 Medium parameters used: f = 831.5 MHz; σ = 0.875 mho/m; ε_r = 40.836; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(9.84, 9.84, 9.84); Calibrated: 2014.04.22
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014.04.30
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Ch26865/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.364 mW/g

Ch26865/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.875 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.394 W/kg
SAR(1 g) = 0.319 mW/g; SAR(10 g) = 0.241 mW/g
Maximum value of SAR (measured) = 0.356 mW/g



0 dB = 0.360mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.06.03

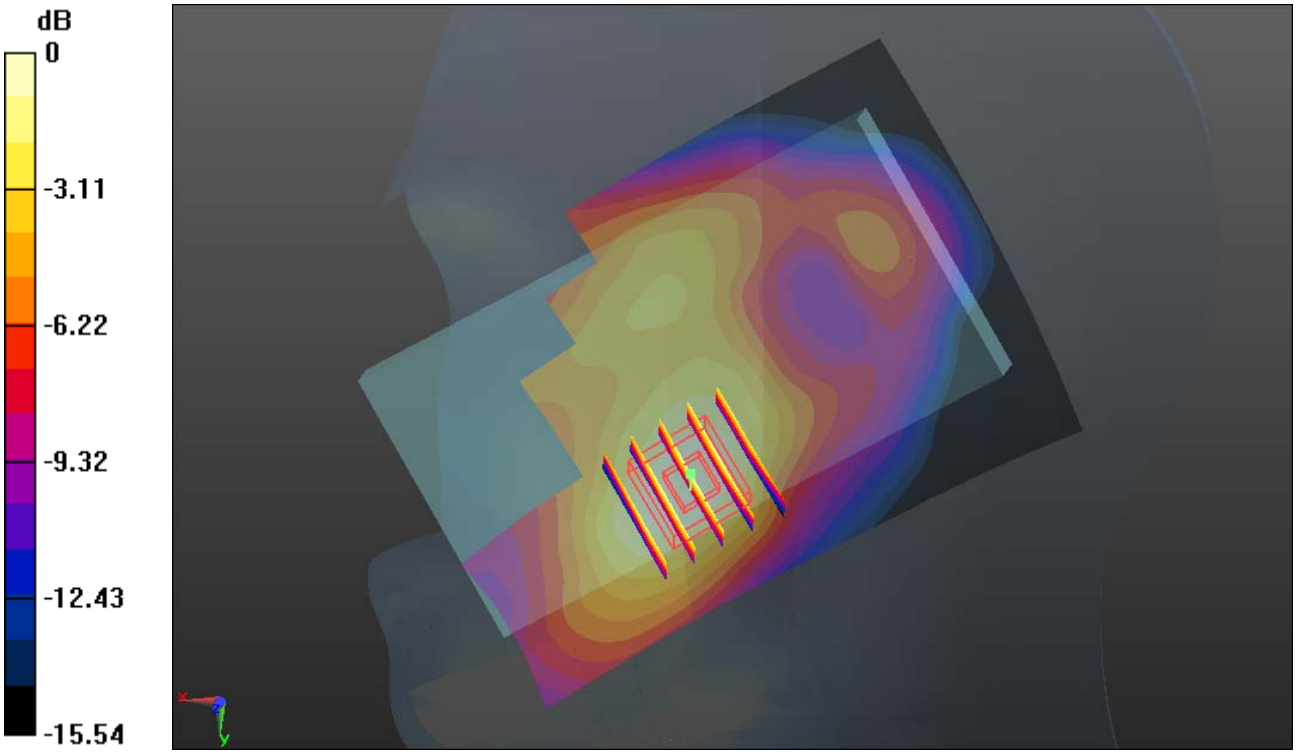
#05_LTE Band 25_20M_QPSK(1,49)_Right Check_Ch26340

Communication System: FDD_LTE (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: HSL_1900_140603 Medium parameters used: f = 1880 MHz; σ = 1.402 mho/m; ε_r = 39.102; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(8.09, 8.09, 8.09); Calibrated: 2014.04.22
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014.04.30
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Ch26340/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.544 mW/g

Ch26340/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.136 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.632 W/kg
SAR(1 g) = 0.423 mW/g; SAR(10 g) = 0.267 mW/g
Maximum value of SAR (measured) = 0.524 mW/g



0 dB = 0.520mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.06.19

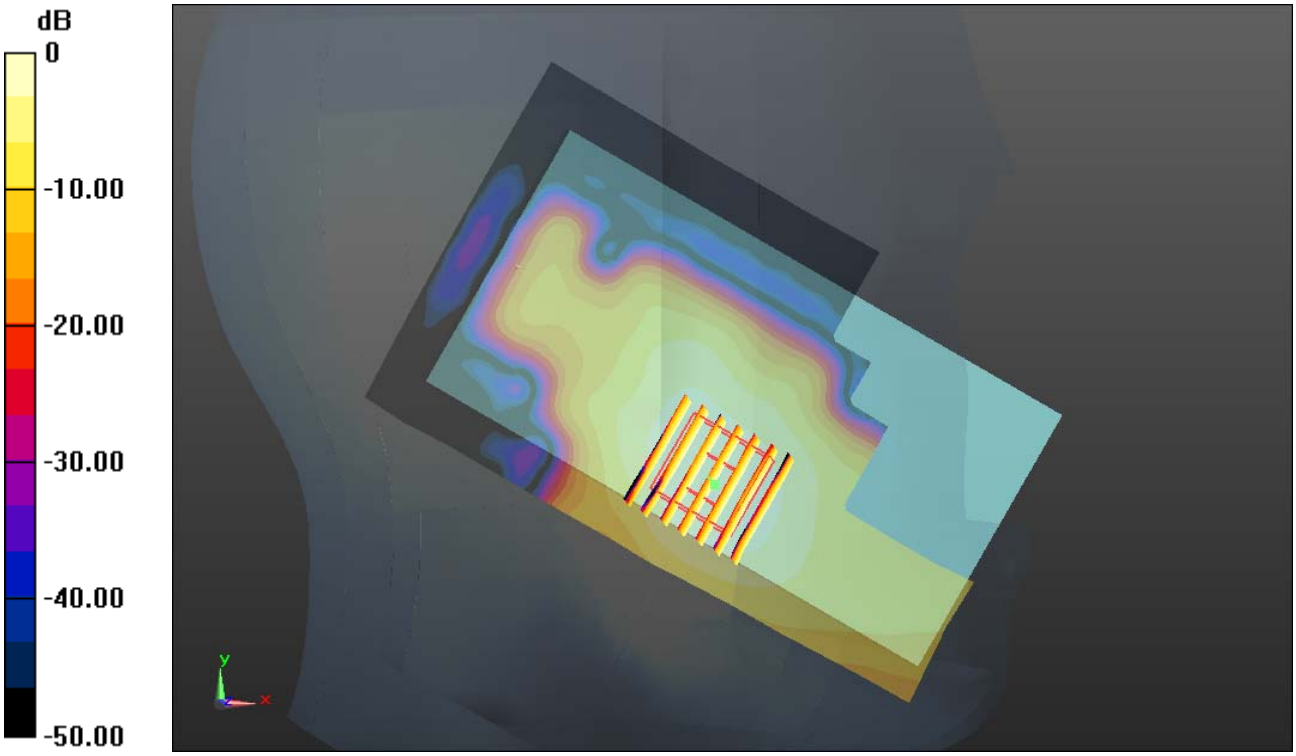
#06_TDD-LTE Band 41_20M_QPSK(1,49)_Left Cheek_Ch40620

Communication System: TDD_LTE (0); Frequency: 2593 MHz;Duty Cycle: 1:1.59
Medium: HSL_2600_140619 Medium parameters used: f = 2593 MHz; σ = 1.966 mho/m; ε_r = 38.238; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.3, 7.3, 7.3); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Ch40620/Area Scan (81x141x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.216 mW/g

Ch40620/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.784 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.275 W/kg
SAR(1 g) = 0.146 mW/g; SAR(10 g) = 0.075 mW/g
Maximum value of SAR (measured) = 0.209 mW/g



0 dB = 0.210mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.06.21

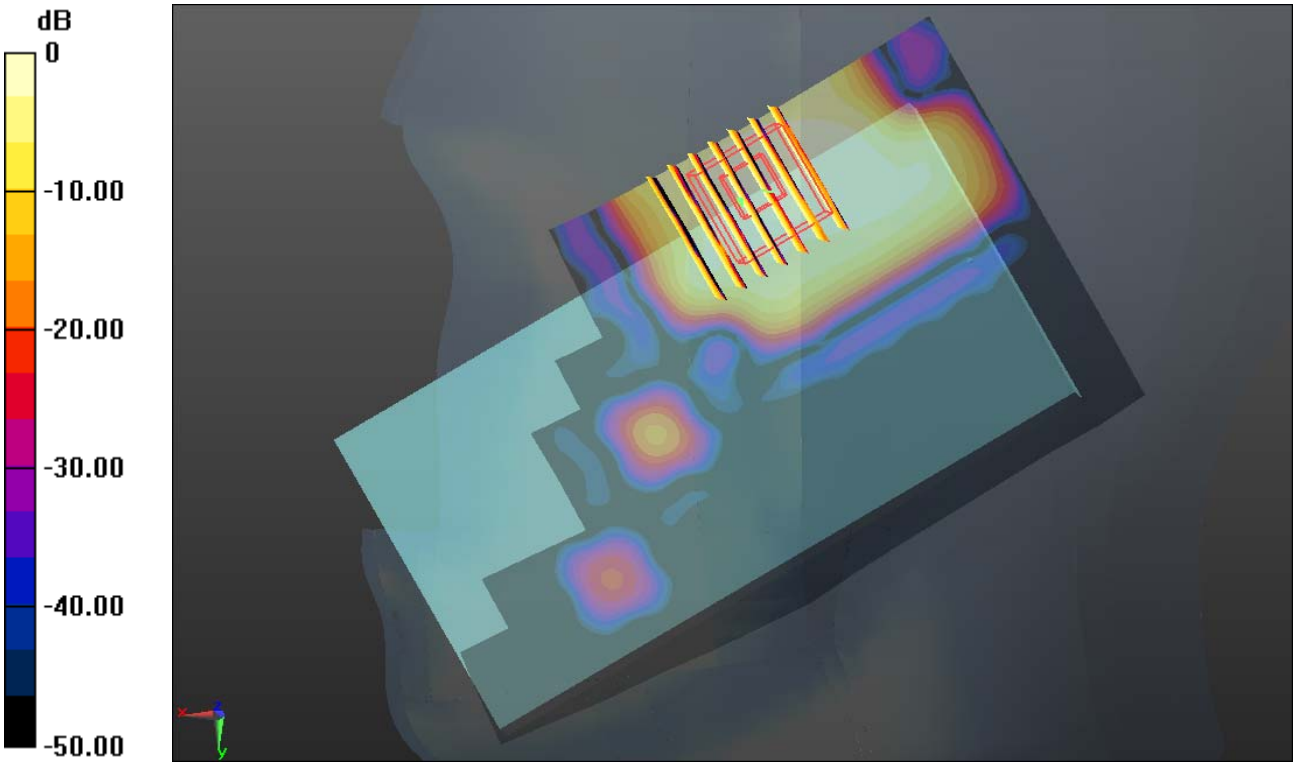
#07_WLAN2.4G_802.11b_1M_Right Cheek_Ch11

Communication System: WIFI (0); Frequency: 2462 MHz;Duty Cycle: 1:1.024
Medium: HSL_2450_140621 Medium parameters used: f = 2462 MHz; σ = 1.836 mho/m; ε_r = 39.151; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.48, 7.48, 7.48); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Ch11/Area Scan (81x141x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.065 mW/g

Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.363 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.090 W/kg
SAR(1 g) = 0.040 mW/g; SAR(10 g) = 0.018 mW/g
Maximum value of SAR (measured) = 0.062 mW/g



0 dB = 0.070mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.06.21

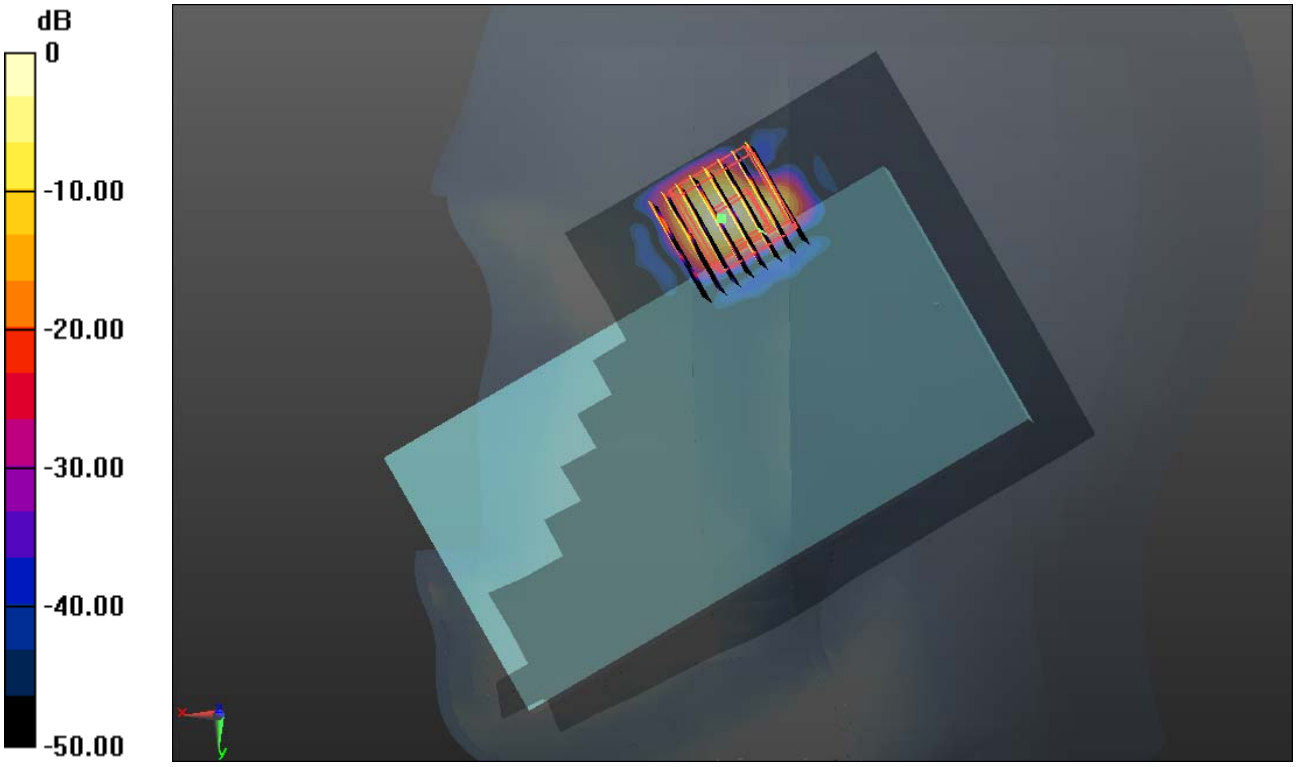
#08_WLAN5G_Band1_802.11a_6M_Right Cheek_Ch36

Communication System: WIFI (0); Frequency: 5180 MHz;Duty Cycle: 1:1.144
Medium: HSL_5000_140621 Medium parameters used: f = 5180 MHz; σ = 4.79 mho/m; ε_r = 35.48; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(5.35, 5.35, 5.35); Calibrated: 2014.05.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Ch36/Area Scan (111x171x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.260 mW/g

Ch36/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 0 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.206 W/kg
SAR(1 g) = 0.028 mW/g; SAR(10 g) = 0.00789 mW/g
Maximum value of SAR (measured) = 0.081 mW/g



0 dB = 0.260mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.06.21

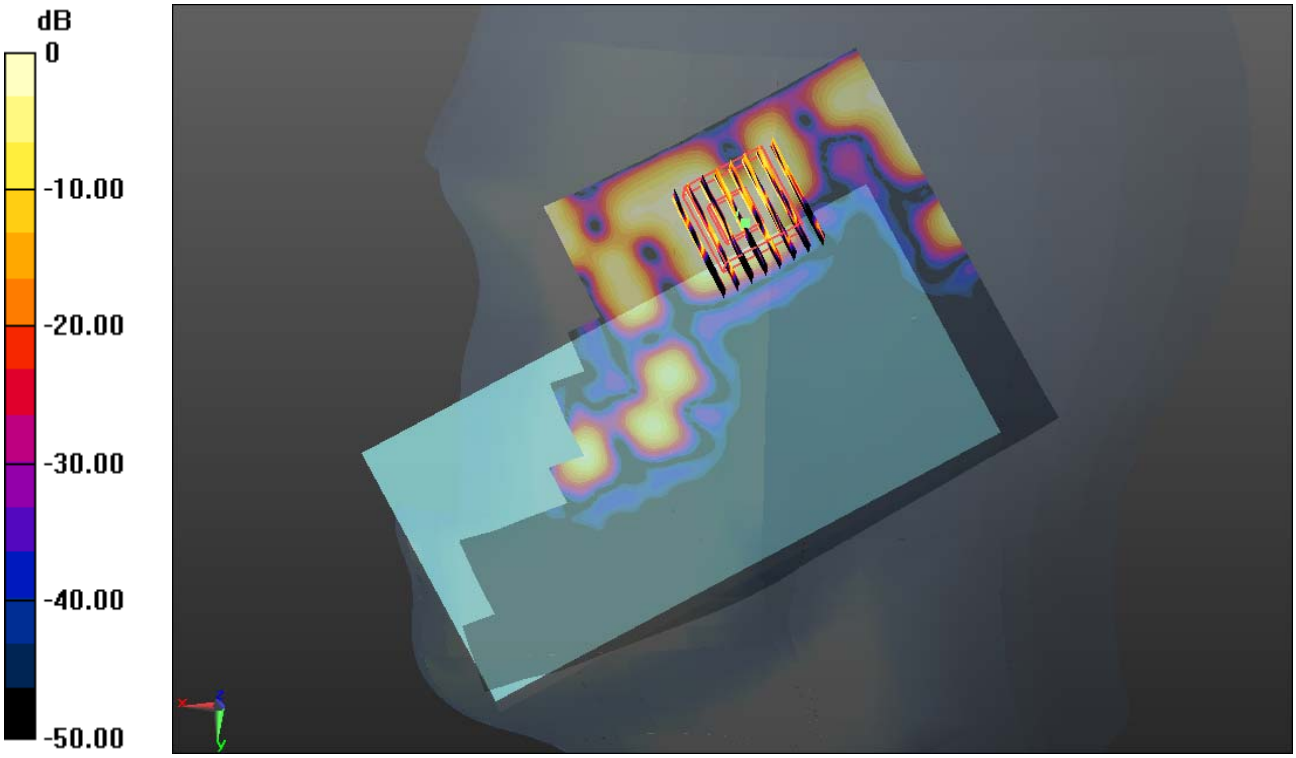
#21_WLAN5G_Band4_802.11a_6M_Right Cheek_Ch161

Communication System: WIFI (0); Frequency: 5805 MHz;Duty Cycle: 1:1.144
Medium: HSL_5000_140621 Medium parameters used: f = 5805 MHz; σ = 5.426 mho/m; ε_r = 34.3; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(4.79, 4.79, 4.79); Calibrated: 2014.05.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Ch161/Area Scan (111x171x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.143 mW/g

Ch161/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 1.295 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.328 W/kg
SAR(1 g) = 0.023 mW/g; SAR(10 g) = 0.00447 mW/g
Maximum value of SAR (measured) = 0.069 mW/g



0 dB = 0.070mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.05.31

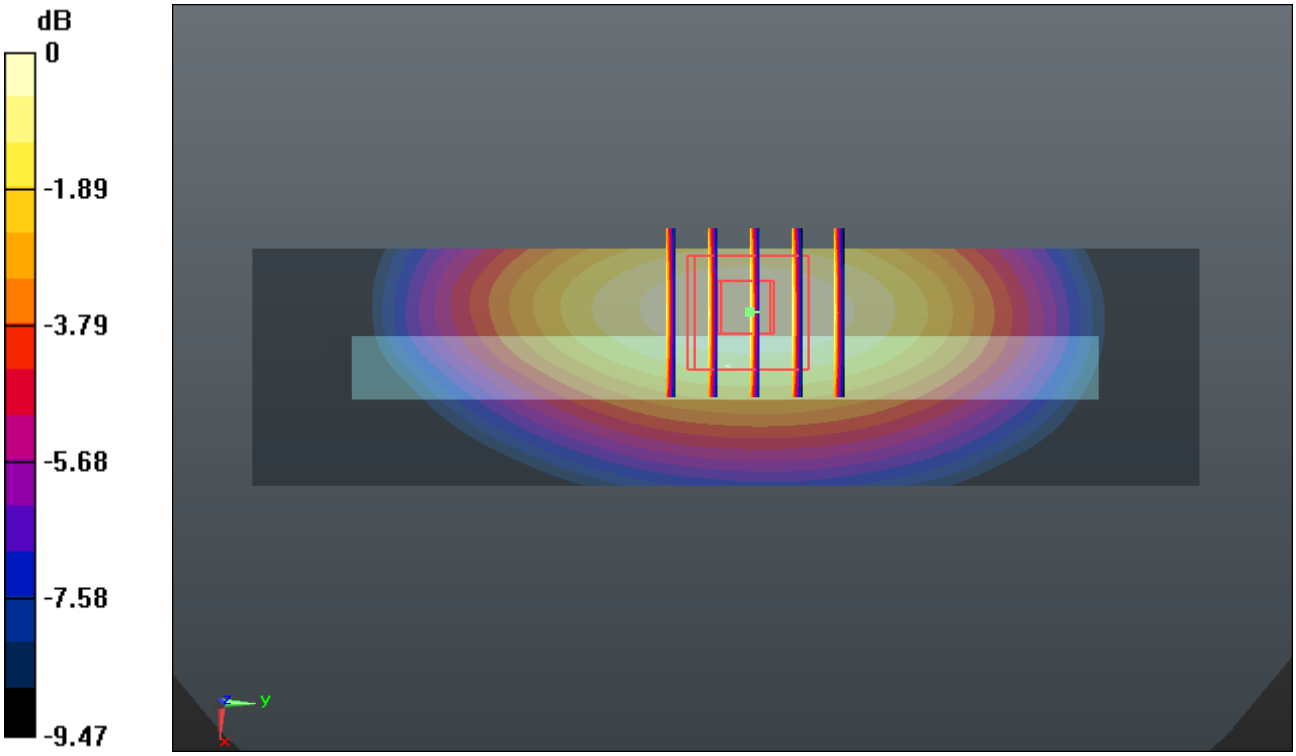
#09_CDMA2000 BC0_RTAP 153.6_Right Side 1cm_Ch384

Communication System: CDMA2000 (0); Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: MSL_835_140531 Medium parameters used: f = 836.52 MHz; σ = 0.982 mho/m; ε_r = 54.458; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(10.02, 10.02, 10.02); Calibrated: 2014.04.22
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014.04.30
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Ch384/Area Scan (31x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.942 mW/g

Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.663 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 1.087 W/kg
SAR(1 g) = 0.766 mW/g; SAR(10 g) = 0.528 mW/g
Maximum value of SAR (measured) = 0.945 mW/g



0 dB = 0.940mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.05.31

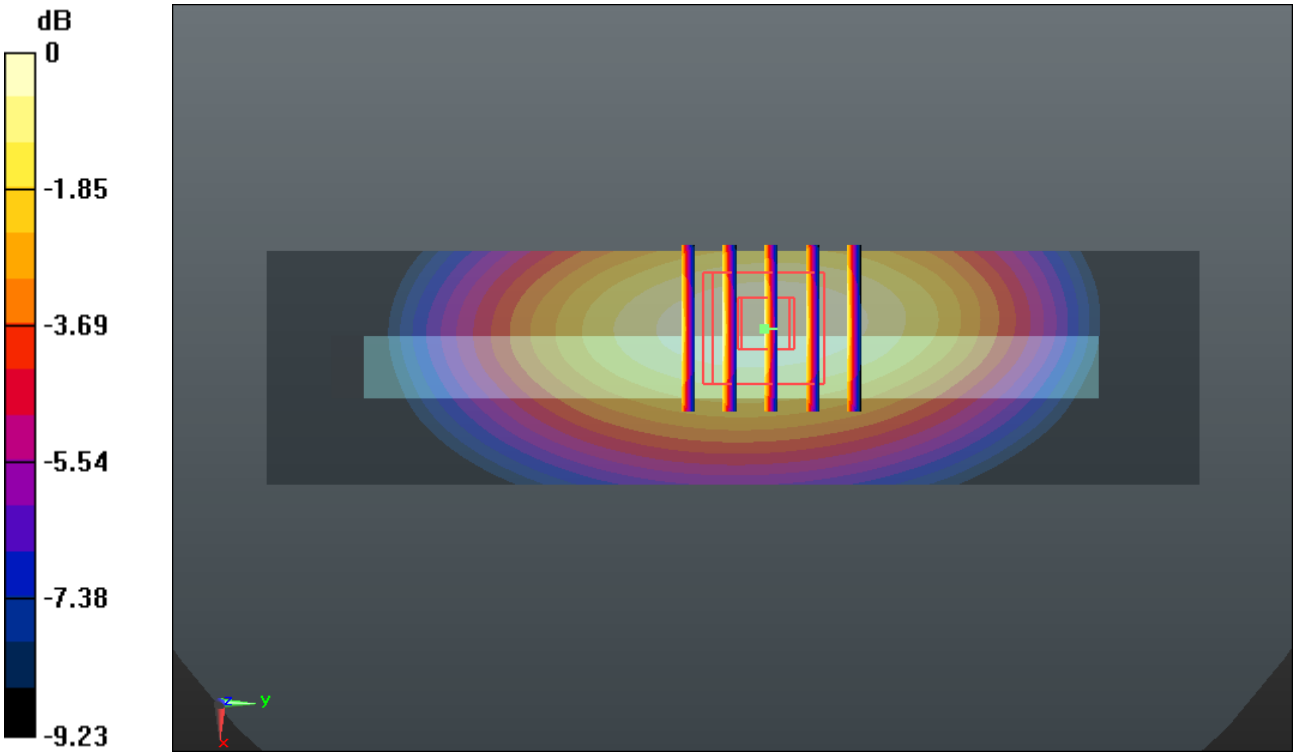
#10_CDMA2000 BC10_RTAP 153.6_Right Side 1cm_Ch476

Communication System: CDMA2000 (0); Frequency: 817.9 MHz;Duty Cycle: 1:1
Medium: MSL_835_140531 Medium parameters used: f = 817.9 MHz; σ = 0.963 mho/m; ε_r = 54.642; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(10.02, 10.02, 10.02); Calibrated: 2014.04.22
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014.04.30
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Ch476/Area Scan (31x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.030 mW/g

Ch476/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.734 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 1.185 W/kg
SAR(1 g) = 0.840 mW/g; SAR(10 g) = 0.585 mW/g
Maximum value of SAR (measured) = 1.030 mW/g



0 dB = 1.030mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.05.27

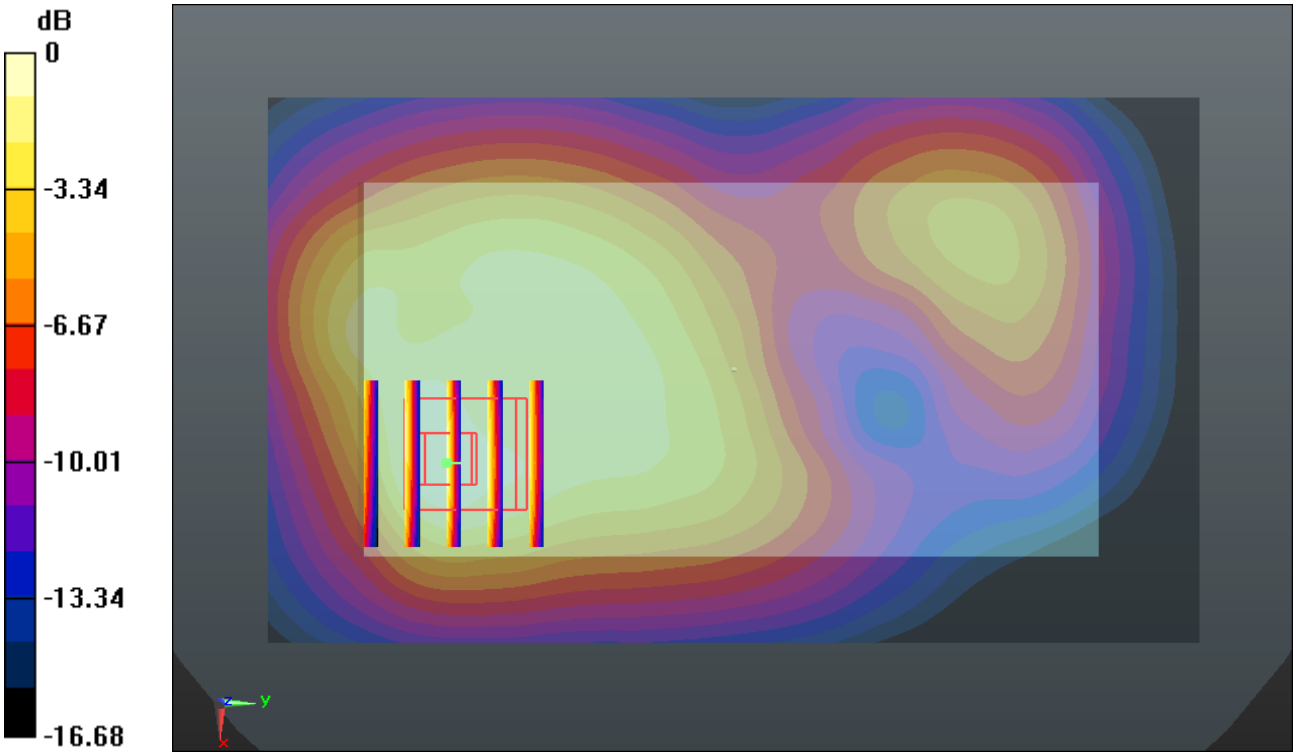
#11_CDMA2000 BC1_RTAP 153.6_Back 1cm_Ch600

Communication System: CDMA2000 (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_140527 Medium parameters used: f = 1880 MHz; σ = 1.526 mho/m; ε_r = 53.444; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(7.83, 7.83, 7.83); Calibrated: 2014.04.22
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014.04.30
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Ch600/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.403 mW/g

Ch600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.446 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 1.686 W/kg
SAR(1 g) = 1.000 mW/g; SAR(10 g) = 0.582 mW/g
Maximum value of SAR (measured) = 1.365 mW/g



0 dB = 1.360mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.05.31

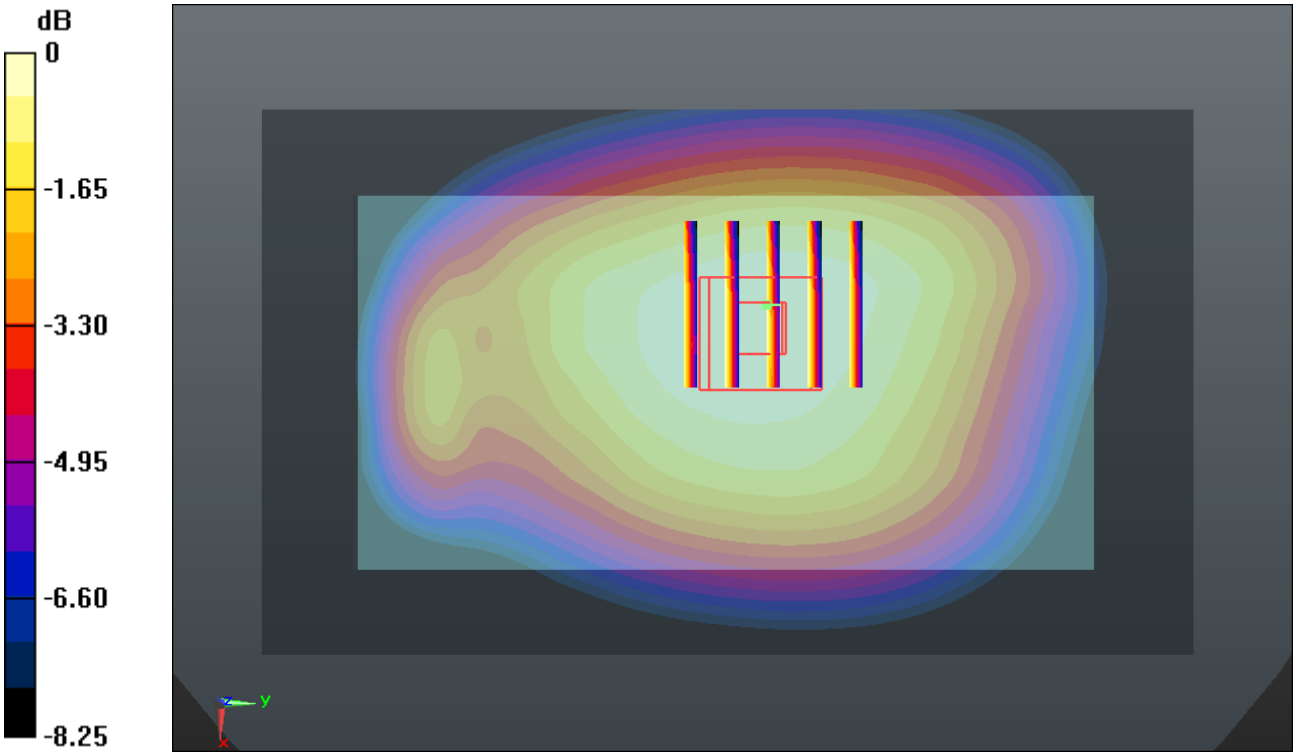
#12_LTE Band 26_15M_QPSK(1,0)_Back 1cm_Ch26865

Communication System: FDD_LTE (0); Frequency: 831.5 MHz;Duty Cycle: 1:1
Medium: MSL_835_140531 Medium parameters used: f = 831.5 MHz; σ = 0.977 mho/m; ε_r = 54.513; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(10.02, 10.02, 10.02); Calibrated: 2014.04.22
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014.04.30
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Ch26865/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.676 mW/g

Ch26865/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.448 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.750 W/kg
SAR(1 g) = 0.587 mW/g; SAR(10 g) = 0.453 mW/g
Maximum value of SAR (measured) = 0.676 mW/g



0 dB = 0.680mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.05.27

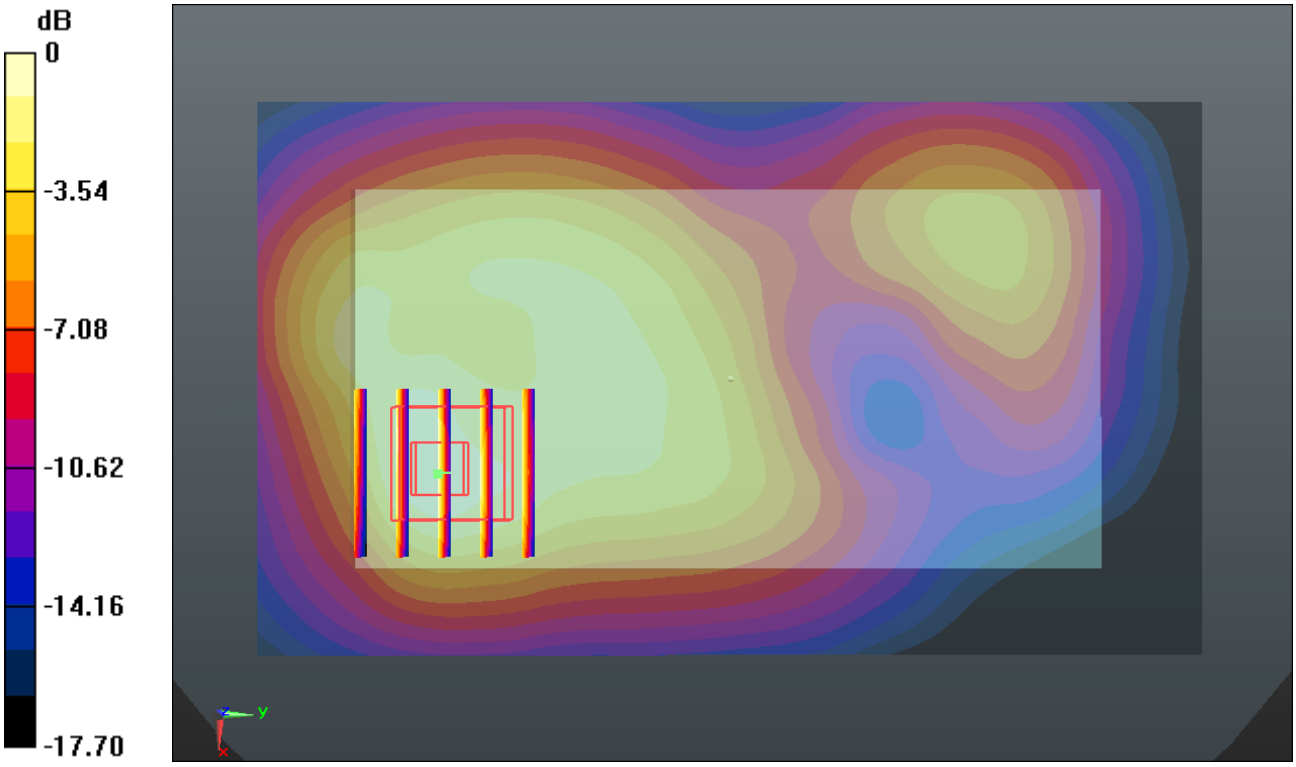
#13_LTE Band 25_20M_QPSK(1,49)_Back 1cm_Ch26590

Communication System: FDD_LTE (0); Frequency: 1905 MHz;Duty Cycle: 1:1
Medium: MSL_1900_140527 Medium parameters used: f = 1905 MHz; σ = 1.556 mho/m; ε_r = 53.381; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(7.83, 7.83, 7.83); Calibrated: 2014.04.22
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014.04.30
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Ch26590/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.123 mW/g

Ch26590/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.299 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.385 W/kg
SAR(1 g) = 0.810 mW/g; SAR(10 g) = 0.463 mW/g
Maximum value of SAR (measured) = 1.107 mW/g



0 dB = 1.110mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.06.19

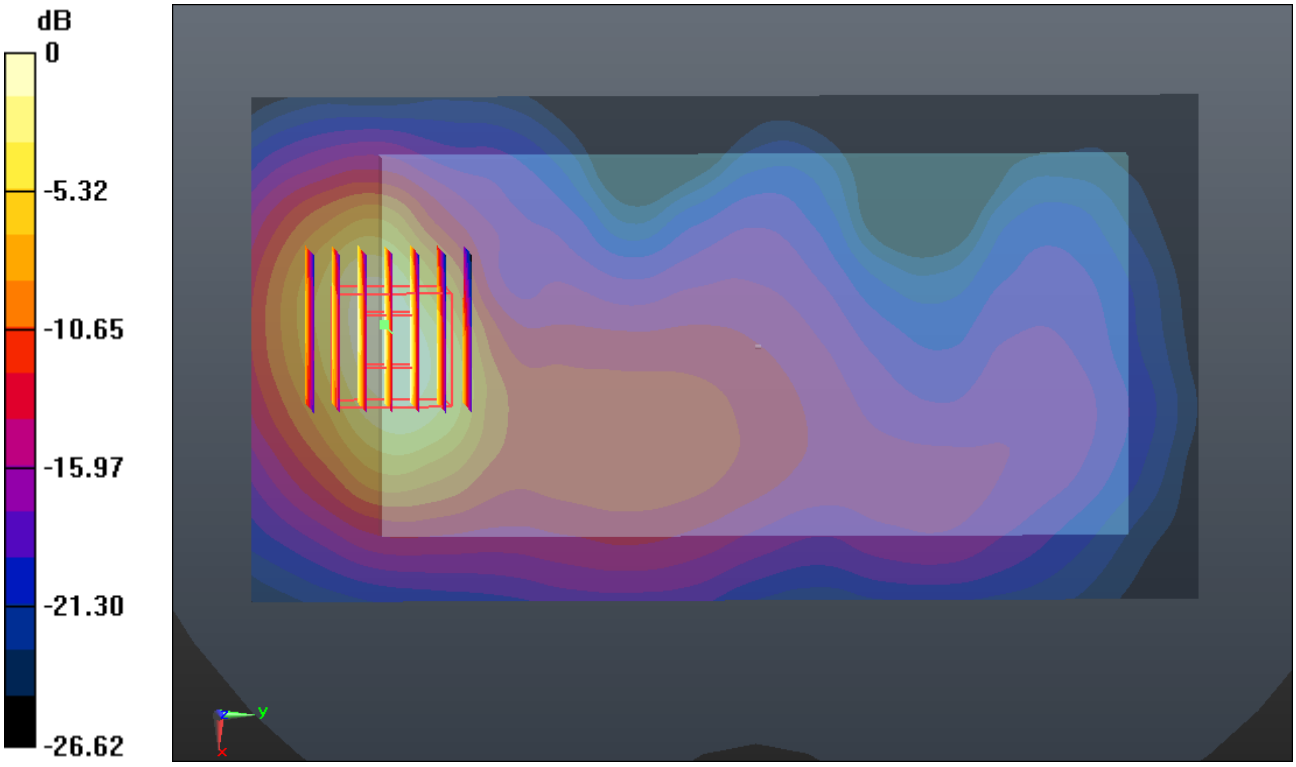
#14_TDD-LTE Band 41_20M_QPSK(1,49)_Back 1cm_Ch39750

Communication System: TDD_LTE (0); Frequency: 2506 MHz;Duty Cycle: 1:1.59
Medium: MSL_2600_140619 Medium parameters used: f = 2506 MHz; σ = 2.107 mho/m; ε_r = 51.302; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(6.82, 6.82, 6.82); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Ch39750/Area Scan (81x151x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 1.576 mW/g

Ch39750/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.989 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 2.122 W/kg
SAR(1 g) = 1.120 mW/g; SAR(10 g) = 0.530 mW/g
Maximum value of SAR (measured) = 1.599 mW/g



0 dB = 1.600mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.06.21

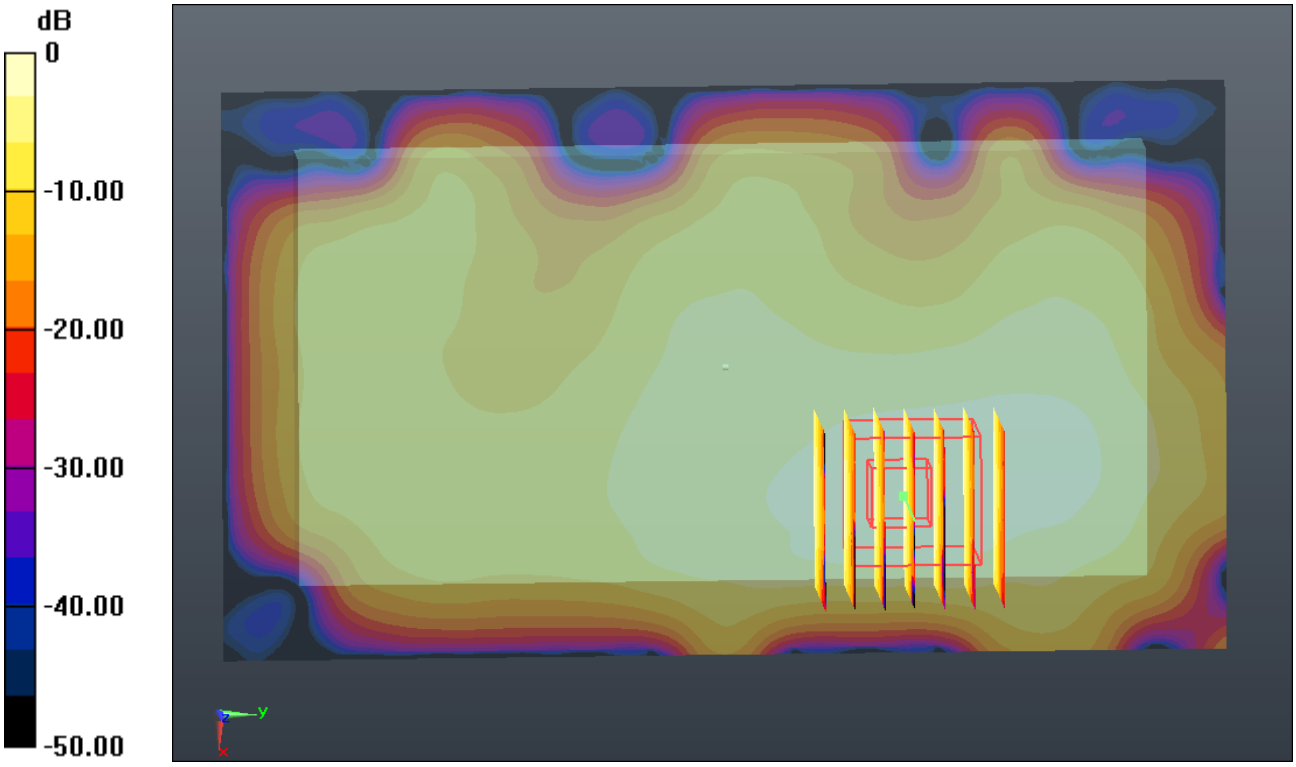
#15_WLAN2.4G_802.11b_1M_Back 1cm_Ch11

Communication System: WIFI (0); Frequency: 2462 MHz;Duty Cycle: 1:1.024
Medium: MSL_2450_140621 Medium parameters used: f = 2462 MHz; σ = 1.958 mho/m; ε_r = 50.903; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.14, 7.14, 7.14); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Ch11/Area Scan (81x141x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.130 mW/g

Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.300 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 0.200 W/kg
SAR(1 g) = 0.093 mW/g; SAR(10 g) = 0.046 mW/g
Maximum value of SAR (measured) = 0.146 mW/g



0 dB = 0.150mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.05.31

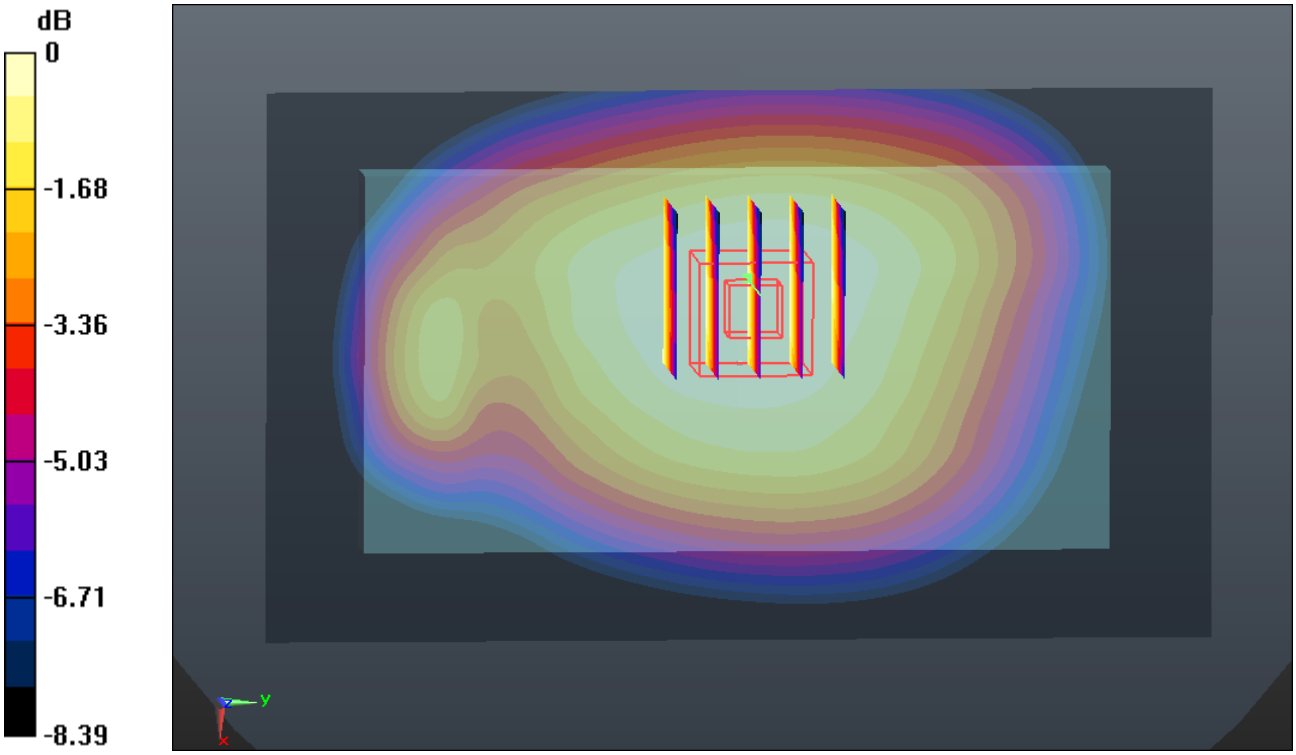
#16_CDMA2000 BC0_RC3 SO32_Back 1cm_Ch384

Communication System: CDMA2000 (0); Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: MSL_835_140531 Medium parameters used: f = 836.52 MHz; σ = 0.982 mho/m; ε_r = 54.458; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(10.02, 10.02, 10.02); Calibrated: 2014.04.22
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014.04.30
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Ch384/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.791 mW/g

Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.373 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.872 W/kg
SAR(1 g) = 0.682 mW/g; SAR(10 g) = 0.526 mW/g
Maximum value of SAR (measured) = 0.783 mW/g



0 dB = 0.780mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.05.31

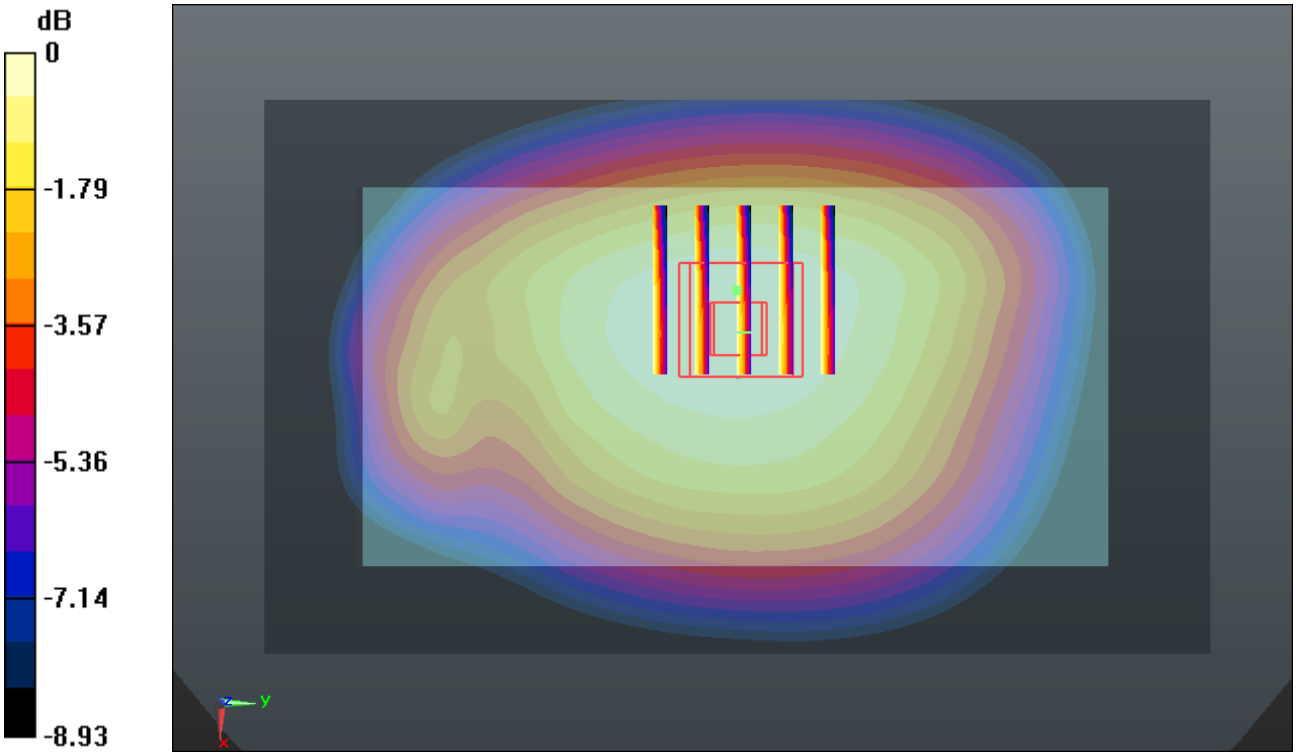
#17_CDMA2000 BC10_ReTAP 4096_Back 1cm_Ch476

Communication System: CDMA2000 (0); Frequency: 817.9 MHz;Duty Cycle: 1:1
Medium: MSL_835_140531 Medium parameters used: f = 817.9 MHz; σ = 0.963 mho/m; ε_r = 54.642; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(10.02, 10.02, 10.02); Calibrated: 2014.04.22
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014.04.30
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Ch476/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.970 mW/g

Ch476/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.463 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.083 W/kg
SAR(1 g) = 0.844 mW/g; SAR(10 g) = 0.642 mW/g
Maximum value of SAR (measured) = 0.974 mW/g



0 dB = 0.970mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.05.27

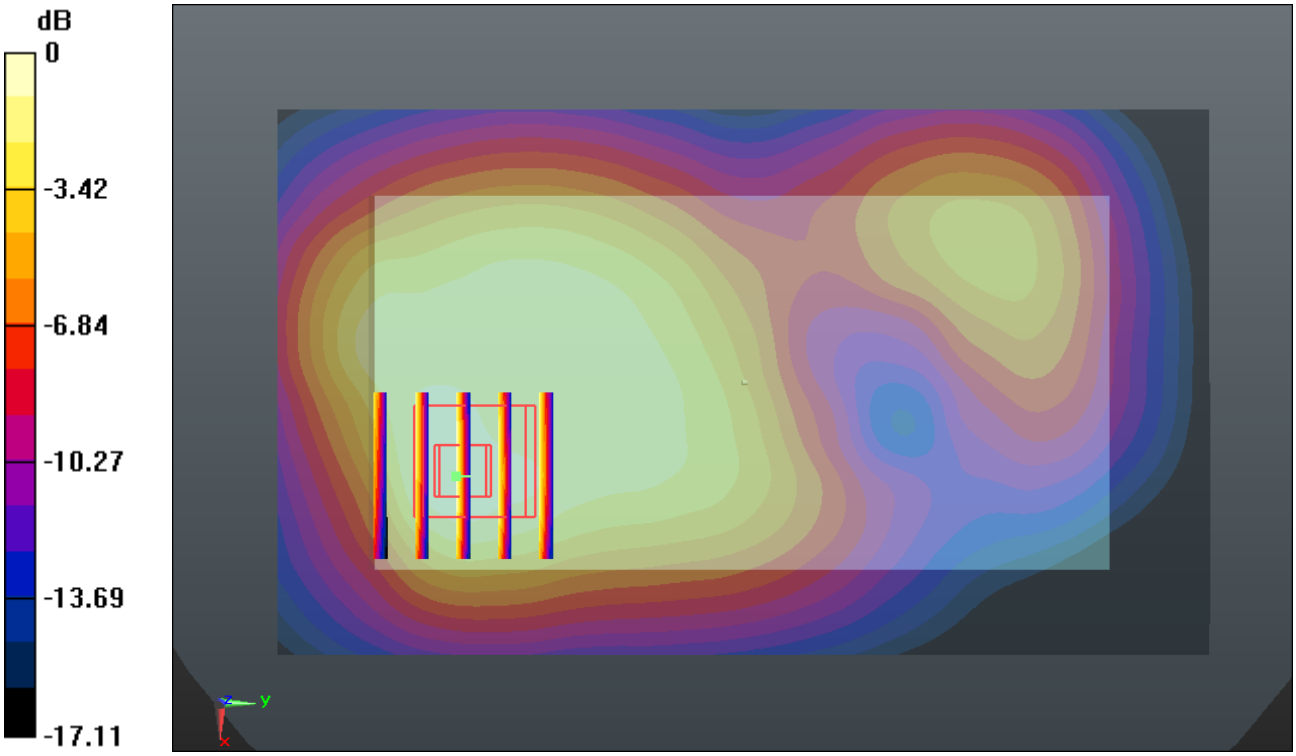
#18_CDMA2000 BC1_RETAP 4096_Back 1cm_Ch600

Communication System: CDMA2000 (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_140527 Medium parameters used: f = 1880 MHz; σ = 1.526 mho/m; ε_r = 53.444; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3911; ConvF(7.83, 7.83, 7.83); Calibrated: 2014.04.22
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2014.04.30
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Ch600/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.392 mW/g

Ch600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.611 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 1.672 W/kg
SAR(1 g) = 0.989 mW/g; SAR(10 g) = 0.578 mW/g
Maximum value of SAR (measured) = 1.347 mW/g



0 dB = 1.350mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.06.21

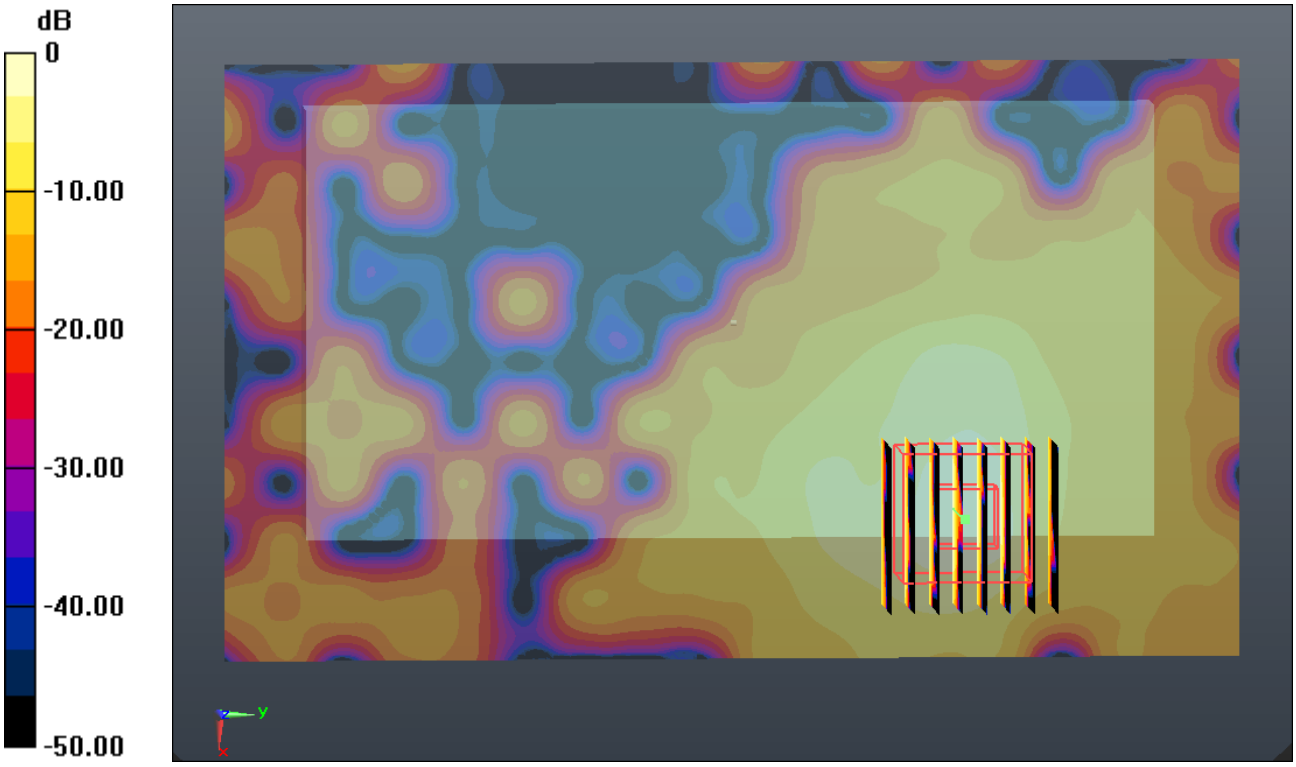
#19_WLAN5G_Band1_802.11a_6M_Back 1cm_Ch36_Headset

Communication System: WIFI (0); Frequency: 5180 MHz;Duty Cycle: 1:1.144
Medium: MSL_5000_140621 Medium parameters used: f = 5180 MHz; σ = 5.268 mho/m; ε_r = 49.23; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(4.54, 4.54, 4.54); Calibrated: 2014.05.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Ch36/Area Scan (101x171x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.559 mW/g

Ch36/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 1.222 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.933 W/kg
SAR(1 g) = 0.254 mW/g; SAR(10 g) = 0.074 mW/g
Maximum value of SAR (measured) = 0.593 mW/g



0 dB = 0.590mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2014.06.21

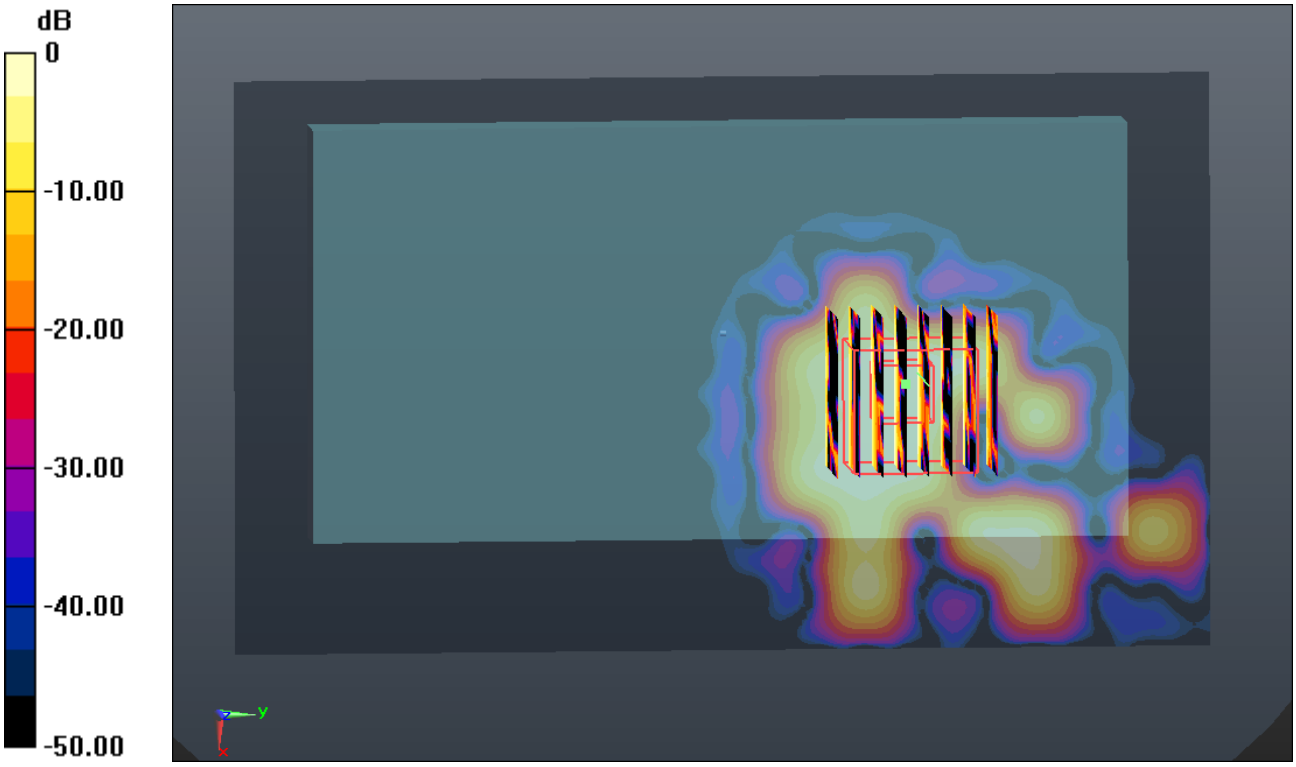
#20_WLAN5G_Band4_802.11a_6M_Back 1cm_Ch161_Headset

Communication System: WIFI (0); Frequency: 5805 MHz;Duty Cycle: 1:1.144
Medium: MSL_5000_140621 Medium parameters used: f = 5805 MHz; σ = 6.134 mho/m; ε_r = 47.763; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(4.21, 4.21, 4.21); Calibrated: 2014.05.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.4.5 (3634)

Ch161/Area Scan (101x171x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.152 mW/g

Ch161/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 0 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.247 W/kg
SAR(1 g) = 0.028 mW/g; SAR(10 g) = 0.010 mW/g
Maximum value of SAR (measured) = 0.089 mW/g



0 dB = 0.090mW/g