FCC SAR Test Report

APPLICANT	:	ZTE CORPORATION
EQUIPMENT	:	LTE/CDMA Mutil-Mode Digital Mobile Phone
BRAND NAME	:	ZTE
MODEL NAME	:	N9132
FCC ID	:	SRQ-ZTEN9132
STANDARD	:	FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2013

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.

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Approved by: Jones Tsai / Manager

Testing Laboratory
2627

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA581705	Rev. 01	Initial issue of report	Sep. 18, 2015

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **ZTE CORPORATION, LTE/CDMA Mutil-Mode Digital Mobile Phone, N9132**, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary			
		Head (Separation 0mm) 1g SAR (W/kg)	Body-worn (Separation 10mm) 1g SAR (W/kg)	Wireless Router (Separation 10mm) 1g SAR (W/kg)	Highest Simultaneous Transmission 1g SAR (W/kg)
PCE	GSM850	0.63	0.60	0.68	1.19
	GSM1900	0.20	0.34	0.40	
	WCDMA Band V	0.57	0.67	0.69	
	WCDMA Band II	0.32	0.58	0.58	
	CDMA 2000 BC10	0.67	**0.89**	0.89	
	CDMA 2000 BC 0	**0.70**	0.88	0.90	
	CDMA 2000 BC1	0.41	0.79	**1.02**	
	LTE Band 26	0.60	0.76	0.76	
	LTE Band 25	0.31	0.72	0.78	
	LTE Band 41	0.62	0.84	0.84	
DTS	WLAN 2.4GHz Band	0.14	0.19	0.19	1.19
Date of Testing:		Sep. 02, 2015 ~ Sep. 08, 2015			

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 1528-2013 and FCC KDB publications.

2. Administration Data

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China 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 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- 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 802.11 Wi-Fi SAR v02r01
- FCC KDB 941225 D01 3G SAR Procedures v03
- FCC KDB 941225 D05 SAR for LTE Devices v02r03
- FCC KDB 941225 D06 Hotspot Mode SAR v02

4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	LTE/CDMA Mutil-Mode Digital Mobile Phone
Brand Name	ZTE
Model Name	N9132
FCC ID	SRQ-ZTEN9132
IMEI Code	990006080009508
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz 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 Bluetooth: 2402 MHz ~ 2480 MHz
Mode	· GSM/GPRS/EGPRS · RMC/AMR 12.2Kbps · HSDPA · HSUPA · HSPA+ (Downlink Only) · CDMA2000 : 1xRTT/1xEv-Do(Rev.0)/1xEv-Do(Rev.A) · LTE: QPSK, 16QAM · 802.11b/g/n HT20/HT40 · Bluetooth v3.0+EDR, Bluetooth v4.0 LE
HW Version	cvzA
SW Version	N9132V1.0.0B01
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Identical Prototype

Remark:
1. This device 2.4GHz WLAN supports Hotspot operation.
2. This device supported VoIP in GPRS/EGPRS, WCDMA, LTE (e.g. 3rd party VoIP).
3. This device supports GRPS/EGPRS mode up to multi-slot class10.
4. This device does not support DTM operation.

4.2 Maximum Tune-up Limit

Mode	Burst average power(dBm)	
	GSM 850	GSM 1900
GSM (GMSK, 1 Tx slot)	32.50	29.50
GPRS (GMSK, 1 Tx slot)	32.50	29.50
GPRS (GMSK, 2 Tx slots)	30.00	27.50
EDGE (8PSK, 1 Tx slot)	26.50	25.50
EDGE (8PSK, 2 Tx slots)	25.50	25.00

Mode	Average power(dBm)	
	WCDMA Band V	WCDMA Band II
AMR 12.2Kbps	23.00	22.50
RMC 12.2Kbps	23.00	22.50
HSDPA Subtest-1	23.00	22.00
HSDPA Subtest-2	23.00	22.00
HSDPA Subtest-3	22.50	22.00
HSDPA Subtest-4	22.50	22.00
HSUPA Subtest-1	22.50	22.00
HSUPA Subtest-2	22.50	22.00
HSUPA Subtest-3	22.50	22.00
HSUPA Subtest-4	22.50	22.00
HSUPA Subtest-5	22.50	22.00

Average Power (dBm)			
Band	CDMA2000 BC0	CDMA2000 BC1	CDMA2000 BC10
1xRTT RC1 SO55	24.00	23.50	24.00
1xRTT RC3 SO55	24.00	23.50	24.00
1xRTT RC3 SO32 (+ F-SCH)	24.00	23.50	24.00
1xRTT RC3 SO32 (+SCH)	24.00	23.50	24.00
1xEV-DO Rev 0 (RTAP 153.6kbps)	24.00	23.50	24.00
1xEV-DO Rev A (RETAP 4096bits)	24.00	23.50	24.00

LTE Band 25				
Modulation	BW (MHz)	RB size	Target MPR	Target Power (dBm)
QPSK	20	≤ 18	0	23.5
QPSK	20	> 18	1	22.5
16QAM	20	≤ 18	1	22.5
16QAM	20	> 18	2	21.5
QPSK	15	≤ 16	0	23.5
QPSK	15	> 16	1	22.5
16QAM	15	≤ 16	1	22.5
16QAM	15	> 16	2	21.5
QPSK	10	≤ 12	0	23.5
QPSK	10	> 12	1	22.5
16QAM	10	≤ 12	1	22.5
16QAM	10	> 12	2	21.5
QPSK	5	≤ 8	0	23.5
QPSK	5	> 8	1	22.5
16QAM	5	≤ 8	1	22.5
16QAM	5	> 8	2	21.5
QPSK	3	≤ 4	0	23.5
QPSK	3	> 4	1	22.5
16QAM	3	≤ 4	1	22.5
16QAM	3	> 4	2	21.5
QPSK	1.4	≤ 5	0	23.5
QPSK	1.4	> 5	1	22.5
16QAM	1.4	≤ 5	1	22.5
16QAM	1.4	> 5	2	21.5

LTE Band 26				
Modulation	BW (MHz)	RB size	Target MPR	Target Power (dBm)
QPSK	15	≤ 16	0	24.5
QPSK	15	> 16	1	23.5
16QAM	15	≤ 16	1	23.5
16QAM	15	> 16	2	22.5
QPSK	10	≤ 12	0	24.5
QPSK	10	> 12	1	23.5
16QAM	10	≤ 12	1	23.5
16QAM	10	> 12	2	22.5
QPSK	5	≤ 8	0	24.5
QPSK	5	> 8	1	23.5
16QAM	5	≤ 8	1	23.5
16QAM	5	> 8	2	22.5
QPSK	3	≤ 4	0	24.5
QPSK	3	> 4	1	23.5
16QAM	3	≤ 4	1	23.5
16QAM	3	> 4	2	22.5
QPSK	1.4	≤ 5	0	24.5
QPSK	1.4	> 5	1	23.5
16QAM	1.4	≤ 5	1	23.5
16QAM	1.4	> 5	2	22.5

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

Mode		Average Power (dBm)
2.4GHz	802.11b	15.5
	802.11g	13.5
	802.11n-HT20	12.5
	802.11n-HT40	11.5
Bluetooth v3.0+EDR		9.5
Bluetooth v4.0 LE		10.0

4.3 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r03	
FCC ID	SRQ-ZTEN9132
Equipment Name	LTE/CDMA Mutil-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	LTE Band 26:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 25:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz
uplink modulations used	QPSK, and 16QAM
LTE Voice / Data requirements	Data only
LTE MPR permanently built-in by design	Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3

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

LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.
LTE Release version	R9 ,Category 4
LTE Carrier Aggregation Support	NO

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

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

LTE Band 41								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506
L M	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5
M	40620	2593	40620	2590	40620	2593	40620	2593
H M	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:

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

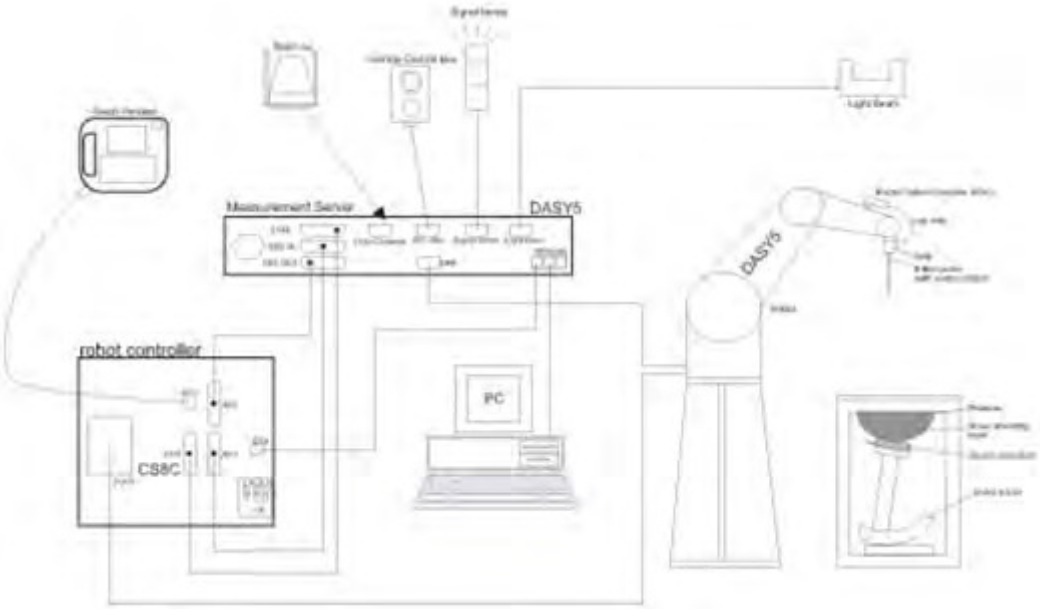
SAR is expressed in units of Watts per kilogram (W/kg)

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

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 D01v01r04 SAR measurement 100 MHz to 6 GHz.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: 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 D01v01r04 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. 21, 2014	Nov. 20, 2015
SPEAG	1900MHz System Validation Kit	D1900V2	5d118	Nov. 21, 2014	Nov. 20, 2015
SPEAG	2450MHz System Validation Kit	D2450V2	840	Nov. 19, 2014	Nov. 18, 2015
SPEAG	2600MHz System Validation Kit	D2600V2	1061	Nov. 19, 2014	Nov. 18, 2015
SPEAG	Data Acquisition Electronics	DAE4	1210	May 21, 2015	May 20, 2016
SPEAG	Dosimetric E-Field Probe	EX3DV4	3857	May 28, 2015	May 27, 2016
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	6201300654	Aug. 10, 2015	Aug. 09, 2016
Agilent	Wireless Communication Test Set	E5515C	MY52102706	May 04, 2015	May 03, 2016
Agilent	ENA Series Network Analyzer	E5071C	MY46111157	May 04, 2015	May 03, 2016
Agilent	Dielectric Probe Kit	85070E	MY44300475	NCR	NCR
R&S	Signal Generator	SMBV100A	258305	Jan. 23, 2015	Jan. 22, 2016
Anritsu	Power Senor	MA2411B	0917070	Jan. 23, 2015	Jan. 22, 2016
Anritsu	Power Meter	ML2495A	1005002	Jan. 23, 2015	Jan. 22, 2016
Anritsu	Power Senor	MA2411B	1339163	Jan. 23, 2015	Jan. 22, 2016
Anritsu	Power Meter	ML2495A	1435004	Jan. 23, 2015	Jan. 22, 2016
ARRA	Power Divider	A3200-2	N/A	NA	NA
MCL	Attenuation	BW-S10W5	N/A	NA	NA
R&S	CBT BLUETOOTH TESTER	CBT	100783	Aug. 10, 2015	Aug. 09, 2016
R&S	Spectrum Analyzer	FSP40	100319	Oct. 28, 2015	Oct. 27, 2016
Agilent	Dual Directional Coupler	778D	50422	Note1	
Woken	Attenuator 1	WK0602-XX	N/A	Note1	
PE	Attenuator 2	PE7005-10	N/A	Note1	
PE	Attenuator 3	PE7005- 3	N/A	Note1	
AR	Power Amplifier	5S1G4M2	0328767	Note1	
Mini-Circuits	Power Amplifier	ZVE-3W	162601250	Note1	
Mini-Circuits	Power Amplifier	ZHL-42W+	13440021344	Note1	

General Note:

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

10. System Verification

10.1 Tissue Verification

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

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

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
835	Head	22.8	0.893	41.398	0.9	41.5	-0.78	-0.25	±5	Sep. 04, 2015
1900	Head	22.9	1.425	38.902	1.4	40	1.79	-2.75	±5	Sep. 07, 2015
2450	Head	22.9	1.821	39.195	1.8	39.2	1.17	-0.01	±5	Sep. 04, 2015
2600	Head	22.8	1.974	38.204	1.96	39	0.71	-2.04	±5	Sep. 03, 2015
835	Body	22.8	0.980	54.479	0.97	55.2	1.03	-1.31	±5	Sep. 03, 2015
1900	Body	22.9	1.551	53.293	1.52	53.3	2.04	-0.01	±5	Sep. 02, 2015
2450	Body	22.7	1.932	51.266	1.95	52.7	-0.92	-2.72	±5	Sep. 08, 2015
2600	Body	22.8	2.165	53.823	2.16	52.5	0.23	2.52	±5	Sep. 02, 2015

10.2 System Performance Check Results

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

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured SAR (W/kg)	Targeted SAR (W/kg)	Normalized SAR (W/kg)	Deviation (%)
Sep. 04, 2015	835	Head	250	4d091	3857	1210	2.39	9.11	9.56	4.94
Sep. 07, 2015	1900	Head	250	5d118	3857	1210	10.3	40.1	41.2	2.74
Sep. 04, 2015	2450	Head	250	840	3857	1210	12.8	52.3	51.2	-2.10
Sep. 03, 2015	2600	Head	250	1061	3857	1210	14.4	56.9	57.6	1.23
Sep. 03, 2015	835	Body	250	4d091	3857	1210	2.29	9.6	9.16	-4.58
Sep. 02, 2015	1900	Body	250	5d118	3857	1210	10.5	40	42	5.00
Sep. 08, 2015	2450	Body	250	840	3857	1210	12.3	51	49.2	-3.53
Sep. 02, 2015	2600	Body	250	1061	3857	1210	13.1	54.9	52.4	-4.55

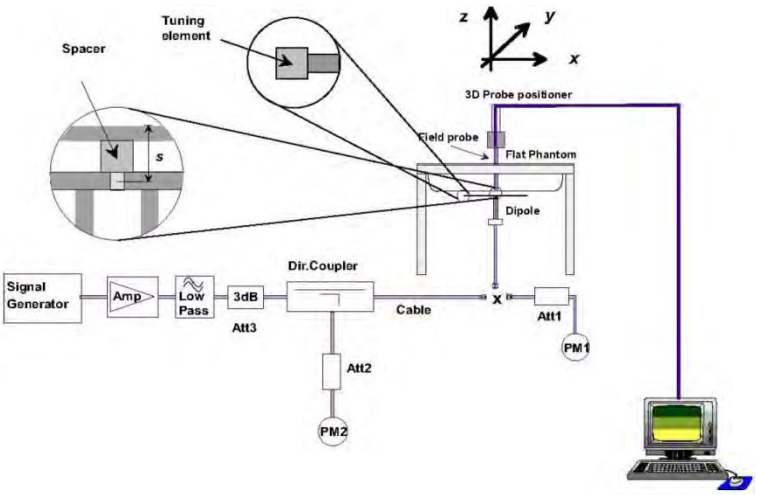


Fig 8.3.1 System Performance Check Setup

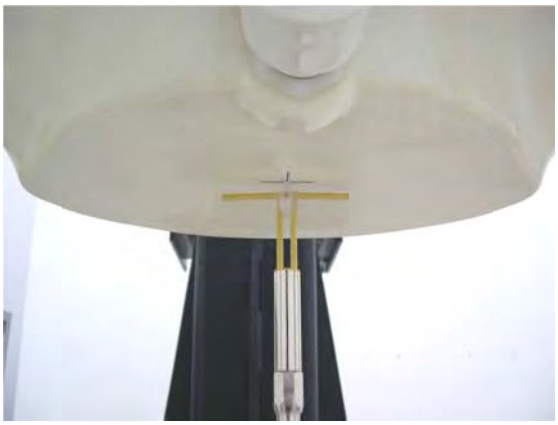


Fig 8.3.2 Setup Photo

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.

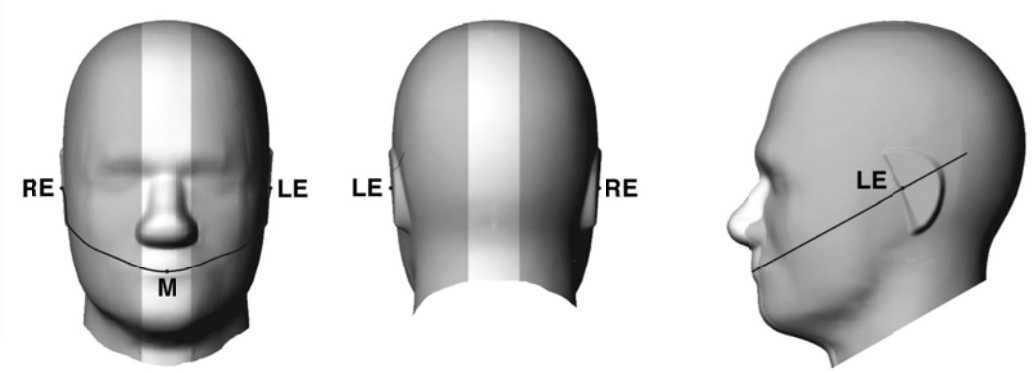


Fig 9.1.1 Front, back, and side views of SAM twin phantom

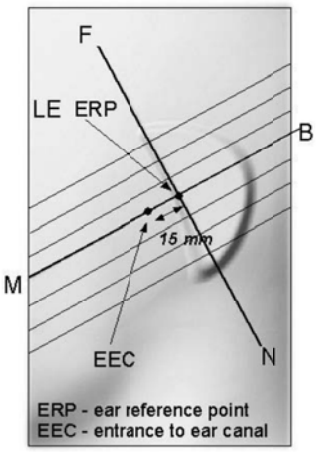


Fig 9.1.2 Close-up side view of phantom showing the ear region.

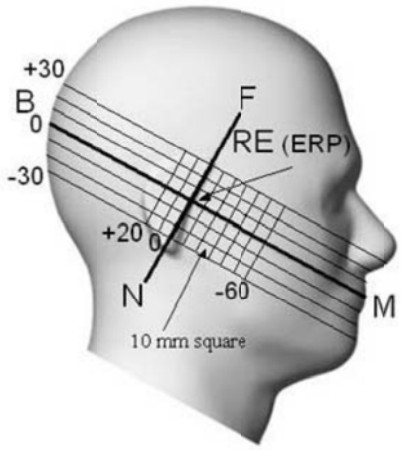


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

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.

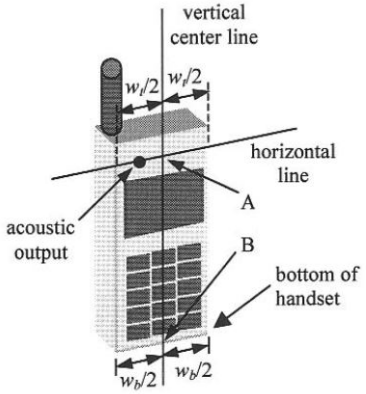


Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case

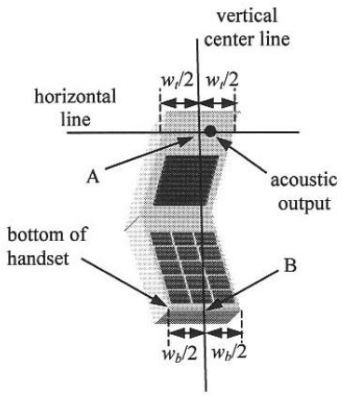


Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

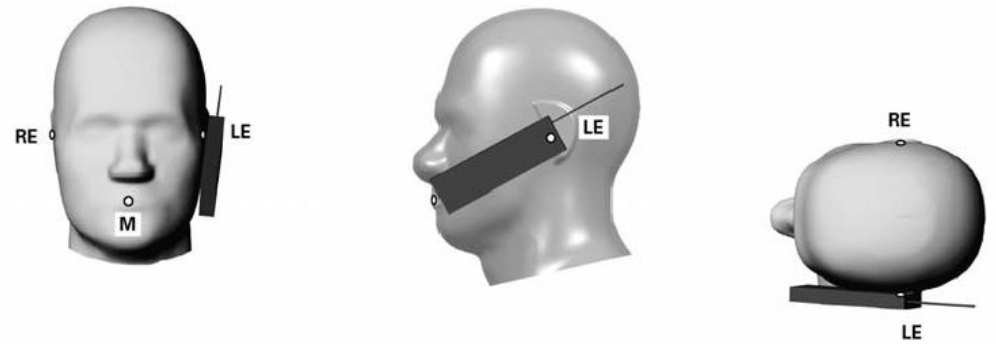


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

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

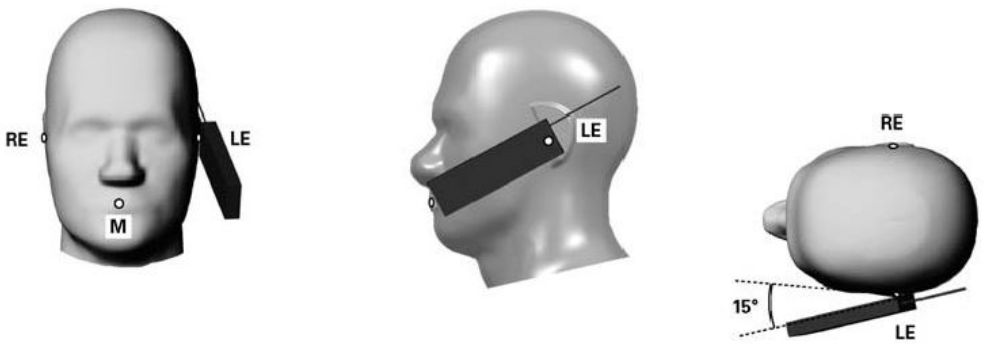


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

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.

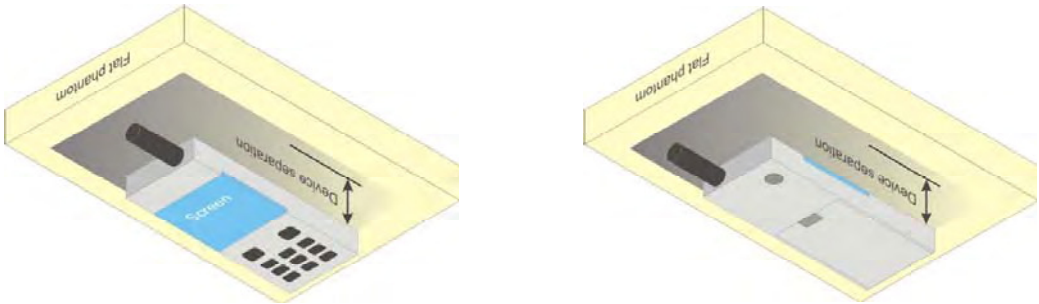


Fig 9.4 Body Worn Position

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 D06 v02 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined form general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

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

12. Conducted RF Output Power (Unit: dBm)

<GSM Conducted Power>

General Note:

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

Band GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM (GMSK, 1 Tx slot)	**31.65**	31.43	31.51	32.50	22.65	22.43	22.51	23.50
GPRS (GMSK, 1 Tx slot)	31.64	31.42	31.50	32.50	22.64	22.42	22.50	23.50
GPRS (GMSK, 2 Tx slots)	29.71	29.13	29.48	30.00	**23.71**	23.13	23.48	24.00
EDGE (8PSK, 1 Tx slot)	26.36	26.30	26.24	26.50	17.36	17.30	17.24	17.50
EDGE (8PSK, 2 Tx slots)	24.84	24.85	24.79	25.50	18.84	18.85	18.79	19.50
Band GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM (GMSK, 1 Tx slot)	**28.39**	28.30	28.25	29.50	19.39	19.30	19.25	20.50
GPRS (GMSK, 1 Tx slot)	28.37	28.28	28.23	29.50	19.37	19.28	19.23	20.50
GPRS (GMSK, 2 Tx slots)	26.99	27.04	27.02	27.50	20.99	**21.04**	21.02	21.50
EDGE (8PSK, 1 Tx slot)	25.01	24.95	24.95	25.50	16.01	15.95	15.95	16.50
EDGE (8PSK, 2 Tx slots)	24.57	24.52	24.53	25.00	18.57	18.52	18.53	19.00

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

<WCDMA Conducted Power>

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

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

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

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

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

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.

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

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

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

Setup Configuration

HSUPA Setup Configuration:

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

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

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

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c .

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

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

Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 14/15 and β_d = 15/15.

Note 5: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 6: β_{ed} can not be set directly, it is set by Absolute Grant Value.

Setup Configuration

<WCDMA Conducted Power>

General Note:

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

Band			WCDMA Band V			WCDMA Band II		
TX Channel			4132	4182	4233	9262	9400	9538
Rx Channel			4357	4407	4458	9662	9800	9938
Frequency (MHz)			826.4	836.4	846.6	1852.4	1880	1907.6
MPR (dB)	3GPP Rel 99	AMR 12.2Kbps	22.75	22.71	22.79	21.95	21.87	21.83
	3GPP Rel 99	RMC 12.2Kbps	22.77	22.72	**22.80**	**21.97**	21.87	21.85
0	3GPP Rel 6	HSDPA Subtest-1	22.38	22.51	22.50	21.56	21.48	21.42
0	3GPP Rel 6	HSDPA Subtest-2	22.49	22.51	22.53	21.52	21.45	21.40
0.5	3GPP Rel 6	HSDPA Subtest-3	22.05	22.11	22.10	21.62	21.56	21.48
0.5	3GPP Rel 6	HSDPA Subtest-4	22.12	22.10	22.04	21.65	21.55	21.44
0	3GPP Rel 6	HSUPA Subtest-1	21.75	22.05	22.04	21.25	21.16	21.10
2	3GPP Rel 6	HSUPA Subtest-2	21.34	21.43	21.41	20.78	21.37	20.91
1	3GPP Rel 6	HSUPA Subtest-3	21.51	21.05	21.03	21.32	21.08	21.29
2	3GPP Rel 6	HSUPA Subtest-4	21.49	21.63	21.59	21.89	21.67	21.90
0	3GPP Rel 6	HSUPA Subtest-5	21.84	21.93	21.90	21.75	21.76	21.71

<CDMA2000 Conducted Power>

General Note:

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

Band	CDMA2000 BC10			CDMA2000 BC0			CDMA2000 BC1		
TX Channel	476	580	684	1013	384	777	25	600	1175
Frequency (MHz)	817.9	820.5	823.1	824.7	836.52	848.31	1851.25	1880	1908.75
1xRTT RC1 SO55	23.63	23.72	23.68	23.74	23.62	23.60	23.07	23.07	**23.10**
1xRTT RC3 SO55	23.75	23.79	23.75	23.80	23.72	23.69	22.99	22.99	23.05
1xRTT RC3 SO32(+ F-SCH)	23.78	**23.82**	23.80	**23.85**	23.78	23.72	23.04	23.02	23.08
1xRTT RC3 SO32(+SCH)	23.70	23.78	23.76	23.84	23.79	23.70	23.01	22.98	23.04
1xEVDO RTAP 153.6Kbps	23.80	23.81	23.79	23.81	23.73	23.71	23.06	23.02	23.08
1xEVDO RETAP 4096Bits	23.78	23.80	23.79	23.79	23.73	23.68	23.01	23.00	23.05

<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	23.61	23.41	23.41	24.5	0
15	QPSK	1	37	23.85	23.51	23.71		
15	QPSK	1	74	23.45	23.33	23.30		
15	QPSK	36	0	22.72	22.57	22.45	23.5	0-1
15	QPSK	36	18	22.55	22.46	22.38		
15	QPSK	36	37	22.54	22.40	22.38		
15	QPSK	75	0	22.53	22.45	22.41		
15	16QAM	1	0	22.88	22.61	22.61	23.5	0-1
15	16QAM	1	37	22.91	22.86	22.73		
15	16QAM	1	74	22.67	22.55	22.56		
15	16QAM	36	0	21.70	21.47	21.44	22.5	0-2
15	16QAM	36	18	21.50	21.49	21.37		
15	16QAM	36	37	21.53	21.51	21.35		
15	16QAM	75	0	21.40	21.44	21.43		
Channel				26740	26865	26990	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	23.82	23.48	23.35	24.5	0
10	QPSK	1	24	23.80	23.67	23.63		
10	QPSK	1	49	23.76	23.44	23.45		
10	QPSK	25	0	22.62	22.54	22.40	23.5	0-1
10	QPSK	25	12	22.63	22.40	22.38		
10	QPSK	25	24	22.62	22.52	22.35		
10	QPSK	50	0	22.64	22.50	22.42		
10	16QAM	1	0	22.91	22.69	22.63	23.5	0-1
10	16QAM	1	24	22.95	22.75	22.66		
10	16QAM	1	49	22.74	22.62	22.61		
10	16QAM	25	0	21.54	21.44	21.36	22.5	0-2
10	16QAM	25	12	21.63	21.61	21.46		
10	16QAM	25	24	21.70	21.64	21.52		
10	16QAM	50	0	21.46	21.54	21.42		
Channel				26715	26865	27015	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	23.77	23.51	23.46	24.5	0
5	QPSK	1	12	23.79	23.56	23.67		
5	QPSK	1	24	23.62	23.55	23.33		
5	QPSK	12	0	22.55	22.49	22.42	23.5	0-1
5	QPSK	12	6	22.49	22.53	22.40		
5	QPSK	12	11	22.67	22.50	22.33		
5	QPSK	25	0	22.57	22.46	22.39		
5	16QAM	1	0	22.98	22.61	22.52	23.5	0-1
5	16QAM	1	12	23.24	22.67	22.60		
5	16QAM	1	24	22.87	22.64	22.58		
5	16QAM	12	0	21.49	21.45	21.42	22.5	0-2
5	16QAM	12	6	21.61	21.39	21.34		
5	16QAM	12	11	21.45	21.46	21.28		
5	16QAM	25	0	21.56	21.40	21.13		

Channel				26705	26865	27025	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	23.82	23.39	23.52	24.5	0
3	QPSK	1	7	23.75	23.51	23.56		
3	QPSK	1	14	23.68	23.49	23.44		
3	QPSK	8	0	22.75	22.53	22.55	23.5	0-1
3	QPSK	8	4	22.66	22.55	22.44		
3	QPSK	8	7	22.64	22.63	22.42		
3	QPSK	15	0	22.57	22.50	22.48		
3	16QAM	1	0	22.77	22.79	22.59	23.5	0-1
3	16QAM	1	7	22.82	22.81	22.75		
3	16QAM	1	14	22.74	22.63	22.67		
3	16QAM	8	0	21.38	21.66	21.49	22.5	0-2
3	16QAM	8	4	21.49	21.53	21.44		
3	16QAM	8	7	21.42	21.44	21.40		
3	16QAM	15	0	21.35	21.38	21.18		
Channel				26697	26865	27033	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	23.65	23.38	23.35	24.5	0
1.4	QPSK	1	2	23.68	23.65	23.61		
1.4	QPSK	1	5	23.45	23.35	23.37		
1.4	QPSK	3	0	23.60	23.41	23.54		
1.4	QPSK	3	1	23.64	23.58	23.60		
1.4	QPSK	3	2	23.64	23.53	23.48		
1.4	QPSK	6	0	22.68	22.54	22.47	23.5	0-1
1.4	16QAM	1	0	22.82	22.70	22.66	23.5	0-1
1.4	16QAM	1	2	22.94	22.71	22.71		
1.4	16QAM	1	5	22.90	22.61	22.59		
1.4	16QAM	3	0	22.88	22.66	22.69		
1.4	16QAM	3	1	22.93	22.69	22.62		
1.4	16QAM	3	2	22.93	22.70	22.67		
1.4	16QAM	6	0	21.38	21.30	21.24	22.5	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	22.86	22.78	22.94	23.5	0
20	QPSK	1	49	22.97	23.07	23.25		
20	QPSK	1	99	22.35	22.86	23.07		
20	QPSK	50	0	21.80	21.71	21.90	22.5	0-1
20	QPSK	50	24	21.83	21.90	21.94		
20	QPSK	50	49	21.63	21.89	21.87		
20	QPSK	100	0	21.75	21.83	21.85		
20	16QAM	1	0	22.03	22.07	22.16	22.5	0-1
20	16QAM	1	49	22.11	22.11	22.18		
20	16QAM	1	99	21.64	21.96	21.79		
20	16QAM	50	0	20.89	20.75	21.00	21.5	0-2
20	16QAM	50	24	20.75	20.82	20.86		
20	16QAM	50	49	20.50	20.77	20.79		
20	16QAM	100	0	20.73	20.85	20.92		
Channel				26115	26340	26615	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	22.90	22.45	22.84	23.5	0
15	QPSK	1	37	23.13	22.99	23.03		
15	QPSK	1	74	22.45	22.72	22.89		
15	QPSK	36	0	21.79	21.76	21.98	22.5	0-1
15	QPSK	36	18	21.85	21.86	21.90		
15	QPSK	36	37	21.74	21.89	21.75		
15	QPSK	75	0	21.82	21.84	21.93		
15	16QAM	1	0	21.87	21.54	21.96	22.5	0-1
15	16QAM	1	37	22.13	22.17	22.25		
15	16QAM	1	74	21.51	21.96	22.20		
15	16QAM	36	0	20.84	20.76	20.91	21.5	0-2
15	16QAM	36	18	20.93	20.78	20.80		
15	16QAM	36	37	20.75	20.79	20.68		
15	16QAM	75	0	20.79	20.78	20.72		
Channel				26090	26340	26640	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	22.76	22.66	22.82	23.5	0
10	QPSK	1	24	22.82	23.00	22.91		
10	QPSK	1	49	22.75	22.81	22.90		
10	QPSK	25	0	21.72	21.67	21.93	22.5	0-1
10	QPSK	25	12	21.73	21.91	21.75		
10	QPSK	25	24	21.84	21.90	21.73		
10	QPSK	50	0	21.78	21.86	21.76		
10	16QAM	1	0	22.01	21.90	22.24	22.5	0-1
10	16QAM	1	24	22.09	22.08	22.28		
10	16QAM	1	49	22.03	22.01	22.11		
10	16QAM	25	0	20.77	20.85	20.80	21.5	0-2
10	16QAM	25	12	20.79	20.80	20.76		
10	16QAM	25	24	21.00	20.95	20.66		
10	16QAM	50	0	20.76	20.83	20.75		

Channel				26065	26340	26665	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	22.65	22.66	22.75	23.5	0
5	QPSK	1	12	22.77	22.94	22.89		
5	QPSK	1	24	22.61	22.83	22.85		
5	QPSK	12	0	21.68	21.80	21.80	22.5	0-1
5	QPSK	12	6	21.65	21.86	21.69		
5	QPSK	12	11	21.74	21.80	21.89		
5	QPSK	25	0	21.72	21.86	21.80		
5	16QAM	1	0	22.02	22.21	22.10	22.5	0-1
5	16QAM	1	12	22.05	22.32	22.16		
5	16QAM	1	24	22.04	22.15	22.07		
5	16QAM	12	0	20.65	20.85	20.54	21.5	0-2
5	16QAM	12	6	20.67	20.75	20.75		
5	16QAM	12	11	20.63	20.85	20.60		
5	16QAM	25	0	20.64	20.92	20.64		
Channel				26055	26340	26675	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	22.60	22.62	22.89	23.5	0
3	QPSK	1	7	22.69	22.91	23.16		
3	QPSK	1	14	22.49	22.84	23.03		
3	QPSK	8	0	21.70	21.87	21.78	22.5	0-1
3	QPSK	8	4	21.66	21.85	21.96		
3	QPSK	8	7	21.74	21.88	21.90		
3	QPSK	15	0	21.61	21.77	21.90		
3	16QAM	1	0	22.09	22.00	22.09	22.5	0-1
3	16QAM	1	7	22.41	22.13	21.99		
3	16QAM	1	14	22.13	22.11	22.28		
3	16QAM	8	0	21.06	20.91	20.71	21.5	0-2
3	16QAM	8	4	21.35	20.90	20.69		
3	16QAM	8	7	20.53	20.81	20.93		
3	16QAM	15	0	20.41	20.89	20.60		
Channel				26047	26340	26683	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	22.59	22.73	22.77	23.5	0
1.4	QPSK	1	2	22.82	22.97	23.07		
1.4	QPSK	1	5	22.50	22.93	22.97		
1.4	QPSK	3	0	22.80	22.87	22.81		
1.4	QPSK	3	1	22.79	22.91	22.99		
1.4	QPSK	3	2	22.80	22.90	23.04		
1.4	QPSK	6	0	21.78	21.84	21.95	22.5	0-1
1.4	16QAM	1	0	21.85	22.11	21.92	22.5	0-1
1.4	16QAM	1	2	21.99	22.24	22.28		
1.4	16QAM	1	5	21.77	22.16	22.25		
1.4	16QAM	3	0	21.76	22.02	22.16		
1.4	16QAM	3	1	21.94	22.02	22.17		
1.4	16QAM	3	2	21.95	22.00	22.15		
1.4	16QAM	6	0	20.57	20.63	20.92	21.5	0-2

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

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

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

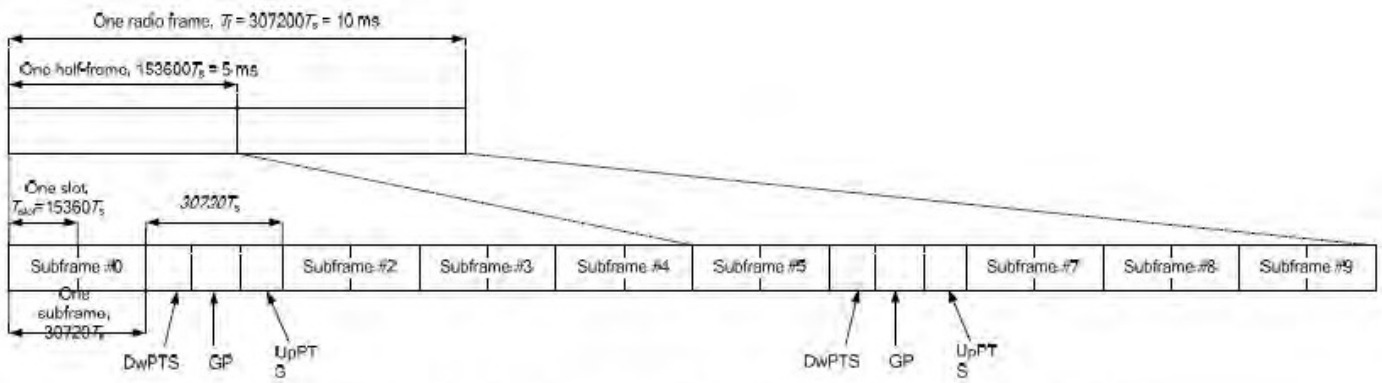


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

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

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

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

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

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

The highest duty factor is resulted from:

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

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

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

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

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

<LTE Band 41>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power Middle High Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				39750	40185	40620	41055	41490		
Frequency (MHz)				2506	2549.5	2593	2636.5	2680		
20	QPSK	1	0	23.52	23.64	23.03	22.55	23.10	24.0	0
20	QPSK	1	49	23.49	23.44	22.82	22.50	23.05		
20	QPSK	1	99	23.41	23.20	22.85	22.45	22.99		
20	QPSK	50	0	22.64	22.75	22.17	21.88	22.15	23.0	1
20	QPSK	50	24	22.47	22.56	22.07	21.69	22.11		
20	QPSK	50	49	22.46	22.54	22.00	21.67	22.11		
20	QPSK	100	0	22.46	22.58	22.15	21.77	22.11		
20	16QAM	1	0	22.40	22.76	22.16	21.81	22.20	23.0	1
20	16QAM	1	49	22.27	22.53	22.06	21.71	22.05		
20	16QAM	1	99	21.88	22.42	22.07	21.72	22.01		
20	16QAM	50	0	21.57	21.65	21.24	21.02	21.17	22.0	2
20	16QAM	50	24	21.44	21.50	21.10	20.90	21.13		
20	16QAM	50	49	21.23	21.35	21.04	20.74	21.10		
20	16QAM	100	0	21.42	21.47	21.12	20.79	21.20		
Channel				39725	40173	40620	41068	41515	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5		
15	QPSK	1	0	23.37	23.61	22.82	22.64	22.83	24.0	0
15	QPSK	1	37	23.28	23.37	22.57	22.57	22.97		
15	QPSK	1	74	23.32	23.17	22.69	22.54	22.89		
15	QPSK	36	0	22.48	22.59	22.08	21.78	22.19	23.0	1
15	QPSK	36	18	22.54	22.50	21.96	21.68	22.25		
15	QPSK	36	37	22.48	22.51	21.92	21.63	22.12		
15	QPSK	75	0	22.48	22.52	22.05	21.71	22.10		
15	16QAM	1	0	22.26	22.43	22.26	21.70	22.17	23.0	1
15	16QAM	1	37	22.16	22.25	21.92	21.57	22.00		
15	16QAM	1	74	22.07	22.08	22.04	21.68	21.71		
15	16QAM	36	0	21.58	21.51	21.22	21.10	21.26	22.0	2
15	16QAM	36	18	21.54	21.33	21.10	21.08	21.29		
15	16QAM	36	37	21.48	21.35	21.08	21.01	21.25		
15	16QAM	75	0	21.41	21.65	21.07	20.98	21.17		
Channel				39700	40160	40620	41080	41540	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2501	2547	2593	2639	2685		
10	QPSK	1	0	23.40	23.64	23.07	22.39	23.12	24.0	0
10	QPSK	1	24	23.62	23.60	23.12	22.59	23.20		
10	QPSK	1	49	23.55	23.45	22.82	22.36	23.17		
10	QPSK	25	0	22.71	22.51	22.18	21.81	22.19	23.0	1
10	QPSK	25	12	22.78	22.48	22.28	21.71	22.11		
10	QPSK	25	24	22.54	22.46	22.24	21.75	22.11		
10	QPSK	50	0	22.54	22.47	22.30	21.76	22.17		
10	16QAM	1	0	22.30	22.84	22.11	21.62	22.07	23.0	1
10	16QAM	1	24	22.62	22.74	22.18	21.85	22.06		
10	16QAM	1	49	22.61	22.66	21.88	21.61	22.30		
10	16QAM	25	0	21.81	21.76	21.36	21.11	21.54	22.0	2
10	16QAM	25	12	21.72	21.76	21.28	20.99	21.19		
10	16QAM	25	24	21.62	21.67	21.27	20.94	21.19		
10	16QAM	50	0	21.42	21.60	21.17	20.93	21.15		

Channel				39675	40148	40620	41093	41565	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2498.5	2545.8	2593	2640.3	2687.5		
5	QPSK	1	0	23.17	23.33	22.82	22.59	23.06	24.0	0
5	QPSK	1	12	23.54	23.61	23.21	22.60	23.19		
5	QPSK	1	24	23.32	23.32	22.89	22.77	22.97		
5	QPSK	12	0	22.31	22.47	22.21	21.71	22.17	23.0	1
5	QPSK	12	6	22.43	22.45	22.11	21.62	22.21		
5	QPSK	12	11	22.53	22.51	22.19	21.65	22.26		
5	QPSK	25	0	22.49	22.49	22.16	21.71	22.21		
5	16QAM	1	0	22.36	22.52	22.11	21.67	21.94	23.0	1
5	16QAM	1	12	22.58	22.33	21.80	21.76	21.99		
5	16QAM	1	24	22.53	22.53	22.13	21.75	22.32		
5	16QAM	12	0	21.44	21.39	21.12	20.81	21.28	22.0	2
5	16QAM	12	6	21.51	21.33	20.96	20.75	21.10		
5	16QAM	12	11	21.47	21.32	21.11	20.84	21.11		
5	16QAM	25	0	21.71	21.56	21.24	20.96	21.23		

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

<WLAN Conducted Power>

General Note:

1. Per KDB 248227 D01v02r01, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
2. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
3. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
4. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.18 The initial test position procedure is described in the following:
   a. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
   b. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
   c. For all positions/configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

<2.4GHz WLAN>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Duty Cycle %
2.4GHz WLAN	802.11b	CH 1	2412	1Mbps	14.37	97.63
		CH 6	2437		14.55	
		CH 11	2462		**14.83**	
	802.11g	CH 1	2412	6Mbps	12.61	87.26
		CH 6	2437		12.53	
		CH 11	2462		**12.93**	
	802.11n-HT20	CH 1	2412	MCS0	11.67	86.47
		CH 6	2437		11.34	
		CH 11	2462		**12.25**	
	802.11n-HT40	CH 3	2422	MCS0	10.10	76.19
		CH 6	2437		**10.81**	
		CH 9	2452		10.05	

13. Bluetooth Exclusions Applied

Mode Band	Average power(dBm)	
	Bluetooth v3.0+EDR	Bluetooth v4.0 LE
2.4GHz Bluetooth	9.5	10.0

Note:

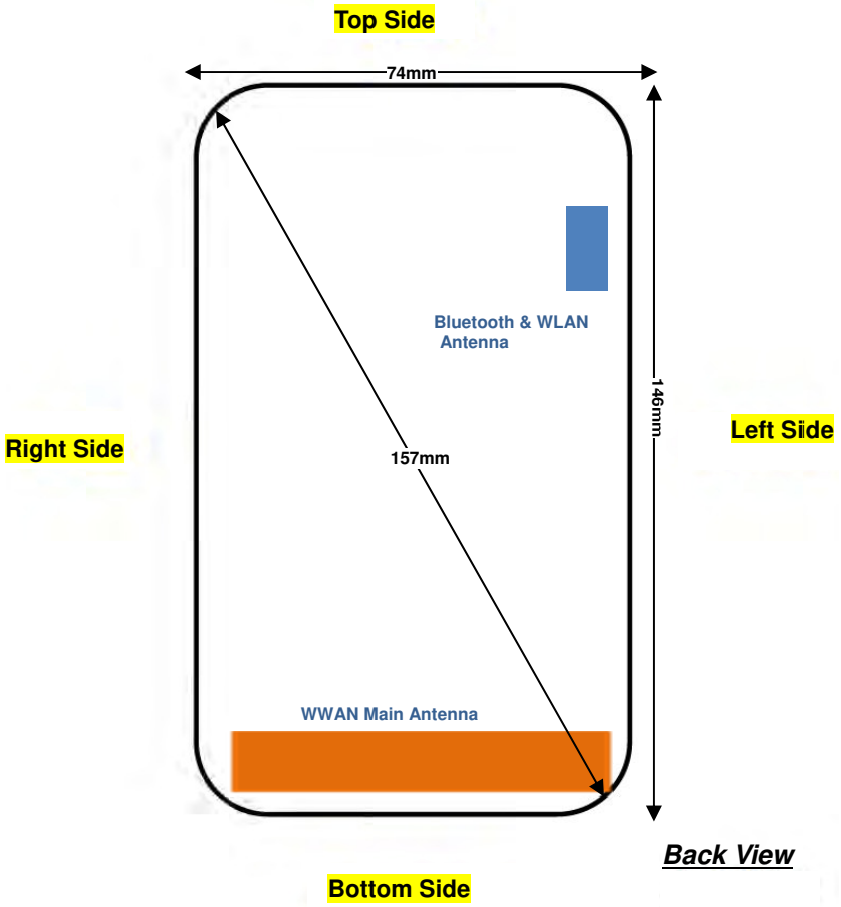
1. Per KDB 447498 D01v05r02, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g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

Bluetooth Max Power (dBm)	Separation Distance (mm)	Frequency (GHz)	exclusion thresholds
10.0	10	2.48	1.6

Note:

Per KDB 447498 D01v05r02, the test exclusion threshold is 1.6 which is <= 3, SAR testing is not required.

14. Antenna Location



Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Main	≤ 25mm	≤ 25mm	135mm	≤ 25mm	≤ 25mm	≤ 25mm
BT&WLAN	≤ 25mm	≤ 25mm	≤ 25mm	117mm	64mm	≤ 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	Yes	No	No	Yes

General Note:

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

15. SAR Test Results

General Note:

1. Per KDB 447498 D01v05r02, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
   e. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
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 648474 D04v01r02, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.

GSM Note:

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

UMTS Note:

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

CMDA Note:

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

LTE Note:

1. 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.
2. Per KDB 941225 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. 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.
4. 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.
5. 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.

WLAN Note:

1. Per KDB 248227 D01v02r01, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
3. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

15.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (2 Tx slots)	Right Cheek	128	824.2	29.71	30.00	1.069	0.1	0.456	0.487
	GSM850	GPRS (2 Tx slots)	Right Tilted	128	824.2	29.71	30.00	1.069	0.09	0.33	0.353
#01	GSM850	GPRS (2 Tx slots)	Left Cheek	128	824.2	29.71	30.00	1.069	0.17	0.586	**0.626**
	GSM850	GPRS (2 Tx slots)	Left Tilted	128	824.2	29.71	30.00	1.069	0.05	0.3	0.321
#02	GSM1900	GPRS (2 Tx slots)	Right Cheek	661	1880	27.04	27.50	1.112	-0.11	0.175	**0.195**
	GSM1900	GPRS (2 Tx slots)	Right Tilted	661	1880	27.04	27.50	1.112	0.05	0.085	0.094
	GSM1900	GPRS (2 Tx slots)	Left Cheek	661	1880	27.04	27.50	1.112	0.05	0.163	0.181
	GSM1900	GPRS (2 Tx slots)	Left Tilted	661	1880	27.04	27.50	1.112	-0.09	0.088	0.098

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA Band V	RMC 12.2Kbps	Right Cheek	4233	846.6	22.80	23.00	1.047	0.01	0.457	0.479
	WCDMA Band V	RMC 12.2Kbps	Right Tilted	4233	846.6	22.80	23.00	1.047	-0.12	0.323	0.338
#03	WCDMA Band V	RMC 12.2Kbps	Left Cheek	4233	846.6	22.80	23.00	1.047	0.02	0.54	**0.565**
	WCDMA Band V	RMC 12.2Kbps	Left Tilted	4233	846.6	22.80	23.00	1.047	0.08	0.315	0.330
	WCDMA Band II	RMC 12.2Kbps	Right Cheek	9262	1852.4	21.97	22.50	1.130	0.12	0.271	0.306
	WCDMA Band II	RMC 12.2Kbps	Right Tilted	9262	1852.4	21.97	22.50	1.130	-0.16	0.132	0.149
#04	WCDMA Band II	RMC 12.2Kbps	Left Cheek	9262	1852.4	21.97	22.50	1.130	0.06	0.279	**0.315**
	WCDMA Band II	RMC 12.2Kbps	Left Tilted	9262	1852.4	21.97	22.50	1.130	-0.16	0.158	0.179

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	CDMA2000 BC10	RC3 SO55	Right Cheek	580	820.5	23.79	24.00	1.050	0.02	0.53	0.556
	CDMA2000 BC10	RC3 SO55	Right Tilted	580	820.5	23.79	24.00	1.050	0.03	0.316	0.332
#05	CDMA2000 BC10	RC3 SO55	Left Cheek	580	820.5	23.79	24.00	1.050	0.028	0.635	**0.666**
	CDMA2000 BC10	RC3 SO55	Left Tilted	580	820.5	23.79	24.00	1.050	0.02	0.325	0.341
	CDMA2000 BC0	RC3 SO55	Right Cheek	1013	824.7	23.80	24.00	1.047	0.19	0.564	0.591
	CDMA2000 BC0	RC3 SO55	Right Tilted	1013	824.7	23.80	24.00	1.047	-0.0069	0.344	0.360
#06	CDMA2000 BC0	RC3 SO55	Left Cheek	1013	824.7	23.80	24.00	1.047	0.15	0.664	**0.695**
	CDMA2000 BC0	RC3 SO55	Left Tilted	1013	824.7	23.80	24.00	1.047	0.12	0.345	0.361
	CDMA2000 BC1	RC3 SO55	Right Cheek	1175	1908.75	23.05	23.50	1.109	0.19	0.327	0.363
	CDMA2000 BC1	RC3 SO55	Right Tilted	1175	1908.75	23.05	23.50	1.109	-0.05	0.173	0.192
#07	CDMA2000 BC1	RC3 SO55	Left Cheek	1175	1908.75	23.05	23.50	1.109	-0.1	0.369	**0.409**
	CDMA2000 BC1	RC3 SO55	Left Tilted	1175	1908.75	23.05	23.50	1.109	-0.03	0.168	0.186

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band26	15M	QPSK	1	37	Right Cheek	26765	821.5	23.85	24.50	1.161	0.02	0.463	0.538
	LTE Band26	15M	QPSK	36	0	Right Cheek	26765	821.5	22.72	23.50	1.197	0.02	0.354	0.424
	LTE Band26	15M	QPSK	1	37	Right Tilted	26765	821.5	23.85	24.50	1.161	0.01	0.35	0.407
	LTE Band26	15M	QPSK	36	0	Right Tilted	26765	821.5	22.72	23.50	1.197	0.14	0.256	0.306
#08	LTE Band26	15M	QPSK	1	37	Left Cheek	26765	821.5	23.85	24.50	1.161	0.03	0.519	**0.603**
	LTE Band26	15M	QPSK	36	0	Left Cheek	26765	821.5	22.72	23.50	1.197	0.08	0.401	0.480
	LTE Band26	15M	QPSK	1	37	Left Tilted	26765	821.5	23.85	24.50	1.161	0.09	0.319	0.371
	LTE Band26	15M	QPSK	36	0	Left Tilted	26765	821.5	22.72	23.50	1.197	0.06	0.27	0.323
	LTE Band25	20M	QPSK	1	49	Right Cheek	26590	1905	23.25	23.50	1.059	0.1	0.273	0.289
	LTE Band25	20M	QPSK	50	24	Right Cheek	26590	1905	21.94	22.50	1.138	0.06	0.218	0.248
	LTE Band25	20M	QPSK	1	49	Right Tilted	26590	1905	23.25	23.50	1.059	0.14	0.12	0.127
	LTE Band25	20M	QPSK	50	24	Right Tilted	26590	1905	21.94	22.50	1.138	0.04	0.096	0.109
#09	LTE Band25	20M	QPSK	1	49	Left Cheek	26590	1905	23.25	23.50	1.059	-0.09	0.293	**0.310**
	LTE Band25	20M	QPSK	50	24	Left Cheek	26590	1905	21.94	22.50	1.138	-0.02	0.23	0.262
	LTE Band25	20M	QPSK	1	49	Left Tilted	26590	1905	23.25	23.50	1.059	-0.01	0.136	0.144
	LTE Band25	20M	QPSK	50	24	Left Tilted	26590	1905	21.94	22.50	1.138	-0.05	0.105	0.119

Plot No.	Band	BW (MHz)	Modulation	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 Band41	20M	QPSK	1	0	Right Cheek	40185	2549.5	23.64	24.00	1.086	62.9	1.006	0.03	0.331	0.362
	LTE Band41	20M	QPSK	50	0	Right Cheek	40185	2549.5	22.75	23.00	1.059	62.9	1.006	0.11	0.263	0.280
	LTE Band41	20M	QPSK	1	0	Right Tilted	40185	2549.5	23.64	24.00	1.086	62.9	1.006	-0.17	0.141	0.154
	LTE Band41	20M	QPSK	50	0	Right Tilted	40185	2549.5	22.75	23.00	1.059	62.9	1.006	0.03	0.119	0.127
	LTE Band41	20M	QPSK	1	0	Left Cheek	40185	2549.5	23.64	24.00	1.086	62.9	1.006	0.044	0.57	0.623
#10	LTE Band41	20M	QPSK	1	0	Left Cheek	39750	2506	23.52	24.00	1.117	62.9	1.006	0.18	0.555	**0.624**
	LTE Band41	20M	QPSK	1	0	Left Cheek	40620	2593	23.03	24.00	1.250	62.9	1.006	0.08	0.446	0.561
	LTE Band41	20M	QPSK	1	0	Left Cheek	41055	2636.5	22.55	24.00	1.396	62.9	1.006	0.07	0.379	0.532
	LTE Band41	20M	QPSK	1	0	Left Cheek	41490	2680	23.10	24.00	1.230	62.9	1.006	-0.02	0.275	0.340
	LTE Band41	20M	QPSK	50	0	Left Cheek	40185	2549.5	22.75	23.00	1.059	62.9	1.006	0.07	0.431	0.459
	LTE Band41	20M	QPSK	100	0	Left Cheek	40185	2549.5	22.58	23.00	1.102	62.9	1.006	-0.09	0.418	0.463
	LTE Band41	20M	QPSK	1	0	Left Tilted	40185	2549.5	23.64	24.00	1.086	62.9	1.006	-0.13	0.231	0.252
	LTE Band41	20M	QPSK	50	0	Left Tilted	40185	2549.5	22.75	23.00	1.059	62.9	1.006	0.02	0.191	0.204

<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)	Area Scan Peak SAR	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
#11	WLAN2.4GHz	802.11b_1Mbps	Right Cheek	11	2462	14.83	15.50	1.167	97.63	1.024	0.04	0.169	0.113	**0.135**
	WLAN2.4GHz	802.11b_1Mbps	Right Tilted	11	2462	14.83	15.50	1.167	97.63	1.024		0.089		
	WLAN2.4GHz	802.11b_1Mbps	Left Cheek	11	2462	14.83	15.50	1.167	97.63	1.024		0.072		
	WLAN2.4GHz	802.11b_1Mbps	Left Tilted	11	2462	14.83	15.50	1.167	97.63	1.024		0.05		

15.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (2 Tx slots)	Front	1	128	824.2	29.71	30.00	1.069	0.02	0.513	0.548
	GSM850	GPRS (2 Tx slots)	Back	1	128	824.2	29.71	30.00	1.069	-0.03	0.562	0.601
#12	GSM850	GPRS (2 Tx slots)	Left Side	1	128	824.2	29.71	30.00	1.069	0.03	0.640	**0.684**
	GSM850	GPRS (2 Tx slots)	Right Side	1	128	824.2	29.71	30.00	1.069	-0.03	0.412	0.440
	GSM850	GPRS (2 Tx slots)	Bottom Side	1	128	824.2	29.71	30.00	1.069	0.12	0.186	0.199
	GSM1900	GPRS (2 Tx slots)	Front	1	661	1880	27.04	27.50	1.112	-0.15	0.25	0.278
	GSM1900	GPRS (2 Tx slots)	Back	1	661	1880	27.04	27.50	1.112	-0.09	0.305	0.339
	GSM1900	GPRS (2 Tx slots)	Left Side	1	661	1880	27.04	27.50	1.112	0.0026	0.116	0.129
	GSM1900	GPRS (2 Tx slots)	Right Side	1	661	1880	27.04	27.50	1.112	-0.0089	0.108	0.120
#13	GSM1900	GPRS (2 Tx slots)	Bottom Side	1	661	1880	27.04	27.50	1.112	-0.09	0.363	**0.404**

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA Band V	RMC 12.2Kbps	Front	1	4233	846.6	22.80	23.00	1.047	-0.01	0.504	0.528
	WCDMA Band V	RMC 12.2Kbps	Back	1	4233	846.6	22.80	23.00	1.047	-0.07	0.635	0.665
#14	WCDMA Band V	RMC 12.2Kbps	Left Side	1	4233	846.6	22.80	23.00	1.047	-0.09	0.661	**0.692**
	WCDMA Band V	RMC 12.2Kbps	Right Side	1	4233	846.6	22.80	23.00	1.047	-0.03	0.435	0.456
	WCDMA Band V	RMC 12.2Kbps	Bottom Side	1	4233	846.6	22.80	23.00	1.047	0.17	0.211	0.221
	WCDMA Band II	RMC 12.2Kbps	Front	1	9262	1852.4	21.97	22.50	1.130	-0.022	0.431	0.487
#15	WCDMA Band II	RMC 12.2Kbps	Back	1	9262	1852.4	21.97	22.50	1.130	-0.05	0.517	**0.584**
	WCDMA Band II	RMC 12.2Kbps	Left Side	1	9262	1852.4	21.97	22.50	1.130	-0.02	0.183	0.207
	WCDMA Band II	RMC 12.2Kbps	Right Side	1	9262	1852.4	21.97	22.50	1.130	0.08	0.194	0.219
	WCDMA Band II	RMC 12.2Kbps	Bottom Side	1	9262	1852.4	21.97	22.50	1.130	0.0029	0.514	0.581

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	CDMA2000 BC10	RTAP 153.6Kbps	Front	1	580	820.5	23.81	24.00	1.045	-0.0095	0.568	0.593
	CDMA2000 BC10	RTAP 153.6Kbps	Back	1	580	820.5	23.81	24.00	1.045	0.03	0.847	0.885
	CDMA2000 BC10	RTAP 153.6Kbps	Back	1	476	817.9	23.80	24.00	1.047	-0.04	0.814	0.852
#16	CDMA2000 BC10	RTAP 153.6Kbps	Back	1	684	823.1	23.79	24.00	1.050	-0.02	0.850	**0.892**
	CDMA2000 BC10	RTAP 153.6Kbps	Left Side	1	580	820.5	23.81	24.00	1.045	0.0012	0.648	0.677
	CDMA2000 BC10	RTAP 153.6Kbps	Right Side	1	580	820.5	23.81	24.00	1.045	-0.01	0.777	0.812
	CDMA2000 BC10	RTAP 153.6Kbps	Right Side	1	476	817.9	23.80	24.00	1.047	-0.12	0.737	0.772
	CDMA2000 BC10	RTAP 153.6Kbps	Right Side	1	684	823.1	23.79	24.00	1.050	-0.02	0.778	0.817
	CDMA2000 BC10	RTAP 153.6Kbps	Bottom Side	1	580	820.5	23.81	24.00	1.045	0.18	0.184	0.192
	CDMA2000 BC0	RTAP 153.6Kbps	Front	1	1013	824.7	23.81	24.00	1.045	0.06	0.611	0.638
#17	CDMA2000 BC0	RTAP 153.6Kbps	Back	1	1013	824.7	23.81	24.00	1.045	-0.07	0.860	**0.898**
	CDMA2000 BC0	RTAP 153.6Kbps	Back	1	384	836.52	23.73	24.00	1.064	-0.11	0.824	0.877
	CDMA2000 BC0	RTAP 153.6Kbps	Back	1	777	848.31	23.71	24.00	1.069	0.0045	0.737	0.788
	CDMA2000 BC0	RTAP 153.6Kbps	Left Side	1	1013	824.7	23.81	24.00	1.045	-0.02	0.697	0.728
	CDMA2000 BC0	RTAP 153.6Kbps	Right Side	1	1013	824.7	23.81	24.00	1.045	-0.03	0.779	0.814
	CDMA2000 BC0	RTAP 153.6Kbps	Right Side	1	384	836.52	23.73	24.00	1.064	-0.06	0.741	0.789
	CDMA2000 BC0	RTAP 153.6Kbps	Right Side	1	777	848.31	23.71	24.00	1.069	-0.02	0.581	0.621
	CDMA2000 BC0	RTAP 153.6Kbps	Bottom Side	1	1013	824.7	23.81	24.00	1.045	0.16	0.203	0.212
	CDMA2000 BC1	RTAP 153.6Kbps	Front	1	1175	1908.75	23.08	23.50	1.102	-0.1	0.705	0.777
	CDMA2000 BC1	RTAP 153.6Kbps	Back	1	1175	1908.75	23.08	23.50	1.102	0.0085	0.915	1.008
	CDMA2000 BC1	RTAP 153.6Kbps	Back	1	25	1851.25	23.06	23.50	1.107	0.02	0.571	0.632
	CDMA2000 BC1	RTAP 153.6Kbps	Back	1	600	1880	23.02	23.50	1.117	0.05	0.665	0.743
	CDMA2000 BC1	RTAP 153.6Kbps	Left Side	1	1175	1908.75	23.08	23.50	1.102	0.02	0.255	0.281
	CDMA2000 BC1	RTAP 153.6Kbps	Right Side	1	1175	1908.75	23.08	23.50	1.102	0.09	0.206	0.227
#18	CDMA2000 BC1	RTAP 153.6Kbps	Bottom Side	1	1175	1908.75	23.08	23.50	1.102	0.03	0.922	**1.016**
	CDMA2000 BC1	RTAP 153.6Kbps	Bottom Side	1	25	1851.25	23.06	23.50	1.107	0.034	0.717	0.793
	CDMA2000 BC1	RTAP 153.6Kbps	Bottom Side	1	600	1880	23.02	23.50	1.117	0.033	0.787	0.879

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	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 Band26	15M	QPSK	1	37	Front	1	26765	821.5	23.85	24.50	1.161	0.05	0.514	0.597
	LTE Band26	15M	QPSK	36	0	Front	1	26765	821.5	22.72	23.50	1.197	0.06	0.402	0.481
#19	LTE Band26	15M	QPSK	1	37	Back	1	26765	821.5	23.85	24.50	1.161	-0.02	0.658	**0.764**
	LTE Band26	15M	QPSK	36	0	Back	1	26765	821.5	22.72	23.50	1.197	0.07	0.522	0.625
	LTE Band26	15M	QPSK	1	37	Left Side	1	26765	821.5	23.85	24.50	1.161	-0.07	0.653	0.758
	LTE Band26	15M	QPSK	36	0	Left Side	1	26765	821.5	22.72	23.50	1.197	-0.06	0.519	0.621
	LTE Band26	15M	QPSK	1	37	Right Side	1	26765	821.5	23.85	24.50	1.161	-0.03	0.506	0.588
	LTE Band26	15M	QPSK	36	0	Right Side	1	26765	821.5	22.72	23.50	1.197	0.06	0.392	0.469
	LTE Band26	15M	QPSK	1	37	Bottom Side	1	26765	821.5	23.85	24.50	1.161	-0.11	0.154	0.179
	LTE Band26	15M	QPSK	36	0	Bottom Side	1	26765	821.5	22.72	23.50	1.197	0.04	0.112	0.134
	LTE Band25	20M	QPSK	1	49	Front	1	26590	1905	23.25	23.50	1.059	-0.09	0.535	0.567
	LTE Band25	20M	QPSK	50	24	Front	1	26590	1905	21.94	22.50	1.138	-0.06	0.418	0.476
	LTE Band25	20M	QPSK	1	49	Back	1	26590	1905	23.25	23.50	1.059	0.1	0.676	0.716
	LTE Band25	20M	QPSK	50	24	Back	1	26590	1905	21.94	22.50	1.138	0.02	0.49	0.557
	LTE Band25	20M	QPSK	1	49	Left Side	1	26590	1905	23.25	23.50	1.059	0.19	0.191	0.202
	LTE Band25	20M	QPSK	50	24	Left Side	1	26590	1905	21.94	22.50	1.138	0.05	0.151	0.172
	LTE Band25	20M	QPSK	1	49	Right Side	1	26590	1905	23.25	23.50	1.059	0.16	0.17	0.180
	LTE Band25	20M	QPSK	50	24	Right Side	1	26590	1905	21.94	22.50	1.138	0.0067	0.129	0.147
#20	LTE Band25	20M	QPSK	1	49	Bottom Side	1	26590	1905	23.25	23.50	1.059	-0.05	0.732	**0.775**
	LTE Band25	20M	QPSK	50	24	Bottom Side	1	26590	1905	21.94	22.50	1.138	0.039	0.551	0.627

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 Band41	20M	QPSK	1	0	Front	1	40185	2549.5	23.64	24.00	1.086	62.9	1.006	0.01	0.746	0.815
	LTE Band41	20M	QPSK	1	0	Front	1	39750	2506	23.52	24.00	1.117	62.9	1.006	-0.05	0.741	0.833
	LTE Band41	20M	QPSK	1	0	Front	1	40620	2593	23.03	24.00	1.250	62.9	1.006	0.12	0.578	0.727
#21	LTE Band41	20M	QPSK	1	0	Front	1	41055	2636.5	22.55	24.00	1.396	62.9	1.006	-0.05	0.598	**0.840**
	LTE Band41	20M	QPSK	1	0	Front	1	41490	2680	23.10	24.00	1.230	62.9	1.006	0.11	0.625	0.774
	LTE Band41	20M	QPSK	50	0	Front	1	40185	2549.5	22.75	23.00	1.059	62.9	1.006	0.11	0.625	0.666
	LTE Band41	20M	QPSK	50	0	Front	1	39750	2506	22.64	23.00	1.086	62.9	1.006	-0.1	0.55	0.601
	LTE Band41	20M	QPSK	50	0	Front	1	40620	2593	22.17	23.00	1.211	62.9	1.006	0.1	0.478	0.582
	LTE Band41	20M	QPSK	50	0	Front	1	41055	2636.5	21.88	23.00	1.294	62.9	1.006	-0.05	0.492	0.641
	LTE Band41	20M	QPSK	50	0	Front	1	41490	2680	22.15	23.00	1.216	62.9	1.006	-0.03	0.378	0.462
	LTE Band41	20M	QPSK	100	0	Front	1	40185	2549.5	22.58	23.00	1.102	62.9	1.006	0.05	0.622	0.689
	LTE Band41	20M	QPSK	1	0	Back	1	40185	2549.5	23.64	24.00	1.086	62.9	1.006	0.09	0.578	0.632
	LTE Band41	20M	QPSK	1	0	Back	1	39750	2506	23.52	24.00	1.117	62.9	1.006	-0.05	0.353	0.397
	LTE Band41	20M	QPSK	1	0	Back	1	40620	2593	23.03	24.00	1.250	62.9	1.006	0.01	0.379	0.477
	LTE Band41	20M	QPSK	1	0	Back	1	41055	2636.5	22.55	24.00	1.396	62.9	1.006	-0.15	0.374	0.525
	LTE Band41	20M	QPSK	1	0	Back	1	41490	2680	23.10	24.00	1.230	62.9	1.006	0.07	0.334	0.413
	LTE Band41	20M	QPSK	50	0	Back	1	40185	2549.5	22.75	23.00	1.059	62.9	1.006	0.05	0.423	0.451
	LTE Band41	20M	QPSK	100	0	Back	1	40185	2549.5	22.58	23.00	1.102	62.9	1.006	0.15	0.283	0.314
	LTE Band41	20M	QPSK	1	0	Left Side	1	40185	2549.5	23.64	24.00	1.086	62.9	1.006	0.1	0.202	0.221
	LTE Band41	20M	QPSK	50	0	Left Side	1	40185	2549.5	22.75	23.00	1.059	62.9	1.006	0.15	0.158	0.168
	LTE Band41	20M	QPSK	1	0	Right Side	1	40185	2549.5	23.64	24.00	1.086	62.9	1.006	0.14	0.181	0.198
	LTE Band41	20M	QPSK	50	0	Right Side	1	40185	2549.5	22.75	23.00	1.059	62.9	1.006	0.15	0.14	0.149
	LTE Band41	20M	QPSK	1	0	Bottom Side	1	40185	2549.5	23.64	24.00	1.086	62.9	1.006	0.043	0.431	0.471
	LTE Band41	20M	QPSK	50	0	Bottom Side	1	40185	2549.5	22.75	23.00	1.059	62.9	1.006	0.19	0.328	0.350

<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)	Area Scan Peak SAR	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b_1Mbps	Front	1	11	2462	14.83	15.50	1.167	97.63	1.024		0.05		
#22	WLAN2.4GHz	802.11b_1Mbps	Back	1	11	2462	14.83	15.50	1.167	97.63	1.024	0.07	0.223	0.155	**0.185**
	WLAN2.4GHz	802.11b_1Mbps	Left Side	1	11	2462	14.83	15.50	1.167	97.63	1.024		0.151		
	WLAN2.4GHz	802.11b_1Mbps	Top Side	1	11	2462	14.83	15.50	1.167	97.63	1.024		0.021		

15.3 Body Worn Accessory SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (2 Tx slots)	Front	1	128	824.2	29.71	30.00	1.069	0.02	0.513	0.548
#23	GSM850	GPRS (2 Tx slots)	Back	1	128	824.2	29.71	30.00	1.069	-0.03	0.562	**0.601**
	GSM1900	GPRS (2 Tx slots)	Front	1	661	1880	27.04	27.50	1.112	-0.15	0.25	0.278
#24	GSM1900	GPRS (2 Tx slots)	Back	1	661	1880	27.04	27.50	1.112	-0.09	0.305	**0.339**

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA Band V	RMC 12.2Kbps	Front	1	4233	846.6	22.80	23.00	1.047	-0.01	0.504	0.528
#25	WCDMA Band V	RMC 12.2Kbps	Back	1	4233	846.6	22.80	23.00	1.047	-0.07	0.635	**0.665**
	WCDMA Band II	RMC 12.2Kbps	Front	1	9262	1852.4	21.97	22.50	1.130	-0.022	0.431	0.487
#15	WCDMA Band II	RMC 12.2Kbps	Back	1	9262	1852.4	21.97	22.50	1.130	-0.05	0.517	**0.584**

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	CDMA2000 BC10	RC3 SO32	Front	1	580	820.5	23.82	24.00	1.042	0.02	0.291	0.303
	CDMA2000 BC10	RC3 SO32	Back	1	580	820.5	23.82	24.00	1.042	-0.0077	0.845	0.881
	CDMA2000 BC10	RC3 SO32	Back	1	476	817.9	23.78	24.00	1.052	0.06	0.815	0.857
#26	CDMA2000 BC10	RC3 SO32	Back	1	684	823.1	23.80	24.00	1.047	-0.008	0.853	**0.893**
	CDMA2000 BC0	RC3 SO32	Front	1	1013	824.7	23.85	24.00	1.035	0.03	0.335	0.347
#27	CDMA2000 BC0	RC3 SO32	Back	1	1013	824.7	23.85	24.00	1.035	0.01	0.852	**0.882**
	CDMA2000 BC0	RC3 SO32	Back	1	384	836.52	23.78	24.00	1.052	0.07	0.707	0.744
	CDMA2000 BC0	RC3 SO32	Back	1	777	848.31	23.72	24.00	1.067	-0.03	0.804	0.858
	CDMA2000 BC1	RC3 SO32	Front	1	1175	1908.75	23.08	23.50	1.102	0.03	0.710	0.782
#28	CDMA2000 BC1	RC3 SO32	Back	1	1175	1908.75	23.08	23.50	1.102	0.04	0.715	**0.788**

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	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 Band26	15M	QPSK	1	37	Front	1	26765	821.5	23.85	24.50	1.161	0.05	0.514	0.597
	LTE Band26	15M	QPSK	36	0	Front	1	26765	821.5	22.72	23.50	1.197	0.06	0.402	0.481
#19	LTE Band26	15M	QPSK	1	37	Back	1	26765	821.5	23.85	24.50	1.161	-0.02	0.658	**0.764**
	LTE Band26	15M	QPSK	36	0	Back	1	26765	821.5	22.72	23.50	1.197	0.07	0.522	0.625
	LTE Band25	20M	QPSK	1	49	Front	1	26590	1905	23.25	23.50	1.059	-0.09	0.535	0.567
	LTE Band25	20M	QPSK	50	24	Front	1	26590	1905	21.94	22.50	1.138	-0.06	0.418	0.476
#29	LTE Band25	20M	QPSK	1	49	Back	1	26590	1905	23.25	23.50	1.059	0.1	0.676	**0.716**
	LTE Band25	20M	QPSK	50	24	Back	1	26590	1905	21.94	22.50	1.138	0.02	0.49	0.557

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 Band41	20M	QPSK	1	0	Front	1	40185	2549.5	23.64	24.00	1.086	62.9	1.006	0.01	0.746	0.815
	LTE Band41	20M	QPSK	1	0	Front	1	39750	2506	23.52	24.00	1.117	62.9	1.006	-0.05	0.741	0.833
	LTE Band41	20M	QPSK	1	0	Front	1	40620	2593	23.03	24.00	1.250	62.9	1.006	0.12	0.578	0.727
#21	LTE Band41	20M	QPSK	1	0	Front	1	41055	2636.5	22.55	24.00	1.396	62.9	1.006	-0.05	0.598	**0.840**
	LTE Band41	20M	QPSK	1	0	Front	1	41490	2680	23.10	24.00	1.230	62.9	1.006	0.11	0.625	0.774
	LTE Band41	20M	QPSK	50	0	Front	1	40185	2549.5	22.75	23.00	1.059	62.9	1.006	0.11	0.625	0.666
	LTE Band41	20M	QPSK	50	0	Front	1	39750	2506	22.64	23.00	1.086	62.9	1.006	-0.1	0.55	0.601
	LTE Band41	20M	QPSK	50	0	Front	1	40620	2593	22.17	23.00	1.211	62.9	1.006	0.1	0.478	0.582
	LTE Band41	20M	QPSK	50	0	Front	1	41055	2636.5	21.88	23.00	1.294	62.9	1.006	-0.05	0.492	0.641
	LTE Band41	20M	QPSK	50	0	Front	1	41490	2680	22.15	23.00	1.216	62.9	1.006	-0.03	0.378	0.462
	LTE Band41	20M	QPSK	100	0	Front	1	40185	2549.5	22.58	23.00	1.102	62.9	1.006	0.05	0.622	0.689
	LTE Band41	20M	QPSK	1	0	Back	1	40185	2549.5	23.64	24.00	1.086	62.9	1.006	0.09	0.578	0.632
	LTE Band41	20M	QPSK	1	0	Back	1	39750	2506	23.52	24.00	1.117	62.9	1.006	-0.05	0.353	0.397
	LTE Band41	20M	QPSK	1	0	Back	1	40620	2593	23.03	24.00	1.250	62.9	1.006	0.01	0.379	0.477
	LTE Band41	20M	QPSK	1	0	Back	1	41055	2636.5	22.55	24.00	1.396	62.9	1.006	-0.15	0.374	0.525
	LTE Band41	20M	QPSK	1	0	Back	1	41490	2680	23.10	24.00	1.230	62.9	1.006	0.07	0.334	0.413
	LTE Band41	20M	QPSK	50	0	Back	1	40185	2549.5	22.75	23.00	1.059	62.9	1.006	0.05	0.423	0.451
	LTE Band41	20M	QPSK	100	0	Back	1	40185	2549.5	22.58	23.00	1.102	62.9	1.006	0.15	0.283	0.314

<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)	Area Scan Peak SAR	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b_1Mbps	Front	1	11	2462	14.83	15.50	1.167	97.63	1.024		0.05		
#22	WLAN2.4GHz	802.11b_1Mbps	Back	1	11	2462	14.83	15.50	1.167	97.63	1.024	0.07	0.223	0.155	**0.185**

15.4 Repeated SAR Measurement

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)	Ratio	Reported 1g SAR (W/kg)
1st	CDMA2000 BC0	RTAP 153.6Kbps	Back	1	1013	824.7	23.81	24.00	1.045	-0.07	0.860	1	0.898
2nd	CDMA2000 BC0	RTAP 153.6Kbps	Back	1	1013	824.7	23.81	24.00	1.045	-0.01	0.843	1.020	0.881
1st	CDMA2000 BC1	RTAP 153.6Kbps	Bottom Side	1	1175	1908.75	23.08	23.50	1.102	0.03	0.922	1	1.016
2nd	CDMA2000 BC1	RTAP 153.6Kbps	Bottom Side	1	1175	1908.75	23.08	23.50	1.102	0.15	0.901	1.023	0.992

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
2. Per KDB 865664 D01v01r04, 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	LTE/CDMA Mutil-Mode Digital Mobile Phone			Note
		Head	Body-worn	Hotspot	
1.	GSM Voice + WLAN2.4GHz	Yes	Yes	Yes	
2.	CDMA Voice + WLAN2.4GHz	Yes	Yes	Yes	
3.	GPRS/EDGE + WLAN2.4GHz	Yes	Yes	Yes	Hotspot
4.	WCDMA + WLAN2.4GHz	Yes	Yes	Yes	Hotspot
5.	LTE + WLAN2.4GHz	Yes	Yes	Yes	Hotspot
6.	GSM Voice + Bluetooth		Yes		
7.	CDMA Voice + Bluetooth		Yes		
8.	GPRS/EDGE + Bluetooth		Yes		WWAN VoIP
9.	WCDMA+ Bluetooth		Yes		WWAN VoIP
10.	LTE + Bluetooth		Yes		WWAN VoIP

General Note:

1. This device supported VoIP in GPRS/EGPRS, WCDMA, LTE (e.g. 3rd party VoIP).
2. This device 2.4GHz WLAN supports Hotspot operation.
3. WLAN and Bluetooth share the same antenna, and cannot transmit simultaneously.
4. EUT will choose each GSM, CDMA, WCDMA and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
5. The reported SAR summation is calculated based on the same configuration and test position.
6. Per KDB 447498 D01v05r02, simultaneous transmission SAR is compliant if,
   i) Scalar SAR summation < 1.6W/kg.
   ii) SPLSR = (SAR1 + SAR2)^1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of [(x1-x2)2 + (y1-y2)2 + (z1-z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
   iii) If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.
   iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.
7. For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01v05r02 based on the formula below.
   i) (*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)]·[√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	Body worn
	Test separation	10mm
10.0 dBm	Estimated SAR (W/kg)	0.21 W/kg

16.1 Head Exposure Conditions

<WWAN + WLAN>

WWAN Band		Exposure Position	WWAN SAR (W/kg)	WLAN 2.4GHz SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Right Cheek	0.487	0.135	0.62		
		Right Tilted	0.353	0.135	0.49		
		Left Cheek	0.626	0.135	0.76		
		Left Tilted	0.321	0.135	0.46		
	GSM1900	Right Cheek	0.195	0.135	0.33		
		Right Tilted	0.094	0.135	0.23		
		Left Cheek	0.181	0.135	0.32		
		Left Tilted	0.098	0.135	0.23		
WCDMA	Band V	Right Cheek	0.479	0.135	0.61		
		Right Tilted	0.338	0.135	0.47		
		Left Cheek	0.565	0.135	0.70		
		Left Tilted	0.330	0.135	0.47		
	Band II	Right Cheek	0.306	0.135	0.44		
		Right Tilted	0.149	0.135	0.28		
		Left Cheek	0.315	0.135	0.45		
		Left Tilted	0.179	0.135	0.31		
CDMA2000	BC10	Right Cheek	0.556	0.135	0.69		
		Right Tilted	0.332	0.135	0.47		
		Left Cheek	0.666	0.135	0.80		
		Left Tilted	0.341	0.135	0.48		
	BC0	Right Cheek	0.591	0.135	0.73		
		Right Tilted	0.360	0.135	0.50		
		Left Cheek	0.695	0.135	0.83		
		Left Tilted	0.361	0.135	0.50		
	BC1	Right Cheek	0.363	0.135	0.50		
		Right Tilted	0.192	0.135	0.33		
		Left Cheek	0.409	0.135	0.54		
		Left Tilted	0.186	0.135	0.32		
LTE	Band 26	Right Cheek	0.538	0.135	0.67		
		Right Tilted	0.407	0.135	0.54		
		Left Cheek	0.603	0.135	0.74		
		Left Tilted	0.371	0.135	0.51		
	Band 25	Right Cheek	0.289	0.135	0.42		
		Right Tilted	0.127	0.135	0.26		
		Left Cheek	0.310	0.135	0.45		
		Left Tilted	0.144	0.135	0.28		
	Band 41	Right Cheek	0.362	0.135	0.50		
		Right Tilted	0.154	0.135	0.29		
		Left Cheek	0.624	0.135	0.76		
		Left Tilted	0.252	0.135	0.39		

16.2 Hotspot Exposure Conditions

<WWAN + WLAN>

WWAN Band		Exposure Position	WWAN SAR (W/kg)	WLAN 2.4GHz SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Front	0.548	0.185	0.73		
		Back	0.601	0.185	0.79		
		Left Side	0.684	0.185	0.87		
		Right Side	0.440		0.44		
		Top Side		0.185	0.19		
		Bottom Side	0.199		0.20		
	GSM1900	Front	0.278	0.185	0.46		
		Back	0.339	0.185	0.52		
		Left Side	0.129	0.185	0.31		
		Right Side	0.120		0.12		
		Top Side		0.185	0.19		
		Bottom Side	0.404		0.40		
WCDMA	Band V	Front	0.528	0.185	0.71		
		Back	0.665	0.185	0.85		
		Left Side	0.692	0.185	0.88		
		Right Side	0.456		0.46		
		Top Side		0.185	0.19		
		Bottom Side	0.221		0.22		
	Band II	Front	0.487	0.185	0.67		
		Back	0.584	0.185	0.77		
		Left Side	0.207	0.185	0.39		
		Right Side	0.219		0.22		
		Top Side		0.185	0.19		
		Bottom Side	0.581		0.58		

WWAN Band		Exposure Position	WWAN SAR (W/kg)	WLAN 2.4GHz SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
CDMA2000	BC10	Front	0.593	0.185	0.78		
		Back	0.892	0.185	1.08		
		Left side	0.677	0.185	0.86		
		Right side	0.817		0.82		
		Top side		0.185	0.19		
		Bottom side	0.192		0.19		
	BC0	Front	0.638	0.185	0.82		
		Back	0.898	0.185	1.08		
		Left side	0.728	0.185	0.91		
		Right side	0.814		0.81		
		Top side		0.185	0.19		
		Bottom side	0.212		0.21		
	BC1	Front	0.777	0.185	0.96		
		Back	1.008	0.185	**1.19**		
		Left side	0.281	0.185	0.47		
		Right side	0.227		0.23		
		Top side		0.185	0.19		
		Bottom side	1.016		1.02		
LTE	Band 26	Front	0.597	0.185	0.78		
		Back	0.764	0.185	0.95		
		Left side	0.758	0.185	0.94		
		Right side	0.588		0.59		
		Top side		0.185	0.19		
		Bottom side	0.179		0.18		
	Band 25	Front	0.567	0.185	0.75		
		Back	0.716	0.185	0.90		
		Left side	0.202	0.185	0.39		
		Right side	0.180		0.18		
		Top side		0.185	0.19		
		Bottom side	0.775		0.78		
	Band 41	Front	0.840	0.185	1.03		
		Back	0.632	0.185	0.82		
		Left side	0.221	0.185	0.41		
		Right side	0.198		0.20		
		Top side		0.185	0.19		
		Bottom side	0.471		0.47		

16.3 Body-Worn Accessory Exposure Conditions

< WWAN + WLAN >

WWAN Band		Exposure Position	WWAN SAR (W/kg)	WLAN 2.4GHz SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Front	0.548	0.185	0.73		
		Back	0.601	0.185	0.79		
	GSM1900	Front	0.278	0.185	0.46		
		Back	0.339	0.185	0.52		
WCDMA	Band V	Front	0.528	0.185	0.71		
		Back	0.665	0.185	0.85		
	Band II	Front	0.487	0.185	0.67		
		Back	0.584	0.185	0.77		
CDMA2000	BC10	Front	0.303	0.185	0.49		
		Back	0.893	0.185	1.08		
	BC0	Front	0.347	0.185	0.53		
		Back	0.882	0.185	1.07		
	BC1	Front	0.782	0.185	0.97		
		Back	0.788	0.185	0.97		
LTE	Band 26	Front	0.597	0.185	0.78		
		Back	0.764	0.185	0.95		
	Band 25	Front	0.567	0.185	0.75		
		Back	0.716	0.185	0.90		
	Band 41	Front	0.840	0.185	1.03		
		Back	0.632	0.185	0.82		

< WWAN + Bluetooth >

WWAN Band		Exposure Position	WWAN SAR (W/kg)	Bluetooth Estimated SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Front	0.548	0.210	0.76		
		Back	0.601	0.210	0.81		
	GSM1900	Front	0.278	0.210	0.49		
		Back	0.339	0.210	0.55		
WCDMA	Band V	Front	0.528	0.210	0.74		
		Back	0.665	0.210	0.88		
	Band II	Front	0.487	0.210	0.70		
		Back	0.584	0.210	0.79		
CDMA2000	BC10	Front	0.303	0.210	0.51		
		Back	0.893	0.210	1.10		
	BC0	Front	0.347	0.210	0.56		
		Back	0.882	0.210	1.09		
	BC1	Front	0.782	0.210	0.99		
		Back	0.788	0.210	1.00		
LTE	Band 26	Front	0.597	0.210	0.81		
		Back	0.764	0.210	0.97		
	Band 25	Front	0.567	0.210	0.78		
		Back	0.716	0.210	0.93		
	Band 41	Front	0.840	0.210	1.05		
		Back	0.632	0.210	0.84		

Test Engineer： Frank Qiao

17. Uncertainty Assessment

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

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

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

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor[(a)]	1/k[(b)]	$1/\sqrt{3}$	$1/\sqrt{6}$	$1/\sqrt{2}$

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

(b) κ is the coverage factor

Table 17.1. Standard Uncertainty for Assumed Distribution

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

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

Error Description	Uncertainty Value (±%)	Probability	Divisor	(Ci) 1g	(Ci) 10g	Standard Uncertainty (1g) (±%)	Standard Uncertainty (10g) (±%)
Measurement System							
Probe Calibration	6.0	N	1	1	1	6.0	6.0
Axial Isotropy	4.7	R	1.732	0.7	0.7	1.9	1.9
Hemispherical Isotropy	9.6	R	1.732	0.7	0.7	3.9	3.9
Boundary Effects	1.0	R	1.732	1	1	0.6	0.6
Linearity	4.7	R	1.732	1	1	2.7	2.7
System Detection Limits	1.0	R	1.732	1	1	0.6	0.6
Modulation Response	3.2	R	1.732	1	1	1.8	1.8
Readout Electronics	0.3	N	1	1	1	0.3	0.3
Response Time	0.0	R	1.732	1	1	0.0	0.0
Integration Time	2.6	R	1.732	1	1	1.5	1.5
RF Ambient Noise	3.0	R	1.732	1	1	1.7	1.7
RF Ambient Reflections	3.0	R	1.732	1	1	1.7	1.7
Probe Positioner	0.4	R	1.732	1	1	0.2	0.2
Probe Positioning	2.9	R	1.732	1	1	1.7	1.7
Max. SAR Eval.	2.0	R	1.732	1	1	1.2	1.2
Test Sample Related							
Device Positioning	3.0	N	1	1	1	3.0	3.0
Device Holder	3.6	N	1	1	1	3.6	3.6
Power Drift	5.0	R	1.732	1	1	2.9	2.9
Power Scaling	0.0	R	1.732	1	1	0.0	0.0
Phantom and Setup							
Phantom Uncertainty	6.1	R	1.732	1	1	3.5	3.5
SAR correction	0.0	R	1.732	1	0.84	0.0	0.0
Liquid Conductivity Repeatability	0.2	N	1	0.78	0.71	0.1	0.1
Liquid Conductivity (target)	5.0	R	1.732	0.78	0.71	2.3	2.0
Liquid Conductivity (mea.)	2.5	R	1.732	0.78	0.71	1.1	1.0
Temp. unc. - Conductivity	3.4	R	1.732	0.78	0.71	1.5	1.4
Liquid Permittivity Repeatability	0.15	N	1	0.23	0.26	0.0	0.0
Liquid Permittivity (target)	5.0	R	1.732	0.23	0.26	0.7	0.8
Liquid Permittivity (mea.)	2.5	R	1.732	0.23	0.26	0.3	0.4
Temp. unc. - Permittivity	0.83	R	1.732	0.23	0.26	0.1	0.1
Combined Std. Uncertainty						11.4%	11.4%
Coverage Factor for 95 %						K=2	K=2
Expanded STD Uncertainty						22.9%	22.7%

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

18. References

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

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

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

[4] SPEAG DASY System Handbook

[5] FCC KDB 248227 D01 v02r01, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Jun 2015.

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

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

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

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

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

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

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

Appendix A. Plots of System Performance Check

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.09.04

System Check_Head_835MHz_150904

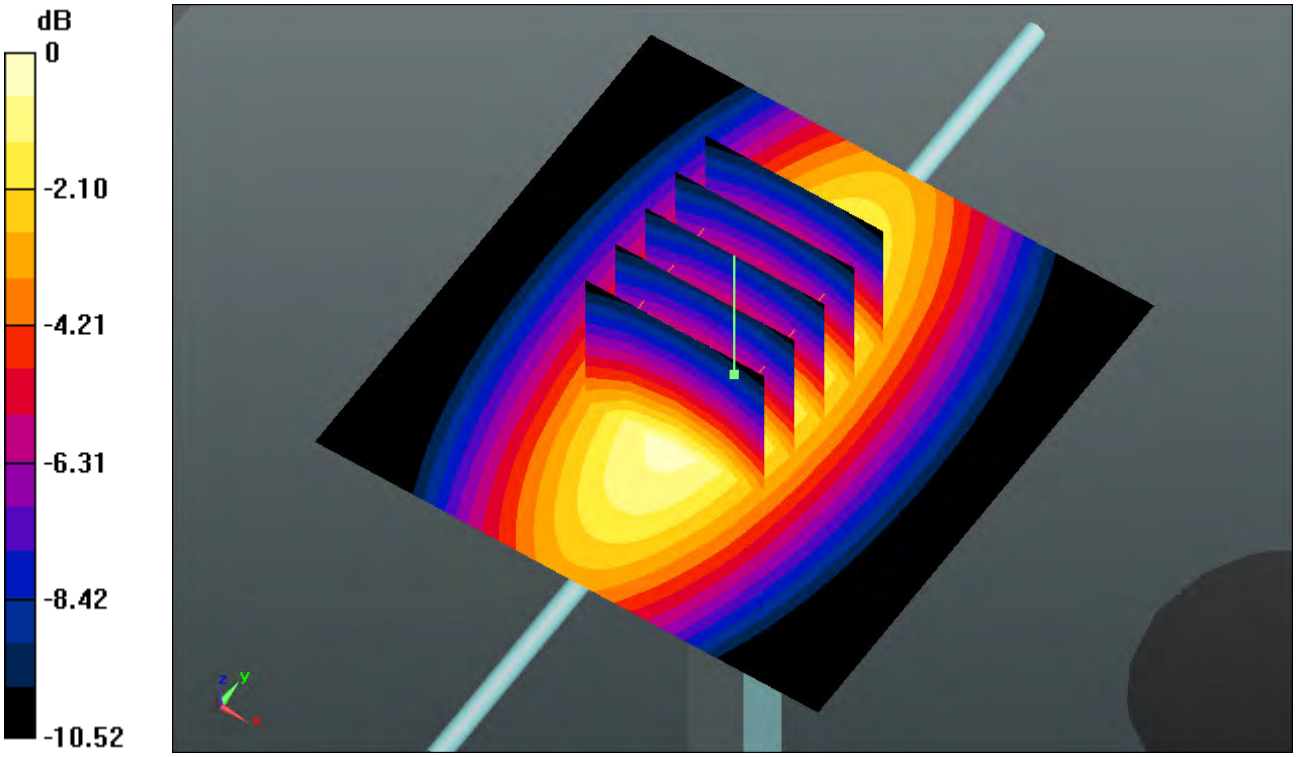
DUT: D835V2 - SN:4d091

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_835_150904 Medium parameters used: f = 835 MHz; σ = 0.893 mho/m; ε_r = 41.398; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.26, 9.26, 9.26); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 3.019 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 54.137 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.490 W/kg
SAR(1 g) = 2.39 mW/g; SAR(10 g) = 1.57 mW/g
Maximum value of SAR (measured) = 3.008 mW/g



0 dB = 3.010mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.09.07

System Check_Head_1900MHz_150907

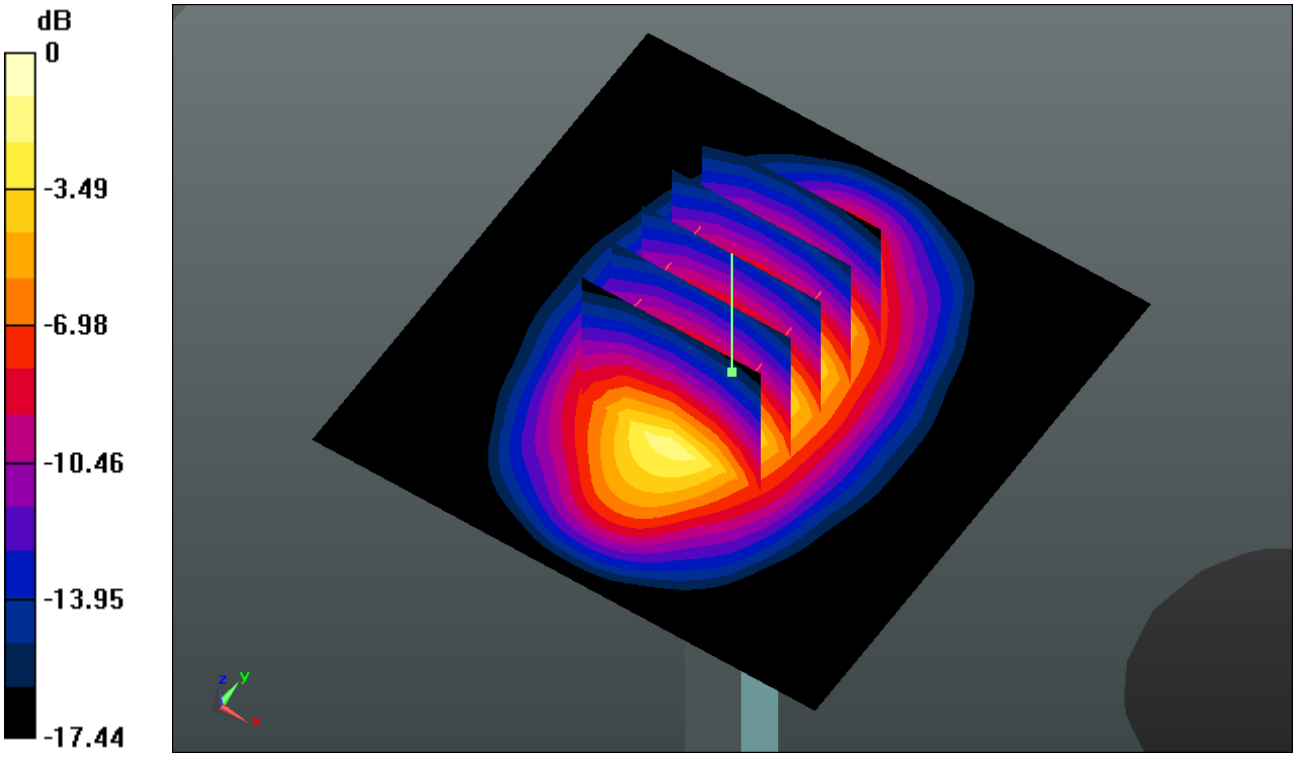
DUT: D1900V2 - SN:5d118

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900_150907 Medium parameters used: f = 1900 MHz; σ = 1.425 mho/m; ε_r = 38.902; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.81, 7.81, 7.81); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 14.790 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 90.111 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 18.697 W/kg
SAR(1 g) = 10.3 mW/g; SAR(10 g) = 5.38 mW/g
Maximum value of SAR (measured) = 14.758 mW/g



0 dB = 14.760mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.09.04

System Check_Head_2450MHz_150904

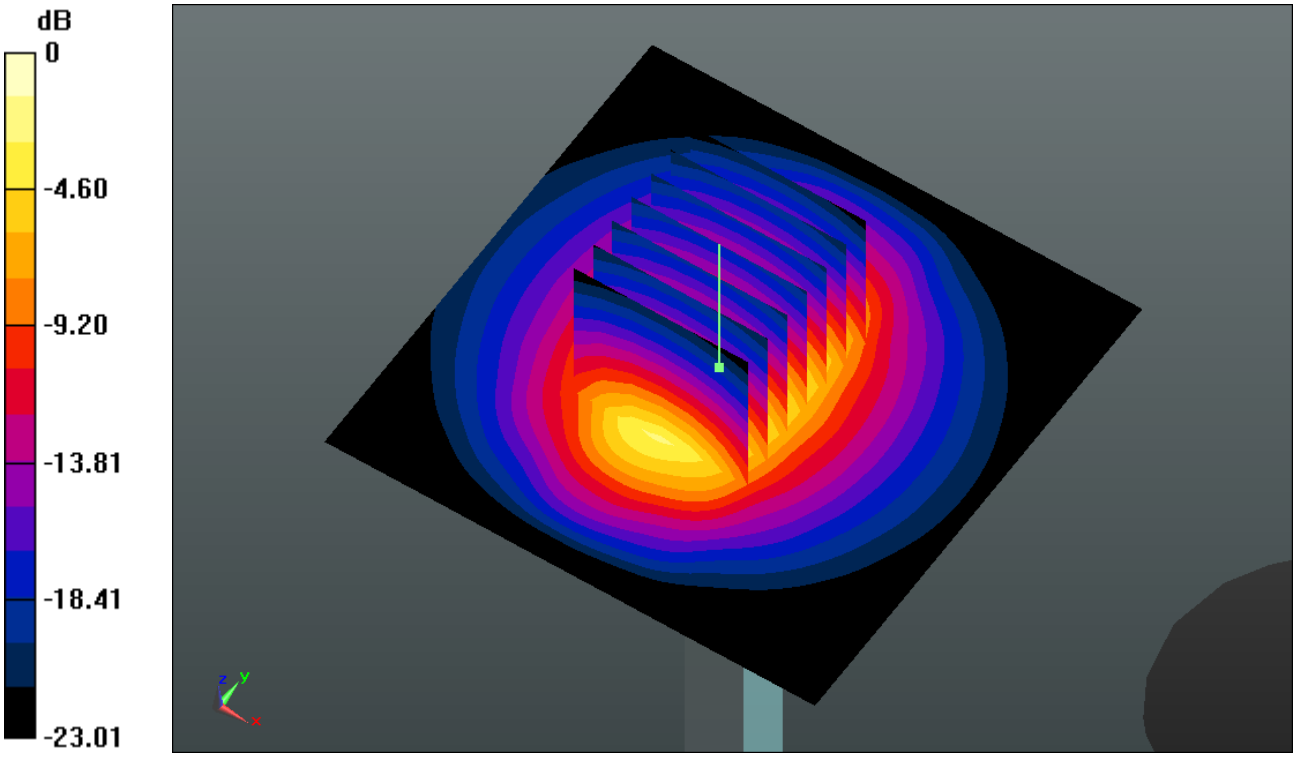
DUT: D2450V2 - SN:840

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL_2450_150904 Medium parameters used: f = 2450 MHz; σ = 1.821 mho/m; ε_r = 39.195; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.08, 7.08, 7.08); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (71x71x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 20.432 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.681 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 26.804 W/kg
SAR(1 g) = 12.8 mW/g; SAR(10 g) = 5.81 mW/g
Maximum value of SAR (measured) = 19.817 mW/g



0 dB = 19.820mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.09.03

System Check_Head_2600MHz_150903

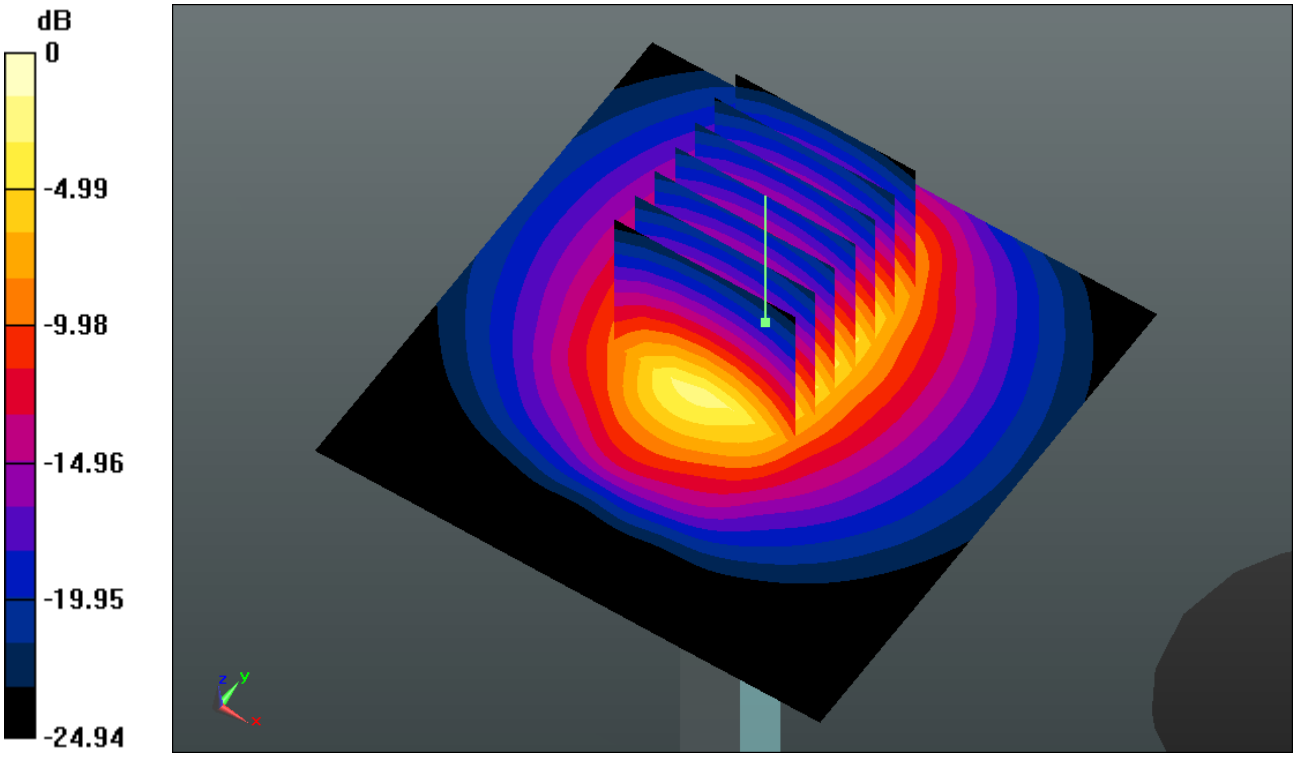
DUT: D2600V2 - SN:1061

Communication System: CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: HSL_2600_150903 Medium parameters used: f = 2600 MHz; σ = 1.974 mho/m; ε_r = 38.204; ρ = 1000 kg/m^3
Ambient Temperature：23.9 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.05, 7.05, 7.05); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (71x71x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 22.974 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 87.037 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 31.427 W/kg
SAR(1 g) = 14.4 mW/g; SAR(10 g) = 6.38 mW/g
Maximum value of SAR (measured) = 22.853 mW/g



0 dB = 22.850mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.09.03

System Check_Body_835MHz_150903

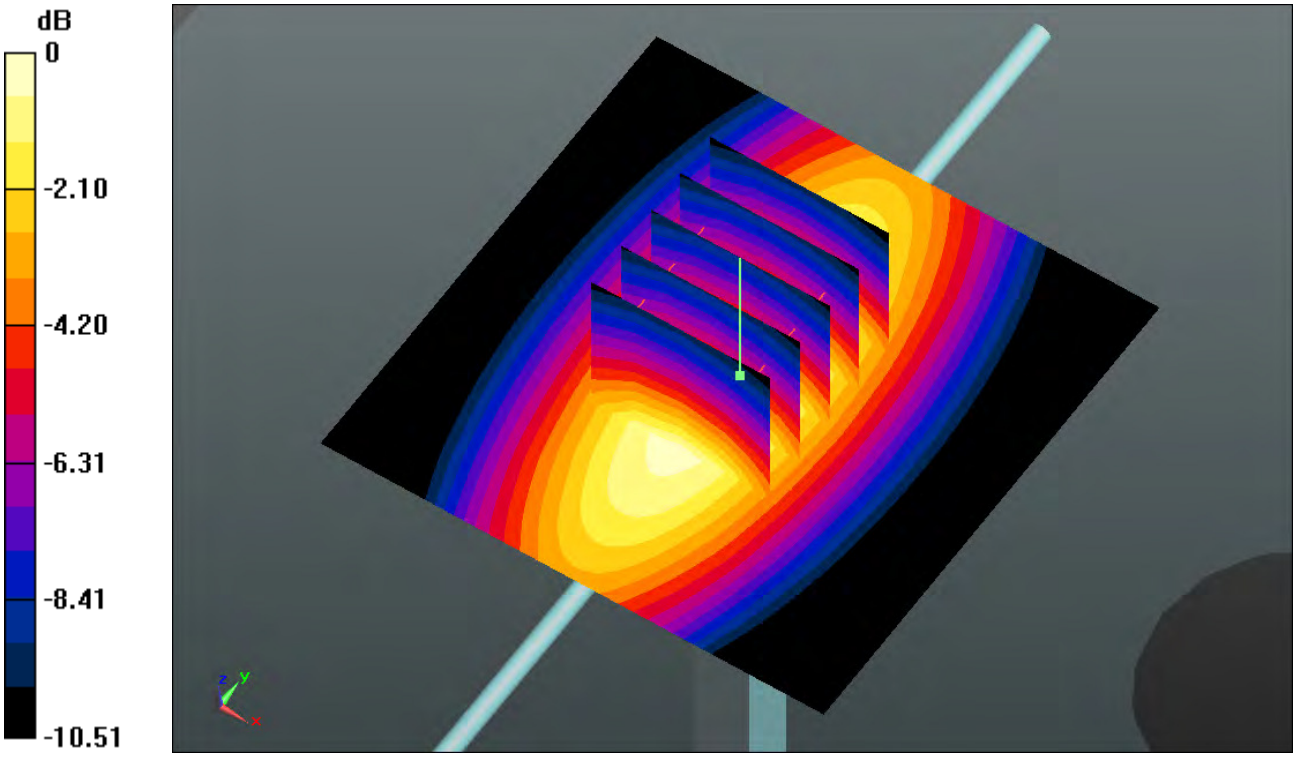
DUT: D835V2 - SN:4d091

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_835_150903 Medium parameters used: f = 835 MHz; σ = 0.98 mho/m; ε_r = 54.479; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.52, 9.52, 9.52); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.787 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 49.498 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 3.234 W/kg
SAR(1 g) = 2.29 mW/g; SAR(10 g) = 1.47 mW/g
Maximum value of SAR (measured) = 2.794 mW/g



0 dB = 2.790mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.09.02

System Check_Body_1900MHz_150902

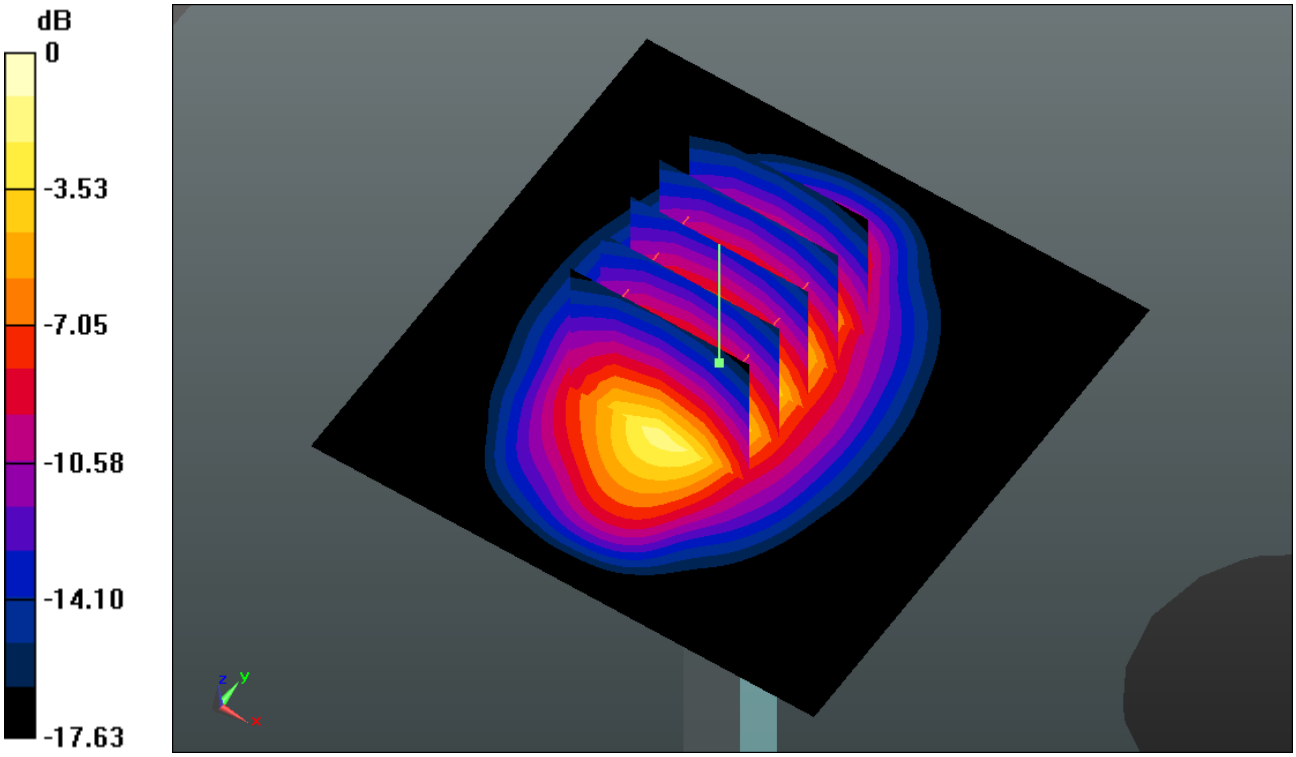
DUT: D1900V2 - SN:5d118

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150902 Medium parameters used: f = 1900 MHz; σ = 1.551 mho/m; ε_r = 53.293; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.54, 7.54, 7.54); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 14.613 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 84.163 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 18.729 W/kg
SAR(1 g) = 10.5 mW/g; SAR(10 g) = 5.44 mW/g
Maximum value of SAR (measured) = 14.980 mW/g



0 dB = 14.980mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.09.08

System Check_Body_2450MHz_150908

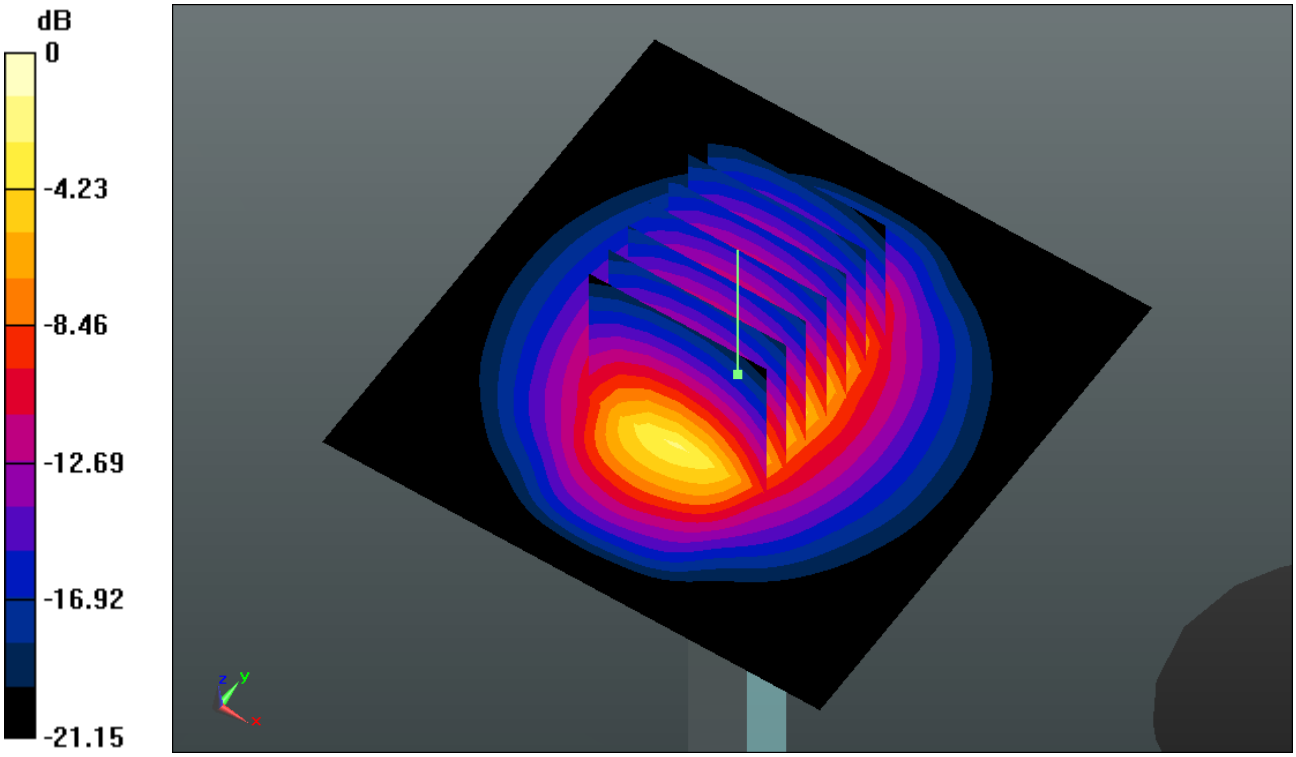
DUT: D2450V2 - SN:840

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL_2450_150908 Medium parameters used: f = 2450 MHz; σ = 1.932 mho/m; ε_r = 51.266; ρ = 1000 kg/m^3
Ambient Temperature：23.9 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.29, 7.29, 7.29); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (71x71x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 18.575 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 84.913 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 23.815 W/kg
SAR(1 g) = 12.3 mW/g; SAR(10 g) = 5.82 mW/g
Maximum value of SAR (measured) = 18.229 mW/g



0 dB = 18.230mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.09.02

System Check_Body_2600MHz_150902

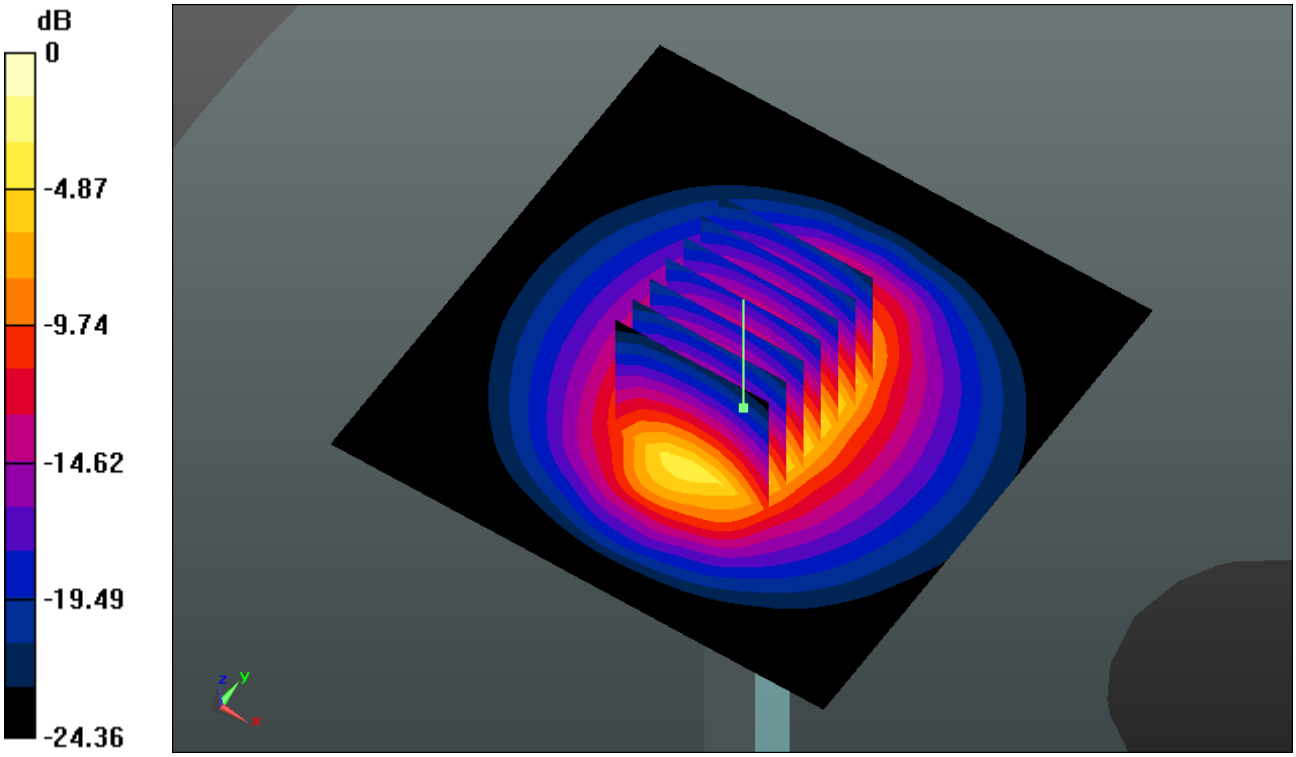
DUT: D2600V2 - SN:1061

Communication System: CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: MSL_2600_150902 Medium parameters used: f = 2600 MHz; σ = 2.165 mho/m; ε_r = 53.823; ρ = 1000 kg/m^3
Ambient Temperature：23.9 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.17, 7.17, 7.17); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (81x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 19.988 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 81.898 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 28.209 W/kg
SAR(1 g) = 13.1 mW/g; SAR(10 g) = 5.86 mW/g
Maximum value of SAR (measured) = 19.952 mW/g



0 dB = 19.950mW/g

Appendix B. Plots of SAR Measurement

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.09.04

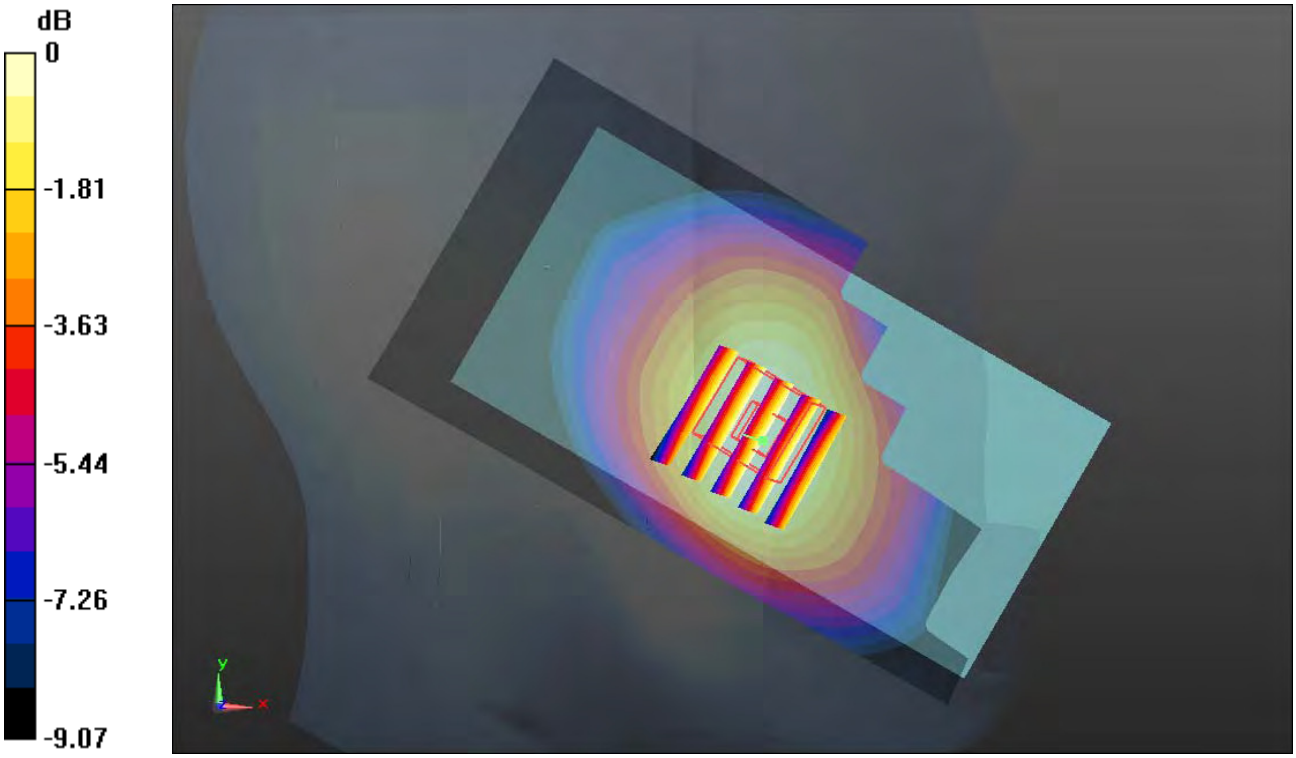
#01 GSM850_GPRS (2 Tx slots)_Left Cheek_Ch128

Communication System: GPRS/EDGE (2 Tx slots) (0); Frequency: 824.2 MHz;Duty Cycle: 1:4.15
Medium: HSL_835_150904 Medium parameters used: f = 824.2 MHz; σ = 0.883 mho/m; ε_r = 41.525; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.26, 9.26, 9.26); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch128/Area Scan (61x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.672 mW/g

Ch128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.365 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 0.715 W/kg
SAR(1 g) = 0.586 mW/g; SAR(10 g) = 0.448 mW/g
Maximum value of SAR (measured) = 0.665 mW/g



0 dB = 0.660mW/g

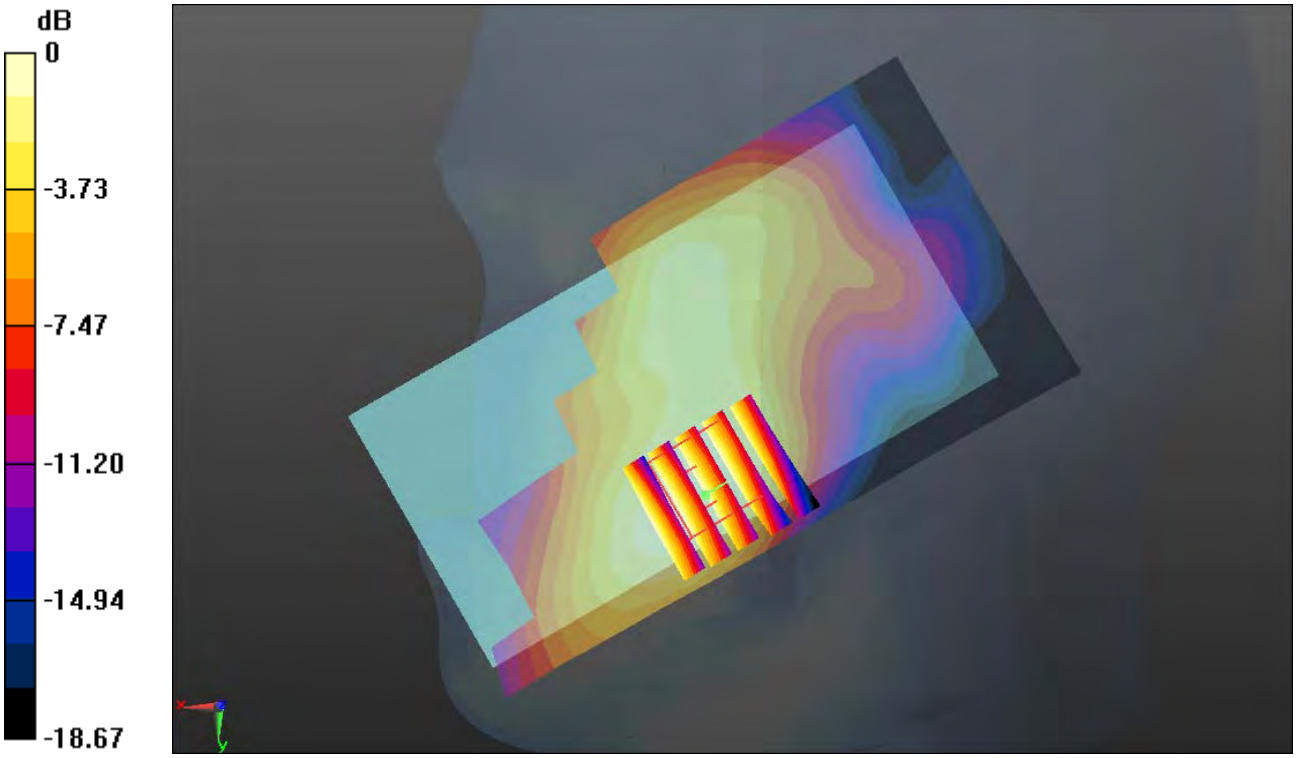
#02 GSM1900_GPRS (2 Tx slots)_Right Cheek_Ch661

Communication System: GPRS/EDGE (2 Tx slots) (0); Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium: HSL_1900_150907 Medium parameters used: f = 1880 MHz; σ = 1.404 mho/m; ε_r = 38.988; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.81, 7.81, 7.81); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch661/Area Scan (61x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.238 mW/g

Ch661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.613 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.266 W/kg
SAR(1 g) = 0.175 mW/g; SAR(10 g) = 0.112 mW/g
Maximum value of SAR (measured) = 0.223 mW/g



0 dB = 0.220mW/g

#03 WCDMA

#04 WCDMA

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.09.04

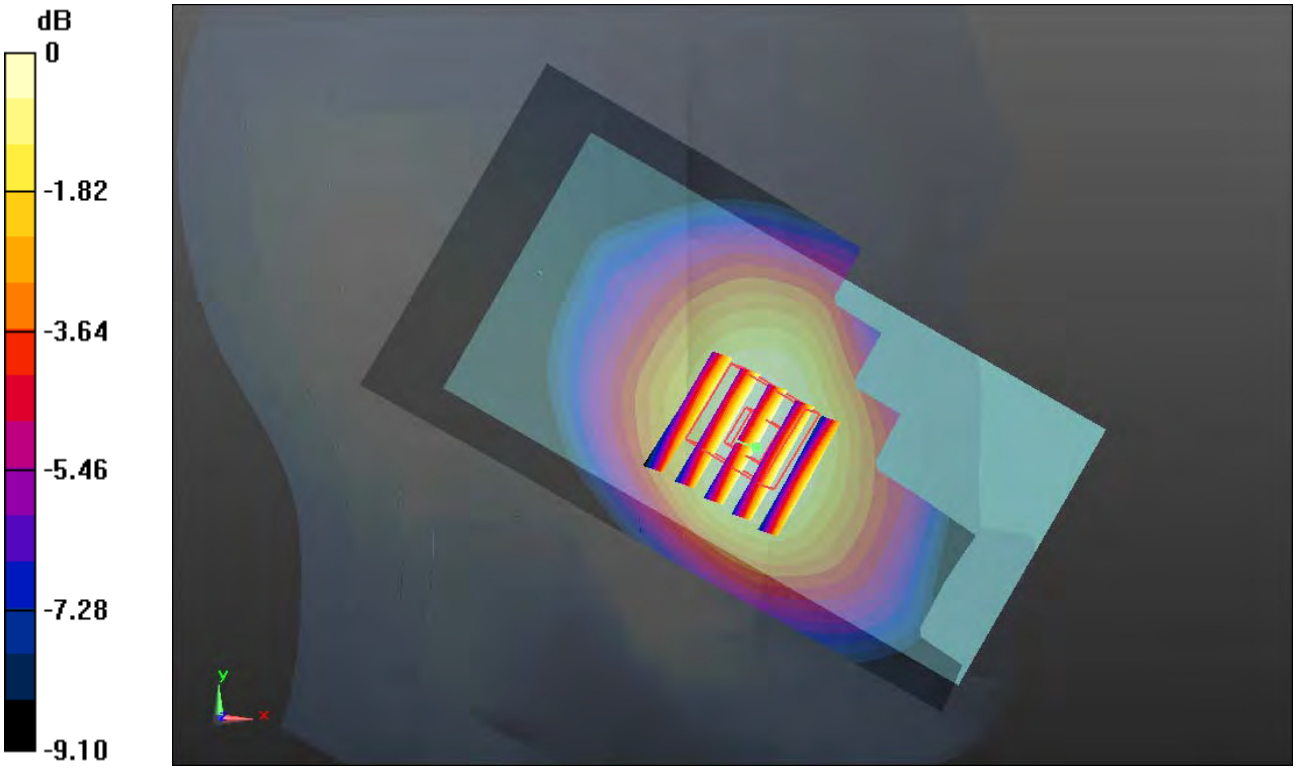
#05 CDMA2000 BC10_RC3 SO55_Left Cheek_Ch580

Communication System: CDMA2000 (0); Frequency: 820.5 MHz;Duty Cycle: 1:1
Medium: HSL_835_150904 Medium parameters used: f = 820.5 MHz; σ = 0.88 mho/m; ε_r = 41.567; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.26, 9.26, 9.26); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch580/Area Scan (61x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.735 mW/g

Ch580/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.327 V/m; Power Drift = 0.028 dB
Peak SAR (extrapolated) = 0.781 W/kg
SAR(1 g) = 0.635 mW/g; SAR(10 g) = 0.485 mW/g
Maximum value of SAR (measured) = 0.724 mW/g



0 dB = 0.720mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.09.04

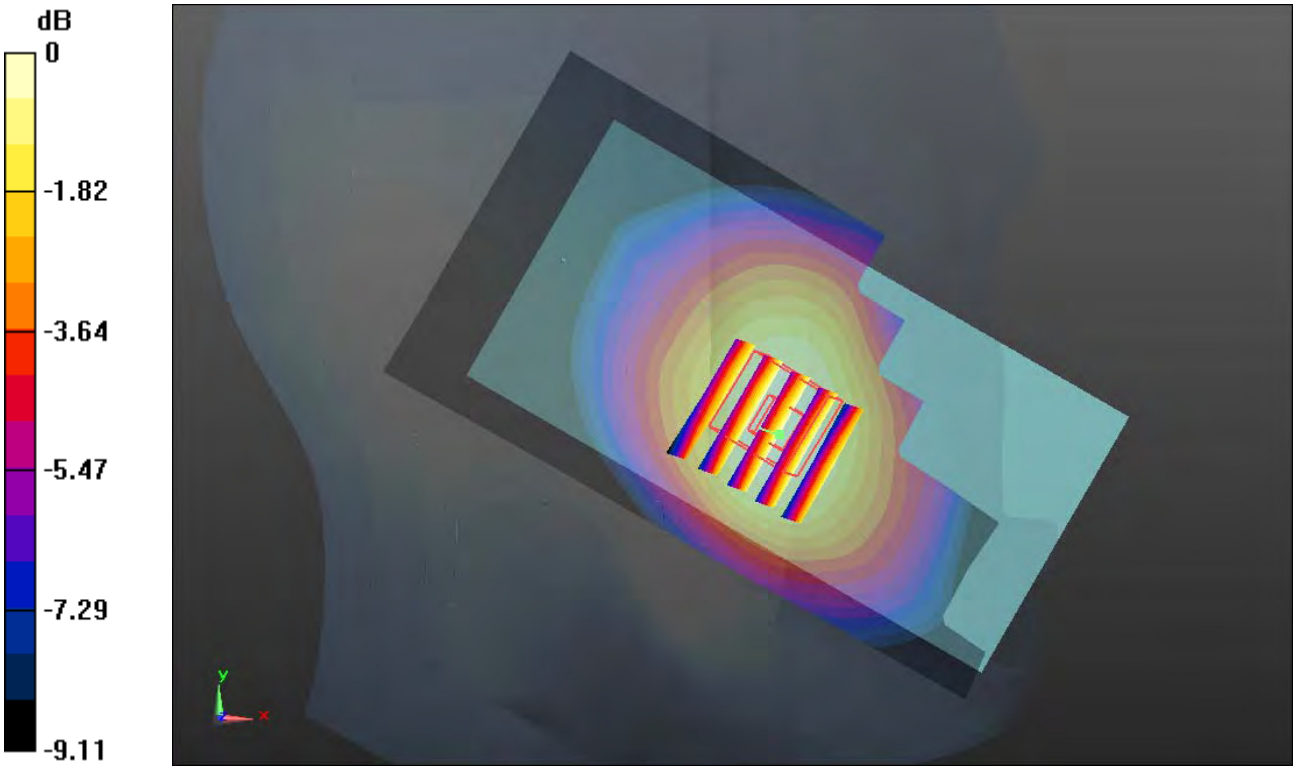
#06 CDMA2000 BC0_RC3 SO55_Left Cheek_Ch1013

Communication System: CDMA2000 (0); Frequency: 824.7 MHz;Duty Cycle: 1:1
Medium: HSL_835_150904 Medium parameters used: f = 824.7 MHz; σ = 0.884 mho/m; ε_r = 41.516; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.26, 9.26, 9.26); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch1013/Area Scan (61x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.763 mW/g

Ch1013/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.533 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.816 W/kg
SAR(1 g) = 0.664 mW/g; SAR(10 g) = 0.506 mW/g
Maximum value of SAR (measured) = 0.756 mW/g



0 dB = 0.760mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.09.07

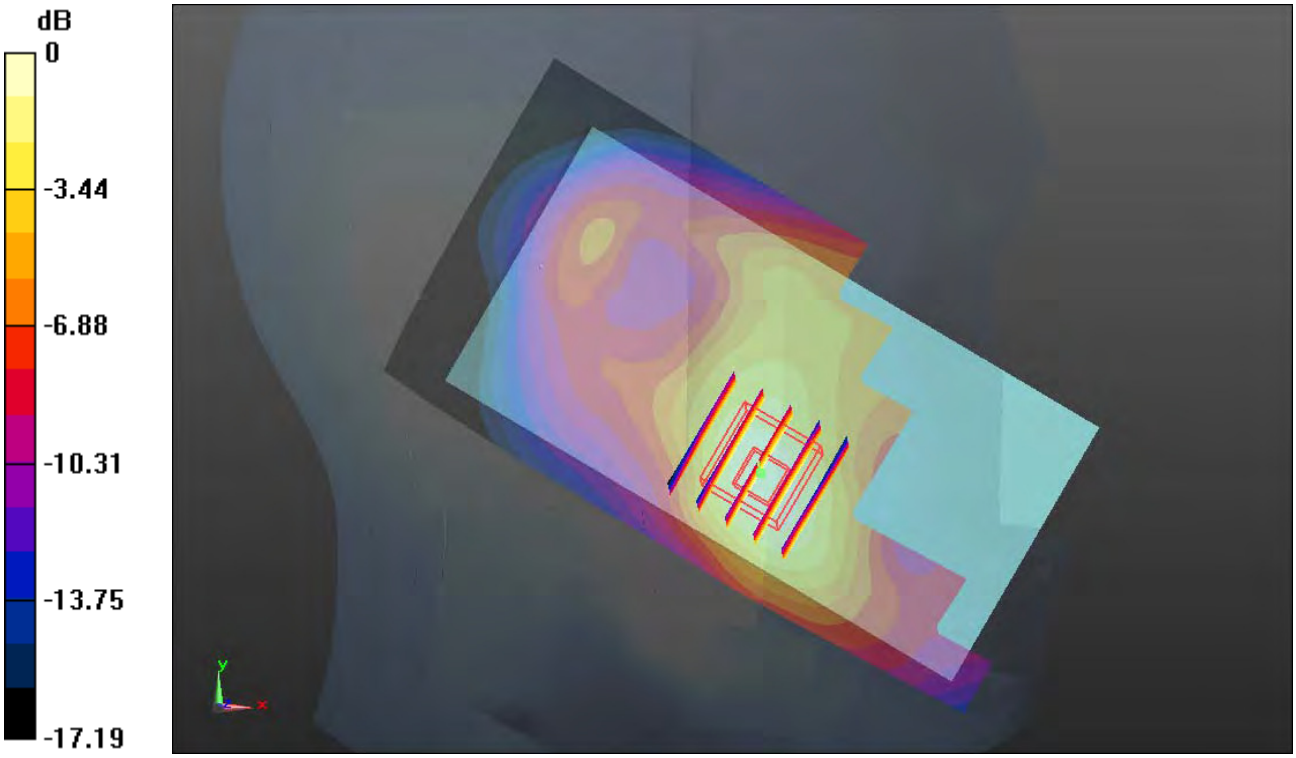
#07 CDMA2000 BC1_RC3 SO55_Left Cheek_Ch1175

Communication System: CDMA2000 (0); Frequency: 1908.75 MHz;Duty Cycle: 1:1
Medium: HSL_1900_150907 Medium parameters used: f = 1908.75 MHz; σ = 1.434 mho/m; ε_r = 38.861; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.81, 7.81, 7.81); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch1175/Area Scan (61x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.463 mW/g

Ch1175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.901 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.569 W/kg
SAR(1 g) = 0.369 mW/g; SAR(10 g) = 0.220 mW/g
Maximum value of SAR (measured) = 0.469 mW/g



0 dB = 0.470mW/g

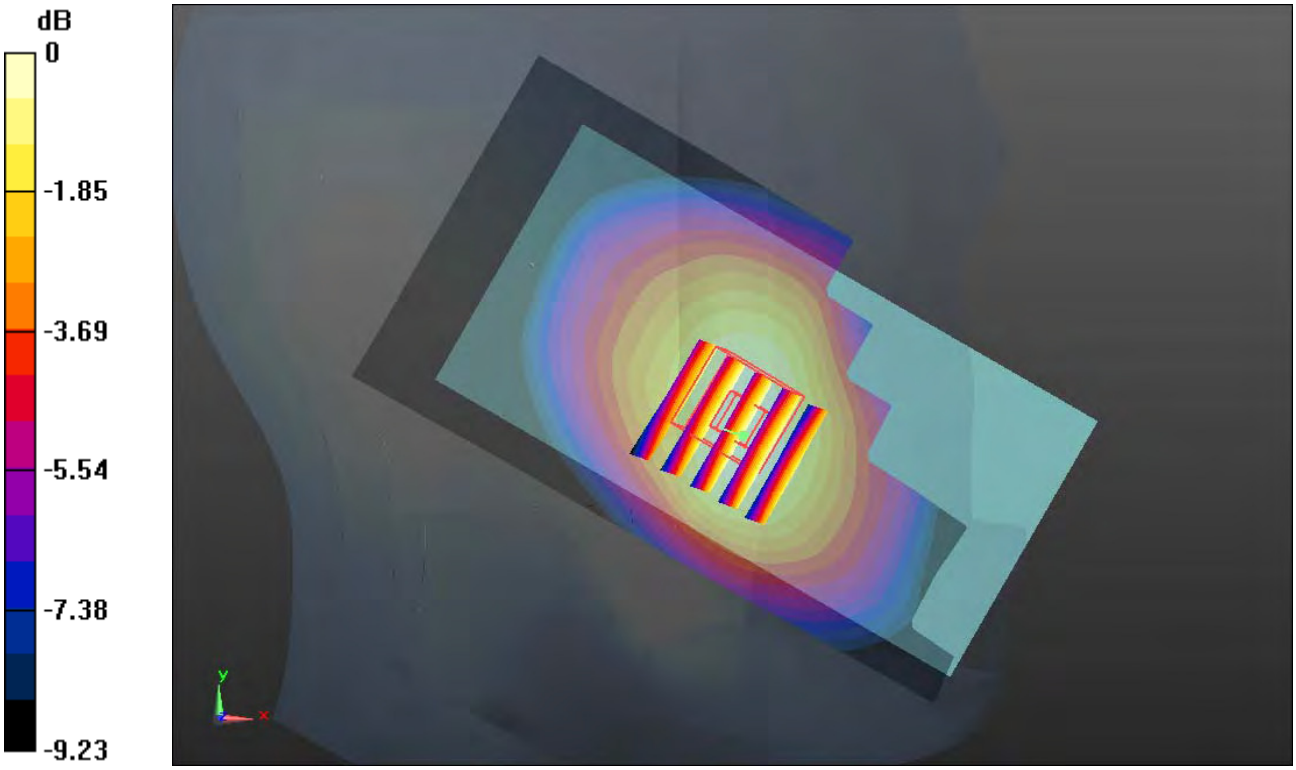
#08 LTE Band26_15M_QPSK(1,37)_Left Cheek_Ch26765

Communication System: FDD_LTE (0); Frequency: 821.5 MHz;Duty Cycle: 1:1
Medium: HSL_835_150904 Medium parameters used: f = 821.5 MHz; σ = 0.881 mho/m; ε_r = 41.555; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.26, 9.26, 9.26); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch26765/Area Scan (61x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.590 mW/g

Ch26765/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.302 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.638 W/kg
SAR(1 g) = 0.519 mW/g; SAR(10 g) = 0.394 mW/g
Maximum value of SAR (measured) = 0.591 mW/g



0 dB = 0.590mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.09.07

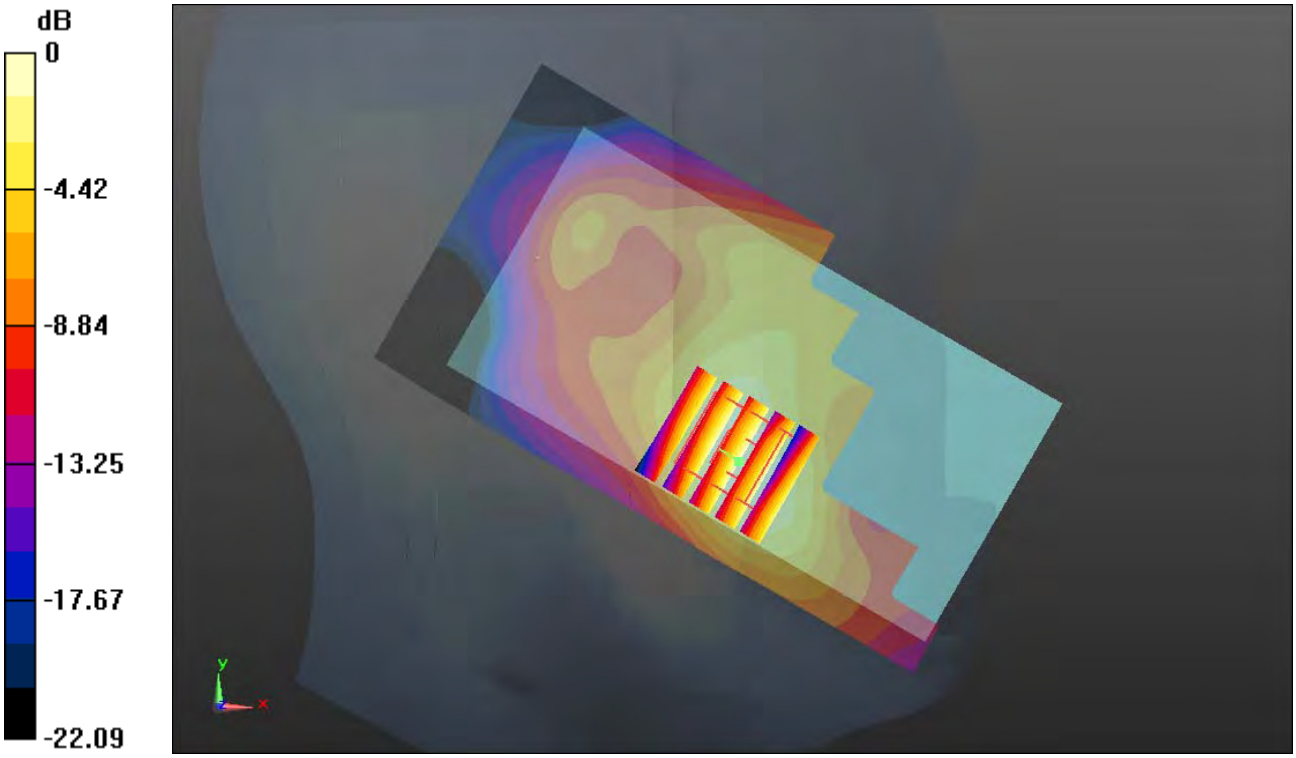
#09 LTE Band25 20M_QPSK(1,49)_Left Cheek_Ch26590

Communication System: FDD_LTE (0); Frequency: 1905 MHz;Duty Cycle: 1:1
Medium: HSL_1900_150907 Medium parameters used: f = 1905 MHz; σ = 1.43 mho/m; ε_r = 38.879; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.81, 7.81, 7.81); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch26590/Area Scan (61x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.366 mW/g

Ch26590/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.181 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.452 W/kg
SAR(1 g) = 0.293 mW/g; SAR(10 g) = 0.175 mW/g
Maximum value of SAR (measured) = 0.378 mW/g



0 dB = 0.380mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.09.03

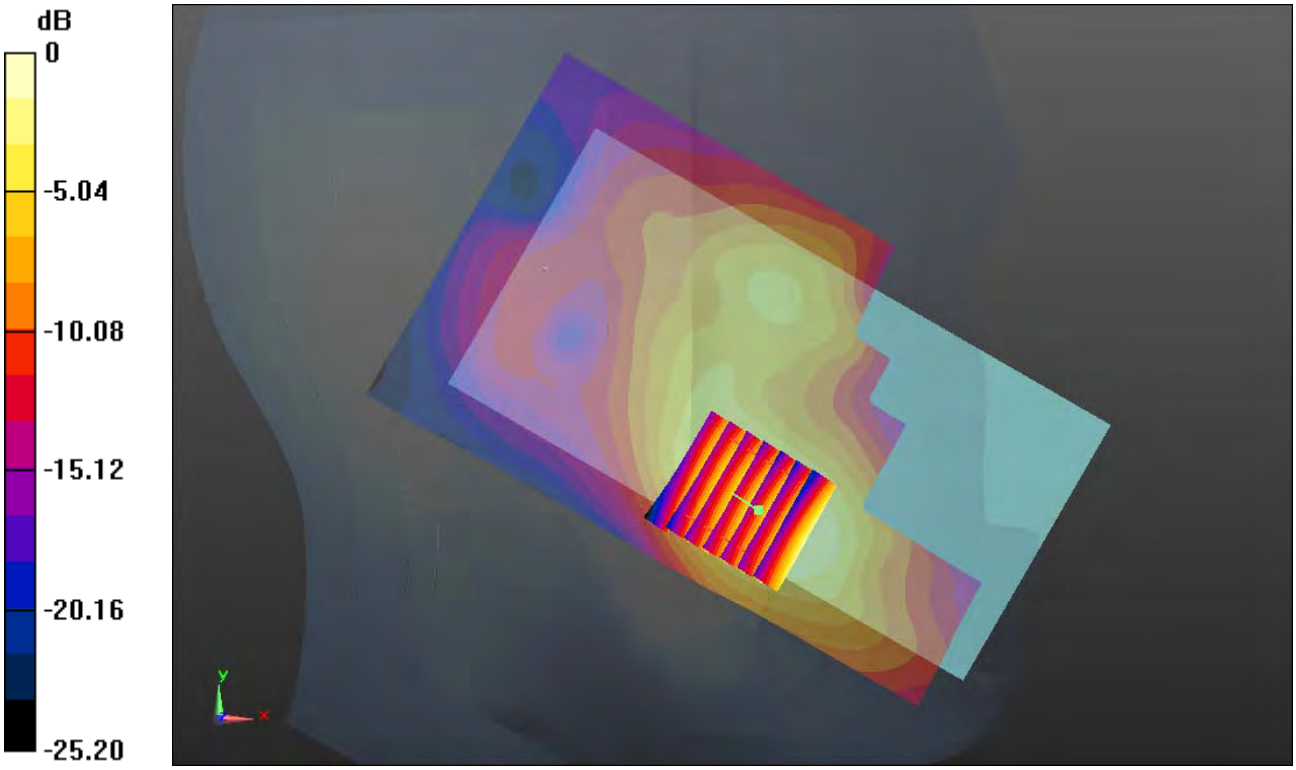
#10 TDD LTE Band41 20M_QPSK(1,0)_Left Cheek_Ch39750

Communication System: TDD_LTE (0); Frequency: 2506 MHz;Duty Cycle: 1:1.59
Medium: HSL_2600_150903 Medium parameters used: f = 2506 MHz; σ = 1.889 mho/m; ε_r = 38.622; ρ = 1000 kg/m^3
Ambient Temperature：23.9 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.05, 7.05, 7.05); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch39750/Area Scan (81x141x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.768 mW/g

Ch39750/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.789 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 1.009 W/kg
SAR(1 g) = 0.555 mW/g; SAR(10 g) = 0.287 mW/g
Maximum value of SAR (measured) = 0.779 mW/g



0 dB = 0.780mW/g

#11 WLAN2.4G

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.09.03

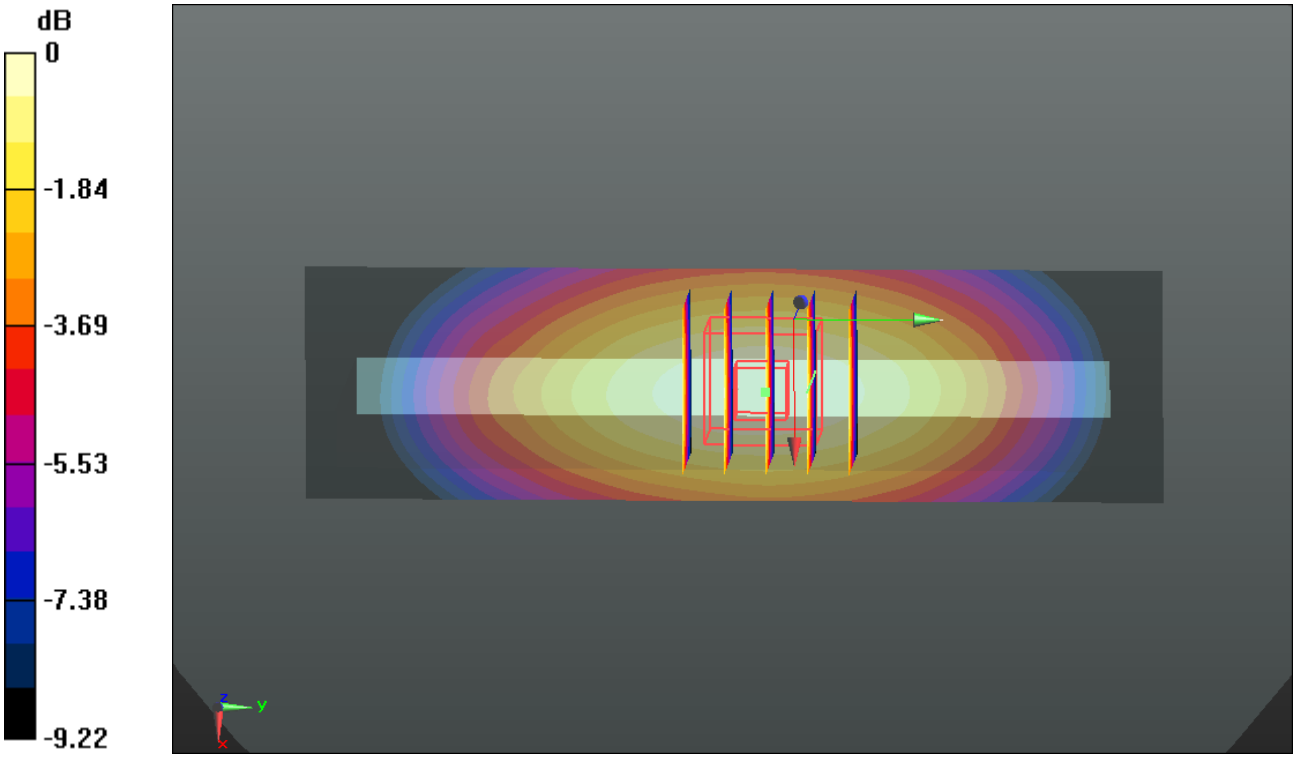
#12 GSM850_GPRS (2 Tx slots)_Left Side 1cm_Ch128

Communication System: GPRS/EDGE (2 Tx slots) (0); Frequency: 824.2 MHz;Duty Cycle: 1:4.15
Medium: MSL_835_150903 Medium parameters used: f = 824.2 MHz; σ = 0.969 mho/m; ε_r = 54.578; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.52, 9.52, 9.52); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch128/Area Scan (31x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.766 mW/g

Ch128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.407 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.877 W/kg
SAR(1 g) = 0.640 mW/g; SAR(10 g) = 0.450 mW/g
Maximum value of SAR (measured) = 0.770 mW/g



0 dB = 0.770mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.09.02

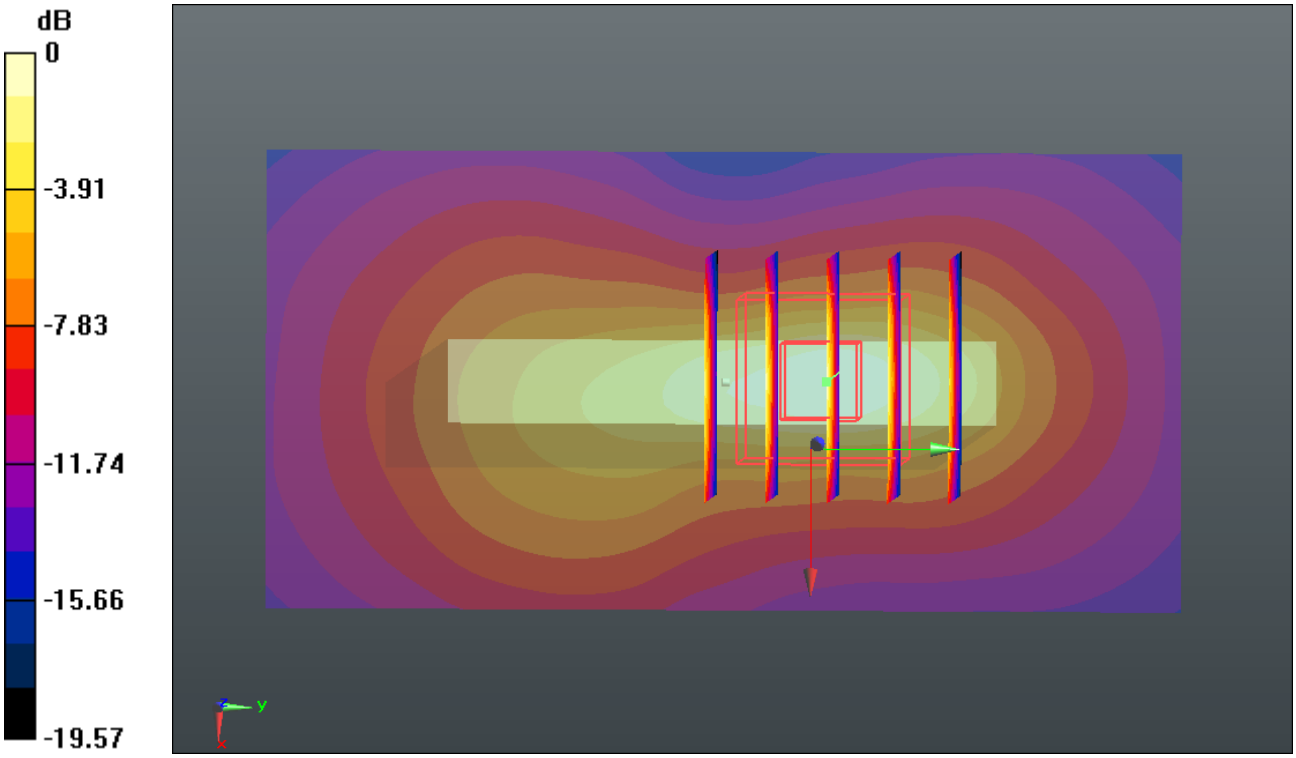
#13 GSM1900_GPRS (2 Tx slots)_Bottom Side 1cm_Ch661

Communication System: GPRS/EDGE (2 Tx slots) (0); Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium: MSL_1900_150902 Medium parameters used: f = 1880 MHz; σ = 1.527 mho/m; ε_r = 53.348; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.54, 7.54, 7.54); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch661/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.523 mW/g

Ch661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.282 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.646 W/kg
SAR(1 g) = 0.363 mW/g; SAR(10 g) = 0.181 mW/g
Maximum value of SAR (measured) = 0.524 mW/g



0 dB = 0.520mW/g

#14 WCDMA

#15 WCDMA

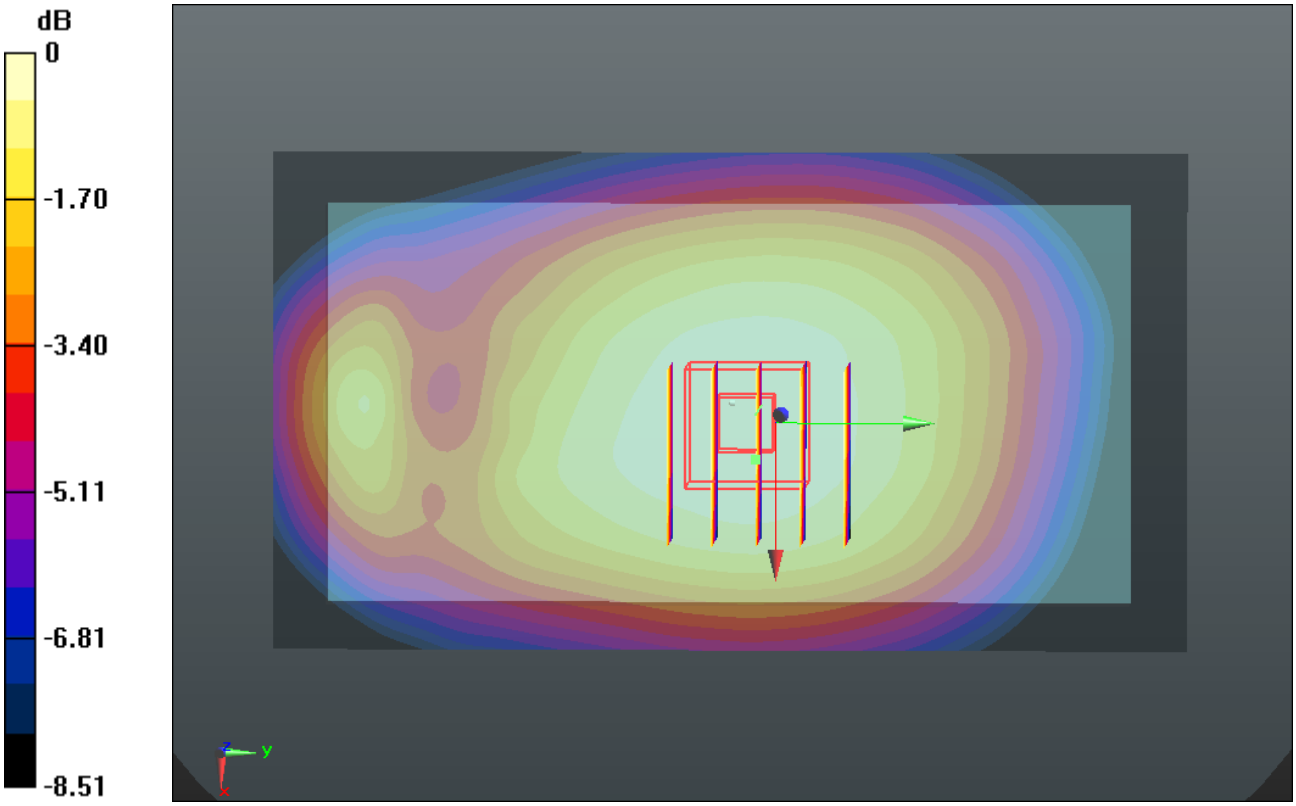
#16 CDMA2000 BC10_RTAP 153.6Kbps_Back 1cm_Ch684

Communication System: CDMA2000 (0); Frequency: 823.1 MHz;Duty Cycle: 1:1
Medium: MSL_835_150903 Medium parameters used: f = 823.1 MHz; σ = 0.968 mho/m; ε_r = 54.588; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.52, 9.52, 9.52); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch684/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.971 mW/g

Ch684/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 30.281 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.056 W/kg
SAR(1 g) = 0.850 mW/g; SAR(10 g) = 0.660 mW/g
Maximum value of SAR (measured) = 0.968 mW/g



0 dB = 0.970mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.09.03

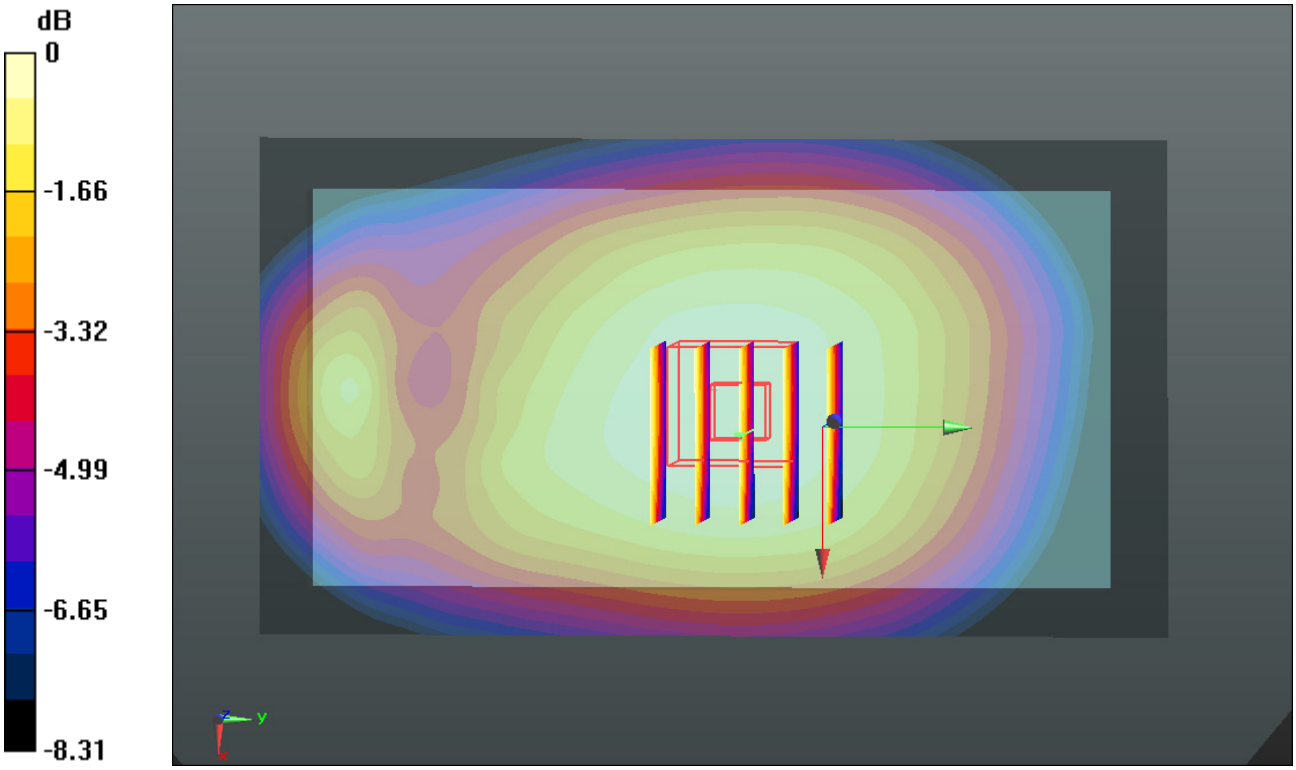
#17 CDMA2000 BC0_RTAP 153.6Kbps_Back 1cm_Ch1013

Communication System: CDMA2000 (0); Frequency: 824.7 MHz;Duty Cycle: 1:1
Medium: MSL_835_150903 Medium parameters used: f = 824.7 MHz; σ = 0.97 mho/m; ε_r = 54.569; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.52, 9.52, 9.52); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch1013/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.974 mW/g

Ch1013/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 30.493 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.053 W/kg
SAR(1 g) = 0.860 mW/g; SAR(10 g) = 0.666 mW/g
Maximum value of SAR (measured) = 0.978 mW/g



0 dB = 0.980mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.09.02

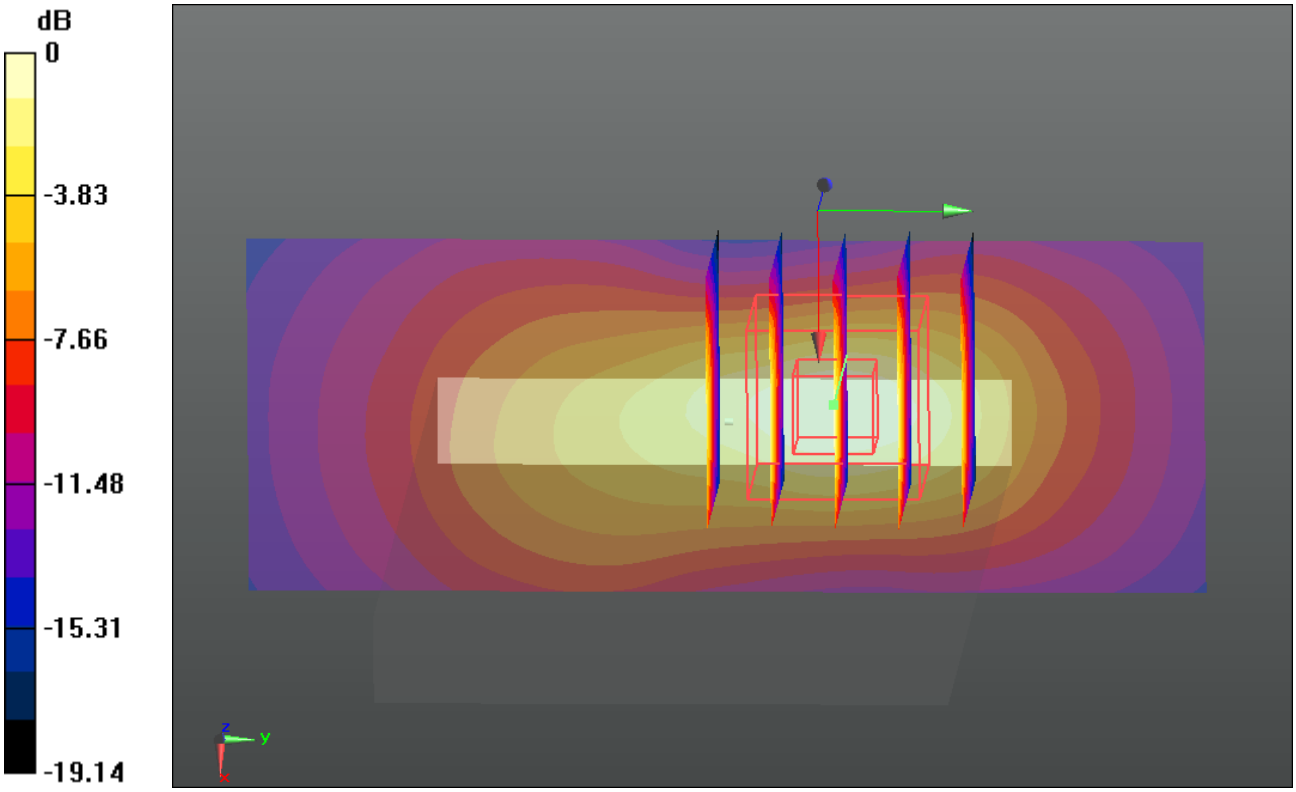
#18 CDMA2000 BC1_RTAP 153.6Kbps_Bottom Side 1cm_Ch1175

Communication System: CDMA2000 (0); Frequency: 1908.75 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150902 Medium parameters used: f = 1908.75 MHz; σ = 1.56 mho/m; ε_r = 53.266; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.54, 7.54, 7.54); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch1175/Area Scan (31x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.327 mW/g

Ch1175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.021 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.634 W/kg
SAR(1 g) = 0.922 mW/g; SAR(10 g) = 0.458 mW/g
Maximum value of SAR (measured) = 1.301 mW/g



0 dB = 1.300mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.09.03

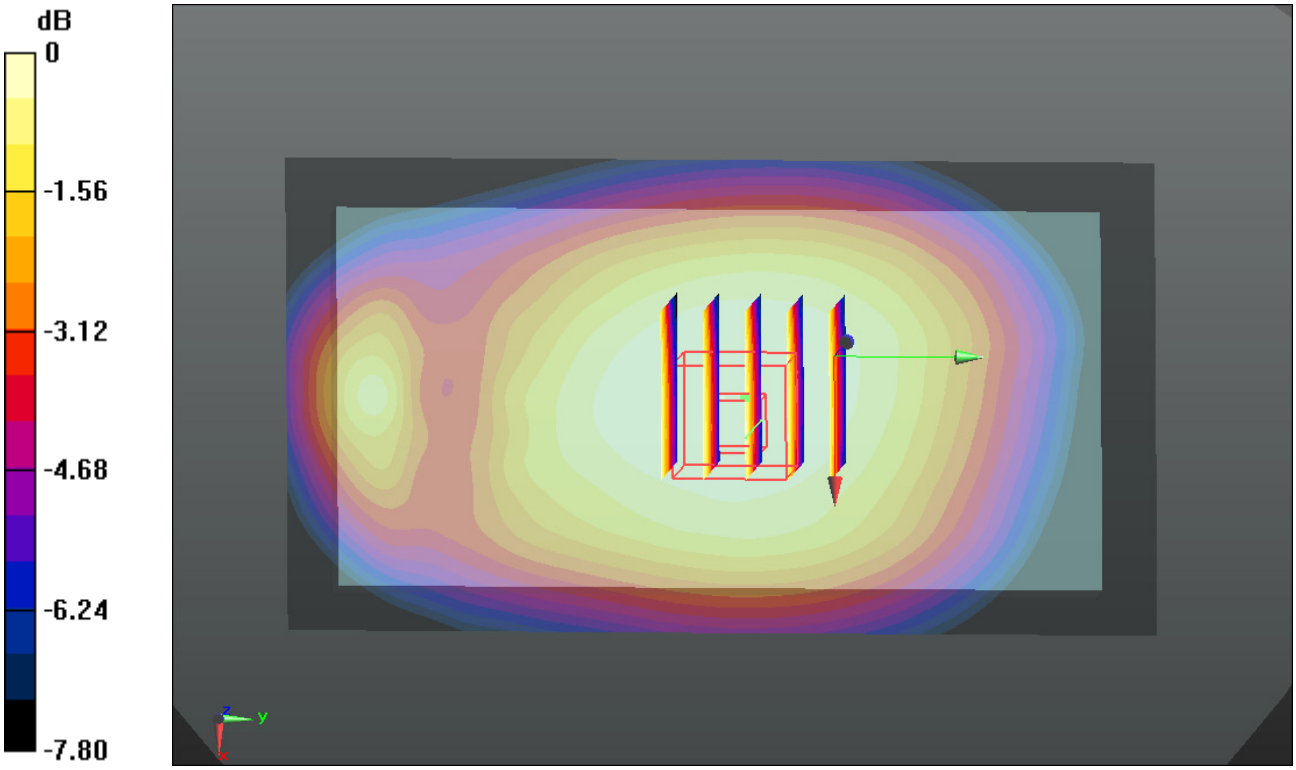
#19 LTE Band26 15M_QPSK(1,37)_Back 1cm_Ch26765

Communication System: FDD_LTE (0); Frequency: 821.5 MHz;Duty Cycle: 1:1
Medium: MSL_835_150903 Medium parameters used: f = 821.5 MHz; σ = 0.967 mho/m; ε_r = 54.602; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.52, 9.52, 9.52); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch26765/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.774 mW/g

Ch26765/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.275 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.817 W/kg
SAR(1 g) = 0.658 mW/g; SAR(10 g) = 0.513 mW/g
Maximum value of SAR (measured) = 0.748 mW/g



0 dB = 0.750mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.09.02

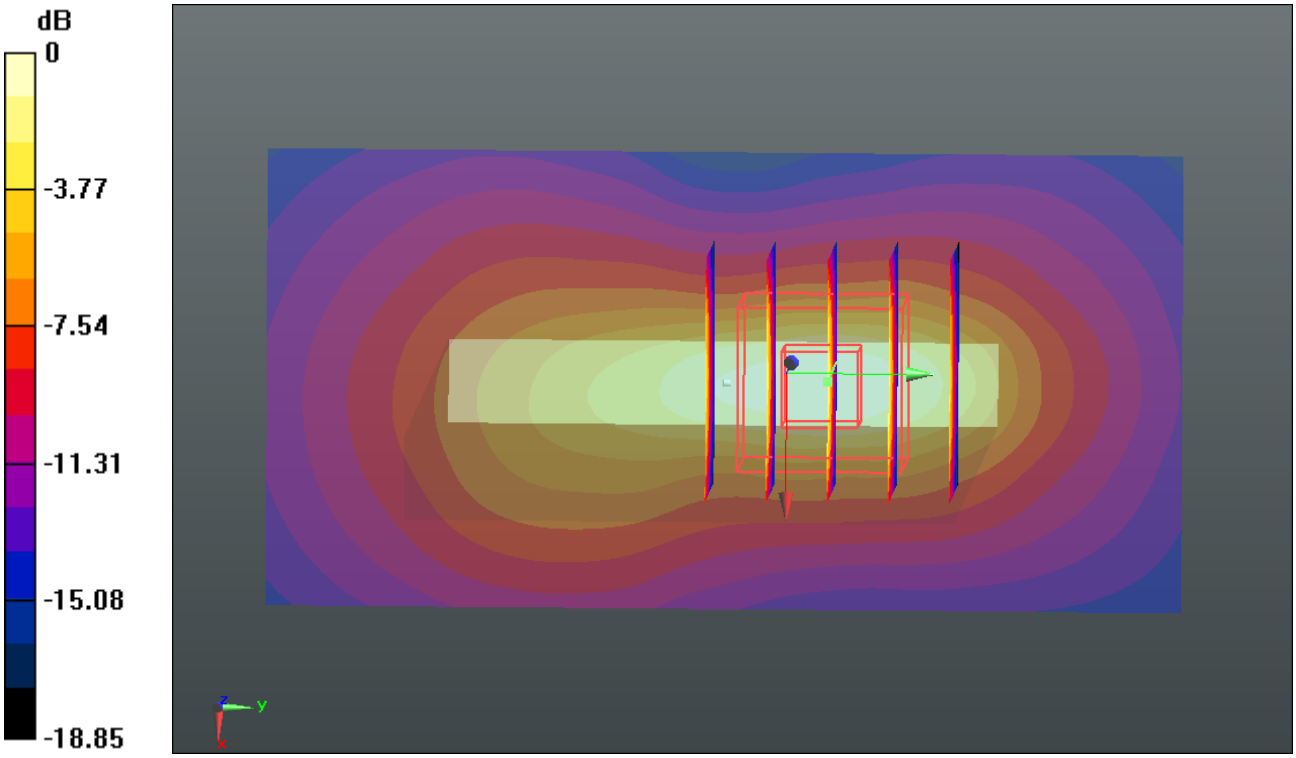
#20 LTE Band25 20M_QPSK(1,49)_DH5_Bottom Side 1cm_Ch26590

Communication System: FDD_LTE (0); Frequency: 1905 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150902 Medium parameters used: f = 1905 MHz; σ = 1.556 mho/m; ε_r = 53.279; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.54, 7.54, 7.54); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch26590/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.087 mW/g

Ch26590/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.856 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.304 W/kg
SAR(1 g) = 0.732 mW/g; SAR(10 g) = 0.363 mW/g
Maximum value of SAR (measured) = 1.044 mW/g



0 dB = 1.040mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.09.02

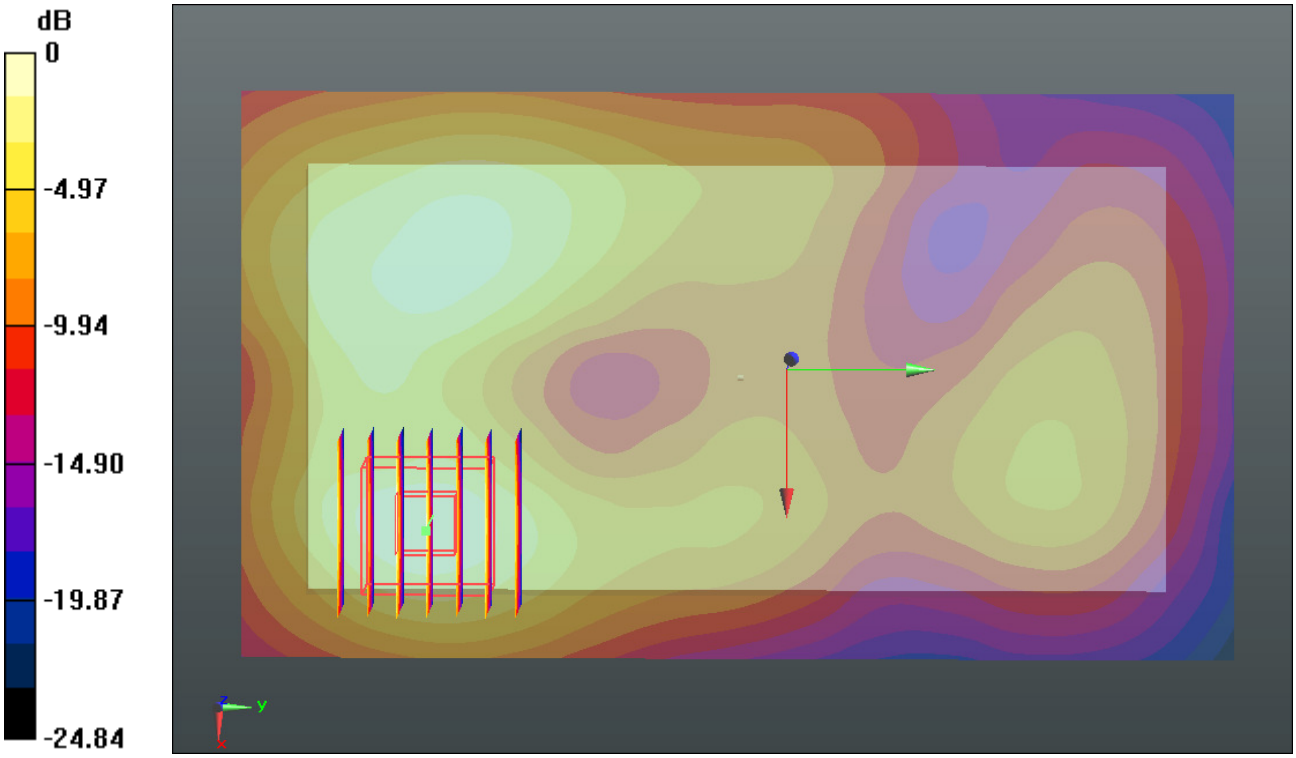
#21 TDD LTE Band41 20M_QPSK(1,0)_Front 1cm_Ch41055

Communication System: TDD_LTE (0); Frequency: 2636.5 MHz;Duty Cycle: 1:1.59
Medium: MSL_2600_150902 Medium parameters used: f = 2636.5 MHz; σ = 2.14 mho/m; ε_r = 53.802; ρ = 1000 kg/m^3
Ambient Temperature：23.9 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.17, 7.17, 7.17); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch41055/Area Scan (81x141x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.893 mW/g

Ch41055/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.283 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.228 W/kg
SAR(1 g) = 0.598 mW/g; SAR(10 g) = 0.284 mW/g
Maximum value of SAR (measured) = 0.890 mW/g



0 dB = 0.890mW/g

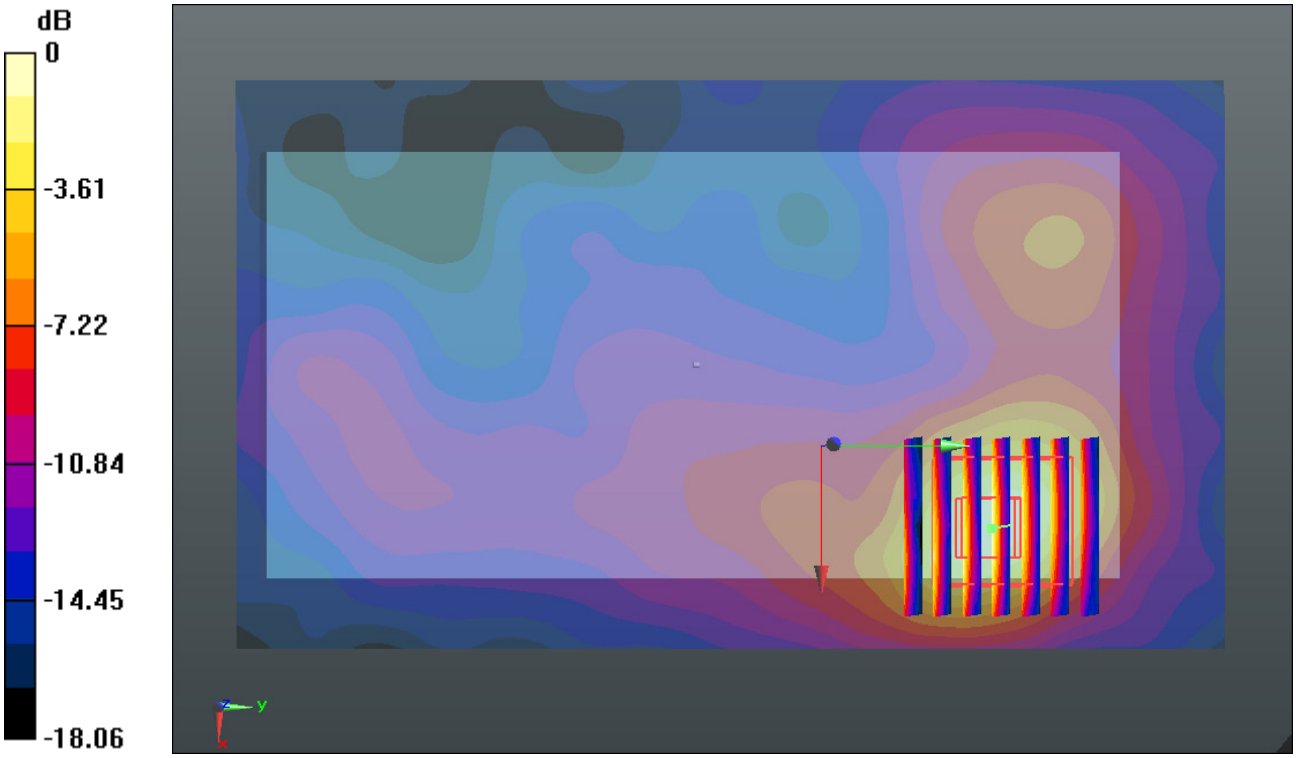
#22 WLAN2.4GHz_802.11b_1Mps_Back 1cm_Ch11

Communication System: WIFI (0); Frequency: 2462 MHz;Duty Cycle: 1:1.024
Medium: MSL_2450_150908 Medium parameters used: f = 2462 MHz; σ = 1.949 mho/m; ε_r = 51.211; ρ = 1000 kg/m^3
Ambient Temperature：23.9 ℃； Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.29, 7.29, 7.29); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch11/Area Scan (81x141x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.223 mW/g

Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.506 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.327 W/kg
SAR(1 g) = 0.155 mW/g; SAR(10 g) = 0.071 mW/g
Maximum value of SAR (measured) = 0.238 mW/g



0 dB = 0.240mW/g