FCC SAR Test Report

APPLICANT	:	ZTE CORPORATION
EQUIPMENT	:	LTE/WCDMA/GSM Tri-Mode Digital Mobile Phone
BRAND NAME	:	ZTE
MODEL NAME	:	Z818L
MARKETING NAME	:	Z818L
FCC ID	:	SRQ-Z818L
STANDARD	:	FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2003

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

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

Reviewed by: Eric Huang / Deputy Manager

Approved by: Jones Tsai / Manager

Testing Laboratory
2627

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Table of Contents

1. Statement of Compliance 4
2. Administration Data 5
3. Guidance Standard 5
4. Equipment Under Test (EUT) 6
4.1 General Information 6
4.2 Maximum Tune-up Limit 7
4.3 General LTE SAR Test and Reporting Considerations 11
5. RF Exposure Limits 13
5.1 Uncontrolled Environment 13
5.2 Controlled Environment 13
6. Specific Absorption Rate (SAR) 14
6.1 Introduction 14
6.2 SAR Definition 14
7. System Description and Setup 15
8. Measurement Procedures 16
8.1 Spatial Peak SAR Evaluation 16
8.2 Power Reference Measurement 17
8.3 Area Scan 17
8.4 Zoom Scan 18
8.5 Volume Scan Procedures 18
8.6 Power Drift Monitoring 18
9. Test Equipment List 19
10. System Verification 20
10.1 Tissue Verification 20
10.2 System Performance Check Results 21
11. RF Exposure Positions 22
11.1 Ear and handset reference point 22
11.2 Definition of the cheek position 23
11.3 Definition of the tilt position 24
11.4 Body Worn Accessory 25
11.5 Wireless Router 25
12. Conducted RF Output Power (Unit: dBm) 26
13. Bluetooth Exclusions Applied 39
14. Antenna Location 40
15. SAR Test Results 41
15.1 Head SAR 42
15.2 Hotspot SAR 44
15.3 Body Worn Accessory SAR 48
15.4 Repeated SAR Measurement 50
16. Simultaneous Transmission Analysis 51
16.1 Head Exposure Conditions 52
16.2 Hotspot Exposure Conditions 54
16.3 Body-Worn Accessory Exposure Conditions 58
16.4 SPLSR Evaluation and Analysis 60
17. Uncertainty Assessment 66
18. References 68
Appendix A. Plots of System Performance Check
Appendix B. Plots of High SAR Measurement
Appendix C. DASY Calibration Certificate
Appendix D. Test Setup Photos

Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA531604	Rev. 01	Initial issue of report	May 11, 2015

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **ZTE CORPORATION, LTE/WCDMA/GSM Tri-Mode Digital Mobile Phone, Z818L** 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	0.67	1.04	1.14	1.59
	GSM1900	0.56	1.00	1.16	
	WCDMA Band V	0.48	0.64	0.86	
	WCDMA Band IV	0.69	**1.29**	**1.29**	
	WCDMA Band II	0.62	1.05	1.19	
	LTE Band 17	0.25	0.53	0.53	
	LTE Band 5	0.33	0.43	0.53	
	LTE Band 4	0.69	1.17	1.17	
	LTE Band 2	0.65	1.06	1.19	
DTS	WLAN 2.4GHz Band	**1.21**	0.64	0.64	1.59
Date of Testing:		03/23/2015 ~ 04/30/2015			

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 1528-2003.

2. Administration Data

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. 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 1528-2003
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r03
- FCC KDB 865664 D02 SAR Reporting v01r01
- FCC KDB 447498 D01 General RF Exposure Guidance v05r02
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r02
- FCC KDB 248227 D01 SAR meas for 802 11abg v01r02
- FCC KDB 941225 D01 3G SAR Procedures v03
- FCC KDB 941225 D05 SAR for LTE Devices v02r03
- FCC KDB 941225 D06 Hotspot Mode SAR v02

4. Equipment Under Test (EUT)

4.1 General Information

Product Feature & Specification	
Equipment Name	LTE/WCDMA/GSM Tri-Mode Digital Mobile Phone
Brand Name	ZTE
Model Name	Z818L
Marketing Name	Z818L
FCC ID	SRQ-Z818L
IMEI Code	004401783323732
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	•GSM/GPRS/EGPRS •RMC/AMR 12.2Kbps •HSDPA •HSUPA •HSPA+ (Downlink Only) •LTE: QPSK, 16QAM •802.11b/g/n HT20 •Bluetooth v3.0+EDR, Bluetooth v4.0 LE
HW Version	wtxA
SW Version	Z818LV1.0.0B01
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 supports hotspot operation and 802.11n-HT40 is not supported in 2.4GHz WLAN.
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 class 10.
4. The EUT do not support DTM function.

4.2 Maximum Tune-up Limit

Mode	Burst average power(dBm)	
	GSM 850	GSM 1900
GSM (GMSK, 1 Tx slot)	32.5	30
GPRS (GMSK, 1 Tx slot)	32.5	30
GPRS (GMSK, 2 Tx slots)	32.5	30
EDGE (8PSK, 1 Tx slot)	27	26
EDGE (8PSK, 2 Tx slots)	27	26

Mode	Average power (dBm)		
	WCDMA Band V	WCDMA Band II	WCDMA Band IV
AMR 12.2Kbps	25	23.5	23.5
RMC 12.2Kbps	25	23.5	23.5
HSDPA Subtest-1	24	22.5	23
HSDPA Subtest-2	24	22.5	23
HSDPA Subtest-3	23	22	22
HSDPA Subtest-4	23	22	22
HSUPA Subtest-1	23	22	22
HSUPA Subtest-2	23	22	22
HSUPA Subtest-3	23	22	22
HSUPA Subtest-4	23	22	22
HSUPA Subtest-5	23.5	22.5	22.5

LTE Band 17				
Average Power (dBm)				
Modulation	BW (MHz)	RB size	MPR	Target Power
QPSK	10	≤ 12	0	24
QPSK	10	> 12	1	23
16QAM	10	≤ 12	1	23
16QAM	10	> 12	2	22
QPSK	5	≤ 8	0	24
QPSK	5	> 8	1	23
16QAM	5	≤ 8	1	23
16QAM	5	> 8	2	22

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

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

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

Mode		Maximum Average Power (dBm)
2.4GHz	802.11b	19.5
	802.11g	16
	802.11n-HT20	15
Bluetooth v3.0+EDR		0
Bluetooth v4.0 LE		-4

4.3 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r03	
FCC ID	SRQ-Z818L
Equipment Name	LTE/WCDMA/GSM Tri-Mode Digital Mobile Phone
Operating Frequency Range of each LTE transmission band	LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz
Channel Bandwidth	1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz(LTE Band 2/4) 1.4MHz, 3MHz, 5MHz, 10MHz(LTE Band 5) 5MHz, 10MHz, (LTE Band 17)
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	R10, Category 4
CA Support	NO

Transmission (H, M, L) channel numbers and frequencies in each LTE band								
LTE Band 17								
	Bandwidth 5 MHz				Bandwidth 10 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq. (MHz)	
L	23755		706.5		23780		709	
M	23790		710		23790		710	
H	23825		713.5		23800		711	
LTE Band 5								
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844
LTE Band 4												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745
LTE Band 2												
	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	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900

5. RF Exposure Limits

5.1 Uncontrolled Environment

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

5.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

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

6. Specific Absorption Rate (SAR)

6.1 Introduction

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

6.2 SAR Definition

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

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

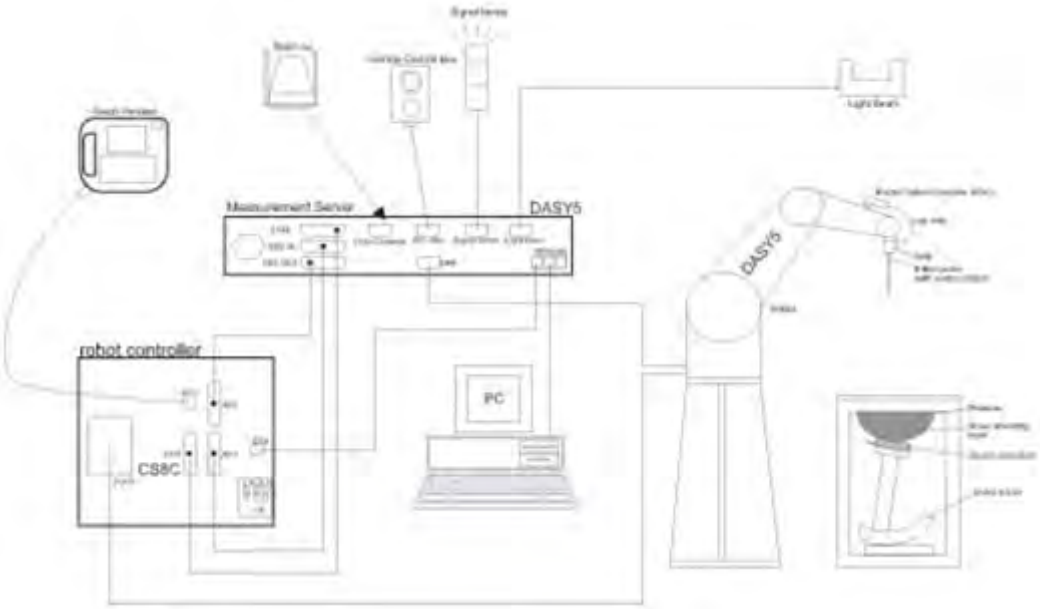
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

7. System Description and Setup

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



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

8. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

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

<SAR measurement>

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

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

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

8.1 Spatial Peak SAR Evaluation

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

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

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

(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid
(e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
(f) Calculation of the averaged SAR within masses of 1g and 10g

8.2 Power Reference Measurement

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

8.3 Area Scan

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

Area scan parameters extracted from FCC KDB 865664 D01v01r03 SAR measurement 100 MHz to 6 GHz.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

8.4 Zoom Scan

Zoom scans are used assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube shoes base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01v01r03 SAR measurement 100 MHz to 6 GHz.

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

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

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

8.5 Volume Scan Procedures

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

8.6 Power Drift Monitoring

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

9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1065	Nov. 19, 2014	Nov. 18, 2015
SPEAG	835MHz System Validation Kit	D835V2	4d091	Nov. 21, 2014	Nov. 20, 2015
SPEAG	1750MHz System Validation Kit	D1750V2	1069	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	Data Acquisition Electronics	DAE4	1210	May 19, 2014	May 18, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3857	May 23, 2014	May 22, 2015
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1477	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1479	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio communication analyzer	MT8820C	6201091028	Jul. 10, 2014	Jul. 09, 2015
Agilent	Wireless Communication Test Set	E5515C	MY52102706	May 03, 2014	May 02, 2015
Agilent	ENA Series Network Analyzer	E5071C	MY46111157	May 04, 2014	May 03, 2015
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
R&S	CBT BLUETOOTH TESTER	CBT	100783	Aug. 11, 2014	Aug. 10, 2015
R&S	Spectrum Analyzer	FSP40	100319	Oct. 28, 2014	Oct. 27, 2015
Agilent	Dual Directional Coupler	778D	50422	Note1	
Woken	Attenuator 1	WK0602-XX	N/A	Note1	
PE	Attenuator 2	PE7005-10	N/A	Note1	
PE	Attenuator 3	PE7005- 3	N/A	Note1	
AR	Power Amplifier	5S1G4M2	0328767	Note1	
Mini-Circuits	Power Amplifier	ZVE-3W	162601250	Note1	
Mini-Circuits	Power Amplifier	ZHL-42W+	13440021344	Note1	

General Note:

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

10. System Verification

10.1 Tissue Verification

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

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (εr)
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
1750	55.2	0	0	0.3	0	44.5	1.37	40.1
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
For Body								
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
1750	70.2	0	0	0.4	0	29.4	1.49	53.4
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	Head	22.7	0.888	40.879	0.89	41.90	-0.22	-2.44	±5	2015/3/30
835	Head	22.6	0.878	40.783	0.90	41.50	-2.44	-1.73	±5	2015/3/30
1750	Head	22.9	1.377	41.359	1.37	40.10	0.51	3.14	±5	2015/4/1
1900	Head	22.7	1.425	39.073	1.40	40.00	1.79	-2.32	±5	2015/4/1
2450	Head	22.7	1.842	39.923	1.80	39.20	2.33	1.84	±5	2015/4/30
750	Body	22.7	0.963	54.242	0.96	55.50	0.31	-2.27	±5	2015/3/24
835	Body	22.9	0.983	54.858	0.97	55.20	1.34	-0.62	±5	2015/3/24
1750	Body	22.6	1.522	54.439	1.49	53.40	2.15	1.95	±5	2015/3/23
1900	Body	22.6	1.549	53.346	1.52	53.30	1.91	0.09	±5	2015/3/23
2450	Body	22.8	1.939	50.920	1.95	52.70	-0.56	-3.38	±5	2015/4/30

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 (%)
2015/3/30	750	Head	250	1065	3857	1210	2.10	8.14	8.4	3.19
2015/3/30	835	Head	250	4d091	3857	1210	2.22	9.11	8.88	-2.52
2015/4/1	1750	Head	250	1069	3857	1210	8.69	37.10	34.76	-6.31
2015/4/1	1900	Head	250	5d118	3857	1210	9.54	40.10	38.16	-4.84
2015/4/30	2450	Head	250	840	3857	1210	13.80	52.30	55.2	5.54
2015/3/24	750	Body	250	1065	3857	1210	2.13	8.64	8.52	-1.39
2015/3/24	835	Body	250	4d091	3857	1210	2.27	9.60	9.08	-5.42
2015/3/23	1750	Body	250	1069	3857	1210	9.04	38.10	36.16	-5.09
2015/3/23	1900	Body	250	5d118	3857	1210	10.50	40.00	42	5.00
2015/4/30	2450	Body	250	840	3857	1210	13.30	51.00	53.2	4.31

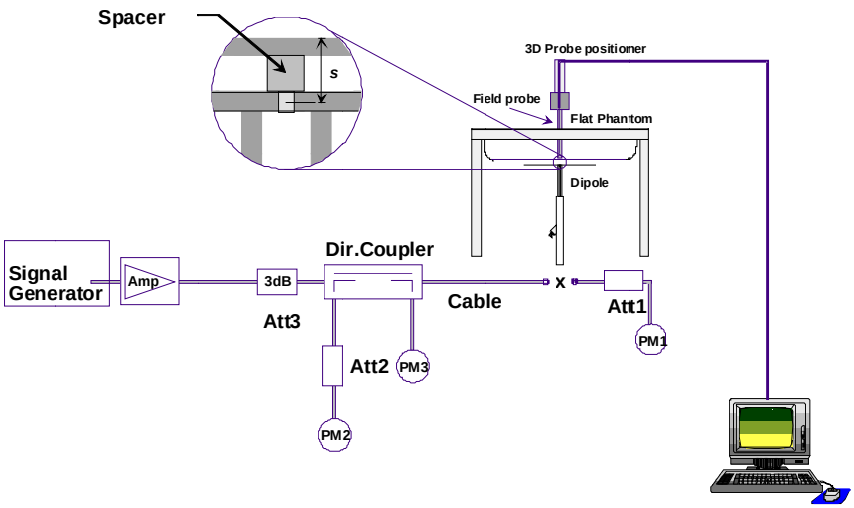


Fig 8.3.1 System Performance Check Setup

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.

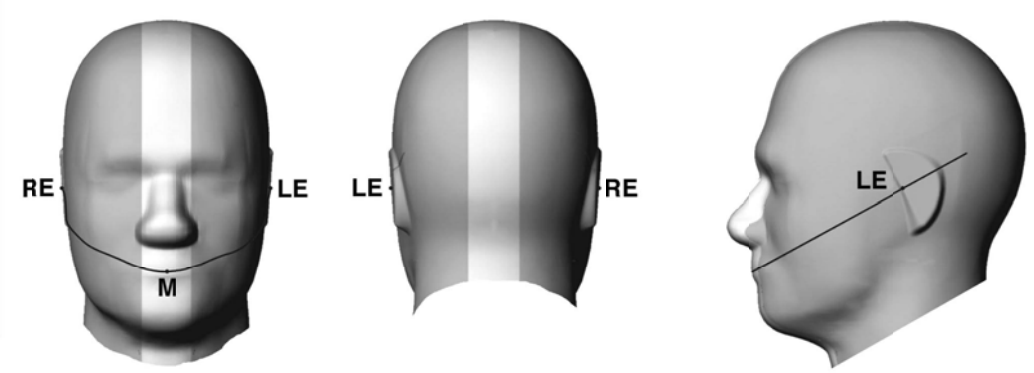


Fig 9.1.1 Front, back, and side views of SAM twin phantom

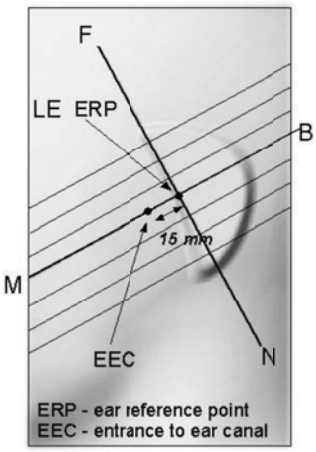


Fig 9.1.2 Close-up side view of phantom showing the ear region.

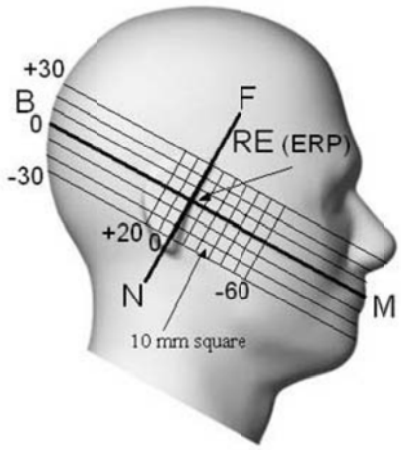


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

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.

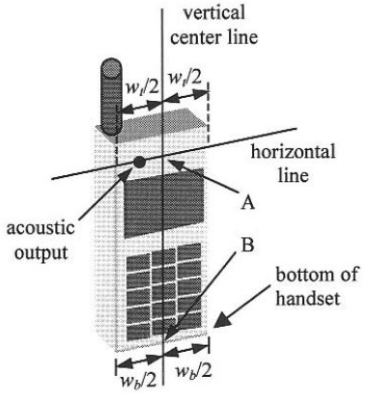


Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case

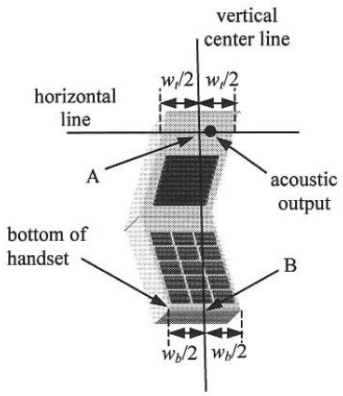


Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

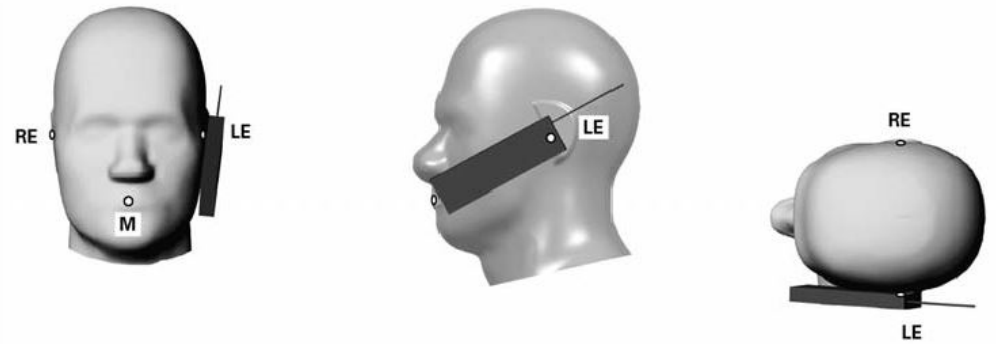


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

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.

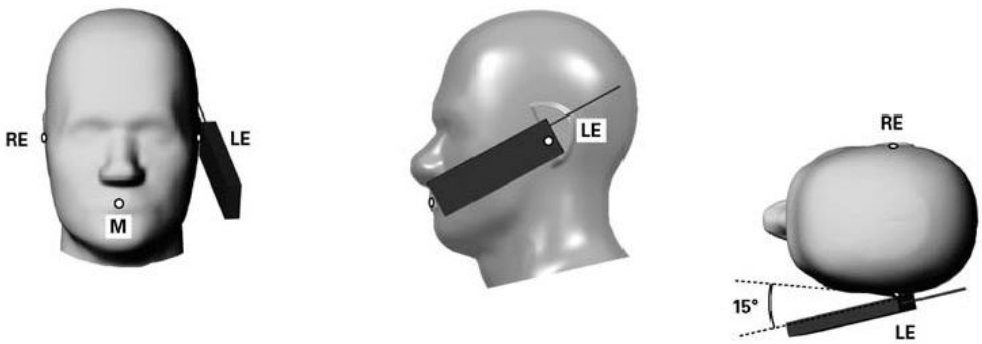


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

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.

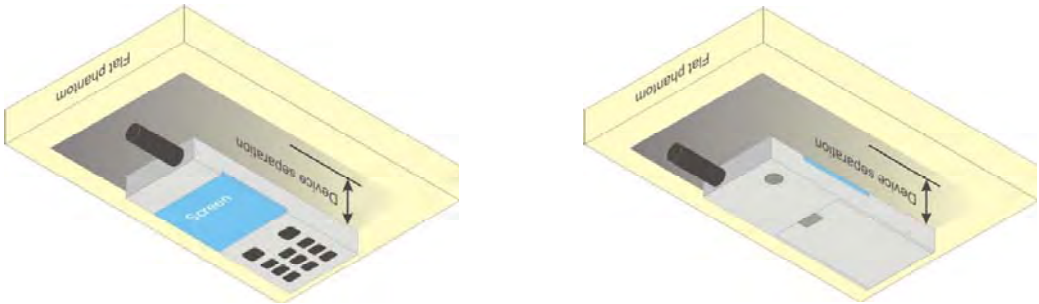


Fig 9.4 Body Worn Position

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>

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)	32.16	32.26	**32.33**	32.5	23.16	23.26	23.33	23.5
GPRS (GMSK, 1 Tx slot) – CS1	32.14	32.24	32.31	32.5	23.14	23.24	23.31	23.5
GPRS (GMSK, 2 Tx slots) – CS1	32.03	32.13	32.20	32.5	26.03	26.13	**26.20**	26.5
EDGE (8PSK, 1 Tx slot) – MCS5	26.15	26.34	26.47	27	17.15	17.34	17.47	18
EDGE (8PSK, 2 Tx slots) – MCS5	26.03	26.23	26.35	27	20.03	20.23	20.35	21
Band GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM (GMSK, 1 Tx slot)	29.22	29.30	**29.54**	30	20.22	20.30	20.54	21
GPRS (GMSK, 1 Tx slot) – CS1	29.21	29.29	29.51	30	20.21	20.29	20.51	21
GPRS (GMSK, 2 Tx slots) – CS1	29.17	29.22	29.41	30	23.17	23.22	**23.41**	24
EDGE (8PSK, 1 Tx slot) – MCS5	25.16	25.17	25.19	26	16.16	16.17	16.19	17
EDGE (8PSK, 2 Tx slots) – MCS5	25.10	25.11	25.11	26	19.10	19.11	19.11	20

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	24.21	24.28	24.35	23.31	23.32	23.26
	3GPP Rel 99	RMC 12.2Kbps	24.23	24.30	**24.36**	23.32	**23.34**	23.28
0	3GPP Rel 6	HSDPA Subtest-1	23.38	23.30	23.35	22.20	22.06	21.95
0	3GPP Rel 6	HSDPA Subtest-2	23.35	23.37	23.32	22.07	22.02	21.90
0.5	3GPP Rel 6	HSDPA Subtest-3	22.86	22.88	22.85	21.53	21.60	21.46
0.5	3GPP Rel 6	HSDPA Subtest-4	22.85	22.86	22.83	21.52	21.58	21.45
0	3GPP Rel 6	HSUPA Subtest-1	22.64	22.63	22.60	21.55	21.62	21.52
2	3GPP Rel 6	HSUPA Subtest-2	22.09	22.05	22.02	21.03	21.08	21.01
1	3GPP Rel 6	HSUPA Subtest-3	22.28	22.27	22.25	21.08	21.04	20.91
2	3GPP Rel 6	HSUPA Subtest-4	22.26	22.30	22.18	21.35	21.37	21.24
0	3GPP Rel 6	HSUPA Subtest-5	23.27	23.27	23.33	22.06	22.04	21.91

Band			WCDMA Band IV		
Tx Channel			1312	1413	1513
Rx Channel			1537	1638	1738
Frequency (MHz)			1712.4	1732.6	1752.6
MPR (dB)	3GPP Rel 99	AMR 12.2Kbps	23.36	23.29	23.30
	3GPP Rel 99	RMC 12.2Kbps	**23.38**	23.31	23.31
0	3GPP Rel 6	HSDPA Subtest-1	22.33	22.28	22.25
0	3GPP Rel 6	HSDPA Subtest-2	22.31	22.29	22.24
0.5	3GPP Rel 6	HSDPA Subtest-3	21.53	21.48	21.58
0.5	3GPP Rel 6	HSDPA Subtest-4	21.51	21.56	21.54
0	3GPP Rel 6	HSUPA Subtest-1	21.51	21.53	21.52
2	3GPP Rel 6	HSUPA Subtest-2	21.38	21.43	21.32
1	3GPP Rel 6	HSUPA Subtest-3	21.08	21.11	21.13
2	3GPP Rel 6	HSUPA Subtest-4	21.38	21.41	21.34
0	3GPP Rel 6	HSUPA Subtest-5	22.15	22.18	22.25

<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 17>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	23.63	**23.70**	23.63	24	0
10	QPSK	1	24	23.47	23.50	23.18		
10	QPSK	1	49	23.61	23.33	23.54		
10	QPSK	25	0	22.44	22.48	22.43	23	0-1
10	QPSK	25	12	22.36	22.26	22.31		
10	QPSK	25	24	22.40	22.30	22.42		
10	QPSK	50	0	22.37	22.39	22.34		
10	16QAM	1	0	22.77	22.61	22.80	23	0-1
10	16QAM	1	24	22.17	22.60	22.38		
10	16QAM	1	49	22.64	22.66	22.61		
10	16QAM	25	0	21.48	21.25	21.33	22	0-2
10	16QAM	25	12	21.64	21.62	21.41		
10	16QAM	25	24	21.17	21.35	21.53		
10	16QAM	50	0	21.27	21.06	21.14		
Channel				23755	23790	23825	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	23.42	23.34	23.26	24	0
5	QPSK	1	12	23.34	23.15	23.29		
5	QPSK	1	24	23.21	23.56	23.20		
5	QPSK	12	0	22.18	22.23	22.34	23	0-1
5	QPSK	12	6	22.15	22.19	22.22		
5	QPSK	12	11	22.23	22.25	22.30		
5	QPSK	25	0	22.30	22.23	22.23		
5	16QAM	1	0	22.65	22.22	22.72	23	0-1
5	16QAM	1	12	22.18	22.30	22.73		
5	16QAM	1	24	22.71	22.53	22.71		
5	16QAM	12	0	21.19	21.13	21.27	22	0-2
5	16QAM	12	6	21.15	21.15	21.26		
5	16QAM	12	11	21.10	21.15	21.27		
5	16QAM	25	0	21.26	21.16	21.07		

<LTE Band 5>

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				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	23.31	23.42	23.51	24	0
10	QPSK	1	24	23.49	23.47	**23.80**		
10	QPSK	1	49	23.46	23.27	23.49		
10	QPSK	25	0	22.46	22.44	22.55	23	0-1
10	QPSK	25	12	22.36	22.31	22.49		
10	QPSK	25	24	22.44	22.42	22.44		
10	QPSK	50	0	22.39	22.39	22.46		
10	16QAM	1	0	22.35	22.74	22.69	23	0-1
10	16QAM	1	24	22.40	22.49	22.66		
10	16QAM	1	49	22.36	22.42	22.70		
10	16QAM	25	0	21.39	21.43	21.41	22	0-2
10	16QAM	25	12	21.47	21.15	21.65		
10	16QAM	25	24	21.52	21.33	21.53		
10	16QAM	50	0	21.39	21.44	21.35		
Channel				20425	20525	20625	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	23.40	23.18	23.56	24	0
5	QPSK	1	12	23.40	23.37	23.62		
5	QPSK	1	24	23.48	23.36	23.47		
5	QPSK	12	0	22.40	22.39	22.44	23	0-1
5	QPSK	12	6	22.35	22.33	22.53		
5	QPSK	12	11	22.34	22.28	22.50		
5	QPSK	25	0	22.37	22.49	22.46		
5	16QAM	1	0	22.59	22.93	22.92	23	0-1
5	16QAM	1	12	22.35	22.48	22.73		
5	16QAM	1	24	22.42	22.35	22.48		
5	16QAM	12	0	21.36	21.31	21.35	22	0-2
5	16QAM	12	6	21.34	21.32	21.45		
5	16QAM	12	11	21.30	21.28	21.43		
5	16QAM	25	0	21.30	21.45	21.56		
Channel				20415	20525	20635	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	23.44	23.54	23.57	24	0
3	QPSK	1	7	23.34	23.15	23.56		
3	QPSK	1	14	23.63	23.46	23.77		
3	QPSK	8	0	22.29	22.31	22.45	23	0-1
3	QPSK	8	4	22.36	22.47	22.65		
3	QPSK	8	7	22.32	22.39	22.57		
3	QPSK	15	0	22.30	22.36	22.45		
3	16QAM	1	0	22.85	22.94	22.88	23	0-1
3	16QAM	1	7	22.47	22.49	22.65		
3	16QAM	1	14	22.56	22.94	22.97		
3	16QAM	8	0	21.40	21.38	21.49	22	0-2
3	16QAM	8	4	21.55	21.49	21.50		
3	16QAM	8	7	21.34	21.26	21.49		
3	16QAM	15	0	21.26	21.42	21.50		

Channel				20407	20525	20643	Tune up Limit (dBm)	Target MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	23.19	23.26	23.35	24	0
1.4	QPSK	1	2	23.37	23.27	23.52		
1.4	QPSK	1	5	23.11	23.28	23.37		
1.4	QPSK	3	0	23.36	23.33	23.45		
1.4	QPSK	3	1	23.33	23.49	23.66		
1.4	QPSK	3	2	23.33	23.48	23.50		
1.4	QPSK	6	0	22.32	22.37	22.50	23	0-1
1.4	16QAM	1	0	22.68	22.96	22.52	23	0-1
1.4	16QAM	1	2	22.54	22.83	22.57		
1.4	16QAM	1	5	22.56	22.46	22.83		
1.4	16QAM	3	0	22.32	22.49	22.58		
1.4	16QAM	3	1	22.39	22.46	22.61		
1.4	16QAM	3	2	22.48	22.29	22.62		
1.4	16QAM	6	0	21.14	21.28	21.46	22	0-2

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	**23.82**	23.67	23.69	24	0
20	QPSK	1	49	23.36	23.49	23.59		
20	QPSK	1	99	23.47	23.40	23.21		
20	QPSK	50	0	22.54	22.46	22.53	23	0-1
20	QPSK	50	24	22.30	22.42	22.46		
20	QPSK	50	49	22.28	22.43	22.28		
20	QPSK	100	0	22.52	22.51	22.46		
20	16QAM	1	0	22.77	22.85	22.92	23	0-1
20	16QAM	1	49	22.69	22.75	22.87		
20	16QAM	1	99	22.68	22.55	22.60		
20	16QAM	50	0	21.47	21.50	21.62	22	0-2
20	16QAM	50	24	21.15	21.44	21.42		
20	16QAM	50	49	21.12	21.43	21.15		
20	16QAM	100	0	21.37	21.48	21.33		
Channel				20025	20175	20325	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	23.71	23.56	23.52	24	0
15	QPSK	1	37	23.36	23.44	23.37		
15	QPSK	1	74	23.19	23.49	23.17		
15	QPSK	36	0	22.48	22.51	22.59	23	0-1
15	QPSK	36	18	22.47	22.49	22.47		
15	QPSK	36	37	22.29	22.56	22.27		
15	QPSK	75	0	22.40	22.53	22.46		
15	16QAM	1	0	22.72	22.86	22.77	23	0-1
15	16QAM	1	37	22.63	22.42	22.91		
15	16QAM	1	74	22.64	22.77	22.81		
15	16QAM	36	0	21.43	21.50	21.44	22	0-2
15	16QAM	36	18	21.48	21.49	21.45		
15	16QAM	36	37	21.24	21.62	21.34		
15	16QAM	75	0	21.39	21.47	21.43		
Channel				20000	20175	20350	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	23.59	23.48	23.51	24	0
10	QPSK	1	24	23.60	23.33	23.28		
10	QPSK	1	49	23.21	23.53	23.20		
10	QPSK	25	0	22.53	22.59	22.51	23	0-1
10	QPSK	25	12	22.47	22.51	22.30		
10	QPSK	25	24	22.31	22.56	22.29		
10	QPSK	50	0	22.43	22.53	22.36		
10	16QAM	1	0	22.58	22.79	22.61	23	0-1
10	16QAM	1	24	22.60	22.38	22.82		
10	16QAM	1	49	22.58	22.69	22.43		
10	16QAM	25	0	21.59	21.50	21.35	22	0-2
10	16QAM	25	12	21.39	21.55	21.25		
10	16QAM	25	24	21.34	21.58	21.29		
10	16QAM	50	0	21.58	21.53	21.29		

Channel				19975	20175	20375	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	23.46	23.51	23.41	24	0
5	QPSK	1	12	23.70	23.40	23.29		
5	QPSK	1	24	23.34	23.64	23.03		
5	QPSK	12	0	22.41	22.43	22.33	23	0-1
5	QPSK	12	6	22.42	22.49	22.35		
5	QPSK	12	11	22.45	22.49	22.34		
5	QPSK	25	0	22.45	22.50	22.32		
5	16QAM	1	0	22.55	22.62	22.67	23	0-1
5	16QAM	1	12	22.58	22.53	22.64		
5	16QAM	1	24	22.55	22.71	22.59		
5	16QAM	12	0	21.52	21.46	21.24	22	0-2
5	16QAM	12	6	21.41	21.36	21.27		
5	16QAM	12	11	21.43	21.40	21.33		
5	16QAM	25	0	21.42	21.38	21.26		
Channel				19965	20175	20385	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	23.47	23.49	23.39	24	0
3	QPSK	1	7	23.53	23.33	23.20		
3	QPSK	1	14	23.56	23.73	23.40		
3	QPSK	8	0	22.48	22.53	22.37	23	0-1
3	QPSK	8	4	22.48	22.49	22.24		
3	QPSK	8	7	22.48	22.56	22.35		
3	QPSK	15	0	22.48	22.49	22.45		
3	16QAM	1	0	22.74	22.46	22.53	23	0-1
3	16QAM	1	7	22.49	22.55	22.78		
3	16QAM	1	14	22.65	22.79	22.30		
3	16QAM	8	0	21.46	21.32	21.57	22	0-2
3	16QAM	8	4	21.36	21.41	21.52		
3	16QAM	8	7	21.33	21.55	21.54		
3	16QAM	15	0	21.29	21.48	21.54		
Channel				19957	20175	20393	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	23.33	23.42	23.20	24	0
1.4	QPSK	1	2	23.41	23.56	23.31		
1.4	QPSK	1	5	23.41	23.44	23.15		
1.4	QPSK	3	0	23.57	23.52	23.23		
1.4	QPSK	3	1	23.56	23.49	23.34		
1.4	QPSK	3	2	23.49	23.54	23.35		
1.4	QPSK	6	0	22.54	22.58	22.41	23	0-1
1.4	16QAM	1	0	22.41	22.62	22.24	23	0-1
1.4	16QAM	1	2	22.87	22.78	22.57		
1.4	16QAM	1	5	22.81	22.76	22.72		
1.4	16QAM	3	0	22.38	22.72	22.31		
1.4	16QAM	3	1	22.45	22.69	22.36		
1.4	16QAM	3	2	22.62	22.71	22.45		
1.4	16QAM	6	0	21.60	21.32	21.39	22	0-2

<LTE Band 2>

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				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	23.02	22.99	23.11	23.5	0
20	QPSK	1	49	22.95	22.73	22.78		
20	QPSK	1	99	22.78	22.88	22.89		
20	QPSK	50	0	21.71	21.79	21.88	22.5	0-1
20	QPSK	50	24	21.62	21.72	21.78		
20	QPSK	50	49	21.59	21.77	21.82		
20	QPSK	100	0	21.72	21.84	21.85		
20	16QAM	1	0	22.15	22.45	22.23	22.5	0-1
20	16QAM	1	49	21.85	22.33	22.19		
20	16QAM	1	99	21.86	21.99	21.99		
20	16QAM	50	0	20.55	20.66	20.71	21.5	0-2
20	16QAM	50	24	20.45	20.80	20.80		
20	16QAM	50	49	20.41	20.80	20.76		
20	16QAM	100	0	20.66	20.91	20.83		
Channel				18675	18900	19125	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.98	22.94	22.95	23.5	0
15	QPSK	1	37	22.50	22.64	22.62		
15	QPSK	1	74	22.90	22.79	22.72		
15	QPSK	36	0	21.67	21.80	21.83	22.5	0-1
15	QPSK	36	18	21.70	21.87	21.81		
15	QPSK	36	37	21.68	21.85	21.86		
15	QPSK	75	0	21.66	21.88	21.74		
15	16QAM	1	0	22.14	22.11	22.19	22.5	0-1
15	16QAM	1	37	21.96	22.03	21.94		
15	16QAM	1	74	22.29	22.13	21.79		
15	16QAM	36	0	20.75	20.84	20.70	21.5	0-2
15	16QAM	36	18	20.70	20.93	20.75		
15	16QAM	36	37	20.61	20.70	20.86		
15	16QAM	75	0	20.53	20.85	20.80		
Channel				18650	18900	19150	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	23.04	23.06	22.78	23.5	0
10	QPSK	1	24	22.83	22.86	22.76		
10	QPSK	1	49	22.91	23.07	22.74		
10	QPSK	25	0	21.77	21.77	21.92	22.5	0-1
10	QPSK	25	12	21.68	21.82	21.87		
10	QPSK	25	24	21.60	21.83	21.75		
10	QPSK	50	0	21.71	21.80	21.81		
10	16QAM	1	0	21.92	21.99	22.44	22.5	0-1
10	16QAM	1	24	22.10	22.02	22.11		
10	16QAM	1	49	22.38	22.08	22.17		
10	16QAM	25	0	20.49	20.61	20.71	21.5	0-2
10	16QAM	25	12	20.55	20.84	20.79		
10	16QAM	25	24	20.57	20.87	20.83		
10	16QAM	50	0	20.64	20.86	20.88		

Channel				18625	18900	19175	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	22.87	22.75	23.09	23.5	0
5	QPSK	1	12	22.94	22.82	22.87		
5	QPSK	1	24	22.60	22.78	22.40		
5	QPSK	12	0	21.65	21.74	21.88	22.5	0-1
5	QPSK	12	6	21.59	21.72	21.80		
5	QPSK	12	11	21.59	21.78	21.77		
5	QPSK	25	0	21.69	21.78	21.79		
5	16QAM	1	0	22.24	21.86	22.23	22.5	0-1
5	16QAM	1	12	22.19	21.98	22.19		
5	16QAM	1	24	21.91	22.36	22.10		
5	16QAM	12	0	20.58	20.62	20.87	21.5	0-2
5	16QAM	12	6	20.57	20.82	20.83		
5	16QAM	12	11	20.57	20.91	20.74		
5	16QAM	25	0	20.72	20.59	20.85		
Channel				18615	18900	19185	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	22.63	23.05	22.78	23.5	0
3	QPSK	1	7	22.60	22.95	22.90		
3	QPSK	1	14	22.71	23.10	22.56		
3	QPSK	8	0	21.71	21.83	21.91	22.5	0-1
3	QPSK	8	4	21.69	21.98	21.90		
3	QPSK	8	7	21.70	21.93	21.84		
3	QPSK	15	0	21.70	21.85	21.81		
3	16QAM	1	0	21.92	22.43	22.06	22.5	0-1
3	16QAM	1	7	21.90	22.25	21.72		
3	16QAM	1	14	22.36	22.16	22.00		
3	16QAM	8	0	20.82	20.98	21.01	21.5	0-2
3	16QAM	8	4	20.72	20.92	20.85		
3	16QAM	8	7	20.80	20.99	20.97		
3	16QAM	15	0	20.81	20.88	20.65		
Channel				18607	18900	19193	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	22.47	22.63	22.55	23.5	0
1.4	QPSK	1	2	22.59	22.81	22.79		
1.4	QPSK	1	5	22.47	22.83	22.63		
1.4	QPSK	3	0	22.86	22.89	22.87		
1.4	QPSK	3	1	22.61	22.99	22.94		
1.4	QPSK	3	2	22.65	22.96	22.92		
1.4	QPSK	6	0	21.68	21.83	21.91	22.5	0-1
1.4	16QAM	1	0	22.19	22.06	22.14	22.5	0-1
1.4	16QAM	1	2	22.16	22.32	22.24		
1.4	16QAM	1	5	21.91	22.19	21.74		
1.4	16QAM	3	0	21.76	22.02	22.09		
1.4	16QAM	3	1	21.73	22.01	21.92		
1.4	16QAM	3	2	21.77	22.05	21.96		
1.4	16QAM	6	0	20.48	20.82	20.69	21.5	0-2

<WLAN Conducted Power>

General Note:

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

<2.4GHz WLAN>

WLAN 2.4GHz 802.11b Average Power (dBm)							Tune up Limit (dBm)
Power vs. Channel			Power vs. Data Rate				
Channel	Frequency (MHz)	Data Rate 1Mbps	Channel	2Mbps	5.5Mbps	11Mbps	
CH 01	2412	**19.25**	CH 01	19.16	19.22	19.21	19.5
CH 06	2437	19.21					
CH 11	2462	19.04					

WLAN 2.4GHz 802.11g Average Power (dBm)											Tune up Limit (dBm)
Power vs. Channel			Power vs. Data Rate								
Channel	Frequency (MHz)	Data Rate 6Mbps	Channel	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps	
CH 01	2412	15.23	CH 06	15.41	15.46	15.47	15.49	15.18	15.50	15.35	16
CH 06	2437	**15.52**									
CH 11	2462	15.14									

WLAN 2.4GHz 802.11n HT20 Average Power (dBm)											Tune up Limit (dBm)
Power vs. Channel			Power vs. MCS Index								
Channel	Frequency (MHz)	MCS Index MCS0	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	
CH 01	2412	14.37	CH 06	14.51	14.46	14.50	14.58	14.45	14.49	14.47	15
CH 06	2437	**14.60**									
CH 11	2462	14.17									

13. Bluetooth Exclusions Applied

Mode Band	Average power(dBm)	
	Bluetooth v3.0+EDR	Bluetooth v4.0 LE
2.4GHz Bluetooth	0	-4

Note:

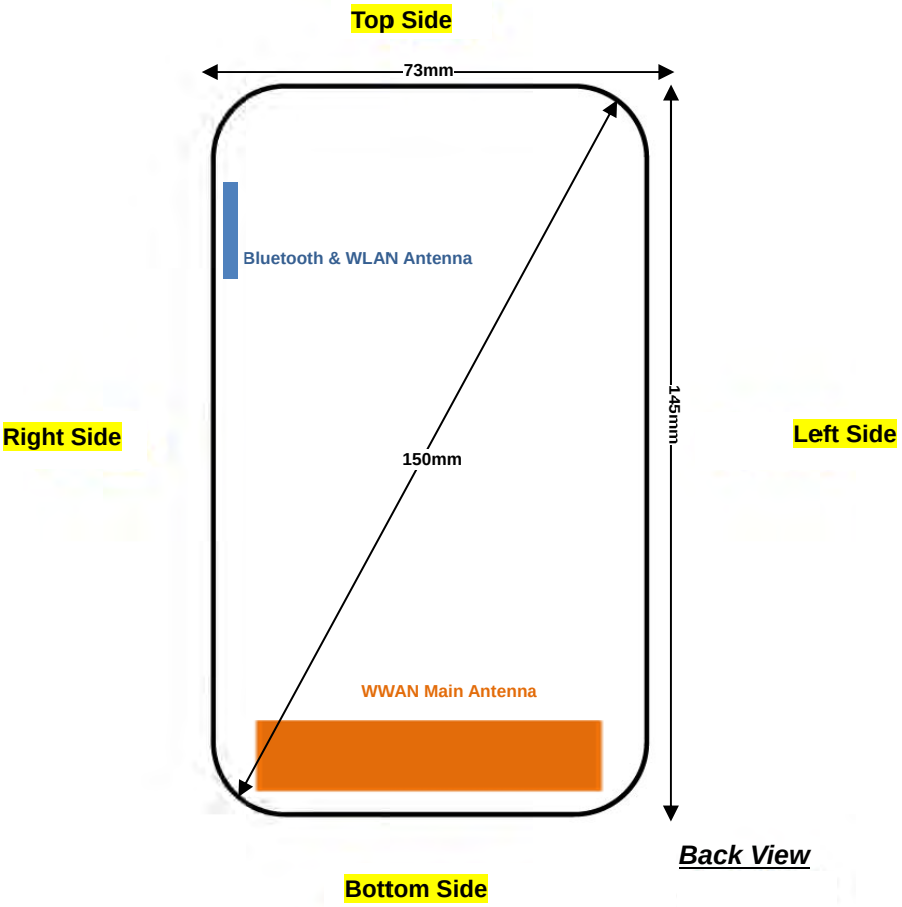
1. Per KDB 447498 D01v05r02, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g 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
0	< 5	2.48	0.3

Note:

Per KDB 447498 D01v05r02, when the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion. The test exclusion threshold is 0.3 which is <= 3, SAR testing is not required.

14. Antenna Location



Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Main	≤ 25mm	≤ 25mm	127mm	≤ 25mm	≤ 25mm	≤ 25mm
BT&WLAN	≤ 25mm	≤ 25mm	≤ 25mm	99mm	≤ 25mm	66mm

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	Yes	No

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

15. SAR Test Results

General Note:

1. Per KDB 447498 D01v05r02, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
2. Per KDB 447498 D01v05r02, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 941225 D01v03, considering the possibility of e.g. 3rd party VoIP operation for Head and body-worn SAR test reduction for GSM and GPRS and EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the EUT was set in GPRS (2Tx slots) for GSM850/GSM1900.
4. Per KDB 941225 D01v03, for Hotspot SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance, for modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested, therefore, the EUT was set in GPRS (2Tx slots) for GSM850/GSM1900.
5. Pre KDB648474 D04v01r02, when the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.
6. Per KDB 941225 D01v03, SAR for next to the ear head / Hotspot / Body-worn exposure is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.
7. 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.
8. Per KDB 941225 D05v02r03, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
9. Per KDB 941225 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
10. Per KDB 941225 D05v02r03, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
11. Per KDB 941225 D05v02r03, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, 16QAM SAR testing is not required.
12. Per KDB 941225 D05v02r03, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, smaller bandwidth SAR testing is not required.
13. This device 2.4GHz WLAN supports Hotspot operation.
14. Additional WLAN SAR with headset testing was performed for simultaneous transmission analysis.

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 (GMSK 2 Tx slots)	Right Cheek	251	848.8	32.20	32.50	1.072	0.06	0.453	0.485
	GSM850	GPRS (GMSK 2 Tx slots)	Right Tilted	251	848.8	32.20	32.50	1.072	-0.06	0.390	0.418
01	**GSM850**	**GPRS (GMSK 2 Tx slots)**	**Left Cheek**	**251**	**848.8**	**32.20**	**32.50**	**1.072**	**0.14**	**0.628**	**0.673**
	GSM850	GPRS (GMSK 2 Tx slots)	Left Tilted	251	848.8	32.20	32.50	1.072	0.07	0.436	0.467
	GSM1900	GPRS (GMSK 2 Tx slots)	Right Cheek	810	1909.8	29.41	30.00	1.146	-0.19	0.344	0.394
	GSM1900	GPRS (GMSK 2 Tx slots)	Right Tilted	810	1909.8	29.41	30.00	1.146	-0.13	0.224	0.257
02	**GSM1900**	**GPRS (GMSK 2 Tx slots)**	**Left Cheek**	**810**	**1909.8**	**29.41**	**30.00**	**1.146**	**-0.0042**	**0.485**	**0.556**
	GSM1900	GPRS (GMSK 2 Tx slots)	Left Tilted	810	1909.8	29.41	30.00	1.146	0.08	0.214	0.245

<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	24.36	25.00	1.159	0.01	0.325	0.377
	WCDMA Band V	RMC 12.2Kbps	Right Tilted	4233	846.6	24.36	25.00	1.159	0.03	0.251	0.291
03	**WCDMA Band V**	**RMC 12.2Kbps**	**Left Cheek**	**4233**	**846.6**	**24.36**	**25.00**	**1.159**	**0.1**	**0.417**	**0.483**
	WCDMA Band V	RMC 12.2Kbps	Left Tilted	4233	846.6	24.36	25.00	1.159	0.09	0.294	0.341
	WCDMA Band IV	RMC 12.2Kbps	Right Cheek	1312	1712.4	23.38	23.50	1.028	-0.04	0.393	0.404
	WCDMA Band IV	RMC 12.2Kbps	Right Tilted	1312	1712.4	23.38	23.50	1.028	-0.008	0.199	0.205
04	**WCDMA Band IV**	**RMC 12.2Kbps**	**Left Cheek**	**1312**	**1712.4**	**23.38**	**23.50**	**1.028**	**0.08**	**0.669**	**0.688**
	WCDMA Band IV	RMC 12.2Kbps	Left Tilted	1312	1712.4	23.38	23.50	1.028	-0.08	0.249	0.256
	WCDMA Band II	RMC 12.2Kbps	Right Cheek	9400	1880	23.34	23.50	1.038	-0.08	0.393	0.408
	WCDMA Band II	RMC 12.2Kbps	Right Tilted	9400	1880	23.34	23.50	1.038	-0.09	0.305	0.316
05	**WCDMA Band II**	**RMC 12.2Kbps**	**Left Cheek**	**9400**	**1880**	**23.34**	**23.50**	**1.038**	**0.04**	**0.596**	**0.618**
	WCDMA Band II	RMC 12.2Kbps	Left Tilted	9400	1880	23.34	23.50	1.038	-0.03	0.28	0.291

<LTE SAR>

Plot No.	Band	BW (MHz)	RB Size	RB offest	Modulation	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)
06	**LTE Band 17**	**10M**	**1**	**0**	**QPSK**	**Right Cheek**	**23790**	**710**	**23.70**	**24.00**	**1.072**	**0.04**	**0.230**	**0.246**
	LTE Band 17	10M	25	0	QPSK	Right Cheek	23790	710	22.48	23.00	1.127	0.07	0.179	0.202
	LTE Band 17	10M	1	0	QPSK	Right Tilted	23790	710	23.70	24.00	1.072	0.07	0.160	0.171
	LTE Band 17	10M	25	0	QPSK	Right Tilted	23790	710	22.48	23.00	1.127	0.12	0.126	0.142
	LTE Band 17	10M	1	0	QPSK	Left Cheek	23790	710	23.70	24.00	1.072	0.02	0.217	0.233
	LTE Band 17	10M	25	0	QPSK	Left Cheek	23790	710	22.48	23.00	1.127	0.01	0.216	0.243
	LTE Band 17	10M	1	0	QPSK	Left Tilted	23790	710	23.70	24.00	1.072	0.03	0.181	0.194
	LTE Band 17	10M	25	0	QPSK	Left Tilted	23790	710	22.48	23.00	1.127	0.09	0.140	0.158

Plot No.	Band	BW (MHz)	RB Size	RB offest	Modulation	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 5	10M	1	24	QPSK	Right Cheek	20600	844	23.80	24.00	1.047	0.06	0.246	0.258
	LTE Band 5	10M	25	0	QPSK	Right Cheek	20600	844	22.55	23.00	1.109	0.02	0.196	0.217
	LTE Band 5	10M	1	24	QPSK	Right Tilted	20600	844	23.80	24.00	1.047	0.04	0.190	0.199
	LTE Band 5	10M	25	0	QPSK	Right Tilted	20600	844	22.55	23.00	1.109	0.14	0.147	0.163
07	**LTE Band 5**	**10M**	**1**	**24**	**QPSK**	**Left Cheek**	**20600**	**844**	**23.80**	**24.00**	**1.047**	**0.09**	**0.318**	**0.333**
	LTE Band 5	10M	25	0	QPSK	Left Cheek	20600	844	22.55	23.00	1.109	0.03	0.251	0.278
	LTE Band 5	10M	1	24	QPSK	Left Tilted	20600	844	23.80	24.00	1.047	-0.11	0.215	0.225
	LTE Band 5	10M	25	0	QPSK	Left Tilted	20600	844	22.55	23.00	1.109	0.02	0.167	0.185
	LTE Band 4	20M	1	0	QPSK	Right Cheek	20050	1720	23.82	24.00	1.042	0.06	0.364	0.379
	LTE Band 4	20M	50	0	QPSK	Right Cheek	20050	1720	22.54	23.00	1.112	0.031	0.286	0.318
	LTE Band 4	20M	1	0	QPSK	Right Tilted	20050	1720	23.82	24.00	1.042	0.02	0.188	0.196
	LTE Band 4	20M	50	0	QPSK	Right Tilted	20050	1720	22.54	23.00	1.112	0.05	0.147	0.163
08	**LTE Band 4**	**20M**	**1**	**0**	**QPSK**	**Left Cheek**	**20050**	**1720**	**23.82**	**24.00**	**1.042**	**0.02**	**0.663**	**0.691**
	LTE Band 4	20M	50	0	QPSK	Left Cheek	20050	1720	22.54	23.00	1.112	0.034	0.514	0.571
	LTE Band 4	20M	1	0	QPSK	Left Tilted	20050	1720	23.82	24.00	1.042	0.09	0.247	0.257
	LTE Band 4	20M	50	0	QPSK	Left Tilted	20050	1720	22.54	23.00	1.112	0.12	0.192	0.213
	LTE Band 2	20M	1	0	QPSK	Right Cheek	19100	1900	23.11	23.50	1.094	-0.02	0.367	0.401
	LTE Band 2	20M	50	0	QPSK	Right Cheek	19100	1900	21.88	22.50	1.153	0.03	0.285	0.329
	LTE Band 2	20M	1	0	QPSK	Right Tilted	19100	1900	23.11	23.50	1.094	-0.17	0.314	0.344
	LTE Band 2	20M	50	0	QPSK	Right Tilted	19100	1900	21.88	22.50	1.153	-0.11	0.239	0.276
09	**LTE Band 2**	**20M**	**1**	**0**	**QPSK**	**Left Cheek**	**19100**	**1900**	**23.11**	**23.50**	**1.094**	**-0.11**	**0.590**	**0.645**
	LTE Band 2	20M	50	0	QPSK	Left Cheek	19100	1900	21.88	22.50	1.153	0.022	0.454	0.524
	LTE Band 2	20M	1	0	QPSK	Left Tilted	19100	1900	23.11	23.50	1.094	0.19	0.348	0.381
	LTE Band 2	20M	50	0	QPSK	Left Tilted	19100	1900	21.88	22.50	1.153	0.05	0.232	0.268

<DTS WLAN SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN 2.4GHz	802.11b 1Mbps	Right Cheek	1	2412	19.25	19.50	1.059	97.63	1.024	0.06	0.557	0.604
	WLAN 2.4GHz	802.11b 1Mbps	Right Tilted	1	2412	19.25	19.50	1.059	97.63	1.024	0.05	0.487	0.528
	WLAN 2.4GHz	802.11b 1Mbps	Left Cheek	1	2412	19.25	19.50	1.059	97.63	1.024	0.0055	0.861	0.934
	WLAN 2.4GHz	802.11b 1Mbps	Left Cheek	6	2437	19.21	19.50	1.069	97.63	1.024	0.02	0.996	1.090
10	**WLAN 2.4GHz**	**802.11b 1Mbps**	**Left Cheek**	**11**	**2462**	**19.04**	**19.50**	**1.112**	**97.63**	**1.024**	**-0.0017**	**1.060**	**1.207**
	WLAN 2.4GHz	802.11b 1Mbps	Left Tilted	1	2412	19.25	19.50	1.059	97.63	1.024	-0.0059	0.453	0.491

15.2 Hotspot SAR

Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Main	≤ 25mm	≤ 25mm	127mm	≤ 25mm	≤ 25mm	≤ 25mm
BT&WLAN	≤ 25mm	≤ 25mm	≤ 25mm	99mm	≤ 25mm	66mm

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	Yes	No

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

<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 (GMSK 2 Tx slots)	Front	1	251	848.8	32.20	32.50	1.072	-0.0087	0.634	0.679
	GSM850	GPRS (GMSK 2 Tx slots)	Back	1	251	848.8	32.20	32.50	1.072	0.05	0.747	0.800
	GSM850	GPRS (GMSK 2 Tx slots)	Back	1	128	824.2	32.03	32.50	1.114	0.02	0.936	1.043
	GSM850	GPRS (GMSK 2 Tx slots)	Back	1	189	836.4	32.13	32.50	1.089	0.06	0.844	0.919
	GSM850	GPRS (GMSK 2 Tx slots)	Left Side	1	251	848.8	32.20	32.50	1.072	0.1	0.982	1.052
11	**GSM850**	**GPRS (GMSK 2 Tx slots)**	**Left Side**	**1**	**128**	**824.2**	**32.03**	**32.50**	**1.114**	**0.04**	**1.020**	**1.137**
	GSM850	GPRS (GMSK 2 Tx slots)	Left Side	1	189	836.4	32.13	32.50	1.089	-0.06	1.030	1.122
	GSM850	GPRS (GMSK 2 Tx slots)	Right Side	1	251	848.8	32.20	32.50	1.072	0.05	0.489	0.524
	GSM850	GPRS (GMSK 2 Tx slots)	Bottom Side	1	251	848.8	32.20	32.50	1.072	0.042	0.445	0.477
	GSM1900	GPRS (GMSK 2 Tx slots)	Front	1	810	1909.8	29.41	30.00	1.146	-0.08	0.847	0.970
	GSM1900	GPRS (GMSK 2 Tx slots)	Front	1	512	1850.2	29.17	30.00	1.211	-0.13	0.800	0.968
	GSM1900	GPRS (GMSK 2 Tx slots)	Front	1	661	1880	29.22	30.00	1.197	0.02	0.805	0.963
	GSM1900	GPRS (GMSK 2 Tx slots)	Back	1	810	1909.8	29.41	30.00	1.146	-0.06	0.873	1.000
	GSM1900	GPRS (GMSK 2 Tx slots)	Back	1	512	1850.2	29.17	30.00	1.211	-0.13	0.699	0.846
	GSM1900	GPRS (GMSK 2 Tx slots)	Back	1	661	1880	29.22	30.00	1.197	-0.13	0.772	0.924
	GSM1900	GPRS (GMSK 2 Tx slots)	Left Side	1	810	1909.8	29.41	30.00	1.146	0.0059	0.203	0.233
	GSM1900	GPRS (GMSK 2 Tx slots)	Right Side	1	810	1909.8	29.41	30.00	1.146	0.11	0.301	0.345
12	**GSM1900**	**GPRS (GMSK 2 Tx slots)**	**Bottom Side**	**1**	**810**	**1909.8**	**29.41**	**30.00**	**1.146**	**0.11**	**1.010**	**1.157**
	GSM1900	GPRS (GMSK 2 Tx slots)	Bottom Side	1	512	1850.2	29.17	30.00	1.211	0.06	0.795	0.962
	GSM1900	GPRS (GMSK 2 Tx slots)	Bottom Side	1	661	1880	29.22	30.00	1.197	0.01	0.847	1.014

<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	24.36	25.00	1.159	-0.06	0.422	0.489
	WCDMA Band V	RMC 12.2Kbps	Back	1	4233	846.6	24.36	25.00	1.159	0.04	0.551	0.638
	WCDMA Band V	RMC 12.2Kbps	Left Side	1	4233	846.6	24.36	25.00	1.159	0.04	0.725	0.840
	WCDMA Band V	RMC 12.2Kbps	Left Side	1	4132	826.4	24.23	25.00	1.194	0.01	0.672	0.802
13	**WCDMA Band V**	**RMC 12.2Kbps**	**Left Side**	**1**	**4182**	**836.4**	**24.30**	**25.00**	**1.175**	**0.03**	**0.735**	**0.864**
	WCDMA Band V	RMC 12.2Kbps	Right Side	1	4233	846.6	24.36	25.00	1.159	0.02	0.338	0.392
	WCDMA Band V	RMC 12.2Kbps	Bottom Side	1	4233	846.6	24.36	25.00	1.159	0.046	0.305	0.353
14	**WCDMA Band IV**	**RMC 12.2Kbps**	**Front**	**1**	**1312**	**1712.4**	**23.38**	**23.50**	**1.028**	**0.04**	**1.250**	**1.285**
	WCDMA Band IV	RMC 12.2Kbps	Front	1	1413	1732.6	23.31	23.50	1.045	0.07	1.190	1.243
	WCDMA Band IV	RMC 12.2Kbps	Front	1	1513	1752.6	23.31	23.50	1.045	0.04	1.010	1.055
	WCDMA Band IV	RMC 12.2Kbps	Back	1	1312	1712.4	23.38	23.50	1.028	-0.1	0.918	0.944
	WCDMA Band IV	RMC 12.2Kbps	Back	1	1413	1732.6	23.31	23.50	1.045	-0.1	0.862	0.901
	WCDMA Band IV	RMC 12.2Kbps	Back	1	1513	1752.6	23.31	23.50	1.045	-0.09	0.834	0.871
	WCDMA Band IV	RMC 12.2Kbps	Left Side	1	1312	1712.4	23.38	23.50	1.028	0.04	0.264	0.271
	WCDMA Band IV	RMC 12.2Kbps	Right Side	1	1312	1712.4	23.38	23.50	1.028	-0.01	0.379	0.390
	WCDMA Band IV	RMC 12.2Kbps	Bottom Side	1	1312	1712.4	23.38	23.50	1.028	-0.05	0.925	0.951
	WCDMA Band IV	RMC 12.2Kbps	Bottom Side	1	1413	1732.6	23.31	23.50	1.045	-0.01	0.899	0.939
	WCDMA Band IV	RMC 12.2Kbps	Bottom Side	1	1513	1752.6	23.31	23.50	1.045	-0.01	0.893	0.933
	WCDMA Band II	RMC 12.2Kbps	Front	1	9400	1880	23.34	23.50	1.038	0.12	0.930	0.965
	WCDMA Band II	RMC 12.2Kbps	Front	1	9262	1852.4	23.32	23.50	1.042	0.05	0.928	0.967
	WCDMA Band II	RMC 12.2Kbps	Front	1	9538	1907.6	23.28	23.50	1.052	-0.07	0.879	0.925
	WCDMA Band II	RMC 12.2Kbps	Back	1	9400	1880	23.34	23.50	1.038	-0.16	0.945	0.980
	WCDMA Band II	RMC 12.2Kbps	Back	1	9262	1852.4	23.32	23.50	1.042	-0.19	0.830	0.865
	WCDMA Band II	RMC 12.2Kbps	Back	1	9538	1907.6	23.28	23.50	1.052	-0.11	0.997	1.049
	WCDMA Band II	RMC 12.2Kbps	Left Side	1	9400	1880	23.34	23.50	1.038	0.09	0.294	0.305
	WCDMA Band II	RMC 12.2Kbps	Right Side	1	9400	1880	23.34	23.50	1.038	0.04	0.329	0.341
	WCDMA Band II	RMC 12.2Kbps	Bottom Side	1	9400	1880	23.34	23.50	1.038	0.06	0.870	0.903
	WCDMA Band II	RMC 12.2Kbps	Bottom Side	1	9262	1852.4	23.32	23.50	1.042	0.08	0.955	0.995
15	**WCDMA Band II**	**RMC 12.2Kbps**	**Bottom Side**	**1**	**9538**	**1907.6**	**23.28**	**23.50**	**1.052**	**-0.03**	**1.130**	**1.189**

<LTE SAR>

Plot No.	Band	BW (MHz)	RB Size	RB offest	Modulation	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
16	**LTE Band 17**	**10M**	**1**	**0**	**QPSK**	**Front**	**1**	**23790**	**710**	**23.70**	**24.00**	**1.072**	**0.01**	**0.492**	**0.527**
	LTE Band 17	10M	25	0	QPSK	Front	1	23790	710	22.48	23.00	1.127	0.0092	0.376	0.424
	LTE Band 17	10M	1	0	QPSK	Back	1	23790	710	23.70	24.00	1.072	0.1	0.488	0.523
	LTE Band 17	10M	25	0	QPSK	Back	1	23790	710	22.48	23.00	1.127	0.09	0.383	0.432
	LTE Band 17	10M	1	0	QPSK	Left Side	1	23790	710	23.70	24.00	1.072	0.06	0.355	0.380
	LTE Band 17	10M	25	0	QPSK	Left Side	1	23790	710	22.48	23.00	1.127	0.05	0.284	0.320
	LTE Band 17	10M	1	0	QPSK	Right Side	1	23790	710	23.70	24.00	1.072	0.08	0.247	0.265
	LTE Band 17	10M	25	0	QPSK	Right Side	1	23790	710	22.48	23.00	1.127	0.08	0.189	0.213
	LTE Band 17	10M	1	0	QPSK	Bottom Side	1	23790	710	23.70	24.00	1.072	0.029	0.080	0.086
	LTE Band 17	10M	25	0	QPSK	Bottom Side	1	23790	710	22.48	23.00	1.127	0.034	0.062	0.070
	LTE Band 5	10M	1	24	QPSK	Front	1	20600	844	23.80	24.00	1.047	-0.01	0.371	0.388
	LTE Band 5	10M	25	0	QPSK	Front	1	20600	844	22.55	23.00	1.109	0.06	0.302	0.335
	LTE Band 5	10M	1	24	QPSK	Back	1	20600	844	23.80	24.00	1.047	-0.06	0.410	0.429
	LTE Band 5	10M	25	0	QPSK	Back	1	20600	844	22.55	23.00	1.109	0.06	0.328	0.364
17	**LTE Band 5**	**10M**	**1**	**24**	**QPSK**	**Left Side**	**1**	**20600**	**844**	**23.80**	**24.00**	**1.047**	**0.02**	**0.508**	**0.532**
	LTE Band 5	10M	25	0	QPSK	Left Side	1	20600	844	22.55	23.00	1.109	0.11	0.404	0.448
	LTE Band 5	10M	1	24	QPSK	Right Side	1	20600	844	23.80	24.00	1.047	-0.01	0.294	0.308
	LTE Band 5	10M	25	0	QPSK	Right Side	1	20600	844	22.55	23.00	1.109	0.09	0.236	0.262
	LTE Band 5	10M	1	24	QPSK	Bottom Side	1	20600	844	23.80	24.00	1.047	0.052	0.212	0.222
	LTE Band 5	10M	25	0	QPSK	Bottom Side	1	20600	844	22.55	23.00	1.109	0.048	0.169	0.187
	LTE Band 4	20M	1	0	QPSK	Front	1	20050	1720	23.82	24.00	1.042	0.13	1.090	1.136
18	**LTE Band 4**	**20M**	**1**	**0**	**QPSK**	**Front**	**1**	**20175**	**1732.5**	**23.67**	**24.00**	**1.079**	**0.16**	**1.080**	**1.165**
	LTE Band 4	20M	1	0	QPSK	Front	1	20300	1745	23.69	24.00	1.074	0.03	1.030	1.106
	LTE Band 4	20M	50	0	QPSK	Front	1	20050	1720	22.54	23.00	1.112	0.1	0.860	0.956
	LTE Band 4	20M	50	0	QPSK	Front	1	20175	1732.5	22.46	24.00	1.132	0.17	0.765	0.866
	LTE Band 4	20M	50	0	QPSK	Front	1	20300	1745	22.53	24.00	1.114	0.1	0.761	0.848
	LTE Band 4	20M	100	0	QPSK	Front	1	20050	1720	22.52	23.00	1.117	0.19	0.777	0.868
	LTE Band 4	20M	1	0	QPSK	Back	1	20050	1720	23.82	24.00	1.042	-0.1	0.910	0.949
	LTE Band 4	20M	1	0	QPSK	Back	1	20175	1732.5	23.67	24.00	1.079	-0.1	0.873	0.942
	LTE Band 4	20M	1	0	QPSK	Back	1	20300	1745	23.69	24.00	1.074	-0.06	0.850	0.913
	LTE Band 4	20M	50	0	QPSK	Back	1	20050	1720	22.54	23.00	1.112	-0.13	0.723	0.804
	LTE Band 4	20M	50	0	QPSK	Back	1	20175	1732.5	22.46	23.00	1.079	-0.02	0.645	0.730
	LTE Band 4	20M	50	0	QPSK	Back	1	20300	1745	22.53	23.00	1.074	-0.16	0.618	0.689
	LTE Band 4	20M	100	0	QPSK	Back	1	20050	1720	22.52	23.00	1.117	-0.14	0.631	0.705
	LTE Band 4	20M	1	0	QPSK	Left Side	1	20050	1720	23.82	24.00	1.042	0.05	0.250	0.261
	LTE Band 4	20M	50	0	QPSK	Left Side	1	20050	1720	22.54	23.00	1.112	0.14	0.189	0.210
	LTE Band 4	20M	1	0	QPSK	Right Side	1	20050	1720	23.82	24.00	1.042	0.04	0.304	0.317
	LTE Band 4	20M	50	0	QPSK	Right Side	1	20050	1720	22.54	23.00	1.112	0.06	0.237	0.263
	LTE Band 4	20M	1	0	QPSK	Bottom Side	1	20050	1720	23.82	24.00	1.042	-0.01	0.872	0.909
	LTE Band 4	20M	1	0	QPSK	Bottom Side	1	20175	1732.5	23.67	24.00	1.079	0.02	0.846	0.913
	LTE Band 4	20M	1	0	QPSK	Bottom Side	1	20300	1745	23.69	24.00	1.074	0.07	0.881	0.946
	LTE Band 4	20M	50	0	QPSK	Bottom Side	1	20050	1720	22.54	23.00	1.112	0.02	0.684	0.760
	LTE Band 4	20M	100	0	QPSK	Bottom Side	1	20050	1720	22.52	23.00	1.117	0.02	0.663	0.740

Plot No.	Band	BW (MHz)	RB Size	RB offest	Modulation	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2	20M	1	0	QPSK	Front	1	19100	1900	23.11	23.50	1.094	-0.01	0.923	1.010
	LTE Band 2	20M	1	0	QPSK	Front	1	18700	1860	23.02	23.50	1.117	0.026	0.839	0.937
	LTE Band 2	20M	1	0	QPSK	Front	1	18900	1880	22.99	23.50	1.125	-0.04	0.832	0.936
	LTE Band 2	20M	50	0	QPSK	Front	1	19100	1900	21.88	22.50	1.153	-0.02	0.712	0.821
	LTE Band 2	20M	50	0	QPSK	Front	1	18700	1860	21.71	22.50	1.199	0.06	0.653	0.783
	LTE Band 2	20M	50	0	QPSK	Front	1	18900	1880	21.79	22.50	1.178	0.0082	0.671	0.790
	LTE Band 2	20M	100	0	QPSK	Front	1	19100	1900	21.85	22.50	1.161	0.11	0.685	0.796
	LTE Band 2	20M	1	0	QPSK	Back	1	19100	1900	23.11	23.50	1.094	-0.11	0.964	1.055
	LTE Band 2	20M	1	0	QPSK	Back	1	18900	1860	23.02	23.50	1.117	-0.1	0.868	0.969
	LTE Band 2	20M	1	0	QPSK	Back	1	18700	1860	22.99	23.50	1.125	-0.08	0.851	0.957
	LTE Band 2	20M	50	0	QPSK	Back	1	19100	1900	21.88	22.50	1.153	-0.1	0.827	0.954
	LTE Band 2	20M	50	0	QPSK	Back	1	18700	1860	21.71	22.50	1.199	-0.14	0.673	0.807
	LTE Band 2	20M	50	0	QPSK	Back	1	18900	1880	21.79	22.50	1.178	-0.07	0.726	0.855
	LTE Band 2	20M	100	0	QPSK	Back	1	19100	1900	21.85	22.50	1.161	-0.19	0.675	0.784
	LTE Band 2	20M	1	0	QPSK	Left Side	1	19100	1900	23.11	23.50	1.094	0.04	0.25	0.273
	LTE Band 2	20M	50	0	QPSK	Left Side	1	19100	1900	21.88	22.50	1.153	0.09	0.203	0.234
	LTE Band 2	20M	1	0	QPSK	Right Side	1	19100	1900	23.11	23.50	1.094	0.03	0.263	0.288
	LTE Band 2	20M	50	0	QPSK	Right Side	1	19100	1900	21.88	22.50	1.153	-0.02	0.210	0.242
19	**LTE Band 2**	**20M**	**1**	**0**	**QPSK**	**Bottom Side**	**1**	**19100**	**1900**	**23.11**	**23.50**	**1.094**	**0.07**	**1.090**	**1.192**
	LTE Band 2	20M	1	0	QPSK	Bottom Side	1	18700	1860	23.02	23.50	1.117	0.07	0.906	1.012
	LTE Band 2	20M	1	0	QPSK	Bottom Side	1	18900	1880	22.99	23.50	1.125	0.0068	0.931	1.047
	LTE Band 2	20M	50	0	QPSK	Bottom Side	1	19100	1900	21.88	22.50	1.153	0.13	0.818	0.944
	LTE Band 2	20M	50	0	QPSK	Bottom Side	1	18700	1860	21.71	22.50	1.199	-0.07	0.719	0.862
	LTE Band 2	20M	50	0	QPSK	Bottom Side	1	18900	1880	21.79	22.50	1.178	-0.07	0.719	0.847
	LTE Band 2	20M	100	0	QPSK	Bottom Side	1	19100	1900	21.85	22.50	1.161	0.01	0.801	0.930

<DTS WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN 2.4GHz	802.11b 1Mbps	Front	1	1	2412	19.25	19.50	1.059	97.63	1.024	0.13	0.32	0.347
20	**WLAN 2.4GHz**	**802.11b 1Mbps**	**Back**	**1**	**1**	**2412**	**19.25**	**19.50**	**1.059**	**97.63**	**1.024**	**-0.05**	**0.592**	**0.642**
	WLAN 2.4GHz	802.11b 1Mbps	Right Side	1	1	2412	19.25	19.50	1.059	97.63	1.024	-0.16	0.418	0.453
	WLAN 2.4GHz	802.11b 1Mbps	Top Side	1	1	2412	19.25	19.50	1.059	97.63	1.024	-0.02	0.105	0.114

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 (GMSK 2 Tx slots)	Front	1	251	848.8	32.20	32.50	1.072	-0.0087	0.634	0.679
	GSM850	GPRS (GMSK 2 Tx slots)	Back	1	251	848.8	32.20	32.50	1.072	0.05	0.747	0.800
21	**GSM850**	**GPRS (GMSK 2 Tx slots)**	**Back**	**1**	**128**	**824.2**	**32.03**	**32.50**	**1.114**	**0.02**	**0.936**	**1.043**
	GSM850	GPRS (GMSK 2 Tx slots)	Back	1	189	836.4	32.13	32.50	1.089	0.06	0.844	0.919
	GSM1900	GPRS (GMSK 2 Tx slots)	Front	1	810	1909.8	29.41	30.00	1.146	-0.08	0.847	0.970
	GSM1900	GPRS (GMSK 2 Tx slots)	Front	1	512	1850.2	29.17	30.00	1.211	-0.13	0.800	0.968
	GSM1900	GPRS (GMSK 2 Tx slots)	Front	1	661	1880	29.22	30.00	1.197	0.02	0.805	0.963
22	**GSM1900**	**GPRS (GMSK 2 Tx slots)**	**Back**	**1**	**810**	**1909.8**	**29.41**	**30.00**	**1.146**	**-0.06**	**0.873**	**1.000**
	GSM1900	GPRS (GMSK 2 Tx slots)	Back	1	512	1850.2	29.17	30.00	1.211	-0.13	0.699	0.846
	GSM1900	GPRS (GMSK 2 Tx slots)	Back	1	661	1880	29.22	30.00	1.197	-0.13	0.772	0.924

<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	24.36	25.00	1.159	-0.06	0.422	0.489
23	**WCDMA Band V**	**RMC 12.2Kbps**	**Back**	**1**	**4233**	**846.6**	**24.36**	**25.00**	**1.159**	**0.04**	**0.551**	**0.638**
14	**WCDMA Band IV**	**RMC 12.2Kbps**	**Front**	**1**	**1312**	**1712.4**	**23.38**	**23.50**	**1.028**	**0.04**	**1.250**	**1.285**
	WCDMA Band IV	RMC 12.2Kbps	Front	1	1413	1732.6	23.31	23.50	1.045	0.07	1.190	1.243
	WCDMA Band IV	RMC 12.2Kbps	Front	1	1513	1752.6	23.31	23.50	1.045	0.04	1.010	1.055
	WCDMA Band IV	RMC 12.2Kbps	Front with headset	1	1312	1712.4	23.38	23.50	1.028	0.07	1.050	1.079
	WCDMA Band IV	RMC 12.2Kbps	Front with headset	1	1413	1732.6	23.31	23.50	1.045	0.16	1.060	1.107
	WCDMA Band IV	RMC 12.2Kbps	Front with headset	1	1513	1752.6	23.31	23.50	1.045	0.13	0.993	1.037
	WCDMA Band IV	RMC 12.2Kbps	Back	1	1312	1712.4	23.38	23.50	1.028	-0.1	0.918	0.944
	WCDMA Band IV	RMC 12.2Kbps	Back	1	1413	1732.6	23.31	23.50	1.045	-0.1	0.862	0.901
	WCDMA Band IV	RMC 12.2Kbps	Back	1	1513	1752.6	23.31	23.50	1.045	-0.09	0.834	0.871
	WCDMA Band II	RMC 12.2Kbps	Front	1	9400	1880	23.34	23.50	1.038	0.12	0.930	0.965
	WCDMA Band II	RMC 12.2Kbps	Front	1	9262	1852.4	23.32	23.50	1.042	0.05	0.928	0.967
	WCDMA Band II	RMC 12.2Kbps	Front	1	9538	1907.6	23.28	23.50	1.052	-0.07	0.879	0.925
	WCDMA Band II	RMC 12.2Kbps	Back	1	9400	1880	23.34	23.50	1.038	-0.16	0.945	0.980
	WCDMA Band II	RMC 12.2Kbps	Back	1	9262	1852.4	23.32	23.50	1.042	-0.19	0.830	0.865
24	**WCDMA Band II**	**RMC 12.2Kbps**	**Back**	**1**	**9538**	**1907.6**	**23.28**	**23.50**	**1.052**	**-0.11**	**0.997**	**1.049**

<LTE SAR>

Plot No.	Band	BW (MHz)	RB Size	RB offest	Modulation	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
16	**LTE Band 17**	**10M**	**1**	**0**	**QPSK**	**Front**	**1**	**23790**	**710**	**23.70**	**24.00**	**1.072**	**0.01**	**0.492**	**0.527**
	LTE Band 17	10M	25	0	QPSK	Front	1	23790	710	22.48	23.00	1.127	0.0092	0.376	0.424
	LTE Band 17	10M	1	0	QPSK	Back	1	23790	710	23.70	24.00	1.072	0.1	0.488	0.523
	LTE Band 17	10M	25	0	QPSK	Back	1	23790	710	22.48	23.00	1.127	0.09	0.383	0.432
	LTE Band 5	10M	1	24	QPSK	Front	1	20600	844	23.80	24.00	1.047	-0.01	0.371	0.388
	LTE Band 5	10M	25	0	QPSK	Front	1	20600	844	22.55	23.00	1.109	0.06	0.302	0.335
25	**LTE Band 5**	**10M**	**1**	**24**	**QPSK**	**Back**	**1**	**20600**	**844**	**23.80**	**24.00**	**1.047**	**-0.06**	**0.410**	**0.429**
	LTE Band 5	10M	25	0	QPSK	Back	1	20600	844	22.55	23.00	1.109	0.06	0.328	0.364
	LTE Band 4	20M	1	0	QPSK	Front	1	20050	1720	23.82	24.00	1.042	0.13	1.090	1.136
18	**LTE Band 4**	**20M**	**1**	**0**	**QPSK**	**Front**	**1**	**20175**	**1732.5**	**23.67**	**24.00**	**1.079**	**0.16**	**1.080**	**1.165**
	LTE Band 4	20M	1	0	QPSK	Front	1	20300	1745	23.69	24.00	1.074	0.03	1.030	1.106
	LTE Band 4	20M	50	0	QPSK	Front	1	20050	1720	22.54	23.00	1.112	0.1	0.860	0.956
	LTE Band 4	20M	50	0	QPSK	Front	1	20175	1732.5	22.46	24.00	1.132	0.17	0.765	0.866
	LTE Band 4	20M	50	0	QPSK	Front	1	20300	1745	22.53	24.00	1.114	0.1	0.761	0.848
	LTE Band 4	20M	100	0	QPSK	Front	1	20050	1720	22.52	23.00	1.117	0.19	0.777	0.868
	LTE Band 4	20M	1	0	QPSK	Back	1	20050	1720	23.82	24.00	1.042	-0.1	0.910	0.949
	LTE Band 4	20M	1	0	QPSK	Back	1	20175	1732.5	23.67	24.00	1.079	-0.1	0.873	0.942
	LTE Band 4	20M	1	0	QPSK	Back	1	20300	1745	23.69	24.00	1.074	-0.06	0.850	0.913
	LTE Band 4	20M	50	0	QPSK	Back	1	20050	1720	22.54	23.00	1.112	-0.13	0.723	0.804
	LTE Band 4	20M	50	0	QPSK	Back	1	20175	1732.5	22.46	23.00	1.079	-0.02	0.645	0.730
	LTE Band 4	20M	50	0	QPSK	Back	1	20300	1745	22.53	23.00	1.074	-0.16	0.618	0.689
	LTE Band 4	20M	100	0	QPSK	Back	1	20050	1720	22.52	23.00	1.117	-0.14	0.631	0.705
	LTE Band 2	20M	1	0	QPSK	Front	1	19100	1900	23.11	23.50	1.094	-0.01	0.923	1.010
	LTE Band 2	20M	1	0	QPSK	Front	1	18700	1860	23.02	23.50	1.117	0.026	0.839	0.937
	LTE Band 2	20M	1	0	QPSK	Front	1	18900	1880	22.99	23.50	1.125	-0.04	0.832	0.936
	LTE Band 2	20M	50	0	QPSK	Front	1	19100	1900	21.88	22.50	1.153	-0.02	0.712	0.821
	LTE Band 2	20M	50	0	QPSK	Front	1	18700	1860	21.71	22.50	1.199	0.06	0.653	0.783
	LTE Band 2	20M	50	0	QPSK	Front	1	18900	1880	21.79	22.50	1.178	0.0082	0.671	0.790
	LTE Band 2	20M	100	0	QPSK	Front	1	19100	1900	21.85	22.50	1.161	0.11	0.685	0.796
26	**LTE Band 2**	**20M**	**1**	**0**	**QPSK**	**Back**	**1**	**19100**	**1900**	**23.11**	**23.50**	**1.094**	**-0.11**	**0.964**	**1.055**
	LTE Band 2	20M	1	0	QPSK	Back	1	18900	1860	23.02	23.50	1.117	-0.1	0.868	0.969
	LTE Band 2	20M	1	0	QPSK	Back	1	18700	1860	22.99	23.50	1.125	-0.08	0.851	0.957
	LTE Band 2	20M	50	0	QPSK	Back	1	19100	1900	21.88	22.50	1.153	-0.1	0.827	0.954
	LTE Band 2	20M	50	0	QPSK	Back	1	18700	1860	21.71	22.50	1.199	-0.14	0.673	0.807
	LTE Band 2	20M	50	0	QPSK	Back	1	18900	1880	21.79	22.50	1.178	-0.07	0.726	0.855
	LTE Band 2	20M	100	0	QPSK	Back	1	19100	1900	21.85	22.50	1.161	-0.19	0.675	0.784

<DTS WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN 2.4GHz	802.11b 1Mbps	Front	1	1	2412	19.25	19.50	1.059	97.63	1.024	0.13	0.32	0.347
	WLAN 2.4GHz	802.11b 1Mbps	Front with headset	1	1	2412	19.25	19.50	1.059	97.63	1.024	0.08	0.267	0.290
20	**WLAN 2.4GHz**	**802.11b 1Mbps**	**Back**	**1**	**1**	**2412**	**19.25**	**19.50**	**1.059**	**97.63**	**1.024**	**-0.05**	**0.592**	**0.642**

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	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WLAN 2.4GHz	802.11b 1Mbps	Left Cheek	0	11	2462	19.04	19.50	1.112	97.63	1.024	-0.0017	1.060	1	1.207
2nd	WLAN 2.4GHz	802.11b 1Mbps	Left Cheek	0	11	2462	19.04	19.50	1.112	97.63	1.024	-0.04	1.040	1.019	1.184
1st	GSM850	GPRS (GMSK 2 Tx slots)	Left Side	1	189	836.4	32.13	32.50	1.089	-	-	-0.06	1.030	1	1.122
2nd	GSM850	GPRS (GMSK 2 Tx slots)	Left Side	1	189	836.4	32.13	32.50	1.089	-	-	-0.02	1.010	1.019	1.100
1st	WCDMA Band IV	RMC 12.2Kbps	Front	1	1312	1712.4	23.38	23.50	1.028	-	-	0.04	1.250	1	1.285
2nd	WCDMA Band IV	RMC 12.2Kbps	Front	1	1312	1712.4	23.38	23.50	1.028	-	-	0.14	1.220	1.024	1.254
1st	WCDMA Band II	RMC 12.2Kbps	Bottom Side	1	9538	1907.6	23.28	23.50	1.052	-	-	-0.03	1.130	1	1.189
2nd	WCDMA Band II	RMC 12.2Kbps	Bottom Side	1	9538	1907.6	23.28	23.50	1.052	-	-	-0.12	1.110	1.018	1.168

General Note:

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

16. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Portable Handset			Note
		Head	Body-worn	Hotspot	
1.	GSM(Voice) + WLAN2.4GHz(data)	Yes	Yes		
2.	WCDMA(Voice) + WLAN2.4GHz(data)	Yes	Yes		
3.	GSM(Voice) + Bluetooth(data)	Yes	Yes		
4.	WCDMA((Voice) + Bluetooth(data)	Yes	Yes		
5.	GPRS/EDGE(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	2.4GHz Hotspot
6.	WCDMA(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	2.4GHz Hotspot
7.	LTE(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	2.4GHz Hotspot
8.	GPRS/EDGE(Data) + Bluetooth(data)	Yes	Yes	Yes	Bluetooth Tethering
9.	WCDMA(Data) + Bluetooth(data)	Yes	Yes	Yes	Bluetooth Tethering
10.	LTE(Data) + Bluetooth(data)	Yes	Yes	Yes	Bluetooth Tethering

General Note:

1. This device supported VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. 3rd party VoIP).
2. This device 2.4GHz WLAN supports hotspot operation.
3. WLAN and Bluetooth share the same antenna, and cannot transmit simultaneously.
4. EUT will choose each GSM, 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 = $(SAR_1 + SAR_2)^{1.5}$ / (*min. separation distance, mm*), and the peak separation distance is determined from the square root of $[(x_1-x_2)^2 + (y_1-y_2)^2 + (z_1-z_2)^2]$, where (x_1, y_1, z_1) and (x_2, y_2, z_2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
   iii) If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.
   iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.

Bluetooth Max Power	Exposure Position	Head	Hotspot	Body worn
	Test separation	0 mm	10 mm	10 mm
0 dBm	Estimated SAR (W/kg)	0.042 W/kg	0.021 W/kg	0.021W/kg

16.1 Head Exposure Conditions

<WWAN PCE + WLAN DTS>

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	WLAN DTS Max. WLAN SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Right Cheek	0.485	0.604	1.09		
		Right Tilted	0.418	0.528	0.95		
		Left Cheek	0.673	1.207	**1.88**	0.04	#01
		Left Tilted	0.467	0.491	0.96		
	GSM1900	Right Cheek	0.394	0.604	1.00		
		Right Tilted	0.257	0.528	0.79		
		Left Cheek	0.556	1.207	**1.76**	0.03	#02
		Left Tilted	0.245	0.491	0.74		
WCDMA	Band V	Right Cheek	0.377	0.604	0.98		
		Right Tilted	0.291	0.528	0.82		
		Left Cheek	0.483	1.207	**1.69**	0.04	#03
		Left Tilted	0.341	0.491	0.83		
	Band IV	Right Cheek	0.404	0.604	1.01		
		Right Tilted	0.205	0.528	0.73		
		Left Cheek	0.688	1.207	**1.90**	0.03	#04
		Left Tilted	0.256	0.491	0.75		
	Band II	Right Cheek	0.408	0.604	1.01		
		Right Tilted	0.316	0.528	0.84		
		Left Cheek	0.618	1.207	**1.83**	0.03	#05
		Left Tilted	0.291	0.491	0.78		
LTE	Band 17	Right Cheek	0.246	0.604	0.85		
		Right Tilted	0.171	0.528	0.70		
		Left Cheek	0.243	1.207	1.45		
		Left Tilted	0.194	0.491	0.69		
	Band 5	Right Cheek	0.258	0.604	0.86		
		Right Tilted	0.199	0.528	0.73		
		Left Cheek	0.333	1.207	1.54		
		Left Tilted	0.225	0.491	0.72		
	Band 4	Right Cheek	0.379	0.604	0.98		
		Right Tilted	0.196	0.528	0.72		
		Left Cheek	0.691	1.207	**1.90**	0.03	#06
		Left Tilted	0.257	0.491	0.75		
	Band 2	Right Cheek	0.401	0.604	1.01		
		Right Tilted	0.344	0.528	0.87		
		Left Cheek	0.645	1.207	**1.85**	0.03	#07
		Left Tilted	0.381	0.491	0.87		

<WWAN PCE + Bluetooth DSS>

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	Bluetooth DSS Estimated SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Right Cheek	0.485	0.042	0.53		
		Right Tilted	0.418	0.042	0.46		
		Left Cheek	0.673	0.042	0.72		
		Left Tilted	0.467	0.042	0.51		
	GSM1900	Right Cheek	0.394	0.042	0.44		
		Right Tilted	0.257	0.042	0.30		
		Left Cheek	0.556	0.042	0.60		
		Left Tilted	0.245	0.042	0.29		
WCDMA	Band V	Right Cheek	0.377	0.042	0.42		
		Right Tilted	0.291	0.042	0.33		
		Left Cheek	0.483	0.042	0.53		
		Left Tilted	0.341	0.042	0.38		
	Band IV	Right Cheek	0.404	0.042	0.45		
		Right Tilted	0.205	0.042	0.25		
		Left Cheek	0.688	0.042	0.73		
		Left Tilted	0.256	0.042	0.30		
	Band II	Right Cheek	0.408	0.042	0.45		
		Right Tilted	0.316	0.042	0.36		
		Left Cheek	0.618	0.042	0.66		
		Left Tilted	0.291	0.042	0.33		
LTE	Band 17	Right Cheek	0.246	0.042	0.29		
		Right Tilted	0.171	0.042	0.21		
		Left Cheek	0.243	0.042	0.29		
		Left Tilted	0.194	0.042	0.24		
	Band 5	Right Cheek	0.258	0.042	0.30		
		Right Tilted	0.199	0.042	0.24		
		Left Cheek	0.333	0.042	0.38		
		Left Tilted	0.225	0.042	0.27		
	Band 4	Right Cheek	0.379	0.042	0.42		
		Right Tilted	0.196	0.042	0.24		
		Left Cheek	0.691	0.042	0.73		
		Left Tilted	0.257	0.042	0.30		
	Band 2	Right Cheek	0.401	0.042	0.44		
		Right Tilted	0.344	0.042	0.39		
		Left Cheek	0.645	0.042	0.69		
		Left Tilted	0.381	0.042	0.42		

16.2 Hotspot Exposure Conditions

<WWAN PCE + WLAN DTS>

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	WLAN DTS Max. WLAN SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Front	0.679	0.347	1.03		
		Back	1.043	0.642	**1.69**	0.04	#08
		Left side	1.137		1.14		
		Right side	0.524	0.453	0.98		
		Top side		0.114	0.11		
		Bottom side	0.477		0.48		
	GSM1900	Front	0.970	0.347	1.32		
		Back	1.000	0.642	**1.64**	0.02	#09
		Left side	0.233		0.23		
		Right side	0.345	0.453	0.80		
		Top side		0.114	0.11		
		Bottom side	1.157		1.16		
WCDMA	Band V	Front	0.489	0.347	0.84		
		Back	0.638	0.642	1.28		
		Left side	0.864		0.86		
		Right side	0.392	0.453	0.85		
		Top side		0.114	0.11		
		Bottom side	0.353		0.35		
	Band IV	Front	1.285	0.347	**1.63**	0.02	#10
		Back	0.944	0.642	**1.59**		
		Left side	0.271		0.27		
		Right side	0.390	0.453	0.84		
		Top side		0.114	0.11		
		Bottom side	0.951		0.95		
	Band II	Front	0.967	0.347	1.31		
		Back	1.049	0.642	**1.69**	0.02	#11
		Left side	0.305		0.31		
		Right side	0.341	0.453	0.79		
		Top side		0.114	0.11		
		Bottom side	1.189		1.19		

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	WLAN DTS Max. WLAN SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
LTE	Band 17	Front	0.527	0.347	0.87		
		Back	0.523	0.642	1.17		
		Left side	0.38		0.38		
		Right side	0.265	0.453	0.72		
		Top side		0.114	0.11		
		Bottom side	0.086		0.09		
	Band 5	Front	0.388	0.347	0.74		
		Back	0.429	0.642	1.07		
		Left side	0.532		0.53		
		Right side	0.308	0.453	0.76		
		Top side		0.114	0.11		
		Bottom side	0.222		0.22		
	Band 4	Front	1.165	0.347	1.51		
		Back	0.949	0.642	1.59		
		Left side	0.261		0.26		
		Right side	0.317	0.453	0.77		
		Top side		0.114	0.11		
		Bottom side	0.946		0.95		
	Band 2	Front	1.010	0.347	1.36		
		Back	1.055	0.642	**1.70**	0.02	#12
		Left side	0.273		0.27		
		Right side	0.288	0.453	0.74		
		Top side		0.114	0.11		
		Bottom side	1.192		1.19		

<WWAN PCE + Bluetooth DSS>

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	Bluetooth DSS Estimated SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Front	0.679	0.021	0.70		
		Back	1.043	0.021	1.06		
		Left side	1.137		1.14		
		Right side	0.524	0.021	0.55		
		Top side		0.021	0.02		
		Bottom side	0.477		0.48		
	GSM1900	Front	0.970	0.021	0.99		
		Back	1.000	0.021	1.02		
		Left side	0.233		0.23		
		Right side	0.345	0.021	0.37		
		Top side		0.021	0.02		
		Bottom side	1.157		1.16		
WCDMA	Band V	Front	0.489	0.021	0.51		
		Back	0.638	0.021	0.66		
		Left side	0.864		0.86		
		Right side	0.392	0.021	0.41		
		Top side		0.021	0.02		
		Bottom side	0.353		0.35		
	Band IV	Front	1.285	0.021	1.31		
		Back	0.944	0.021	0.97		
		Left side	0.271		0.27		
		Right side	0.390	0.021	0.41		
		Top side		0.021	0.02		
		Bottom side	0.951		0.95		
	Band II	Front	0.967	0.021	0.99		
		Back	1.049	0.021	1.07		
		Left side	0.305		0.31		
		Right side	0.341	0.021	0.36		
		Top side		0.021	0.02		
		Bottom side	1.189		1.19		

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	Bluetooth DSS Estimated SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
LTE	Band 17	Front	0.527	0.021	0.55		
		Back	0.523	0.021	0.54		
		Left side	0.38		0.38		
		Right side	0.265	0.021	0.29		
		Top side		0.021	0.02		
		Bottom side	0.086		0.09		
	Band 5	Front	0.388	0.021	0.41		
		Back	0.429	0.021	0.45		
		Left side	0.532		0.53		
		Right side	0.308	0.021	0.33		
		Top side		0.021	0.02		
		Bottom side	0.222		0.22		
	Band 4	Front	1.165	0.021	1.19		
		Back	0.949	0.021	0.97		
		Left side	0.261		0.26		
		Right side	0.317	0.021	0.34		
		Top side		0.021	0.02		
		Bottom side	0.946		0.95		
	Band 2	Front	1.010	0.021	1.03		
		Back	1.055	0.021	1.08		
		Left side	0.273		0.27		
		Right side	0.288	0.021	0.31		
		Top side		0.021	0.02		
		Bottom side	1.192		1.19		

16.3 Body-Worn Accessory Exposure Conditions

<WWAN PCE + WLAN DTS>

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	WLAN DTS Max. WLAN SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Front	0.679	0.347	1.03		
		Back	1.043	0.642	**1.69**	0.04	#08
		Front with Headset		0.290	0.29		
	GSM1900	Front	0.970	0.347	1.32		
		Back	1.000	0.642	**1.64**	0.02	#09
		Front with Headset		0.290	0.29		
WCDMA	Band V	Front	0.489	0.347	0.84		
		Back	0.638	0.642	1.28		
		Front with Headset		0.290	0.29		
	Band IV	Front	1.285	0.347	**1.63**	0.02	#10
		Back	0.944	0.642	1.59		
		Front with Headset	1.107	0.290	1.40		
	Band II	Front	0.967	0.347	1.31		
		Back	1.049	0.642	**1.69**	0.02	#11
		Front with Headset		0.290	0.29		
LTE	Band 17	Front	0.527	0.347	0.87		
		Back	0.523	0.642	1.17		
		Front with Headset		0.290	0.29		
	Band 5	Front	0.388	0.347	0.74		
		Back	0.429	0.642	1.07		
		Front with Headset		0.290	0.29		
	Band 4	Front	1.165	0.347	1.51		
		Back	0.949	0.642	1.59		
		Front with Headset		0.290	0.29		
	Band 2	Front	1.010	0.347	1.36		
		Back	1.055	0.642	**1.70**	0.02	#12
		Front with Headset		0.290	0.29		

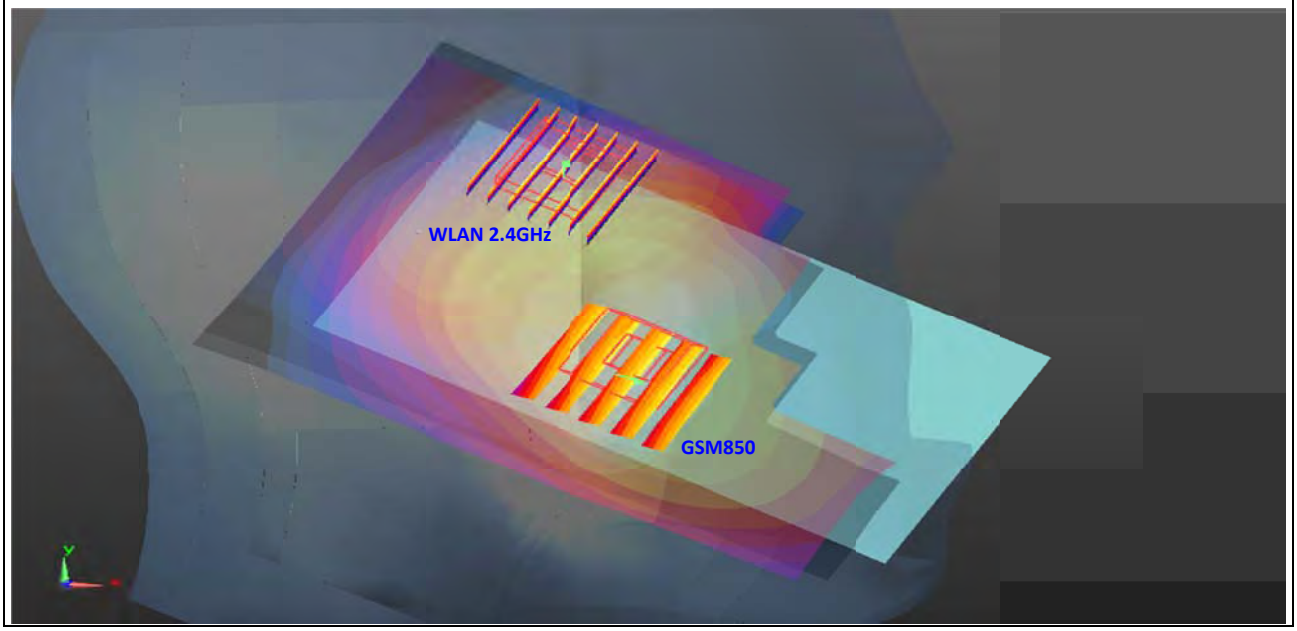
<WWAN PCE + Bluetooth DSS>

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	Bluetooth DSS Estimated SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Front	0.679	0.021	0.70		
		Back	1.043	0.021	1.06		
		Front with Headset		0.021	0.02		
	GSM1900	Front	0.970	0.021	0.99		
		Back	1.000	0.021	1.02		
		Front with Headset		0.021	0.02		
WCDMA	Band V	Front	0.489	0.021	0.51		
		Back	0.638	0.021	0.66		
		Front with Headset		0.021	0.02		
	Band IV	Front	1.285	0.021	1.31		
		Back	0.944	0.021	0.97		
		Front with Headset	1.107	0.021	1.13		
	Band II	Front	0.967	0.021	0.99		
		Back	1.049	0.021	1.07		
		Front with Headset		0.021	0.02		
LTE	Band 17	Front	0.527	0.021	0.55		
		Back	0.523	0.021	0.54		
		Front with Headset		0.021	0.02		
	Band 5	Front	0.388	0.021	0.41		
		Back	0.429	0.021	0.45		
		Front with Headset		0.021	0.02		
	Band 4	Front	1.165	0.021	1.19		
		Back	0.949	0.021	0.97		
		Front with Headset		0.021	0.02		
	Band 2	Front	1.010	0.021	1.03		
		Back	1.055	0.021	1.08		
		Front with Headset		0.021	0.02		

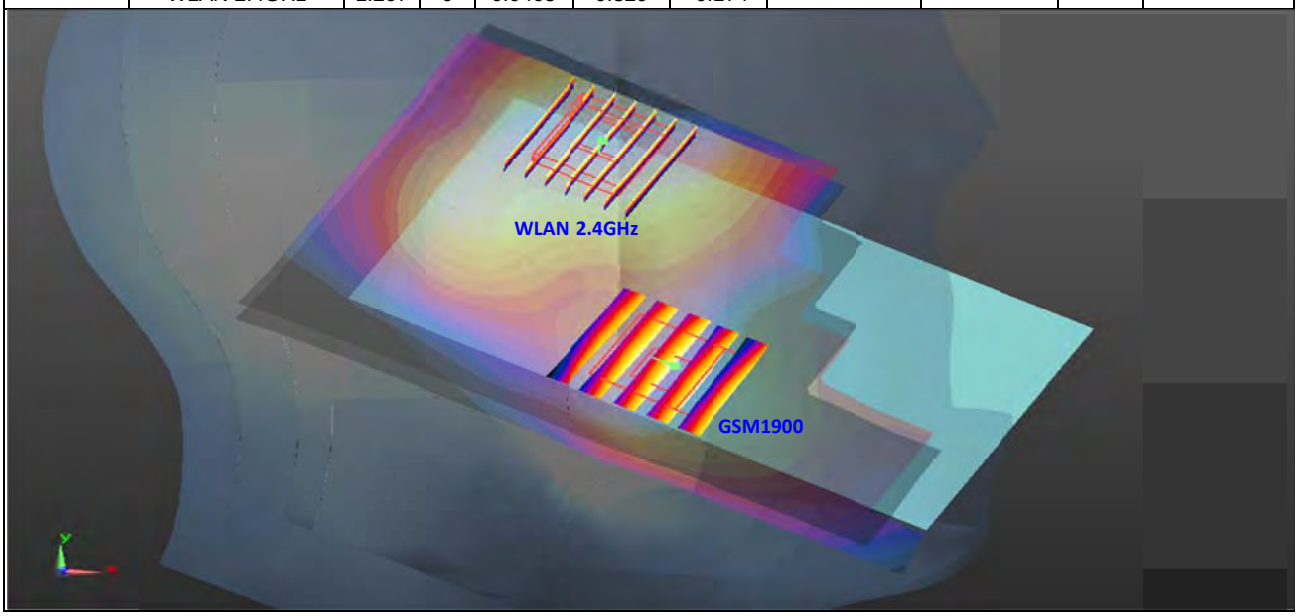
16.4 SPLSR Evaluation and Analysis

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

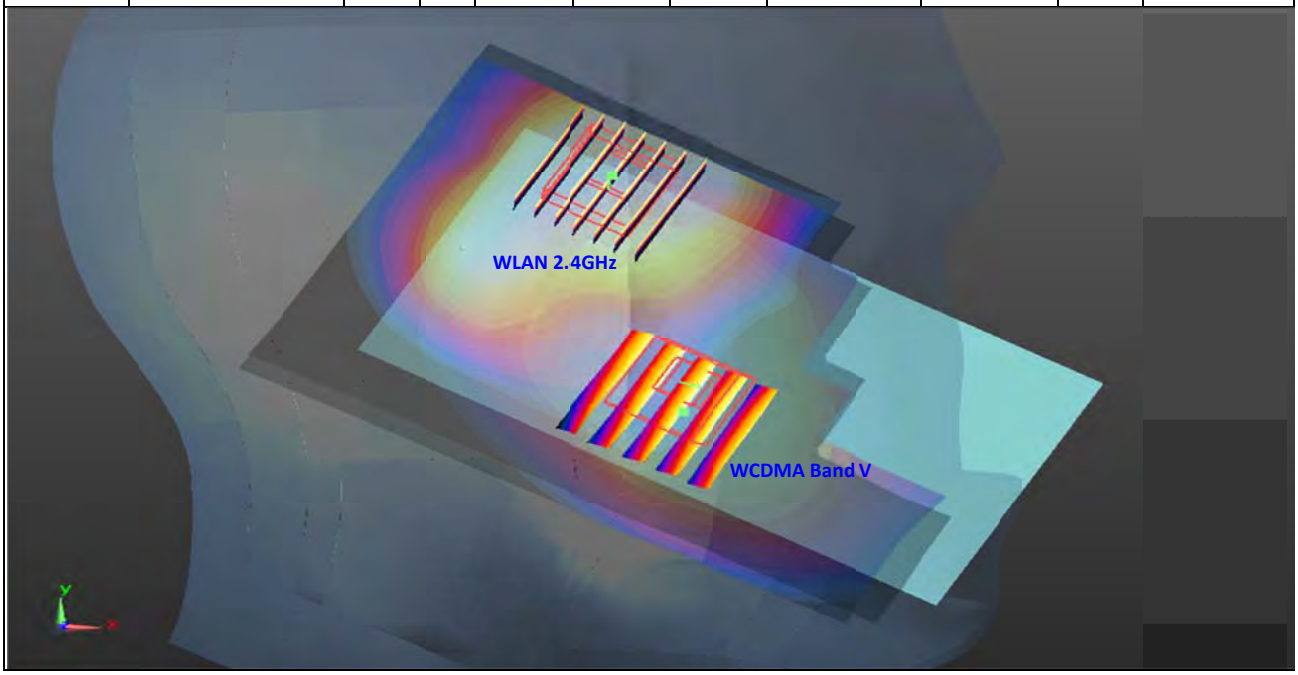
Case No #01 Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
				X	Y	Z				
Left Cheek	GSM850	0.673	0	0.0621	0.264	-0.173	66.9	1.88	0.04	Not required
	WLAN2.4GHz	1.207	0	0.0465	0.329	-0.174				



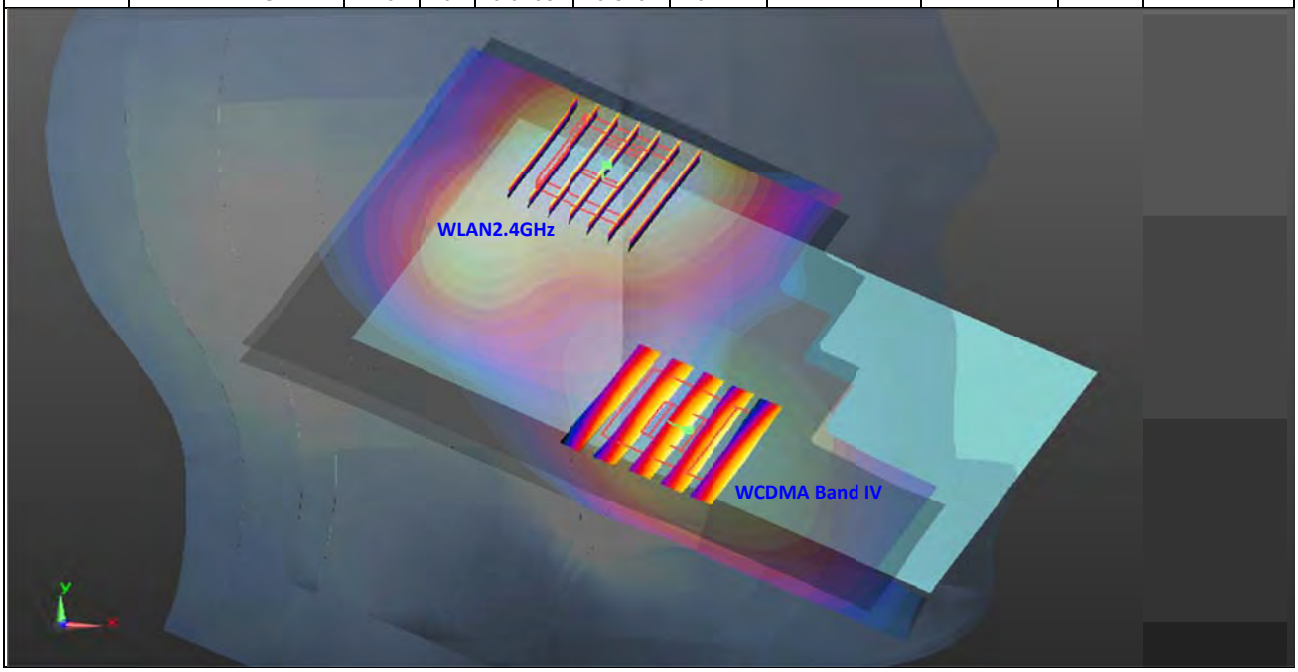
Case No #02 Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
				X	Y	Z				
Left Cheek	GSM1900	0.556	0	0.0615	0.259	-0.173	71.6	1.76	0.03	Not required
	WLAN 2.4GHz	1.207	0	0.0465	0.329	-0.174				



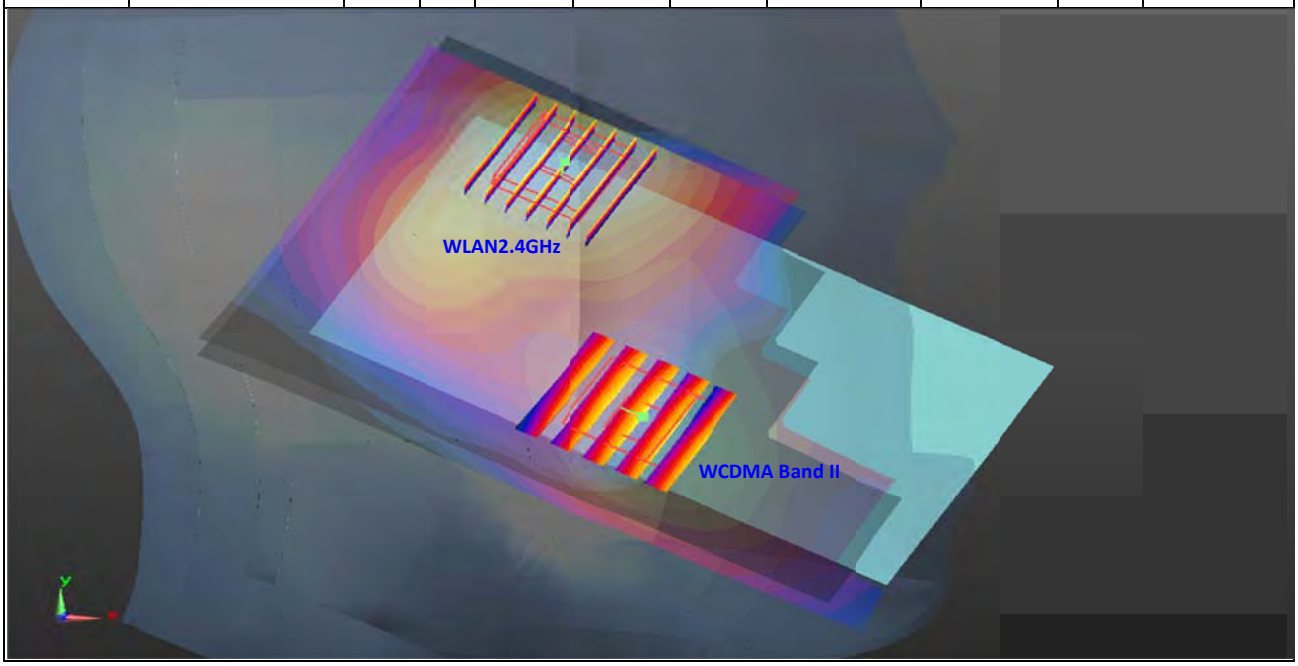
Case No #03 Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
				X	Y	Z				
Left Cheek	WCDMA Band V	0.483	0	0.0653	0.27	-0.173	61.9	1.69	0.04	Not required
	WLAN2.4GHz	1.207	0	0.0465	0.329	-0.174				



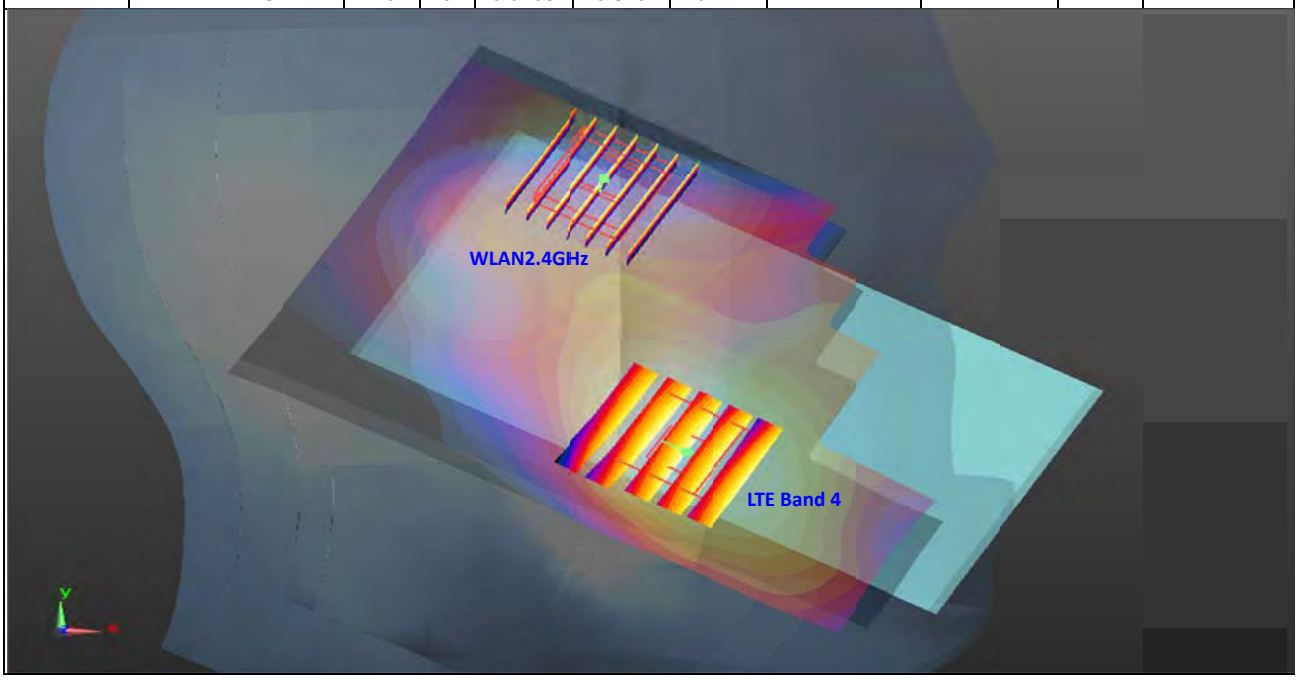
Case No #04 Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
				X	Y	Z				
Left Cheek	WCDMA Band IV	0.688	0	0.0639	0.255	-0.172	76.0	1.90	0.03	Not required
	WLAN2.4GHz	1.207	0	0.0465	0.329	-0.174				



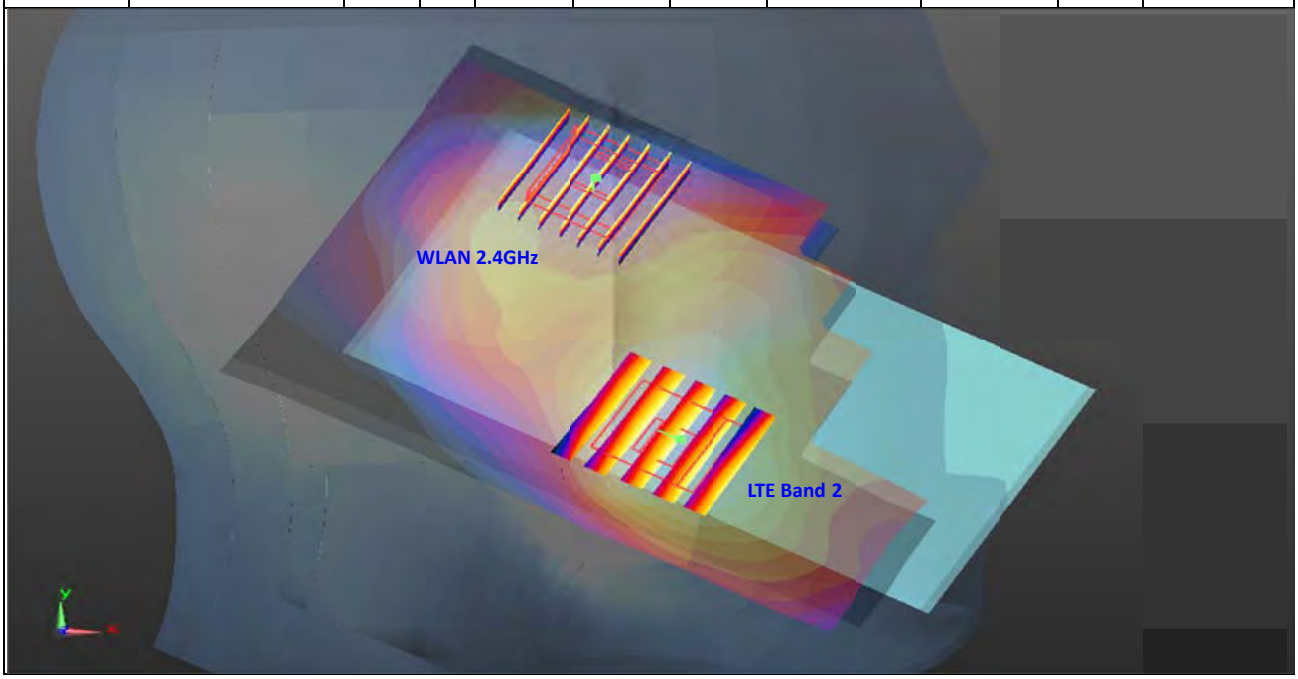
Case No #05 Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
				X	Y	Z				
Left Cheek	WCDMA Band II	0.618	0	0.0634	0.257	-0.172	74.0	1.83	0.03	Not required
	WLAN2.4GHz	1.207	0	0.0465	0.329	-0.174				



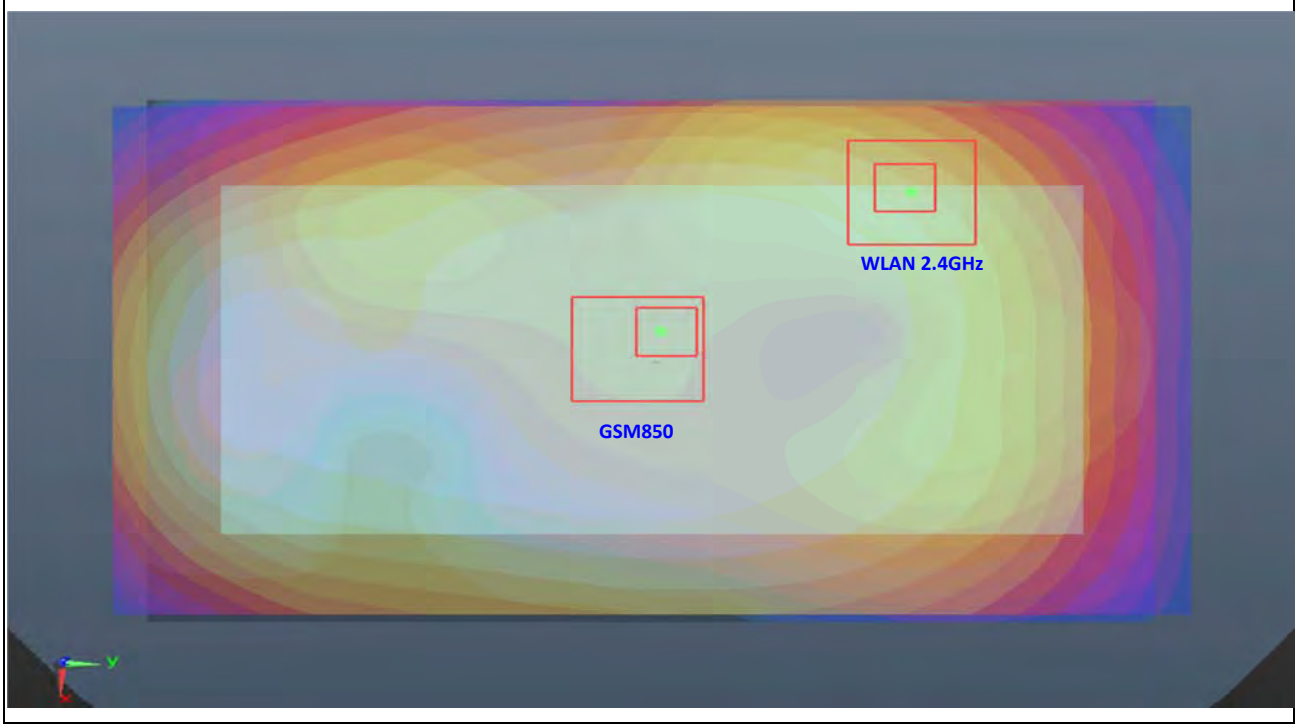
Case No #06 Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
				X	Y	Z				
Left Cheek	LTE Band 4	0.691	0	0.0642	0.253	-0.173	78.0	1.90	0.03	Not required
	WLAN2.4GHz	1.207	0	0.0465	0.329	-0.174				



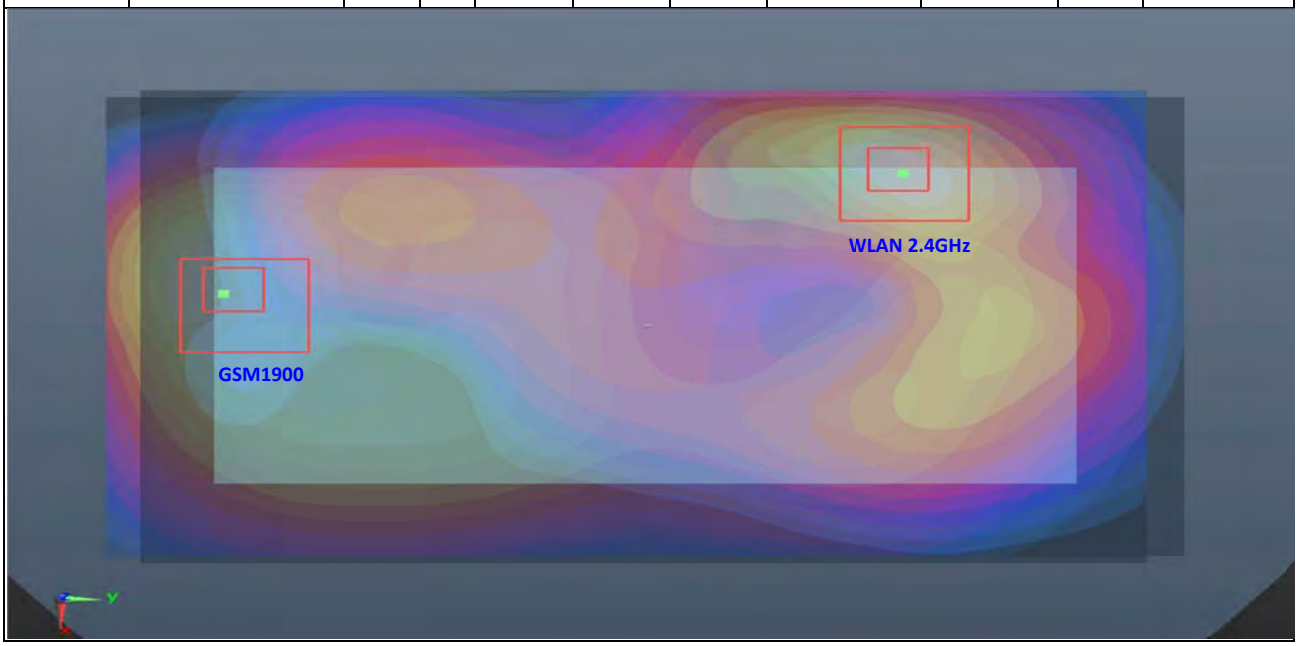
Case No #07 Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
				X	Y	Z				
Left Cheek	LTE Band 2	0.645	0	0.0644	0.256	-0.173	75.2	1.85	0.03	Not required
	WLAN2.4GHz	1.207	0	0.0465	0.329	-0.174				



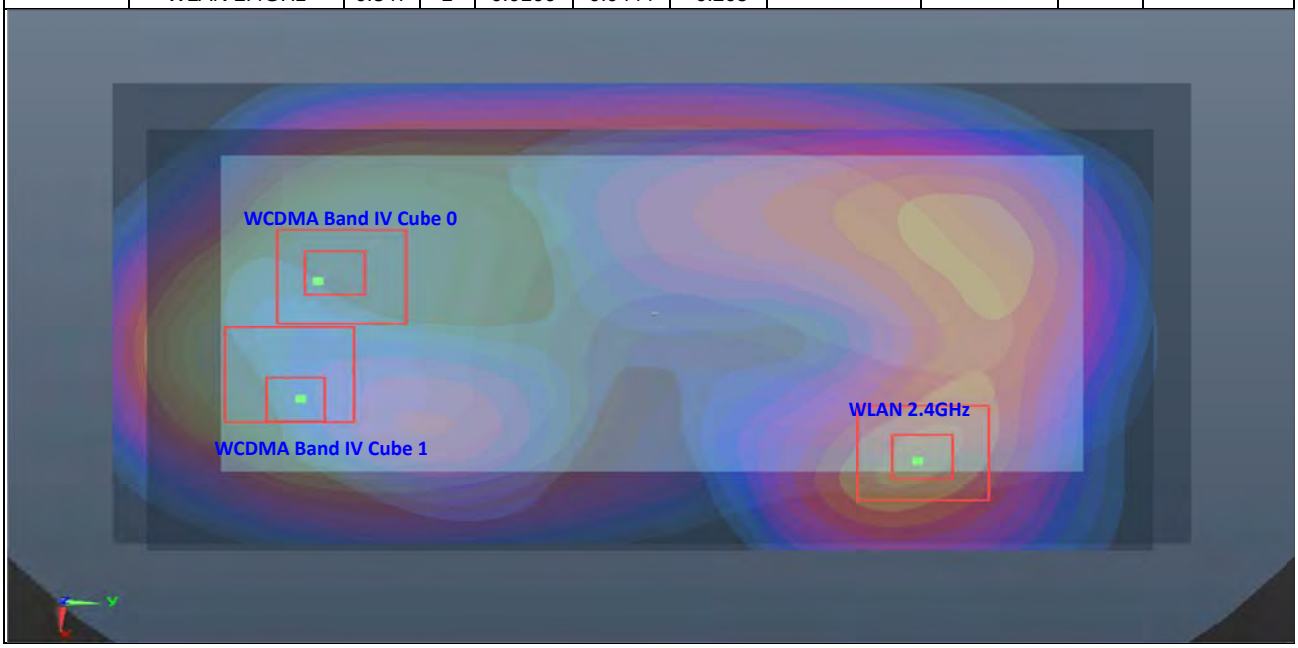
Case No #08 Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
				X	Y	Z				
Back	GSM850	1.043	1	-0.023	0.0015	-0.206	50.7	1.69	0.04	Not required
	WLAN 2.4GHz	0.642	1	-0.0518	0.0432	-0.205				



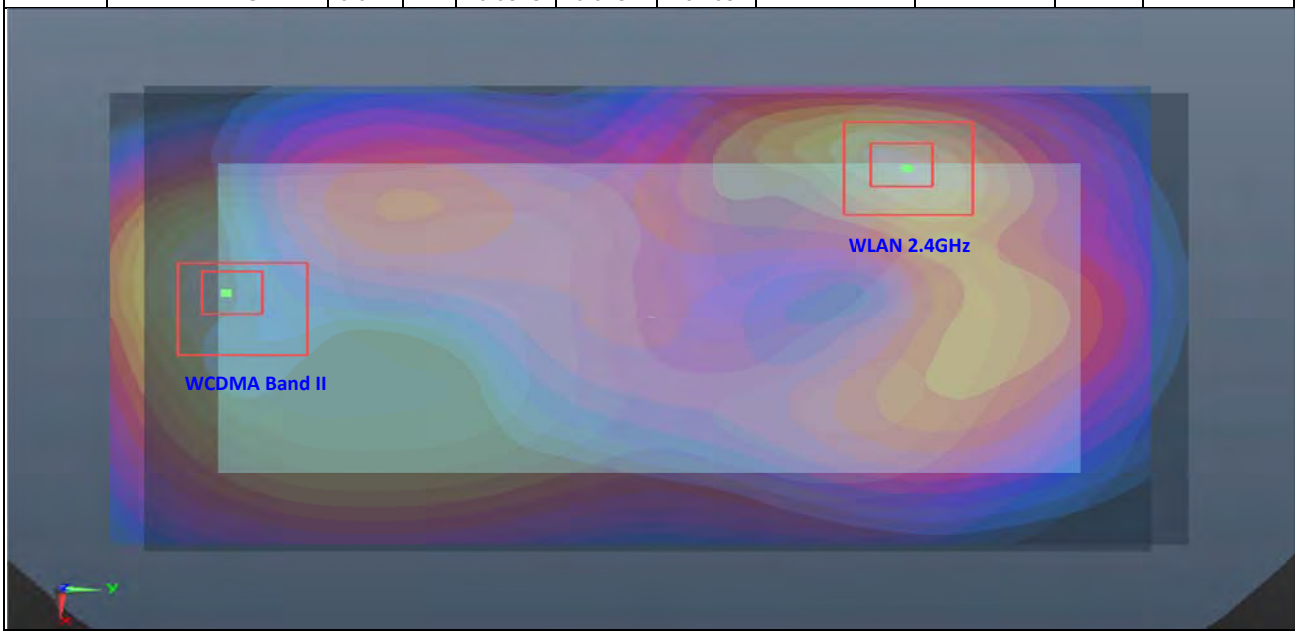
Case No #09 Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
				X	Y	Z				
Back	GSM1900	1.000	1	-0.0245	-0.0705	-0.206	116.9	1.64	0.02	Not required
	WLAN 2.4GHz	0.642	1	-0.0518	0.0432	-0.205				



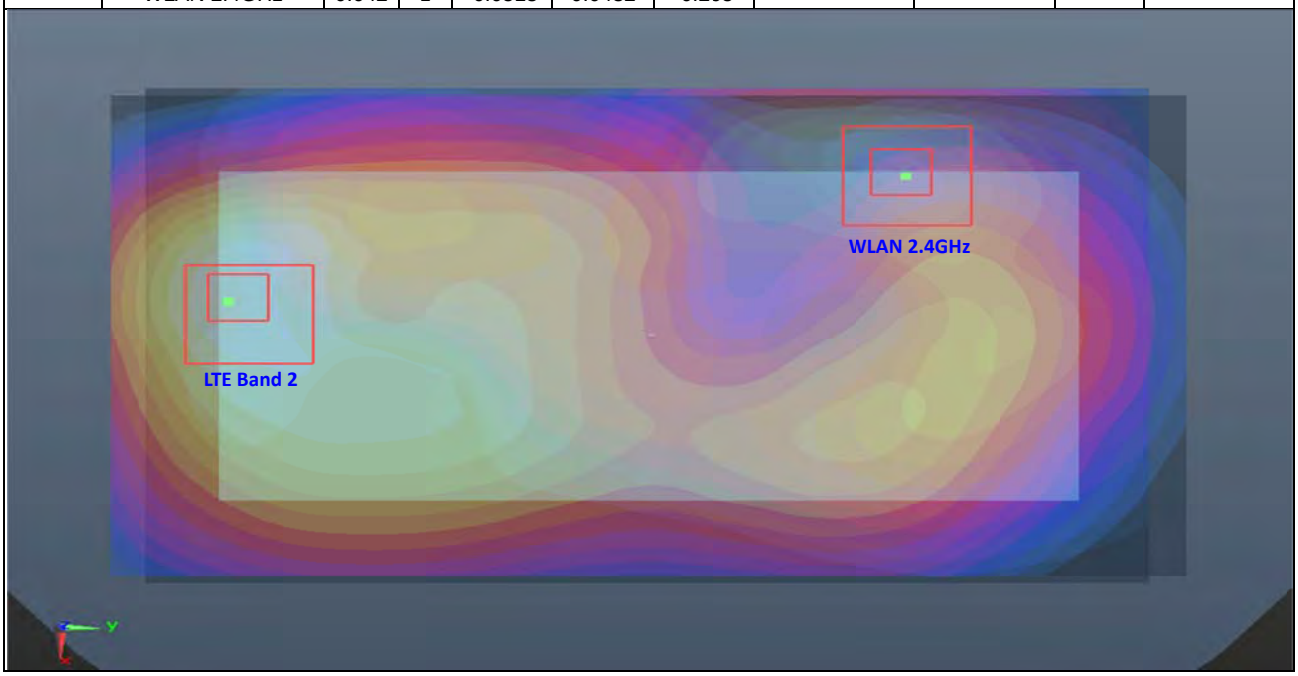
Case No #10 Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
				X	Y	Z				
Front	WCDMA Band IV Cube 0	1.285	1	-0.0245	-0.0555	-0.206	108.0	1.63	0.02	Not required
	WLAN 2.4GHz	0.347	1	0.0166	0.0444	-0.205				
Front	WCDMA Band IV Cube 1	1.100	1	0.0025	-0.0585	-0.206	103.9	1.45	0.02	Not required
	WLAN 2.4GHz	0.347	1	0.0166	0.0444	-0.205				



Case No #11 Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
				X	Y	Z				
Back	WCDMA Band II	1.049	1	-0.023	-0.0705	-0.206	117.3	1.69	0.02	Not required
	WLAN 2.4GHz	0.642	1	-0.0518	0.0432	-0.205				



Case No #12 Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
				X	Y	Z				
Back	LTE Band 2	1.055	1	-0.0245	-0.0705	-0.206	116.9	1.70	0.02	Not required
	WLAN 2.4GHz	0.642	1	-0.0518	0.0432	-0.205				



Test Engineer : Fulu Hu

17. Uncertainty Assessment

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

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

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

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

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

(b) κ is the coverage factor

Table 17.1. Standard Uncertainty for Assumed Distribution

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

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

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

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

18. References

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

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

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

[4] SPEAG DASY System Handbook

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

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

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

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

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

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

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

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

Appendix A. Plots of System Performance Check

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.03.30

System Check_Head_750MHz_150330

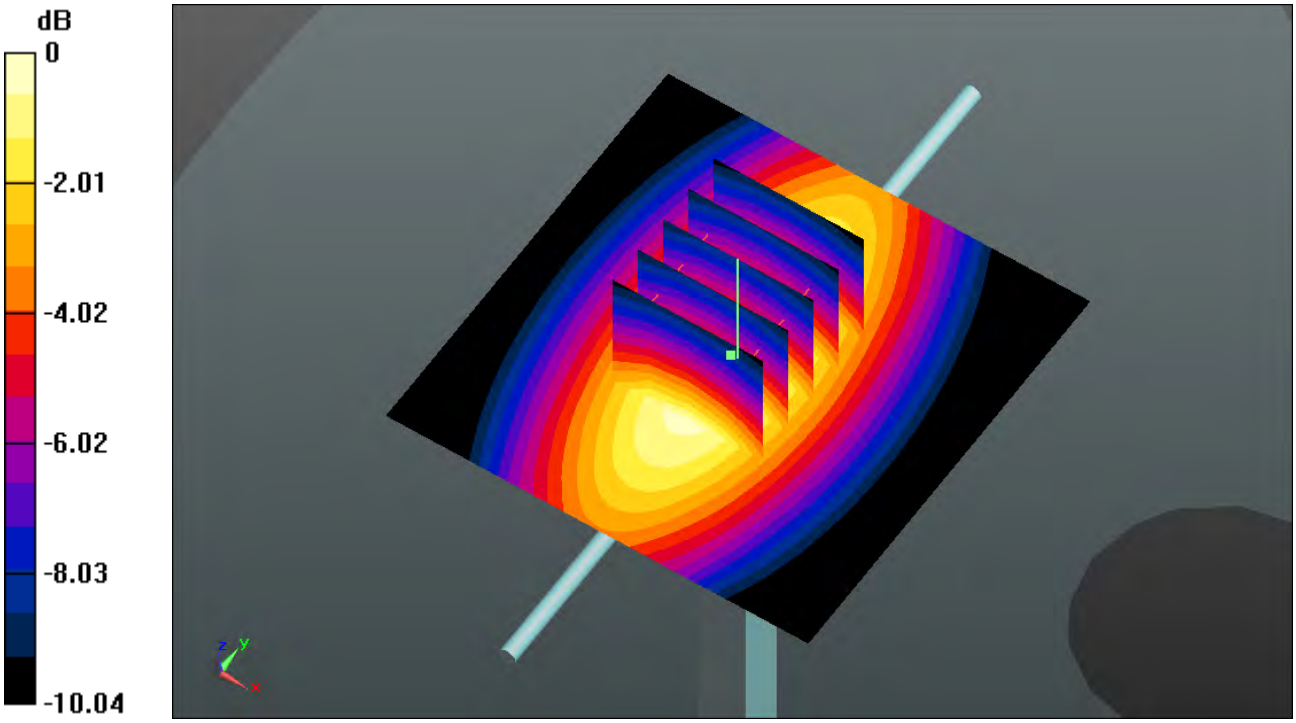
DUT: D750V3 - SN:1065

Communication System: CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium: HSL_750_150330 Medium parameters used: f = 750 MHz; σ = 0.888 mho/m; ε_r = 40.879; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.92, 9.92, 9.92); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.151 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 63.195 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 4.854 W/kg
SAR(1 g) = 2.1 mW/g; SAR(10 g) = 1.4 mW/g
Maximum value of SAR (measured) = 2.027 mW/g



0 dB = 4.130mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.03.30

System Check_Head_835MHz_150330

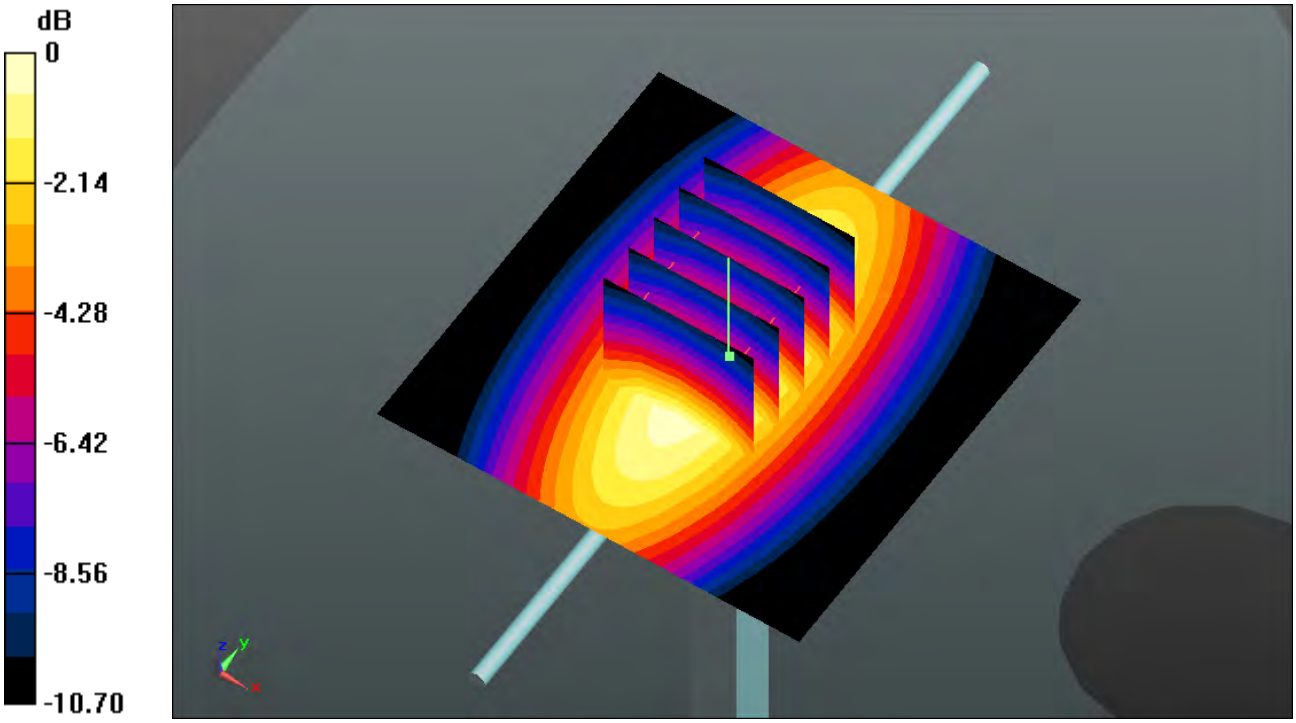
DUT: D835V2 - SN:4d091

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_835_150330 Medium parameters used: f = 835 MHz; σ = 0.878 mho/m; ε_r = 40.783; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.41, 9.41, 9.41); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.806 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 52.090 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 3.282 W/kg
SAR(1 g) = 2.22 mW/g; SAR(10 g) = 1.45 mW/g
Maximum value of SAR (measured) = 2.807 mW/g



0 dB = 2.810mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.04.01

System Check_Head_1750MHz_150401

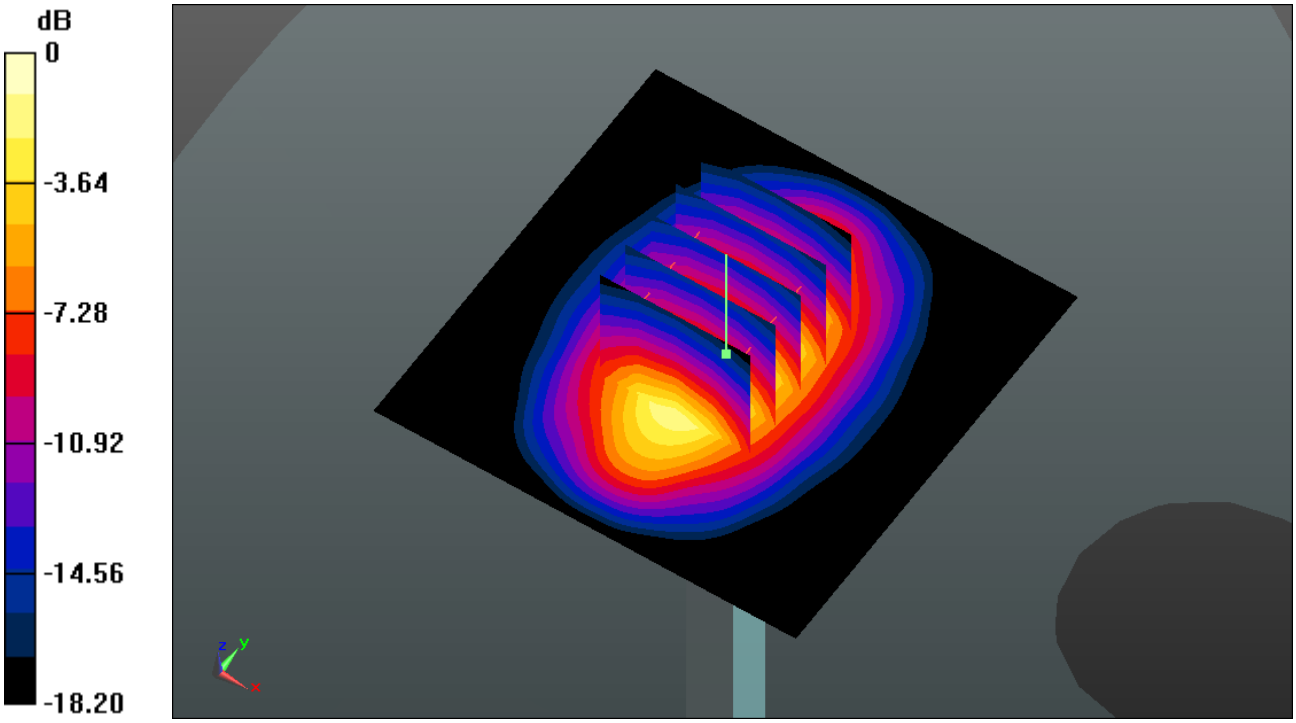
DUT: D1750V2 - SN:1069

Communication System: CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: HSL_1750_150401 Medium parameters used: f = 1750 MHz; σ = 1.377 mho/m; ε_r = 41.359; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(8.55, 8.55, 8.55); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 12.690 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 84.663 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 16.177 W/kg
SAR(1 g) = 8.69 mW/g; SAR(10 g) = 4.49 mW/g
Maximum value of SAR (measured) = 12.618 mW/g



0 dB = 12.620mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.04.01

System Check_Head_1900MHz_150401

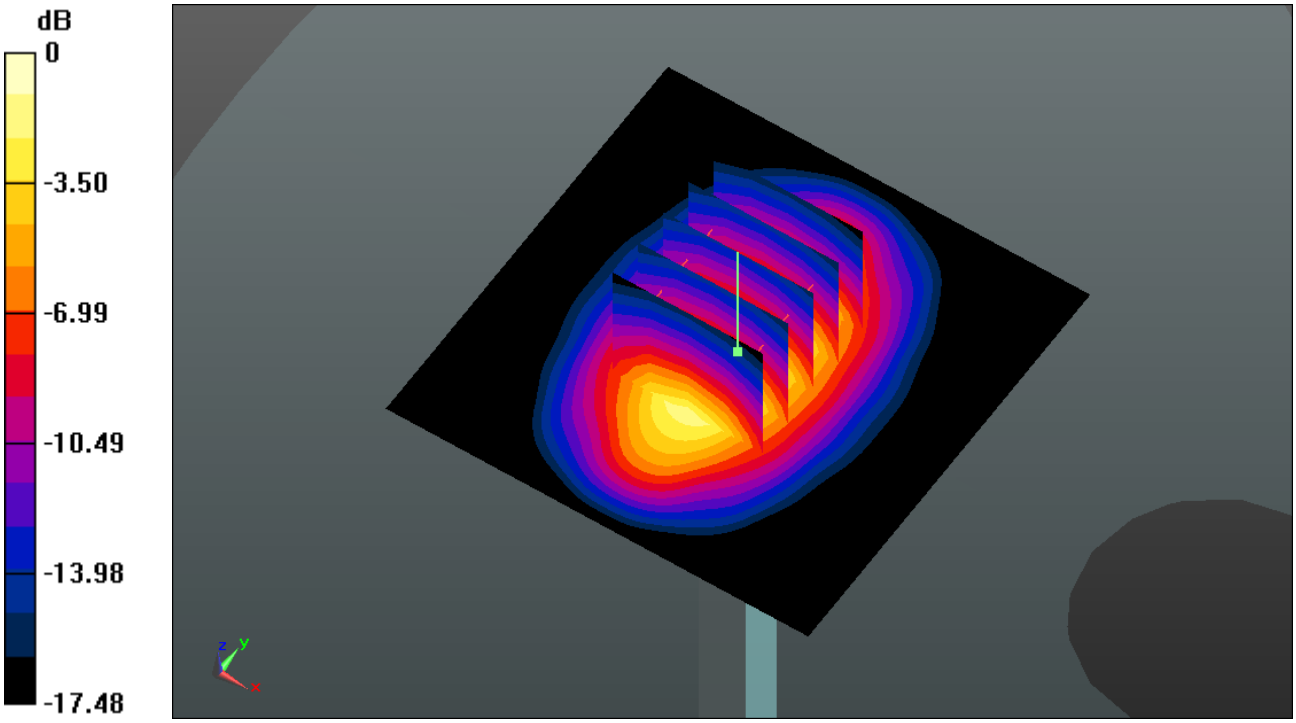
DUT: D1900V2 - SN:5d118

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900_150401 Medium parameters used: f = 1900 MHz; σ = 1.425 mho/m; ε_r = 39.073; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：22.7 ℃

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

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 13.720 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 86.568 V/m; Power Drift = -0.0072 dB
Peak SAR (extrapolated) = 17.324 W/kg
SAR(1 g) = 9.54 mW/g; SAR(10 g) = 5 mW/g
Maximum value of SAR (measured) = 13.709 mW/g



0 dB = 13.710mW/g

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

System Check_Head_2450MHz_150430

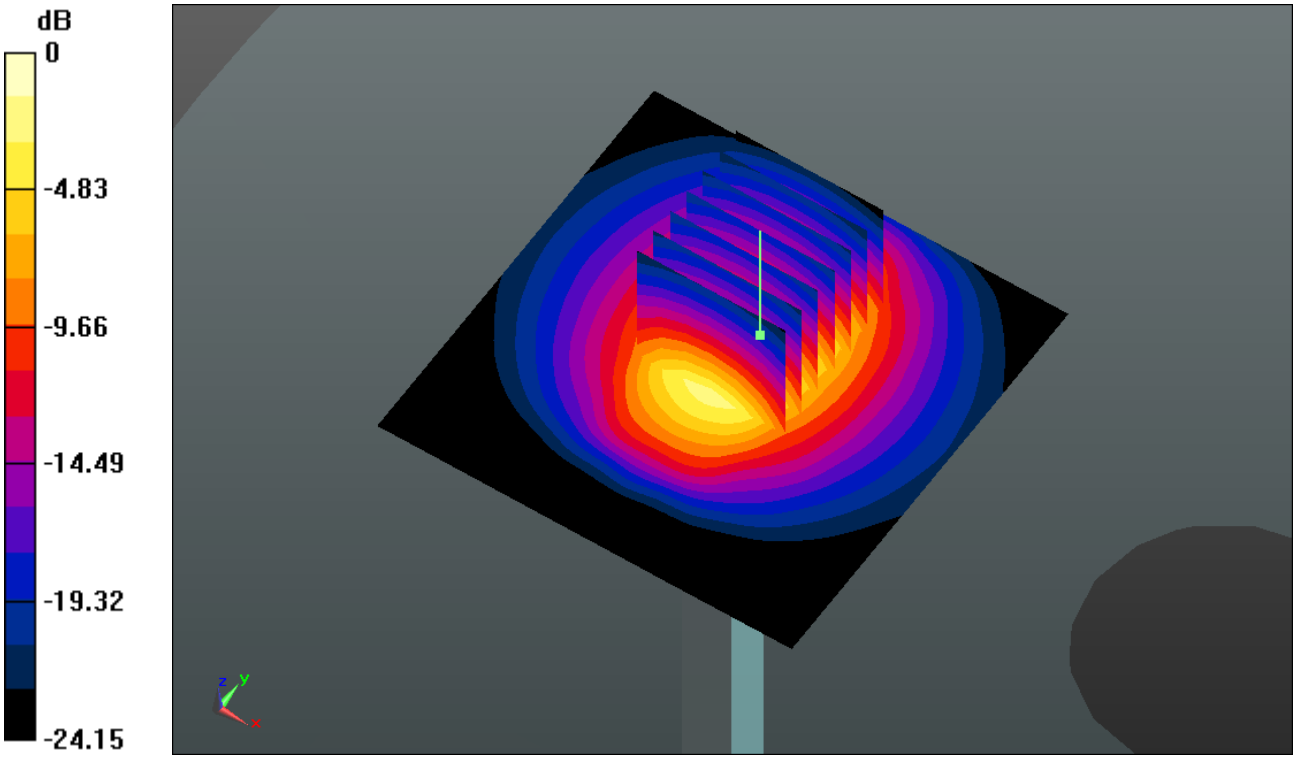
DUT: D2450V2 - SN:840

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL_2450_150430 Medium parameters used: f = 2450 MHz; σ = 1.842 mho/m; ε_r = 39.923; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.48, 7.48, 7.48); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: 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) = 21.343 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 85.323 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 30.420 W/kg
SAR(1 g) = 13.8 mW/g; SAR(10 g) = 6.16 mW/g
Maximum value of SAR (measured) = 21.614 mW/g



0 dB = 21.610mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.03.24

System Check_Body_750MHz_150324

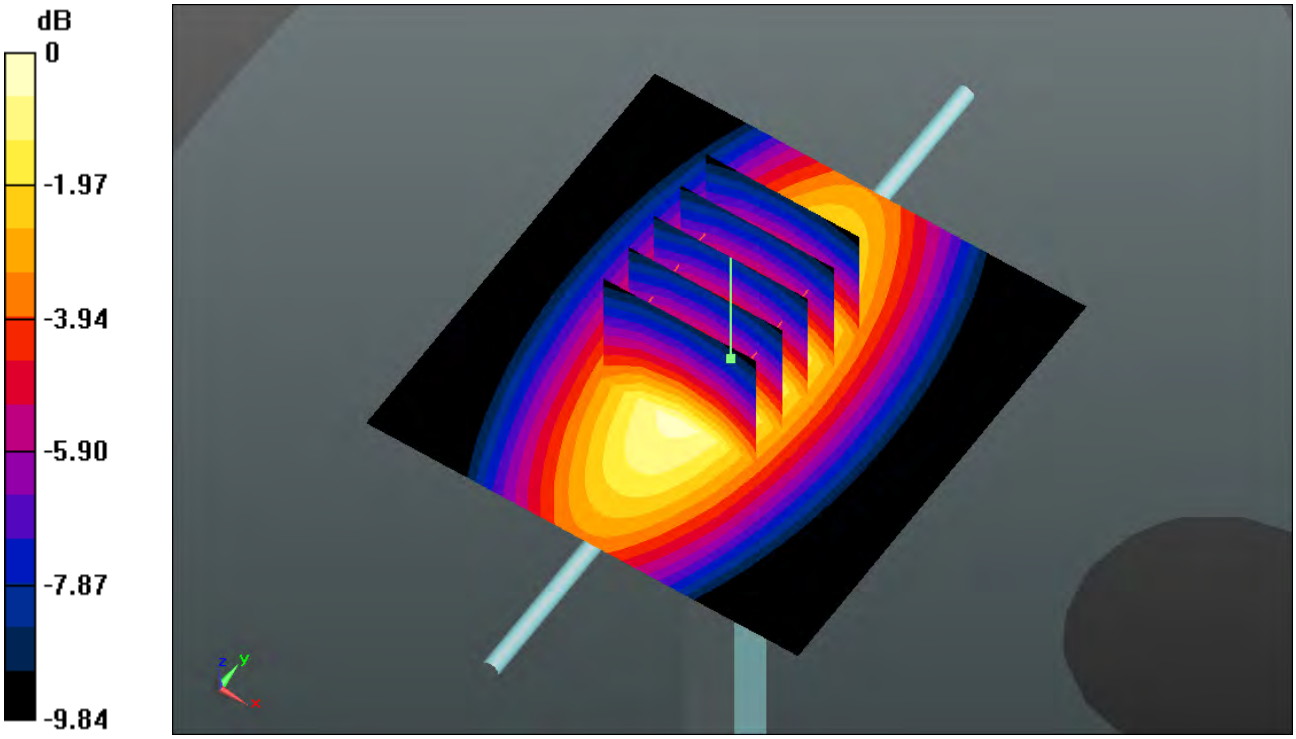
DUT: D750V2 - SN:1065

Communication System: CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium: MSL_750_150324 Medium parameters used: f = 750 MHz; σ = 0.963 mho/m; ε_r = 54.242; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.46, 9.46, 9.46); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; 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) = 2.646 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 48.970 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.058 W/kg
SAR(1 g) = 2.13 mW/g; SAR(10 g) = 1.43 mW/g
Maximum value of SAR (measured) = 2.653 mW/g



0 dB = 2.650mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.03.24

System Check_Body_835MHz_150324

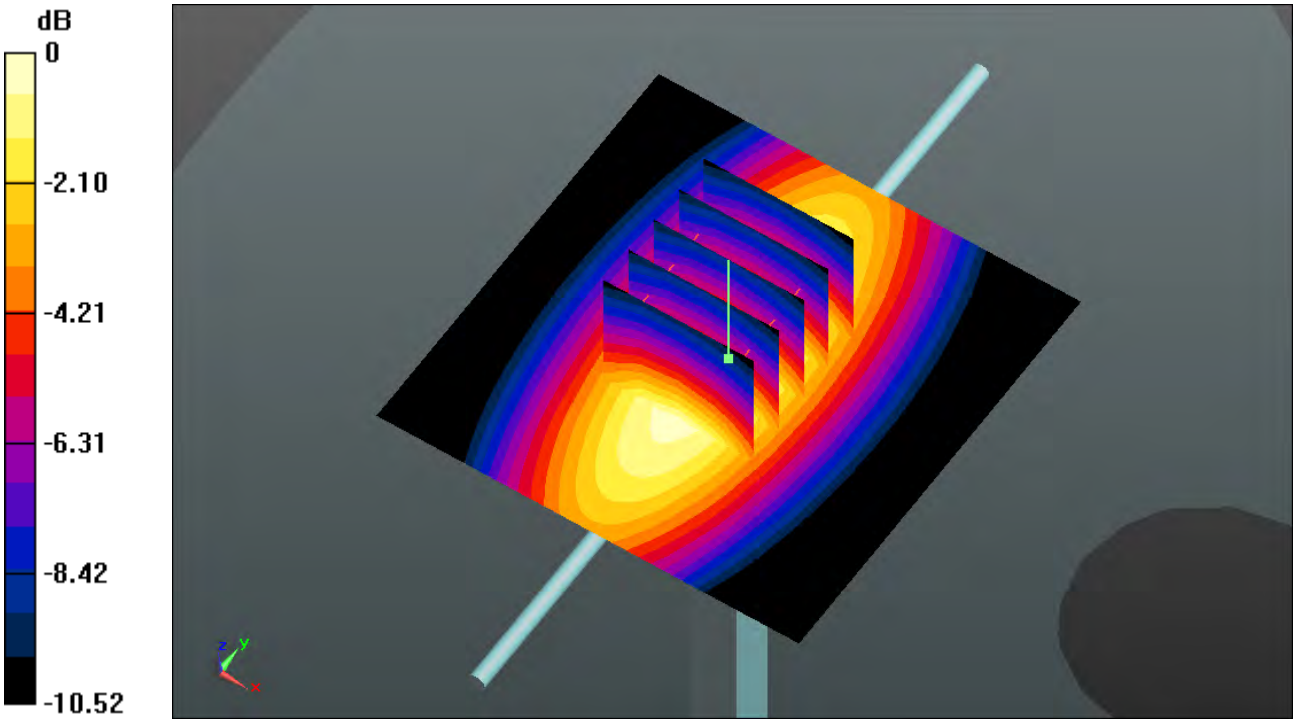
DUT: D835V2 - SN:4d091

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_835_150324 Medium parameters used: f = 835 MHz; σ = 0.983 mho/m; ε_r = 54.858; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.31, 9.31, 9.31); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.857 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 50.056 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 3.330 W/kg
SAR(1 g) = 2.27 mW/g; SAR(10 g) = 1.49 mW/g
Maximum value of SAR (measured) = 2.861 mW/g



0 dB = 2.860mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.03.23

System Check_Body_1750MHz_150323

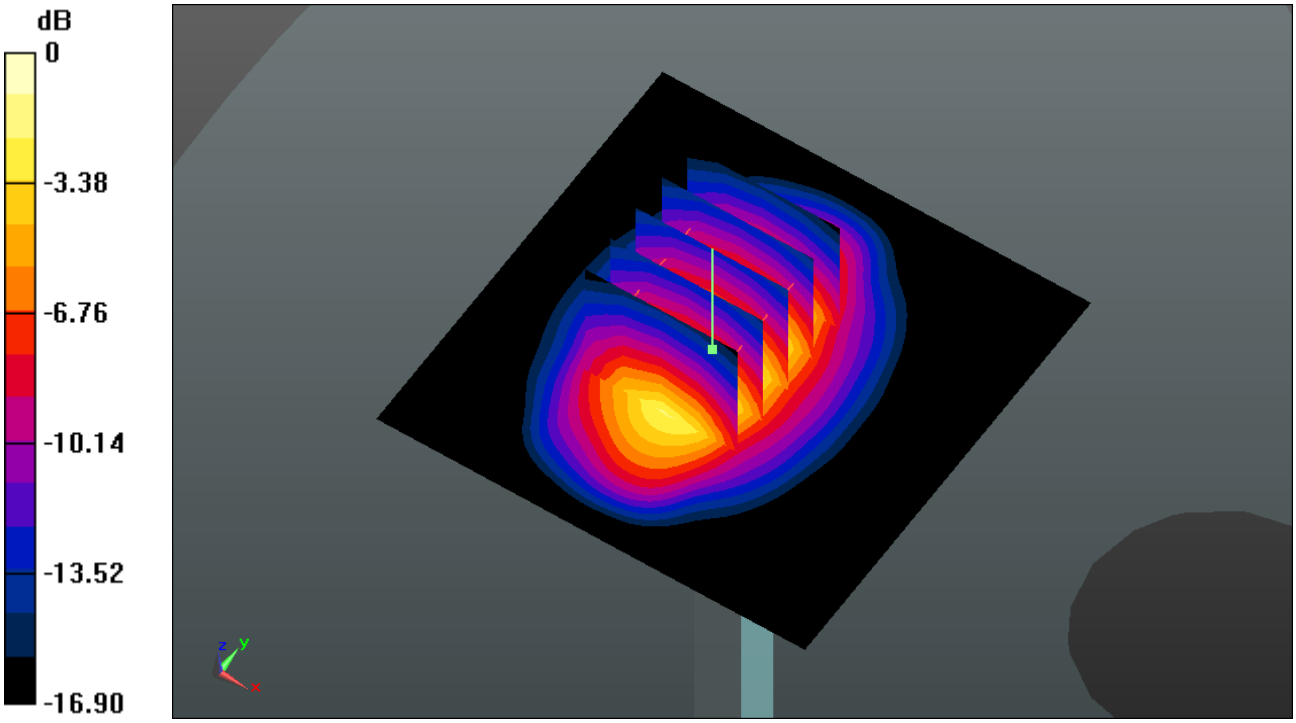
DUT: D1750V2 - SN:1069

Communication System: CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: MSL_1750_150323 Medium parameters used: f = 1750 MHz; σ = 1.522 mho/m; ε_r = 54.439; ρ = 1000 kg/m^3
Ambient Temperature：23.9 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.89, 7.89, 7.89); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 12.485 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 77.579 V/m; Power Drift = 0.024 dB
Peak SAR (extrapolated) = 15.969 W/kg
SAR(1 g) = 9.04 mW/g; SAR(10 g) = 4.78 mW/g
Maximum value of SAR (measured) = 12.791 mW/g



0 dB = 12.790mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.03.23

System Check_Body_1900MHz_150323

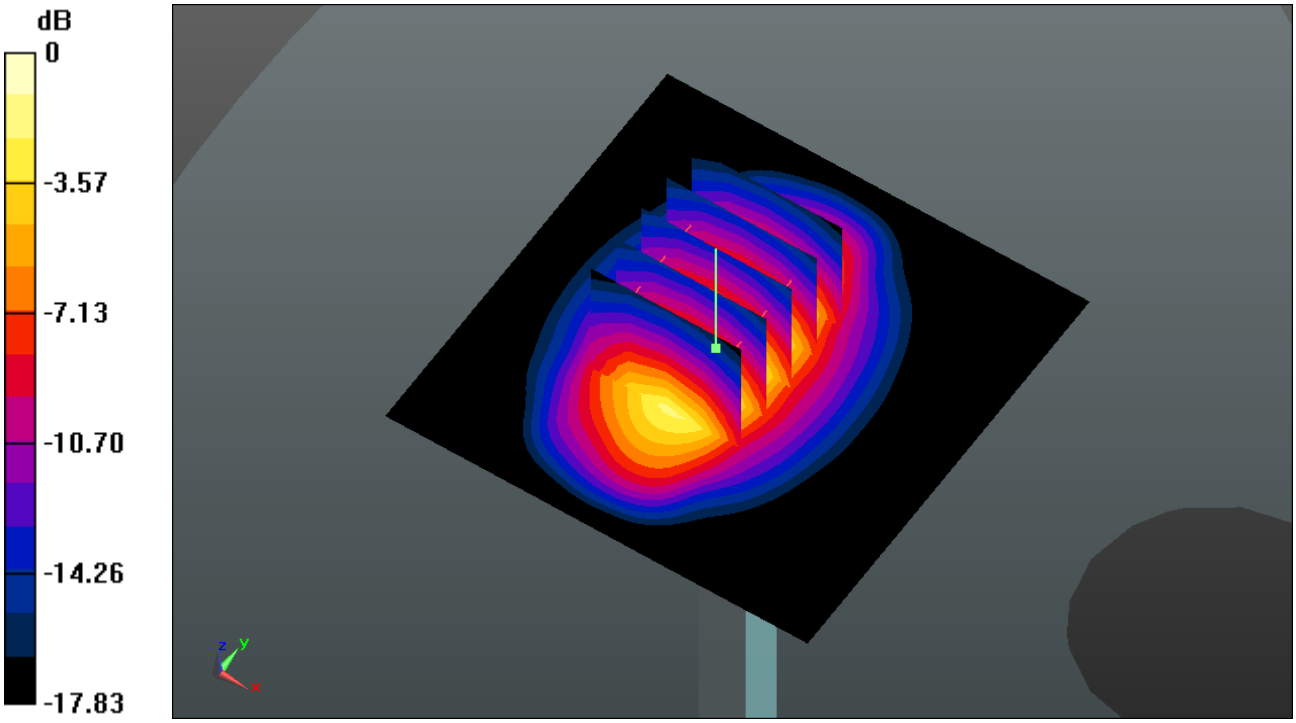
DUT: D1900V2 - SN:5d118

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150323 Medium parameters used: f = 1900 MHz; σ = 1.549 mho/m; ε_r = 53.346; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃； Liquid Temperature：22.6 ℃

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

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 15.282 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 82.041 V/m; Power Drift = 0.022 dB
Peak SAR (extrapolated) = 19.792 W/kg
SAR(1 g) = 10.5 mW/g; SAR(10 g) = 5.61 mW/g
Maximum value of SAR (measured) = 15.816 mW/g



0 dB = 15.820mW/g

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

System Check_Body_2450MHz_150430

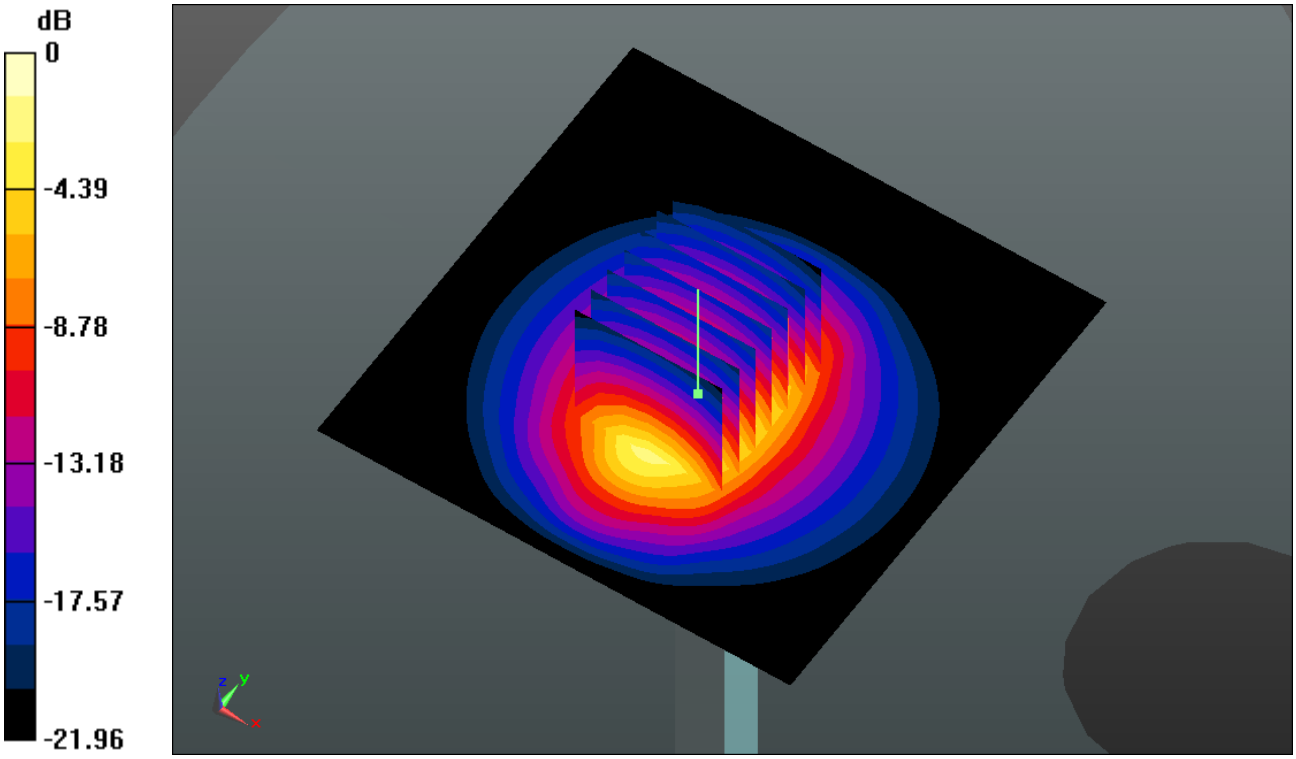
DUT: D2450V2 - SN:840

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL_2450_150430 Medium parameters used: f = 2450 MHz; σ = 1.939 mho/m; ε_r = 50.92; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.14, 7.14, 7.14); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- 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) = 20.726 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 86.531 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 27.784 W/kg
SAR(1 g) = 13.3 mW/g; SAR(10 g) = 6.18 mW/g
Maximum value of SAR (measured) = 20.318 mW/g



0 dB = 20.320mW/g

Appendix B. Plots of High SAR Measurement

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.03.30

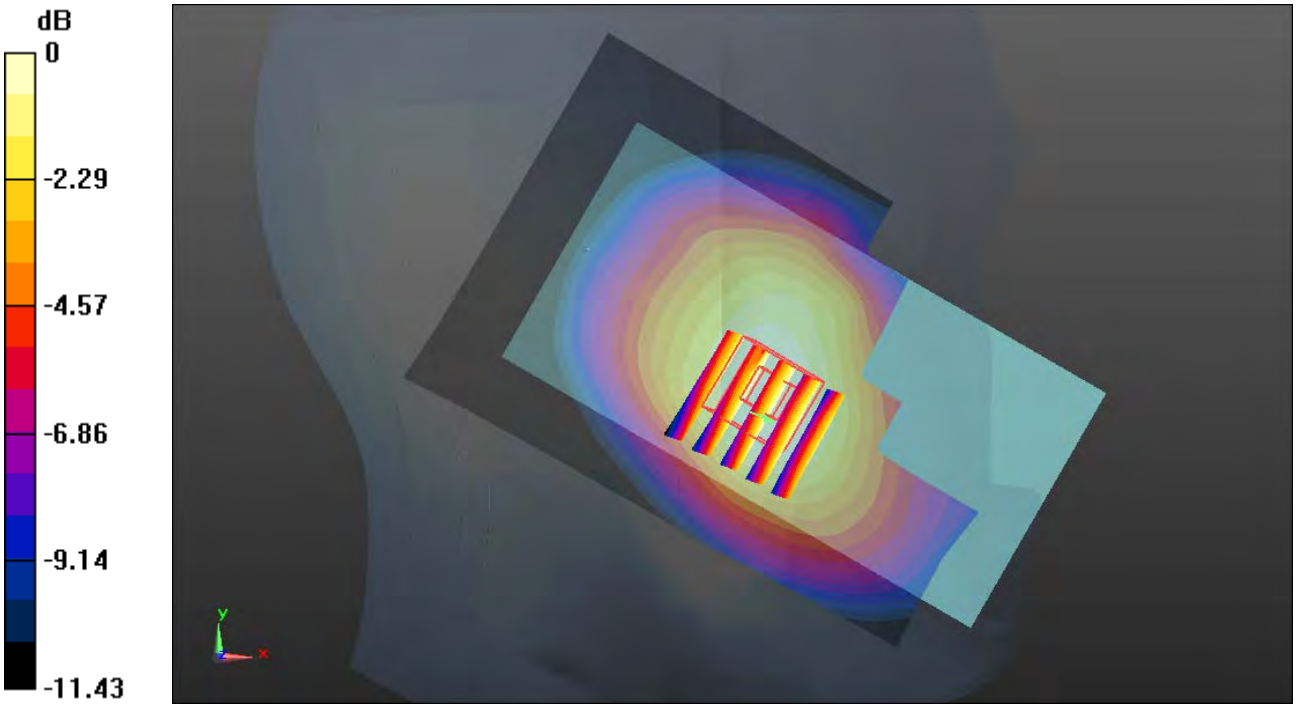
01_GSM850_GPRS (2 Tx slots)_Left Cheek_Ch251

Communication System: GPRS/EDGE (2 Tx slots) (0); Frequency: 848.8 MHz;Duty Cycle: 1:4.15
Medium: HSL_835_150330 Medium parameters used: f = 848.8 MHz; σ = 0.89 mho/m; ε_r = 40.598; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.41, 9.41, 9.41); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch251/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.773 mW/g

Ch251/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.550 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.801 W/kg
SAR(1 g) = 0.628 mW/g; SAR(10 g) = 0.454 mW/g
Maximum value of SAR (measured) = 0.713 mW/g



0 dB = 0.710mW/g

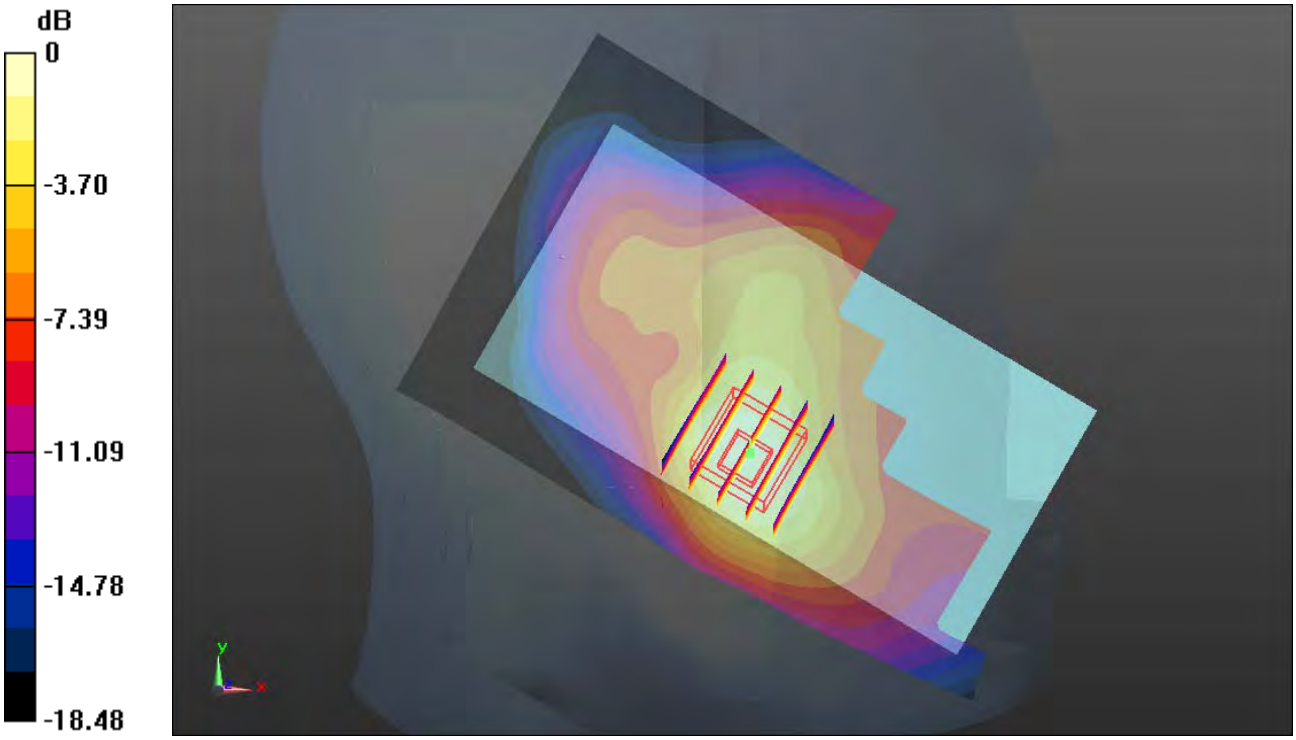
02_GSM1900_GPRS (2 Tx slots)_Left Cheek_Ch810

Communication System: GPRS/EDGE (2 Tx slots) (0); Frequency: 1909.8 MHz;Duty Cycle: 1:4.15
Medium: HSL_1900_150401 Medium parameters used: f = 1909.8 MHz; σ = 1.435 mho/m; ε_r = 39.027; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature：22.7 ℃

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

Ch810/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.630 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.838 V/m; Power Drift = -0.0042 dB
Peak SAR (extrapolated) = 0.764 W/kg
SAR(1 g) = 0.485 mW/g; SAR(10 g) = 0.283 mW/g
Maximum value of SAR (measured) = 0.602 mW/g



0 dB = 0.600mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.03.30

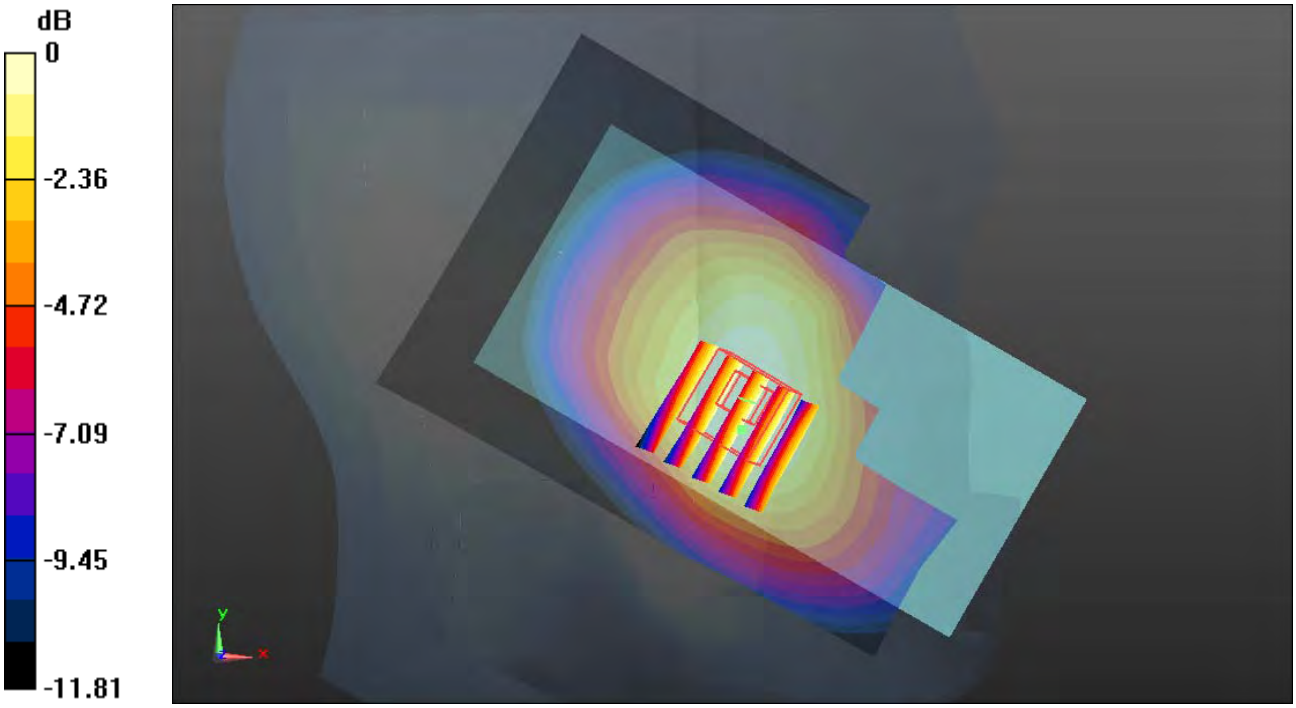
03_WCDMA V_RMC12.2K_Left Cheek_Ch4233

Communication System: UMTS (0); Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium: HSL_835_150330 Medium parameters used: f = 846.6 MHz; σ = 0.888 mho/m; ε_r = 40.631; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.41, 9.41, 9.41); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch4233/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.503 mW/g

Ch4233/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.711 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.537 W/kg
SAR(1 g) = 0.417 mW/g; SAR(10 g) = 0.304 mW/g
Maximum value of SAR (measured) = 0.473 mW/g



0 dB = 0.470mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.04.01

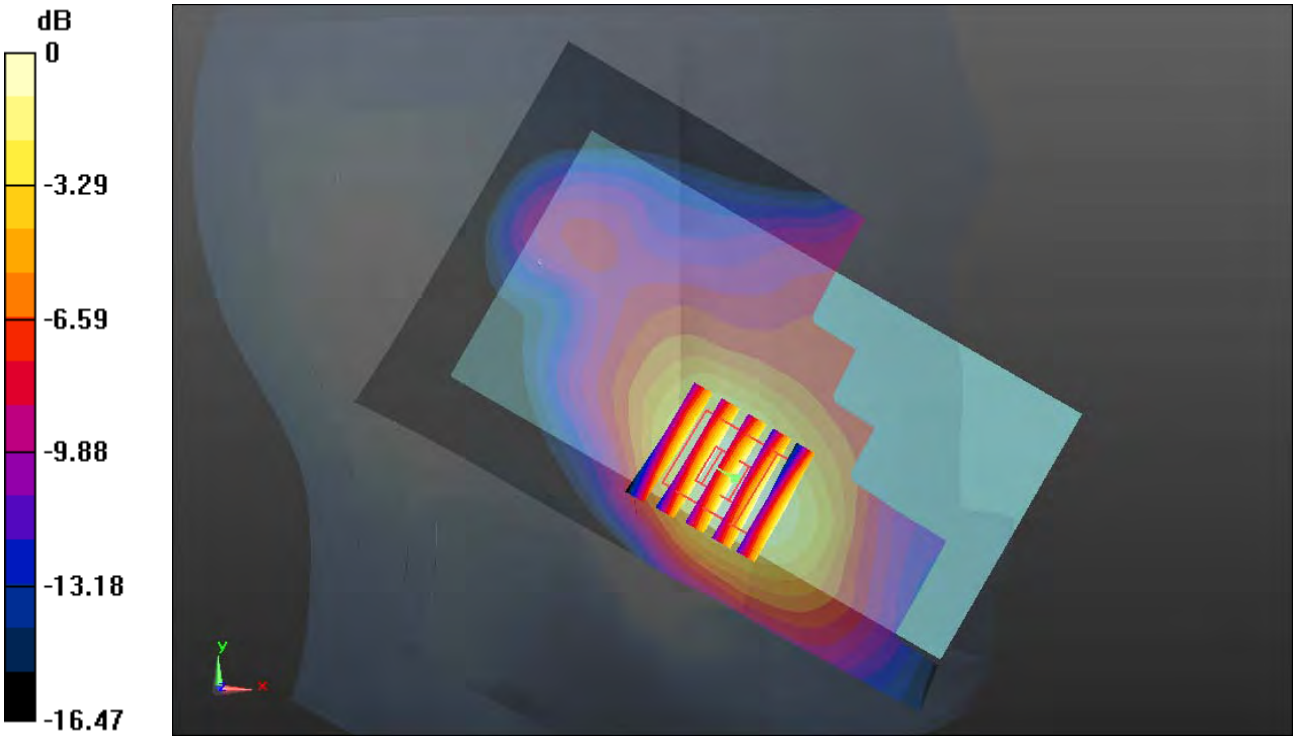
04_WCDMA IV_RMC 12.2K_Left Cheek_Ch1312

Communication System: UMTS (0); Frequency: 1712.4 MHz;Duty Cycle: 1:1
Medium: HSL_1750_150401 Medium parameters used: f = 1712.4 MHz; σ = 1.337 mho/m; ε_r = 41.546; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(8.55, 8.55, 8.55); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch1312/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.849 mW/g

Ch1312/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.899 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 1.001 W/kg
SAR(1 g) = 0.669 mW/g; SAR(10 g) = 0.421 mW/g
Maximum value of SAR (measured) = 0.838 mW/g



0 dB = 0.840mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.04.01

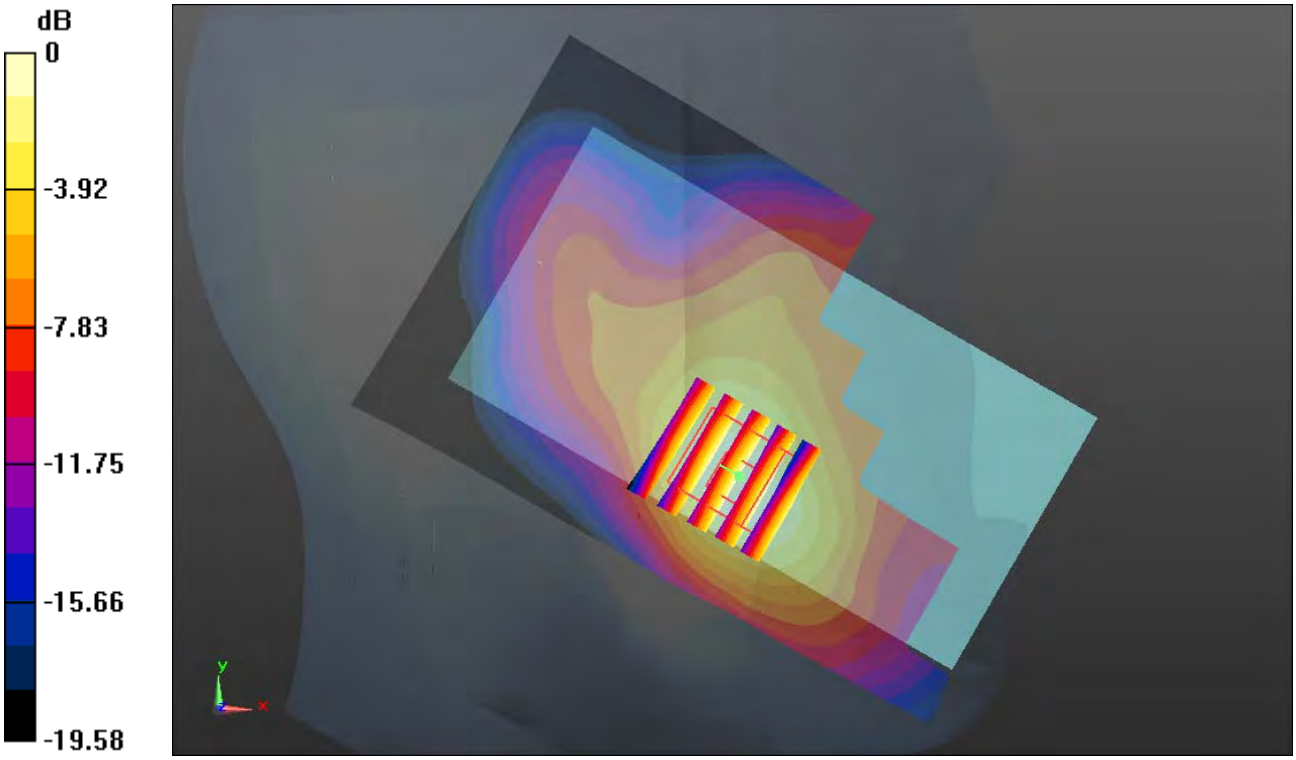
05_WCDMA II_RMC 12.2K_Left Cheek_Ch9400

Communication System: UMTS (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: HSL_1900_150401 Medium parameters used: f = 1880 MHz; σ = 1.404 mho/m; ε_r = 39.159; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature：22.7 ℃

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

Ch9400/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.798 mW/g

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.743 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.938 W/kg
SAR(1 g) = 0.596 mW/g; SAR(10 g) = 0.354 mW/g
Maximum value of SAR (measured) = 0.759 mW/g



0 dB = 0.760mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.03.30

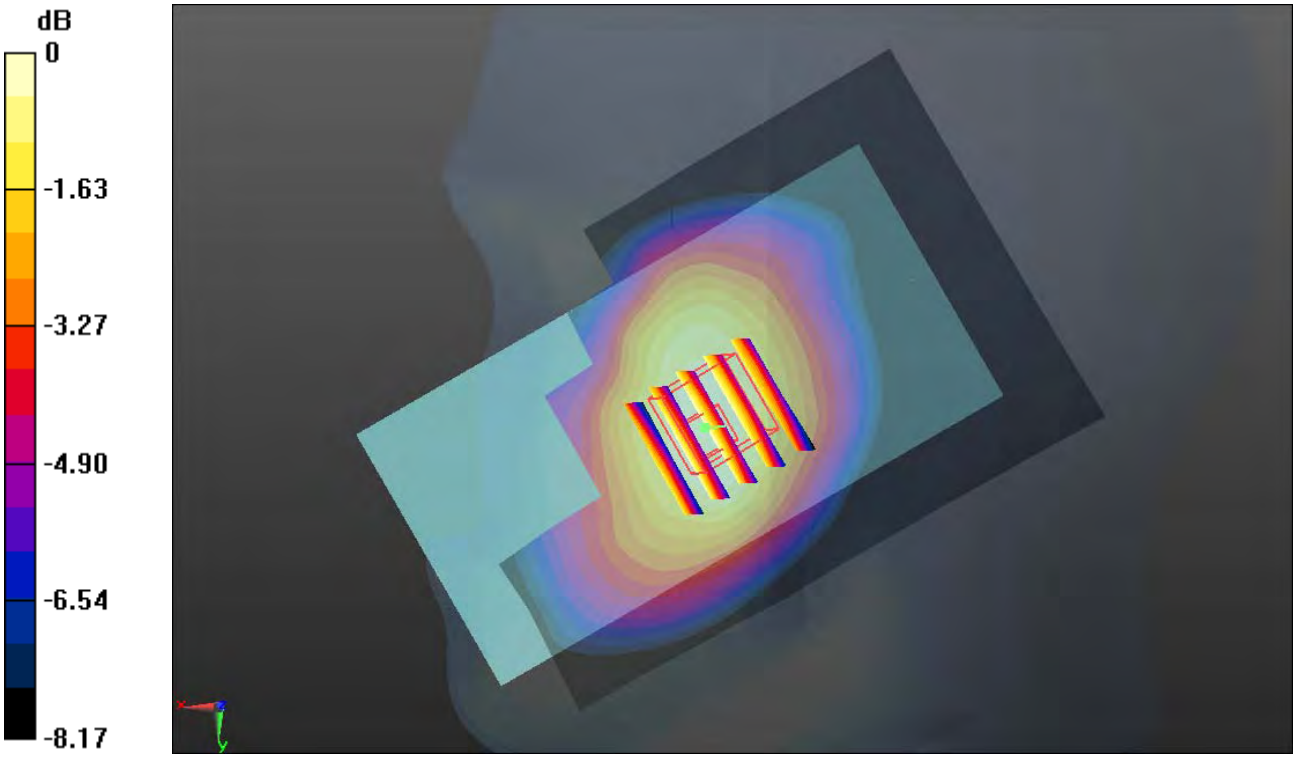
06_LTE Band17_10M_QPSK(1,0)_Right Cheek_Ch23790

Communication System: FDD_LTE (0); Frequency: 710 MHz;Duty Cycle: 1:1
Medium: HSL_750_150330 Medium parameters used: f = 710 MHz; σ = 0.869 mho/m; ε_r = 41.783; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.92, 9.92, 9.92); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch23790/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.258 mW/g

Ch23790/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.381 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.275 W/kg
SAR(1 g) = 0.230 mW/g; SAR(10 g) = 0.182 mW/g
Maximum value of SAR (measured) = 0.257 mW/g



0 dB = 0.260mW/g

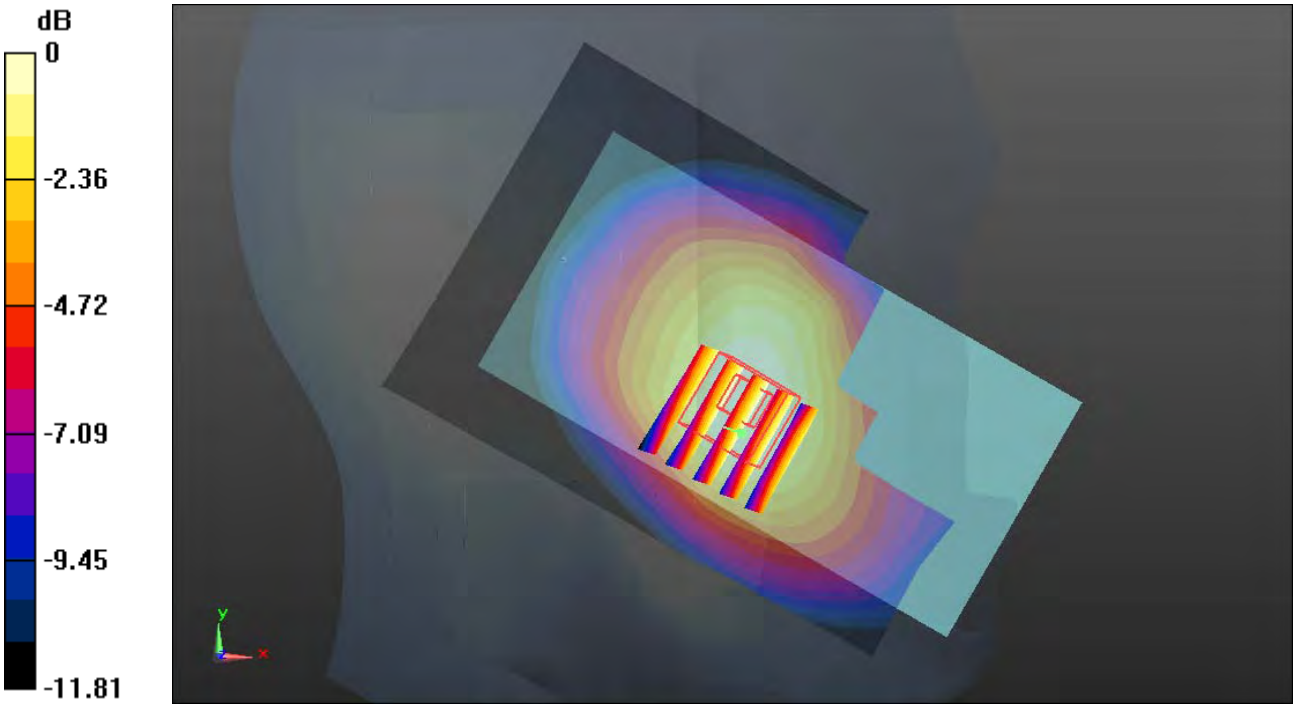
07_LTE Band5_10M_QPSK(1,24)_Left Cheek_Ch20600

Communication System: FDD_LTE (0); Frequency: 844 MHz;Duty Cycle: 1:1
Medium: HSL_835_150330 Medium parameters used: f = 844 MHz; σ = 0.886 mho/m; ε_r = 40.67; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.41, 9.41, 9.41); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch20600/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.369 mW/g

Ch20600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.452 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.411 W/kg
SAR(1 g) = 0.318 mW/g; SAR(10 g) = 0.233 mW/g
Maximum value of SAR (measured) = 0.363 mW/g



0 dB = 0.360mW/g

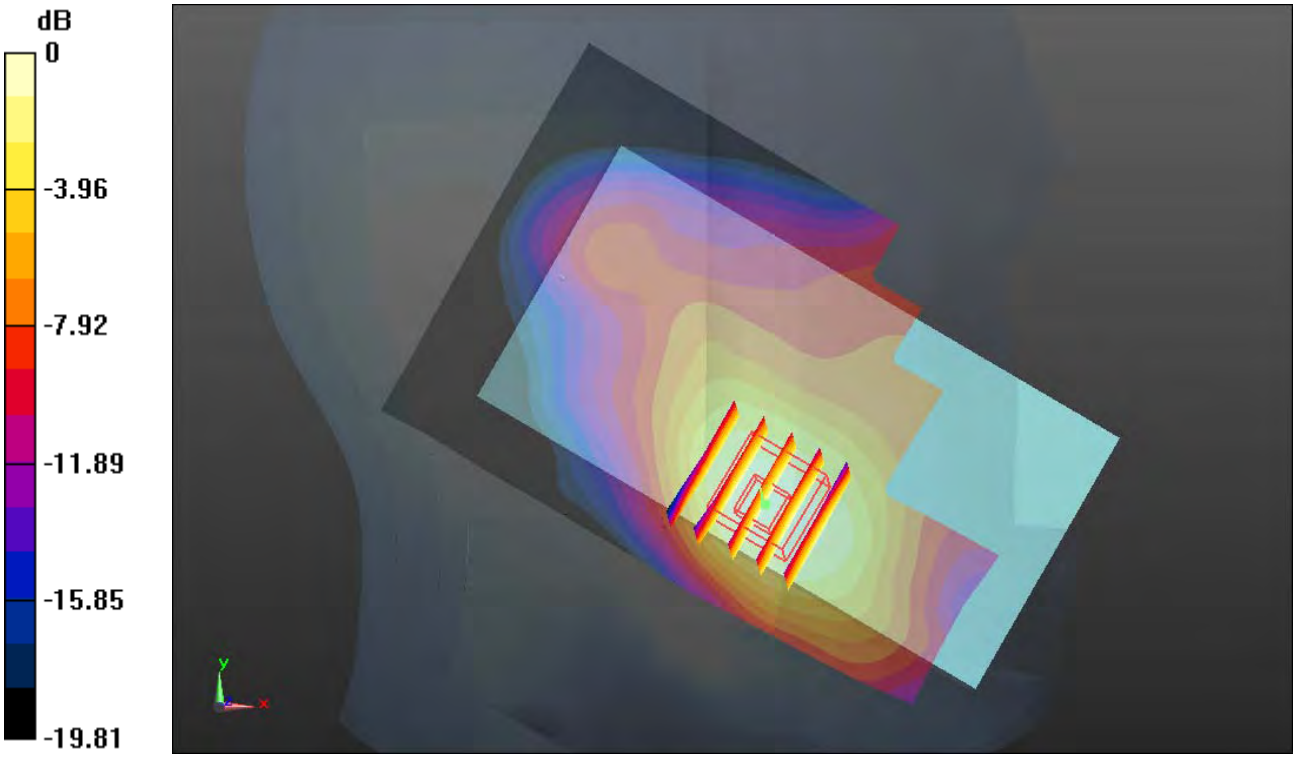
08_LTE Band4_20M_QPSK(1,0)_Left Cheek_Ch20050

Communication System: FDD_LTE (0); Frequency: 1720 MHz;Duty Cycle: 1:1
Medium: HSL_1750_150401 Medium parameters used: f = 1720 MHz; σ = 1.345 mho/m; ε_r = 41.51; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(8.55, 8.55, 8.55); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch20050/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.831 mW/g

Ch20050/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.061 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.979 W/kg
SAR(1 g) = 0.663 mW/g; SAR(10 g) = 0.424 mW/g
Maximum value of SAR (measured) = 0.832 mW/g



0 dB = 0.830mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.04.01

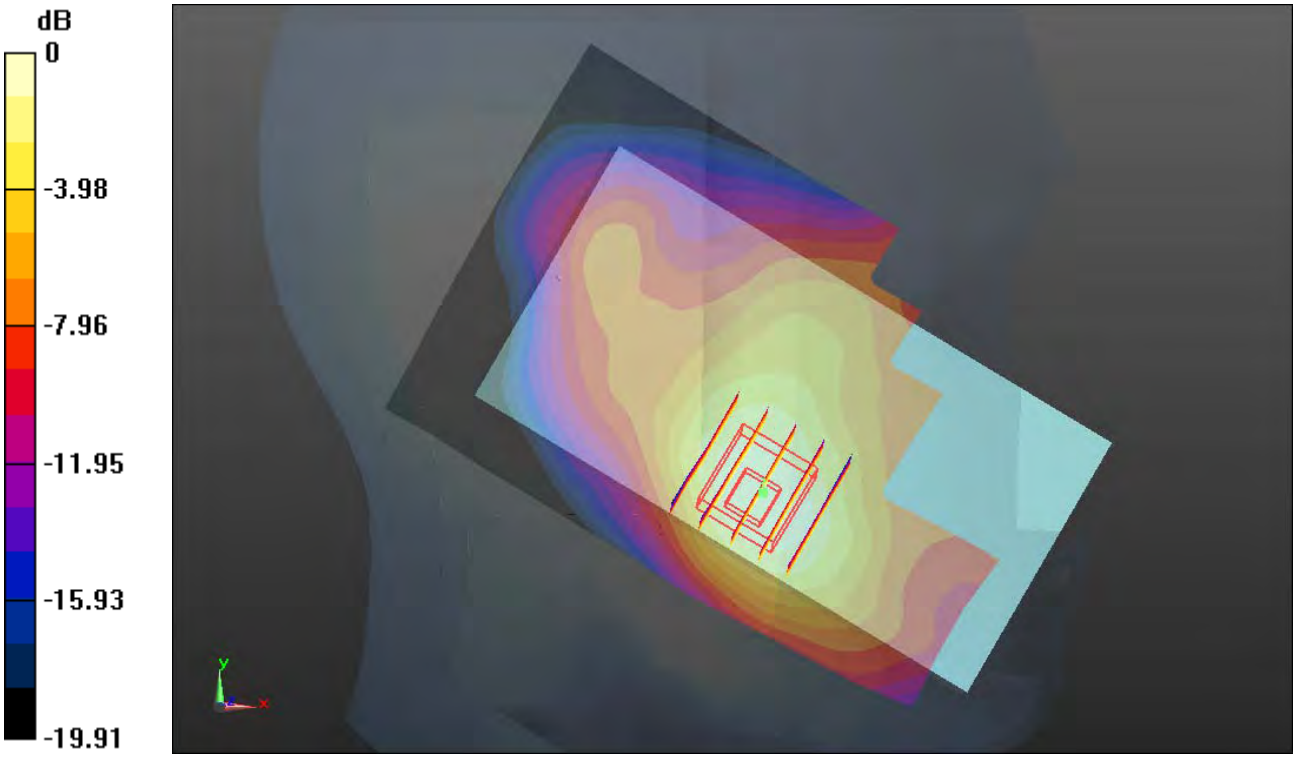
09_LTE Band2_20M_QPSK(1,0)_Left Cheek_Ch19100

Communication System: FDD_LTE (0); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900_150401 Medium parameters used: f = 1900 MHz; σ = 1.425 mho/m; ε_r = 39.073; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature：22.7 ℃

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

Ch19100/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.812 mW/g

Ch19100/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.792 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.933 W/kg
SAR(1 g) = 0.590 mW/g; SAR(10 g) = 0.356 mW/g
Maximum value of SAR (measured) = 0.732 mW/g



0 dB = 0.730mW/g

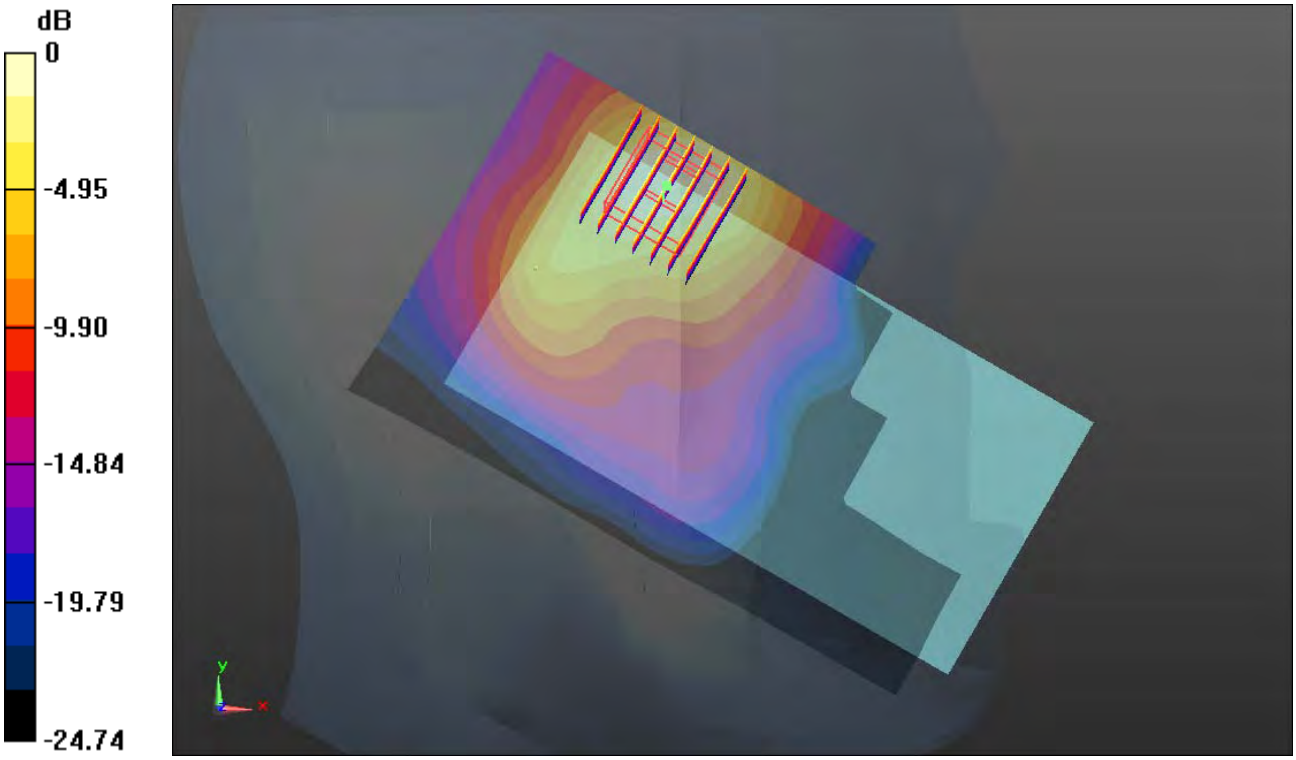
10_WLAN 2.4GHz_802.11b_1M_Left Cheek_Ch11

Communication System: WIFI (0); Frequency: 2462 MHz;Duty Cycle: 1:1.024
Medium: HSL_2450_150430 Medium parameters used: f = 2462 MHz; σ = 1.856 mho/m; ε_r = 39.882; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.48, 7.48, 7.48); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: 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) = 1.710 mW/g

Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.612 V/m; Power Drift = -0.0017 dB
Peak SAR (extrapolated) = 2.377 W/kg
SAR(1 g) = 1.060 mW/g; SAR(10 g) = 0.506 mW/g
Maximum value of SAR (measured) = 1.614 mW/g



0 dB = 1.610mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.03.24

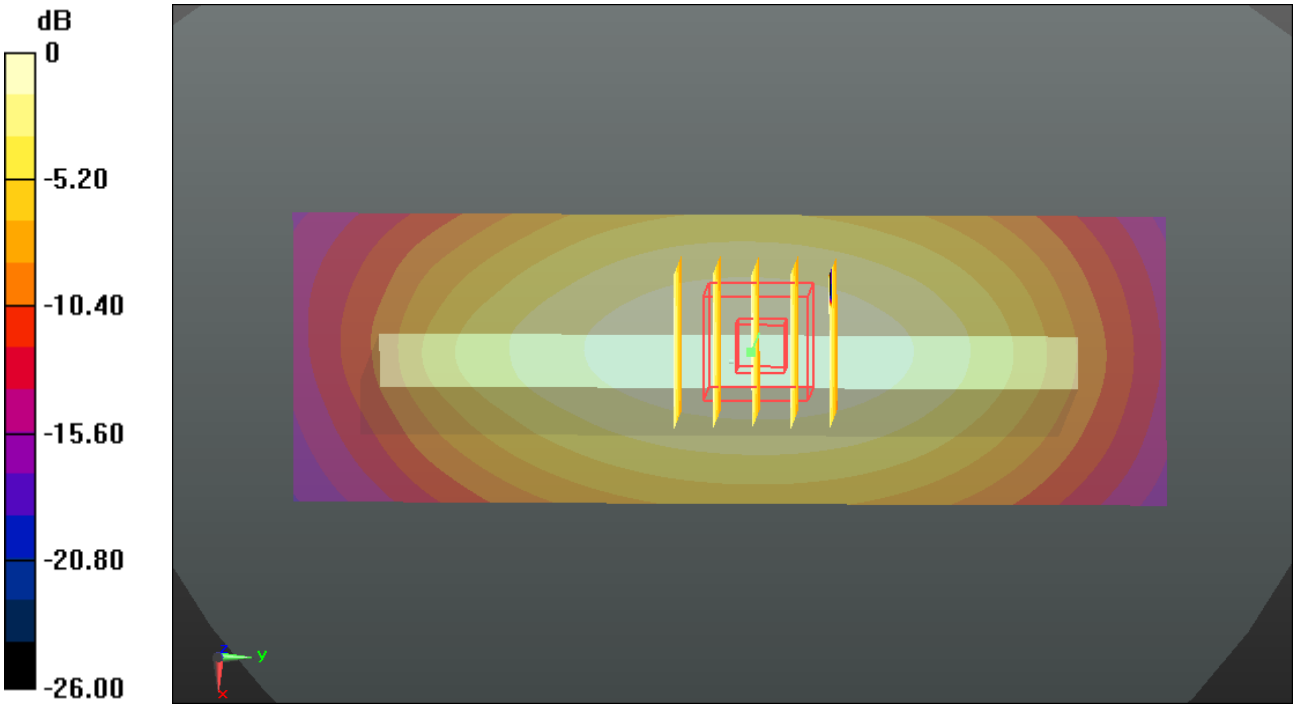
11_GSM850_GPRS (2 Tx slots)_Left Side 1cm_Ch128

Communication System: GPRS/EDGE (2 Tx slots) (0); Frequency: 824.2 MHz;Duty Cycle: 1:4.15
Medium: MSL_835_150324 Medium parameters used: f = 824.2 MHz; σ = 0.972 mho/m; ε_r = 54.958; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.31, 9.31, 9.31); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch128/Area Scan (41x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.243 mW/g

Ch128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 33.266 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.457 W/kg
SAR(1 g) = 1.020 mW/g; SAR(10 g) = 0.717 mW/g
Maximum value of SAR (measured) = 1.239 mW/g



0 dB = 1.240mW/g

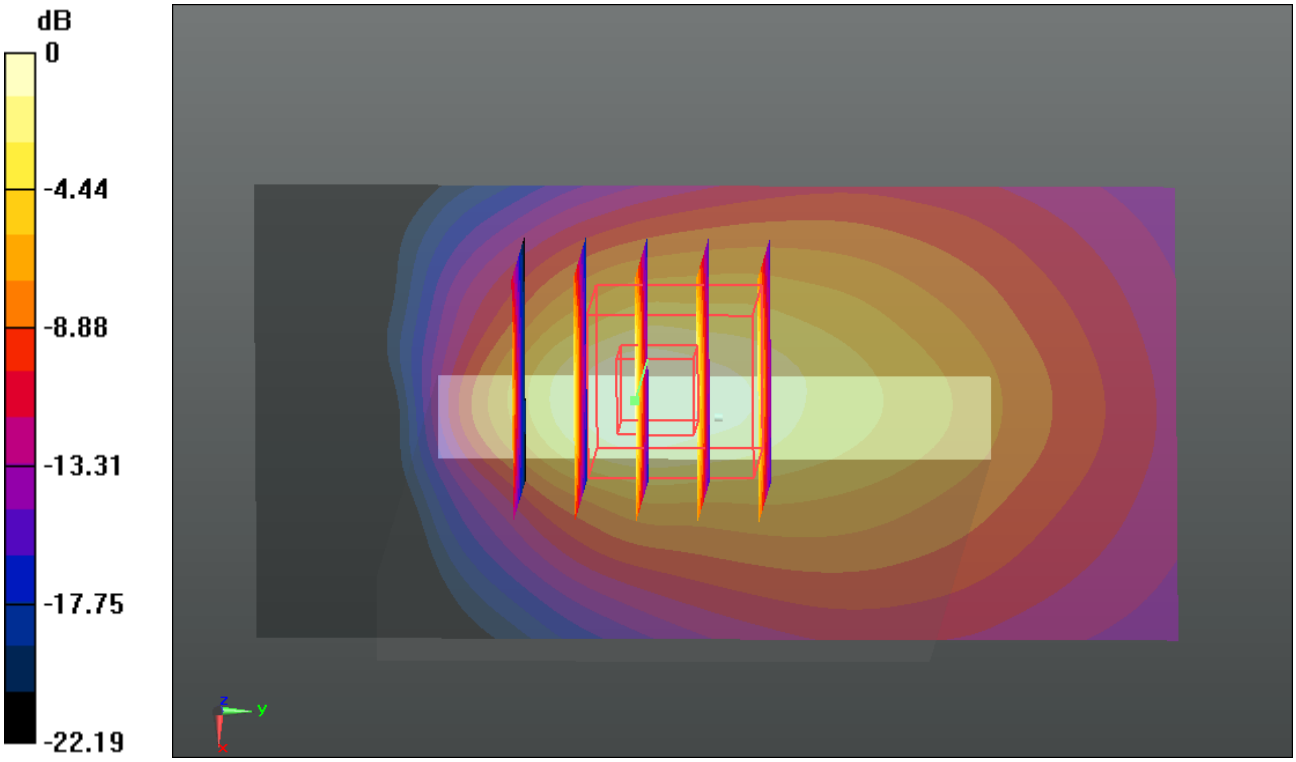
12_GSM1900_GPRS (2 Tx slots)_Bottom Side 1cm_Ch810

Communication System: GPRS/EDGE (2 Tx slots) (0); Frequency: 1909.8 MHz;Duty Cycle: 1:4.15
Medium: MSL_1900_150323 Medium parameters used: f = 1909.8 MHz; σ = 1.559 mho/m; ε_r = 53.318; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃; Liquid Temperature：22.6 ℃

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

Ch810/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.580 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.623 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.884 W/kg
SAR(1 g) = 1.010 mW/g; SAR(10 g) = 0.510 mW/g
Maximum value of SAR (measured) = 1.470 mW/g



0 dB = 1.470mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.03.24

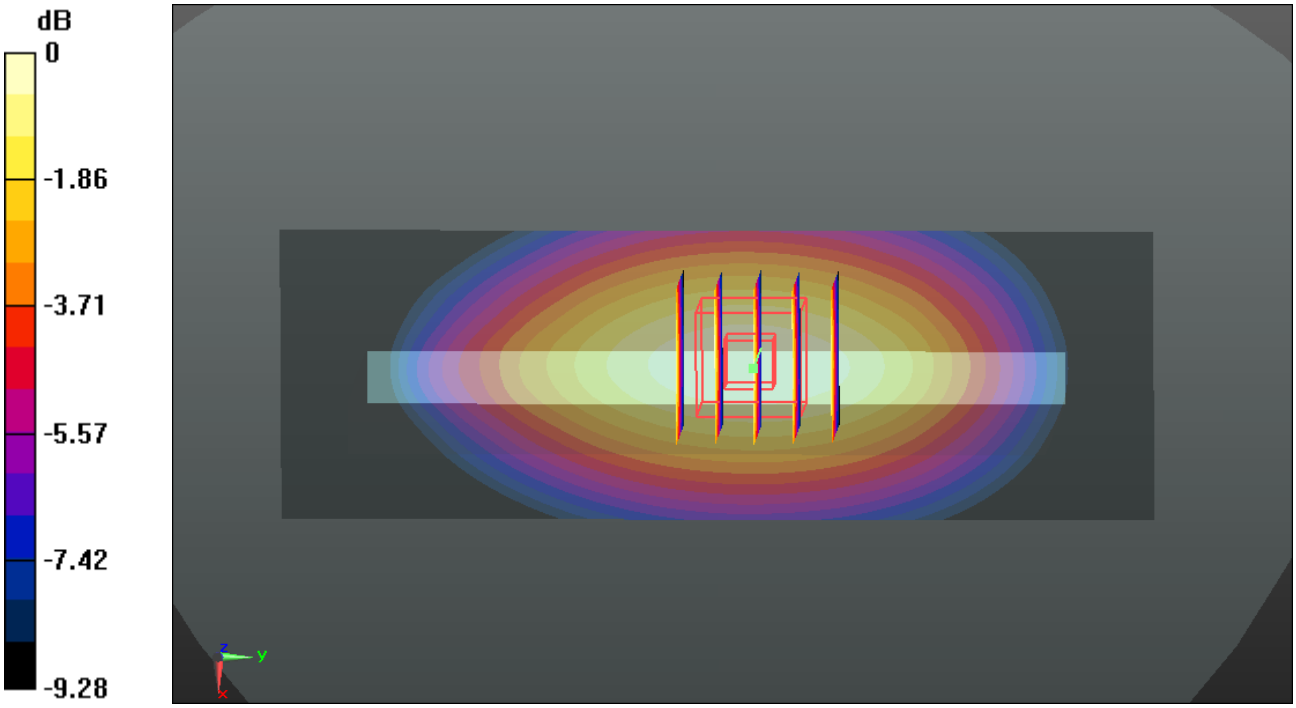
13_WCDMA V_RMC12.2K_Left Side 1cm_Ch4182

Communication System: UMTS (0); Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: MSL_835_150324 Medium parameters used: f = 836.4 MHz; σ = 0.984 mho/m; ε_r = 54.844; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.31, 9.31, 9.31); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch4182/Area Scan (41x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.888 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.954 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.012 W/kg
SAR(1 g) = 0.735 mW/g; SAR(10 g) = 0.515 mW/g
Maximum value of SAR (measured) = 0.891 mW/g



0 dB = 0.890mW/g

14_WCDMA IV_RMC 12.2K_Front 1cm_Ch1312

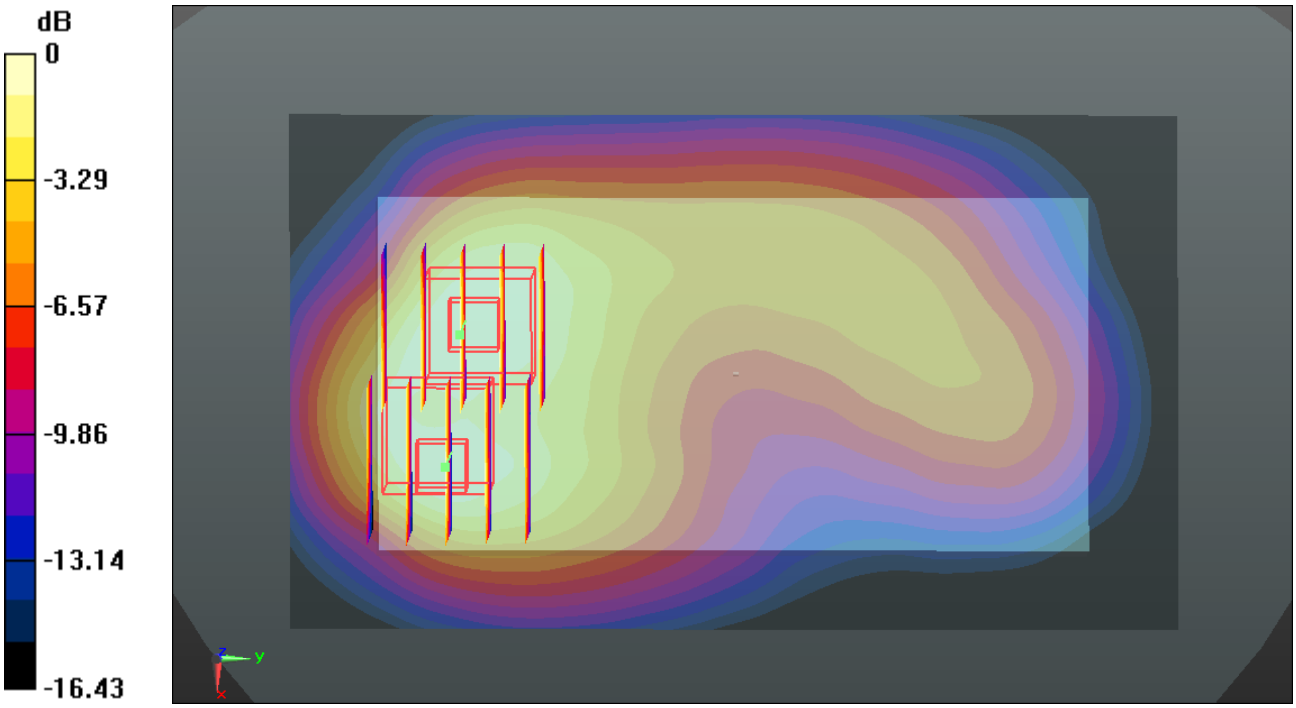
Communication System: UMTS (0); Frequency: 1712.4 MHz;Duty Cycle: 1:1
Medium: MSL_1750_150323 Medium parameters used: f = 1712.4 MHz; σ = 1.48 mho/m; ε_r = 54.495; ρ = 1000 kg/m^3
Ambient Temperature：23.9 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.89, 7.89, 7.89); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch1312/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.655 mW/g

Ch1312/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.062 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.911 W/kg
SAR(1 g) = 1.250 mW/g; SAR(10 g) = 0.783 mW/g
Maximum value of SAR (measured) = 1.601 mW/g

Configuration/Ch1312/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.062 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.813 W/kg
SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.647 mW/g
Maximum value of SAR (measured) = 1.483 mW/g



0 dB = 1.480mW/g

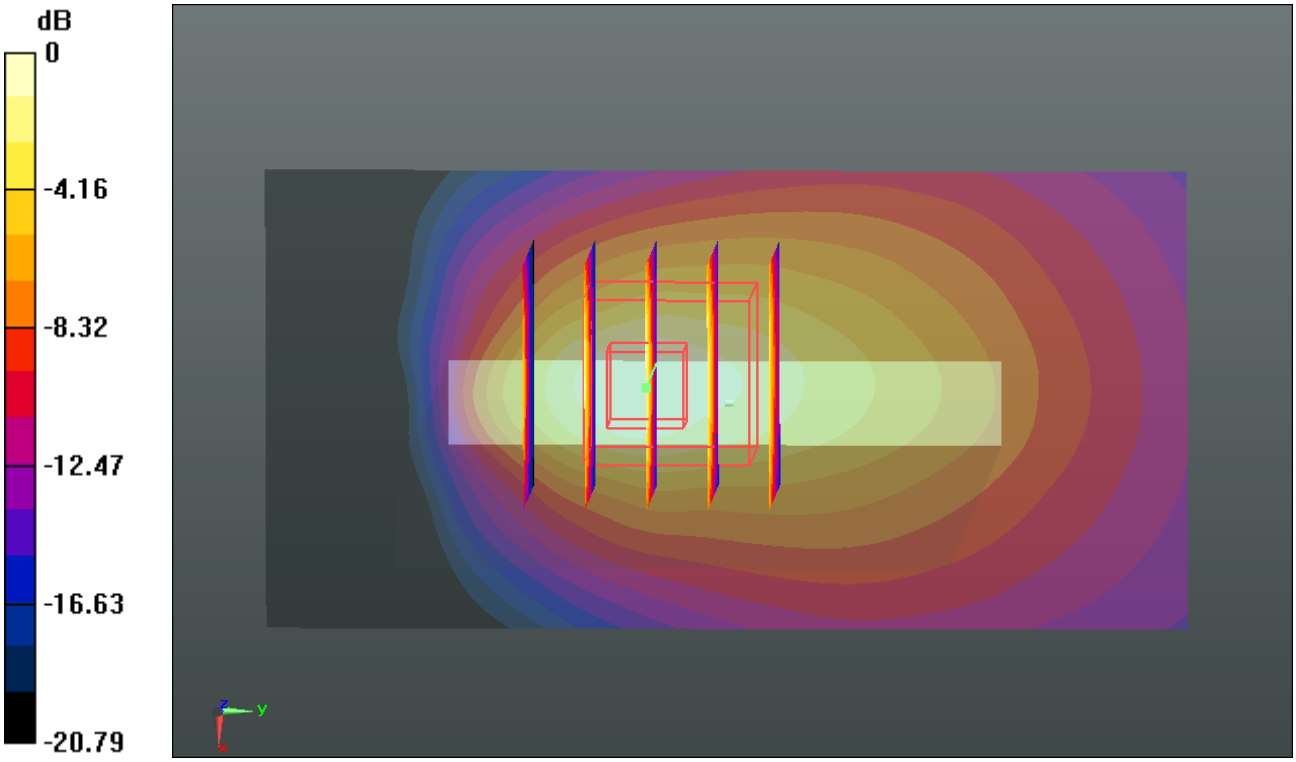
15_WCDMA II_RMC 12.2K_Bottom Side 1cm_Ch9538

Communication System: UMTS (0); Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150323 Medium parameters used: f = 1907.6 MHz; σ = 1.558 mho/m; ε_r = 53.324; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃； Liquid Temperature：22.6 ℃

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

Ch9538/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.816 mW/g

Ch9538/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.502 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 2.085 W/kg
SAR(1 g) = 1.130 mW/g; SAR(10 g) = 0.575 mW/g
Maximum value of SAR (measured) = 1.654 mW/g



0 dB = 1.650mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.03.24

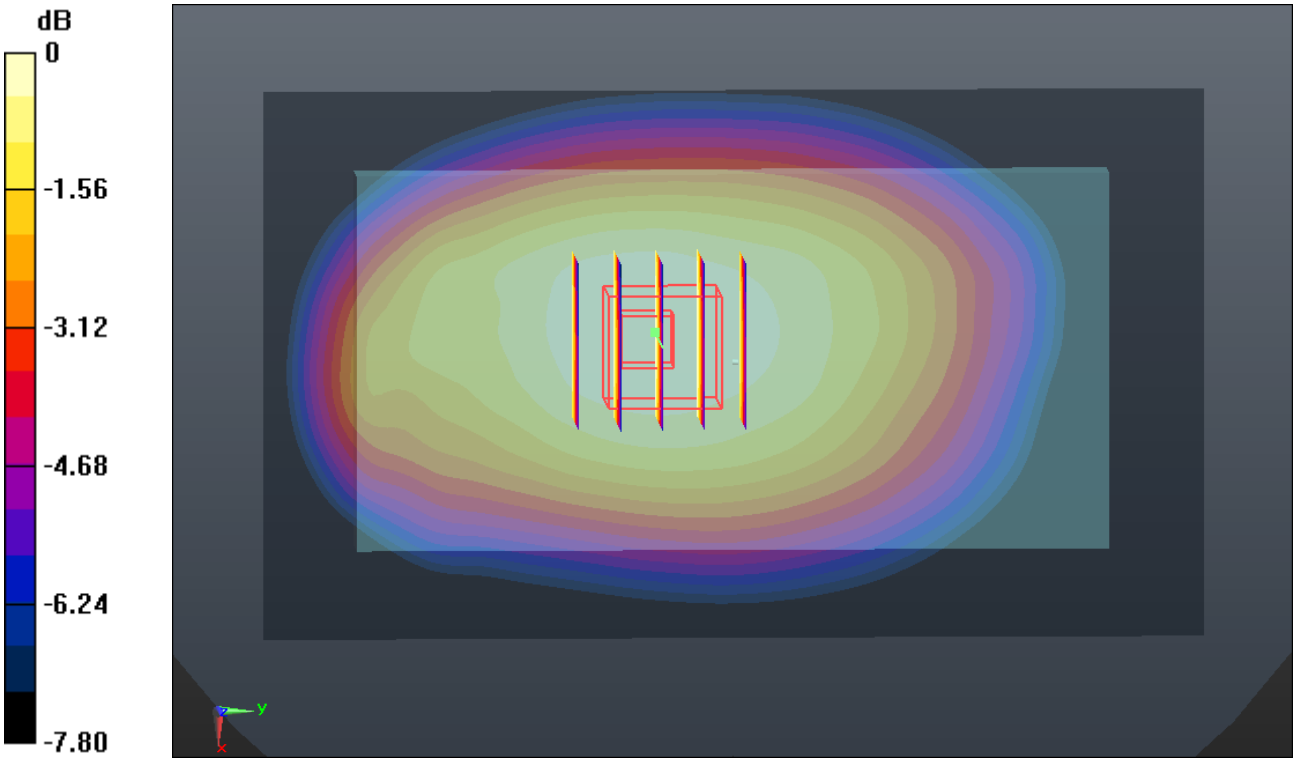
16_LTE Band17_10M_QPSK(1,0)_Front 1cm_Ch23790

Communication System: FDD_LTE (0); Frequency: 710 MHz;Duty Cycle: 1:1
Medium: MSL_750_150324 Medium parameters used: f = 710 MHz; σ = 0.936 mho/m; ε_r = 55.171; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.46, 9.46, 9.46); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch23790/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.546 mW/g

Ch23790/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.712 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.601 W/kg
SAR(1 g) = 0.492 mW/g; SAR(10 g) = 0.388 mW/g
Maximum value of SAR (measured) = 0.553 mW/g



0 dB = 0.550mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.03.24

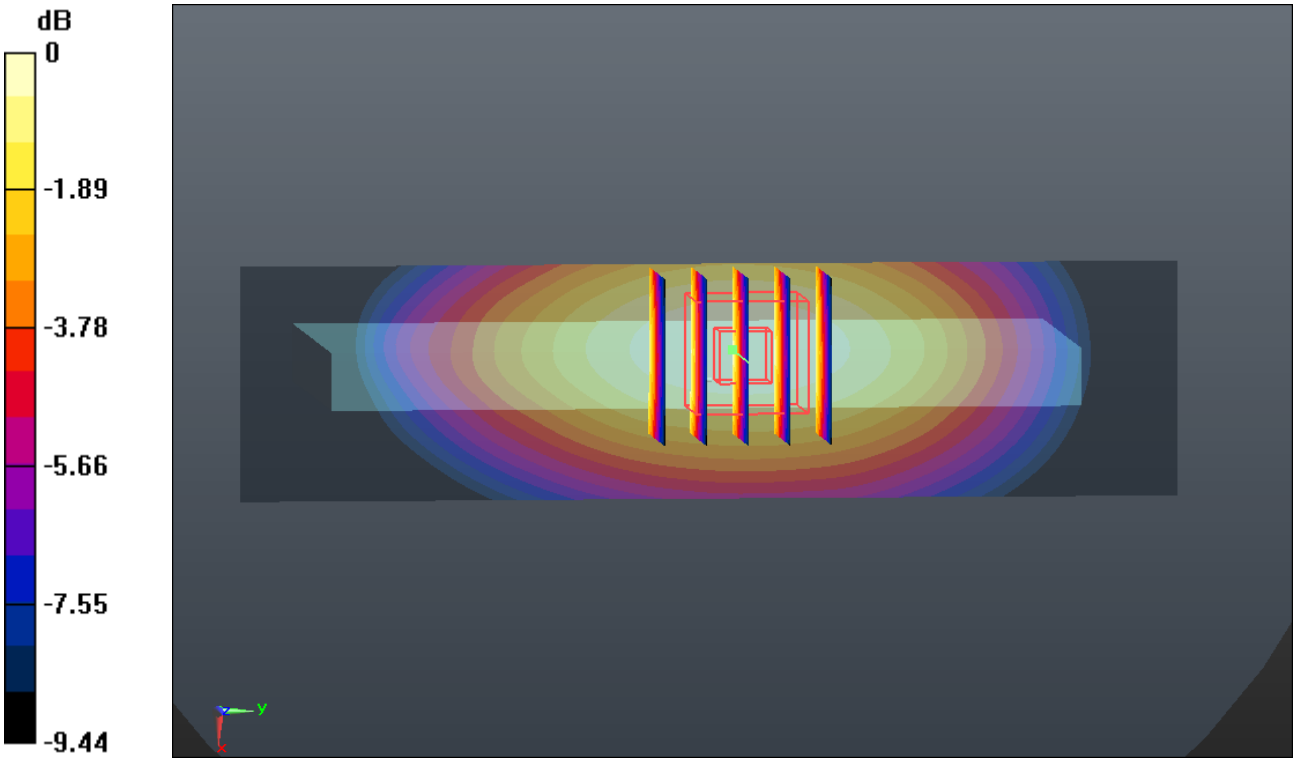
17_LTE Band5_10M_QPSK(1,24)_Left Side 1cm_Ch20600

Communication System: FDD_LTE (0); Frequency: 844 MHz;Duty Cycle: 1:1
Medium: MSL_850_150324 Medium parameters used: f = 844 MHz; σ = 0.992 mho/m; ε_r = 54.763; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.31, 9.31, 9.31); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch20600/Area Scan (31x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.615 mW/g

Ch20600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.479 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.707 W/kg
SAR(1 g) = 0.508 mW/g; SAR(10 g) = 0.357 mW/g
Maximum value of SAR (measured) = 0.615 mW/g



0 dB = 0.610mW/g

18_LTE Band4_20M_QPSK(1,0)_Front 1cm_Ch20175

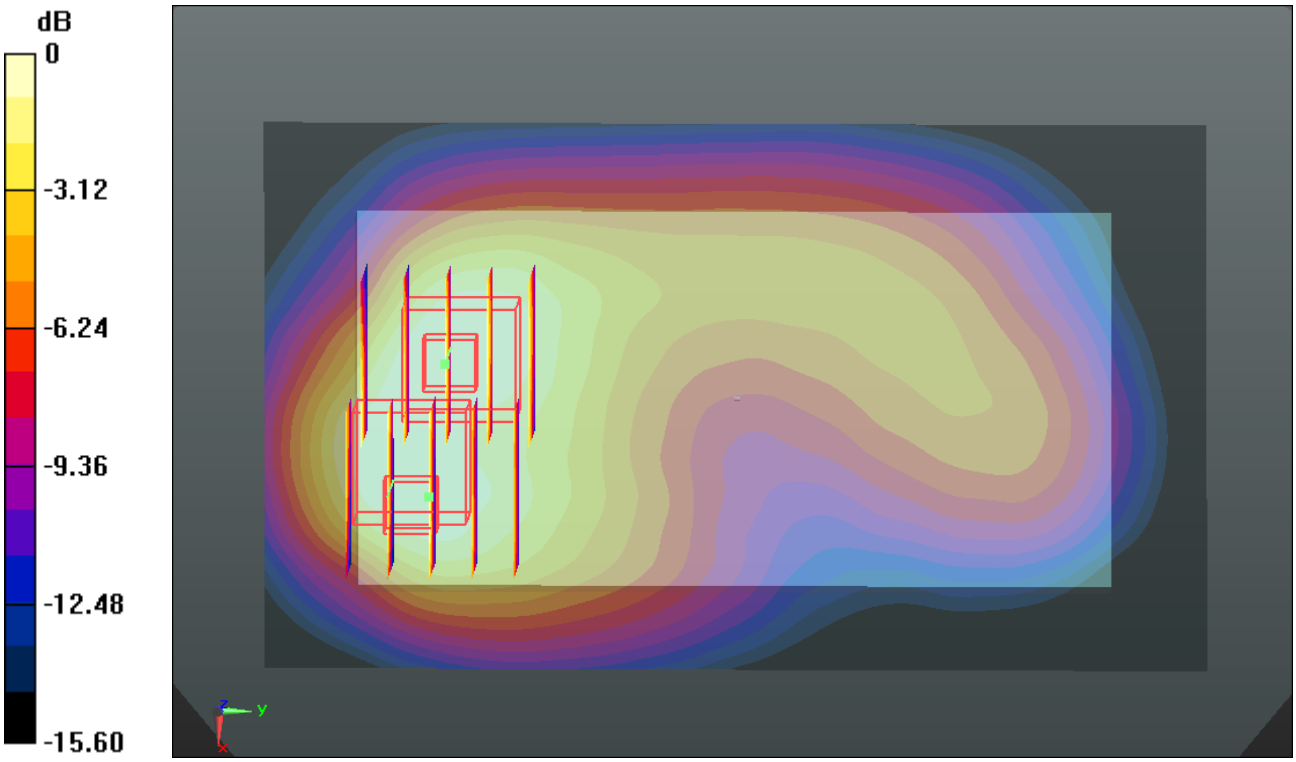
Communication System: FDD_LTE (0); Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium: MSL_1750_150323 Medium parameters used: f = 1732.5 MHz; σ = 1.503 mho/m; ε_r = 54.464; ρ = 1000 kg/m^3
Ambient Temperature：23.9 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.89, 7.89, 7.89); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch20175/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.337 mW/g

Ch20175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.364 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 1.633 W/kg
SAR(1 g) = 1.080 mW/g; SAR(10 g) = 0.673 mW/g
Maximum value of SAR (measured) = 1.383 mW/g

Ch20175/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.364 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 1.490 W/kg
SAR(1 g) = 0.874 mW/g; SAR(10 g) = 0.543 mW/g
Maximum value of SAR (measured) = 1.172 mW/g



0 dB = 1.170mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.03.23

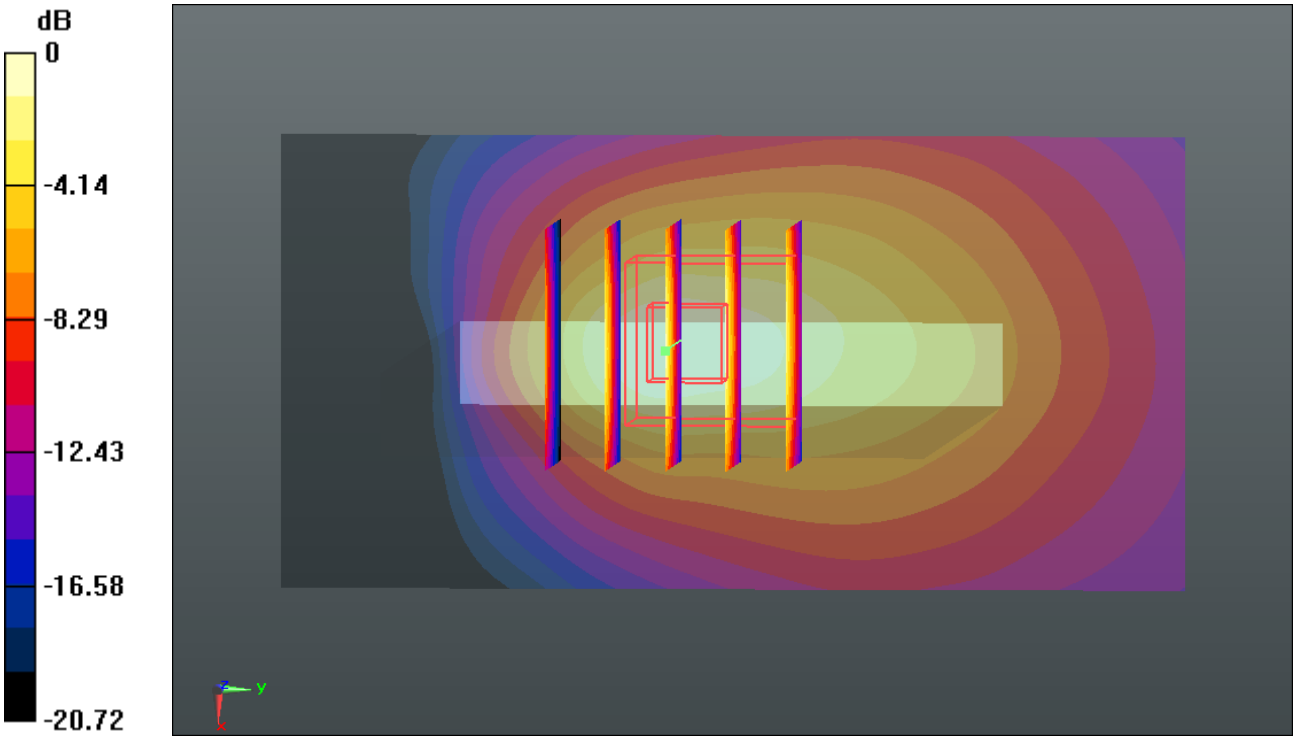
19_LTE Band2_20M_QPSK(1,0)_Bottom Side 1cm_Ch19100

Communication System: FDD_LTE (0); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150323 Medium parameters used: f = 1900 MHz; σ = 1.549 mho/m; ε_r = 53.346; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃; Liquid Temperature：22.6 ℃

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

Ch19100/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.634 mW/g

Ch19100/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.644 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.975 W/kg
SAR(1 g) = 1.090 mW/g; SAR(10 g) = 0.567 mW/g
Maximum value of SAR (measured) = 1.557 mW/g



0 dB = 1.560mW/g

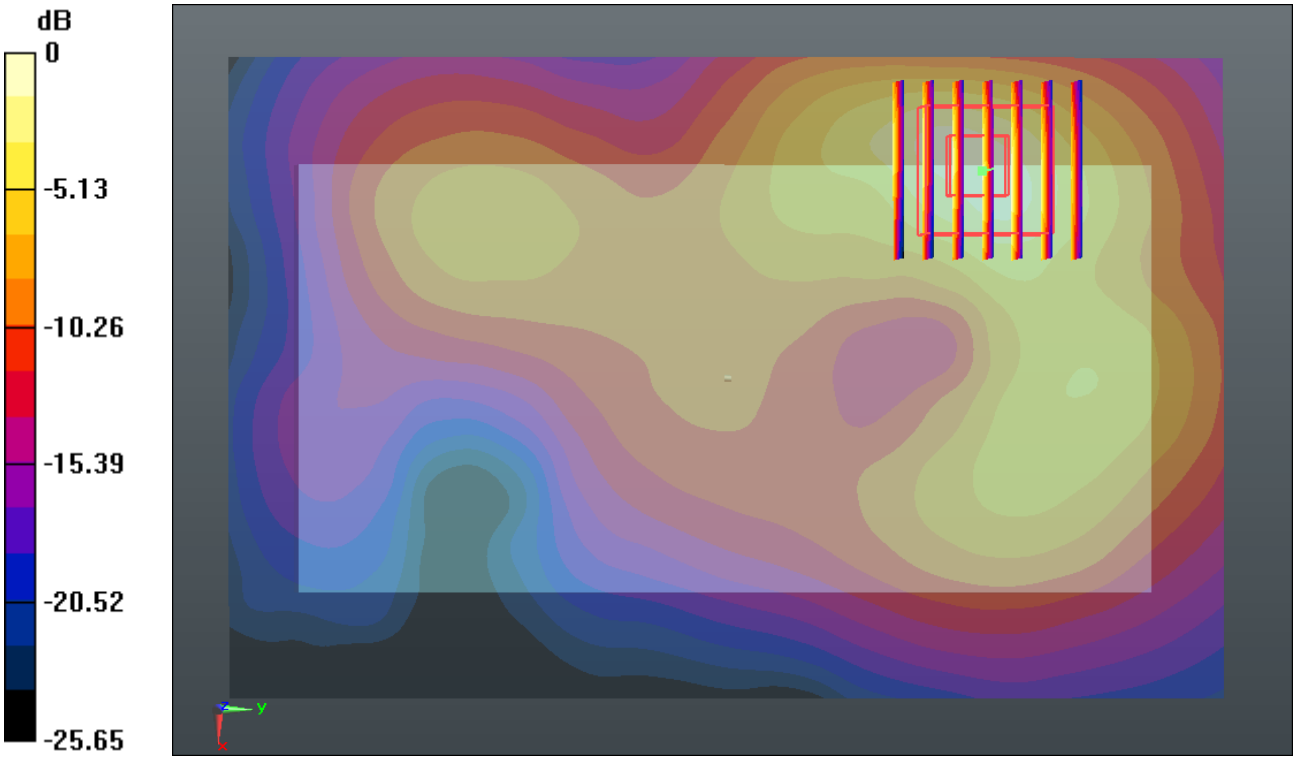
20_WLAN 2.4GHz_802.11b_Back 1cm_Ch1

Communication System: WIFI (0); Frequency: 2412 MHz;Duty Cycle: 1:1.024
Medium: MSL_2450_150430 Medium parameters used: f = 2412 MHz; σ = 1.883 mho/m; ε_r = 51.092; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.14, 7.14, 7.14); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch1/Area Scan (91x141x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.802 mW/g

Ch1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.376 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.243 W/kg
SAR(1 g) = 0.592 mW/g; SAR(10 g) = 0.267 mW/g
Maximum value of SAR (measured) = 0.911 mW/g



0 dB = 0.910mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.03.24

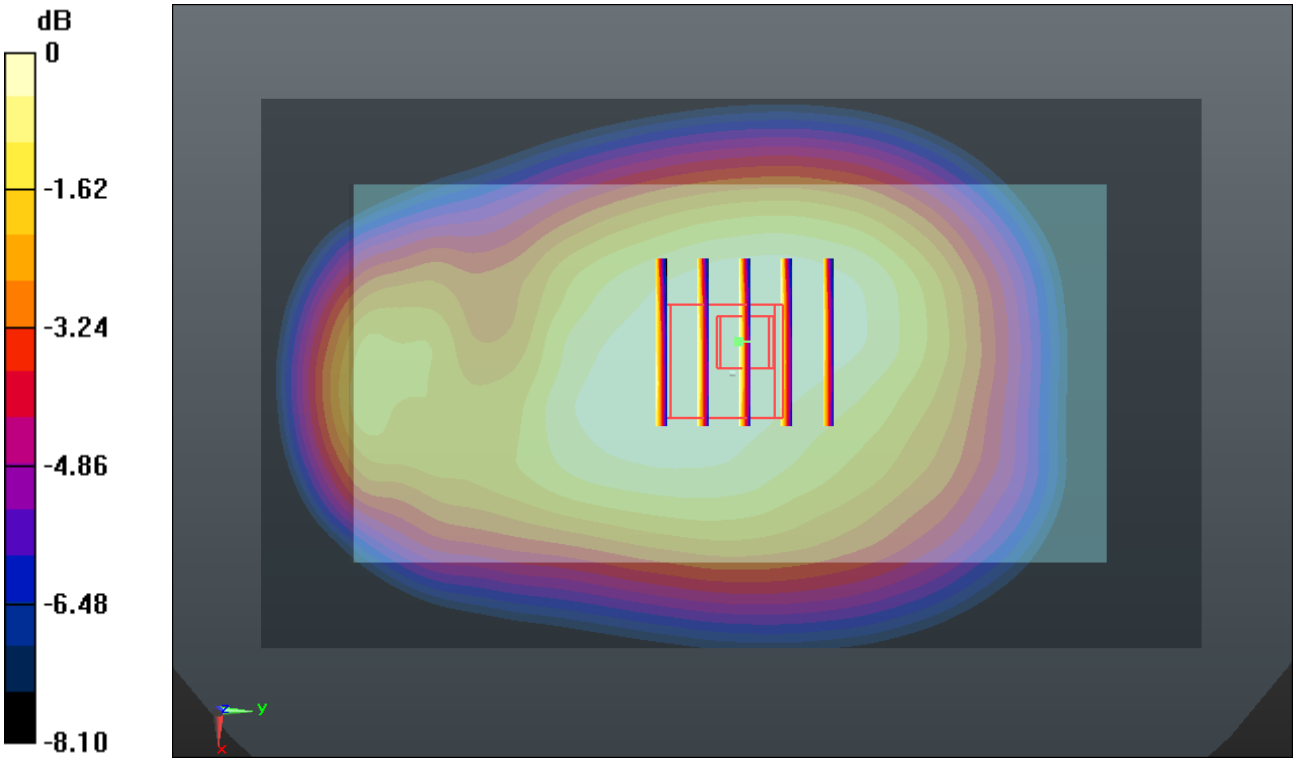
21_GSM850_GPRS (2 Tx slots)_Back 1cm_Ch128

Communication System: GPRS/EDGE (2 Tx slots) (0); Frequency: 824.2 MHz;Duty Cycle: 1:4.15
Medium: MSL_835_150324 Medium parameters used: f = 824.2 MHz; σ = 0.972 mho/m; ε_r = 54.958; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.31, 9.31, 9.31); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch128/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.087 mW/g

Ch128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.523 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.189 W/kg
SAR(1 g) = 0.936 mW/g; SAR(10 g) = 0.723 mW/g
Maximum value of SAR (measured) = 1.072 mW/g



0 dB = 1.070mW/g

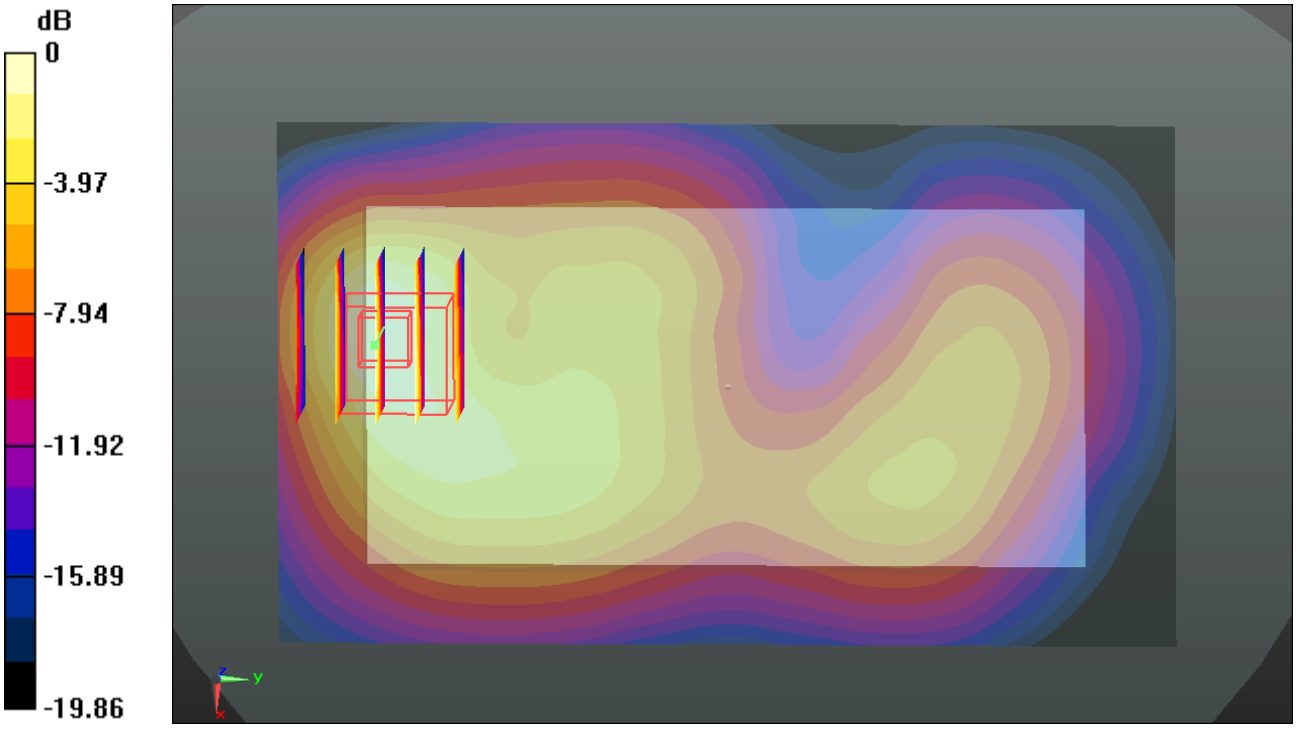
22_GSM1900_GPRS (2 Tx slots)_Back 1cm_Ch810

Communication System: GPRS/EDGE (2 Tx slots) (0); Frequency: 1909.8 MHz;Duty Cycle: 1:4.15
Medium: MSL_1900_150323 Medium parameters used: f = 1909.8 MHz; σ = 1.559 mho/m; ε_r = 53.318; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃; Liquid Temperature：22.6 ℃

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

Ch810/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.139 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.658 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.567 W/kg
SAR(1 g) = 0.873 mW/g; SAR(10 g) = 0.485 mW/g
Maximum value of SAR (measured) = 1.168 mW/g



0 dB = 1.170mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.03.24

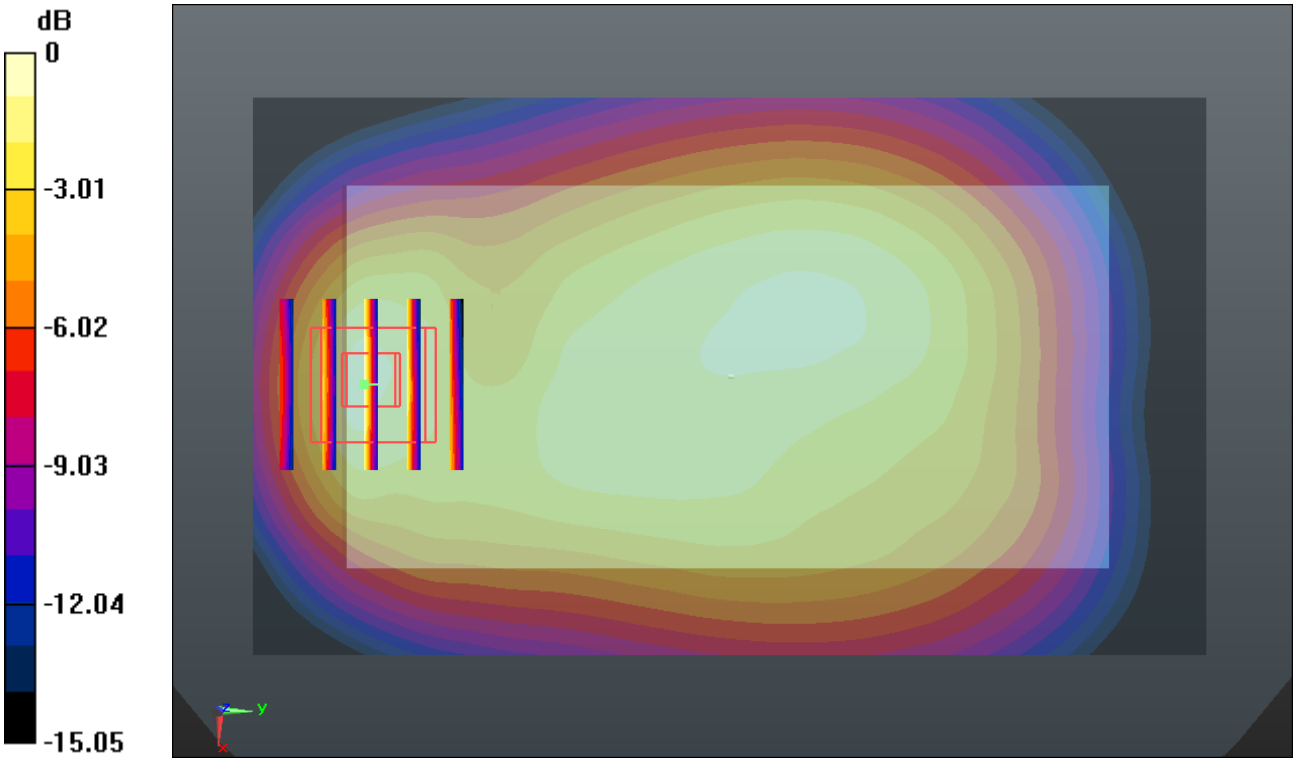
23_WCDMA V_RMC12.2K_Back 1cm_Ch4233

Communication System: UMTS (0); Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium: MSL_835_150324 Medium parameters used: f = 846.6 MHz; σ = 0.995 mho/m; ε_r = 54.732; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.31, 9.31, 9.31); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch4233/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.669 mW/g

Ch4233/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.670 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.981 W/kg
SAR(1 g) = 0.551 mW/g; SAR(10 g) = 0.308 mW/g
Maximum value of SAR (measured) = 0.766 mW/g



0 dB = 0.770mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.03.23

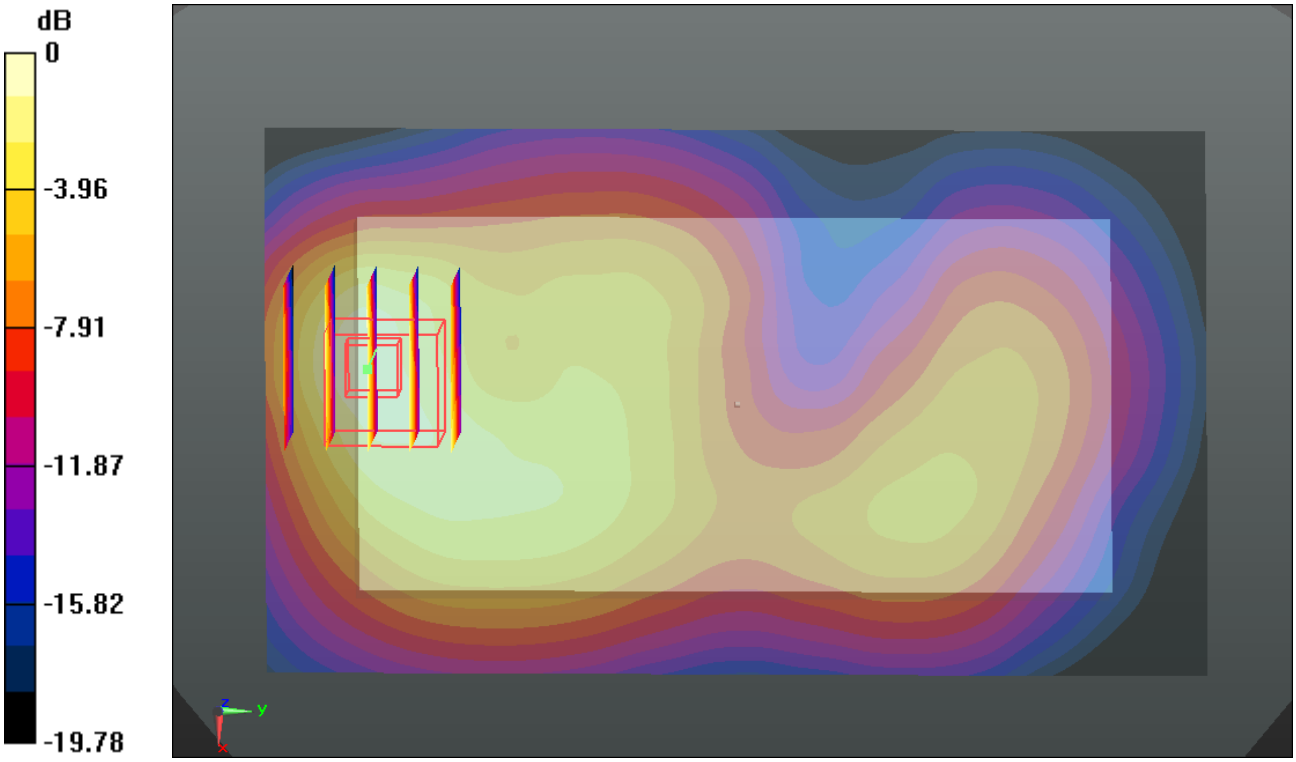
24_WCDMA II_RMC 12.2K_Back 1cm_Ch9538

Communication System: UMTS (0); Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150323 Medium parameters used: f = 1907.6 MHz; σ = 1.558 mho/m; ε_r = 53.324; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃； Liquid Temperature：22.6 ℃

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

Ch9538/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.349 mW/g

Ch9538/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.460 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 1.777 W/kg
SAR(1 g) = 0.997 mW/g; SAR(10 g) = 0.560 mW/g
Maximum value of SAR (measured) = 1.360 mW/g



0 dB = 1.360mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.03.24

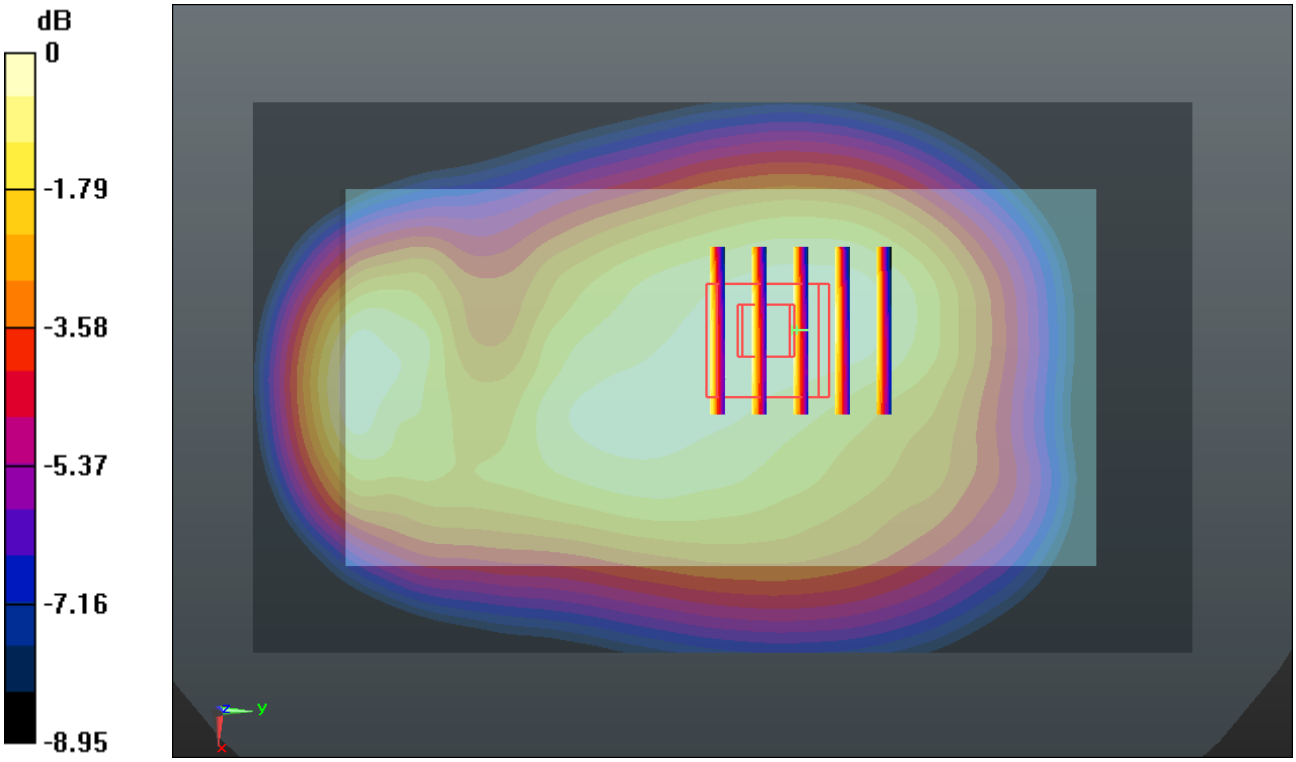
25_LTE Band5_10M_QPSK(1,24)_Back 1cm_Ch20600

Communication System: FDD_LTE (0); Frequency: 844 MHz;Duty Cycle: 1:1
Medium: MSL_835_150324 Medium parameters used: f = 844 MHz; σ = 0.992 mho/m; ε_r = 54.763; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.31, 9.31, 9.31); Calibrated: 2014.05.23
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2014.05.19
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch20600/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.480 mW/g

Ch20600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.500 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.535 W/kg
SAR(1 g) = 0.410 mW/g; SAR(10 g) = 0.308 mW/g
Maximum value of SAR (measured) = 0.477 mW/g



0 dB = 0.480mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.03.23

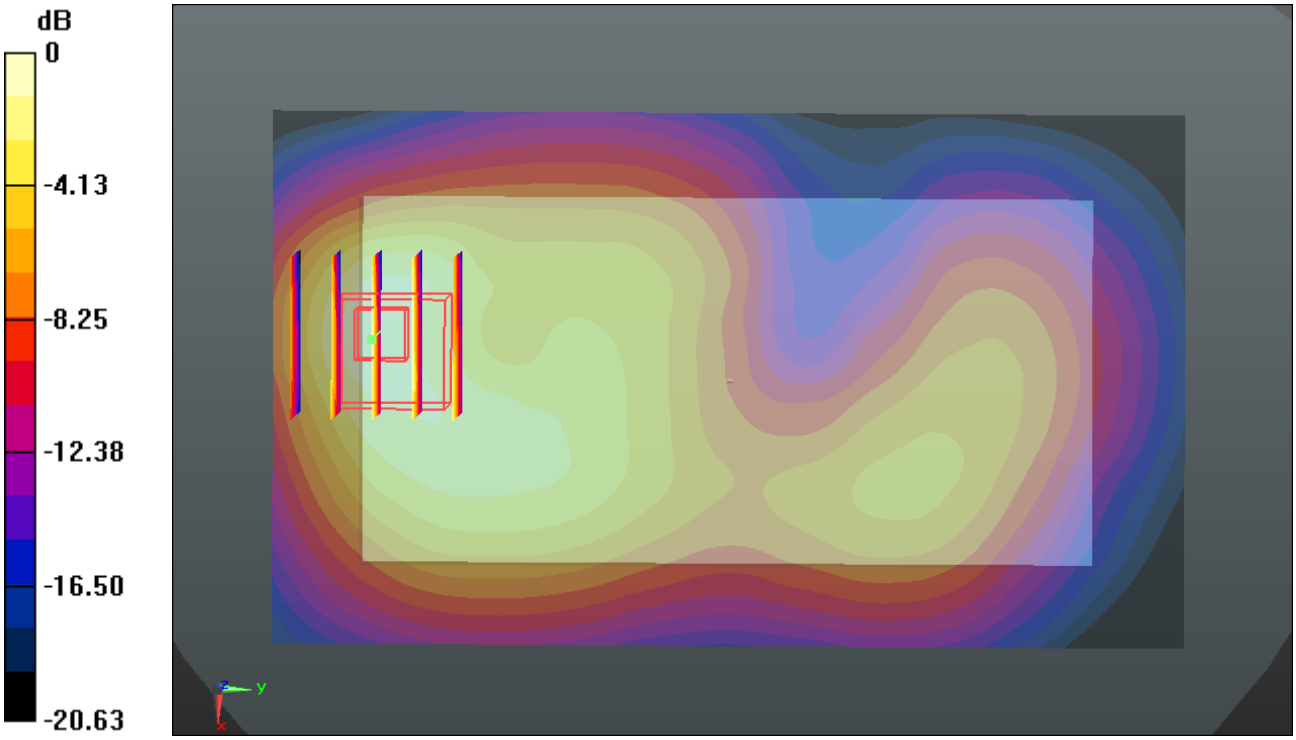
26_LTE Band2_20M_QPSK(1,0)_Back 1cm_Ch19100

Communication System: FDD_LTE (0); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150323 Medium parameters used: f = 1900 MHz; σ = 1.549 mho/m; ε_r = 53.346; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃; Liquid Temperature：22.6 ℃

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

Ch19100/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.268 mW/g

Ch19100/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.142 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 1.730 W/kg
SAR(1 g) = 0.964 mW/g; SAR(10 g) = 0.542 mW/g
Maximum value of SAR (measured) = 1.302 mW/g



0 dB = 1.300mW/g