FCC SAR Test Report

APPLICANT	:	Hewlett-Packard Co., Ltd.
EQUIPMENT	:	Tablet PC
BRAND NAME	:	HP
MODEL NAME	:	HSTNH-B17CM
MARKETING NAME	:	HP SLATE 10 HD
FCC ID	:	B94HHB17CM
STANDARD	:	FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2003

The product was completely tested on Sep. 29, 2013. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown the compliance with the applicable technical standards.

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

Reviewed by: Eric Huang / Deputy Manager

Approved by: Jones Tsai / Manager

Testing Laboratory
2627

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA362701	Rev. 01	Initial issue of report	Oct. 21, 2013
FA362701	Rev. 02	Update report for revising SW version.	Nov. 22, 2013

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Hewlett-Packard Co., Ltd. Tablet PC, HP, HP SLATE 10 HD** are as follows.

<Highest SAR Summary>

Exposure Position	Frequency Band	Reported 1g-SAR (W/kg)	Equipment Class	Highest Reported 1g-SAR (W/kg)
Body	GSM850	0.78	PCB	1.35
	GSM1900	0.95		
	WCDMA Band V	0.74		
	WCDMA Band IV	1.33		
	WCDMA Band II	1.35		
	WLAN 2.4GHz Band	0.88	DTS	0.88

<Highest Simultaneous Transmission SAR>

Exposure Position	Frequency Band	Equipment Class	Highest Reported Simultaneous Transmission 1g-SAR (W/kg)
Body	WCDMA Band II	PCB	1.59
	WLAN 5.3/5.5GHz Band	NII	
Body	WCDMA Band II	PCB	1.59
	WLAN 5.8GHz Band	DTS	
Body	GSM850	PCB	1.53
	Bluetooth	DSS	

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

2.1 Testing Laboratory

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

2.2 Applicant

Company Name	Hewlett-Packard Co., Ltd.
Address	1501 Page Mill Road Palo Alto, CA 94304 United States

2.3 Manufacturer

Company Name	BYD Precision Manufacture Co., Ltd.
Address	No.3001, Baohe Road, Baolong Industrial, Longgang, Shenzhen, 518116, P.R.China

2.4 Application Details

Date of Start during the Test	Sep. 26, 2013
Date of End during the Test	Sep. 29, 2013

3. General Information

3.1 Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT	Tablet PC
Brand Name	HP
Model Name	HSTNH-B17CM
Marketing Name	HP SLATE 10 HD
FCC ID	B94HHB17CM
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 WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	・GPRS/EGPRS ・RMC 12.2Kbps Rel 99 ・HSDPA Rel 6, Cat14 ・HSUPA Rel 6, Cat6 ・HSPA+ Rel 7, Cat 14 (Downlink Only) ・802.11a/b/g/n HT20/HT40 ・Bluetooth v3.0+EDR
Antenna Type	WWAN: Fixed Internal Antenna WLAN: Fixed Internal Antenna Bluetooth: Fixed Internal Antenna
HW Version	DVT
SW Version	V1.00.09_20131114.155
EUT Stage	Identical Prototype

Remark:
1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. Voice call is not supported.
3. This device supports GPRS/EGPRS operation up to class12.
4. WLAN5GHz operation in 5600 MHz ~ 5650 MHz is notched.

3.2 Maximum RF output power among production units

Burst Average Power (dBm)				
Mode / Band	GSM850		GSM1900	
Output Power Status	Full power mode	Reduced power mode	Full power mode	Reduced power mode
GPRS/EDGE (GMSK, 1 Tx slot)	33	29	29.5	25.5
GPRS/EDGE (GMSK, 2 Tx slots)	31	27	27.5	23.5
GPRS/EDGE (GMSK, 3 Tx slots)	29	25	25.5	21.5
GPRS/EDGE (GMSK, 4 Tx slots)	27	23	23.5	19
EDGE (8PSK, 1 Tx slot)	26		26	24.5
EDGE (8PSK, 2 Tx slots)	26		26	22.5
EDGE (8PSK, 3 Tx slots)	24.5		24.5	20.5
EDGE (8PSK, 4 Tx slots)	22.5		22	18.5

Average Power (dBm)						
Mode / Band	WCDMA Band V		WCDMA Band II		WCDMA Band IV	
Output Power Status	Full power mode	Reduced power mode	Full power mode	Reduced power mode	Full power mode	Reduced power mode
RMC 12.2K	24	20	23	17	22.5	18
HSDPA Subtest-1	24	19.5	23	16.5	22.5	17.5
HSDPA Subtest-2	23.5	19.5	23	16.5	22.5	17.5
HSDPA Subtest-3	23.5	19	22	16	22	17
HSDPA Subtest-4	23	19	22.5	16	22	17
HSUPA Subtest-1	23	19	22.5	16.5	22.5	17.5
HSUPA Subtest-2	21.5	17.5	20.5	15	20.5	16
HSUPA Subtest-3	22	17.5	21	15	21	16.5
HSUPA Subtest-4	21.5	17	20.5	15	20.5	15.5
HSUPA Subtest-5	23.5	19.5	22.5	16.5	22.5	17.5

Band	Average Power (dBm)				
	IEEE 802.11				
	11a	11b	11g	11n-HT20	11n-HT40
WLAN 2.4GHz Band		15.5	15.5	15	15
WLAN 5.2GHz Band	7.8			7.8	7.8
WLAN 5.3GHz Band	7.8			7.8	7.8
WLAN 5.5GHz Band	7.8			7.8	7.8
WLAN 5.8GHz Band	7.8			7.8	7.8

Average Power (dBm)			
Mode / Band	1Mbps (GFSK)	2Mbps (π/4-DQPSK)	3Mbps (8-DPSK)
Bluetooth	1	-1	-1

3.3 Applied 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 v01r01
- FCC KDB 865664 D02 v01r01
- FCC KDB 447498 D01 v05r01
- FCC KDB 248227 D01 v01r02
- FCC KDB 616217 D04 v01r01
- FCC KDB 941225 D01 v02
- FCC KDB 941225 D02 v02r02
- FCC KDB 941225 D03 v01

3.4 Device Category and SAR Limits

This device belongs to portable device category because its radiating structure is allowed to be used within 20 centimeters of the body of the user. Limit for General Population/Uncontrolled exposure should be applied for this device, it is 1.6 W/kg as averaged over any 1 gram of tissue.

3.5 Test Conditions

3.5.1 Ambient Condition

Ambient Temperature	20 to 24 ℃
Humidity	< 60 %

3.5.2 Test Configuration

For WWAN SAR testing, the device was controlled by using a base station emulator. Communication between the device and the emulator was established by air link. The distance between the EUT and the antenna of the emulator is larger than 50 cm and the output power radiated from the emulator antenna is at least 30 dB smaller than the output power of EUT.

The EUT was set from the emulator to radiate maximum WWAN output power during all tests. For Bottom-Face and Edge 1 testing at 0cm separation, the proximity sensor will activate the power reduction and the maximum power is limited at the pre-defined level implemented in this device.

During WLAN SAR testing EUT is configured with the WLAN continuous TX tool, and the transmission duty factor was monitored on the spectrum analyzer with zero-span setting

For WLAN SAR testing, WLAN engineering testing software installed on the EUT can provide continuous transmitting RF signal.

Target Power reduction applied for each wireless mode and orientation

Exposure Position / wireless mode	Bottom Face(1)	Curved surface of Edge1(1)	Edge 1(1)	Edge 2	Edge 3	Edge 4
GSM850 GPRS/EDGE (GMSK 1 Tx slot) - CS1/MCS1	4 dB	4 dB	4 dB	0 dB	0 dB	0 dB
GSM850 GPRS/EDGE (GMSK 2 Tx slots) - CS1/MCS1	4 dB	4 dB	4 dB	0 dB	0 dB	0 dB
GSM850 GPRS/EDGE (GMSK 3 Tx slots) - CS1/MCS1	4 dB	4 dB	4 dB	0 dB	0 dB	0 dB
GSM850 GPRS/EDGE (GMSK 4 Tx slots) - CS1/MCS1	4 dB	4 dB	4 dB	0 dB	0 dB	0 dB
GSM850 EDGE (8PSK 1 Tx slot) - MCS5	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB
GSM850 EDGE (8PSK 2 Tx slots) - MCS5	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB
GSM850 EDGE (8PSK 3 Tx slots) - MCS5	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB
GSM850 EDGE (8PSK 4 Tx slots) - MCS5	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB
GSM1900 GPRS/EDGE (GMSK 1 Tx slot) - CS1/MCS1	4 dB	4 dB	4 dB	0 dB	0 dB	0 dB
GSM1900 GPRS/EDGE (GMSK 2 Tx slots) - CS1/MCS1	4 dB	4 dB	4 dB	0 dB	0 dB	0 dB
GSM1900 GPRS/EDGE (GMSK 3 Tx slots) - CS1/MCS1	4 dB	4 dB	4 dB	0 dB	0 dB	0 dB
GSM1900 GPRS/EDGE (GMSK 4 Tx slots) - CS1/MCS1	4.5 dB	4.5 dB	4.5 dB	0 dB	0 dB	0 dB
GSM1900 EDGE (8PSK 1 Tx slot) - MCS5	1.5 dB	1.5 dB	1.5 dB	0 dB	0 dB	0 dB
GSM1900 EDGE (8PSK 2 Tx slots) - MCS5	3.5 dB	3.5 dB	3.5 dB	0 dB	0 dB	0 dB
GSM1900 EDGE (8PSK 3 Tx slots) - MCS5	4 dB	4 dB	4 dB	0 dB	0 dB	0 dB
GSM1900 EDGE (8PSK 4 Tx slots) - MCS5	3.5 dB	3.5 dB	3.5 dB	0 dB	0 dB	0 dB
WCDMA Band V RMC 12.2kbps	4 dB	4 dB	4 dB	0 dB	0 dB	0 dB
WCDMA Band IV RMC 12.2kbps	4.5 dB	4.5 dB	4.5 dB	0 dB	0 dB	0 dB
WCDMA Band II RMC 12.2kbps	6 dB	6 dB	6 dB	0 dB	0 dB	0 dB

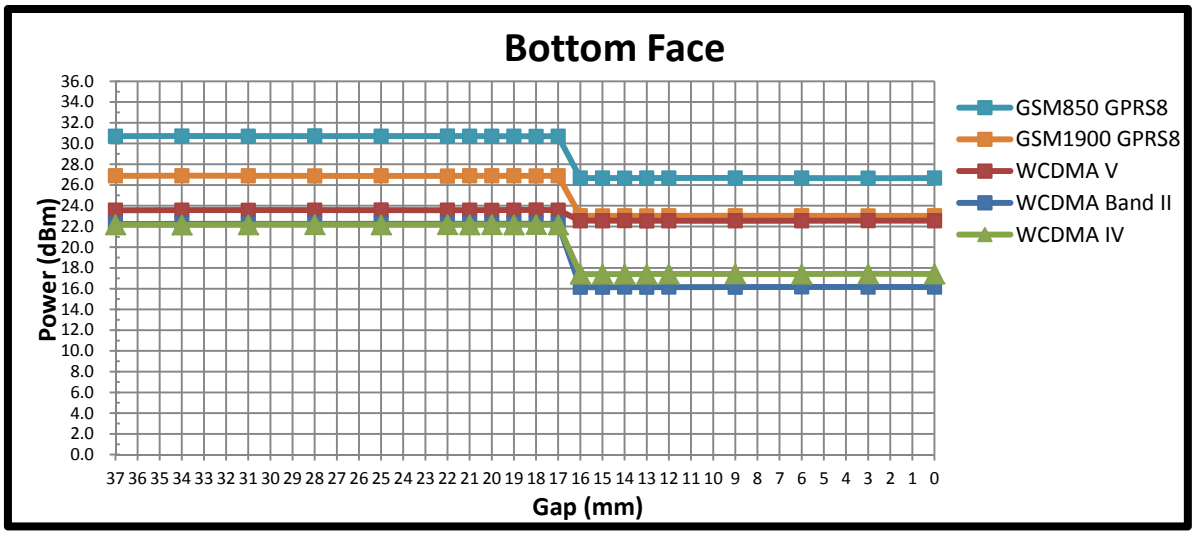
Remark:

1. (1): Reduced maximum limit applied by activation of proximity sensor.
2. Power reduction is not applicable for GSM850 EDGE 8PSK, WLAN and Bluetooth.

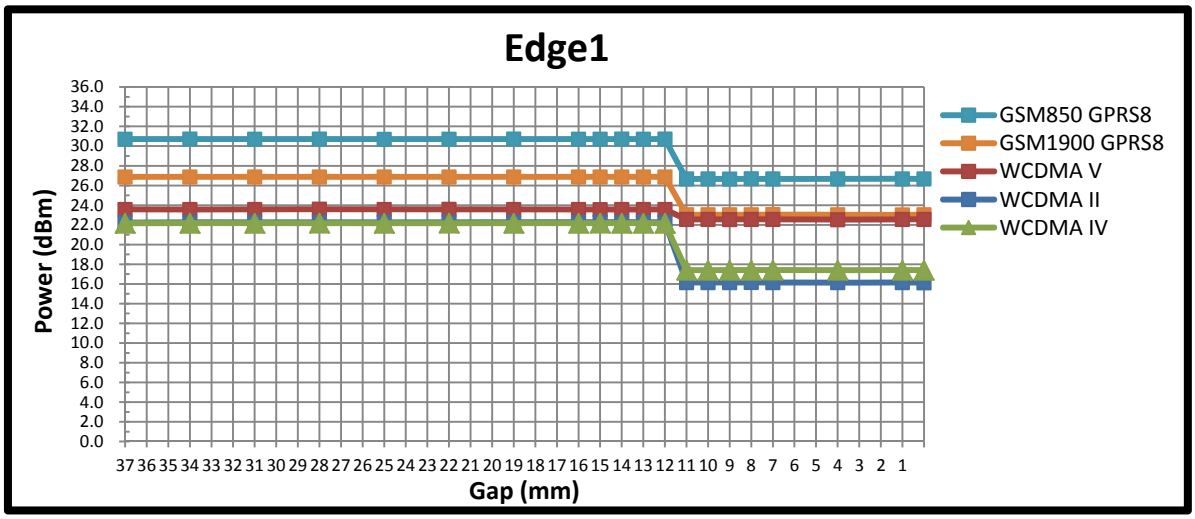
Measurement on EUT:

Band/Mode	Ch #	Measured power reduction (dBm)		Reduction Levels
		w/o power back-off	w/ power back-off	(dB)
GSM850 GPRS (GMSK 2 Tx slot) - CS1	189	30.70	26.66	4.04
GSM1900 GPRS (GMSK 2 Tx slot) - CS1	661	26.88	23.02	3.86
WCDMA Band V (RMC 12.2Kbps)	4182	23.57	19.40	4.17
WCDMA Band IV (RMC 12.2Kbps)	1413	22.16	17.40	4.76
WCDMA Band II (RMC 12.2Kbps)	9400	22.25	16.14	6.11

Proximity Sensor for Bottom Face detection



Proximity Sensor for Edge 1 detection



4. Specific Absorption Rate (SAR)

4.1 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.

4.2 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)

SAR measurement can be either related to the temperature elevation in tissue by

$$\mathbf{SAR} = \mathbf{C}\left(\frac{\boldsymbol{\delta}\mathbf{T}}{\boldsymbol{\delta}\mathbf{t}}\right)$$

Where: C is the specific heat capacity, δT is the temperature rise and δt is the exposure duration, or related to the electrical field in the tissue by

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

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

However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

5. SAR Measurement System

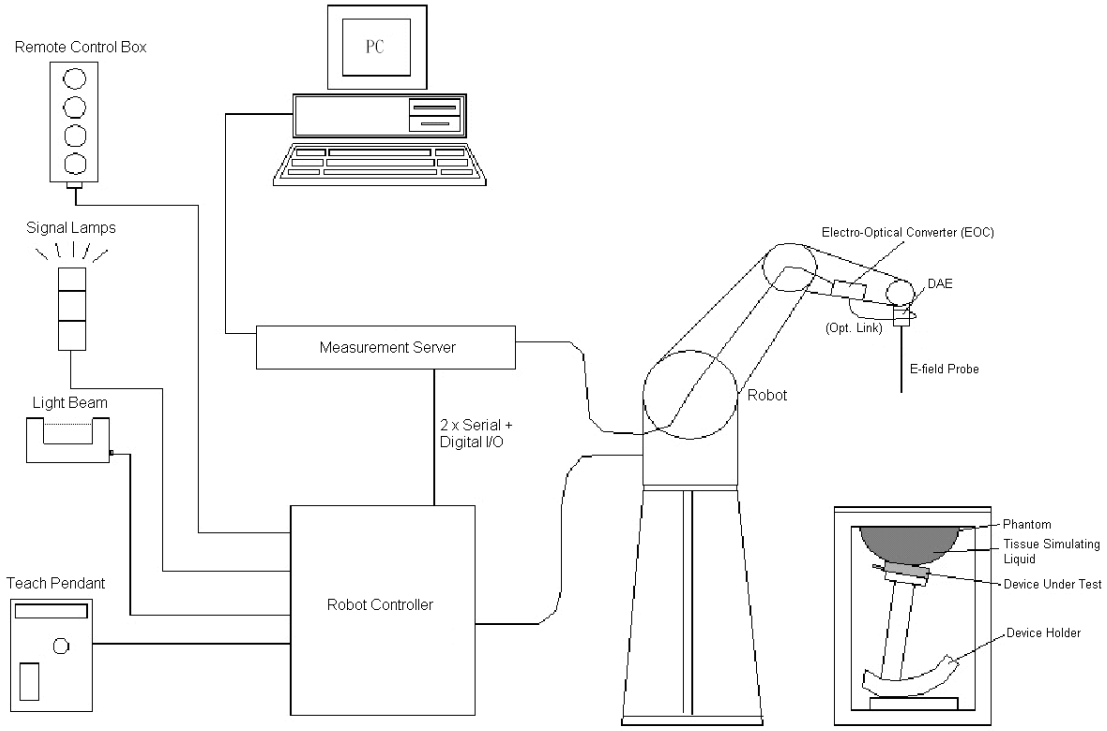


Fig 5.1 SPEAG DASY System Configurations

The DASY system for performance compliance tests is illustrated above graphically. This system consists of the following items:

- A standard high precision 6-axis robot with controller, a teach pendant and software
- A data acquisition electronic (DAE) attached to the robot arm extension
- A dosimetric probe equipped with an optical surface detector system
- The electro-optical converter (EOC) performs the conversion between optical and electrical signals
- A measurement server performs the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the accuracy of the probe positioning
- A computer operating Windows XP
- DASY software
- Remove control with teach pendant and additional circuitry for robot safety such as warming lamps, etc.
- The SAM twin phantom
- A device holder
- Tissue simulating liquid
- Dipole for evaluating the proper functioning of the system

Component details are described in in the following sub-sections.

5.1 E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG).The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

5.1.1 E-Field Probe Specification

<EX3DV4 Probe>

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Frequency	10 MHz to 6 GHz; Linearity: ± 0.2 dB
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	10 µW/g to 100 mW/g; Linearity: ± 0.2 dB (noise: typically < 1 µW/g)
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm

Fig 5.2 Photo of EX3DV4

5.1.2 E-Field Probe Calibration

Each probe needs to be calibrated according to a dosimetric assessment procedure with accuracy better than ± 10%. The spherical isotropy shall be evaluated and within ± 0.25dB. The sensitivity parameters (NormX, NormY, and NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested. The calibration data can be referred to appendix C of this report.

5.2 Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Fig 5.3 Photo of DAE

5.3 Robot

The SPEAG DASY system uses the high precision robots (DASY5: TX90XL) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY5: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability ±0.035 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)

Fig 5.4 Photo of DASY5

5.4 Measurement Server

The measurement server is based on a PC/104 CPU board with CPU (DASY5: 400 MHz, Intel Celeron), chipdisk (DASY5: 128 MB), RAM (DASY5: 128 MB). The necessary circuits for communication with the DAE electronic box, as well as the 16 bit AD converter system for optical detection and digital I/O interface are contained on the DASY I/O board, which is directly connected to the PC/104 bus of the CPU board.

The measurement server performs all the real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operations.

Fig 5.5 Photo of Server for DASY5

5.5 Phantom

<ELI4 Phantom>

Shell Thickness	2 ± 0.2 mm (sagging: <1%)
Filling Volume	Approx. 30 liters
Dimensions	Major ellipse axis: 600 mm Minor axis: 400 mm

Fig 5.6 Photo of ELI4 Phantom

The ELI4 phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

5.6 Device Holder

<Device Holder for SAM Twin Phantom>

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5 mm distance, a positioning uncertainty of ± 0.5 mm would produce a SAR uncertainty of ± 20 %. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.

The DASY device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation center for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.

The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity ε = 3 and loss tangent δ = 0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

Fig 5.7 Device Holder

<Laptop Extension Kit>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.

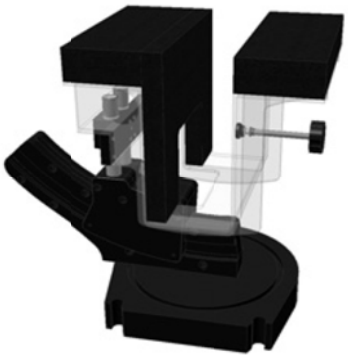


Fig 5.8 Laptop Extension Kit

5.7 Data Storage and Evaluation

5.7.1 Data Storage

The DASY software stores the assessed data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all the necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files. The post-processing software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of erroneous parameter settings. For example, if a measurement has been performed with an incorrect crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be reevaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type (e.g., [V/m], [A/m], [mW/g]). Some of these units are not available in certain situations or give meaningless results, e.g., a SAR-output in a non-lose media, will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

5.7.2 Data Evaluation

The DASY post-processing software (SEMCAD) automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software：

Probe parameters：	- Sensitivity	$Norm_i$, a_{i0}, a_{i1}, a_{i2}
	- Conversion factor	$ConvF_i$
	- Diode compression point	dcp_i
Device parameters：	- Frequency	f
	- Crest factor	cf
Media parameters：	- Conductivity	σ
	- Density	ρ

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY components. In the direct measuring mode of the multi-meter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power.

The formula for each channel can be given as：

$$\mathbf{V_i = U_i + U_i^2 \cdot \frac{cf}{dcp_i}}$$

with V_i = compensated signal of channel i, (i = x, y, z)
U_i = input signal of channel i, (i = x, y, z)
cf = crest factor of exciting field (DASY parameter)
dcp_i = diode compression point (DASY parameter)

From the compensated input signals, the primary field data for each channel can be evaluated：

E-field Probes：$\mathbf{E_i = \sqrt{\frac{V_i}{Norm_i \cdot ConvF}}}$

H-field Probes：$\mathbf{H_i = \sqrt{V_i} \cdot \frac{a_{i0}+a_{i1}f+a_{i2}f^2}{f}}$

with V_i = compensated signal of channel i, (i = x, y, z)
$Norm_i$ = sensor sensitivity of channel i, (i = x, y, z), μV/(V/m)^2 for E-field Probes
ConvF = sensitivity enhancement in solution
a_{ij} = sensor sensitivity factors for H-field probes
f = carrier frequency [GHz]
E_i = electric field strength of channel i in V/m
H_i = magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude)：

$$\mathbf{E_{tot} = \sqrt{E_x^2 + E_y^2 + E_z^2}}$$

The primary field data are used to calculate the derived field units.

$$\mathbf{SAR = E_{tot}^2 \cdot \frac{\sigma}{\rho \cdot 1000}}$$

with SAR = local specific absorption rate in mW/g
E_{tot} = total field strength in V/m
σ = conductivity in [mho/m] or [Siemens/m]
ρ = equivalent tissue density in g/cm^3

Note that the density is set to 1, to account for actual head tissue density rather than the density of the tissue simulating liquid.

5.8 Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	835MHz System Validation Kit	D835V2	4d091	Nov. 18, 2011	Nov. 16, 2013
SPEAG	1750MHz System Validation Kit	D1750V2	1090	Mar. 27, 2013	Mar. 26, 2014
SPEAG	1900MHz System Validation Kit	D1900V2	5d118	Nov. 21, 2011	Nov. 16, 2013
SPEAG	2450MHz System Validation Kit	D2450V2	840	Mar. 26, 2013	Mar. 25, 2014
SPEAG	Data Acquisition Electronics	DAE4	1210	Jun. 19, 2013	Jun. 18, 2014
SPEAG	Dosimetric E-Field Probe	EX3DV4	3857	Jun. 20, 2013	Jun. 19, 2014
SPEAG	ELI4 Phantom	QD OVA 001 BB	1079	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Agilent	Wireless Communication Test Set	E5515C	MY48367160	Oct. 25, 2012	Oct. 24, 2013
Agilent	ENA Series Network Analyzer	E5071C	MY46106933	Aug. 13, 2013	Aug. 12, 2014
Agilent	Dielectric Probe Kit	85070E	MY44300475	NCR	NCR
R&S	Signal Generator	SMR40	100455	Jan. 18, 2013	Jan. 17, 2014
Anritsu	Pulse Power Senor	MA2411B	0917070	Feb. 28, 2013	Feb. 27, 2014
Anritsu	Power Meter	ML2495A	1005002	Feb. 28, 2013	Feb. 27, 2014
ARRA	Power Divider	A3200-2	N/A	NA	NA
Agilent	Dual Directional Coupler	778D	50422	Note 4	
Woken	Attenuator 1	WK0602-XX	N/A	Note 4	
PE	Attenuator 2	PE7005-10	N/A	Note 4	
PE	Attenuator 3	PE7005- 3	N/A	Note 4	
AR	Power Amplifier	5S1G4M2	328767	Note 5	
R&S	Spectrum Analyzer	FSP30	101399	May 23, 2013	May 22, 2014

Table 5.1 Test Equipment List

Note:

1. The calibration certificate of DASY can be referred to appendix C of this report.
2. Referring to KDB 865664 D01v01r01, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.
3. The justification data of dipole D835V2, SN: 4d091; D1900V2 and SN: 5d118 can be found in appendix C. The return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration.
4. The Insertion Loss calibration of Dual Directional Coupler and Attenuator were characterized via the network analyzer and compensated during system check.
5. In system check we need to monitor the level on the power meter, and adjust the power amplifier level to have precise power level to the dipole; the measured SAR will be normalized to 1W input power according to the ratio of 1W to the input power to the dipole. For system check, the calibration of the power amplifier is deemed not critically required for correct measurement; the power meter is critical and we do have calibration for it
6. Attenuator 1 insertion loss is calibrated by the network Analyzer, which the calibration is valid, before system check.

6. Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 6.1.

Fig 6.1 Photo of Liquid Height for Body SAR

The following table gives the recipes for tissue simulating liquid.

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (ε_r)
For Body								
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7

Table 6.1 Recipes of Tissue Simulating Liquid

The dielectric parameters of the liquids were verified prior to the SAR evaluation using an Agilent 85070E Dielectric Probe Kit and an Agilent E5071C Network Analyzer.

The following table shows the measuring results for simulating liquid.

Frequency (MHz)	Liquid Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
835	Body	22.9	0.983	55.18	0.97	55.2	1.34	-0.04	±5	Sep. 27, 2013
1750	Body	22.8	1.502	51.015	1.49	53.4	0.81	-4.47	±5	Sep. 26, 2013
1900	Body	22.8	1.55	53.354	1.52	53.3	1.97	0.10	±5	Sep. 26, 2013
2450	Body	22.6	1.939	50.923	1.95	52.7	-0.56	-3.37	±5	Sep. 29, 2013

Table 6.2 Measuring Results for Simulating Liquid

7. System Verification Procedures

Each DASY system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the DASY software, enable the user to conduct the system performance check and system validation. System validation kit includes a dipole, tripod holder to fix it underneath the flat phantom and a corresponding distance holder.

7.1 Purpose of System Performance check

The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results. The system performance check uses normal SAR measurements in a simplified setup with a well characterized source. This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

7.2 System Setup

In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The equipment setup is shown below:

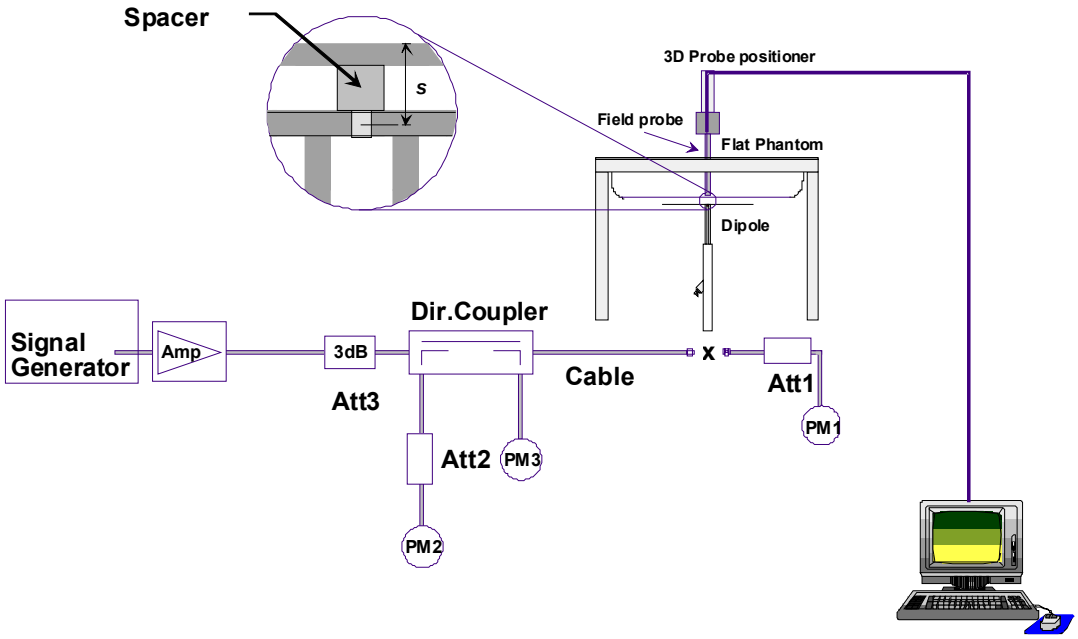


Fig 7.1 System Setup for System Evaluation

1. Signal Generator
2. Amplifier
3. Directional Coupler
4. Power Meter
5. Calibrated Dipole

Fig 7.2 Photo of Dipole Setup

7.3 SAR System Verification Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Table 7.1 shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

Date	Frequency (MHz)	Liquid Type	Power fed onto reference dipole (mW)	Targeted SAR (W/kg)	Measured SAR (W/kg)	Normalized SAR (W/kg)	Deviation (%)
Sep. 27, 2013	835	Body	250	9.42	2.23	8.92	-5.31
Sep. 26, 2013	1750	Body	250	38.1	9.02	36.08	-5.30
Sep. 26, 2013	1900	Body	250	41.8	11.2	44.8	7.18
Sep. 29, 2013	2450	Body	250	50.4	12.6	50.4	0.00

Table 7.1 Target and Measurement SAR after Normalized

8. EUT Testing Position

This EUT was tested in four different positions. They are bottom-face of tablet PC, Edge1, Edge2 and Curved surface of Edge1. EUT has proximity sensor function, it would be on bottom-face and Edge1 active, the sensor trigger distance is 1 cm for bottom-face and 0.6 cm for Edge1, EUT transmitting full power in normal mode was performed. Additional the surface of EUT is touching with phantom 0 cm for bottom-face, Edge1 and Curved surface of Edge1 reduce power and Edge2 full power were performed. Please refer to Appendix D for the test setup photos.

9. 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

9.1 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

9.2 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.

9.3 Area & Zoom Scan Procedures

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g. Area scan and zoom scan resolution setting follows KDB 865664 D01v01r01 quoted below.

When the 1-g SAR of the highest peak is within 2 dB of the SAR limit, additional zoom scans are required for other peaks within 2 dB of the highest peak that have not been included in any zoom scan to ensure there is no increase in SAR.

			≤ 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.	
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.

9.4 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.

9.5 SAR Averaged Methods

In DASY, the interpolation and extrapolation are both based on the modified Quadratic Shepard's method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5 mm.

9.6 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.

10. Conducted RF Output Power (Unit: dBm)

<GSM Conducted Power>

General Note:

1. Per KDB 447498 D01v05r01, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D03 v01, for Body SAR testing, the EUT operating without power back-off was set in GPRS (2 Tx slots) and the EUT operating with power back-off was set in GPRS (2 Tx slots) due to its highest frame-average power.

Maximum Average RF Power (Proximity Sensor Inactive)

Band: GSM850	Burst Average Power (dBm)			Frame-Average Power (dBm)		
Channel	128	189	251	128	189	251
Frequency (MHz)	824.2	836.4	848.8	824.2	836.4	848.8
GPRS (GMSK, 1 Tx slot) – CS1	**32.94**	32.90	32.87	23.94	23.90	23.87
GPRS (GMSK, 2 Tx slots) – CS1	30.74	30.70	30.67	**24.74**	24.70	24.67
GPRS (GMSK, 3 Tx slots) – CS1	28.74	28.70	28.67	24.48	24.44	24.41
GPRS (GMSK, 4 Tx slots) – CS1	26.71	26.68	26.64	23.71	23.68	23.64
EDGE (GMSK, 1 Tx slot) – MCS1	32.93	32.89	32.86	23.93	23.89	23.86
EDGE (GMSK, 2 Tx slots) – MCS1	30.73	30.70	30.66	24.73	24.70	24.66
EDGE (GMSK, 3 Tx slots) – MCS1	28.73	28.70	28.66	24.47	24.44	24.40
EDGE (GMSK, 4 Tx slots) – MCS1	26.70	26.68	26.63	23.70	23.68	23.63
EDGE (8PSK, 1 Tx slot) – MCS5	25.89	25.67	25.60	16.89	16.67	16.60
EDGE (8PSK, 2 Tx slots) – MCS5	25.77	25.56	25.49	19.77	19.56	19.49
EDGE (8PSK, 3 Tx slots) – MCS5	24.28	24.00	24.05	20.02	19.74	19.79
EDGE (8PSK, 4 Tx slots) – MCS5	22.04	21.70	21.68	19.04	18.70	18.68
Band: GSM1900	Burst Average Power (dBm)			Frame-Average Power (dBm)		
Channel	512	661	810	512	661	810
Frequency (MHz)	1850.2	1880.0	1909.8	1850.2	1880.0	1909.8
GPRS (GMSK, 1 Tx slot) – CS1	**29.01**	28.85	28.78	20.01	19.85	19.78
GPRS (GMSK, 2 Tx slots) – CS1	27.01	26.88	26.84	**21.01**	20.88	20.84
GPRS (GMSK, 3 Tx slots) – CS1	25.00	24.91	24.88	20.74	20.65	20.62
GPRS (GMSK, 4 Tx slots) – CS1	23.05	23.00	23.01	20.05	20.00	20.01
EDGE (GMSK, 1 Tx slot) – MCS1	29.00	28.84	28.78	20.00	19.84	19.78
EDGE (GMSK, 2 Tx slots) – MCS1	27.00	26.88	26.83	21.00	20.88	20.83
EDGE (GMSK, 3 Tx slots) – MCS1	25.00	24.90	24.87	20.74	20.64	20.61
EDGE (GMSK, 4 Tx slots) – MCS1	23.05	23.00	23.01	20.05	20.00	20.01
EDGE (8PSK, 1 Tx slot) – MCS5	25.25	25.54	25.69	16.25	16.54	16.69
EDGE (8PSK, 2 Tx slots) – MCS5	25.09	25.36	25.53	19.09	19.36	19.53
EDGE (8PSK, 3 Tx slots) – MCS5	23.60	23.90	24.06	19.34	19.64	19.80
EDGE (8PSK, 4 Tx slots) – MCS5	21.51	21.81	21.97	18.51	18.81	18.97

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

Reduced Average RF Power (Proximity Sensor Active)

Band: GSM850	Burst Average Power (dBm)			Frame-Average Power (dBm)		
Channel	128	189	251	128	189	251
Frequency (MHz)	824.2	836.4	848.8	824.2	836.4	848.8
GPRS (GMSK, 1 Tx slot) – CS1	**28.73**	28.69	28.66	19.73	19.69	19.66
GPRS (GMSK, 2 Tx slots) – CS1	26.69	26.66	26.62	**20.69**	20.66	20.62
GPRS (GMSK, 3 Tx slots) – CS1	24.82	24.78	24.75	20.56	20.52	20.49
GPRS (GMSK, 4 Tx slots) – CS1	22.54	22.51	22.46	19.54	19.51	19.46
EDGE (GMSK, 1 Tx slot) – MCS1	28.72	28.69	28.66	19.72	19.69	19.66
EDGE (GMSK, 2 Tx slots) – MCS1	26.68	26.65	26.61	20.68	20.65	20.61
EDGE (GMSK, 3 Tx slots) – MCS1	24.82	24.77	24.75	20.56	20.51	20.49
EDGE (GMSK, 4 Tx slots) – MCS1	22.53	22.51	22.45	19.53	19.51	19.45
EDGE (8PSK, 1 Tx slot) – MCS5	25.89	25.67	25.60	16.89	16.67	16.60
EDGE (8PSK, 2 Tx slots) – MCS5	25.77	25.56	25.49	19.77	19.56	19.49
EDGE (8PSK, 3 Tx slots) – MCS5	24.28	24.00	24.05	20.02	19.74	19.79
EDGE (8PSK, 4 Tx slots) – MCS5	22.04	21.70	21.68	19.04	18.70	18.68
Band: GSM1900	Burst Average Power (dBm)			Frame-Average Power (dBm)		
Channel	512	661	810	512	661	810
Frequency (MHz)	1850.2	1880.0	1909.8	1850.2	1880.0	1909.8
GPRS (GMSK, 1 Tx slot) – CS1	**25.01**	24.92	24.90	16.01	15.92	15.90
GPRS (GMSK, 2 Tx slots) – CS1	23.07	23.02	23.02	**17.07**	17.02	17.02
GPRS (GMSK, 3 Tx slots) – CS1	21.15	21.13	21.15	16.89	16.87	16.89
GPRS (GMSK, 4 Tx slots) – CS1	18.73	18.73	18.75	15.73	15.73	15.75
EDGE (GMSK, 1 Tx slot) – MCS1	25.00	24.92	24.90	16.00	15.92	15.90
EDGE (GMSK, 2 Tx slots) – MCS1	23.06	23.01	23.01	17.06	17.01	17.01
EDGE (GMSK, 3 Tx slots) – MCS1	21.15	21.13	21.14	16.89	16.87	16.88
EDGE (GMSK, 4 Tx slots) – MCS1	18.72	18.71	18.73	15.72	15.71	15.73
EDGE (8PSK, 1 Tx slot) – MCS5	23.85	24.20	24.41	14.85	15.20	15.41
EDGE (8PSK, 2 Tx slots) – MCS5	21.83	22.14	22.30	15.83	16.14	16.30
EDGE (8PSK, 3 Tx slots) – MCS5	19.72	19.94	20.07	15.46	15.68	15.81
EDGE (8PSK, 4 Tx slots) – MCS5	17.44	17.77	18.02	14.44	14.77	15.02

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

<WCDMA Conducted Power>

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

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

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

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

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

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

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

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

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

Setup Configuration

HSUPA Setup Configuration:

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

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

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

Note:

1. Applying the subtest setup in Table C.11.1.3 of 3GPP TS 34.121-1 V9.1.0 to Rel. 6 HSPA.
2. Per KDB 941225 D01v02, RMC 12.2kbps setting is used to evaluate SAR. If AMR 12.2kbps power is < 0.25dB higher than RMC 12.2kbps, SAR tests with AMR 12.2kbps can be excluded.
3. By design, AMR, HSDPA/HSUPA RF power will not be larger than RMC 12.2kbps, detailed information is included in Tune-up Procure exhibit.
4. It is expected by the manufacturer that MPR for some HSDPA/HSUPA subtests may differ from the specification of 3GPP, according to the chipset implementation in this model. The implementation and expected deviation are detailed in tune-up procedure exhibit.
5. Per KDB 941225 D02v02r02, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA/HSUPA output power is < 0.25dB higher than RMC, or reported SAR with RMC 12.2kbps setting is ≤ 1.2W/kg, HSDPA/HSUPA SAR evaluation can be excluded.

Maximum Average RF Power (Proximity Sensor Inactive)

Band		WCDMA Band V			WCDMA Band II			WCDMA Band IV		
Tx Channel		4132	4182	4233	9262	9400	9538	1312	1413	1513
Rx Channel		4357	4407	4458	9662	9800	9938	1537	1638	1738
Frequency (MHz)		826.4	836.4	846.6	1852.4	1880	1907.6	1712.4	1732.6	1752.6
3GPP Rel 99	RMC 12.2Kbps	**23.76**	23.57	23.26	**22.67**	22.25	22.09	**22.20**	22.16	22.15
3GPP Rel 6	HSDPA Subtest-1	23.64	23.46	23.07	22.66	22.18	22.06	22.19	22.12	22.11
3GPP Rel 6	HSDPA Subtest-2	23.44	23.25	22.84	22.59	22.20	22.04	22.13	22.09	22.00
3GPP Rel 6	HSDPA Subtest-3	22.93	22.73	23.35	21.95	21.67	21.59	21.60	21.55	21.50
3GPP Rel 6	HSDPA Subtest-4	22.90	22.71	22.31	22.05	21.72	21.56	21.59	21.57	21.56
3GPP Rel 6	HSUPA Subtest-1	22.58	22.37	22.11	22.36	22.02	21.69	22.03	21.49	22.07
3GPP Rel 6	HSUPA Subtest-2	21.04	21.07	20.85	20.48	20.08	19.82	20.26	20.21	20.28
3GPP Rel 6	HSUPA Subtest-3	21.53	21.22	21.11	20.96	20.32	20.10	20.68	20.42	20.14
3GPP Rel 6	HSUPA Subtest-4	21.03	20.83	20.73	20.28	20.07	19.86	20.00	20.04	20.06
3GPP Rel 6	HSUPA Subtest-5	23.11	22.91	22.55	22.32	22.05	21.70	21.98	22.02	22.00
3GPP MPR specification	MPR result	WCDMA Band V			WCDMA Band II			WCDMA Band IV		
0	HSDPA Subtest-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	HSDPA Subtest-2	0.20	0.21	0.23	0.07	-0.02	0.02	0.06	0.03	0.11
≦0.5	HSDPA Subtest-3	0.71	0.73	-0.28	0.71	0.51	0.47	0.59	0.57	0.61
≦0.5	HSDPA Subtest-4	0.74	0.75	0.76	0.61	0.46	0.50	0.60	0.55	0.55
≦0	HSUPA Subtest-1	0.53	0.54	0.44	-0.04	0.03	0.01	-0.05	0.53	-0.07
≦2	HSUPA Subtest-2	2.07	1.84	1.70	1.84	1.97	1.88	1.72	1.81	1.72
≦1	HSUPA Subtest-3	1.58	1.69	1.44	1.36	1.73	1.60	1.30	1.60	1.86
≦2	HSUPA Subtest-4	2.08	2.08	1.82	2.04	1.98	1.84	1.98	1.98	1.94
≦0	HSUPA Subtest-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Reduced Average RF Power (Proximity Sensor Active)

Band		WCDMA Band V			WCDMA Band II			WCDMA Band IV		
Tx Channel		4132	4182	4233	9262	9400	9538	1312	1413	1513
Rx Channel		4357	4407	4458	9662	9800	9938	1537	1638	1738
Frequency (MHz)		826.4	836.4	846.6	1852.4	1880	1907.6	1712.4	1732.6	1752.6
3GPP Rel 99	RMC 12.2Kbps	**19.49**	19.40	19.38	**16.49**	16.14	16.29	**17.46**	17.40	17.45
3GPP Rel 6	HSDPA Subtest-1	19.34	19.26	19.17	16.35	16.13	16.32	17.32	17.23	17.29
3GPP Rel 6	HSDPA Subtest-2	19.14	19.20	19.25	16.48	16.16	16.34	17.36	17.27	17.33
3GPP Rel 6	HSDPA Subtest-3	18.63	18.63	18.74	15.87	15.69	15.88	16.90	16.79	16.89
3GPP Rel 6	HSDPA Subtest-4	18.60	18.61	18.33	15.93	15.71	15.88	16.92	16.82	16.88
3GPP Rel 6	HSUPA Subtest-1	18.55	18.45	18.44	16.30	16.10	16.01	17.37	16.77	17.38
3GPP Rel 6	HSUPA Subtest-2	17.14	16.89	17.07	14.46	14.12	13.92	15.62	15.40	15.60
3GPP Rel 6	HSUPA Subtest-3	17.37	17.39	17.43	14.53	14.46	14.35	16.01	15.87	16.02
3GPP Rel 6	HSUPA Subtest-4	16.72	16.87	16.73	14.46	14.31	14.16	15.42	15.09	15.22
3GPP Rel 6	HSUPA Subtest-5	19.06	19.02	18.92	16.26	16.05	15.94	17.31	17.20	17.29
3GPP MPR specification	MPR result	WCDMA Band V			WCDMA Band II			WCDMA Band IV		
0	HSDPA Subtest-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	HSDPA Subtest-2	0.20	0.06	-0.08	-0.13	-0.03	-0.02	-0.04	-0.04	-0.04
≦0.5	HSDPA Subtest-3	0.71	0.63	0.43	0.48	0.44	0.44	0.42	0.44	0.40
≦0.5	HSDPA Subtest-4	0.74	0.65	0.84	0.42	0.42	0.44	0.40	0.41	0.41
≦0	HSUPA Subtest-1	0.51	0.57	0.48	-0.04	-0.05	-0.07	-0.06	0.43	-0.09
≦2	HSUPA Subtest-2	1.92	2.13	1.85	1.80	1.93	2.02	1.69	1.80	1.69
≦1	HSUPA Subtest-3	1.69	1.63	1.49	1.73	1.59	1.59	1.30	1.33	1.27
≦2	HSUPA Subtest-4	2.34	2.15	2.19	1.80	1.74	1.78	1.89	2.11	2.07
≦0	HSUPA Subtest-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

<WLAN 2.4GHz Band Conducted Power>

General Note:

1. Per KDB 248227 D01 v01r02, choose the highest output power channel to test SAR and determine further SAR exclusion
2. For each frequency band, testing at higher data rates and higher order modulations is not required when the maximum average output power for each of these configurations is less than 1/4dB higher than those measured at the lowest data rate
3. Per KDB 248227 D01 v01r02, 11g, 11n-HT20 and 11n-HT40 output power is less than 1/4dB higher than 11b mode, thus the SAR can be excluded.

802.11b Average Power (dBm)					
Channel	Frequency (MHz)	Data Rate (bps)			
		1M bps	2M bps	5.5M bps	11M bps
CH 01	2412	14.88	14.65	15.15	15.08
CH 06	2437	15.18	14.85	15.12	15.12
CH 11	2462	**15.21**	15.01	15.11	15.15

802.11g Average Power (dBm)									
Channel	Frequency (MHz)	Data Rate (bps)							
		6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
CH 01	2412	**15.38**	15.28	14.76	15.26	14.67	15.30	14.80	14.76
CH 06	2437	15.17	14.79	14.75	15.14	14.75	15.15	14.79	15.12
CH 11	2462	15.21	15.11	15.06	14.79	14.79	15.18	14.82	14.86

WLAN 2.4GHz Band 802.11n-HT20 Average Power (dBm)									
Channel	Frequency (MHz)	MCS Index							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412	**14.82**	14.74	14.42	13.97	14.41	12.99	13.04	13.32
CH 06	2437	14.21	14.08	14.29	14.13	14.16	13.26	13.18	13.15
CH 11	2462	14.36	14.13	14.06	14.31	14.28	12.89	13.00	13.17

WLAN 2.4GHz Band 802.11n-HT40 Average Power (dBm)									
Channel	Frequency (MHz)	MCS Index							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 03	2422	**14.65**	14.34	14.32	14.40	14.05	13.05	13.00	13.01
CH 06	2437	14.25	14.10	14.18	14.06	14.18	13.01	12.98	12.76
CH 09	2452	12.70	12.68	12.56	12.60	12.16	12.15	12.18	12.16

<Bluetooth Conducted Power>

Bluetooth Average Power (dBm)										
Channel	Frequency (MHz)	Data Rate								
		DH1	DH3	DH5	2DH1	2DH3	2DH5	3DH1	3DH3	3DH5
CH 00	2402	-1.36	-1.43	-1.55	-2.06	-2.47	-2.39	-2.35	-2.56	-2.47
CH 39	2441	-1.11	-2.13	-1.72	-1.93	-2.58	-2.27	-1.80	-2.64	-2.35
CH 78	2480	-0.72	-1.19	**-0.57**	-1.15	-1.72	-1.70	-1.41	-1.79	-1.49

Note:

1. Per KDB 447498 D01v05r01, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] ·[$\sqrt{f(GHz)}$] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
   - f(GHz) is the RF channel transmit frequency in GHz
   - Power and distance are rounded to the nearest mW and mm before calculation
   - The result is rounded to one decimal place for comparison
   - If the test separation distance (antenna-user) is < 5mm, 5mm is used for excluded SAR calculation

Bluetooth Max Power (dBm)	mW	Test Distance (mm)	Frequency (GHz)	Exclusion Thresholds
1	1.26	0	2.48	0.40

2. Per KDB 447498 D01v05r01 exclusion thresholds is 0.40 < 3, RF exposure evaluation is not required.

<WLAN 5GHz Band Conducted Power>

802.11a Average Power (dBm)									
Channel	Frequency (MHz)	Average Power (dBm)							
		Data Rate (bps)							
		6M	9M	12M	18M	24M	36M	48M	54M
CH 036	5180	7.56	7.53	7.22	6.75	7.35	6.72	7.29	6.76
CH 040	5200	7.03	6.88	7.38	6.95	7.33	6.78	7.21	7.28
CH 044	5220	**7.69**	7.01	6.53	7.07	7.00	7.47	6.98	6.45
CH 048	5240	7.49	7.24	6.77	7.14	6.76	6.65	7.19	6.69
CH 052	5260	**7.55**	7.08	7.06	7.49	7.04	7.49	7.00	7.46
CH 056	5280	7.05	6.95	6.97	7.15	6.92	7.08	7.03	7.05
CH 060	5300	6.65	6.54	6.49	6.72	7.02	6.79	6.85	7.04
CH 064	5320	7.20	6.98	6.96	7.24	6.99	6.78	7.01	6.65
CH 100	5500	**7.68**	6.83	7.35	7.38	7.31	6.72	7.27	7.62
CH 104	5520	7.25	6.98	7.32	6.86	7.09	7.39	7.19	7.60
CH 108	5540	7.30	6.89	7.31	7.37	7.23	7.18	7.21	7.64
CH 112	5560	7.24	6.96	7.09	7.31	7.14	6.98	7.09	7.50
CH 116	5580	7.67	7.08	6.98	7.25	7.05	6.89	7.19	7.05
CH 136	5680	7.37	7.11	7.29	7.33	7.48	7.51	7.32	7.61
CH 140	5700	6.72	7.04	7.09	7.18	7.13	6.98	7.42	7.16
CH 149	5745	7.56	7.52	7.08	6.76	7.10	6.96	7.43	7.06
CH 153	5765	**7.57**	7.41	6.98	6.75	6.94	6.87	7.12	7.34
CH 157	5785	7.09	6.98	7.02	6.87	6.99	7.01	7.25	6.54
CH 161	5805	7.12	7.49	7.53	7.16	7.06	7.53	7.49	7.54
CH 165	5825	7.06	7.54	7.25	7.36	7.53	7.54	7.42	7.48

WLAN 5GHz Band 802. 11n-HT20 Average Power (dBm)									
Channel	Frequency (MHz)	Average Power (dBm)							
		MCS Index							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 036	5180	**7.56**	6.59	6.68	6.73	7.27	6.76	6.79	6.79
CH 040	5200	6.64	6.85	6.82	6.79	6.82	6.79	6.80	7.32
CH 044	5220	6.93	6.45	6.95	6.94	6.99	6.43	6.98	6.43
CH 048	5240	6.99	6.53	6.89	6.81	6.87	6.58	6.93	7.01
CH 052	5260	**7.55**	7.14	7.10	6.60	7.11	6.60	7.13	6.61
CH 056	5280	7.19	7.24	7.21	7.19	7.21	6.93	7.09	7.19
CH 060	5300	7.18	7.21	7.19	7.27	7.08	6.85	7.11	6.73
CH 064	5320	6.73	6.99	7.15	7.29	7.13	6.89	7.08	7.30
CH 100	5500	7.35	7.05	7.06	7.37	7.01	6.89	7.17	6.86
CH 104	5520	7.39	7.11	7.12	7.41	7.11	6.84	7.11	7.11
CH 108	5540	7.41	7.08	7.07	7.45	7.06	6.79	7.12	7.02
CH 112	5560	7.32	7.16	7.14	7.36	7.12	6.84	7.08	6.99
CH 116	5580	**7.77**	7.27	7.26	7.66	7.27	6.76	7.27	6.80
CH 136	5680	7.46	7.09	7.05	7.45	6.99	6.67	6.99	6.79
CH 140	5700	6.91	6.89	6.98	7.08	6.96	6.46	7.02	7.14
CH 149	5745	**7.64**	7.17	7.22	7.27	7.22	7.16	7.21	6.98
CH 153	5765	7.51	7.13	7.14	7.05	6.96	7.19	7.23	7.05
CH 157	5785	7.20	7.28	7.23	6.79	7.24	6.80	7.29	7.24
CH 161	5805	7.18	7.21	7.25	6.98	7.01	6.82	7.11	6.92
CH 165	5825	7.17	7.13	7.15	7.11	6.89	7.21	7.01	6.71

WLAN 5GHz Band 802. 11n-HT40 Average Power (dBm)									
Channel	Frequency (MHz)	Average Power (dBm)							
		MCS Index							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 38	5190	**7.44**	6.90	6.45	6.91	6.88	7.41	6.95	6.41
CH 46	5230	6.62	6.87	6.52	6.98	6.94	7.39	6.93	6.59
CH 54	5270	7.65	6.67	6.64	6.64	7.15	6.61	6.69	6.63
CH 62	5310	**7.68**	6.31	6.70	6.22	6.73	6.81	6.89	6.77
CH 102	5510	7.15	6.99	6.95	7.01	7.31	7.08	7.33	7.35
CH 110	5550	**7.64**	6.69	6.65	6.68	7.25	7.61	7.23	7.18
CH 134	5670	6.94	6.79	6.81	6.98	6.99	7.59	7.19	7.12
CH 151	5755	**7.65**	7.59	6.68	6.65	7.12	7.14	7.13	6.61
CH 159	5795	6.99	6.97	7.12	7.13	6.98	6.99	6.95	6.62

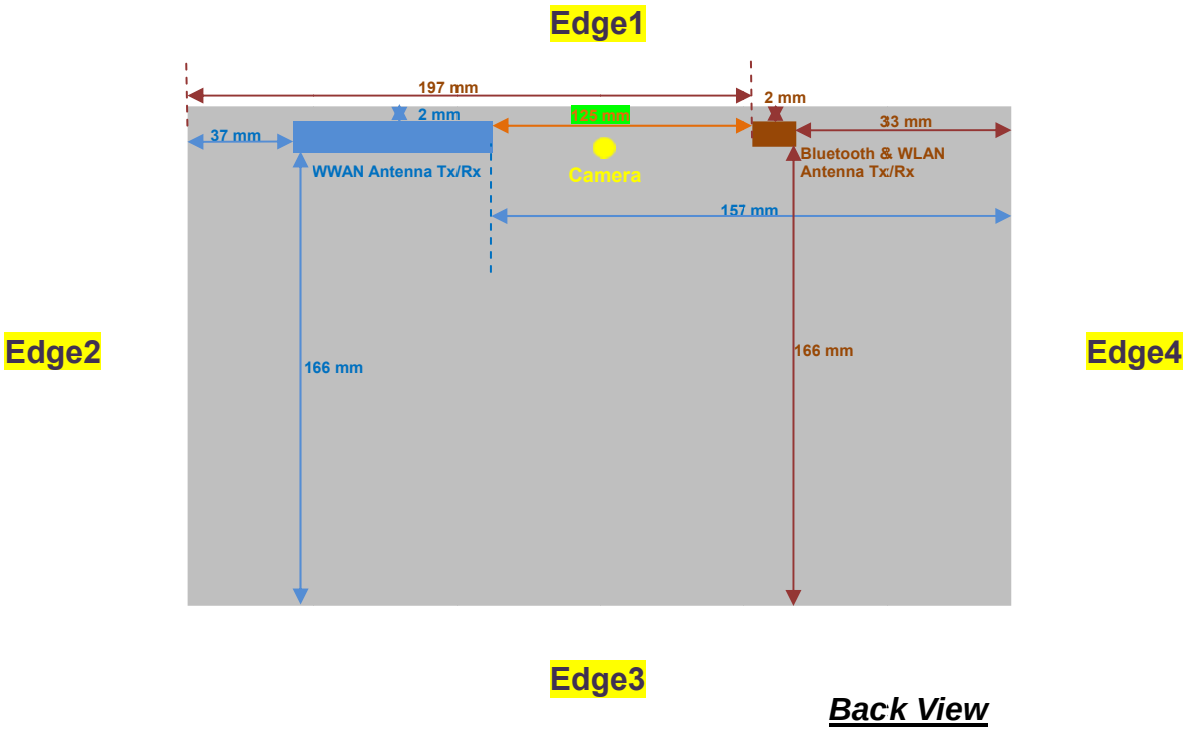
Note:

1. Per KDB 447498 D01v05r01, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] ·[$\sqrt{f(GHz)}$] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
   - f(GHz) is the RF channel transmit frequency in GHz
   - Power and distance are rounded to the nearest mW and mm before calculation
   - The result is rounded to one decimal place for comparison
   - If the test separation distance (antenna-user) is < 5mm, 5mm is used for excluded SAR calculation

WLAN 5GHz Max Power (dBm)	mW	Test Distance (mm)	Frequency (GHz)	Exclusion Thresholds
7.8	6.03	0	5.825	2.91

2. Per KDB 447498 D01v05r01 exclusion thresholds is 2.91 < 3, RF exposure evaluation is not required.

11. Antenna Location



Back View

Antennas	Wireless Interface
WWAN Antenna (Tx / Rx)	GSM850 GSM1900 WCDMA Band V WCDMA Band IV WCDMA Band II
Bluetooth & WLAN Antenna (Tx / Rx)	WLAN 2.4GHz Band WLAN 5GHz Band Bluetooth

SAR test exclusion table distance is ≤ 50mm

Exposure Position	Wireless Interface	GPRS850 2 Tx slots	GPRS1900 2 Tx slots	WCDMA Band V	WCDMA Band IV	WCDMA Band II	802.11b
	Tune-up Maximum power (dBm)	25	21.5	24	22.5	23	15.5
Bottom Face	Antenna to user (mm)	5					5
	SAR exclusion threshold	58.24	39.03	46.21	47.05	55.11	11.13
	SAR testing required?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Edge 1	Antenna to user (mm)	5					5
	SAR exclusion threshold	58.24	39.03	46.21	47.05	55.11	11.13
	SAR testing required?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Edge 2	Antenna to user (mm)	37					
	SAR exclusion threshold	7.87	5.27	6.24	6.36	7.45	
	SAR testing required?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	
Edge 4	Antenna to user (mm)						33
	SAR exclusion threshold						1.69
	SAR testing required?						No

SAR test exclusion table distance is > 50mm

Exposure Position	Wireless Interface	GPRS850 2 Tx slots	GPRS1900 2 Tx slots	WCDMA Band V	WCDMA Band IV	WCDMA Band II	802.11b
	Tune-up Maximum power (dBm)	25	21.5	24	22.5	23	15.5
	Tune-up Maximum rated power (mW)	316.23	141.25	251.19	177.83	199.53	35.48
Edge 2	Antenna to user (mm)						197
	SAR exclusion threshold (mW)						1565.6
	SAR testing required?						No
Edge 3	Antenna to user (mm)	166					166
	SAR exclusion threshold (mW)	818.68	1268.56	817.32	1273.39	1268.62	1255.6
	SAR testing required?	No	No	No	No	No	No
Edge 4	Antenna to user (mm)	157					
	SAR exclusion threshold (mW)	767.80	1178.56	766.56	1183.39	1178.62	
	SAR testing required?	No	No	No	No	No	

Note:

1. Maximum power is the source-based time-average power and represents the maximum RF output power among production units
2. Per KDB 447498 D01v05r01, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
3. Per KDB 447498 D01v05r01, standalone SAR test exclusion threshold is applied; If the distance of the antenna to the user is < 5mm, 5mm is used to determine SAR exclusion threshold
4. Per KDB 447498 D01v05r01, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] ·[$\sqrt{f(GHz)}$] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
   - f(GHz) is the RF channel transmit frequency in GHz
   - Power and distance are rounded to the nearest mW and mm before calculation
   - The result is rounded to one decimal place for comparison
   - For < 50 mm distance, we just calculate mW of the exclusion threshold value (3.0) to do compare. This formula is [3.0] / [$\sqrt{f(GHz)}$] ·[(*min. test separation distance, mm*)] = exclusion threshold of mW.
5. Per KDB 447498 D01v05r01, at 100 MHz to 6 GHz and for *test separation distances* > 50 mm, the SAR test exclusion threshold is determined according to the following
   a) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·(f(MHz)/150)] mW, at 100 MHz to 1500 MHz
   b) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz

12. SAR Test Results

General Note:

1. Per KDB 447498 D01v05r01, 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 WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
2. Per KDB 447498 D01v05r01, for each exposure position, if the highest output channel reported SAR ≤0.8W/kg, other channels SAR testing is not necessary.
3. Per KDB 941225 D02v02r02, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA/HSUPA output power is < 0.25dB higher than RMC, or reported SAR with RMC 12.2kbps setting is ≤ 1.2W/kg, HSDPA/HSUPA SAR evaluation can be excluded.
4. For the exposure positions that proximity sensor power reduction is applied for SAR compliance, additional SAR testing with EUT transmitting full power in normal mode was performed; 1cm for bottom face, 0.6cm for edge1.
5. Per KDB 616217 D04v01r01, the additional separation introduced by the contour against a flat phantom is smaller than 5mm, only wireless interfaces which SAR level at standard bottom-face and edge positions >1.2w/kg, are chosen to test SAR at the curved surface, and for these wireless interfaces full-power SAR testing for this tilt position was also performed at the separation of "the trigger distance for this tilt position -1mm", more detail information please refer to the setup photo.
6. For SAR testing of the curved region of the device, the device was placed directly against the phantom at the point where the distance between the antenna and device exterior is a minimum.
7. Additional WLAN 2.4GHz SAR testing for curved surface was performed for simultaneous transmission analysis.

12.1 Body SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Power Back-off	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
#01	GSM850	GPRS (2 Tx slots)	Bottom Face	0	128	824.2	On	26.69	27	1.074	-0.04	0.723	**0.776**
#02	GSM850	GPRS (2 Tx slots)	Edge1	0	128	824.2	On	26.69	27	1.074	0.13	0.694	0.745
#03	GSM850	GPRS (2 Tx slots)	Edge2	0	128	824.2	Off	30.74	31	1.062	0.09	0.072	0.076
#04	GSM850	GPRS (2 Tx slots)	Bottom Face	1	128	824.2	Off	30.74	31	1.062	0.07	0.505	0.536
#05	GSM850	GPRS (2 Tx slots)	Edge1	0.6	128	824.2	Off	30.74	31	1.062	0.03	0.603	0.640
#11	GSM1900	GPRS (2 Tx slots)	Bottom Face	0	512	1850.2	On	23.07	23.5	1.104	-0.06	0.812	0.897
#12	GSM1900	GPRS (2 Tx slots)	Edge1	0	512	1850.2	On	23.07	23.5	1.104	-0.06	0.770	0.850
#13	GSM1900	GPRS (2 Tx slots)	Edge2	0	512	1850.2	Off	27.01	27.5	1.119	-0.03	0.386	0.432
#14	GSM1900	GPRS (2 Tx slots)	Bottom Face	1	512	1850.2	Off	27.01	27.5	1.119	0.06	0.466	0.522
#15	GSM1900	GPRS (2 Tx slots)	Edge1	0.6	512	1850.2	Off	27.01	27.5	1.119	-0.07	0.647	0.724
#17	GSM1900	GPRS (2 Tx slots)	Bottom Face	0	661	1880	On	23.02	23.5	1.117	0.08	0.776	0.867
#18	GSM1900	GPRS (2 Tx slots)	Bottom Face	0	810	1909.8	On	23.02	23.5	1.117	-0.07	0.715	0.799
#19	GSM1900	GPRS (2 Tx slots)	Edge1	0	661	1880	On	23.02	23.5	1.117	0.04	0.831	0.928
#20	GSM1900	GPRS (2 Tx slots)	Edge1	0	810	1909.8	On	23.02	23.5	1.117	-0.03	0.849	**0.948**

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Power Back-off	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
#23	WCDMA Band V	RMC12.2K	Bottom Face	0	4132	826.4	On	19.49	20	1.125	0.09	0.654	**0.735**
#24	WCDMA Band V	RMC12.2K	Edge1	0	4132	826.4	On	19.49	20	1.125	-0.18	0.621	0.698
#25	WCDMA Band V	RMC12.2K	Edge2	0	4132	826.4	Off	23.76	24	1.057	-0.1	0.045	0.048
#26	WCDMA Band V	RMC12.2K	Bottom Face	1	4132	826.4	Off	23.76	24	1.057	0.05	0.161	0.170
#27	WCDMA Band V	RMC12.2K	Edge1	0.6	4132	826.4	Off	23.76	24	1.057	-0.08	0.392	0.414
#31	WCDMA Band IV	RMC 12.2K	Bottom Face	0	1312	1712.4	On	17.46	18	1.132	-0.06	0.949	1.075
#32	WCDMA Band IV	RMC 12.2K	Edge1	0	1312	1712.4	On	17.46	18	1.132	-0.01	0.799	0.905
#33	WCDMA Band IV	RMC 12.2K	Edge2	0	1312	1712.4	Off	22.2	22.5	1.072	-0.03	0.370	0.396
#34	WCDMA Band IV	RMC 12.2K	Bottom Face	1	1312	1712.4	Off	22.2	22.5	1.072	0.07	0.641	0.687
#35	WCDMA Band IV	RMC 12.2K	Edge1	0.6	1312	1712.4	Off	22.2	22.5	1.072	-0.08	1.080	1.157
#37	WCDMA Band IV	RMC 12.2K	Bottom Face	0	1413	1732.6	On	17.4	18	1.148	-0.04	1.090	1.251
#38	WCDMA Band IV	RMC 12.2K	Bottom Face	0	1513	1752.6	On	17.45	18	1.135	-0.01	1.000	1.135
#39	WCDMA Band IV	RMC 12.2K	Edge1	0	1413	1732.6	On	17.4	18	1.148	-0.0063	0.583	0.669
#40	WCDMA Band IV	RMC 12.2K	Edge1	0	1513	1752.6	On	17.45	18	1.135	-0.07	0.925	1.050
#41	WCDMA Band IV	RMC 12.2K	Edge1	0.6	1413	1732.6	Off	22.16	22.5	1.081	-0.00083	0.863	0.933
#42	WCDMA Band IV	RMC 12.2K	Edge1	0.6	1513	1752.6	Off	22.15	22.5	1.084	-0.05	1.100	1.192
#36	WCDMA Band IV	RMC 12.2K	Curved surface of Edge1	0	1312	1712.4	On	17.46	18	1.132	-0.09	1.040	1.178
#43	WCDMA Band IV	RMC 12.2K	Curved surface of Edge1	0	1413	1732.6	On	17.4	18	1.148	-0.09	0.978	1.123
#44	WCDMA Band IV	RMC 12.2K	Curved surface of Edge1	0	1513	1752.6	On	17.45	18	1.135	0.1	1.170	**1.328**
#46	WCDMA Band II	RMC 12.2K	Bottom Face	0	9262	1852.4	On	16.49	17	1.125	-0.09	0.723	0.813
#47	WCDMA Band II	RMC 12.2K	Edge1	0	9262	1852.4	On	16.49	17	1.125	0.11	0.961	1.081
#48	WCDMA Band II	RMC 12.2K	Edge2	0	9262	1852.4	Off	22.67	23	1.079	-0.05	0.553	0.597
#49	WCDMA Band II	RMC 12.2K	Bottom Face	1	9262	1852.4	Off	22.67	23	1.079	-0.17	0.736	0.794
#50	WCDMA Band II	RMC 12.2K	Edge1	0.6	9262	1852.4	Off	22.67	23	1.079	-0.003	1.250	**1.349**
#53	WCDMA Band II	RMC 12.2K	Bottom Face	0	9400	1880	On	16.14	17	1.219	-0.08	0.713	0.869
#54	WCDMA Band II	RMC 12.2K	Bottom Face	0	9538	1907.6	On	16.29	17	1.178	-0.09	0.768	0.904
#55	WCDMA Band II	RMC 12.2K	Edge1	0	9400	1880	On	16.14	17	1.219	-0.12	0.733	0.894
#56	WCDMA Band II	RMC 12.2K	Edge1	0	9538	1907.6	On	16.29	17	1.178	-0.0044	0.841	0.990
#57	WCDMA Band II	RMC 12.2K	Edge1	0.6	9400	1880	Off	22.25	23	1.189	-0.06	1.030	1.224
#58	WCDMA Band II	RMC 12.2K	Edge1	0.6	9538	1907.6	Off	22.09	23	1.233	-0.07	1.030	1.270
#52	WCDMA Band II	RMC 12.2K	Curved surface of Edge1	0	9262	1852.4	On	16.49	17	1.125	-0.11	0.943	1.061
#59	WCDMA Band II	RMC 12.2K	Curved surface of Edge1	0	9400	1880	On	16.14	17	1.125	-0.02	0.868	0.976
#60	WCDMA Band II	RMC 12.2K	Curved surface of Edge1	0	9538	1907.6	On	16.29	17	1.125	-0.03	0.927	1.043

<WLAN 2.4GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Power Back-off	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
#61	WLAN 2.4GHz	802.11b 1Mbps	Bottom Face	0	11	2462	Off	15.21	15.5	1.069	-0.05	0.571	0.610
#62	WLAN 2.4GHz	802.11b 1Mbps	Edge1	0	11	2462	Off	15.21	15.5	1.069	-0.18	0.825	**0.882**
#63	WLAN 2.4GHz	802.11b 1Mbps	Curved surface of Edge1	0	11	2462	Off	15.21	15.5	1.069	0.09	0.693	0.741
#64	WLAN 2.4GHz	802.11b 1Mbps	Edge1	0	1	2412	Off	14.88	15.5	1.153	-0.09	0.506	0.584
#65	WLAN 2.4GHz	802.11b 1Mbps	Edge1	0	6	2437	Off	15.18	15.5	1.076	-0.05	0.632	0.680

12.2 Repeated SAR Measurement

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Power Back-off	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
#44	WCDMA Band IV	RMC 12.2K	Curved surface of Edge1	0	1513	1752.6	On	17.45	18	1.135	0.1	1.170	1	1.328
#45	WCDMA Band IV	RMC 12.2K	Curved surface of Edge1	0	1513	1752.6	On	17.45	18	1.135	-0.08	1.110	1.054	1.260
#50	WCDMA Band II	RMC 12.2K	Edge1	0.6	9262	1852.4	Off	22.67	23	1.079	-0.003	1.250	1	1.349
#51	WCDMA Band II	RMC 12.2K	Edge1	0.6	9262	1852.4	Off	22.67	23	1.079	-0.08	1.220	1.025	1.316
#62	WLAN 2.4GHz	802.11b 1Mbps	Edge1	0	11	2462	Off	15.21	15.5	1.069	-0.18	0.825	1	0.882
#66	WLAN 2.4GHz	802.11b 1Mbps	Edge1	0	11	2462	Off	15.21	15.5	1.069	-0.08	0.822	1.004	0.879

Note:

1. Per KDB 865664 D01v01r01, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg
2. Per KDB 865664 D01v01r01, 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 largest SAR to the smallest SAR among original and repeated measurement.
4. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

12.3 Highest SAR Plot

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.27

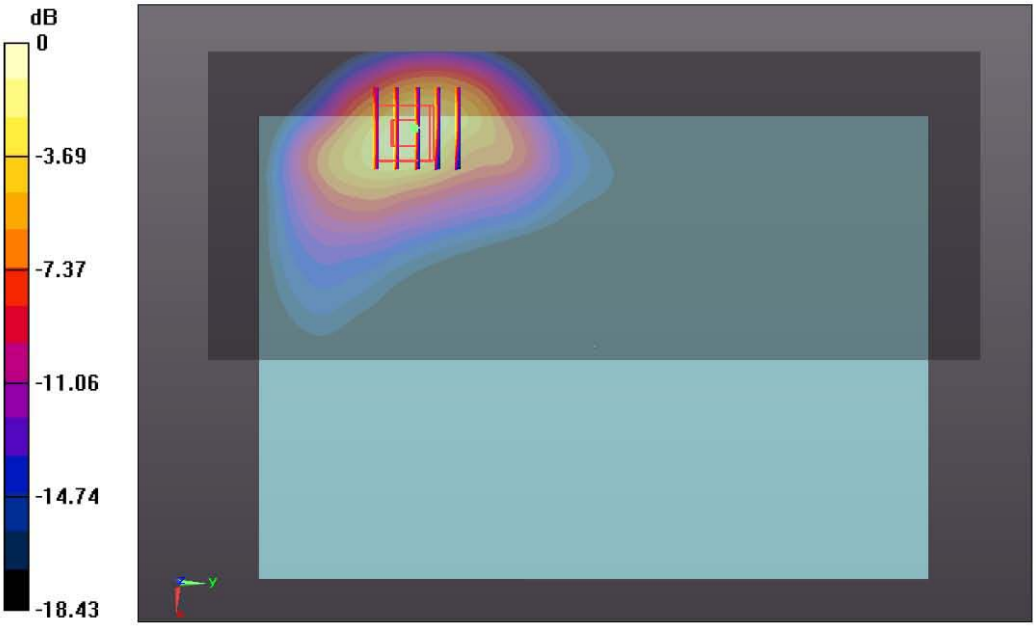
#01_GSM850_GPRS (2 Tx slots)_Bottom Face 0cm_Ch128_Sensor on

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 824.2 MHz;Duty Cycle: 1:4.15
Medium: MSL_835_130927 Medium parameters used: f = 824.2 MHz; σ = 0.972 mho/m; ε_r = 55.281; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.48, 9.48, 9.48); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch128/Area Scan 81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.776 mW/g

Ch128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.969 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.417 W/kg
SAR(1 g) = 0.723 mW/g; SAR(10 g) = 0.376 mW/g
Maximum value of SAR (measured) = 1.057 mW/g



0 dB = 1.060mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

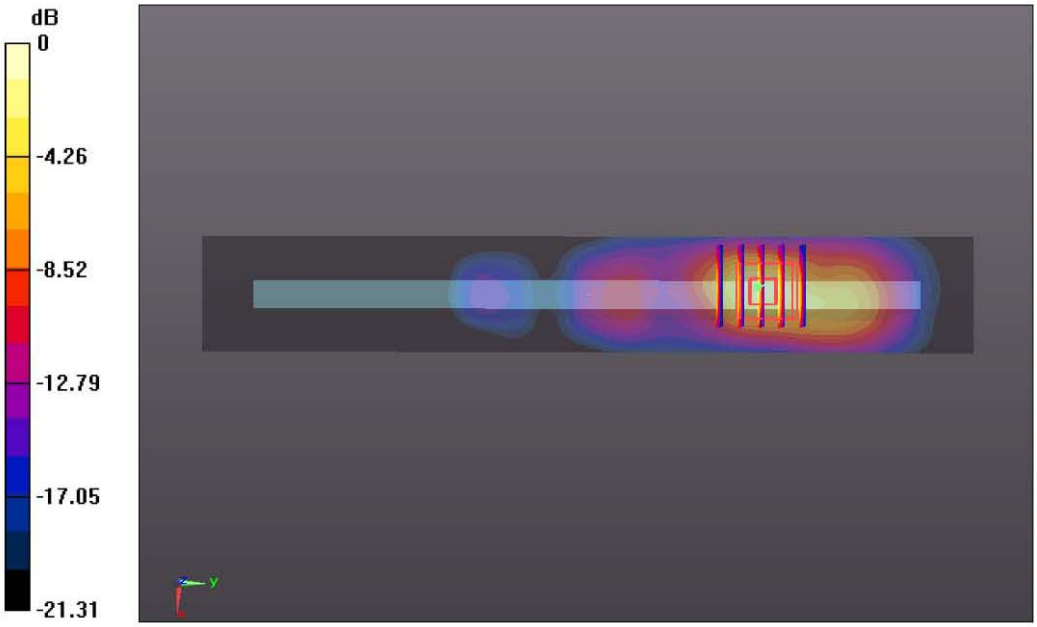
#20_GSM1900_GPRS (2 Tx slots)_Edge1 0cm_Ch810_Sensor on

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 1909.8 MHz;Duty Cycle: 1:4.15
Medium: MSL_1900_130926 Medium parameters used: f = 1910 MHz; σ = 1.56 mho/m; ε_r = 53.325; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch810/Area Scan (31x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.014 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.100 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.649 W/kg
SAR(1 g) = 0.849 mW/g; SAR(10 g) = 0.394 mW/g
Maximum value of SAR (measured) = 1.269 mW/g



0 dB = 1.270mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.27

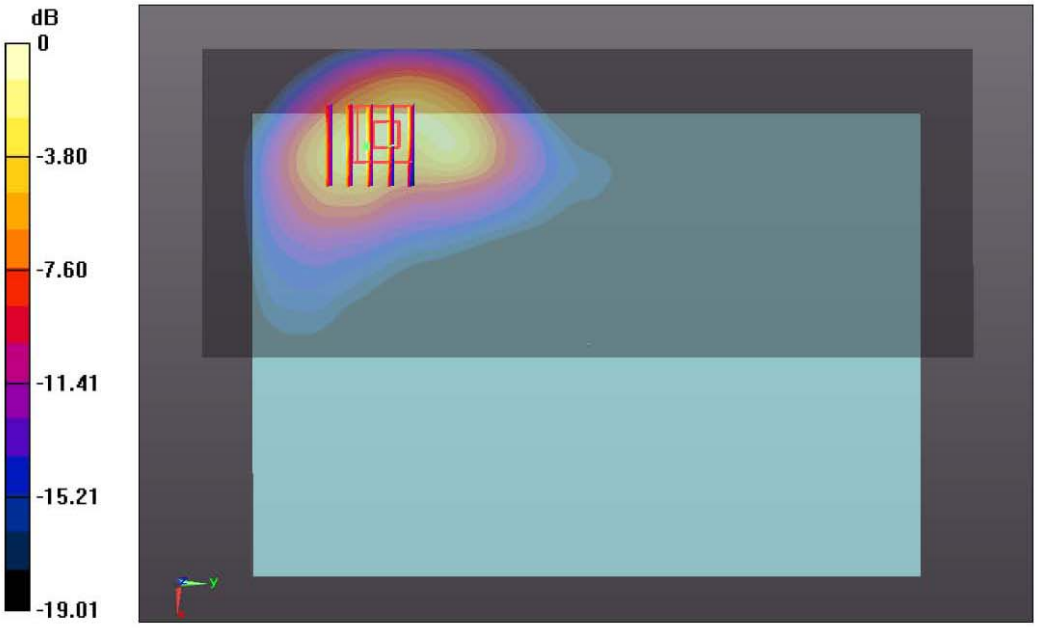
#23_WCDMA Band V_RMC12.2K_Bottom Face 0cm_Ch4132_Sensor on

Communication System: UMTS; Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium: MSL_835_130927 Medium parameters used: f = 826.4 MHz; σ = 0.974 mho/m; ε_r = 55.258; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.48, 9.48, 9.48); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch4132/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.641 mW/g

Ch4132/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.551 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.313 W/kg
SAR(1 g) = 0.654 mW/g; SAR(10 g) = 0.337 mW/g
Maximum value of SAR (measured) = 0.880 mW/g



0 dB = 0.880mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

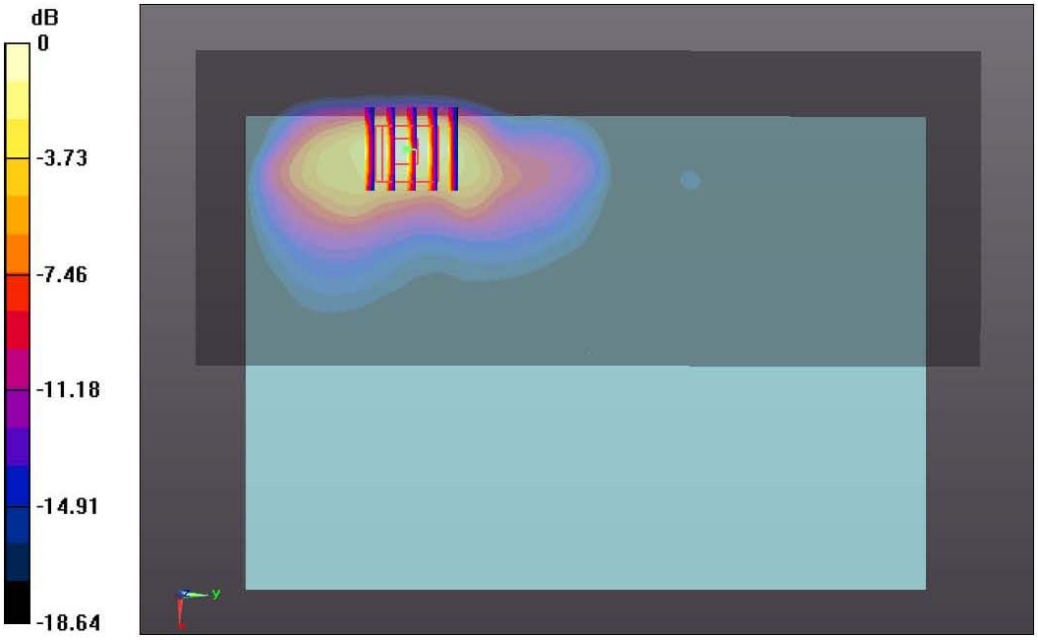
#44_WCDMA Band IV_RMC12.2K_Curved surface of Edge1_Ch1513_Sensor on

Communication System: UMTS; Frequency: 1752.6 MHz;Duty Cycle: 1:1
Medium: MSL_1750_130926 Medium parameters used: f = 1753 MHz; σ = 1.506 mho/m; ε_r = 51.006; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.86, 7.86, 7.86); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch1513/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.488 mW/g

Ch1513/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.743 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 2.185 W/kg
SAR(1 g) = 1.170 mW/g; SAR(10 g) = 0.599 mW/g
Maximum value of SAR (measured) = 1.703 mW/g



0 dB = 1.700mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

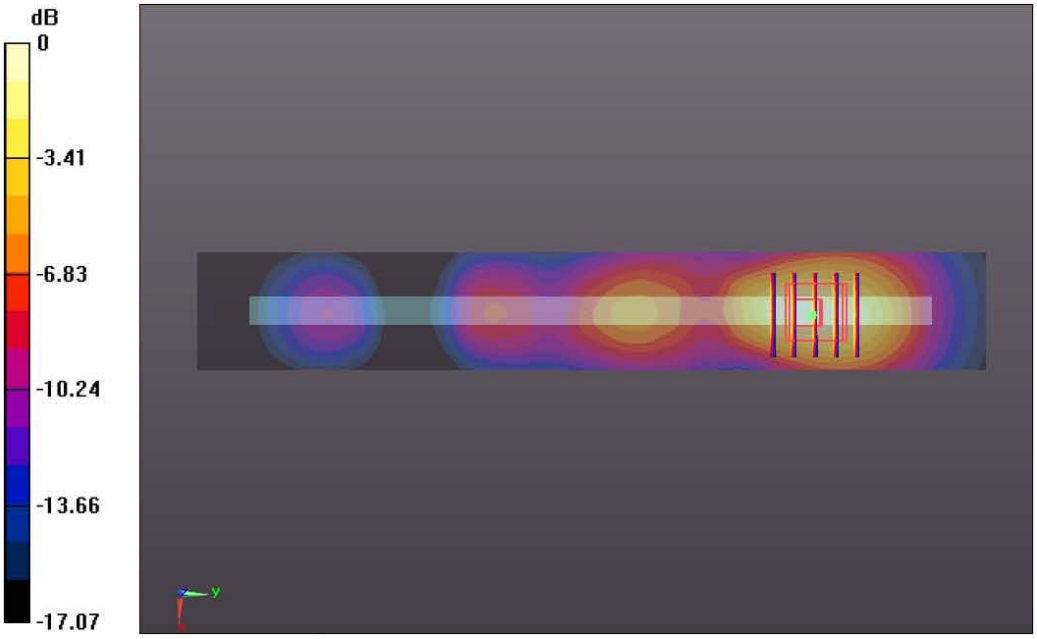
#50_WCDMA Band II_RMC12.2K_Edge1 0.6cm_Ch9262_Sensor off

Communication System: UMTS; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130926 Medium parameters used: f = 1852.4 MHz; σ = 1.492 mho/m; ε_r = 53.467; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch9262/Area Scan (31x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.607 mW/g

Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.822 V/m; Power Drift = -0.003 dB
Peak SAR (extrapolated) = 2.074 W/kg
SAR(1 g) = 1.250 mW/g; SAR(10 g) = 0.694 mW/g
Maximum value of SAR (measured) = 1.722 mW/g



0 dB = 1.720mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.29

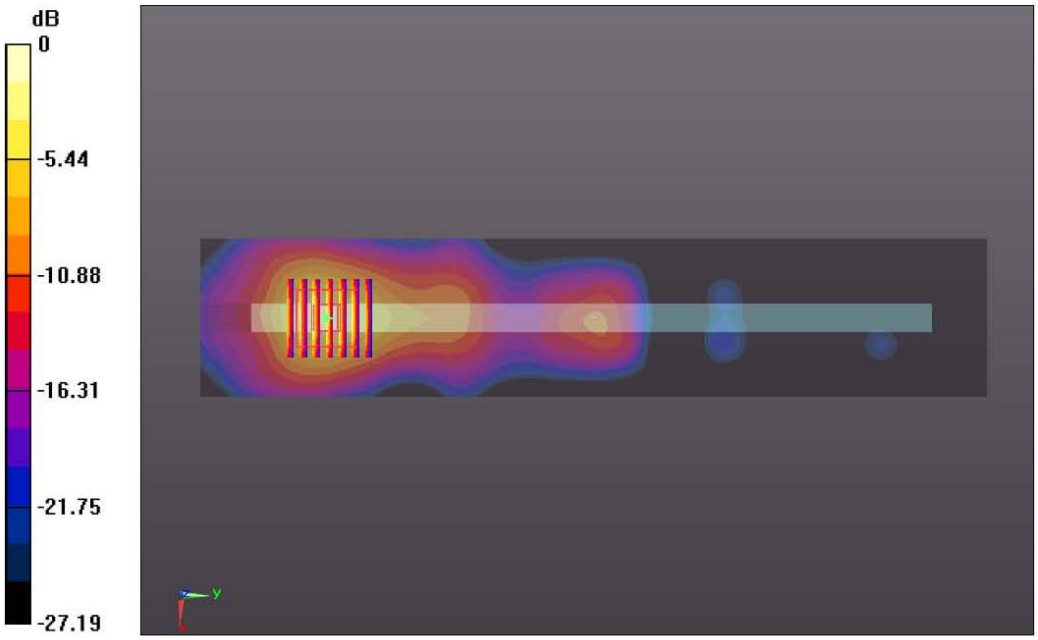
#62_WLAN 2.4GHz_802.11b_Edge1 0cm_Ch11

Communication System: WIFI; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: MSL_2450_130929 Medium parameters used: f = 2462 MHz; σ = 1.955 mho/m; ε_r = 50.875; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7, 7, 7); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch11/Area Scan (51x251x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.711 mW/g

Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.142 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 1.724 W/kg
SAR(1 g) = 0.825 mW/g; SAR(10 g) = 0.366 mW/g
Maximum value of SAR (measured) = 1.272 mW/g



0 dB = 1.270mW/g

13. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Body	Note
1.	GPRS/EDGE(Data) + WLAN 2.4GHz	Yes	2.4GHz Hotspot
2.	WCDMA(Data) + WLAN 2.4GHz	Yes	2.4GHz Hotspot
3.	GPRS/EDGE(Data) + Bluetooth	Yes	
4.	WCDMA(Data) + Bluetooth	Yes	
5.	GPRS/EDGE(data) + WLAN 5.3/5.5/5.8GHz	Yes	WiFi Direct
6.	WCDMA(data) + WLAN 5.3/5.5/5.8GHz	Yes	WiFi Direct

Note:

1. WLAN 2.4GHz and Bluetooth share the same antenna, and cannot transmit simultaneously.
2. EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, they will not transmit simultaneously.
3. EUT will choose either GSM or WCDMA according to the network signal condition; therefore, they will not transmit simultaneously.
4. WWAN and WLAN 5.2GHz band cannot be simultaneous transmission, due the WLAN 5.2GHz band limited used indoor.
5. For simultaneous transmission analysis for exposure position of bottom face 1cm and Edge1 0.6cm, WLAN SAR tested at 0mm separation is worse and the test data is used for conservative SAR summation.
6. The Reported SAR summation is calculated based on the same configuration and test position.
7. Per KDB 447498 D01v05r01, 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
   If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.
   iii) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.
8. For simultaneous transmission analysis, Bluetooth/WLAN 5GHz SAR is estimated per KDB 447498 D01v05r01 based on the formula below.
   i) (*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)]·[$\sqrt{f(GHz)/x}$] W/kg for *test separation distances* ≤ 50 mm; where *x* = 7.5 for 1-g SAR, and *x* = 18.75 for 10-g SAR.
   ii) When the minimum test separation distance is < 5mm, the distance is used 5mm to determine SAR test exclusion.
   iii) 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the *test separation distances* is > 50 mm.
   iv) If the test separation distance (antenna-user) is < 5mm, 5mm is used for excluded SAR calculation.

In this report, 50mm separation is applied to conservatively estimate SAR value for separation distance > 50mm.

Band	Tune-up Power dBm	Exposure Position	Bottom Face	Bottom Face	Curved surface of Edge1	Edge 1	Edge 1	Edge 2
		Test separation (mm)	0	10	0	0	6	0
		Antenna to user distance (mm)	5	10	5	5	8	197
Bluetooth	1	Estimated SAR (W/kg)	0.053	0.026	0.053	0.053	0.033	0.005
WLAN 5.3GHz Band	7.8		0.371	0.185	0.371	0.371	0.232	0.037
WLAN 5.5GHz Band	7.8		0.384	0.192	0.384	0.384	0.240	0.038
WLAN 5.8GHz Band	7.8		0.388	0.194	0.388	0.388	0.242	0.039

13.1 Tablet Body Exposure Conditions

<WWAN + WLAN 2.4GHz>

Position	WWAN (PCB)			WLAN 2.4GHz (DTS)		Summed SAR (W/kg)	SPLSR	Case No
	WWAN Band	Plot No	SAR (W/kg)	Plot No	SAR (W/kg)			
Bottom Face at 1cm	GSM850	#04	0.536	#61	0.610	1.15		
	GSM1900	#14	0.522	#61	0.610	1.13		
	WCDMA Band V	#26	0.170	#61	0.610	0.78		
	WCDMA Band IV	#34	0.687	#61	0.610	1.30		
	WCDMA Band II	#49	0.794	#61	0.610	1.40		
Edge1 at 0.6cm	GSM850	#05	0.640	#62	0.882	1.52		
	GSM1900	#15	0.724	#62	0.882	**1.61**	0.01	#1
	WCDMA Band V	#27	0.414	#62	0.882	1.30		
	WCDMA Band IV	#42	1.192	#62	0.882	**2.07**	0.02	#2
	WCDMA Band II	#50	1.349	#62	0.882	**2.23**	0.02	#3
Bottom Face at 0cm	GSM850	#01	0.776	#61	0.610	1.39		
	GSM1900	#11	0.897	#61	0.610	1.51		
	WCDMA Band V	#23	0.735	#61	0.610	1.35		
	WCDMA Band IV	#37	1.251	#61	0.610	**1.86**	0.02	#4
	WCDMA Band II	#54	0.904	#61	0.610	1.51		
Edge1 at 0cm	GSM850	#02	0.745	#62	0.882	**1.63**	0.01	#5
	GSM1900	#20	0.948	#62	0.882	**1.83**	0.01	#6
	WCDMA Band V	#24	0.698	#62	0.882	1.58		
	WCDMA Band IV	#40	1.050	#62	0.882	**1.93**	0.02	#7
	WCDMA Band II	#47	1.081	#62	0.882	**1.96**	0.02	#8
Edge2 at 0cm	GSM850	#03	0.076			0.08		
	GSM1900	#13	0.432			0.43		
	WCDMA Band V	#25	0.048			0.05		
	WCDMA Band IV	#33	0.396			0.40		
	WCDMA Band II	#48	0.597			0.60		
Curved surface of Edge1	GSM850			#63	0.741	0.74		
	GSM1900			#63	0.741			
	WCDMA Band V			#63	0.741	0.74		
	WCDMA Band IV	#44	1.328	#63	0.741	**2.07**	0.02	#9
	WCDMA Band II	#52	1.061	#63	0.741	**1.80**	0.01	#10

<WWAN + WLAN 5.3/5.5GHz>

Position	WWAN (PCB)			WLAN 5.3/5.5GHz (NII)	Summed SAR (W/kg)	SPLSR	Case No
	WWAN Band	Plot No	SAR (W/kg)	Estimated SAR (W/kg)			
Bottom Face at 1cm	GSM850	#04	0.536	0.192	0.73		
	GSM1900	#14	0.522	0.192	0.71		
	WCDMA Band V	#26	0.170	0.192	0.36		
	WCDMA Band IV	#34	0.687	0.192	0.88		
	WCDMA Band II	#49	0.794	0.192	0.99		
Edge1 at 0.6cm	GSM850	#05	0.640	0.240	0.88		
	GSM1900	#15	0.724	0.240	0.96		
	WCDMA Band V	#27	0.414	0.240	0.65		
	WCDMA Band IV	#42	1.192	0.240	1.43		
	WCDMA Band II	#50	1.349	0.240	**1.59**		
Bottom Face at 0cm	GSM850	#01	0.776	0.384	1.16		
	GSM1900	#11	0.897	0.384	1.28		
	WCDMA Band V	#23	0.735	0.384	1.12		
	WCDMA Band IV	#37	1.251	0.384	**1.64**	0.02	#11
	WCDMA Band II	#54	0.904	0.384	1.29		
Edge1 at 0cm	GSM850	#02	0.745	0.384	1.13		
	GSM1900	#20	0.948	0.384	1.33		
	WCDMA Band V	#24	0.698	0.384	1.08		
	WCDMA Band IV	#40	1.050	0.384	1.43		
	WCDMA Band II	#47	1.081	0.384	1.47		
Edge2 at 0cm	GSM850	#03	0.076	0.038	0.11		
	GSM1900	#13	0.432	0.038	0.47		
	WCDMA Band V	#25	0.048	0.038	0.09		
	WCDMA Band IV	#33	0.396	0.038	0.43		
	WCDMA Band II	#48	0.597	0.038	0.64		
Curved surface of Edge1	GSM850			0.384	0.38		
	GSM1900			0.384	0.38		
	WCDMA Band V			0.384	0.38		
	WCDMA Band IV	#44	1.328	0.384	**1.71**	0.02	#12
	WCDMA Band II	#52	1.061	0.384	1.45		

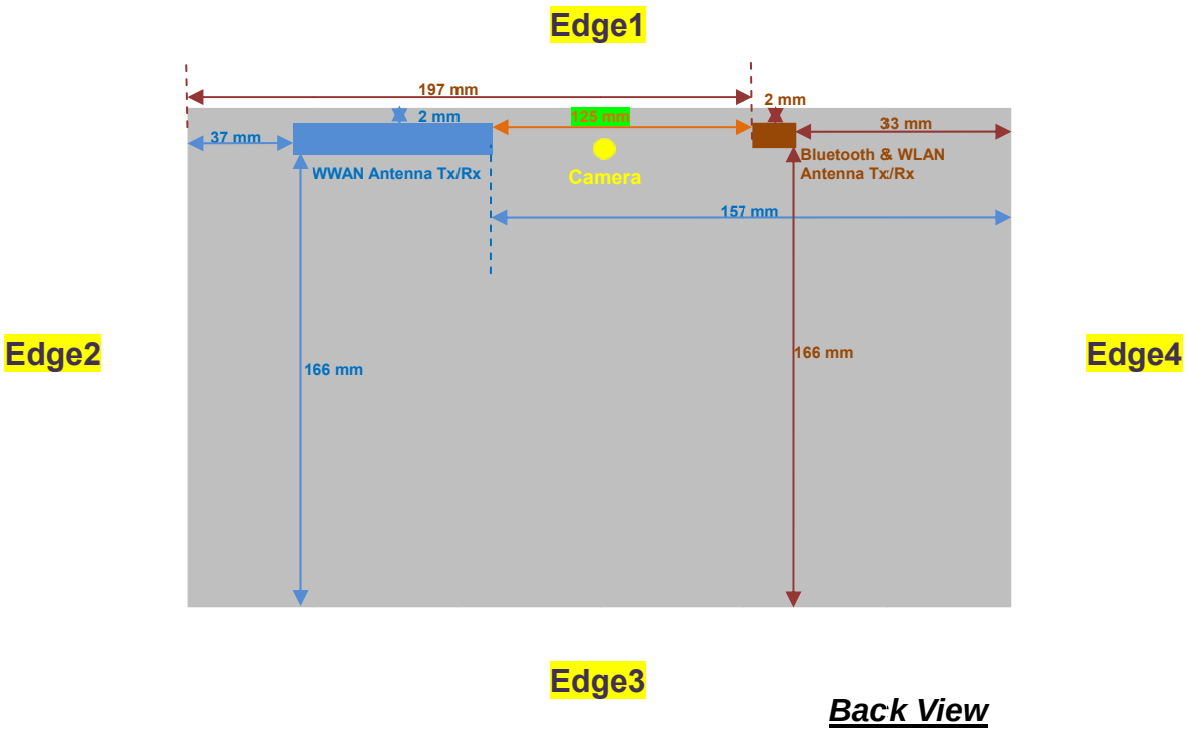
<WWAN + WLAN 5.8GHz>

Position	WWAN (PCB)			WLAN 5.8GHz (DTS)	Summed SAR (W/kg)	SPLSR	Case No
	WWAN Band	Plot No	SAR (W/kg)	Estimated SAR (W/kg)			
Bottom Face at 1cm	GSM850	#04	0.536	0.194	0.73		
	GSM1900	#14	0.522	0.194	0.72		
	WCDMA Band V	#26	0.170	0.194	0.36		
	WCDMA Band IV	#34	0.687	0.194	0.88		
	WCDMA Band II	#49	0.794	0.194	0.99		
Edge1 at 0.6cm	GSM850	#05	0.640	0.242	0.88		
	GSM1900	#15	0.724	0.242	0.97		
	WCDMA Band V	#27	0.414	0.242	0.66		
	WCDMA Band IV	#42	1.192	0.242	1.43		
	WCDMA Band II	#50	1.349	0.242	**1.59**		
Bottom Face at 0cm	GSM850	#01	0.776	0.388	1.16		
	GSM1900	#11	0.897	0.388	1.29		
	WCDMA Band V	#23	0.735	0.388	1.12		
	WCDMA Band IV	#37	1.251	0.388	**1.64**	0.02	#13
	WCDMA Band II	#54	0.904	0.388	1.29		
Edge1 at 0cm	GSM850	#02	0.745	0.388	1.13		
	GSM1900	#20	0.948	0.388	1.34		
	WCDMA Band V	#24	0.698	0.388	1.09		
	WCDMA Band IV	#40	1.050	0.388	1.44		
	WCDMA Band II	#47	1.081	0.388	1.47		
Edge2 at 0cm	GSM850	#03	0.076	0.039	0.12		
	GSM1900	#13	0.432	0.039	0.47		
	WCDMA Band V	#25	0.048	0.039	0.09		
	WCDMA Band IV	#33	0.396	0.039	0.44		
	WCDMA Band II	#48	0.597	0.039	0.64		
Curved surface of Edge1	GSM850			0.388	0.39		
	GSM1900			0.388	0.39		
	WCDMA Band V			0.388	0.39		
	WCDMA Band IV	#44	1.328	0.388	**1.72**	0.02	#14
	WCDMA Band II	#52	1.061	0.388	1.45		

<WWAN + Bluetooth>

Position	WWAN (PCB)			Bluetooth (DSS)	Summed SAR (W/kg)	SPLSR	Case No
	WWAN Band	Plot No	SAR (W/kg)	Estimated SAR (W/kg)			
Bottom Face at 1cm	GSM850	#04	0.536	0.026	0.56		
	GSM1900	#14	0.522	0.026	0.55		
	WCDMA Band V	#26	0.170	0.026	0.20		
	WCDMA Band IV	#34	0.687	0.026	0.71		
	WCDMA Band II	#49	0.794	0.026	0.82		
Edge1 at 0.6cm	GSM850	#05	0.640	0.033	0.67		
	GSM1900	#15	0.724	0.033	0.76		
	WCDMA Band V	#27	0.414	0.033	0.45		
	WCDMA Band IV	#42	1.192	0.033	1.23		
	WCDMA Band II	#50	1.349	0.033	1.38		
Bottom Face at 0cm	GSM850	#01	0.776	0.053	0.83		
	GSM1900	#11	0.897	0.053	0.95		
	WCDMA Band V	#23	0.735	0.053	0.79		
	WCDMA Band IV	#37	1.251	0.053	1.30		
	WCDMA Band II	#54	0.904	0.053	0.96		
Edge1 at 0cm	GSM850	#02	0.745	0.053	0.80		
	GSM1900	#20	0.948	0.053	1.00		
	WCDMA Band V	#24	0.698	0.053	0.75		
	WCDMA Band IV	#40	1.050	0.053	1.10		
	WCDMA Band II	#47	1.081	0.053	1.13		
Edge2 at 0cm	GSM850	#03	0.076	0.005	0.08		
	GSM1900	#13	0.432	0.005	0.44		
	WCDMA Band V	#25	0.048	0.005	0.05		
	WCDMA Band IV	#33	0.396	0.005	0.40		
	WCDMA Band II	#48	0.597	0.005	0.60		
Curved surface of Edge1	GSM850	#08	1.473	0.053	1.53		
	GSM1900			0.053	0.05		
	WCDMA Band V			0.053	0.05		
	WCDMA Band IV	#44	1.328	0.053	1.38		
	WCDMA Band II	#52	1.061	0.053	1.11		

13.2 SPLSR Evaluation and Analysis

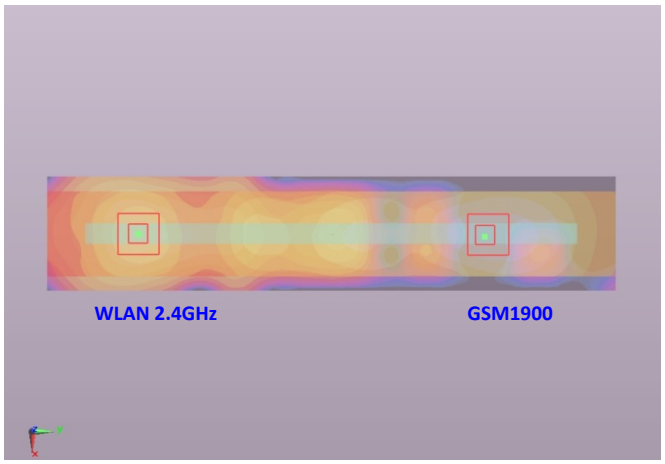


Back View

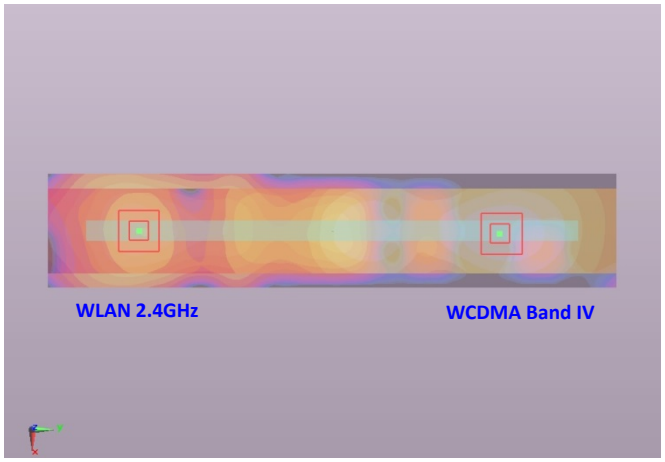
Note:

1. For SPLSR analysis of colocation with WLAN 5GHz, the minimum distances between each antenna pair was used for conservative SPLSR calculation. This is justified to compare the SAR peak separation in SPLSR analysis case #11/#13 and #12/#14 with SPLSR analysis case #4 and #9.
2. SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (*min. separation distance, mm*). If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary

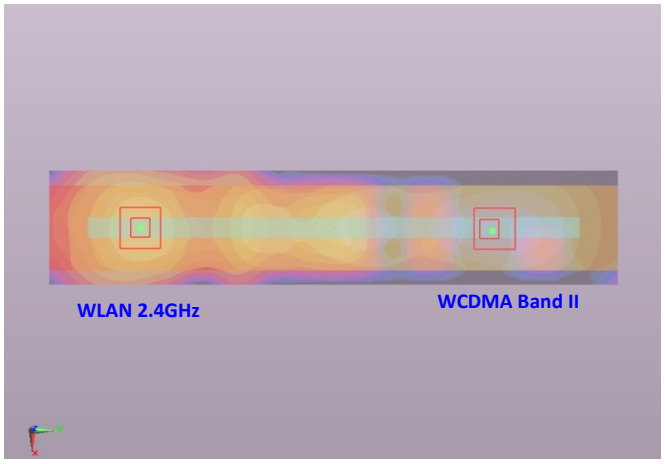
Case No #1 / Plot No	Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
					X	Y	Z				
#15	Edge1	GSM1900	0.724	0.6	0.0015	0.081	-0.178	183.0	1.61	0.01	Not required
#62		WLAN 2.4GHz	0.882	0	8.74E-11	-0.102	-0.177				



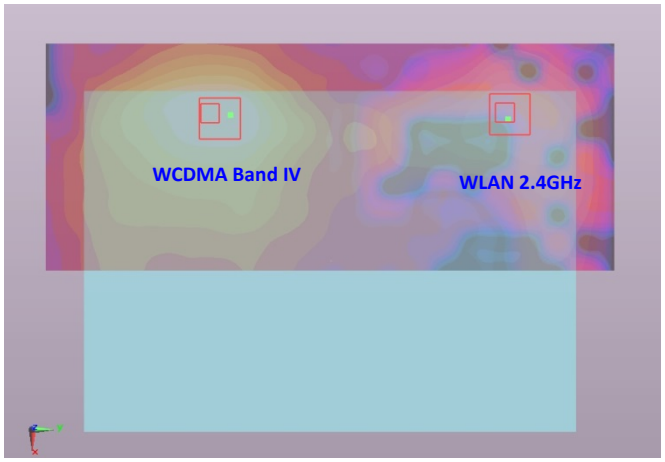
Case No #2 / Plot No	Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
					X	Y	Z				
#42	Edge1	WCDMA Band IV	1.192	0.6	0.0015	0.0885	-0.178	190.5	2.07	0.02	Not required
#62		WLAN 2.4GHz	0.882	0	8.74E-11	-0.102	-0.177				



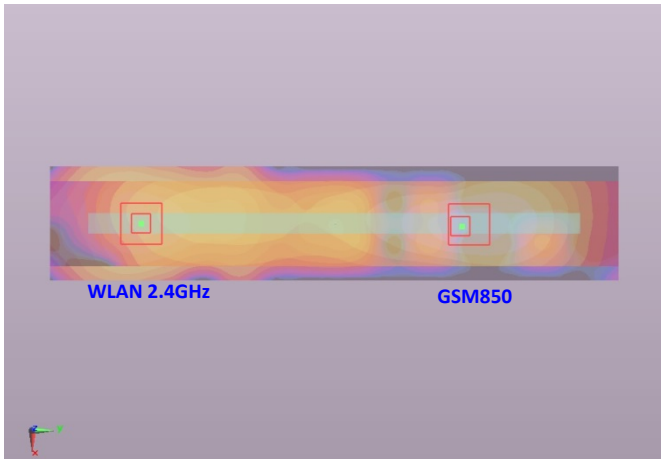
Case No #3 / Plot No	Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
					X	Y	Z				
#50	Edge1	WCDMA Band II	1.349	0.6	0.0015	0.084	-0.178	186.0	2.23	0.02	Not required
#62		WLAN 2.4GHz	0.882	0	8.74E-11	-0.102	-0.177				



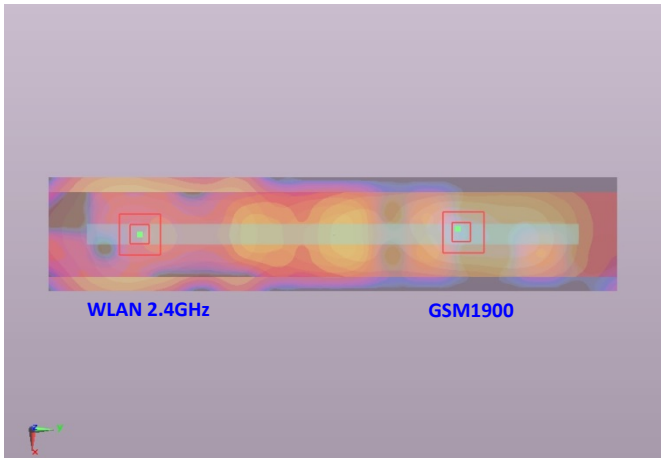
Case No #4 / Plot No	Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
					X	Y	Z				
#37	Bottom Face	WCDMA Band IV	1.251	0	-0.0775	-0.0685	-0.177	162.5	1.86	0.02	Not required
#61		WLAN 2.4GHz	0.61	0	-0.08	0.094	-0.177				



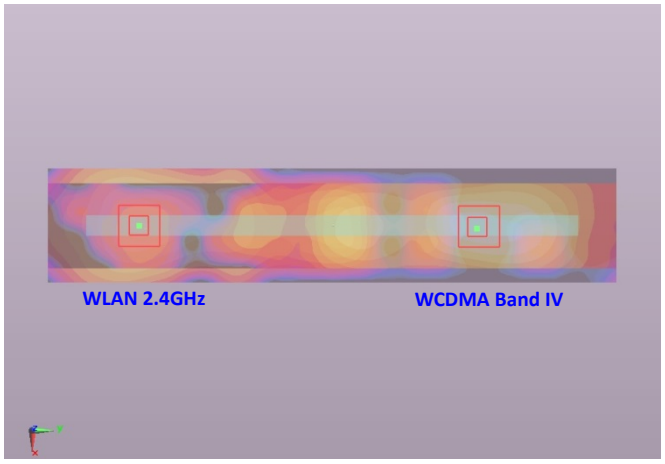
Case No #5 / Plot No	Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
					X	Y	Z				
#02	Edge1	GSM850	0.745	0	0.0015	0.0675	-0.178	169.5	1.63	0.01	Not required
#62		WLAN 2.4GHz	0.882	0	8.74E-11	-0.102	-0.177				



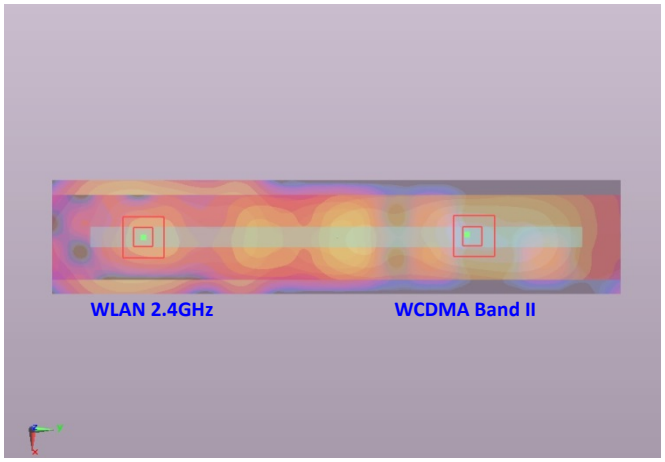
Case No #6 / Plot No	Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
					X	Y	Z				
#20	Edge1	GSM1900	0.948	0	-0.003	0.066	-0.177	168.0	1.83	0.01	Not required
#62		WLAN 2.4GHz	0.882	0	8.74E-11	-0.102	-0.177				



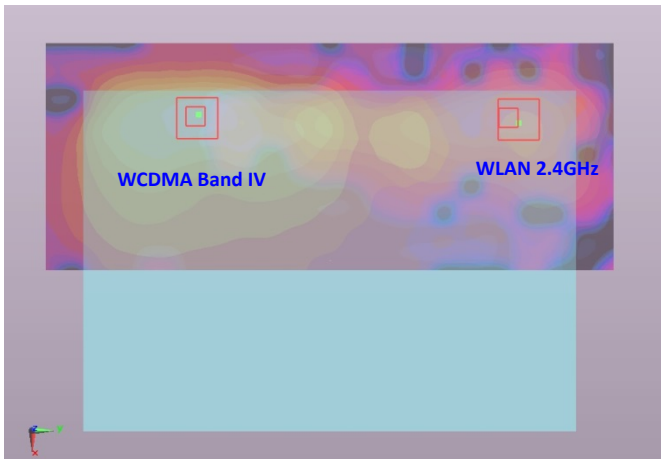
Case No #7 / Plot No	Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
					X	Y	Z				
#40	Edge1	WCDMA Band IV	1.05	0	0.0015	0.0765	-0.177	178.5	1.93	0.02	Not required
#62		WLAN 2.4GHz	0.882	0	8.74E-11	-0.102	-0.177				



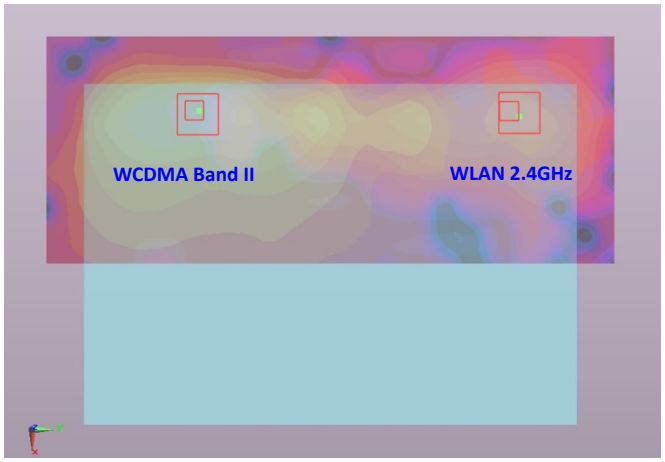
Case No #8 / Plot No	Position	Band	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
					X	Y	Z				
#47	Edge1	WCDMA Band II	1.081	0	-0.0015	0.069	-0.177	171.0	1.96	0.02	Not required
#62		WLAN 2.4GHz	0.882	0	8.74E-11	-0.102	-0.177				



Case No #9 Plot No	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				
#44	Curved surface of Edge1	WCDMA Band IV	1.328	0	-0.0775	-0.077	-0.177	172.0	2.07	0.02	Not required
#63		WLAN 2.4GHz	0.741	0	-0.078	0.095	-0.177				



Case No #10 Plot No	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				
#52	Curved surface of Edge1	WCDMA Band II	1.061	0	-0.076	-0.077	-0.177	172.0	1.80	0.01	Not required
#63		WLAN 2.4GHz	0.741	0	-0.078	0.095	-0.177				



Case No #11 / Plot No	Position	Band	SAR (W/kg)	Gap (cm)	3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
#37	Bottom Face	WCDMA Band IV	1.251	0	125.0	1.64	0.02	Not required
-		WLAN 5.3/5.5GHz	0.384	0				

Case No #12 / Plot No	Position	Band	SAR (W/kg)	Gap (cm)	3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
#44	Curved surface of Edge1	WCDMA Band IV	1.328	0	125.0	1.71	0.02	Not required
-		WLAN 5.3/5.5GHz	0.384	0				

Case No #13 / Plot No	Position	Band	SAR (W/kg)	Gap (cm)	3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
#37	Bottom Face	WCDMA Band IV	1.251	0	125.0	1.64	0.02	Not required
-		WLAN 5.8GHz	0.388	0				

Case No #14 / Plot No	Position	Band	SAR (W/kg)	Gap (cm)	3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
#44	Curved surface of Edge1	WCDMA Band IV	1.328	0	125.0	1.72	0.02	Not required
-		WLAN 5.8GHz	0.388	0				

Test Engineer : Fulu Hu and Chimmy Cheng

14. Uncertainty Assessment

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

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

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

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

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

(b) κ is the coverage factor

Table 14.1. Standard Uncertainty for Assumed Distribution

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

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

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

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

15. 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 v05r01, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, May 2013

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

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

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

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

[11] FCC KDB 865664 D01 v01r01, "SAR Measurement Requirements for 100 MHz to 6 GHz", May 2013.

[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: 2013.09.27

System Check_Body_835MHz_130927

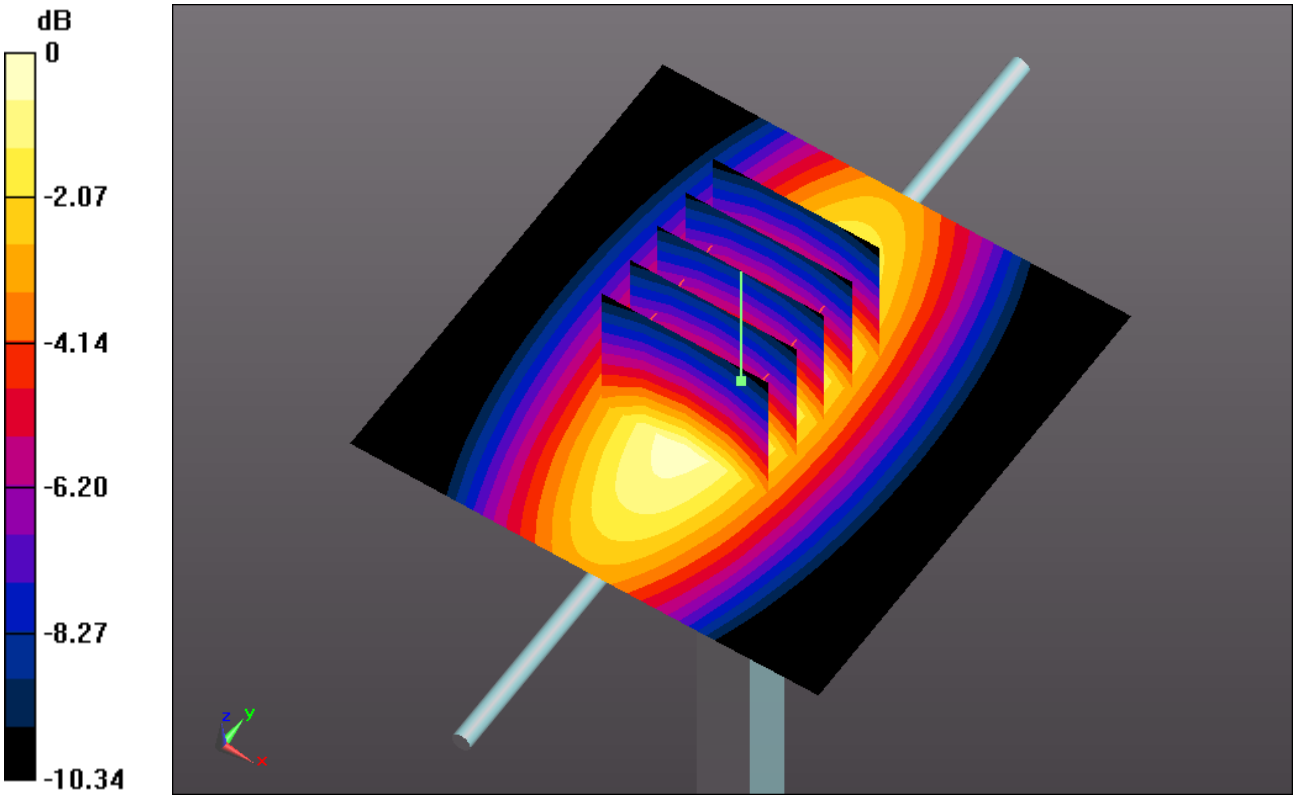
DUT: D835V2 - SN:4d091

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_835_130927 Medium parameters used: f = 835 MHz; σ = 0.983 mho/m; ε_r = 55.18; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.48, 9.48, 9.48); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.829 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 49.749 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 3.309 W/kg
SAR(1 g) = 2.23 mW/g; SAR(10 g) = 1.48 mW/g
Maximum value of SAR (measured) = 2.824 mW/g



0 dB = 2.820mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

System Check_Body_1750MHz_130926

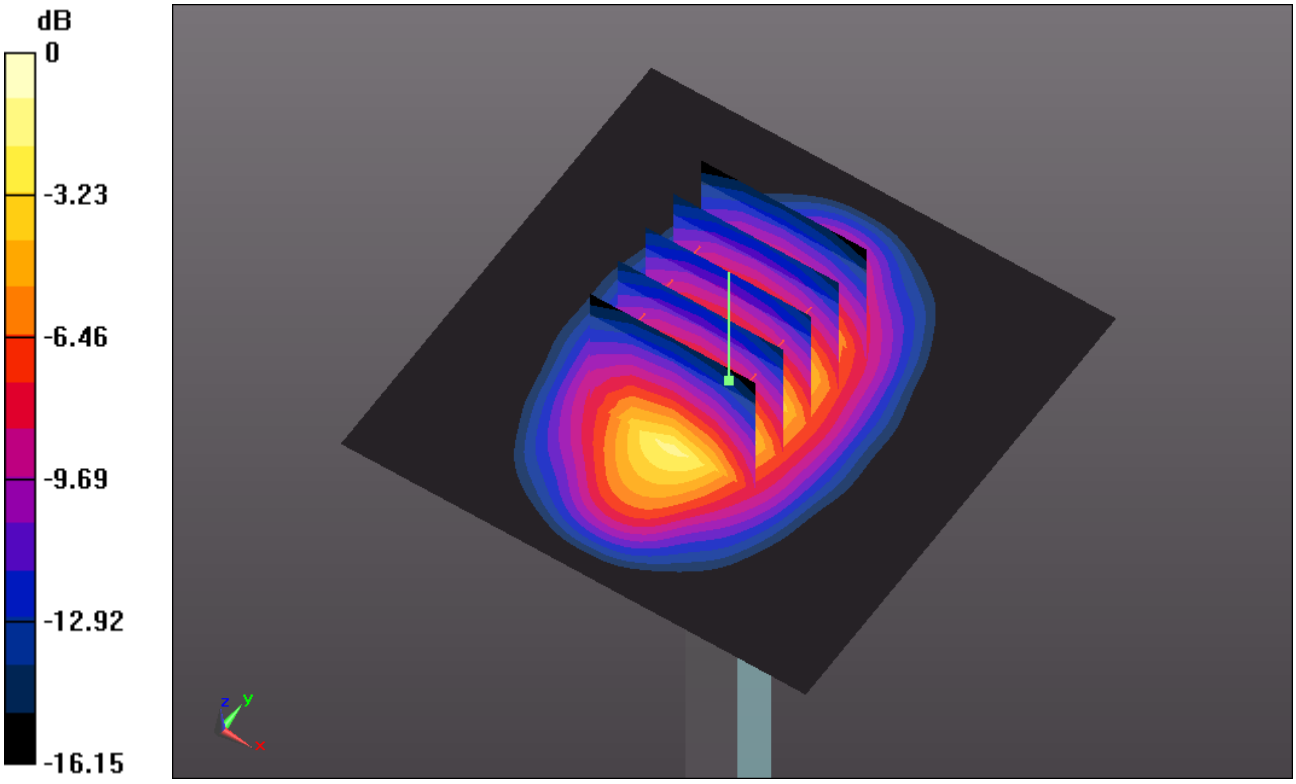
DUT: D1750V2 - SN:1069

Communication System: CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: MSL_1750_130926 Medium parameters used: f = 1750 MHz; σ = 1.502 mho/m; ε_r = 51.015; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.86, 7.86, 7.86); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 12.620 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 82.925 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 15.365 W/kg
SAR(1 g) = 9.02 mW/g; SAR(10 g) = 4.85 mW/g
Maximum value of SAR (measured) = 12.624 mW/g



0 dB = 12.620mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

System Check_Body_1900MHz_130926

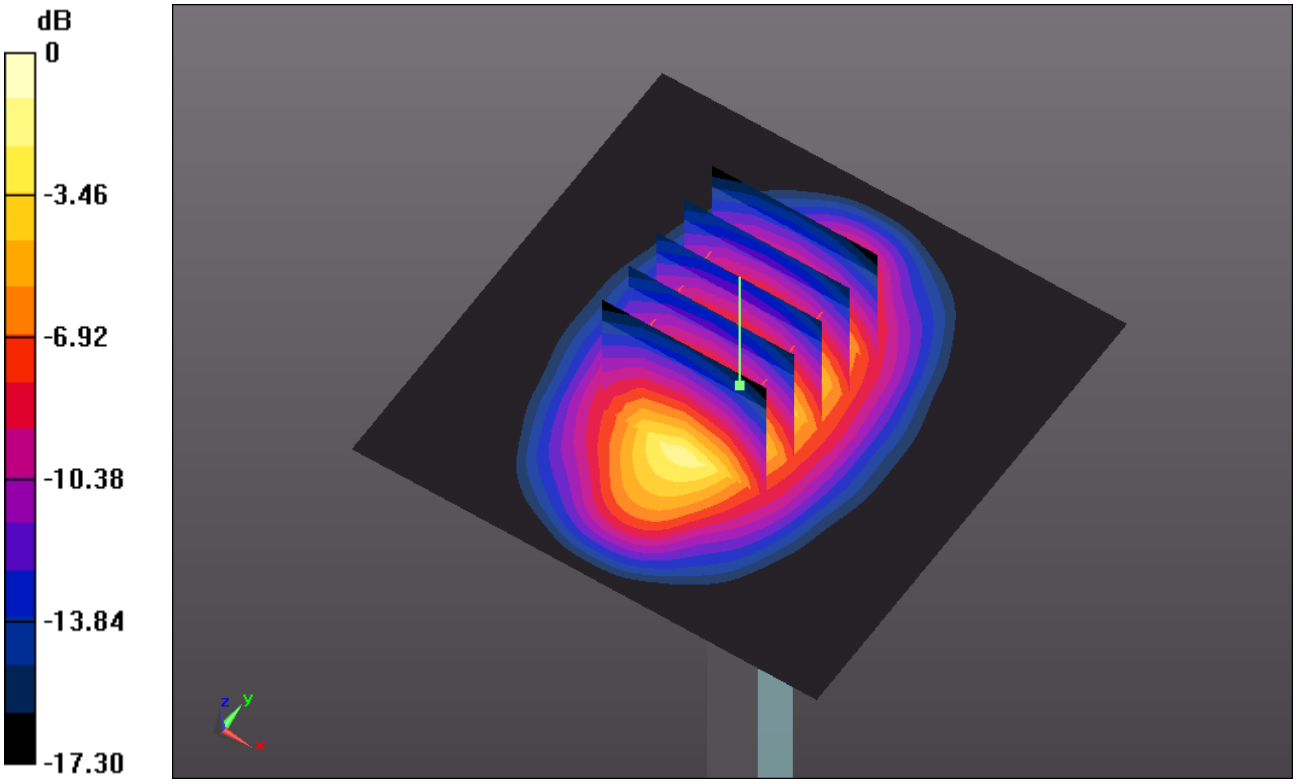
DUT: D1900V2 - SN:5d118

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130926 Medium parameters used: f = 1900 MHz; σ = 1.55 mho/m; ε_r = 53.354; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 15.917 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 91.260 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 19.564 W/kg
SAR(1 g) = 11.2 mW/g; SAR(10 g) = 5.89 mW/g
Maximum value of SAR (measured) = 15.922 mW/g



0 dB = 15.920mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.29

System Check_Body_2450MHz_130929

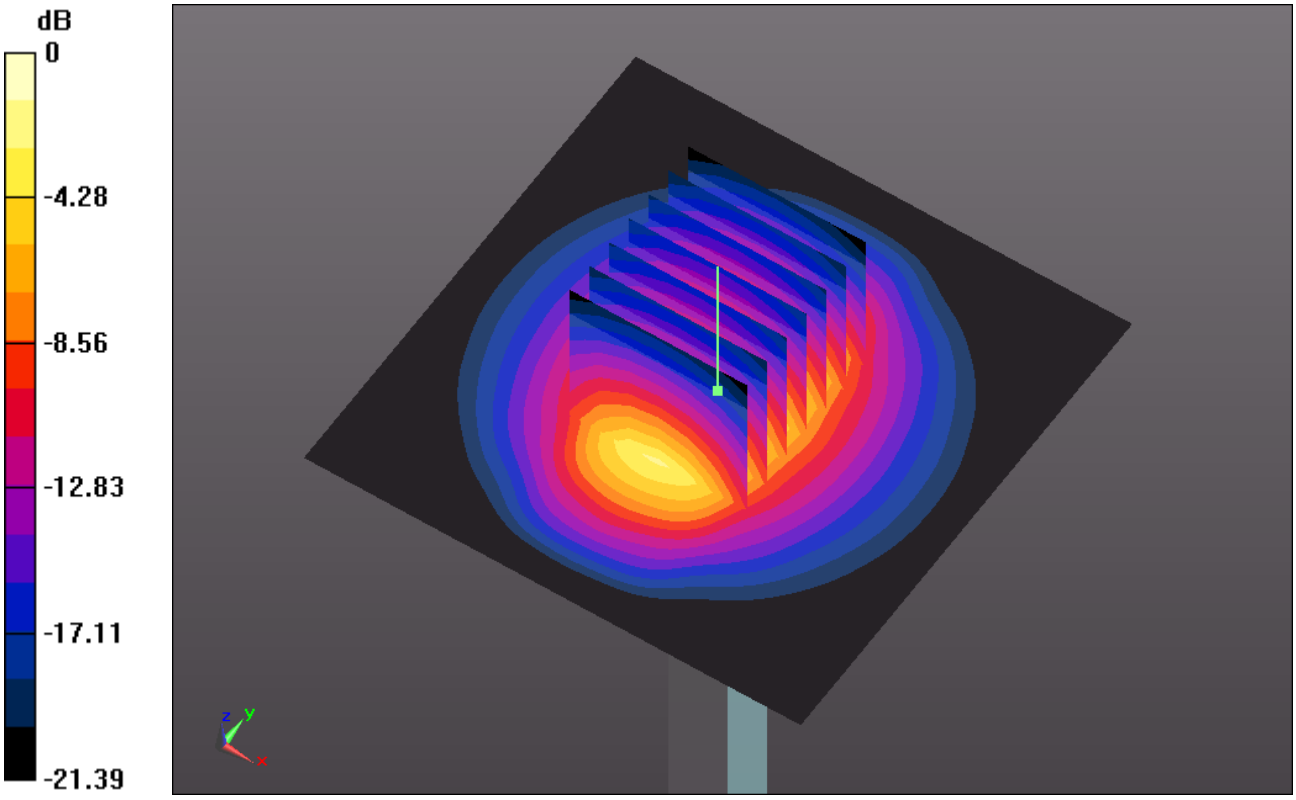
DUT: D2450V2 - SN:840

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL_2450_130929 Medium parameters used: f = 2450 MHz; σ = 1.939 mho/m; ε_r = 50.923; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7, 7, 7); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (71x71x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 19.616 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 86.184 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 25.804 W/kg
SAR(1 g) = 12.6 mW/g; SAR(10 g) = 5.83 mW/g
Maximum value of SAR (measured) = 19.164 mW/g



0 dB = 19.160mW/g

Appendix B. Plots of SAR Measurement

The plots are shown as follows.

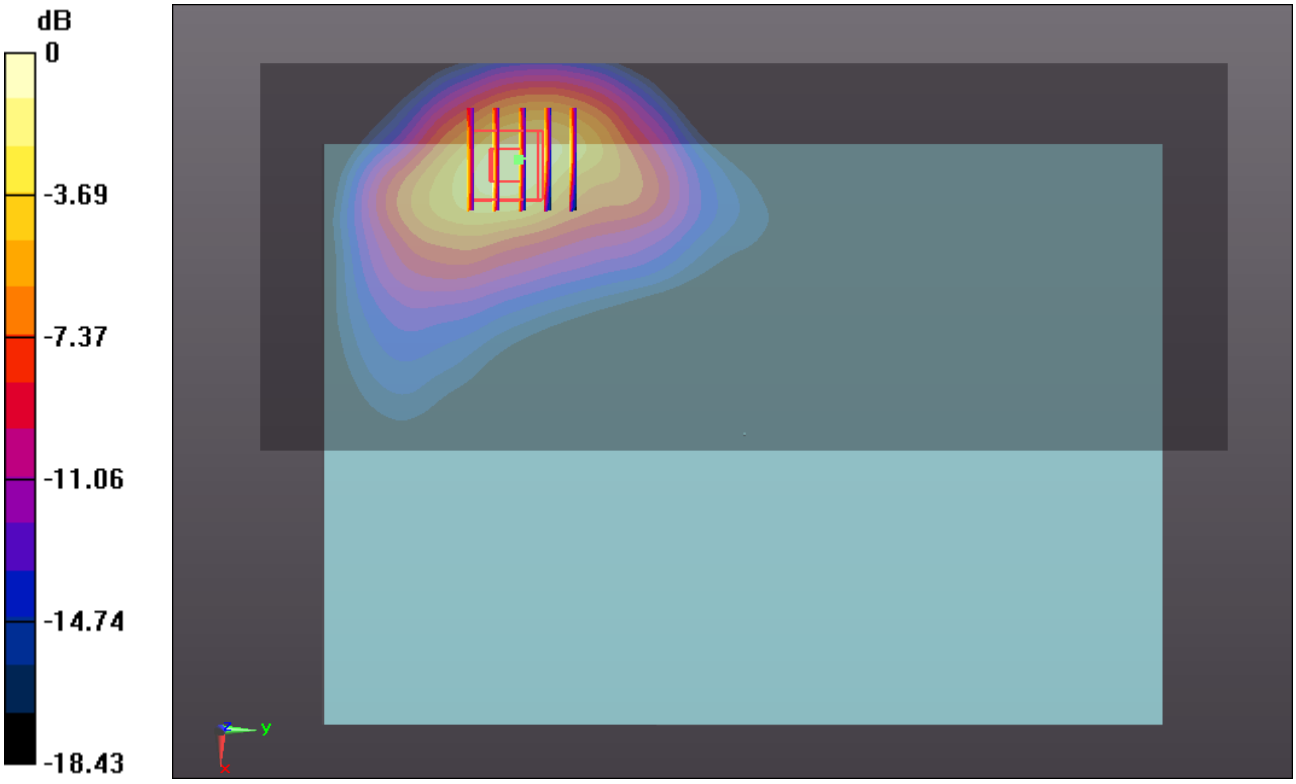
#01_GSM850_GPRS (2 Tx slots)_Bottom Face 0cm_Ch128_Sensor on

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 824.2 MHz;Duty Cycle: 1:4.15
Medium: MSL_835_130927 Medium parameters used: f = 824.2 MHz; σ = 0.972 mho/m; ε_r = 55.281; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.48, 9.48, 9.48); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch128/Area Scan 81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.776 mW/g

Ch128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.969 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.417 W/kg
SAR(1 g) = 0.723 mW/g; SAR(10 g) = 0.376 mW/g
Maximum value of SAR (measured) = 1.057 mW/g



0 dB = 1.060mW/g

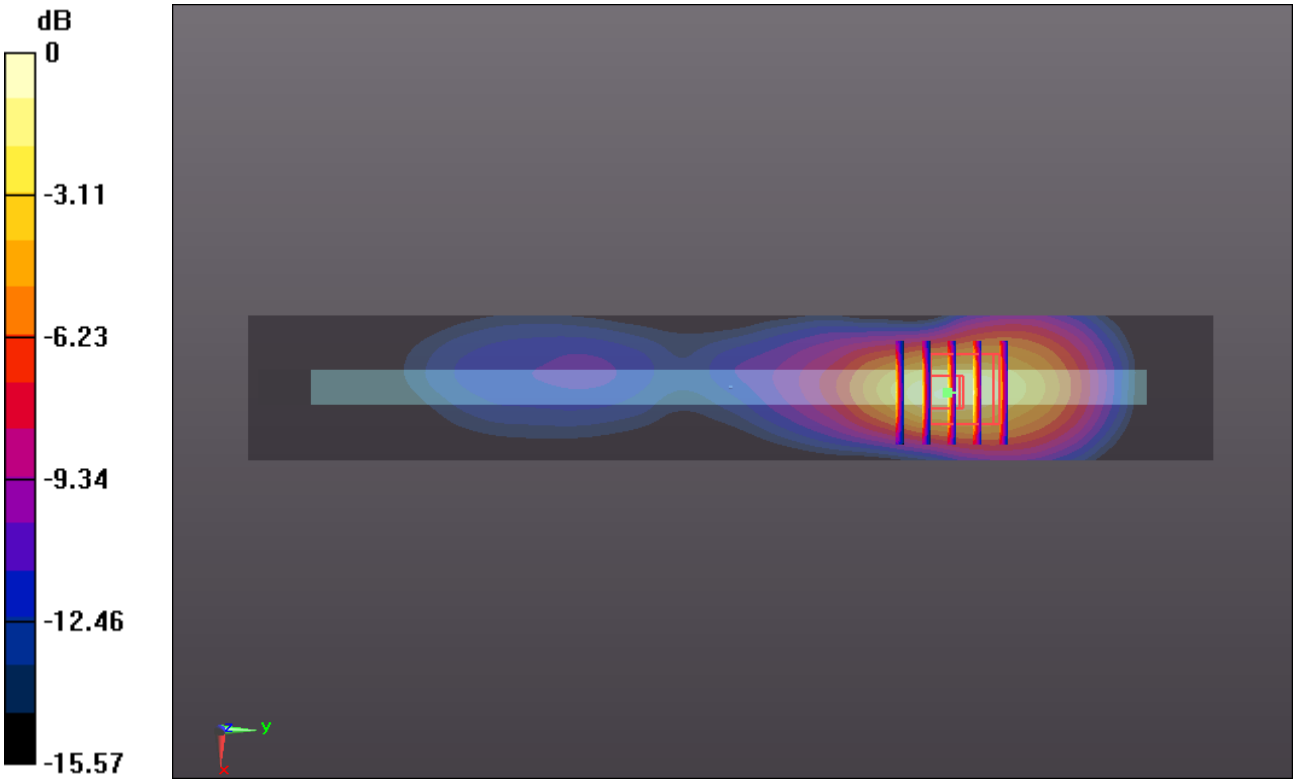
#02_GSM850_GPRS (2 Tx slots)_Edge1 0cm_Ch128_Sensor on

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 824.2 MHz;Duty Cycle: 1:4.15
Medium: MSL_835_130927 Medium parameters used: f = 824.2 MHz; σ = 0.972 mho/m; ε_r = 55.281; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.48, 9.48, 9.48); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch128/Area Scan (31x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.851 mW/g

Ch128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.608 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 1.362 W/kg
SAR(1 g) = 0.694 mW/g; SAR(10 g) = 0.372 mW/g
Maximum value of SAR (measured) = 1.053 mW/g



0 dB = 1.050mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.27

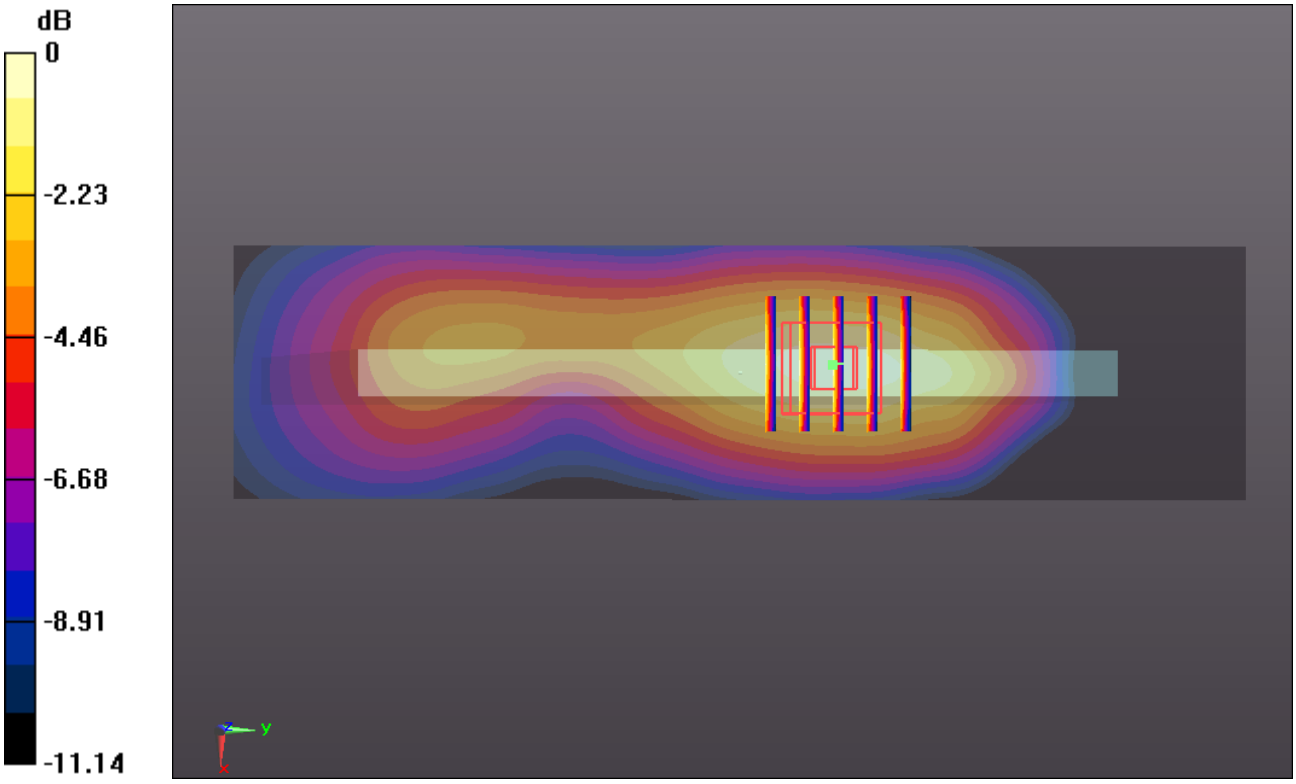
#03_GSM850_GPRS (2 Tx slots)_Edge2 0cm_Ch128_Sensor off

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 824.2 MHz;Duty Cycle: 1:4.15
Medium: MSL_835_130927 Medium parameters used: f = 824.2 MHz; σ = 0.972 mho/m; ε_r = 55.281; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.48, 9.48, 9.48); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch128/Area Scan (41x161x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.082 mW/g

Ch128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.205 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.114 W/kg
SAR(1 g) = 0.072 mW/g; SAR(10 g) = 0.046 mW/g
Maximum value of SAR (measured) = 0.094 mW/g



0 dB = 0.090mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.27

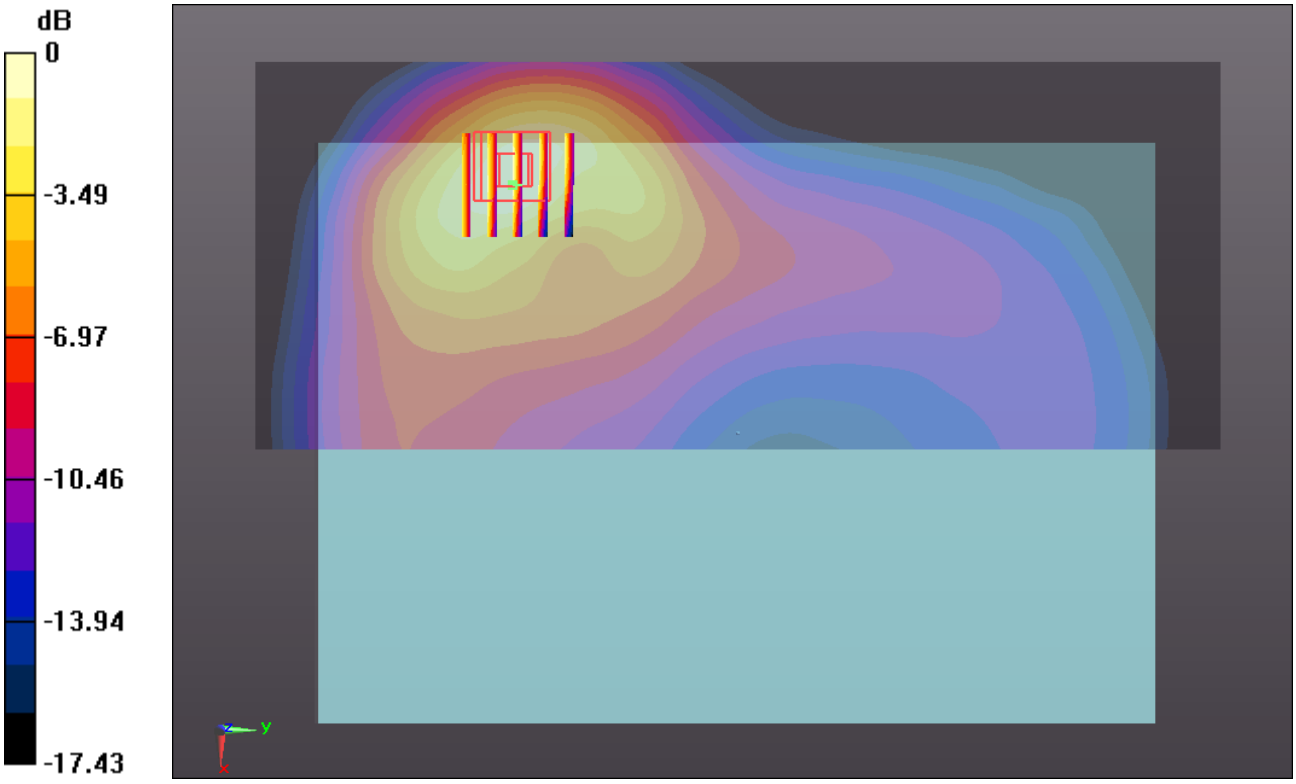
#04_GSM850_GPRS (2 Tx slots)_Bottom Face 1cm_Ch128_Sensor off

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 824.2 MHz;Duty Cycle: 1:4.15
Medium: MSL_835_130927 Medium parameters used: f = 824.2 MHz; σ = 0.972 mho/m; ε_r = 55.281; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.48, 9.48, 9.48); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch128/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.597 mW/g

Ch128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.598 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.814 W/kg
SAR(1 g) = 0.505 mW/g; SAR(10 g) = 0.307 mW/g
Maximum value of SAR (measured) = 0.633 mW/g



0 dB = 0.630mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.27

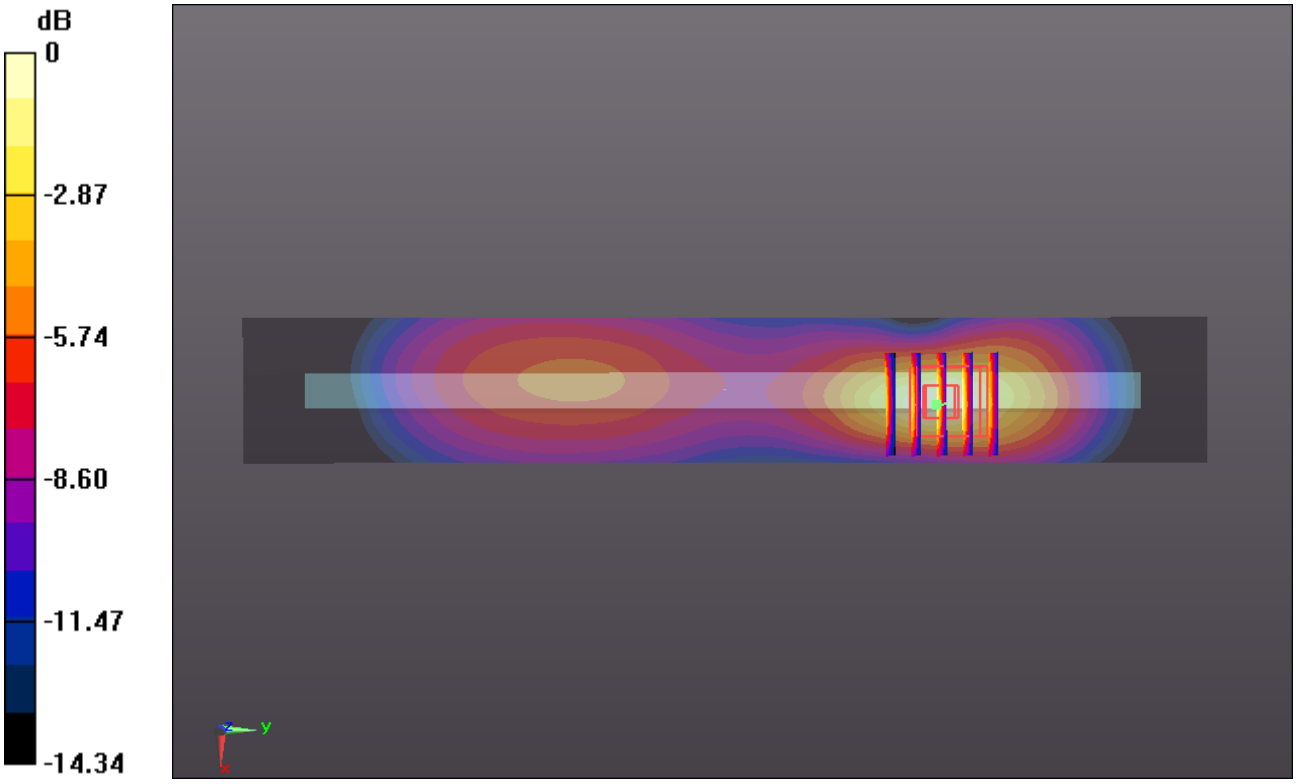
#05_GSM850_GPRS (2 Tx slots)_Edge1 0.6cm_Ch128_Sensor off

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 824.2 MHz;Duty Cycle: 1:4.15
Medium: MSL_835_130926 Medium parameters used: f = 824.2 MHz; σ = 0.972 mho/m; ε_r = 55.281; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.48, 9.48, 9.48); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch128/Area Scan (31x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.793 mW/g

Ch128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.537 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.019 W/kg
SAR(1 g) = 0.603 mW/g; SAR(10 g) = 0.343 mW/g
Maximum value of SAR (measured) = 0.819 mW/g



0 dB = 0.820mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

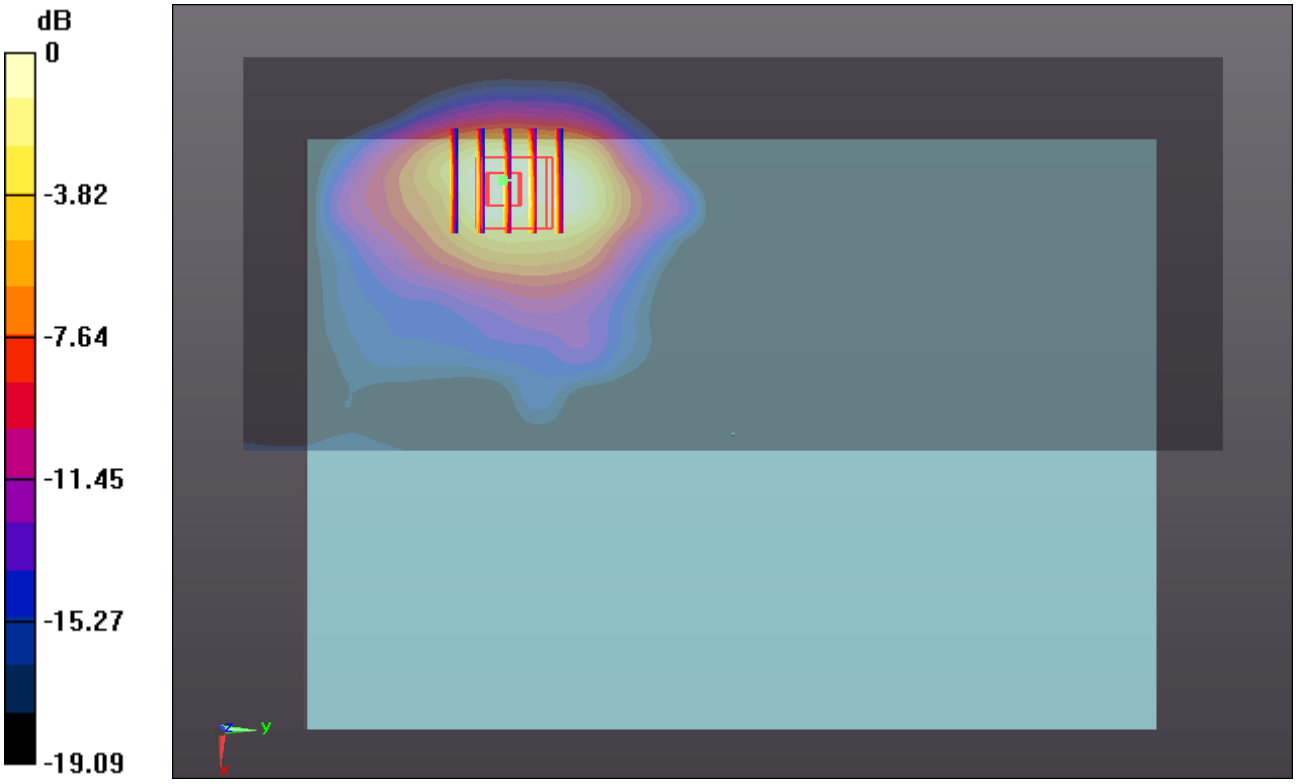
#11_GSM1900_GPRS (2 Tx slots)_Bottom Face 0cm_Ch512_Sensor on

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 1850.2 MHz;Duty Cycle: 1:4.15
Medium: MSL_1900_130926 Medium parameters used: f = 1850.2 MHz; σ = 1.489 mho/m; ε_r = 53.472; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch512/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.228 mW/g

Ch512/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.341 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.445 W/kg
SAR(1 g) = 0.812 mW/g; SAR(10 g) = 0.467 mW/g
Maximum value of SAR (measured) = 1.081 mW/g



0 dB = 1.080mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

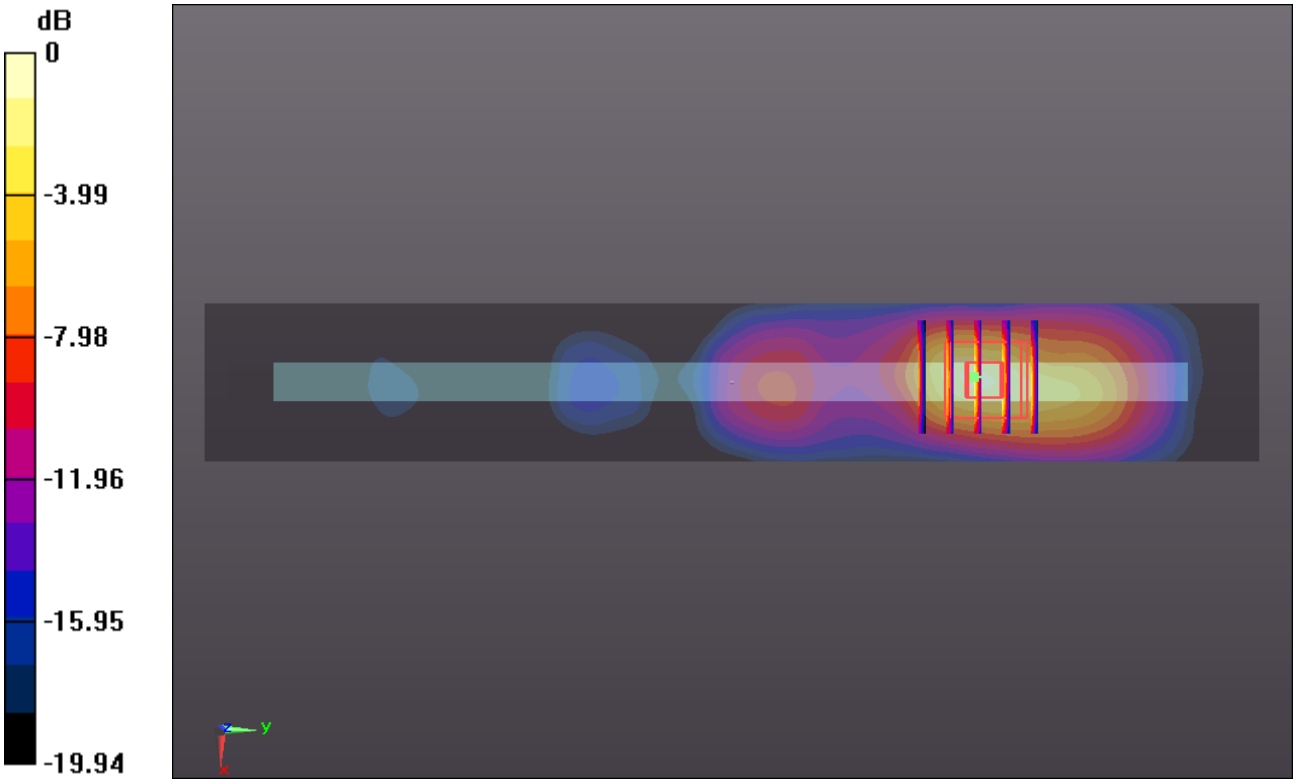
#12_GSM1900_GPRS (2 Tx slots)_Edge1 0cm_Ch512_Sensor on

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 1850.2 MHz;Duty Cycle: 1:4.15
Medium: MSL_1900_130926 Medium parameters used: f = 1850.2 MHz; σ = 1.489 mho/m; ε_r = 53.472; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch512/Area Scan (31x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.925 mW/g

Ch512/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.954 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.448 W/kg
SAR(1 g) = 0.770 mW/g; SAR(10 g) = 0.367 mW/g
Maximum value of SAR (measured) = 1.165 mW/g



0 dB = 1.170mW/g

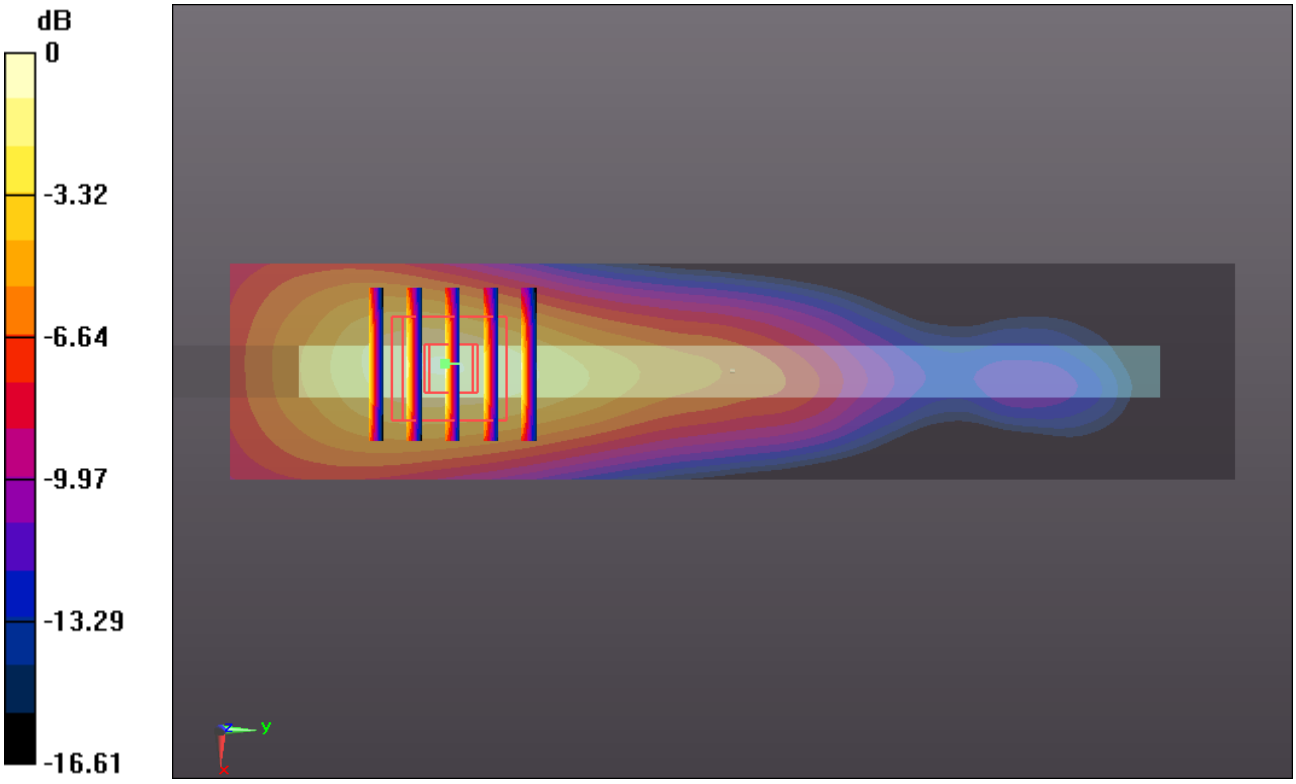
#13_GSM1900_GPRS (2 Tx slots)_Edge2 0cm_Ch512_Sensor off

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 1850.2 MHz;Duty Cycle: 1:4.15
Medium: MSL_1900_130926 Medium parameters used: f = 1850.2 MHz; σ = 1.489 mho/m; ε_r = 53.472; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch512/Area Scan (31x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.442 mW/g

Ch512/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.260 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.698 W/kg
SAR(1 g) = 0.386 mW/g; SAR(10 g) = 0.206 mW/g
Maximum value of SAR (measured) = 0.559 mW/g



0 dB = 0.560mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

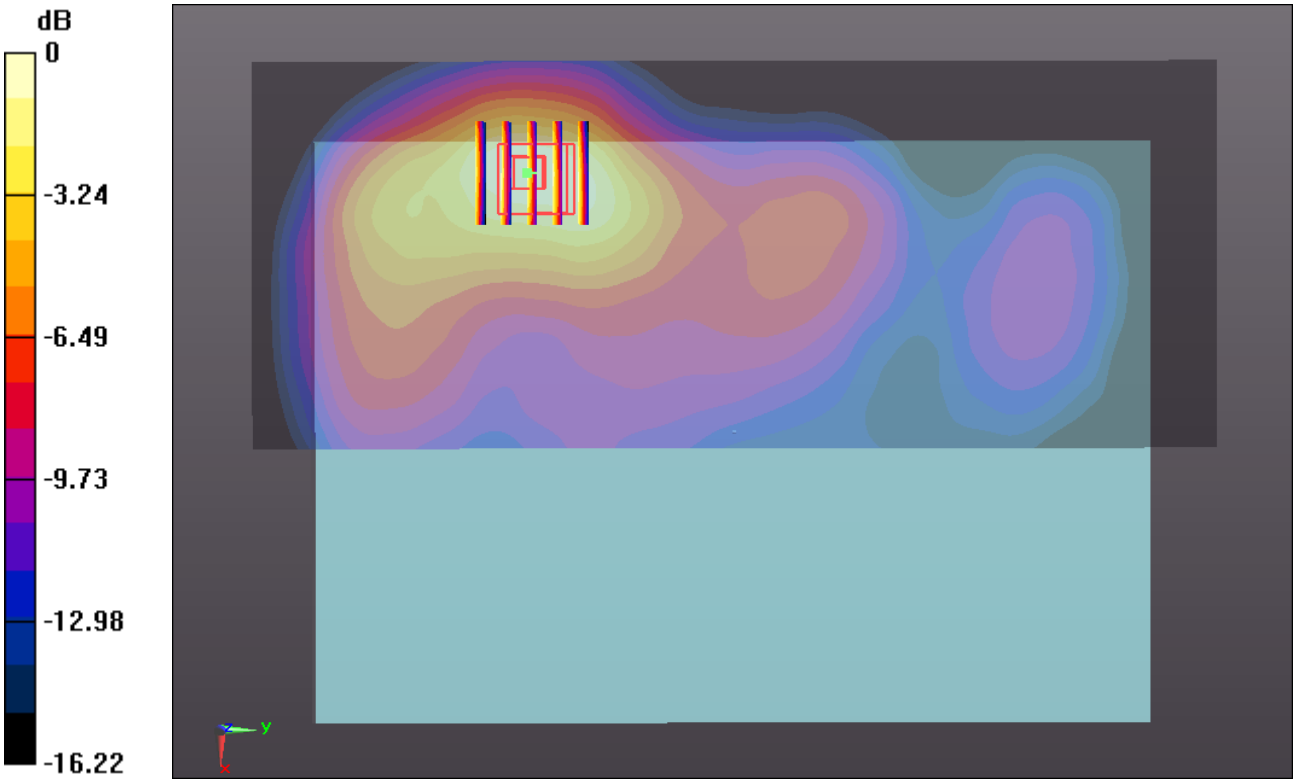
#14_GSM1900_GPRS (2 Tx slots)_Bottom Face 1cm_Ch512_Sensor off

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 1850.2 MHz;Duty Cycle: 1:4.15
Medium: MSL_1900_130926 Medium parameters used: f = 1850.2 MHz; σ = 1.489 mho/m; ε_r = 53.472; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch512/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.625 mW/g

Ch512/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.513 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.717 W/kg
SAR(1 g) = 0.466 mW/g; SAR(10 g) = 0.286 mW/g
Maximum value of SAR (measured) = 0.601 mW/g



0 dB = 0.600mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

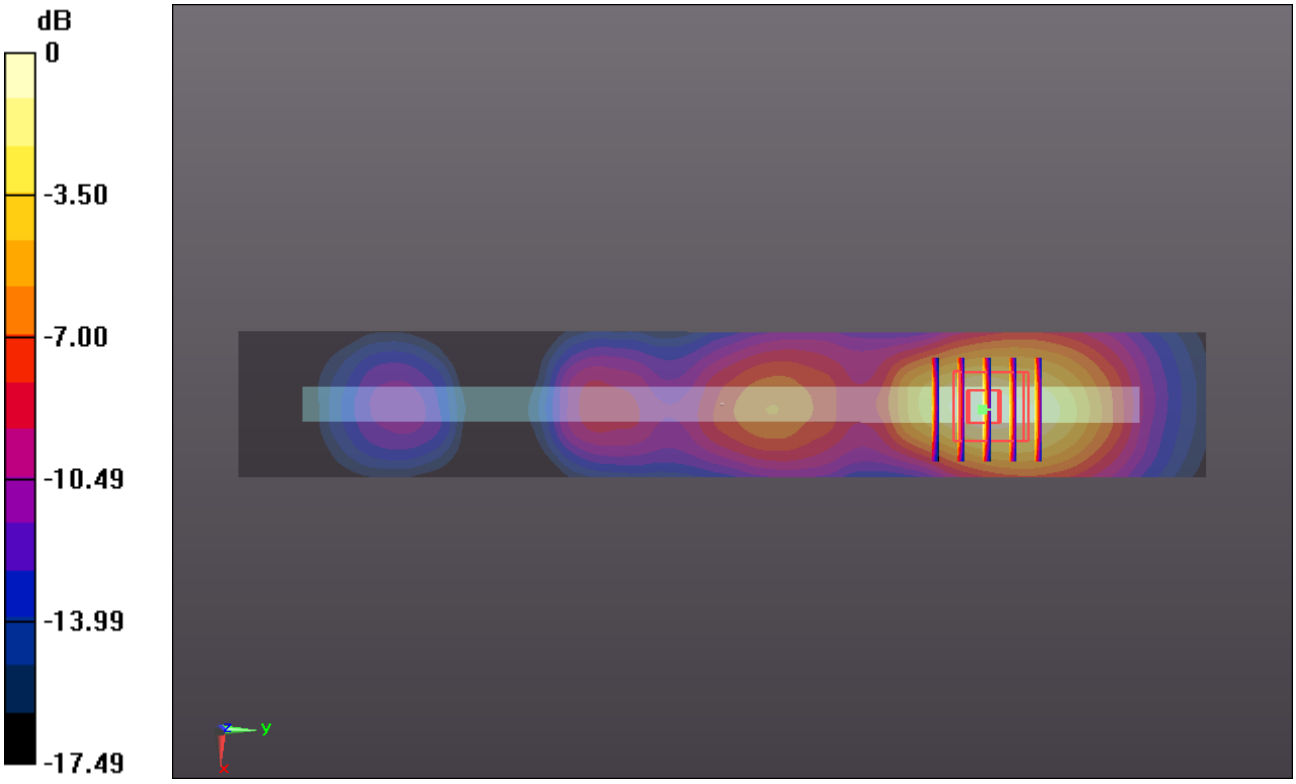
#15_GSM1900_GPRS (2 Tx slots)_Edge1 0.6cm_Ch512_Sensor off

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 1850.2 MHz;Duty Cycle: 1:4.15
Medium: MSL_1900_130926 Medium parameters used: f = 1850.2 MHz; σ = 1.489 mho/m; ε_r = 53.472; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch512/Area Scan (31x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.839 mW/g

Ch512/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.025 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.080 W/kg
SAR(1 g) = 0.647 mW/g; SAR(10 g) = 0.357 mW/g
Maximum value of SAR (measured) = 0.896 mW/g



0 dB = 0.900mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

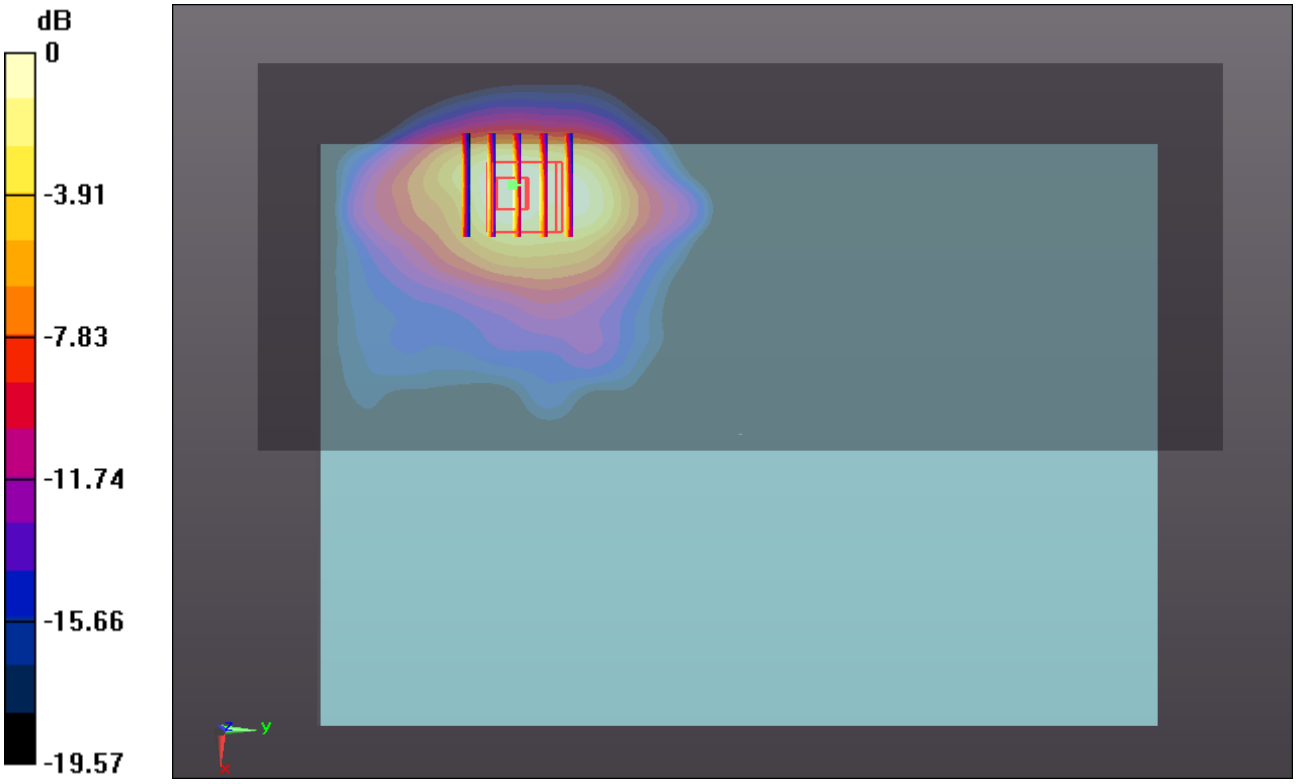
#17_GSM1900_GPRS (2 Tx slots)_Bottom Face 0cm_Ch661_Sensor on

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium: MSL_1900_130926 Medium parameters used: f = 1880 MHz; σ = 1.525 mho/m; ε_r = 53.405; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch661/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.161 mW/g

Ch661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.206 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 1.407 W/kg
SAR(1 g) = 0.776 mW/g; SAR(10 g) = 0.437 mW/g
Maximum value of SAR (measured) = 1.041 mW/g



0 dB = 1.040mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

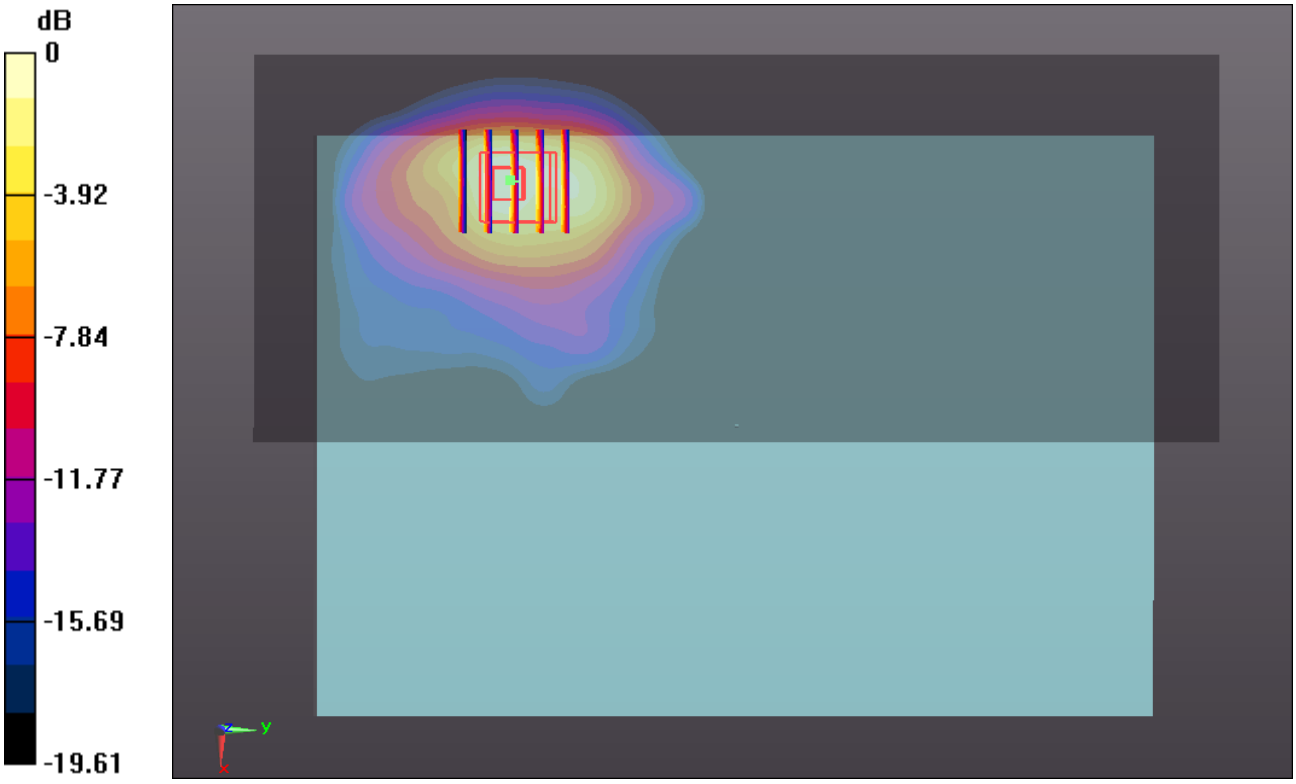
#18_GSM1900_GPRS (2 Tx slots)_Bottom Face 0cm_Ch810_Sensor on

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 1909.8 MHz;Duty Cycle: 1:4.15
Medium: MSL_1900_130926 Medium parameters used: f = 1910 MHz; σ = 1.56 mho/m; ε_r = 53.325; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch810/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.067 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.279 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.312 W/kg
SAR(1 g) = 0.715 mW/g; SAR(10 g) = 0.393 mW/g
Maximum value of SAR (measured) = 1.000 mW/g



0 dB = 1.000mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

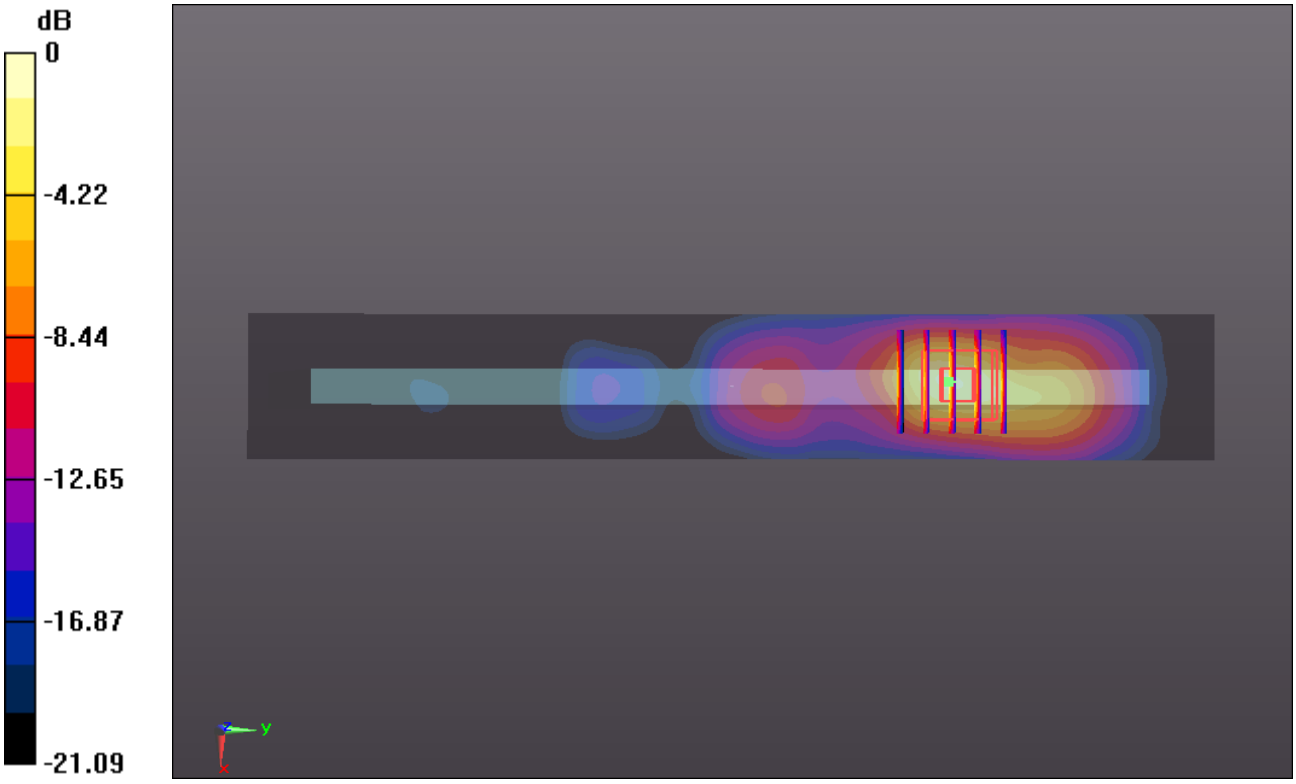
#19_GSM1900_GPRS (2 Tx slots)_Edge1 0cm_Ch661_Sensor on

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium: MSL_1900_130926 Medium parameters used: f = 1880 MHz; σ = 1.525 mho/m; ε_r = 53.405; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch661/Area Scan (31x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.994 mW/g

Ch661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.584 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.595 W/kg
SAR(1 g) = 0.831 mW/g; SAR(10 g) = 0.391 mW/g
Maximum value of SAR (measured) = 1.284 mW/g



0 dB = 1.280mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

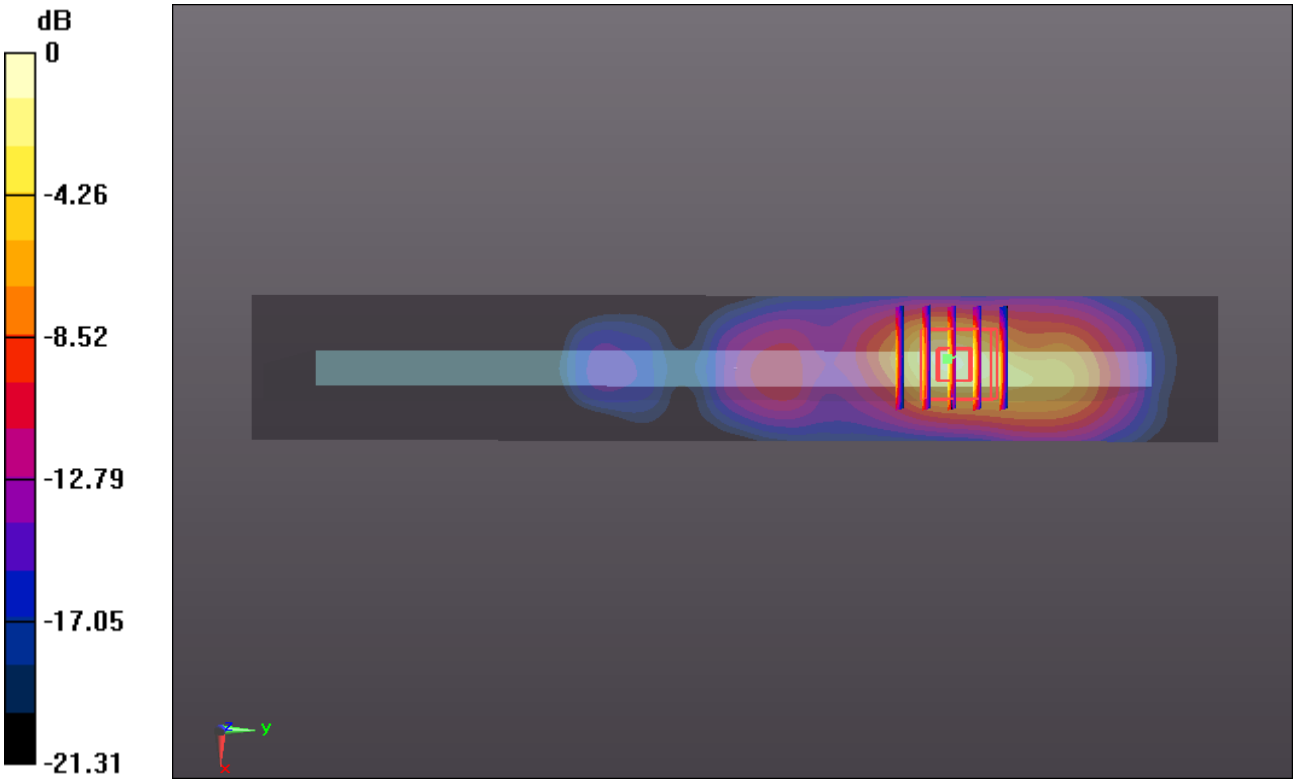
#20_GSM1900_GPRS (2 Tx slots)_Edge1 0cm_Ch810_Sensor on

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 1909.8 MHz;Duty Cycle: 1:4.15
Medium: MSL_1900_130926 Medium parameters used: f = 1910 MHz; σ = 1.56 mho/m; ε_r = 53.325; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch810/Area Scan (31x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.014 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.100 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.649 W/kg
SAR(1 g) = 0.849 mW/g; SAR(10 g) = 0.394 mW/g
Maximum value of SAR (measured) = 1.269 mW/g



0 dB = 1.270mW/g

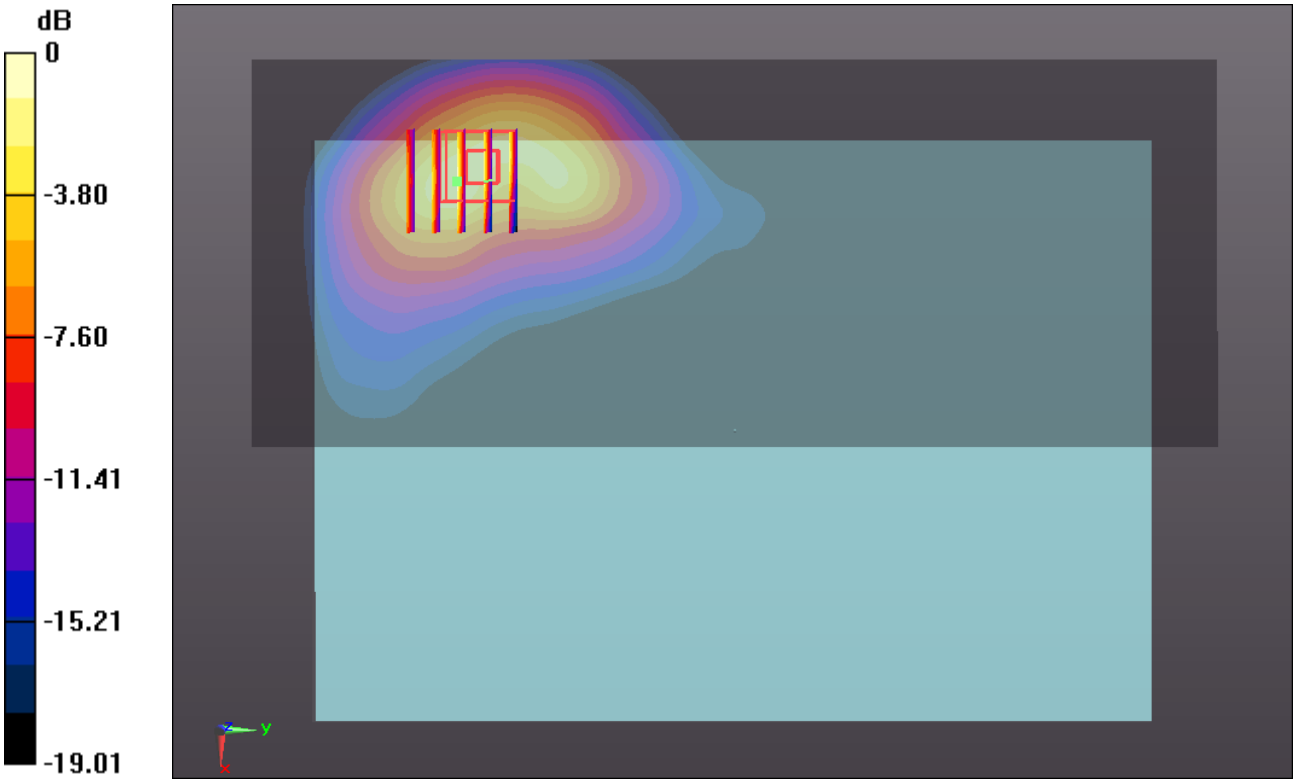
#23_WCDMA Band V_RMC12.2K_Bottom Face 0cm_Ch4132_Sensor on

Communication System: UMTS; Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium: MSL_835_130927 Medium parameters used: f = 826.4 MHz; σ = 0.974 mho/m; ε_r = 55.258; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.48, 9.48, 9.48); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch4132/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.641 mW/g

Ch4132/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.551 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.313 W/kg
SAR(1 g) = 0.654 mW/g; SAR(10 g) = 0.337 mW/g
Maximum value of SAR (measured) = 0.880 mW/g



0 dB = 0.880mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.27

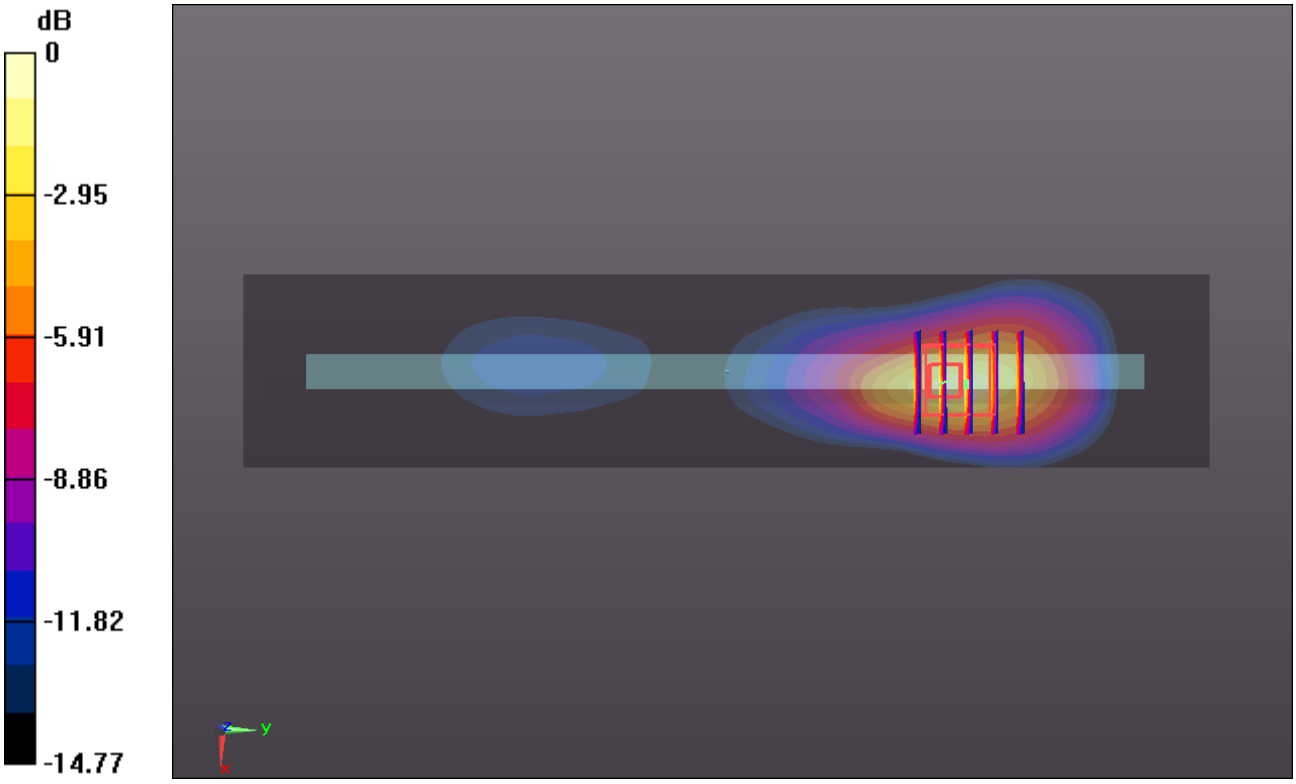
#24_WCDMA Band V_RMC12.2K_Edge1 0cm_Ch4132_Sensor on

Communication System: UMTS; Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium: MSL_835_130927 Medium parameters used: f = 826.4 MHz; σ = 0.974 mho/m; ε_r = 55.258; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.48, 9.48, 9.48); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch4132/Area Scan (41x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.689 mW/g

Ch4132/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.616 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 1.223 W/kg
SAR(1 g) = 0.621 mW/g; SAR(10 g) = 0.332 mW/g
Maximum value of SAR (measured) = 0.949 mW/g



0 dB = 0.950mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.27

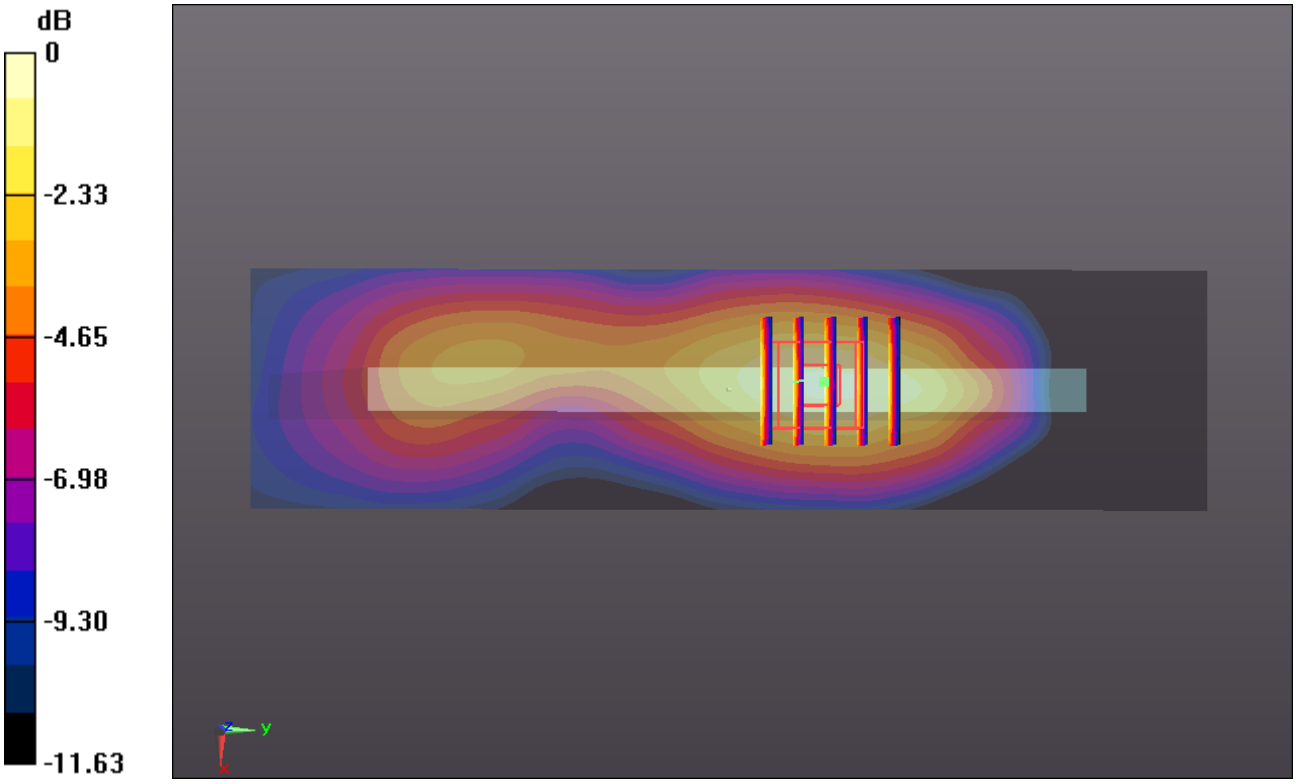
#25_WCDMA Band V_RMC12.2K_Edge2 0cm_Ch4132_Sensor off

Communication System: UMTS; Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium: MSL_835_130927 Medium parameters used: f = 826.4 MHz; σ = 0.974 mho/m; ε_r = 55.258; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.48, 9.48, 9.48); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch4132/Area Scan (41x161x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.052 mW/g

Ch4132/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.575 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.070 W/kg
SAR(1 g) = 0.045 mW/g; SAR(10 g) = 0.029 mW/g
Maximum value of SAR (measured) = 0.058 mW/g



0 dB = 0.060mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.27

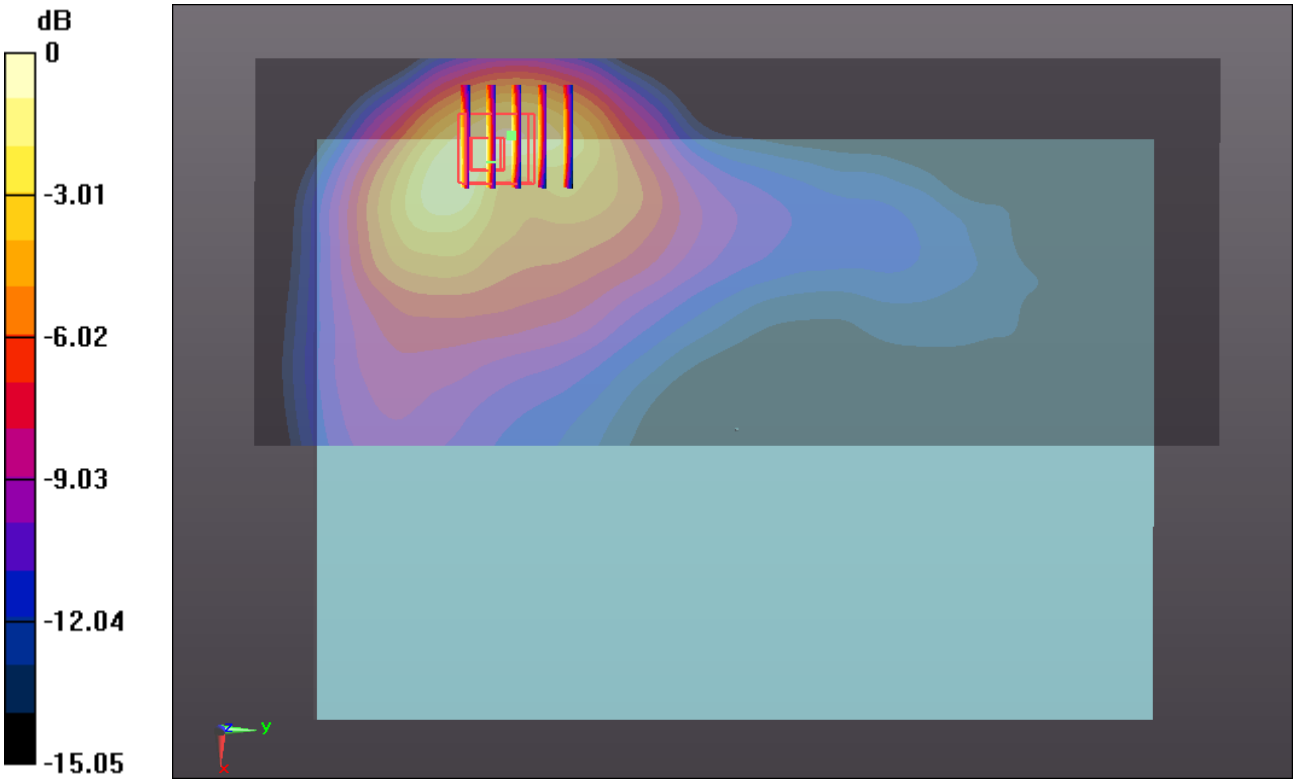
#26_WCDMA Band V_RMC12.2K_Bottom Face 1cm_Ch4132_Sensor off

Communication System: UMTS; Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium: MSL_835_130927 Medium parameters used: f = 826.4 MHz; σ = 0.974 mho/m; ε_r = 55.258; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.48, 9.48, 9.48); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch4132/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.175 mW/g

Ch4132/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.707 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.268 W/kg
SAR(1 g) = 0.161 mW/g; SAR(10 g) = 0.095 mW/g
Maximum value of SAR (measured) = 0.211 mW/g



0 dB = 0.210mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.27

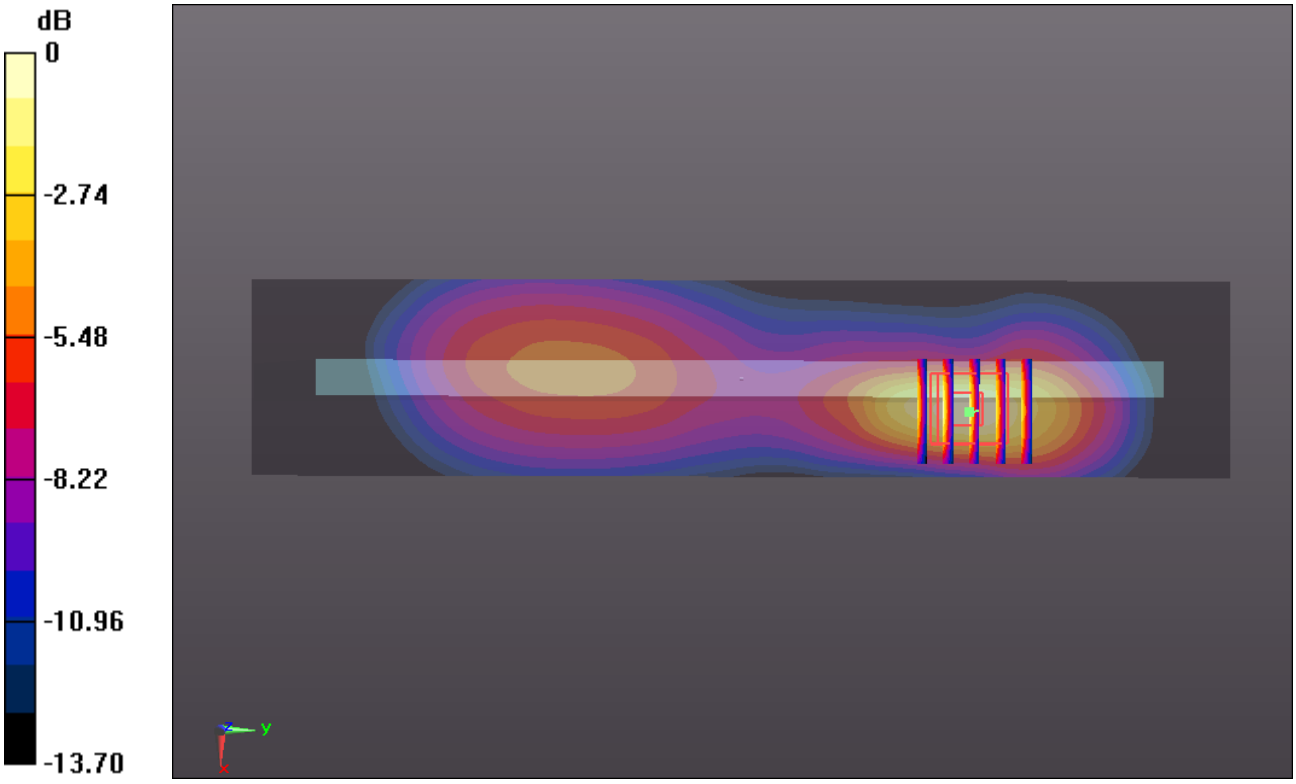
#27_WCDMA Band V_RMC12.2K_Edge1 0.6cm_Ch4132_Sensor off

Communication System: UMTS; Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium: MSL_835_130927 Medium parameters used: f = 826.4 MHz; σ = 0.974 mho/m; ε_r = 55.258; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.48, 9.48, 9.48); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch4132/Area Scan (41x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.537 mW/g

Ch4132/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.361 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.661 W/kg
SAR(1 g) = 0.392 mW/g; SAR(10 g) = 0.224 mW/g
Maximum value of SAR (measured) = 0.528 mW/g



0 dB = 0.530mW/g

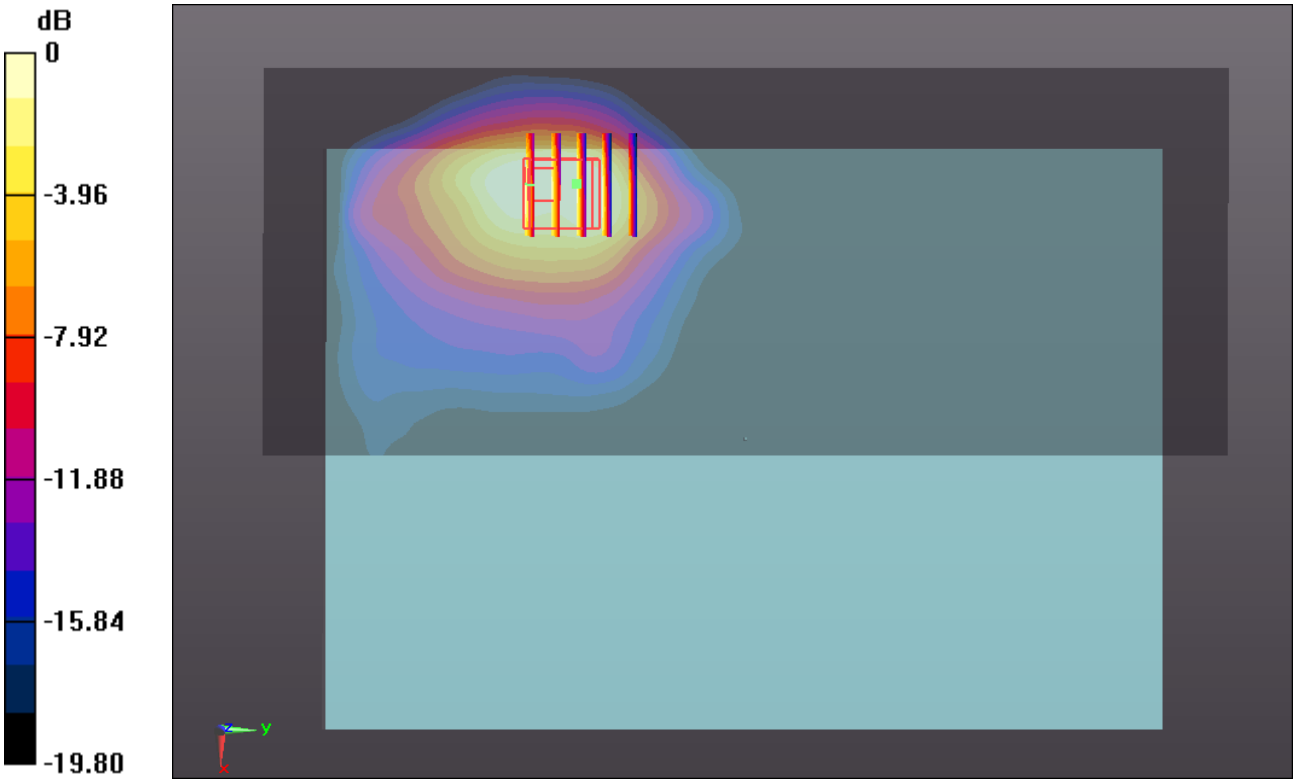
#31_WCDMA Band IV_RMC12.2K_Bottom Face 0cm_Ch1312_Sensor on

Communication System: UMTS; Frequency: 1712.4 MHz;Duty Cycle: 1:1
Medium: MSL_1750_130926 Medium parameters used: f = 1712.4 MHz; σ = 1.462 mho/m; ε_r = 51.14; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.86, 7.86, 7.86); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch1312/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.527 mW/g

Ch1312/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.189 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.684 W/kg
SAR(1 g) = 0.949 mW/g; SAR(10 g) = 0.552 mW/g
Maximum value of SAR (measured) = 1.224 mW/g



0 dB = 1.220mW/g

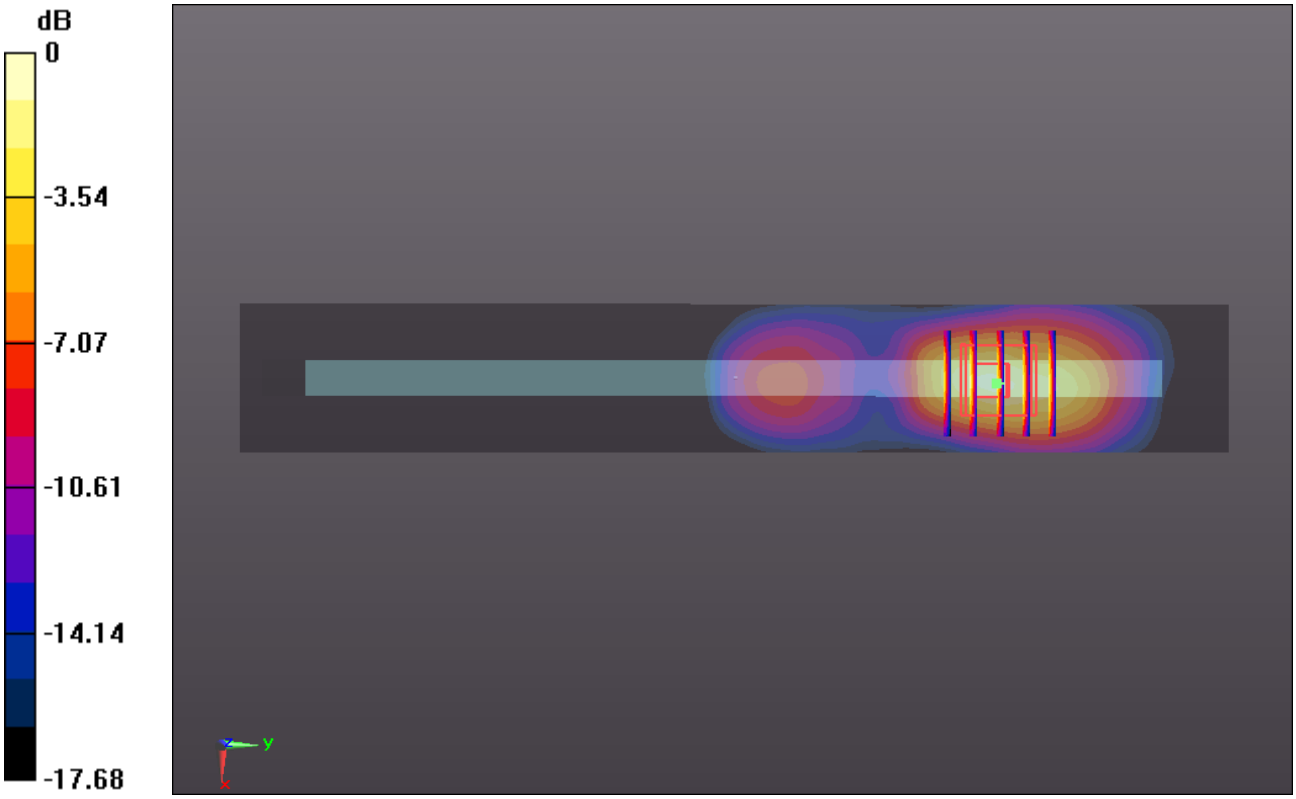
#32_WCDMA Band IV_RMC12.2K_Edge1 0cm_Ch1312_Sensor on

Communication System: UMTS; Frequency: 1712.4 MHz;Duty Cycle: 1:1
Medium: MSL_1750_130926 Medium parameters used: f = 1712.4 MHz; σ = 1.462 mho/m; ε_r = 51.14; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.86, 7.86, 7.86); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch1312/Area Scan (31x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.965 mW/g

Ch1312/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.975 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.440 W/kg
SAR(1 g) = 0.799 mW/g; SAR(10 g) = 0.402 mW/g
Maximum value of SAR (measured) = 1.181 mW/g



0 dB = 1.180mW/g

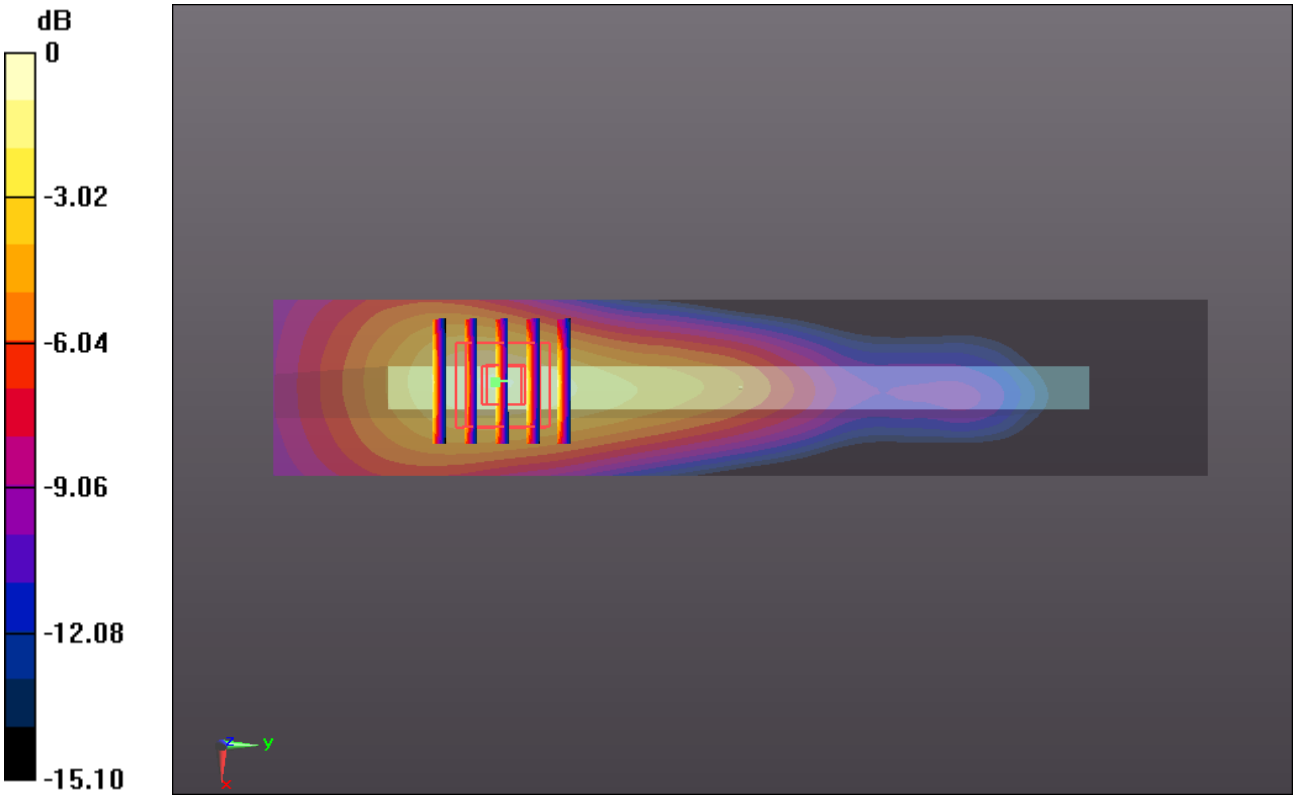
#33_WCDMA Band IV_RMC12.2K_Edge2 0cm_Ch1312_Sensor off

Communication System: UMTS; Frequency: 1712.4 MHz;Duty Cycle: 1:1
Medium: MSL_1750_130926 Medium parameters used: f = 1712.4 MHz; σ = 1.462 mho/m; ε_r = 51.14; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.86, 7.86, 7.86); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch1312/Area Scan (31x161x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.428 mW/g

Ch1312/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.865 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.650 W/kg
SAR(1 g) = 0.370 mW/g; SAR(10 g) = 0.206 mW/g
Maximum value of SAR (measured) = 0.532 mW/g



0 dB = 0.530mW/g

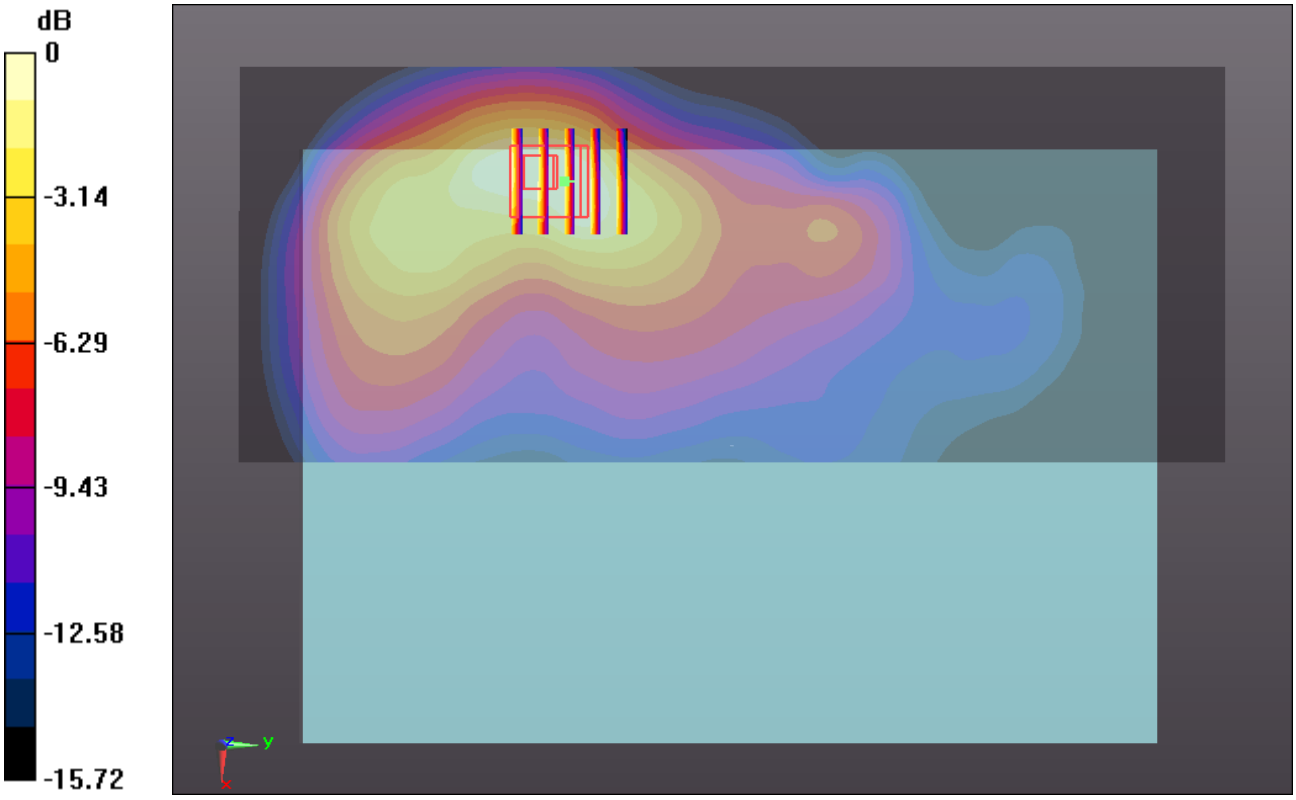
#34_WCDMA Band IV_RMC12.2K_Bottom Face 1cm_Ch1312_Sensor off

Communication System: UMTS; Frequency: 1712.4 MHz;Duty Cycle: 1:1
Medium: MSL_1750_130926 Medium parameters used: f = 1712.4 MHz; σ = 1.462 mho/m; ε_r = 51.14; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.86, 7.86, 7.86); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch1312/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.861 mW/g

Ch1312/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.830 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.975 W/kg
SAR(1 g) = 0.641 mW/g; SAR(10 g) = 0.399 mW/g
Maximum value of SAR (measured) = 0.803 mW/g



0 dB = 0.800mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

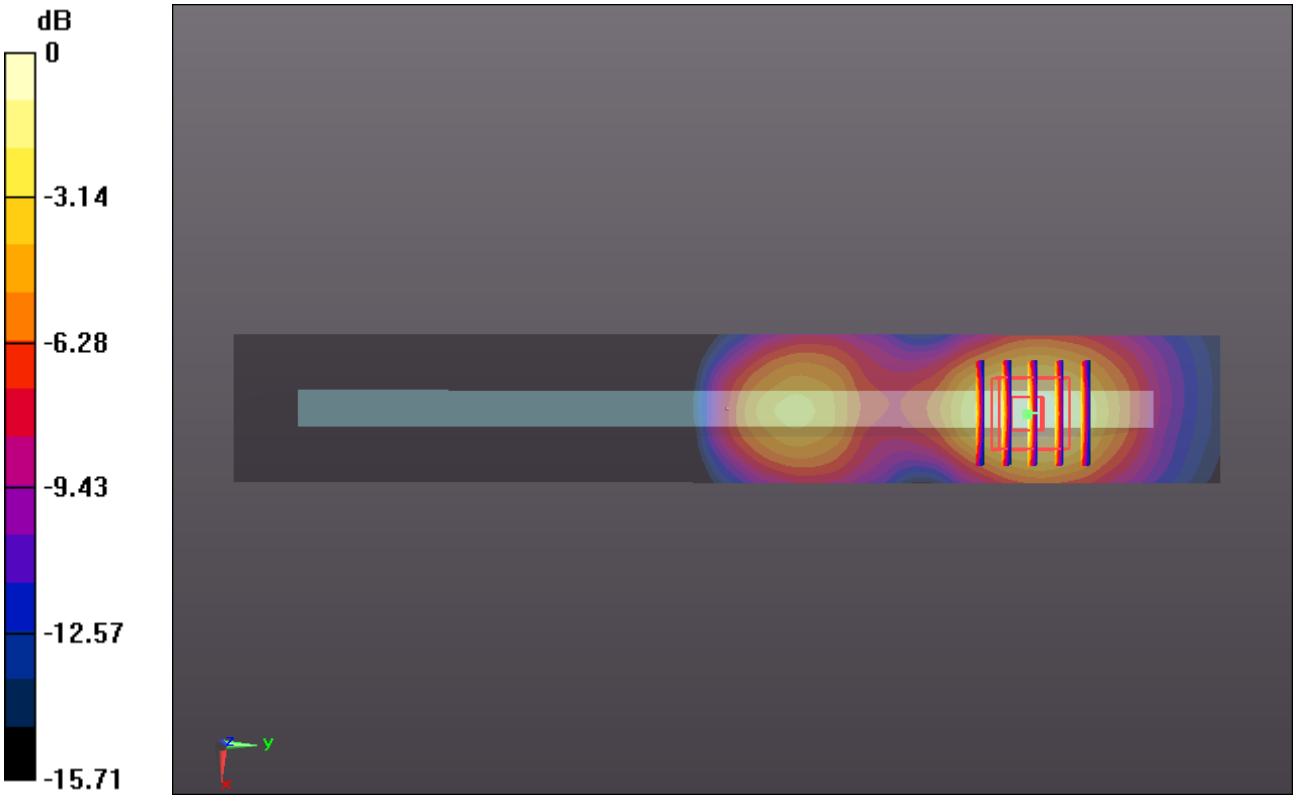
#35_WCDMA Band IV_RMC12.2K_Edge1 0.6cm_Ch1312_Sensor off

Communication System: UMTS; Frequency: 1712.4 MHz;Duty Cycle: 1:1
Medium: MSL_1750_130926 Medium parameters used: f = 1712.4 MHz; σ = 1.462 mho/m; ε_r = 51.14; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.86, 7.86, 7.86); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch1312/Area Scan (31x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.392 mW/g

Ch1312/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.205 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.694 W/kg
SAR(1 g) = 1.080 mW/g; SAR(10 g) = 0.629 mW/g
Maximum value of SAR (measured) = 1.434 mW/g



0 dB = 1.430mW/g

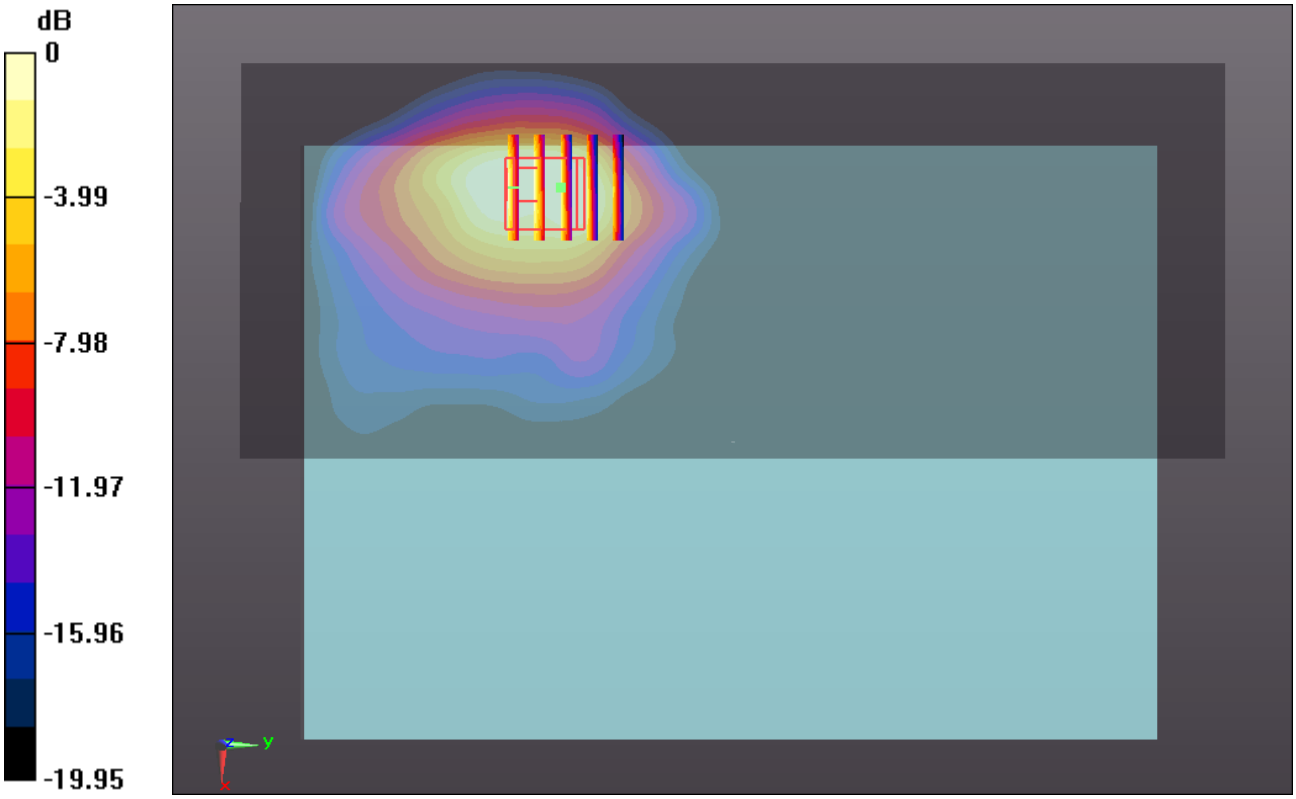
#37_WCDMA Band IV_RMC12.2K_Bottom Face 0cm_Ch1413_Sensor on

Communication System: UMTS; Frequency: 1732.6 MHz;Duty Cycle: 1:1
Medium: MSL_1750_130926 Medium parameters used: f = 1733 MHz; σ = 1.484 mho/m; ε_r = 51.046; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.86, 7.86, 7.86); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch1413/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.705 mW/g

Ch1413/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.447 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.876 W/kg
SAR(1 g) = 1.090 mW/g; SAR(10 g) = 0.635 mW/g
Maximum value of SAR (measured) = 1.425 mW/g



0 dB = 1.420mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

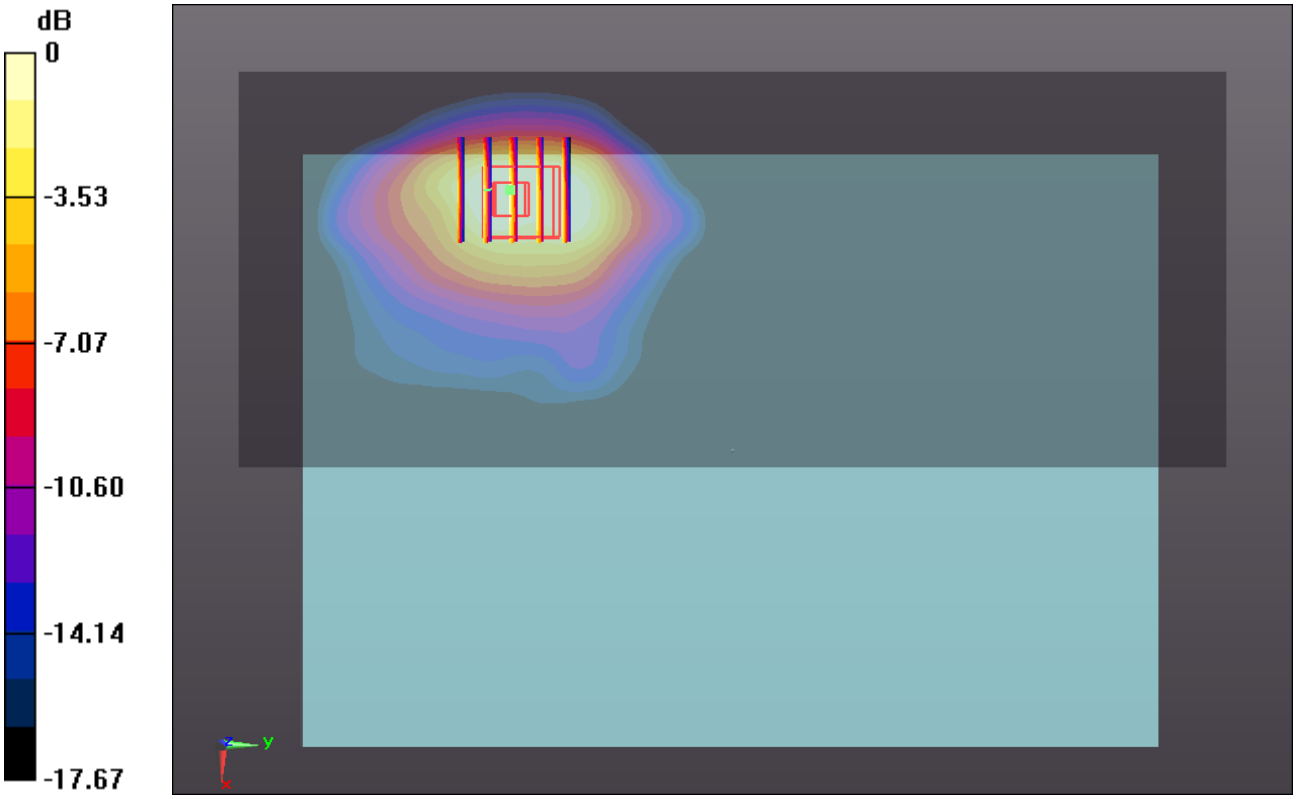
#38_WCDMA Band IV_RMC12.2K_Bottom Face 0cm_Ch1513_Sensor on

Communication System: UMTS; Frequency: 1752.6 MHz;Duty Cycle: 1:1
Medium: MSL_1750_130926 Medium parameters used: f = 1753 MHz; σ = 1.506 mho/m; ε_r = 51.006; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.86, 7.86, 7.86); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch1513/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.562 mW/g

Ch1513/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.405 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.697 W/kg
SAR(1 g) = 1.000 mW/g; SAR(10 g) = 0.603 mW/g
Maximum value of SAR (measured) = 1.292 mW/g



0 dB = 1.290mW/g

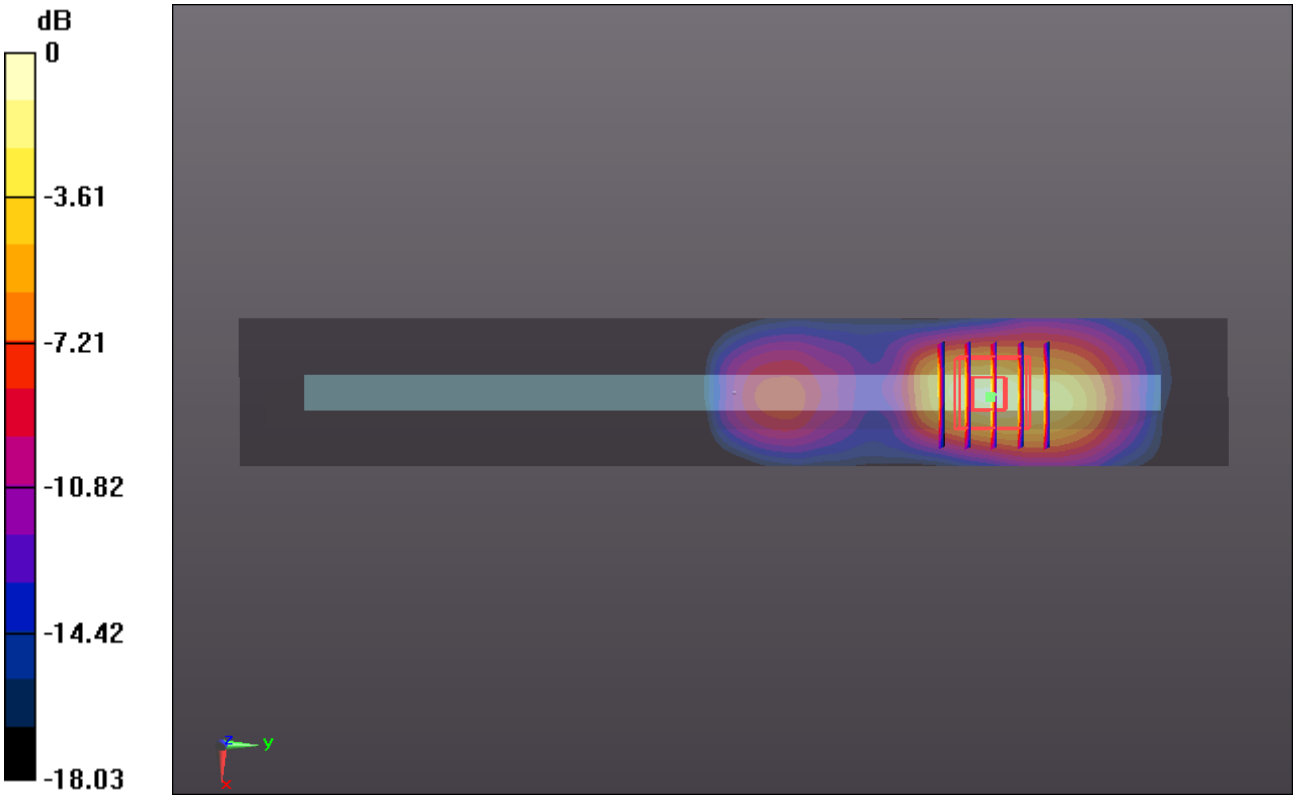
#39_WCDMA Band IV_RMC12.2K_Edge1 0cm_Ch1413_Sensor on

Communication System: UMTS; Frequency: 1732.6 MHz;Duty Cycle: 1:1
Medium: MSL_1750_130926 Medium parameters used: f = 1733 MHz; σ = 1.484 mho/m; ε_r = 51.046; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.86, 7.86, 7.86); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch1413/Area Scan (31x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.703 mW/g

Ch1413/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.629 V/m; Power Drift = -0.0063 dB
Peak SAR (extrapolated) = 1.070 W/kg
SAR(1 g) = 0.583 mW/g; SAR(10 g) = 0.290 mW/g
Maximum value of SAR (measured) = 0.873 mW/g



0 dB = 0.870mW/g

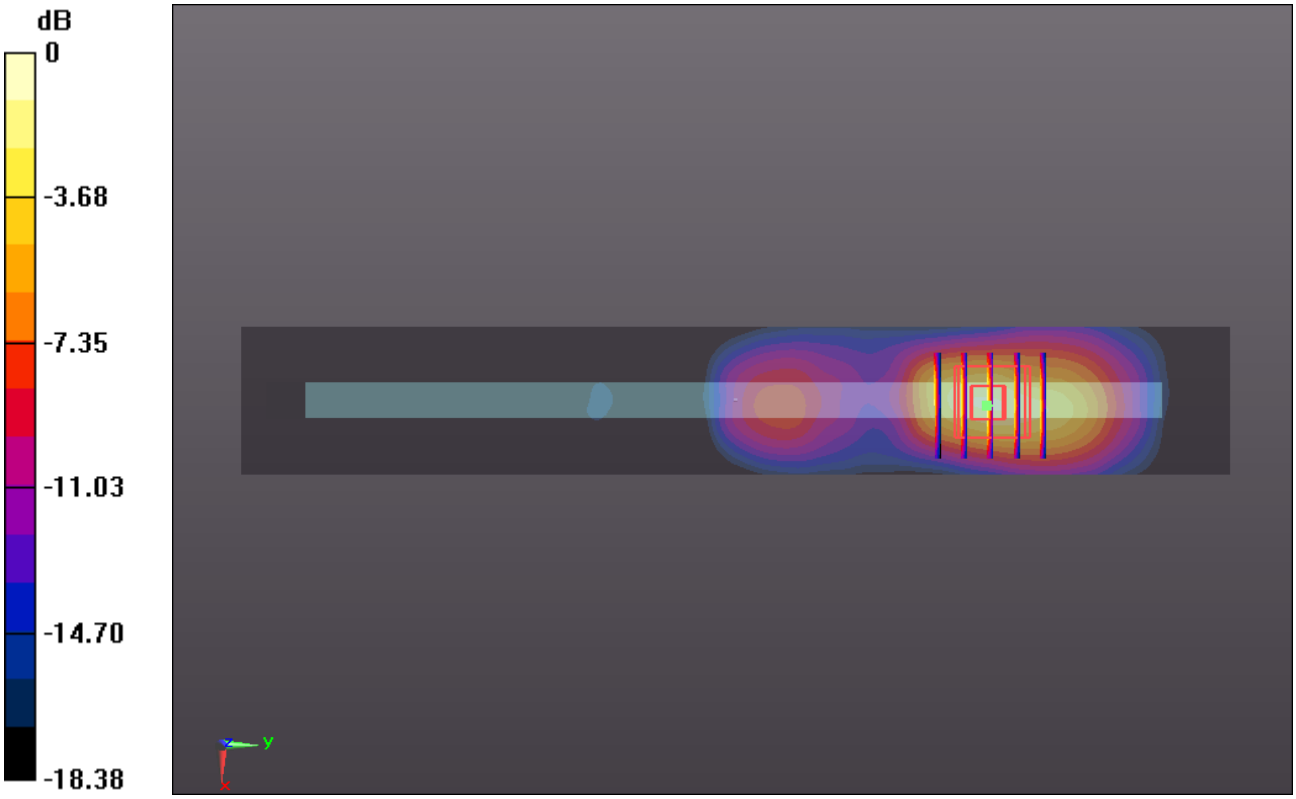
#40_WCDMA Band IV_RMC12.2K_Edge1 0cm_Ch1513_Sensor on

Communication System: UMTS; Frequency: 1752.6 MHz;Duty Cycle: 1:1
Medium: MSL_1750_130926 Medium parameters used: f = 1753 MHz; σ = 1.506 mho/m; ε_r = 51.006; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.86, 7.86, 7.86); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch1513/Area Scan (31x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.097 mW/g

Ch1513/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.620 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.717 W/kg
SAR(1 g) = 0.925 mW/g; SAR(10 g) = 0.457 mW/g
Maximum value of SAR (measured) = 1.392 mW/g



0 dB = 1.390mW/g

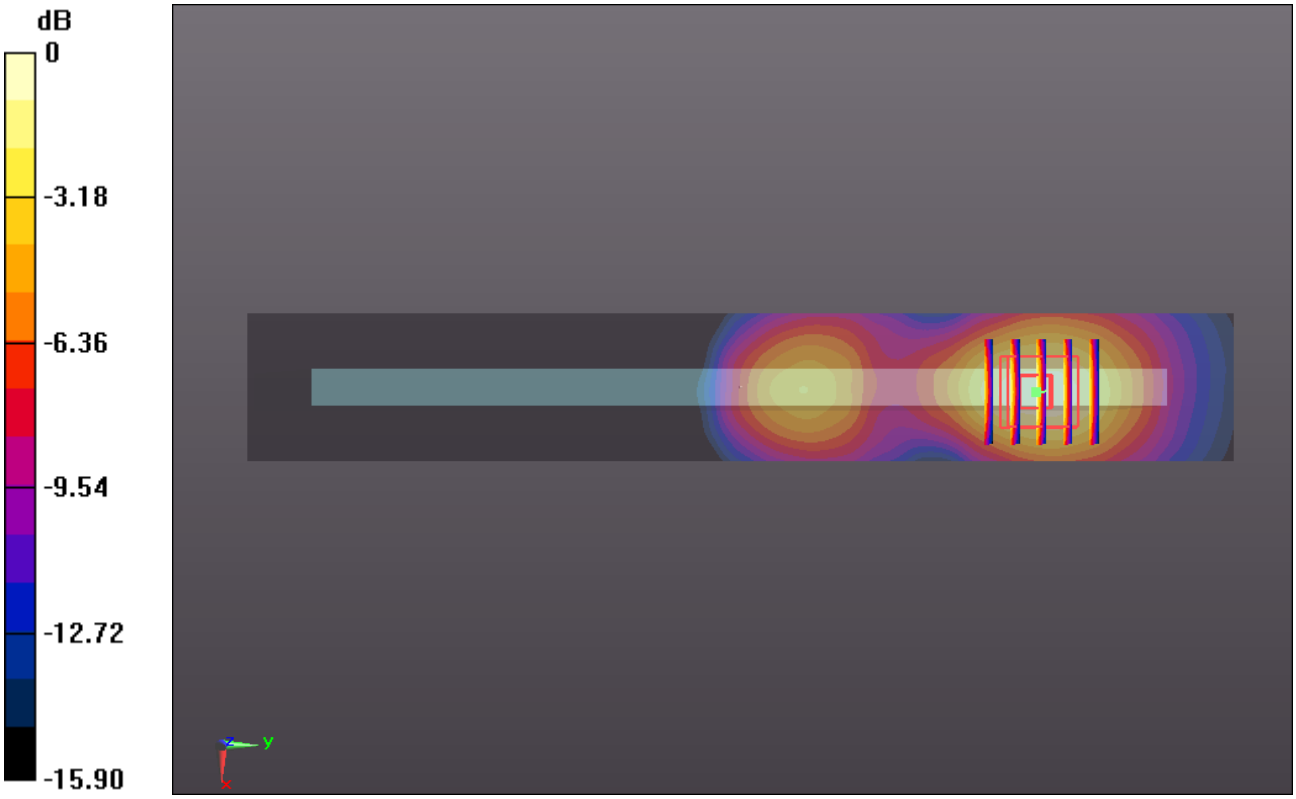
#41_WCDMA Band IV_RMC12.2K_Edge1 0.6cm_Ch1413_Sensor off

Communication System: UMTS; Frequency: 1732.6 MHz;Duty Cycle: 1:1
Medium: MSL_1750_130926 Medium parameters used: f = 1733 MHz; σ = 1.484 mho/m; ε_r = 51.046; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.86, 7.86, 7.86); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch1413/Area Scan (31x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.116 mW/g

Ch1413/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.074 V/m; Power Drift = -0.00083 dB
Peak SAR (extrapolated) = 1.369 W/kg
SAR(1 g) = 0.863 mW/g; SAR(10 g) = 0.502 mW/g
Maximum value of SAR (measured) = 1.153 mW/g



0 dB = 1.150mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

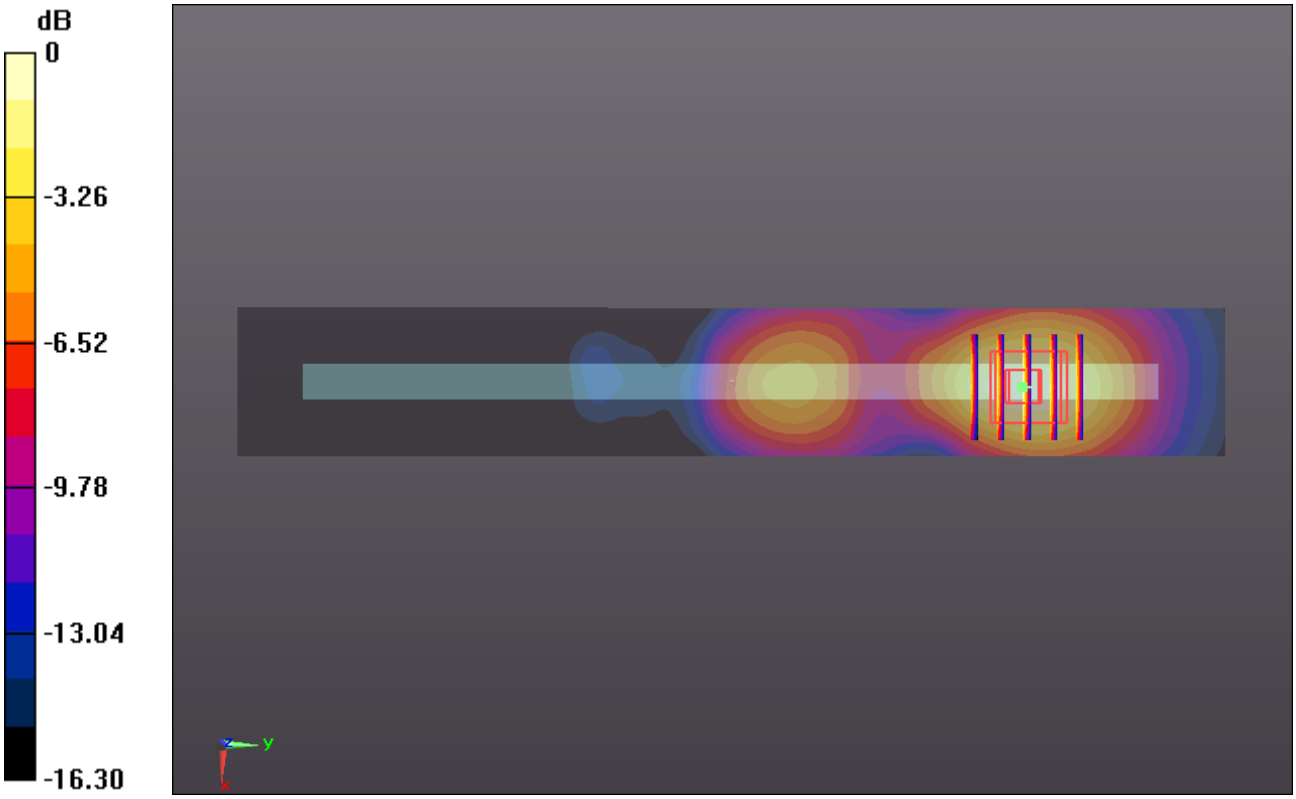
#42_WCDMA Band IV_RMC12.2K_Edge1 0.6cm_Ch1513_Sensor off

Communication System: UMTS; Frequency: 1752.6 MHz;Duty Cycle: 1:1
Medium: MSL_1750_130926 Medium parameters used: f = 1753 MHz; σ = 1.506 mho/m; ε_r = 51.006; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.86, 7.86, 7.86); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch1513/Area Scan (31x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.410 mW/g

Ch1513/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.863 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.749 W/kg
SAR(1 g) = 1.100 mW/g; SAR(10 g) = 0.635 mW/g
Maximum value of SAR (measured) = 1.469 mW/g



0 dB = 1.470mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

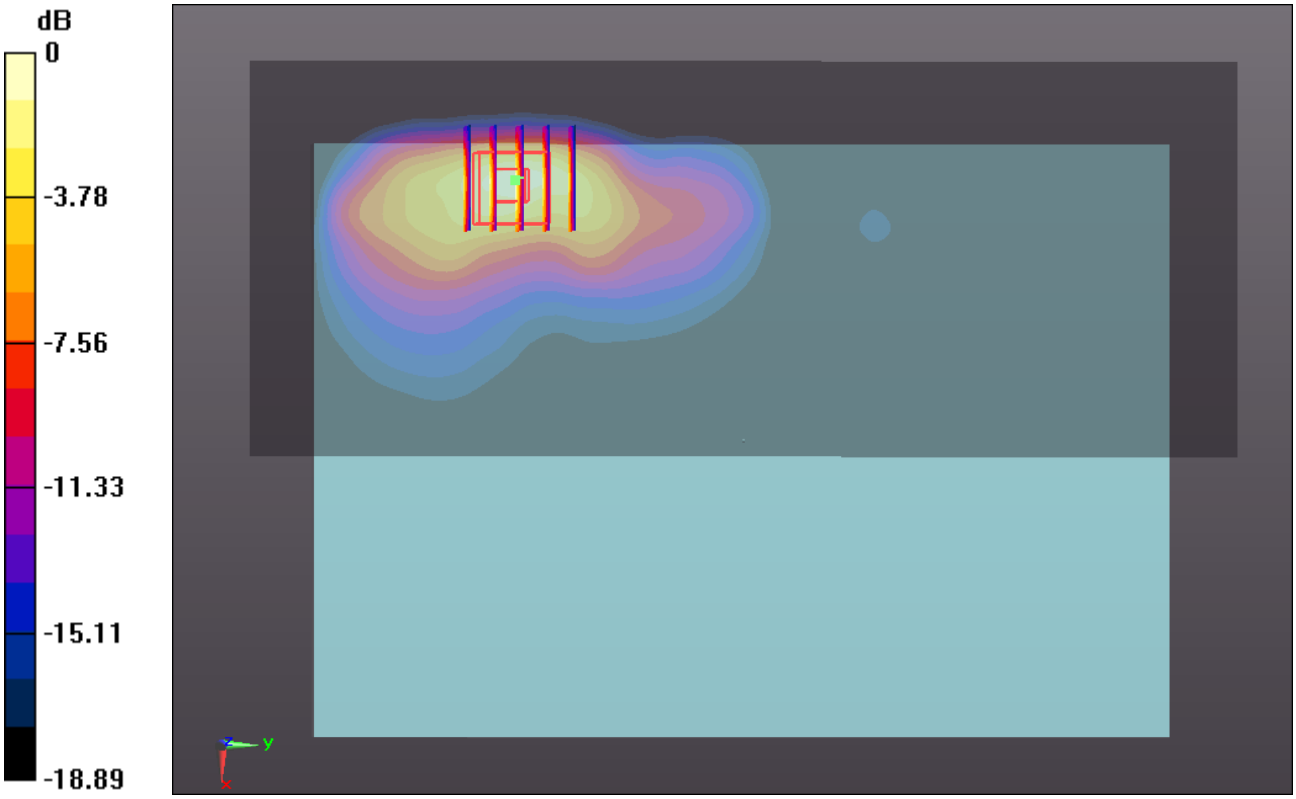
#36_WCDMA Band IV_RMC12.2K_Curved surface of Edge1_Ch1312_Sensor on

Communication System: UMTS; Frequency: 1712.4 MHz;Duty Cycle: 1:1
Medium: MSL_1750_130926 Medium parameters used: f = 1712.4 MHz; σ = 1.462 mho/m; ε_r = 51.14; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.86, 7.86, 7.86); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch1312/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.340 mW/g

Ch1312/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.508 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.939 W/kg
SAR(1 g) = 1.040 mW/g; SAR(10 g) = 0.534 mW/g
Maximum value of SAR (measured) = 1.477 mW/g



0 dB = 1.480mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

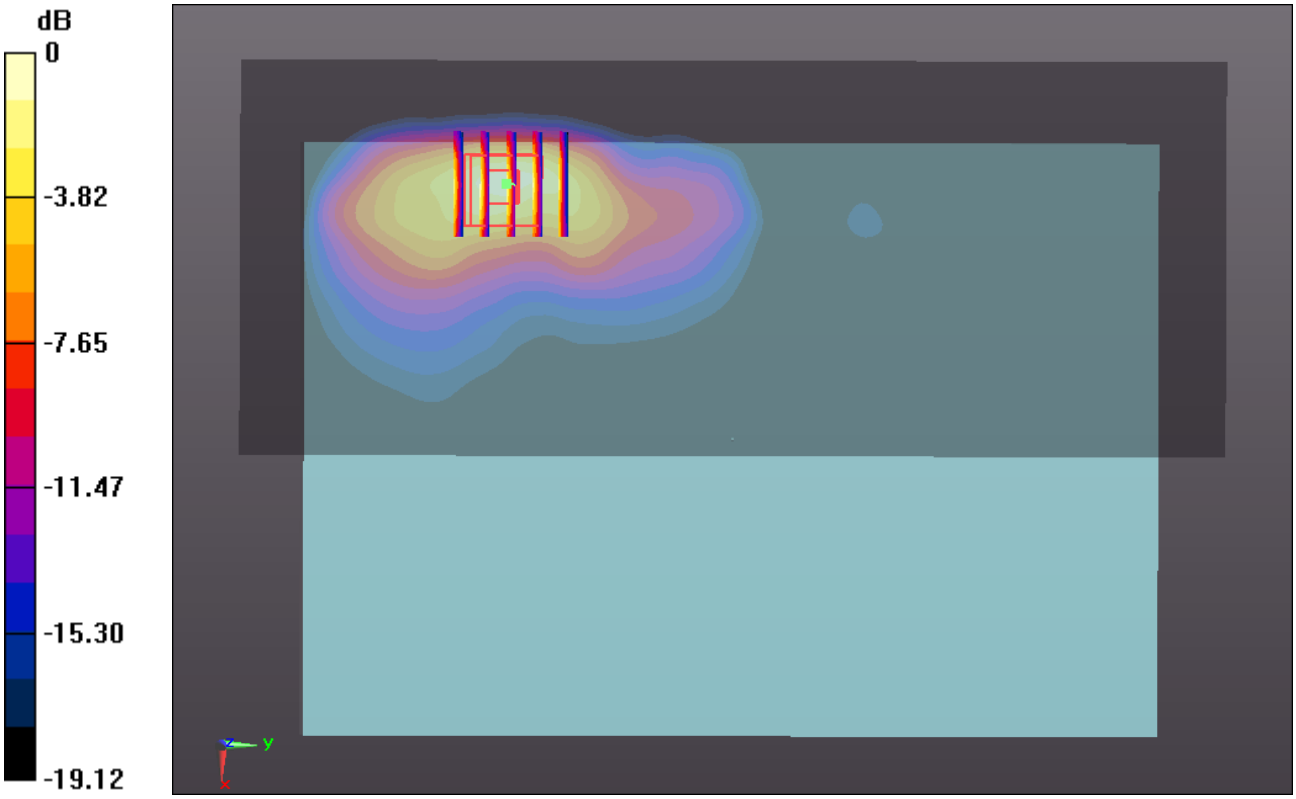
#43_WCDMA Band IV_RMC12.2K_Curved surface of Edge1_Ch1413_Sensor on

Communication System: UMTS; Frequency: 1732.6 MHz;Duty Cycle: 1:1
Medium: MSL_1750_130926 Medium parameters used: f = 1733 MHz; σ = 1.484 mho/m; ε_r = 51.046; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.86, 7.86, 7.86); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch1413/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.243 mW/g

Ch1413/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.497 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.820 W/kg
SAR(1 g) = 0.978 mW/g; SAR(10 g) = 0.498 mW/g
Maximum value of SAR (measured) = 1.429 mW/g



0 dB = 1.430mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

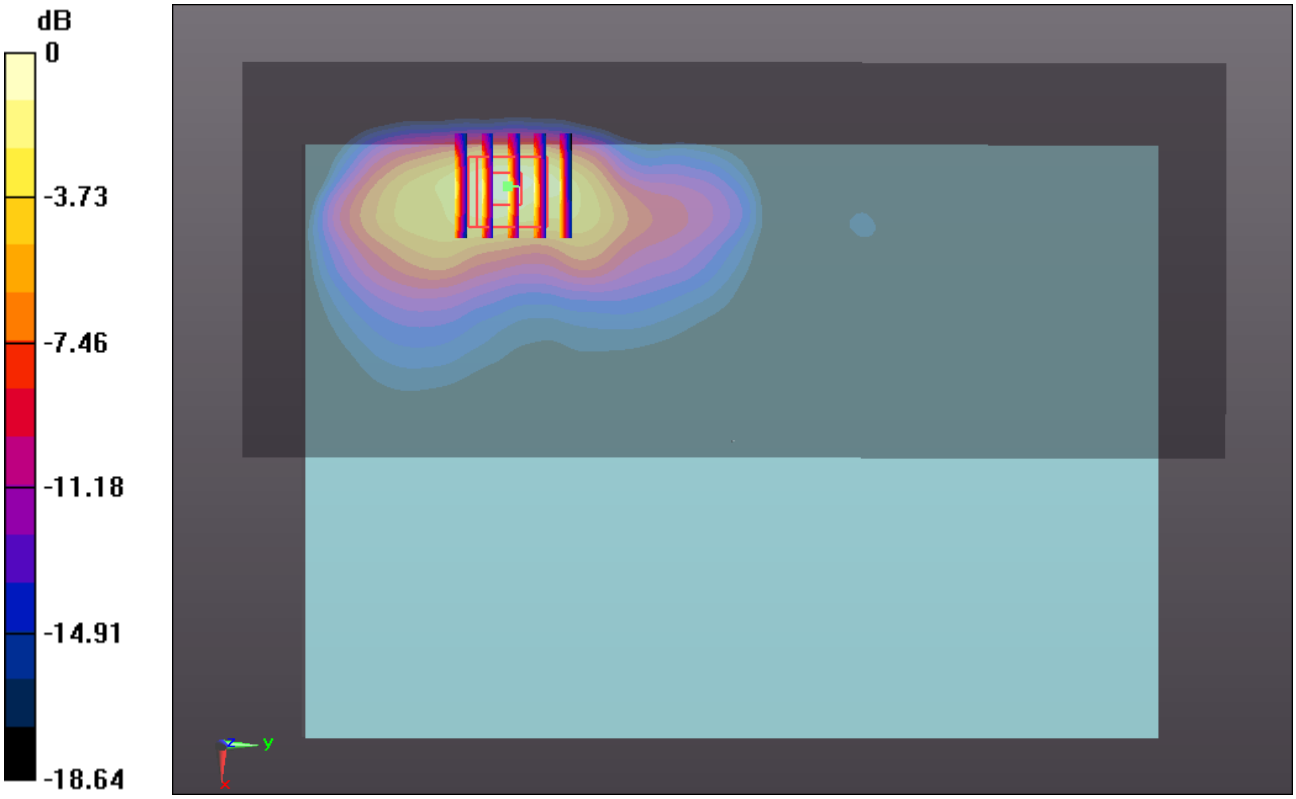
#44_WCDMA Band IV_RMC12.2K_Curved surface of Edge1_Ch1513_Sensor on

Communication System: UMTS; Frequency: 1752.6 MHz;Duty Cycle: 1:1
Medium: MSL_1750_130926 Medium parameters used: f = 1753 MHz; σ = 1.506 mho/m; ε_r = 51.006; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.86, 7.86, 7.86); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch1513/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.488 mW/g

Ch1513/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.743 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 2.185 W/kg
SAR(1 g) = 1.170 mW/g; SAR(10 g) = 0.599 mW/g
Maximum value of SAR (measured) = 1.703 mW/g



0 dB = 1.700mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

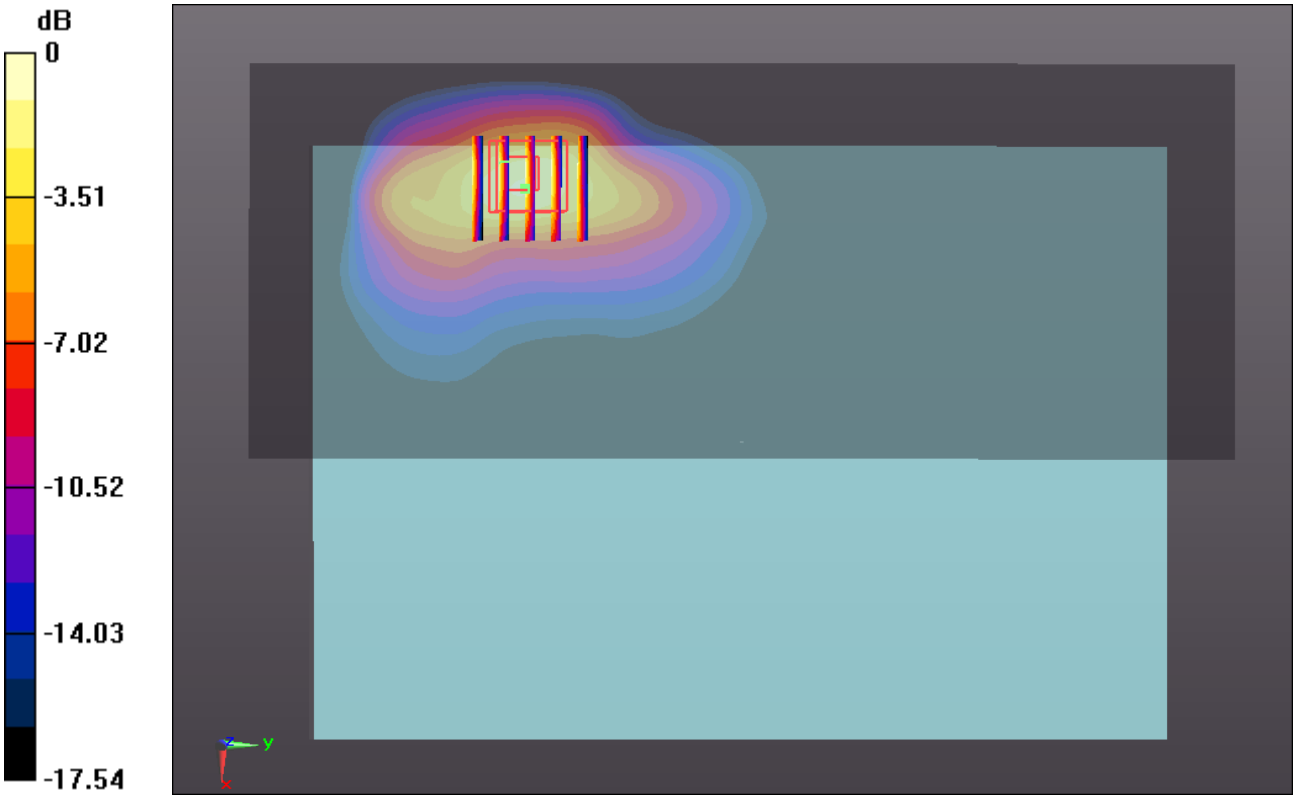
#45_WCDMA Band IV_RMC12.2K_Curved surface of Edge1_Ch1513_Sensor on_Repeat SAR

Communication System: UMTS; Frequency: 1752.6 MHz;Duty Cycle: 1:1
Medium: MSL_1750_130926 Medium parameters used: f = 1753 MHz; σ = 1.506 mho/m; ε_r = 51.006; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.86, 7.86, 7.86); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch1513/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.154 mW/g

Ch1513/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.727 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 2.059 W/kg
SAR(1 g) = 1.110 mW/g; SAR(10 g) = 0.589 mW/g
Maximum value of SAR (measured) = 1.466 mW/g



0 dB = 1.470mW/g

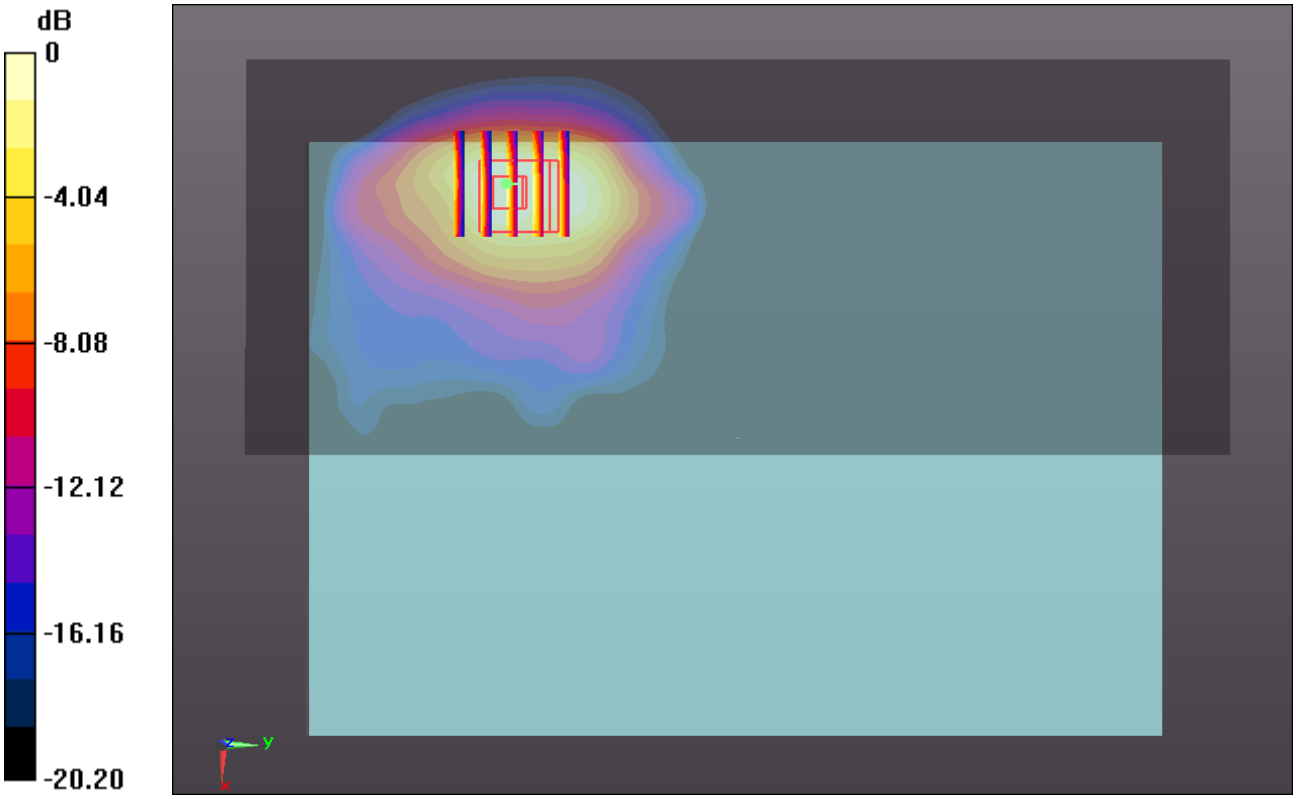
#46_WCDMA Band II_RMC12.2K_Bottom Face 0cm_Ch9262_Sensor on

Communication System: UMTS; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130926 Medium parameters used: f = 1852.4 MHz; σ = 1.492 mho/m; ε_r = 53.467; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch9262/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.077 mW/g

Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.347 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.295 W/kg
SAR(1 g) = 0.723 mW/g; SAR(10 g) = 0.414 mW/g
Maximum value of SAR (measured) = 0.970 mW/g



0 dB = 0.970mW/g

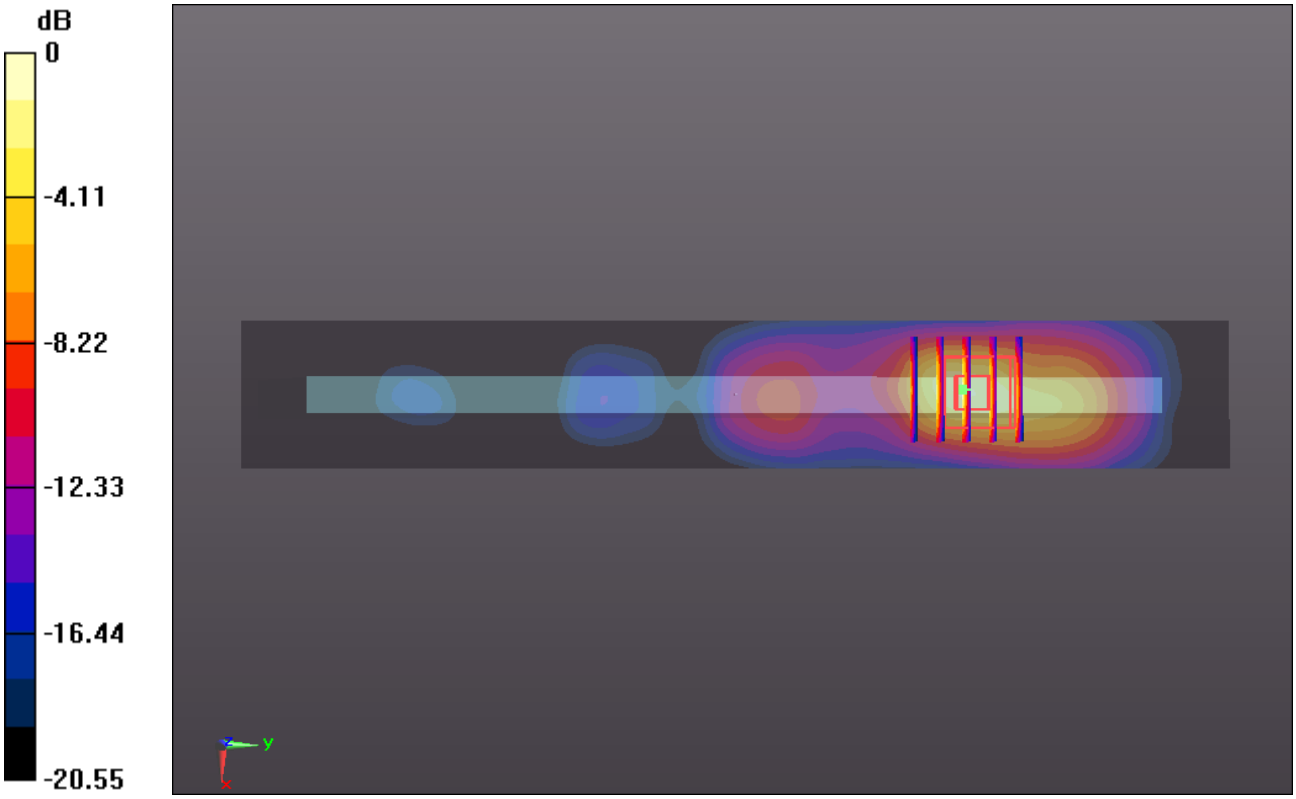
#47_WCDMA Band II_RMC12.2K_Edge1 0cm_Ch9262_Sensor on

Communication System: UMTS; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130926 Medium parameters used: f = 1852.4 MHz; σ = 1.492 mho/m; ε_r = 53.467; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch9262/Area Scan (31x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.111 mW/g

Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.850 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.815 W/kg
SAR(1 g) = 0.961 mW/g; SAR(10 g) = 0.455 mW/g
Maximum value of SAR (measured) = 1.470 mW/g



0 dB = 1.470mW/g

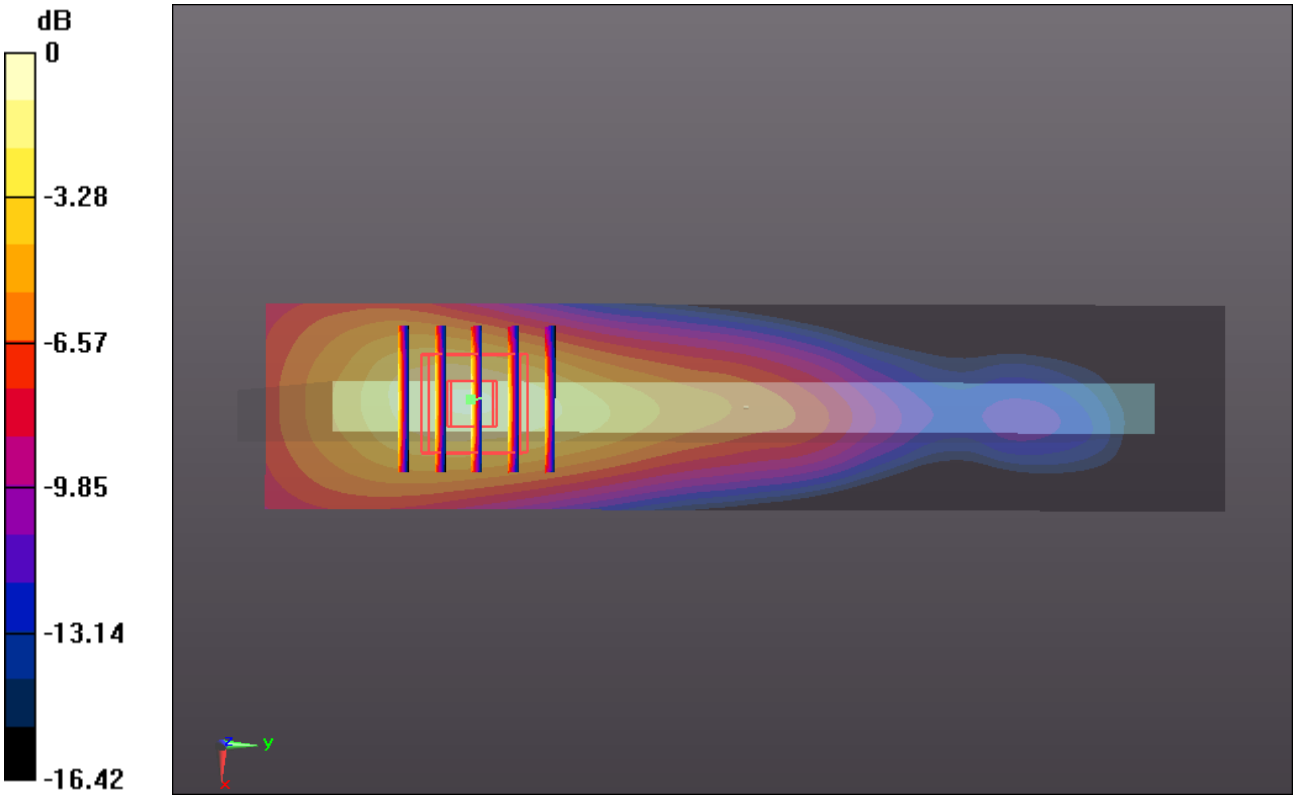
#48_WCDMA Band II_RMC12.2K_Edge2 0cm_Ch9262_Sensor off

Communication System: UMTS; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130926 Medium parameters used: f = 1852.4 MHz; σ = 1.492 mho/m; ε_r = 53.467; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch9262/Area Scan (31x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.644 mW/g

Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.320 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.004 W/kg
SAR(1 g) = 0.553 mW/g; SAR(10 g) = 0.296 mW/g
Maximum value of SAR (measured) = 0.803 mW/g



0 dB = 0.800mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

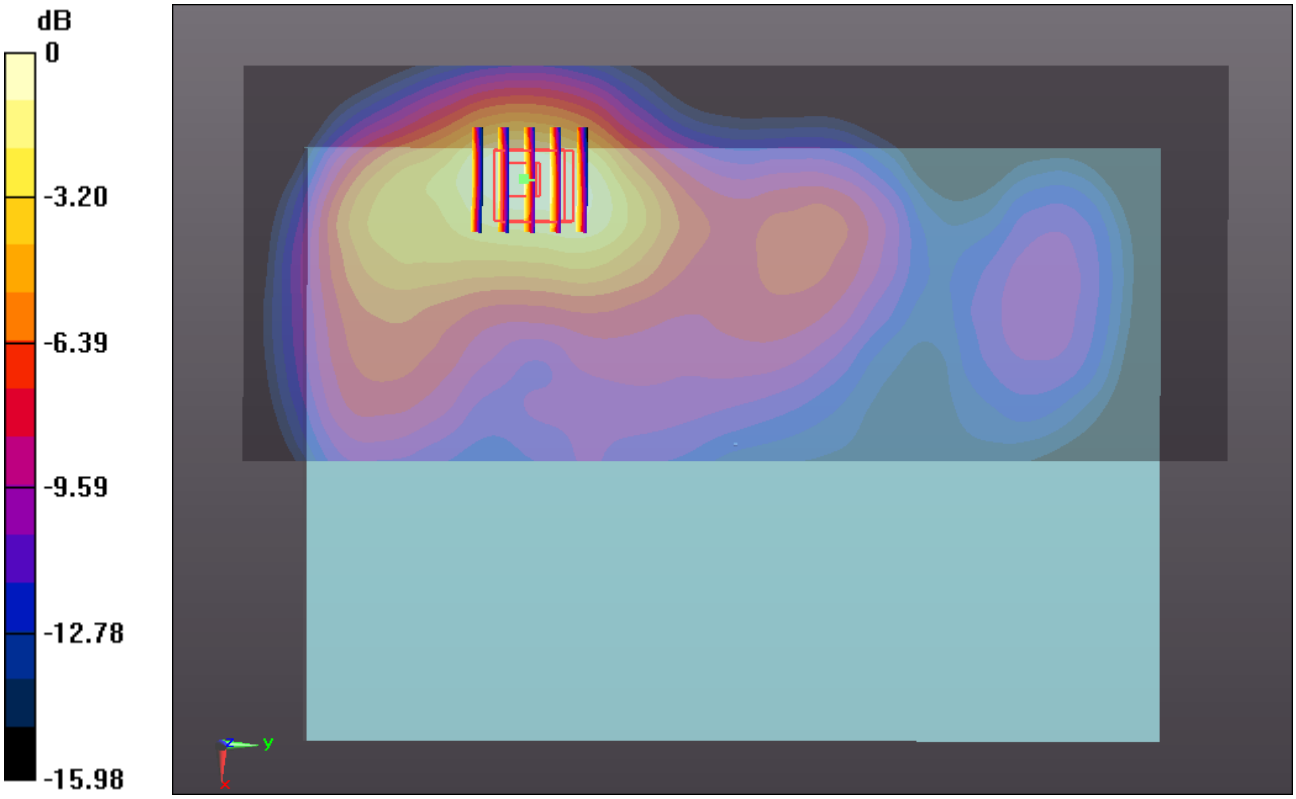
#49_WCDMA Band II_RMC12.2K_Bottom Face 1cm_Ch9262_Sensor off

Communication System: UMTS; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130926 Medium parameters used: f = 1852.4 MHz; σ = 1.492 mho/m; ε_r = 53.467; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch9262/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.986 mW/g

Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.737 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 1.137 W/kg
SAR(1 g) = 0.736 mW/g; SAR(10 g) = 0.449 mW/g
Maximum value of SAR (measured) = 0.952 mW/g



0 dB = 0.950mW/g

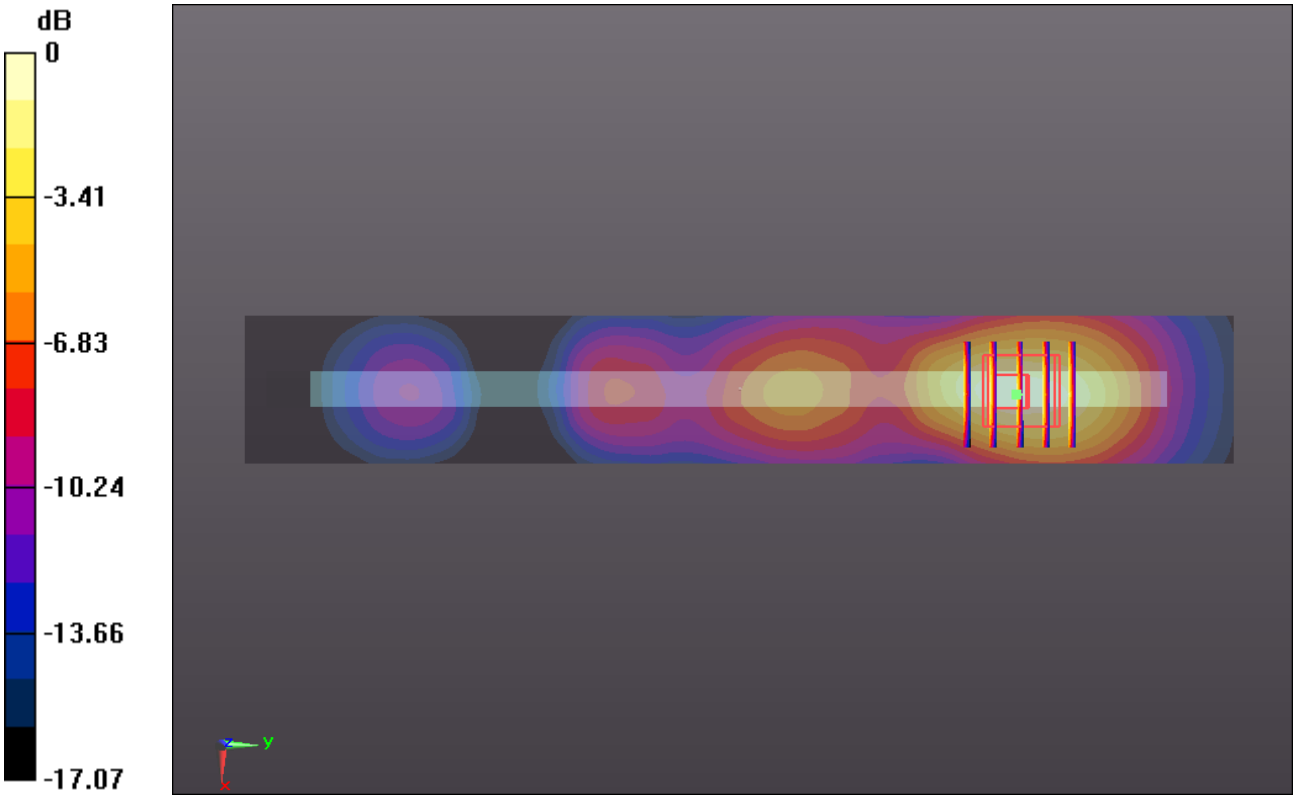
#50_WCDMA Band II_RMC12.2K_Edge1 0.6cm_Ch9262_Sensor off

Communication System: UMTS; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130926 Medium parameters used: f = 1852.4 MHz; σ = 1.492 mho/m; ε_r = 53.467; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch9262/Area Scan (31x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.607 mW/g

Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.822 V/m; Power Drift = -0.003 dB
Peak SAR (extrapolated) = 2.074 W/kg
SAR(1 g) = 1.250 mW/g; SAR(10 g) = 0.694 mW/g
Maximum value of SAR (measured) = 1.722 mW/g



0 dB = 1.720mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

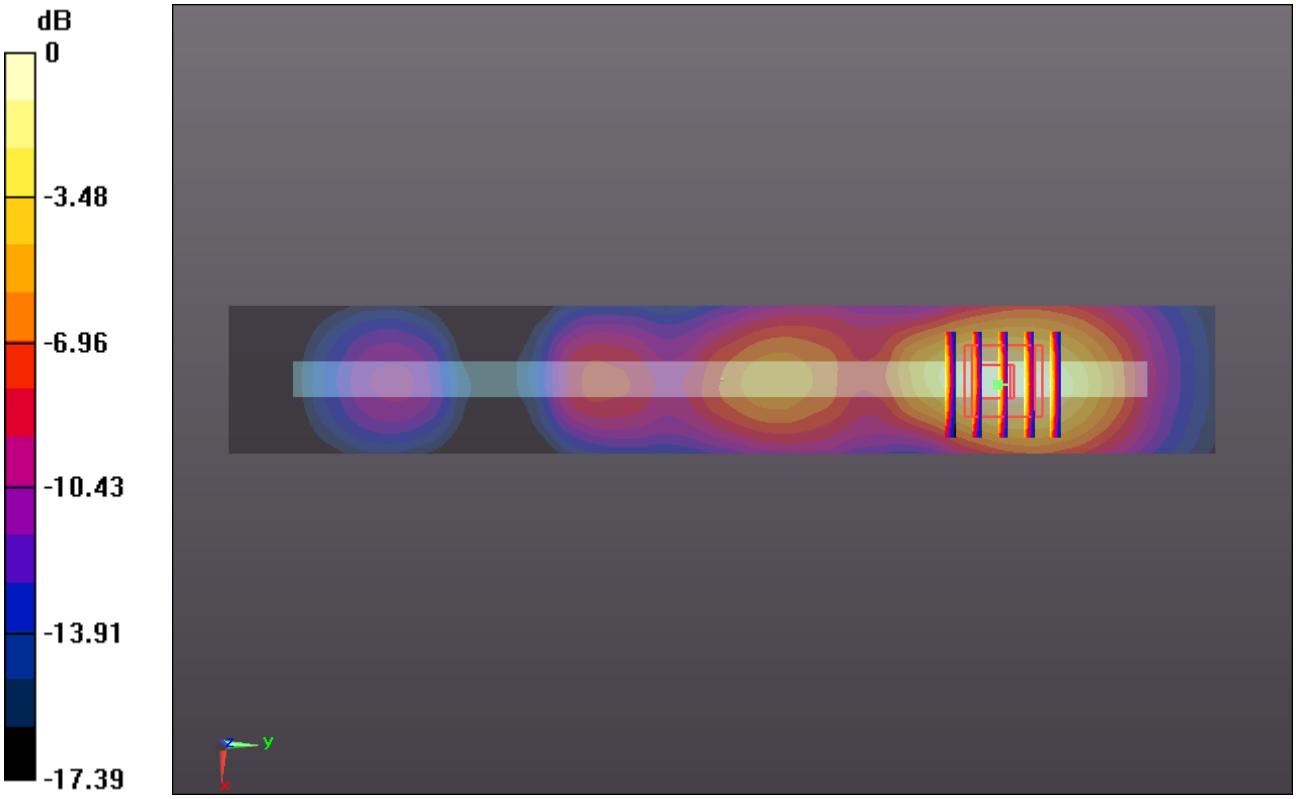
#51_WCDMA Band II_RMC12.2K_Edge1 0.6cm_Ch9262_Sensor off_Repeat SAR

Communication System: UMTS; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130926 Medium parameters used: f = 1852.4 MHz; σ = 1.492 mho/m; ε_r = 53.467; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch9262/Area Scan (31x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.567 mW/g

Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.790 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 2.028 W/kg
SAR(1 g) = 1.220 mW/g; SAR(10 g) = 0.681 mW/g
Maximum value of SAR (measured) = 1.685 mW/g



0 dB = 1.680mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

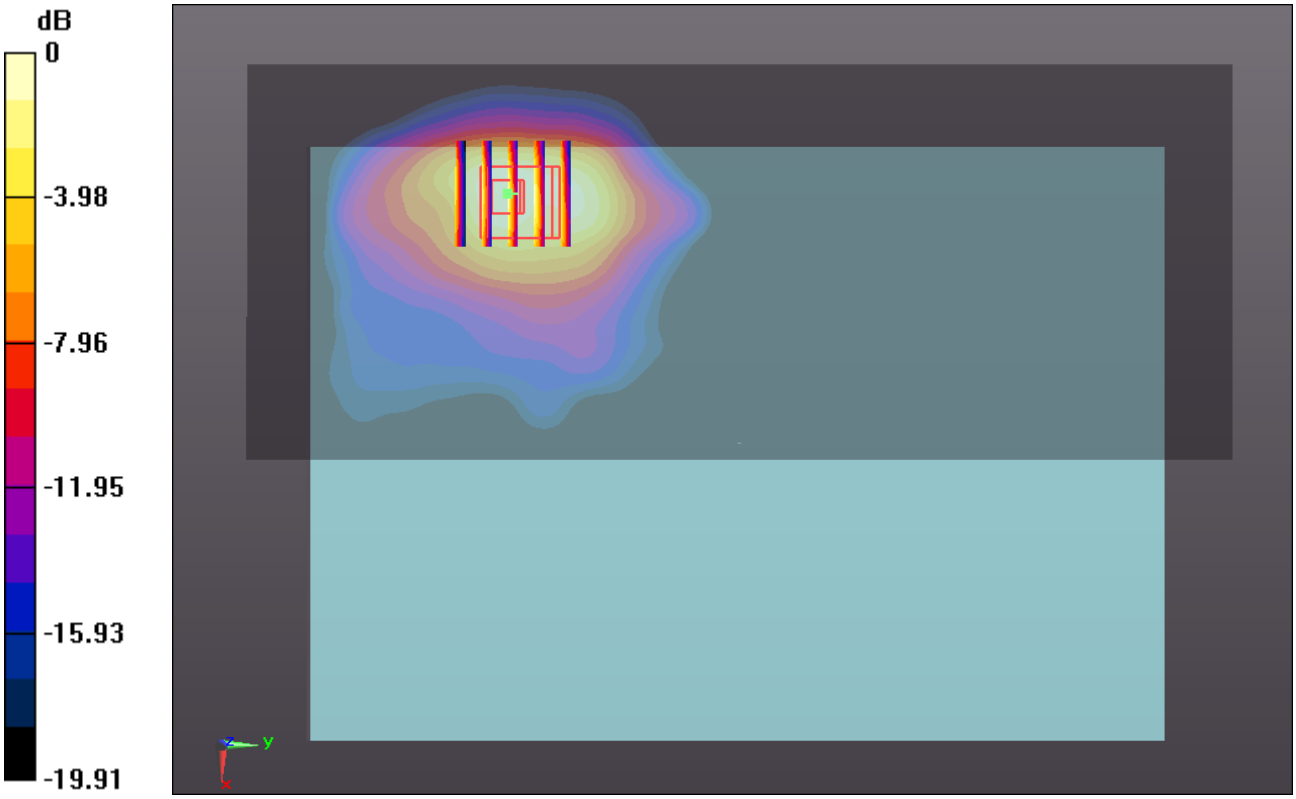
#53_WCDMA Band II_RMC12.2K_Bottom Face 0cm_Ch9400_Sensor on

Communication System: UMTS; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130926 Medium parameters used: f = 1880 MHz; σ = 1.525 mho/m; ε_r = 53.405; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch9400/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.071 mW/g

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.257 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.278 W/kg
SAR(1 g) = 0.713 mW/g; SAR(10 g) = 0.401 mW/g
Maximum value of SAR (measured) = 0.988 mW/g



0 dB = 0.990mW/g

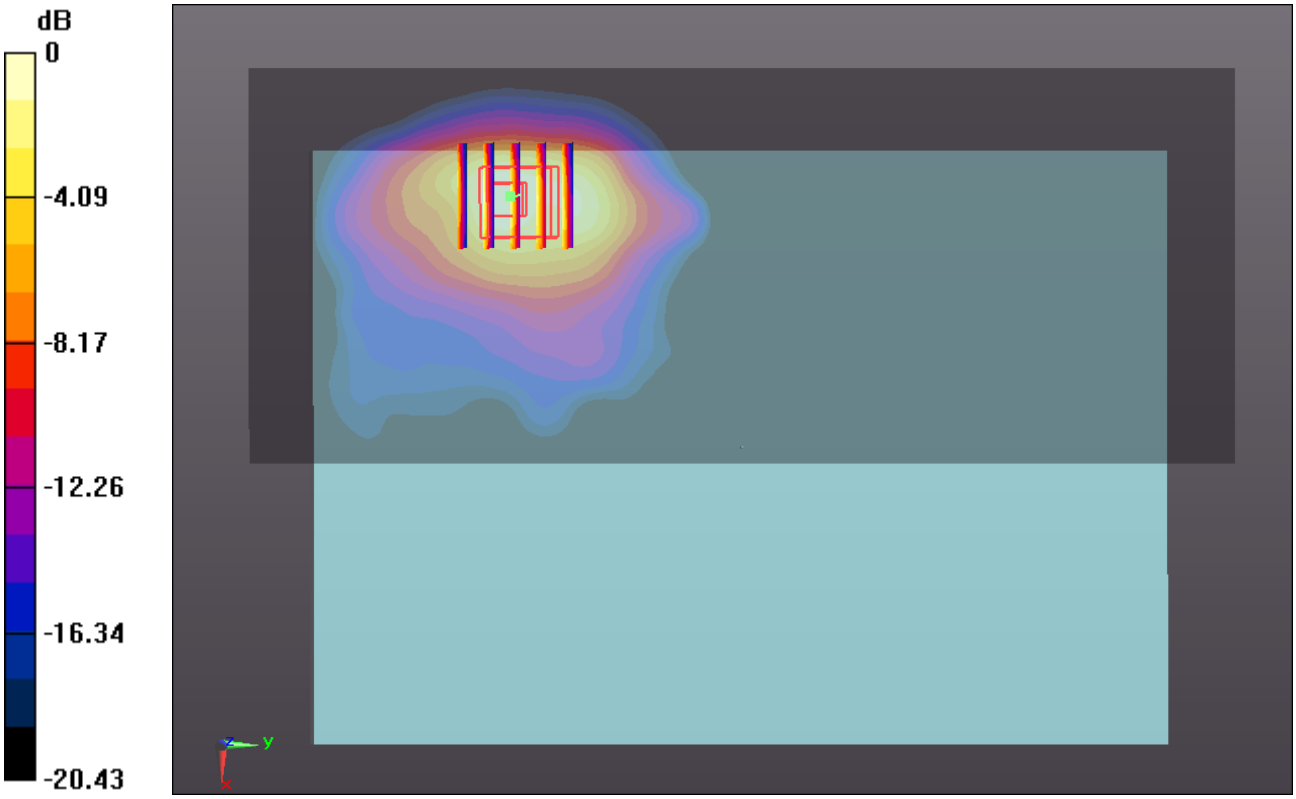
#54_WCDMA Band II_RMC12.2K_Bottom Face 0cm_Ch9538_Sensor on

Communication System: UMTS; Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130926 Medium parameters used: f = 1908 MHz; σ = 1.558 mho/m; ε_r = 53.331; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch9538/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.145 mW/g

Ch9538/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.372 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.410 W/kg
SAR(1 g) = 0.768 mW/g; SAR(10 g) = 0.422 mW/g
Maximum value of SAR (measured) = 1.078 mW/g



0 dB = 1.080mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

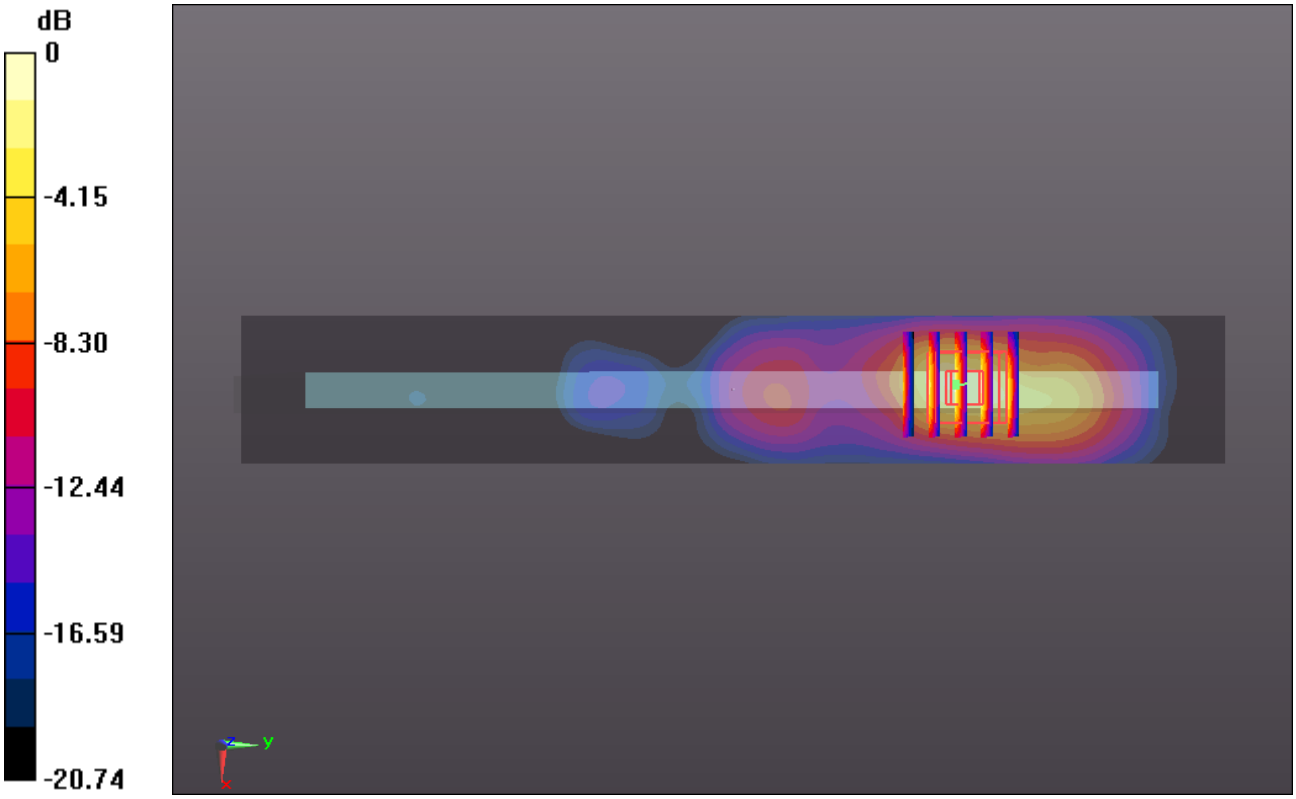
#55_WCDMA Band II_RMC12.2K_Edge1 0cm_Ch9400_Sensor on

Communication System: UMTS; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130926 Medium parameters used: f = 1880 MHz; σ = 1.525 mho/m; ε_r = 53.405; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch9400/Area Scan (31x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.872 mW/g

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.328 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 1.409 W/kg
SAR(1 g) = 0.733 mW/g; SAR(10 g) = 0.345 mW/g
Maximum value of SAR (measured) = 1.128 mW/g



0 dB = 1.130mW/g

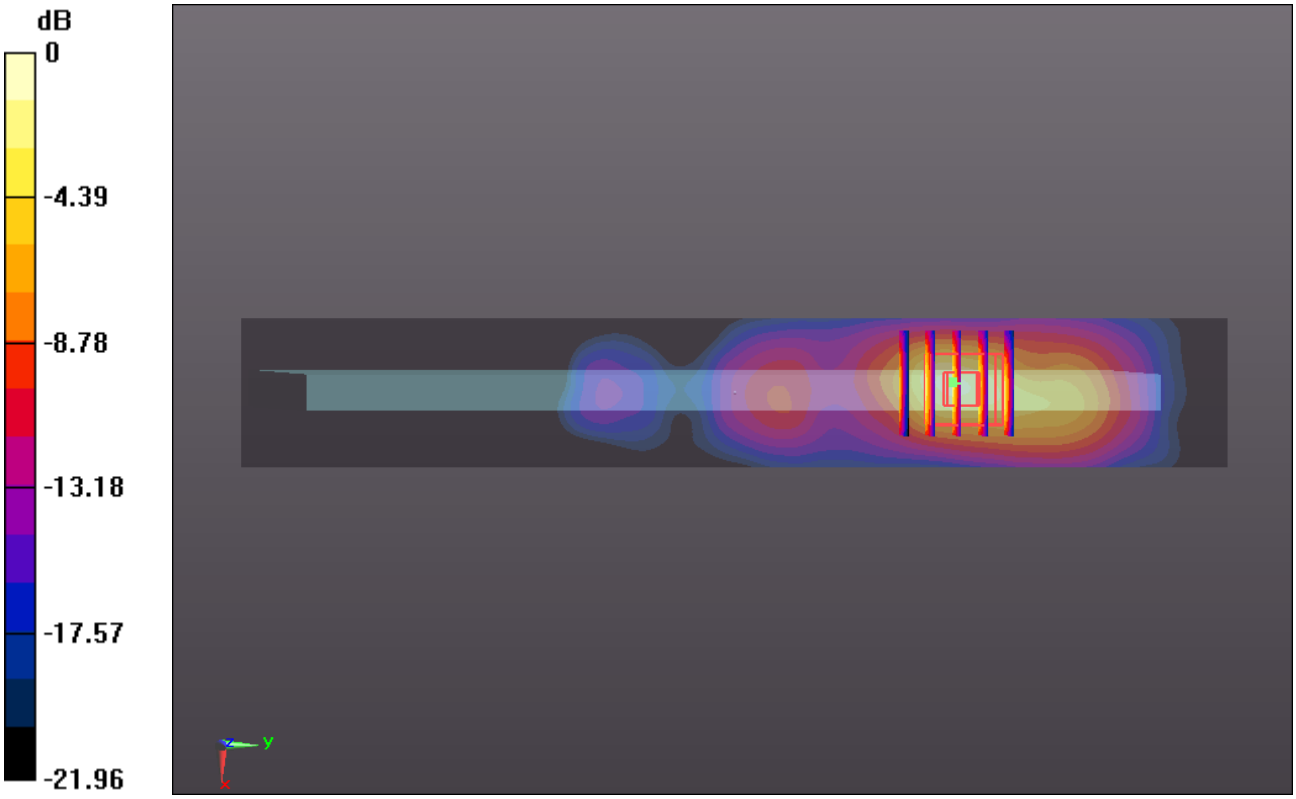
#56_WCDMA Band II_RMC12.2K_Edge1 0cm_Ch9538_Sensor on

Communication System: UMTS; Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130926 Medium parameters used: f = 1908 MHz; σ = 1.558 mho/m; ε_r = 53.331; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch9538/Area Scan (31x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.009 mW/g

Ch9538/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.098 V/m; Power Drift = -0.0044 dB
Peak SAR (extrapolated) = 1.626 W/kg
SAR(1 g) = 0.841 mW/g; SAR(10 g) = 0.391 mW/g
Maximum value of SAR (measured) = 1.256 mW/g



0 dB = 1.260mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

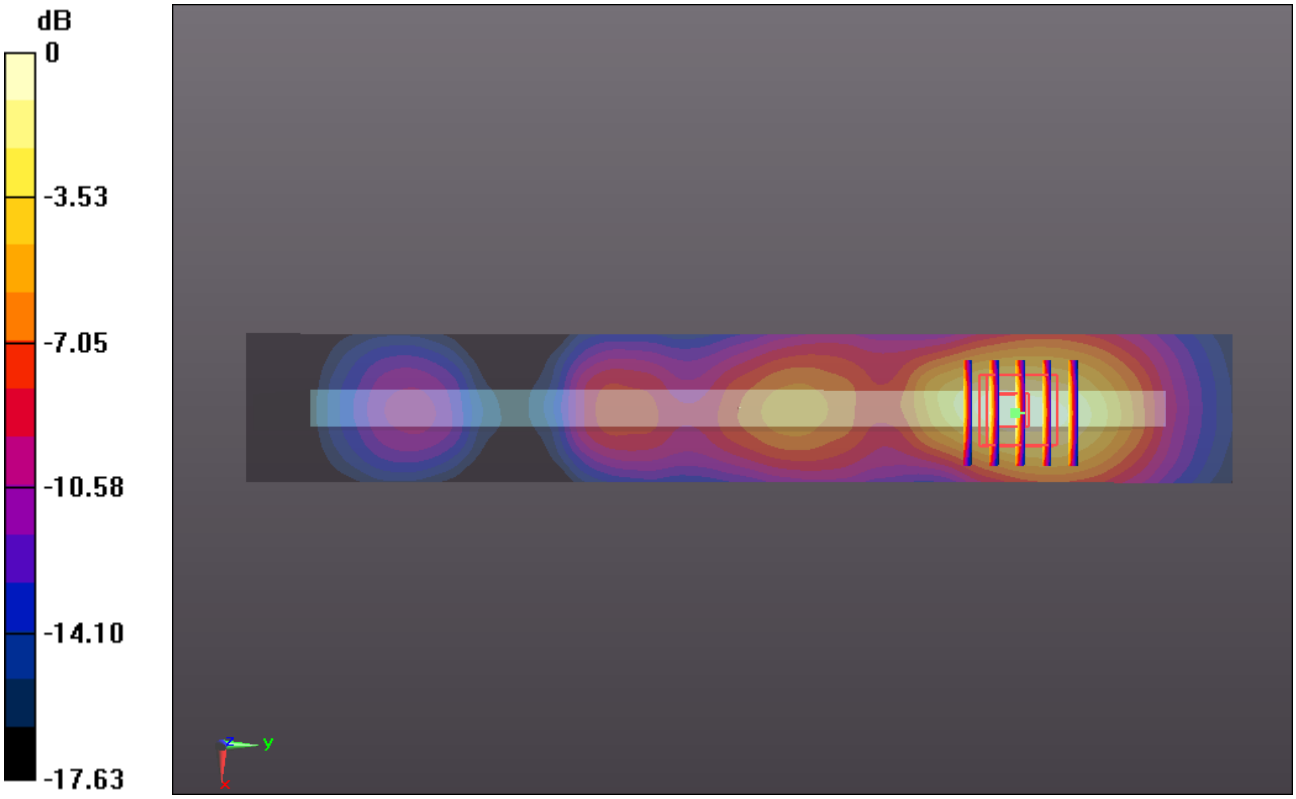
#57_WCDMA Band II_RMC12.2K_Edge1 0.6cm_Ch9400_Sensor off

Communication System: UMTS; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130926 Medium parameters used: f = 1880 MHz; σ = 1.525 mho/m; ε_r = 53.405; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch9400/Area Scan (31x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.309 mW/g

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.119 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.716 W/kg
SAR(1 g) = 1.030 mW/g; SAR(10 g) = 0.566 mW/g
Maximum value of SAR (measured) = 1.416 mW/g



0 dB = 1.420mW/g

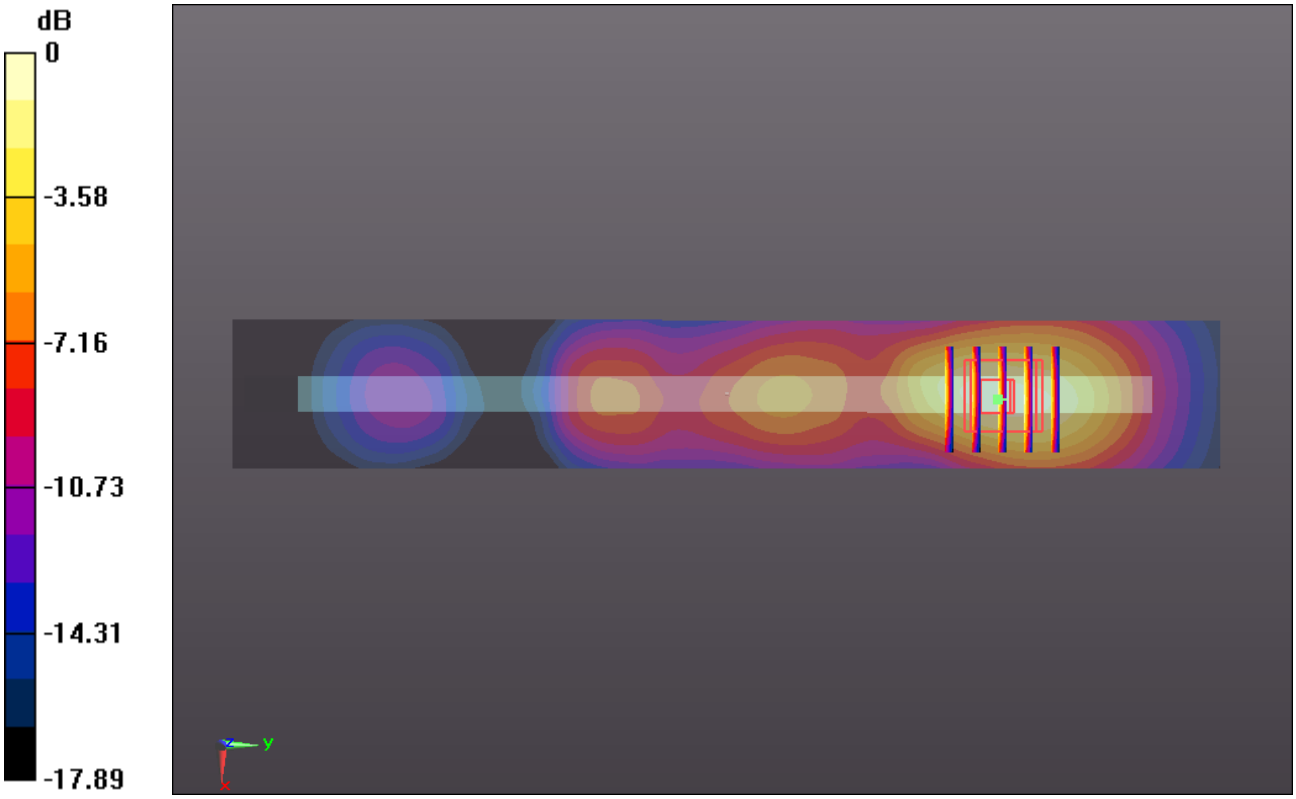
#58_WCDMA Band II_RMC12.2K_Edge1 0.6cm_Ch9538_Sensor off

Communication System: UMTS; Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130926 Medium parameters used: f = 1908 MHz; σ = 1.558 mho/m; ε_r = 53.331; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch9538/Area Scan (31x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.293 mW/g

Ch9538/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.715 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.754 W/kg
SAR(1 g) = 1.030 mW/g; SAR(10 g) = 0.564 mW/g
Maximum value of SAR (measured) = 1.442 mW/g



0 dB = 1.440mW/g

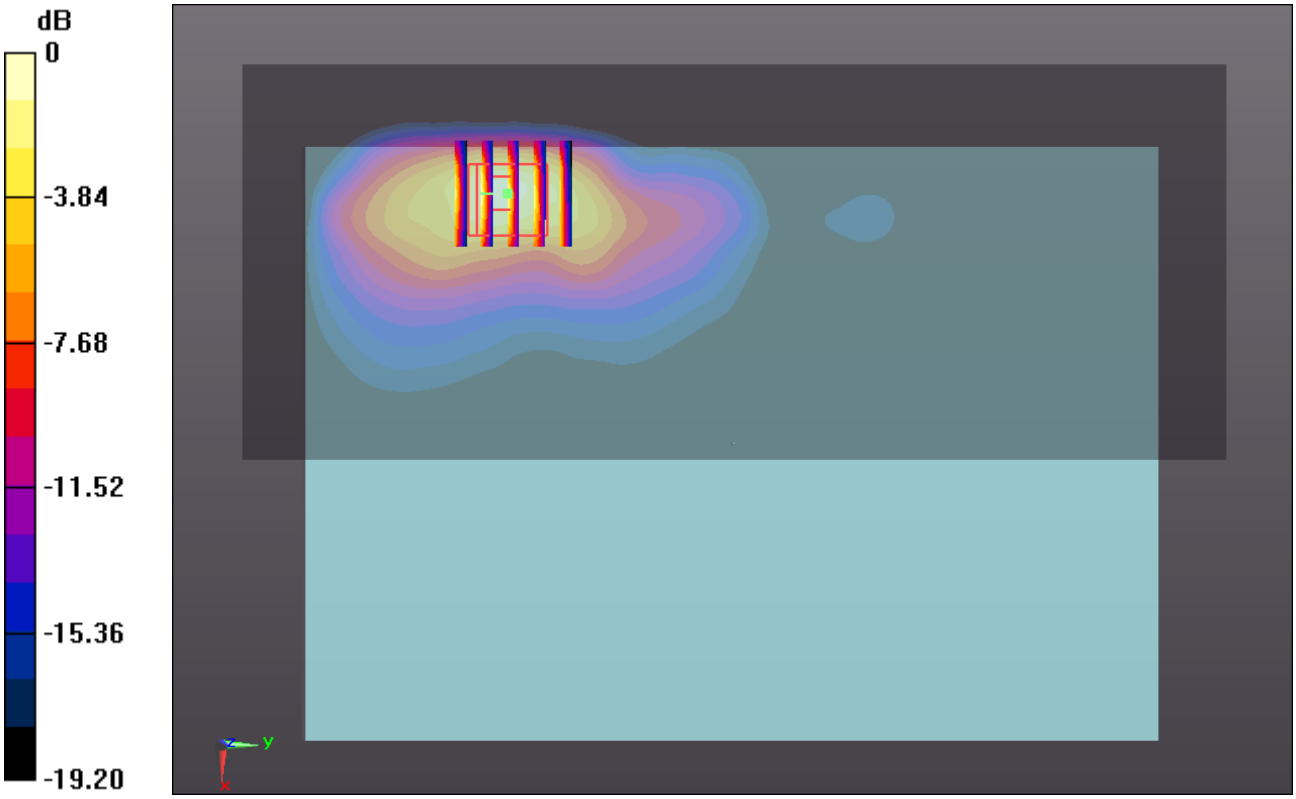
#52_WCDMA Band II_RMC12.2K_Curved surface of Edge1_Ch9262_Sensor on

Communication System: UMTS; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130926 Medium parameters used: f = 1852.4 MHz; σ = 1.492 mho/m; ε_r = 53.467; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch9262/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.218 mW/g

Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.064 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 1.813 W/kg
SAR(1 g) = 0.943 mW/g; SAR(10 g) = 0.474 mW/g
Maximum value of SAR (measured) = 1.386 mW/g



0 dB = 1.390mW/g

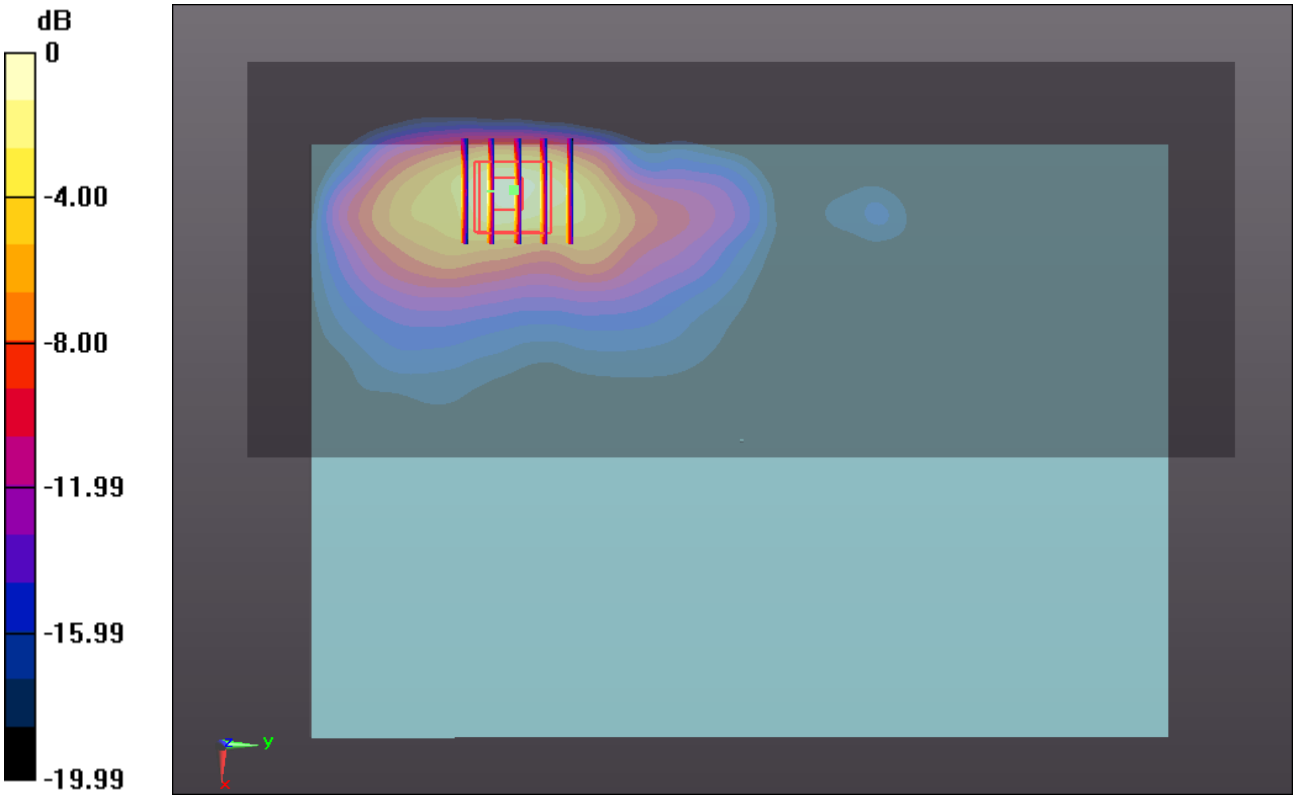
#59_WCDMA Band II_RMC12.2K_Curved surface of Edge1_Ch9400_Sensor on

Communication System: UMTS; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130926 Medium parameters used: f = 1880 MHz; σ = 1.525 mho/m; ε_r = 53.405; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch9400/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.114 mW/g

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.943 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.689 W/kg
SAR(1 g) = 0.868 mW/g; SAR(10 g) = 0.434 mW/g
Maximum value of SAR (measured) = 1.291 mW/g



0 dB = 1.290mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.26

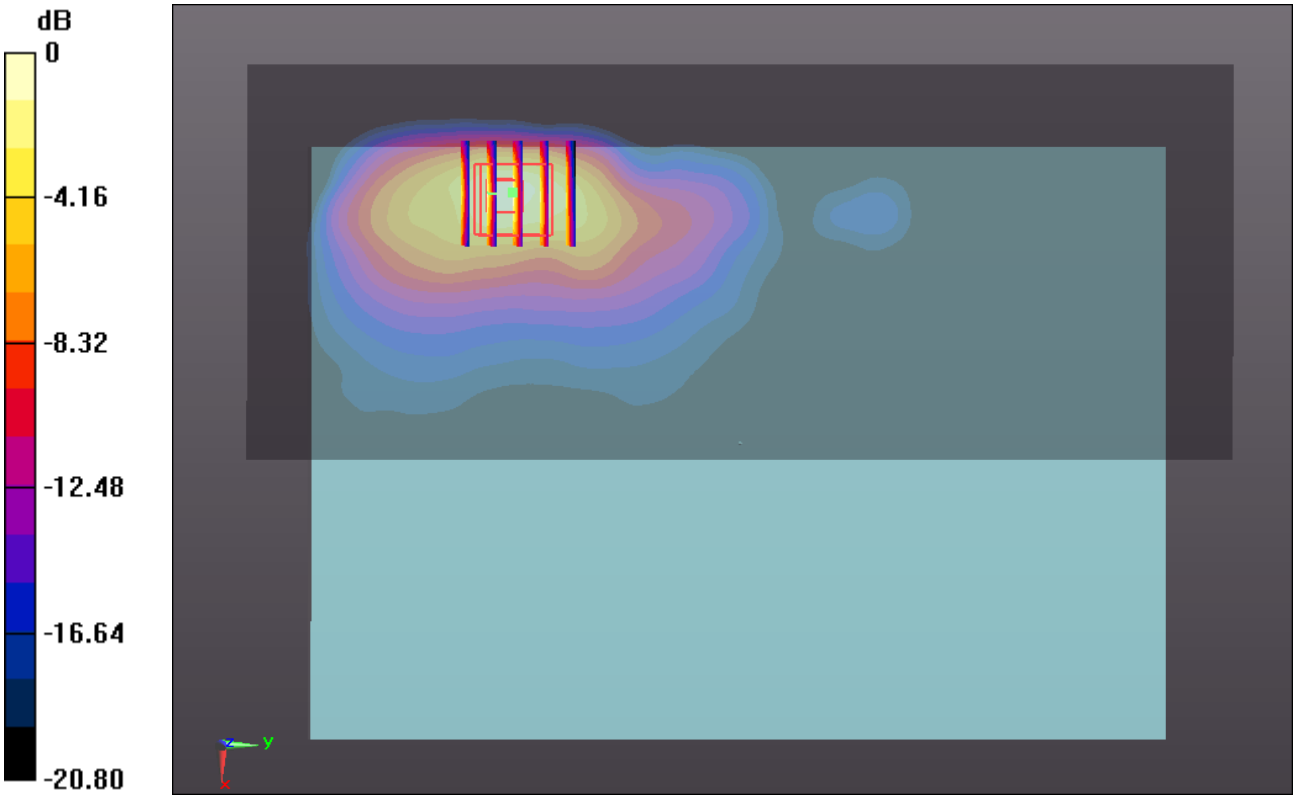
#60_WCDMA Band II_RMC12.2K_Curved surface of Edge1_Ch9538_Sensor on

Communication System: UMTS; Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130926 Medium parameters used: f = 1908 MHz; σ = 1.558 mho/m; ε_r = 53.331; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.52, 7.52, 7.52); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch9538/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.192 mW/g

Ch9538/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.965 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.806 W/kg
SAR(1 g) = 0.927 mW/g; SAR(10 g) = 0.461 mW/g
Maximum value of SAR (measured) = 1.366 mW/g



0 dB = 1.370mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.29

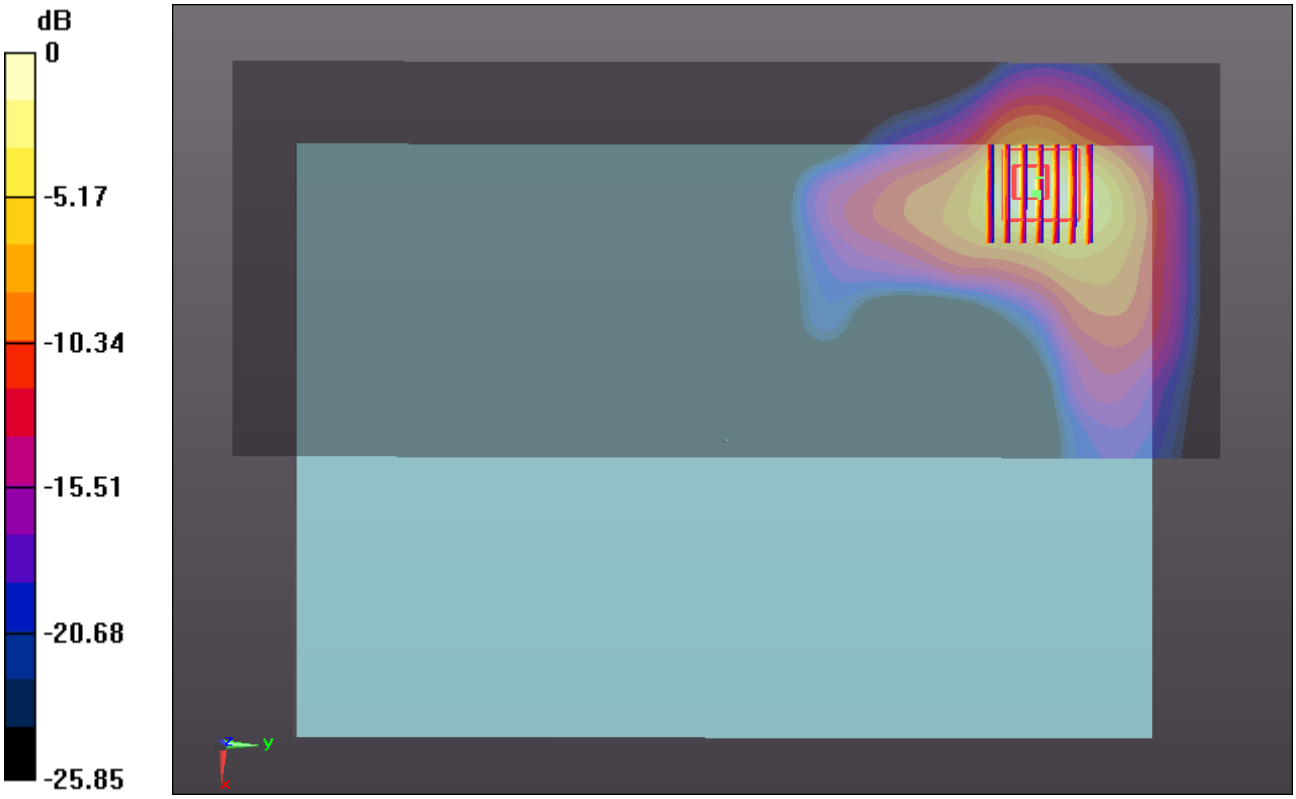
#61_WLAN 2.4GHz_802.11b_Bottom Face 0cm_Ch11

Communication System: WIFI; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: MSL_2450_130929 Medium parameters used: f = 2462 MHz; σ = 1.955 mho/m; ε_r = 50.875; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7, 7, 7); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch11/Area Scan (101x251x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.850 mW/g

Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.890 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.387 W/kg
SAR(1 g) = 0.571 mW/g; SAR(10 g) = 0.253 mW/g
Maximum value of SAR (measured) = 0.906 mW/g



0 dB = 0.910mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.29

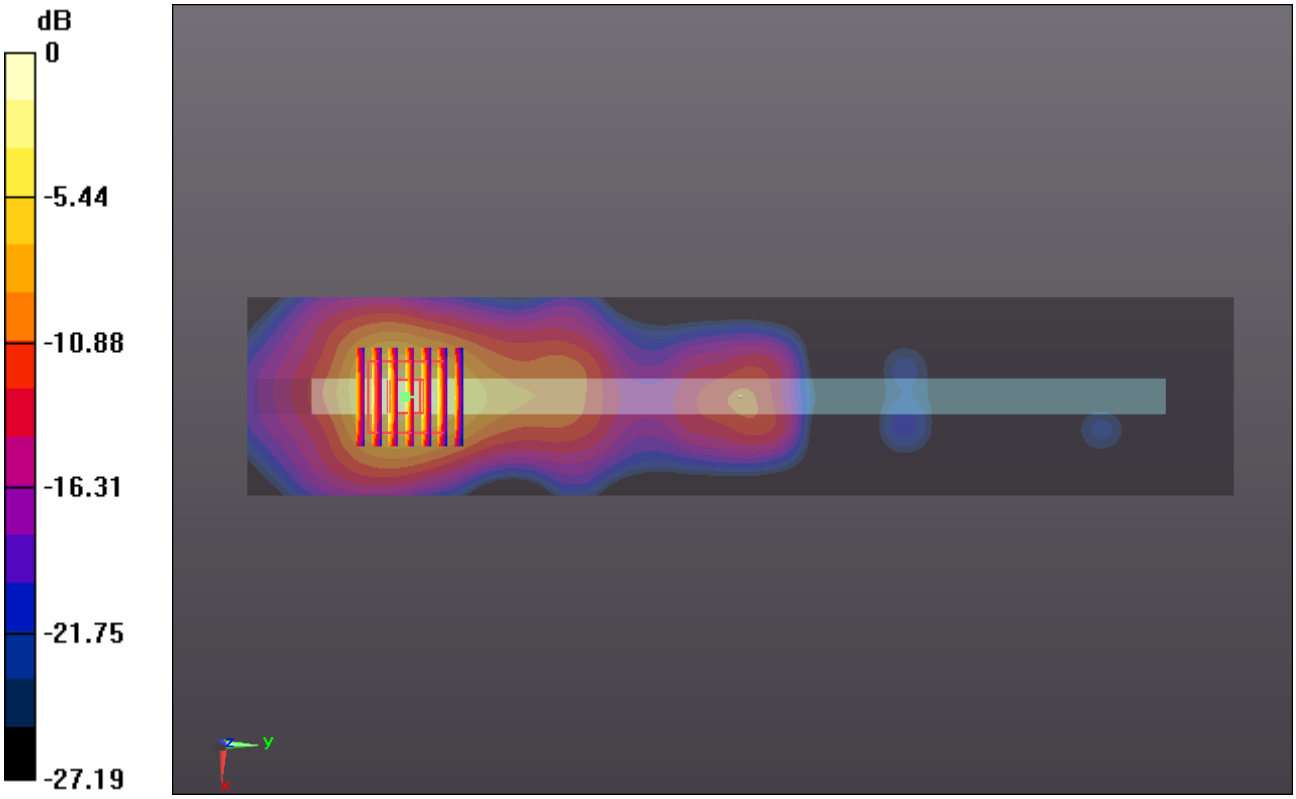
#62_WLAN 2.4GHz_802.11b_Edge1 0cm_Ch11

Communication System: WIFI; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: MSL_2450_130929 Medium parameters used: f = 2462 MHz; σ = 1.955 mho/m; ε_r = 50.875; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7, 7, 7); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch11/Area Scan (51x251x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.711 mW/g

Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.142 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 1.724 W/kg
SAR(1 g) = 0.825 mW/g; SAR(10 g) = 0.366 mW/g
Maximum value of SAR (measured) = 1.272 mW/g



0 dB = 1.270mW/g

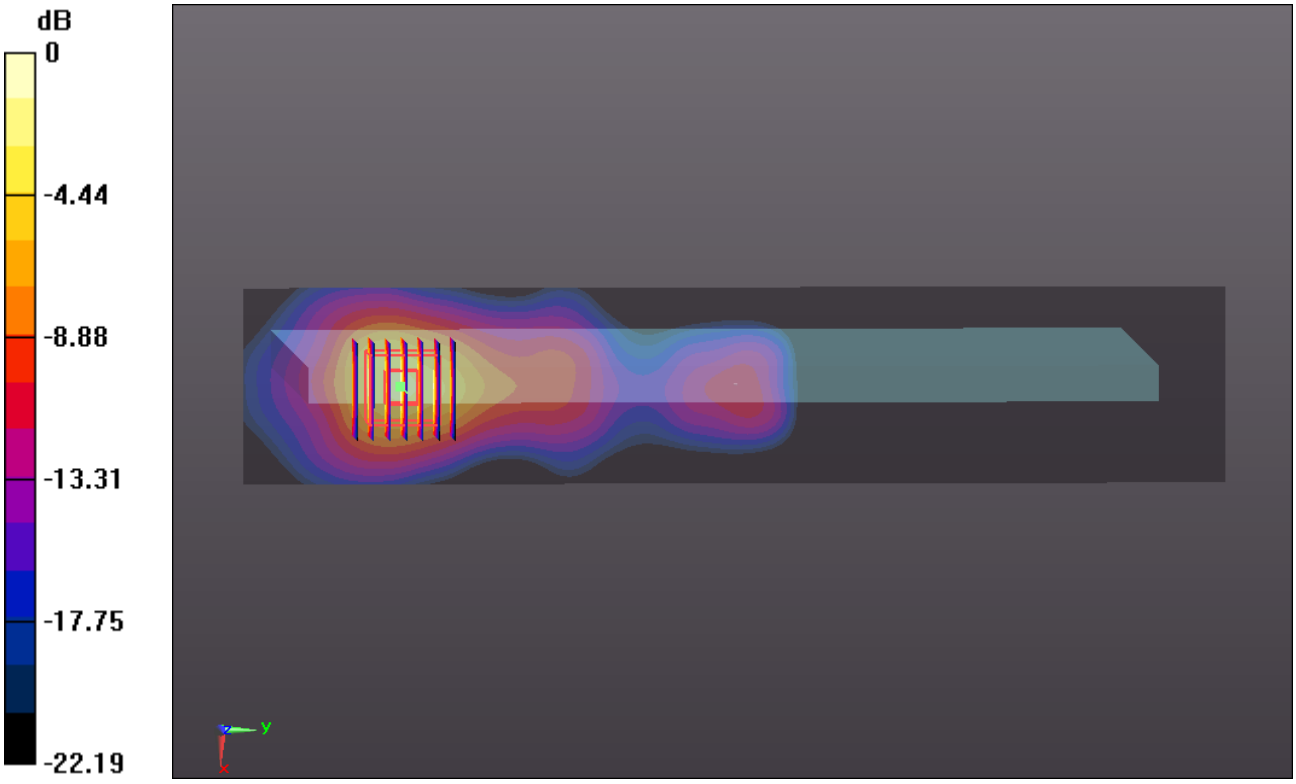
#66_WLAN 2.4GHz_802.11b_Edge1 0cm_Ch11_Repeat SAR

Communication System: WIFI; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: MSL_2450_130929 Medium parameters used: f = 2462 MHz; σ = 1.955 mho/m; ε_r = 50.875; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7, 7, 7); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch11/Area Scan (51x251x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.708 mW/g

Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.142 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.719 W/kg
SAR(1 g) = 0.822 mW/g; SAR(10 g) = 0.365 mW/g
Maximum value of SAR (measured) = 1.268 mW/g



0 dB = 1.270mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.29

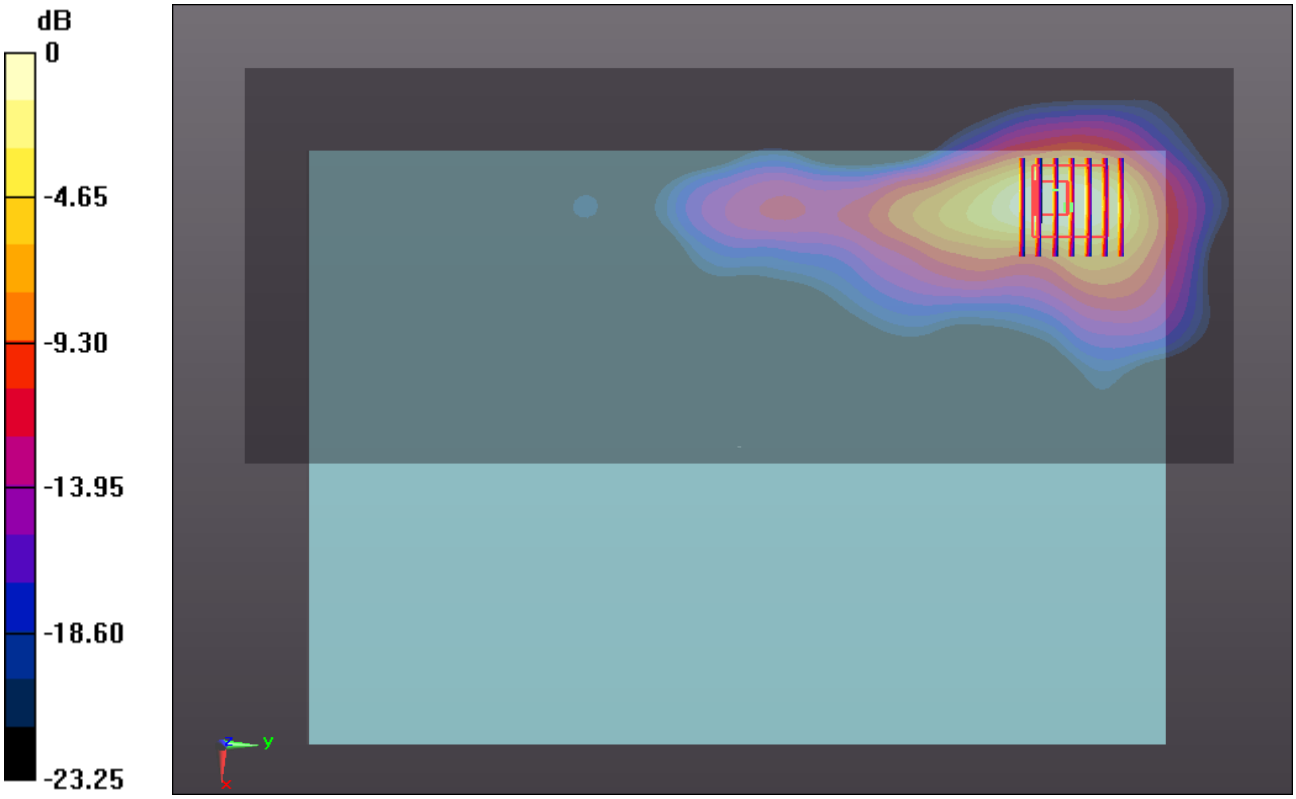
#63_WLAN 2.4GHz_802.11b_Curved surface of Edge1_Ch11

Communication System: WIFI; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: MSL_2450_130929 Medium parameters used: f = 2462 MHz; σ = 1.955 mho/m; ε_r = 50.875; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7, 7, 7); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch11/Area Scan (101x251x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 1.189 mW/g

Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.571 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.673 W/kg
SAR(1 g) = 0.693 mW/g; SAR(10 g) = 0.324 mW/g
Maximum value of SAR (measured) = 1.090 mW/g



0 dB = 1.090mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.29

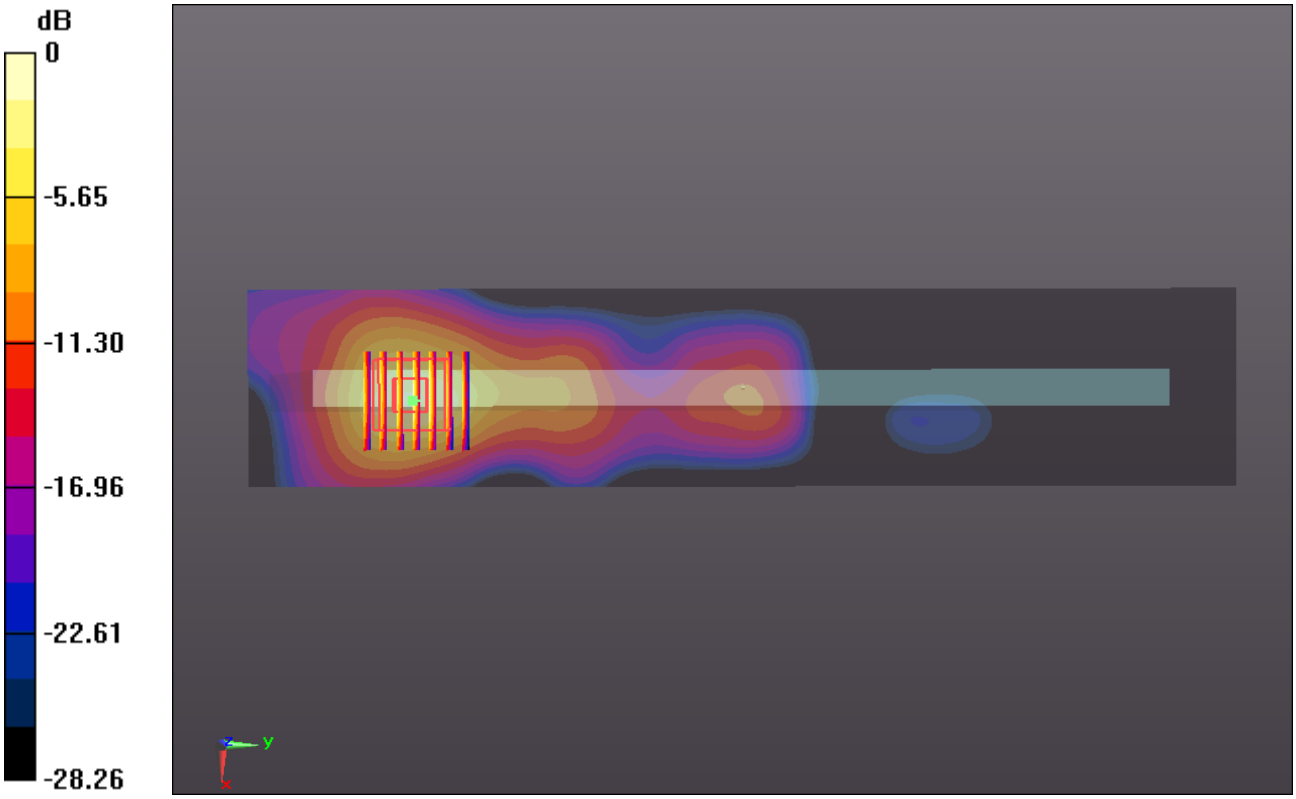
#64_WLAN 2.4GHz_802.11b_Edge1 0cm_Ch1

Communication System: WIFI; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450_130929 Medium parameters used: f = 2412 MHz; σ = 1.883 mho/m; ε_r = 51.092; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7, 7, 7); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch1/Area Scan (51x251x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.496 mW/g

Ch1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.677 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.033 W/kg
SAR(1 g) = 0.506 mW/g; SAR(10 g) = 0.228 mW/g
Maximum value of SAR (measured) = 0.732 mW/g



0 dB = 0.730mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2013.09.29

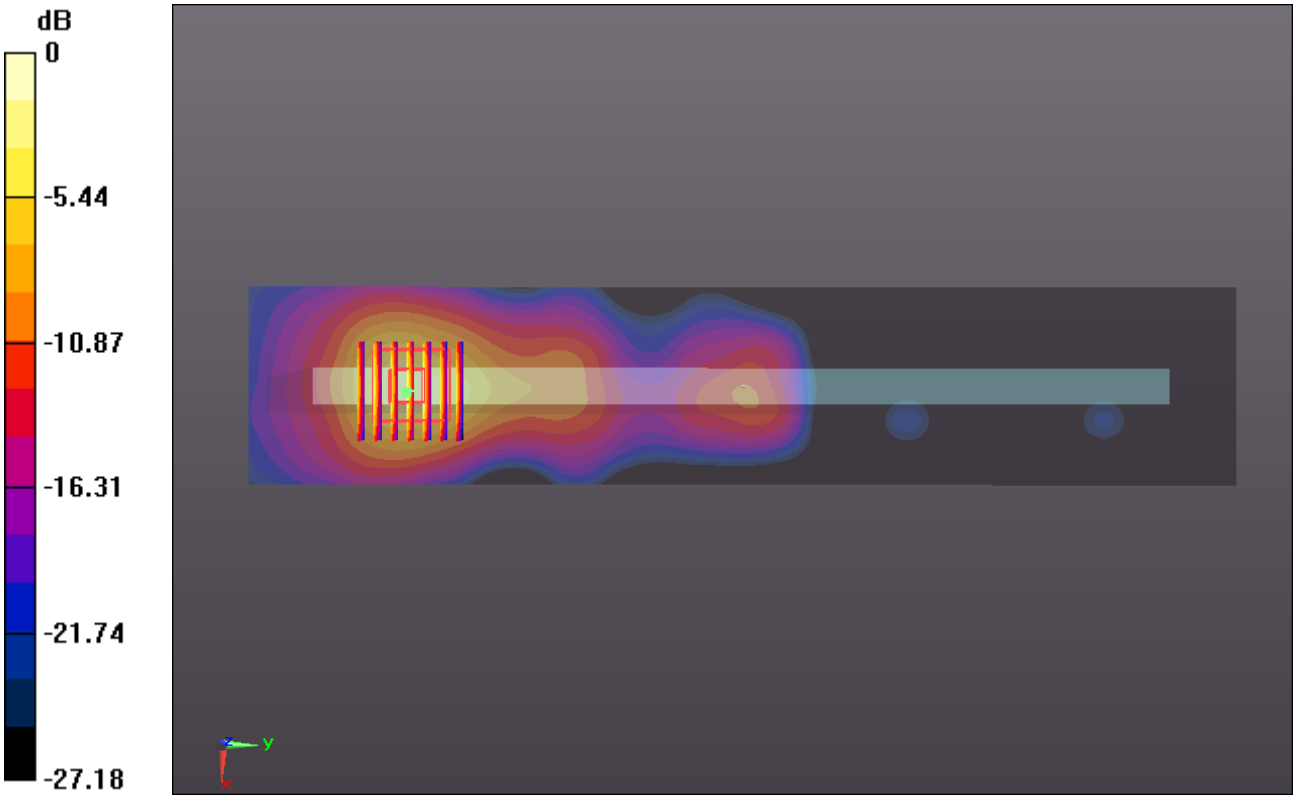
#65_WLAN 2.4GHz_802.11b_Edge1 0cm_Ch6

Communication System: WIFI; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: MSL_2450_130929 Medium parameters used: f = 2437 MHz; σ = 1.921 mho/m; ε_r = 50.978; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7, 7, 7); Calibrated: 2013.06.20
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2013.06.19
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.4.5 (3634)

Ch6/Area Scan (51x251x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.574 mW/g

Ch6/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.690 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.311 W/kg
SAR(1 g) = 0.632 mW/g; SAR(10 g) = 0.283 mW/g
Maximum value of SAR (measured) = 0.937 mW/g



0 dB = 0.940mW/g