FCC SAR Test Report

APPLICANT	:	**ZTE CORPORATION**
EQUIPMENT	:	**HSPA+ uFi**
BRAND NAME	:	**ZTE**
MODEL NAME	:	**MF65, ZTE MF65**
FCC ID	:	**SRQZTEMF65**
STANDARD	:	**FCC 47 CFR Part 2 (2.1093)**
		ANSI/IEEE C95.1-1992
		IEEE 1528-2003
		FCC OET Bulletin 65 Supplement C (Edition 01-01)

The product was completely tested on Jun. 19, 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 (KUNSHAN) INTERNATIONAL INC., the test report shall not be reproduced except in full.

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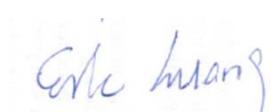
Reviewed by: Eric Huang / Deputy Manager

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Approved by: Jones Tsai / Manager

Testing Laboratory 2627

SPORTON INTERNATIONAL (KUNSHAN) INC.
No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA350802	Rev. 01	Initial issue of report	Jul. 04, 2013

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1. *Statement of Compliance*

The maximum results of Specific Absorption Rate (SAR) found during testing for **ZTE CORPORATION , DUT:**

HSPA+ uFi, Brand Name: ZTE, Model Name: MF65, ZTE MF65 , are as follows.

<Highest SAR Summary>

Exposure Position	Frequency Band	Reported 1g-SAR (W/kg)	Equipment Class	Highest Reported 1g-SAR (W/kg)
Hotspot (1cm Gap)	GSM 850	1.20	PCB	1.20
	GSM 1900	0.76		
	WCDMA Band V	0.89		
	WCDMA Band II	1.13		
	WLAN 2.4GHz Band	0.23	DTS	0.23

<Highest Simultaneous transmission SAR>

Frequency Band	Equipment Class	Exposure Position	Highest Reported Simultaneous Transmission 1g-SAR (W/kg)
GSM850	PCB	Hotspot	1.43
WLAN 2.4GHz Band	DTS		

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 and FCC OET Bulletin 65 Supplement C (Edition 01-01).

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

2.3 *Manufacturer*

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

2.4 *Application Details*

Date of Start during the Test	Jun. 18, 2013
Date of End during the Test	Jun. 19, 2013

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3. *General Information*

3.1 *Description of Equipment Under Test (EUT)*

Product Feature & Specification	
EUT	HSPA+ uFi
Brand Name	ZTE
Model Name	MF65, ZTE MF65
FCC ID	SRQZTEMF65
IMEI	867307011041739
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz
Type of Modulations	GPRS: GMSK EDGE: GMSK / 8PSK WCDMA(Rel 99): QPSK (Uplink) HSDPA(Rel 7): QPSK (Uplink) HSUPA(Rel 6): QPSK (Uplink) HSPA+(Rel 7): 16QAM(Uplink) 802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
Antenna Type	WWAN: PCB Antenna WLAN: PCB Antenna
HW Version	dcjA
SW Version	EN_ZTE_HDV6MF65V2.0.0B01
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.	

3.2 Maximum RF output power among production units

Mode	GSM 850	GSM 1900
	Average power(dBm)	
GPRS (GMSK, 1 Tx slot)	32	28.5
GPRS (GMSK, 2 Tx slot)	29.5	27.5
EDGE (GMSK, 1 Tx slot)	32	28.5
EDGE (GMSK, 2 Tx slots)	29.5	27
EDGE (GMSK, 3 Tx slots)	27.5	25
EDGE (GMSK, 4 Tx slots)	26.5	24
EDGE (8PSK, 1 Tx slot)	27.5	26
EDGE (8PSK, 2 Tx slots)	25	23.5
EDGE (8PSK, 3 Tx slots)	23	22
EDGE (8PSK, 4 Tx slots)	21.5	20.5

Mode	Average power(dBm)	
	WCDMA Band V	WCDMA Band II
RMC 12.2Kbps	21.5	21.5
HSDPA Subtest-1	21.5	21.5
HSDPA Subtest-2	21.5	21
HSDPA Subtest-3	21.5	21
HSDPA Subtest-4	21.5	21
HSUPA Subtest-1	20.5	20.5
HSUPA Subtest-2	19.5	19
HSUPA Subtest-3	20.5	19.5
HSUPA Subtest-4	19	19
HSUPA Subtest-5	21	21
HSPA+ (16QAM) Subtest-1	21	21

Average power (dBm)				
Mode / Band	IEEE 802.11			
	a	b	g	n-HT20
WLAN 2.4GHz		14	12	13

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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 OET Bulletin 65 Supplement C (Edition 01-01)
- FCC KDB 447498 D01 v05r01
- FCC KDB 248227 D01 v01r02
- FCC KDB 941225 D01 v02
- FCC KDB 941225 D02 v02r02
- FCC KDB 941225 D03 v01
- FCC KDB 941225 D06 v01r01
- FCC KDB 865664 D01 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.

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
Duty factor observed as below:
For WLAN SAR testing, WLAN engineering testing software installed on the EUT can provide continuous transmitting RF signal.

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:

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

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

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

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

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

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

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.

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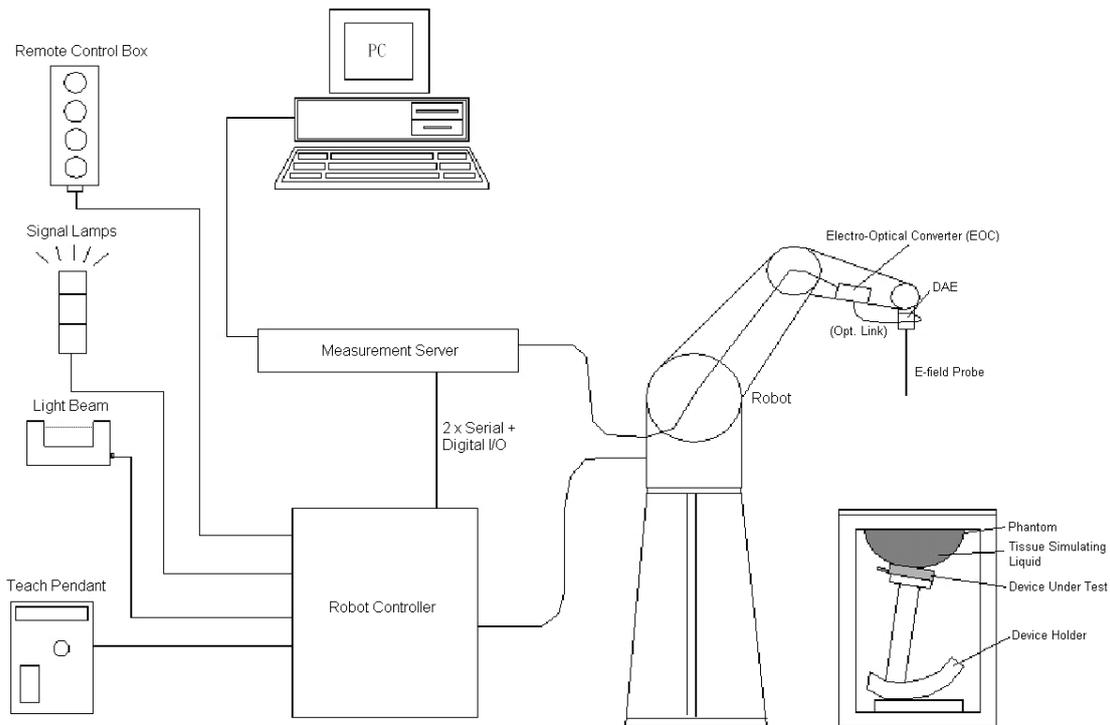Report Version   : Rev. 01

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>

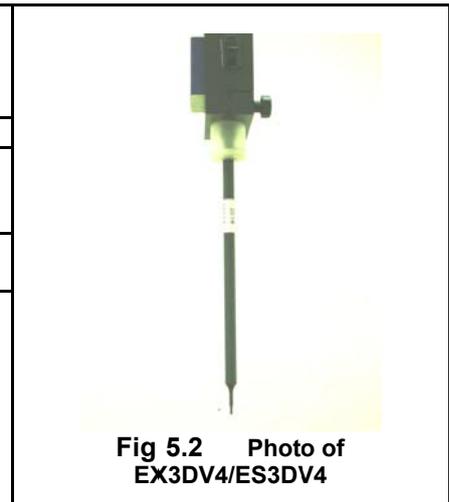| Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz to 6 GHz; Linearity: ± 0.2 dB	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation 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/ES3DV4**

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

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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 (Intel Pentium; 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

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5.5 *Phantom*

<SAM Twin Phantom>

Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm	
Filling Volume	Approx. 25 liters	
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet	
Measurement Areas	Left Hand, Right Hand, Flat Phantom	**Fig 5.6 Photo of SAM Phantom**
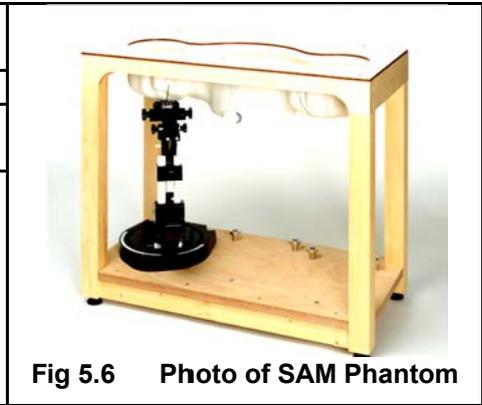
The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

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

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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：

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

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：

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

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

with V_i = compensated signal of channel i, (i = x, y, z)
              $Norm_i$ = sensor sensitivity of channel i, (i = x, y, z), $\mu V/(V/m)^2$ 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)：

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

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

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

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	1900MHz System Validation Kit	D1900V2	5d118	Nov. 21, 2011	Nov. 16, 2013
SPEAG	2450MHz System Validation Kit	D2450V2	736	Jul. 25, 2011	Jul. 24, 2013
SPEAG	Data Acquisition Electronics	DAE4	679	Jan. 16, 2013	Jan. 15, 2014
SPEAG	Dosimetric E-Field Probe	EX3DV4	3820	Dec.10,2012	Dec.09,2013
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1477	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1479	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Agilent	Wireless Communication Test Set	E5515C	MY48367160	Oct. 25, 2012	Oct. 24, 2013
R&S	Universal Radio Communication Tester	CMU200	116456	Sep. 19, 2012	Sep. 18, 2013
Agilent	ENA Series Network Analyzer	E5071C	MY46106933	Aug. 31, 2012	Aug. 30, 2013
Agilent	Dielectric Probe Kit	85070E	MY44300475	NCR	NCR
R&S	Signal Generator	SMR40	100455	Jan. 18, 2013	Jan. 17, 2014
AR	Amplifier	551G4	333096	NCR	NCR
Agilent	Power Meter	E4416A	MY45101555	Aug. 22, 2012	Aug. 21, 2013
Agilent	Power Sensor	E9327A	MY44421198	Aug. 22, 2012	Aug. 21, 2013
ARRA	Power Divider	A3200-2	N/A	NA	NA
MCL	Attenuation	BW-S10W5	N/A	NA	NA
R&S	Spectrum Analyzer	FSP30	101399	May. 23, 2013	May. 22, 2014
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	
Agilent	Dielectric Probe Kit	85070D	US01440205	Note 5	
AR	Power Amplifier	5S1G4M2	328767	Note 6	

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 D01v01, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.
3. The justification data of dipole D835V2, SN: 4d091, D1900V2, SN: 5d118, D2450V2, SN: 736, 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. The dielectric probe kit was calibrated via the network analyzer, with the specified procedure (calibrated in pure water) and calibration kit (standard) short circuit, before the dielectric measurement. The specific procedure and calibration kit are provided by Agilent.
6. 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
7. 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 head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 6.1. 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. 6.2.

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 (εr)
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 85070D Dielectric Probe Kit and an Agilent Network Analyzer.

The following table shows the measuring results for simulating liquid.

Frequency (MHz)	Liquid Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (εr)	Conductivity Target (σ)	Permittivity Target (εr)	Delta (σ) (%)	Delta (εr) (%)	Limit (%)	Date
835	Body	21.2	0.979	54.092	0.97	55.2	0.93	-2.01	±5	Jun. 18, 2013
1900	Body	21.5	1.55	53.153	1.52	53.3	1.97	-0.28	±5	Jun. 18, 2013
2450	Body	21.3	1.955	51.529	1.95	52.7	0.26	-2.22	±5	Jun. 19, 2013

Table 6.2 Measuring Results for Simulating Liquid

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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:
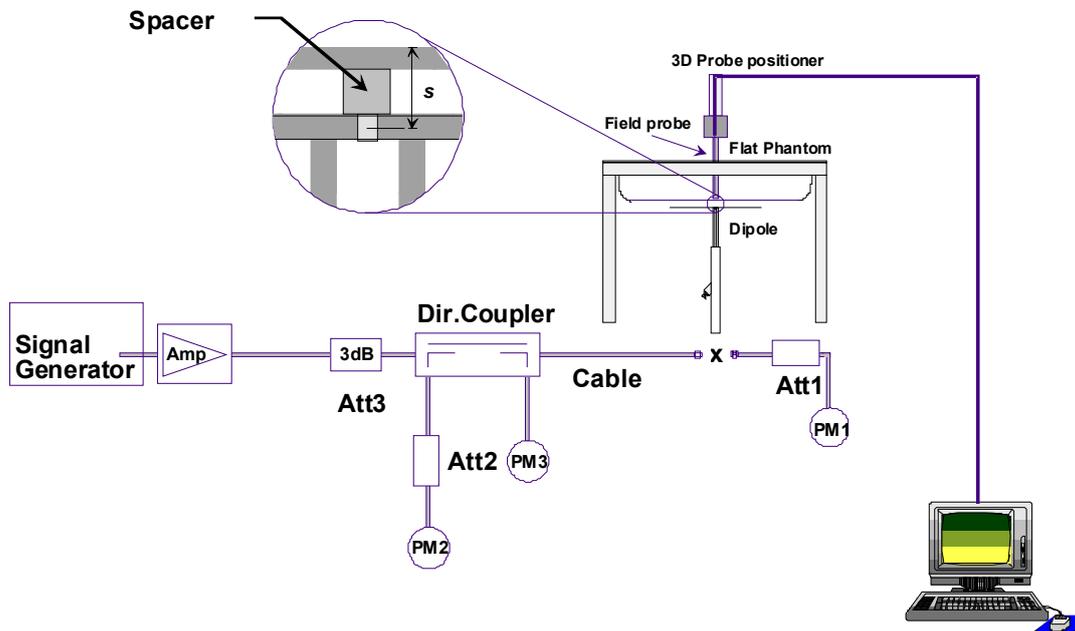
Fig 7.1 System Setup for System Evaluation

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 (%)
Jun. 18, 2013	835	Body	250	9.42	2.36	9.44	0.21
Jun. 18, 2013	1900	Body	250	41.8	11	44	5.26
Jun. 19, 2013	2450	Body	250	52.3	12.8	51.2	-2.10

Table 7.1 Target and Measurement SAR after Normalized

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8. *EUT Testing Position*

This EUT was tested in six different positions. They are Front/Back/Right Side/Left Side/Top Side/Bottom Side of the EUT with phantom 1 cm gap, as illustrated below, please refer to Appendix D for the test setup photos.

8.1 *Hotspot Position*

(a) To position the device parallel to the phantom surface with all sides.

(b) To adjust the device parallel to the flat phantom.

(c) To adjust the distance between the device and the flat phantom to 1.0cm.

<EUT Setup Photos>

Please refer to Appendix D for the test setup photos.

9. *Measurement Procedures*

The measurement procedures are as follows:

<u>Conducted power measurement</u>
(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 power measurement, use engineering software to configure EUT WLAN 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

<u>SAR measurement</u>
(a)   Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN 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 D01v01 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	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location		$30° \pm 1°$	$20° \pm 1°$
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 $\leq$ 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.

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10. Conducted RF Output Power (Unit: dBm)

<GSM Conducted Power>

Note:
1. Per KDB 447498 D01v05r01, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. The EUT do not support DTM function.
3. For hotspot mode SAR testing, GPRS and EDGE should be evaluated, therefore the EUT was set in GPRS 2 Tx slots for GSM850 and GSM1900 due to its highest frame-average power.

Band GSM850	Burst Average Power (dBm)			Frame-Average Power (dBm)		
TX Channel	128	189	251	128	189	251
Frequency (MHz)	824.2	836.4	848.8	824.2	836.4	848.8
GPRS (GMSK, 1 Tx slot) – CS1	31.47	**31.51**	31.43	22.47	22.51	22.43
GPRS (GMSK, 2 Tx slots) – CS1	28.96	29.02	29.00	22.96	**23.02**	23.00
EDGE (GMSK, 1 Tx slot) – MCS1	31.45	31.47	31.35	22.45	22.47	22.35
EDGE (GMSK, 2 Tx slots) – MCS1	28.97	29.00	28.93	22.97	23.00	22.93
EDGE (GMSK, 3 Tx slots) – MCS1	27.14	27.15	27.04	22.88	22.89	22.78
EDGE (GMSK, 4 Tx slots) – MCS1	26.00	26.01	25.88	23.00	23.01	22.88
EDGE (8PSK, 1 Tx slot) – MCS5	27.04	27.09	27.07	18.04	18.09	18.07
EDGE (8PSK, 2 Tx slots) – MCS5	24.57	24.60	24.55	18.57	18.60	18.55
EDGE (8PSK, 3 Tx slots) – MCS5	22.68	22.69	22.65	18.42	18.43	18.39
EDGE (8PSK, 4 Tx slots) – MCS5	20.98	21.13	21.07	17.98	18.13	18.07

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

Band GSM1900	Burst Average Power (dBm)			Frame-Average Power (dBm)		
TX Channel	512	661	810	512	661	810
Frequency (MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8
GPRS (GMSK, 1 Tx slot) – CS1	28.19	28.20	**28.33**	19.19	19.20	19.33
GPRS (GMSK, 2 Tx slots) – CS1	26.70	26.71	26.84	20.70	20.71	**20.84**
EDGE (GMSK, 1 Tx slot) – MCS1	28.12	28.19	28.26	19.12	19.19	19.26
EDGE (GMSK, 2 Tx slots) – MCS1	26.66	26.67	26.80	20.66	20.67	20.80
EDGE (GMSK, 3 Tx slots) – MCS1	24.81	24.80	24.93	20.55	20.54	20.67
EDGE (GMSK, 4 Tx slots) – MCS1	23.64	23.66	23.80	20.64	20.66	20.80
EDGE (8PSK, 1 Tx slot) – MCS5	25.72	25.73	25.84	16.72	16.73	16.84
EDGE (8PSK, 2 Tx slots) – MCS5	23.24	23.24	23.36	17.24	17.24	17.36
EDGE (8PSK, 3 Tx slots) – MCS5	21.34	21.36	21.50	17.08	17.10	17.24
EDGE (8PSK, 4 Tx slots) – MCS5	20.21	20.24	20.37	17.21	17.24	17.37

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

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<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

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

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

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

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

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

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

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

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

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

Setup Configuration

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HSPA+ 3GPP release 7 (uplink category 7) 16QAM, 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 = 5.2E:HSPA+:UL with 16QAM
        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, C11.1.4, quoted from the TS 34.121-1 s5.2E
        iii.   Set Channel Parms
        iv.   Set Cell Power = -86 dBm
        v.   Set Channel Type = HSPA
        vi.   Set UE Target Power =21 dBm
        vii.   Power Ctrl Mode= All Up Bits
        viii.   Set Manual Uplink DPCH Bc/Bd = Manual
        ix.   Set Manual Uplink DPCH Bc and Bd=15,15(for 34.121-1 v8.10.0 table C11.1.4 sub-test 1)
        x.   Set HSPA Conn DL Channel Levels
        xi.   Set HS-SCCH Configs
        xii.   Set RB Test Mode Setup
        xiii.   Set Common HSUPA Parameters
        xiv.   Set Serving Grant
        xv.   Confirm that E-TFCI is equal to the target E-TFCI of 105 for sub-test 1, and other subtest's E-TFCI
    d.   The transmitted maximum output power was recorded.

Table C.11.1.4: β values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM

Sub-test	β_c (Note3)	β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed}1: 30/15 β_{ed}2: 30/15	β_{ed}3: 24/15 β_{ed}4: 24/15	3.5	2.5	14	105	105

Note 1:	Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with $\beta_{hs} = 30/15 * \beta_c$.
Note 2:	CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).
Note 3:	DPDCH is not configured, therefore the β_c is set to 1 and β_d = 0 by default.
Note 4:	β_{ed} can not be set directly; it is set by Absolute Grant Value.
Note 5:	All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signaled to use the extrapolation algorithm.

Setup Configuration

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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, and the subtest setup in Table C.11.1.4 to Rel. 7 HSPA+.
2. By design, HSDPA/HSUPA and HSPA+ (16QAM in uplink) RF power will not be larger than RMC 12.2kbps., detailed information is included in Tune-up Procure exhibit.
3. It is expected by the manufacturer that MPR for some HSDPA/HSUPA, HSPA+ (16QAM in uplink) 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.

Band		WCDMA V			WCDMA II		
TX Channel		**4132**	**4182**	**4233**	**9262**	**9400**	**9538**
Rx Channel		**4357**	**4407**	**4458**	**9662**	**9800**	**9938**
Frequency (MHz)		**826.4**	**836.4**	**846.6**	**1852.4**	**1880**	**1907.6**
3GPP Rel 99	**RMC 12.2Kbps**	21.11	21.13	21.06	20.93	20.91	21.07
3GPP Rel 6	**HSDPA Subtest-1**	21.07	20.93	20.91	20.63	20.42	20.54
3GPP Rel 6	**HSDPA Subtest-2**	21.00	20.93	20.89	20.48	20.39	20.53
3GPP Rel 6	**HSDPA Subtest-3**	21.05	21.06	20.98	20.55	20.41	20.62
3GPP Rel 6	**HSDPA Subtest-4**	21.02	21.04	20.97	20.51	20.34	20.59
3GPP Rel 6	**HSUPA Subtest-1**	20.36	20.49	20.27	20.38	20.36	20.47
3GPP Rel 6	**HSUPA Subtest-2**	19.07	19.22	19.10	18.74	18.70	18.80
3GPP Rel 6	**HSUPA Subtest-3**	20.09	19.95	19.95	19.40	19.32	19.42
3GPP Rel 6	**HSUPA Subtest-4**	18.78	18.67	18.67	18.50	18.49	18.56
3GPP Rel 6	**HSUPA Subtest-5**	20.82	20.86	20.67	20.62	20.60	20.59
3GPP Rel 7	**HSPA+ (16QAM) Subtest-1**	20.68	20.74	20.44	20.50	20.48	20.49

3GPP MPR specification	MPR result	WCDMA V			WCDMA II		
0	**HSDPA Subtest-1**	0.00	0.00	0.00	0.00	0.00	0.00
0	**HSDPA Subtest-2**	0.07	0.00	0.02	0.15	0.03	0.01
≦0.5	**HSDPA Subtest-3**	0.02	-0.13	-0.07	0.08	0.01	-0.08
≦0.5	**HSDPA Subtest-4**	0.05	-0.11	-0.06	0.12	0.08	-0.05
≦0	**HSUPA Subtest-1**	0.46	0.37	0.40	0.24	0.24	0.12
≦2	**HSUPA Subtest-2**	1.75	1.64	1.57	1.88	1.90	1.79
≦1	**HSUPA Subtest-3**	0.73	0.91	0.72	1.22	1.28	1.17
≦2	**HSUPA Subtest-4**	2.04	2.19	2.00	2.12	2.11	2.03
≦0	**HSUPA Subtest-5**	0.00	0.00	0.00	0.00	0.00	0.00
≦2.5	**HSPA+ (16QAM) Subtest-1**	0.14	0.12	0.23	0.12	0.12	0.10

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<WLAN 2.4GHz Conducted Power>

802.11b Average Power (dBm)					
Channel	**Frequency (MHz)**	**Data Rate (bps)**			
		1M bps	**2M bps**	**5.5M bps**	**11M bps**
CH 01	2412	12.05	11.25	10.47	9.55
CH 06	2437	13.39	13.37	12.90	12.06
CH 11	2462	13.75	13.47	12.71	11.94

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	10.92	10.39	10.30	10.01	9.68	9.56	9.33	9.01
CH 06	2437	11.95	11.76	11.43	10.54	10.49	10.41	10.25	9.76
CH 11	2462	11.23	11.08	10.99	10.61	10.22	10.01	9.94	9.75

WLAN 2.4GHz Band 802.11n-HT20 Average Power (dBm)									
Channel	**Frequency (MHz)**	**Data Rate (bps)**							
		MCS0	**MCS1**	**MCS2**	**MCS3**	**MCS4**	**MCS5**	**MCS6**	**MCS7**
CH 01	2412	10.91	10.64	10.46	9.83	9.67	9.41	9.32	9.05
CH 06	2437	12.84	12.71	12.33	12.26	12.27	11.90	11.73	11.46
CH 11	2462	11.61	11.41	11.17	11.02	10.83	10.45	10.29	10.01

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 and 11n-HT20 output power is less than 1/4dB higher than 11b mode, thus the SAR can be excluded.

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11. *DUT Antenna Location*

Top Side

WWAN Main Antenna <Tx/Rx>

Length: 10.2 cm

0.3cm

0.5cm

0.4cm

8.6cm

6.6cm

8.2cm

Right Side

Left Side

WLAN Antenna <Tx/Rx>

0.6cm

0.5cm

2.8cm

Width: 5.0 cm

Bottom Side

Back View
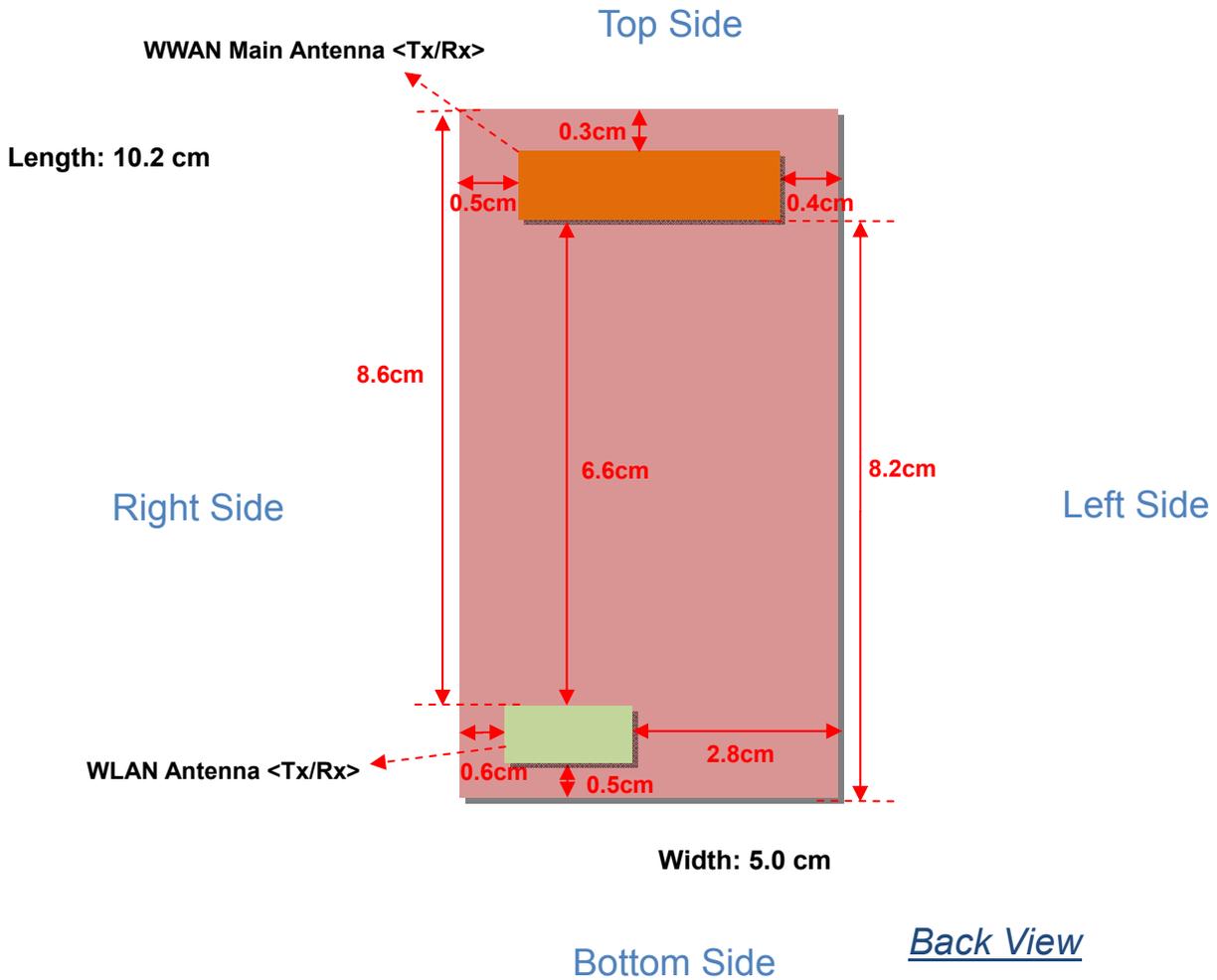
Antennas	Wireless Interface
WWAN Main Antenna (Tx / Rx)	GSM850 GSM1900 WCDMA Band V WCDMA Band II
WLAN Antenna (Tx / Rx)	WLAN 2.4GHz

Distance of the Antenna to the EUT surface/edge						
Antennas	**Back**	**Front**	**Top Side**	**Bottom Side**	**Right Side**	**Left Side**
WWAN Main	≤ 25mm	≤ 25mm	≤ 25mm	82mm	≤ 25mm	≤ 25mm
WLAN	≤ 25mm	≤ 25mm	86mm	≤ 25mm	≤ 25mm	28mm

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Positions for SAR tests; Hotspot mode Test distance: 10 mm						
Antennas	**Back**	**Front**	**Top Side**	**Bottom Side**	**Right Side**	**Left Side**
WWAN Main	Yes	Yes	Yes	NO	Yes	Yes
WLAN	Yes	Yes	NO	Yes	Yes	NO

1. Hotspot mode SAR assessments are required.
2. Referring to KDB 941225 D06 v01, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.

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12. SAR Test Results

Note:

1. Per KDB 447498 D01v05r01, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.

   Scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.

   Reported SAR(W/kg)= Measured SAR(W/kg) 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. Additional WLAN SAR testing was performed for simultaneous transmission analysis

4. For Hotspot SAR testing, per KDB 941225 D06, for EUT dimension ≥ 9cm*5cm, the test distance is 1cm. SAR must be measured for all surfaces and sides with a transmitting antenna located within 2.5cm from that surface or edge.

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12.1 Test Records for Hotspot SAR Test

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured SAR 1g (W/kg)	Reported SAR 1g (W/kg)
1	GSM850	GPRS (2 Tx slots)	Front	1	189	836.4	29.02	29.5	1.117	0.03	1.03	1.150
2	GSM850	GPRS (2 Tx slots)	Back	1	189	836.4	29.02	29.5	1.117	-0.06	0.688	0.768
3	GSM850	GPRS (2 Tx slots)	Left Side	1	189	836.4	29.02	29.5	1.117	-0.05	0.439	0.490
4	GSM850	GPRS (2 Tx slots)	Right Side	1	189	836.4	29.02	29.5	1.117	0.08	0.533	0.595
5	GSM850	GPRS (2 Tx slots)	Top Side	1	189	836.4	29.02	29.5	1.117	-0.15	0.057	0.064
6	GSM850	GPRS (2 Tx slots)	Front	1	128	824.2	28.96	29.5	1.132	-0.0071	0.916	1.037
7	GSM850	GPRS (2 Tx slots)	Front	1	251	848.8	29.00	29.5	1.122	0.03	1.07	1.201
8	GSM1900	GPRS (2 Tx slots)	Front	1	810	1909.8	26.84	27.5	1.164	-0.18	0.655	0.763
9	GSM1900	GPRS (2 Tx slots)	Back	1	810	1909.8	26.84	27.5	1.164	0.008	0.431	0.502
10	GSM1900	GPRS (2 Tx slots)	Left Side	1	810	1909.8	26.84	27.5	1.164	0.08	0.217	0.253
11	GSM1900	GPRS (2 Tx slots)	Right Side	1	810	1909.8	26.84	27.5	1.164	0.02	0.132	0.154
12	GSM1900	GPRS (2 Tx slots)	Top Side	1	810	1909.8	26.84	27.5	1.164	-0.02	0.38	0.442

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured SAR 1g (W/kg)	Reported SAR 1g (W/kg)
13	WCDMA band V	RMC12.2Kbps	Front	1	4182	836.4	21.13	21.5	1.089	-0.04	0.814	0.886
14	WCDMA band V	RMC12.2Kbps	Back	1	4182	836.4	21.13	21.5	1.089	-0.0053	0.642	0.699
15	WCDMA band V	RMC12.2Kbps	Left Side	1	4182	836.4	21.13	21.5	1.089	0.03	0.441	0.480
16	WCDMA band V	RMC12.2Kbps	Right Side	1	4182	836.4	21.13	21.5	1.089	0.01	0.474	0.516
17	WCDMA band V	RMC12.2Kbps	Top Side	1	4182	836.4	21.13	21.5	1.089	-0.05	0.035	0.038
18	WCDMA band V	RMC12.2Kbps	Front	1	4132	826.4	21.11	21.5	1.094	0.03	0.756	0.827
19	WCDMA band V	RMC12.2Kbps	Front	1	4233	846.6	21.06	21.5	1.107	0.04	0.799	0.884
20	WCDMA band II	RMC12.2Kbps	Front	1	9538	1907.6	21.07	21.5	1.104	-0.08	0.932	1.029
21	WCDMA band II	RMC12.2Kbps	Back	1	9538	1907.6	21.07	21.5	1.104	0.05	0.619	0.683
22	WCDMA band II	RMC12.2Kbps	Left Side	1	9538	1907.6	21.07	21.5	1.104	-0.04	0.343	0.379
23	WCDMA band II	RMC12.2Kbps	Right Side	1	9538	1907.6	21.07	21.5	1.104	-0.01	0.207	0.229
24	WCDMA band II	RMC12.2Kbps	Top Side	1	9538	1907.6	21.07	21.5	1.104	-0.02	0.397	0.438
25	WCDMA band II	RMC12.2Kbps	Front	1	9262	1852.4	20.93	21.5	1.140	-0.18	0.817	0.932
26	WCDMA band II	RMC12.2Kbps	Front	1	9400	1880	20.91	21.5	1.146	-0.03	0.99	1.134

Note:

1. Per KDB 941225 D02v02r02, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA/HSUPA, HSPA+ (16QAM in uplink) output power is < 0.25dB higher than RMC, or reported SAR with RMC 12.2kbps setting is ≤ 1.2W/kg, HSDPA/HSUPA and HSPA+ (16QAM in uplink) SAR evaluation can be excluded.

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<WLAN2.4GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Data Rate (bps)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured SAR 1g (W/kg)	Reported SAR 1g (W/kg)
29	**WLAN 2.4GHz**	**802.11b**	**Front**	**1**	**11**	**2462**	**1M**	**13.75**	**14**	**1.059**	**0.07**	**0.219**	**0.232**
30	WLAN 2.4GHz	802.11b	Back	1	11	2462	1M	13.75	14	1.059	0.043	0.149	0.158
31	WLAN 2.4GHz	802.11b	Right Side	1	11	2462	1M	13.75	14	1.059	-0.09	0.11	0.117
32	WLAN 2.4GHz	802.11b	Bottom Side	1	11	2462	1M	13.75	14	1.059	-0.04	0.06	0.064

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12.2 *Repeated SAR Measurement*

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR$_{1g}$ (W/kg)	Reported SAR$_{1g}$ (W/kg)
7	GSM850	GPRS (2 Tx slots)	Front	1	251	848.8	29	29.5	1.122	0.03	1.07	1.201
27	GSM850	GPRS (2 Tx slots)	Front	1	251	848.8	29	29.5	1.122	0.01	1.06	1.189
26	WCDMA band II	RMC12.2Kbps	Front	1	9400	1880	20.91	21.5	1.146	-0.03	0.99	1.134
28	WCDMA band II	RMC12.2Kbps	Front	1	9400	1880	20.91	21.5	1.146	-0.16	0.964	1.104

Note:

1. Per KDB 865664 D01v01, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg

2. Per KDB 865664 D01v01, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR <1.45W/kg, only one repeated measurement is required.

3. The ratio is the difference in percentage between original and repeated *measured SAR*.

4. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

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12.3 *Highest SAR Plot*

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab　　　　Date: 2013-6-18

#07_GSM850_GPRS (2 Tx slots)_Front 1cm_Ch251

DUT: 350802

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 848.8 MHz;Duty Cycle: 1:4
Medium: MSL_835_130618 Medium parameters used: f = 849 MHz; σ = 0.993 mho/m; ε_r = 53.932;

ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(9.07, 9.07, 9.07); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch251/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.249 mW/g

Ch251/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 32.200 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.420 W/kg
SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.772 mW/g
Maximum value of SAR (measured) = 1.267 mW/g

0 dB = 1.270mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab   Date: 2013-6-18

#08_GSM1900_GPRS (2 Tx slots)_Front 1cm_Ch810

DUT: 350802

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 1909.8 MHz;Duty Cycle: 1:4
Medium: MSL_1900_130618 Medium parameters used: f = 1910 MHz; σ = 1.561 mho/m; ε_r =

53.121; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(7.3, 7.3, 7.3); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch810/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.904 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.680 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 1.101 W/kg
SAR(1 g) = 0.655 mW/g; SAR(10 g) = 0.377 mW/g
Maximum value of SAR (measured) = 0.853 mW/g

0 dB = 0.850mW/g

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Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab   Date: 2013-6-18

#13_WCDMA band V_RMC12.2Kbps_Front 1cm_Ch4182

DUT: 350802

Communication System: UMTS; Frequency: 836.4 MHz; Duty Cycle: 1:1
Medium: MSL_835_130618 Medium parameters used: $f = 836.4$ MHz; $\sigma = 0.98$ mho/m; $\varepsilon_r \approx$

54.077; $\rho = 1000$ kg/m^3
Ambient Temperature : 23.3 ℃; Liquid Temperature : 21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(9.07, 9.07, 9.07); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch4182/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.956 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.804 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.088 W/kg
SAR(1 g) = 0.814 mW/g; SAR(10 g) = 0.585 mW/g
Maximum value of SAR (measured) = 0.962 mW/g

0 dB = 0.960mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab   Date: 2013-6-18

#26_WCDMA band II_RMC12.2Kbps_Front 1cm_Ch9400

DUT: 350802

Communication System: UMTS; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130618 Medium parameters used: f = 1880 MHz; σ = 1.526 mho/m; ε_r =

53.206; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(7.3, 7.3, 7.3); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch9400/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.356 mW/g

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.036 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.649 W/kg
SAR(1 g) = 0.990 mW/g; SAR(10 g) = 0.571 mW/g
Maximum value of SAR (measured) = 1.307 mW/g

0 dB = 1.310mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab   Date: 2013-6-19

#29_802.11b_1M_Front 1cm_Ch11

DUT: 350802

Communication System: WIFI; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: MSL_2450_130619 Medium parameters used: f = 2462 MHz; σ = 1.971 mho/m; ε_r =

51.475; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(6.84, 6.84, 6.84); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch11/Area Scan (71x121x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.301 mW/g

Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.540 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.438 W/kg
SAR(1 g) = 0.219 mW/g; SAR(10 g) = 0.110 mW/g
Maximum value of SAR (measured) = 0.325 mW/g

0 dB = 0.330mW/g

13. *Simultaneous Transmission Analysis*

NO.	Simultaneous Transmission Configurations	EUT			Note
		Head	Body-worn	Hotspot	
1.	GPRS/EDGE(Data) + WLAN2.4GHz(data)	-	-	Yes	2.4GHz Hotspot
2.	WCDMA(Data) + WLAN2.4GHz(data)	-	-	Yes	2.4GHz Hotspot

Note:
1. EUT will choose either GSM or WCDMA according to the network signal condition; therefore, they will not transmit simultaneously.
2. The Scaled SAR summation is calculated based on the same configuration and test position.
3. 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

13.1 Hotspot Exposure Conditions

< WWAN + WLAN >

Position	WWAN			WLAN		WWAN+WLAN Summation SAR (W/kg)	SPLSR	Case No	Multi-Band Combined SAR (W/kg)
	WWAN Band	Plot No	SAR (W/kg)	Plot No	SAR (W/kg)				
Front	GSM850	#7	1.201	#29	0.232	1.43			
	GSM1900	#8	0.763	#29	0.232	1.00			
	WCDMA V	#13	0.886	#29	0.232	1.12			
	WCDMA II	#26	1.134	#29	0.232	1.37			
Back	GSM850	#2	0.768	#30	0.158	0.93			
	GSM1900	#9	0.502	#30	0.158	0.66			
	WCDMA V	#14	0.699	#30	0.158	0.86			
	WCDMA II	#21	0.683	#30	0.158	0.84			
Left Side	GSM850	#3	0.49			0.49			
	GSM1900	#10	0.253			0.25			
	WCDMA V	#15	0.48			0.48			
	WCDMA II	#22	0.379			0.38			
Right Side	GSM850	#4	0.595	#31	0.117	0.71			
	GSM1900	#11	0.154	#31	0.117	0.27			
	WCDMA V	#16	0.516	#31	0.117	0.63			
	WCDMA II	#23	0.229	#31	0.117	0.35			
Top Side	GSM850	#5	0.064			0.06			
	GSM1900	#12	0.442			0.44			
	WCDMA V	#17	0.038			0.04			
	WCDMA II	#24	0.438			0.44			
Bottom Side	GSM850			#32	0.064	0.06			
	GSM1900			#32	0.064	0.06			
	WCDMA V			#32	0.064	0.06			
	WCDMA II			#32	0.064	0.06			

Test Engineer： Fulu Hu

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 12.1

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

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

(b) κ is the coverage factor

Table 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

SPORTON INTERNATIONAL(KUNSHAN) INC.

TEL : 86-0512-5790-0158

FAX : 86-0512-5790-0958

FCC ID : SRQZTEMF65

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Report Issued Date : Jul. 04, 2013

Report Version   : Rev. 01

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] FCC OET Bulletin 65 (Edition 97-01) Supplement C (Edition 01-01), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields", June 2001

[5] SPEAG DASY System Handbook

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

[7] FCC KDB 447498 D01 v05r01, "Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies", May 2013

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

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

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

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

Appendix A.   Plots of System Performance Check

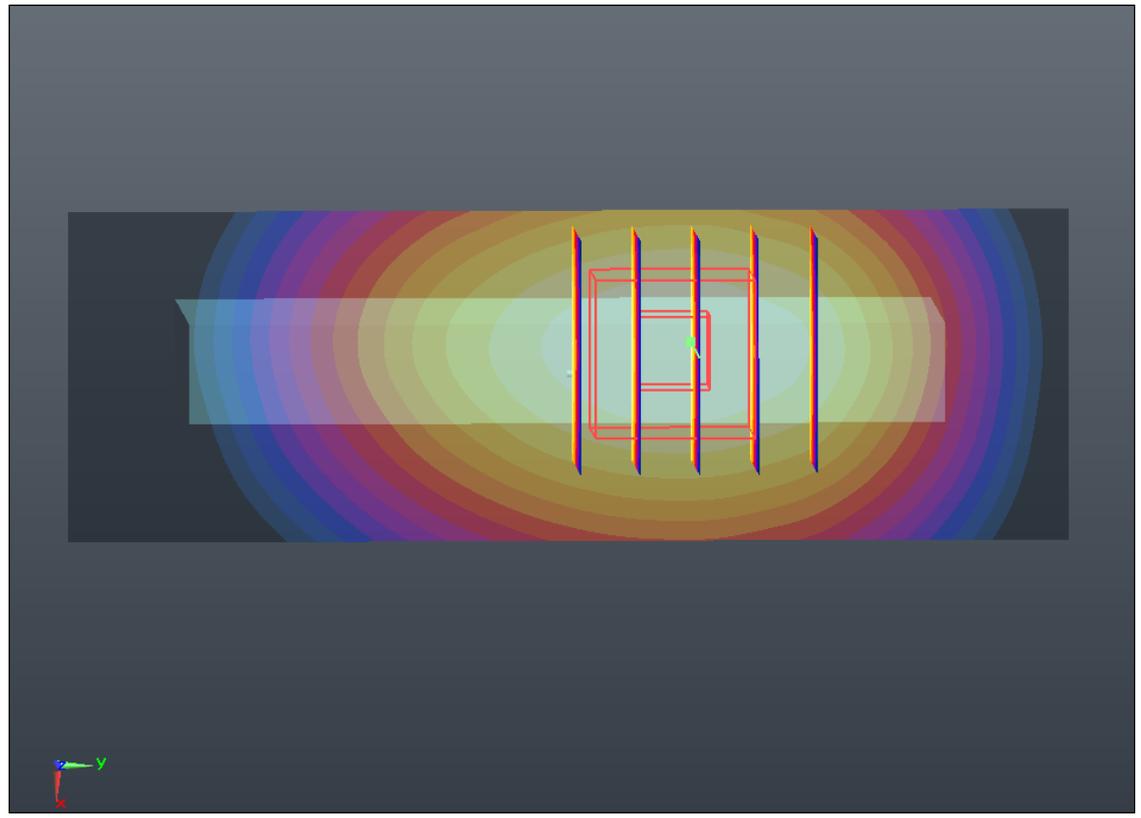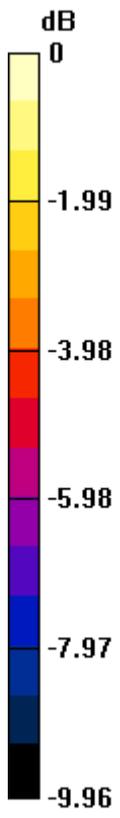The plots are shown as follows.

System Check_Body_835MHz_130618

DUT: D835V2 - SN:4d091
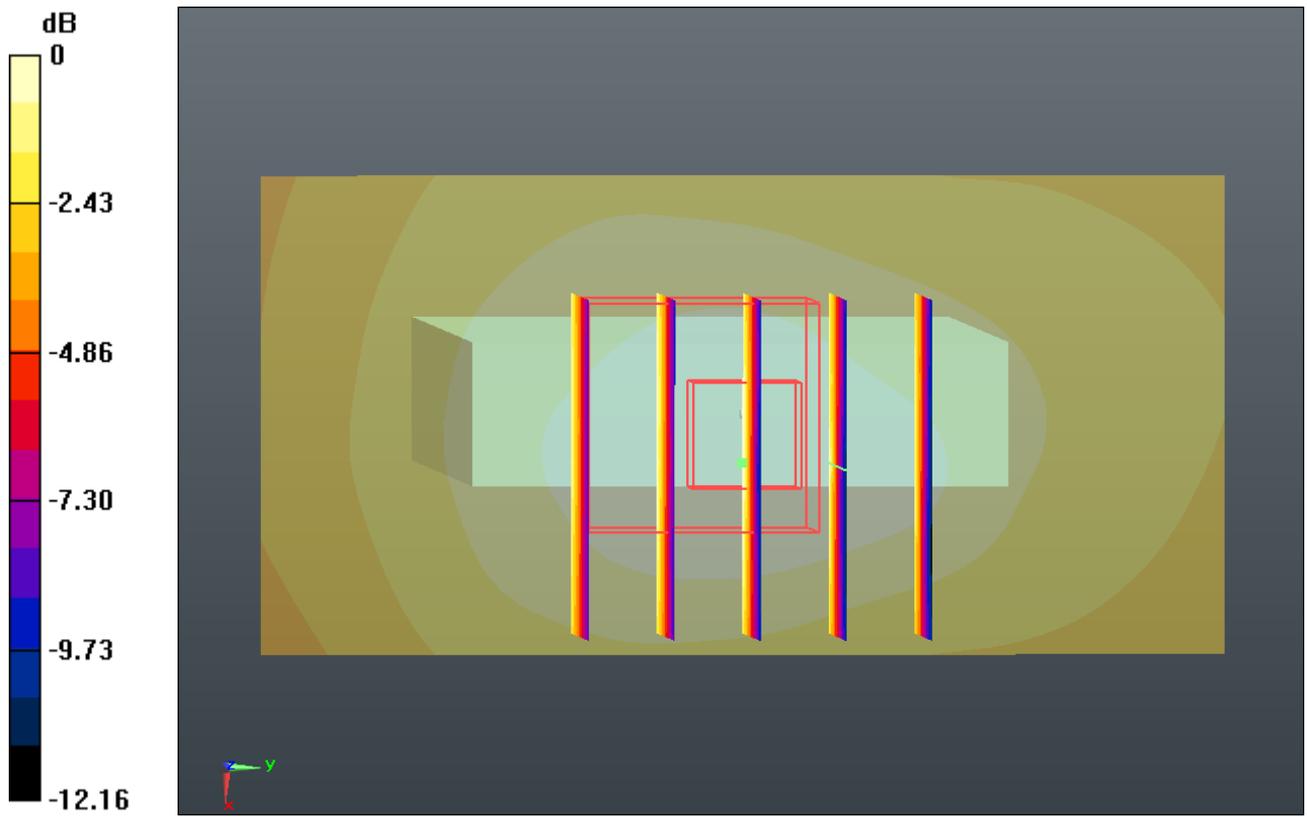
Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_835_130618 Medium parameters used: f = 835 MHz; σ = 0.979 mho/m; ε_r = 54.092;

ρ = 1000 kg/m^3
Ambient Temperature：23.3℃；Liquid Temperature：21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(9.07, 9.07, 9.07); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.964 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 51.298 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 3.433 W/kg
SAR(1 g) = 2.36 mW/g; SAR(10 g) = 1.56 mW/g
Maximum value of SAR (measured) = 2.968 mW/g
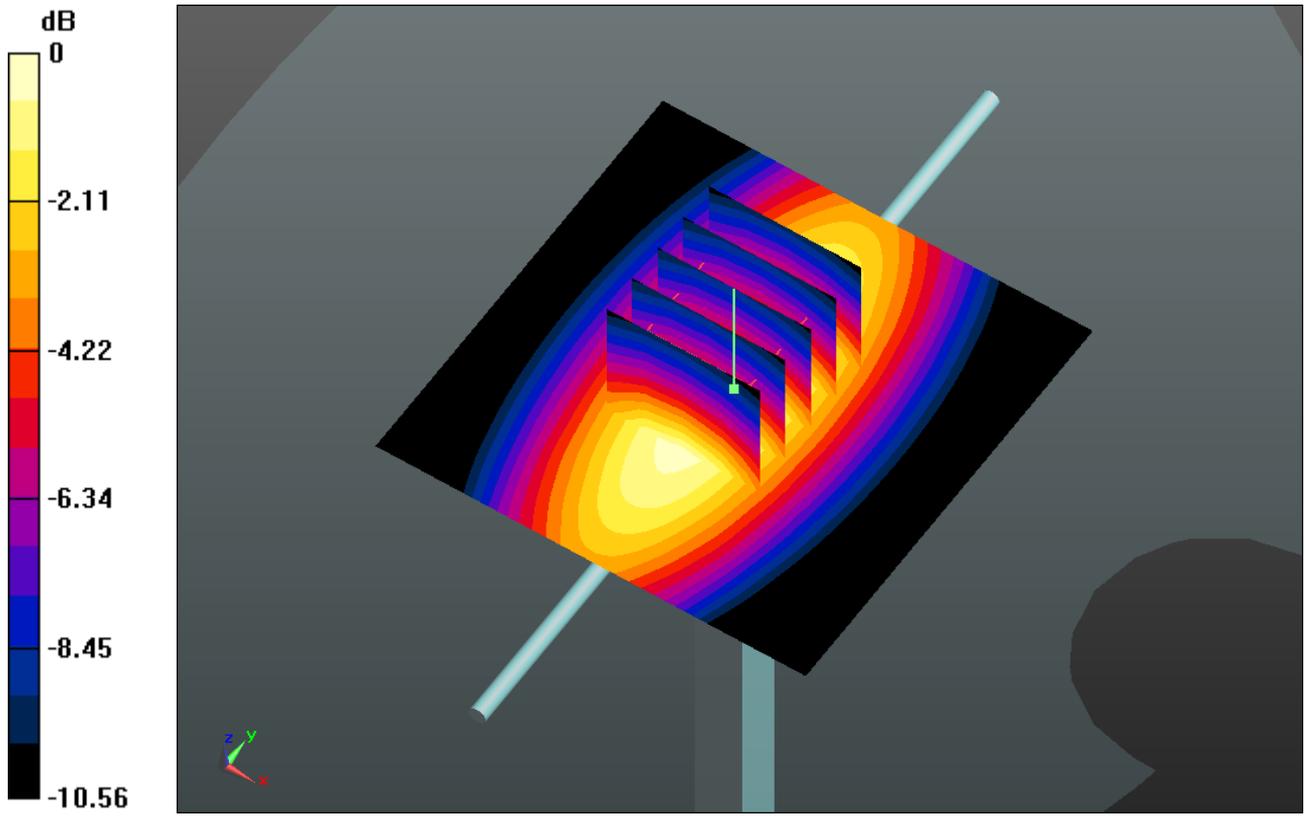
0 dB = 2.970mW/g

System Check_Body_1900MHz_130618

DUT: D1900V2 - SN:5d118

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130618 Medium parameters used: f = 1900 MHz; σ = 1.55 mho/m; ε_r =

53.153; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(7.3, 7.3, 7.3); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 16.948 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 93.882 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 20.962 W/kg
SAR(1 g) = 11 mW/g; SAR(10 g) = 5.75 mW/g
Maximum value of SAR (measured) = 16.960 mW/g
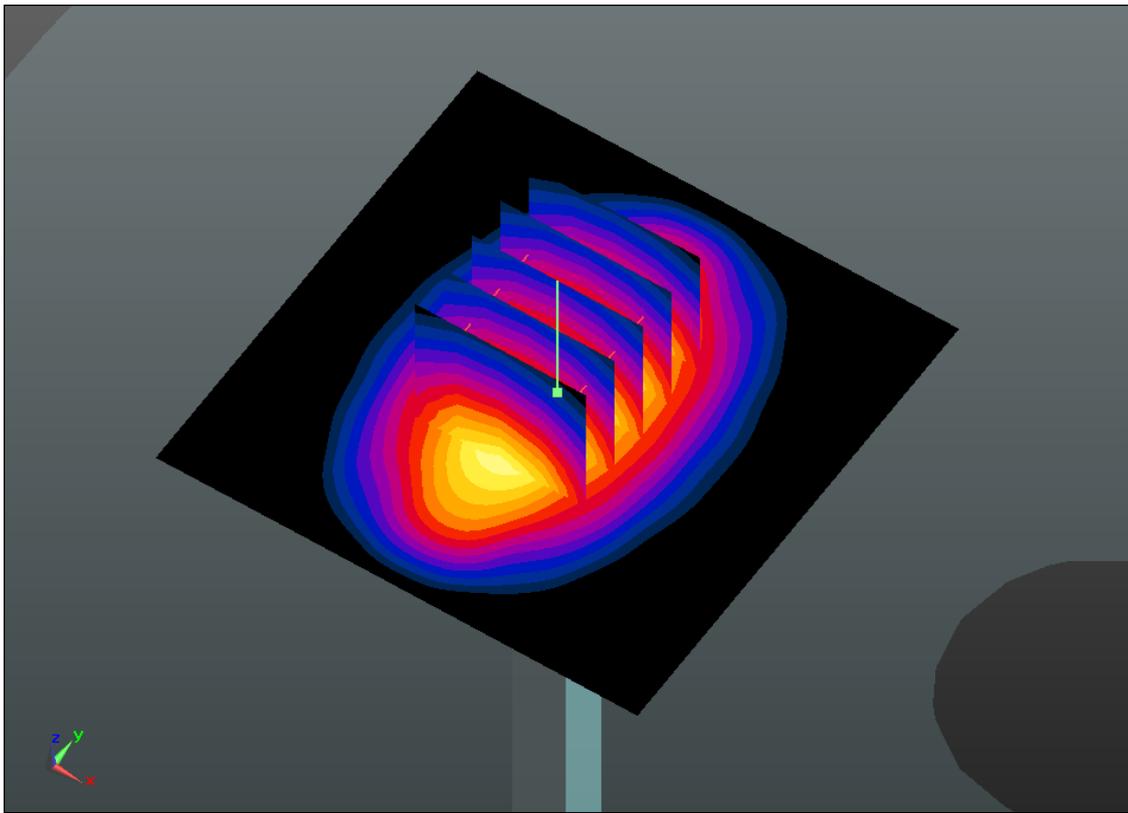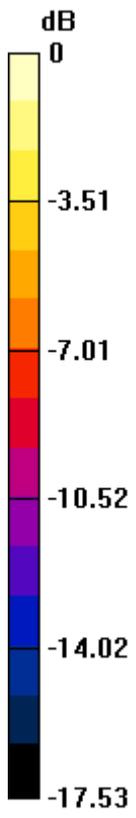
0 dB = 16.960mW/g

System Check_Body_2450MHz_130619

DUT: D2450V2 - SN:736

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL_2450_130619 Medium parameters used: f = 2450 MHz; σ = 1.955 mho/m; ε_r =

51.529; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃；Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(6.84, 6.84, 6.84); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (71x71x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 19.921 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 87.584 V/m; Power Drift = 0.0068 dB
Peak SAR (extrapolated) = 25.629 W/kg
SAR(1 g) = 12.8 mW/g; SAR(10 g) = 5.98 mW/g
Maximum value of SAR (measured) = 19.419 mW/g
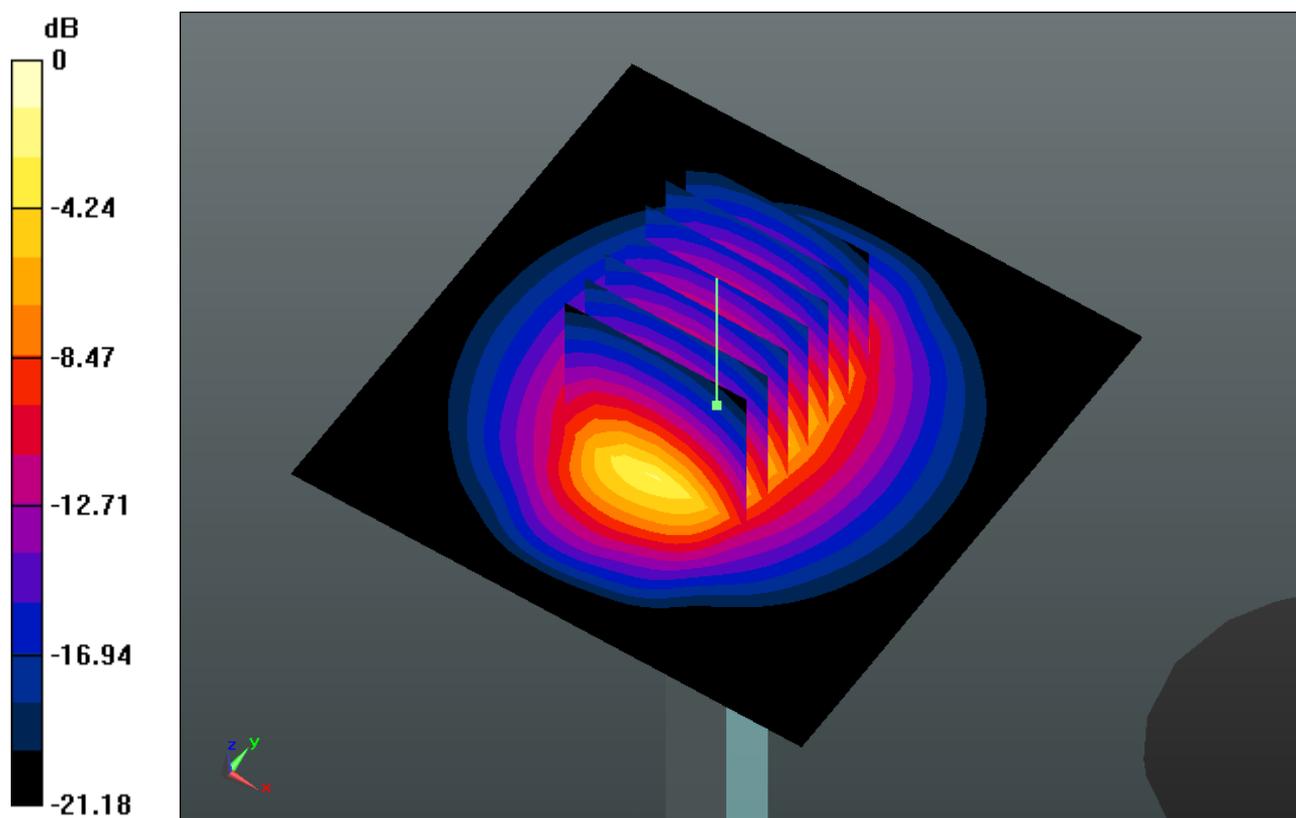
0 dB = 19.420mW/g

Appendix B.   Plots of SAR Measurement

The plots are shown as follows.

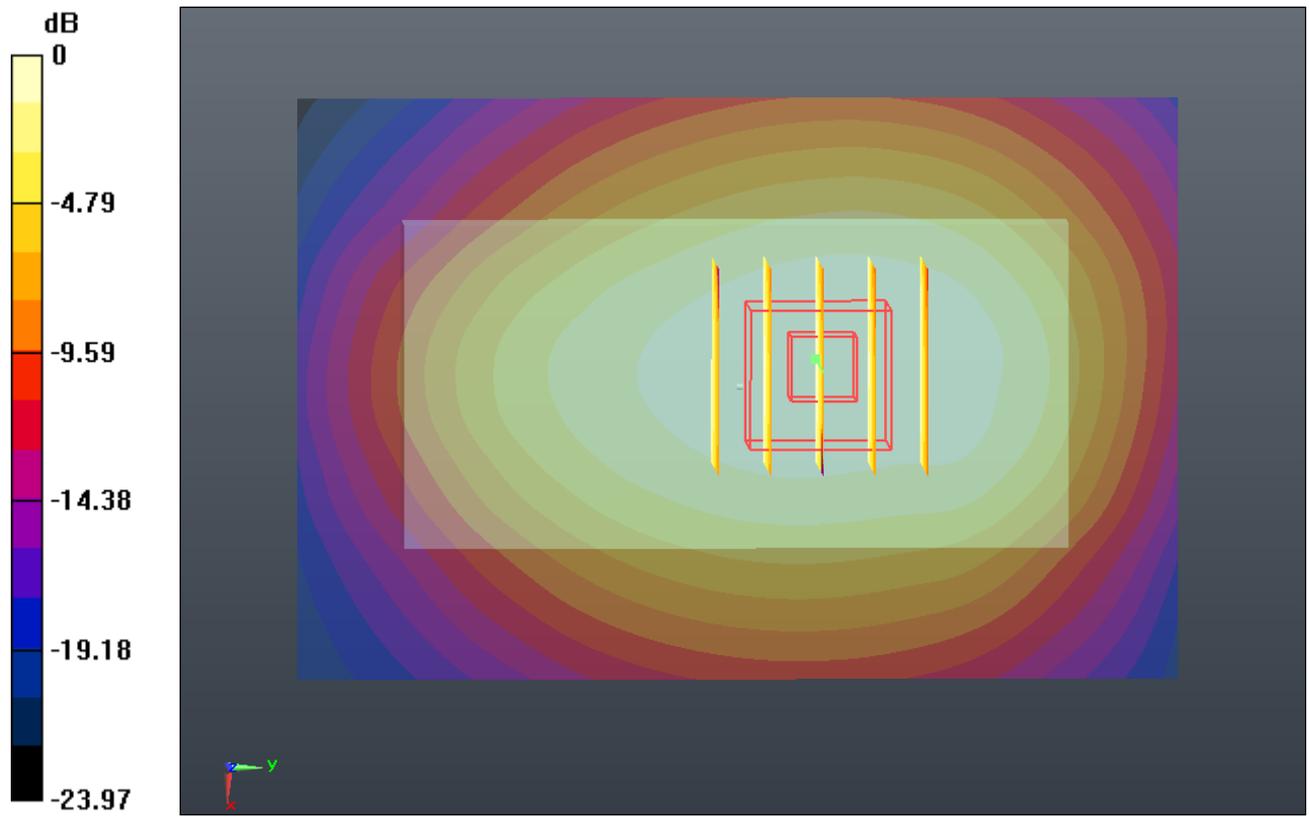## #01_GSM850_GPRS (2 Tx slots)_Front 1cm_Ch189

DUT: 350802

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 836.4 MHz;Duty Cycle: 1:4
Medium: MSL_835_130618 Medium parameters used: f = 836.4 MHz; σ = 0.98 mho/m; ε_r = 54.077; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(9.07, 9.07, 9.07); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch189/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.222 mW/g

Ch189/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.346 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.359 W/kg
SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.741 mW/g
Maximum value of SAR (measured) = 1.204 mW/g

0 dB = 1.200mW/g

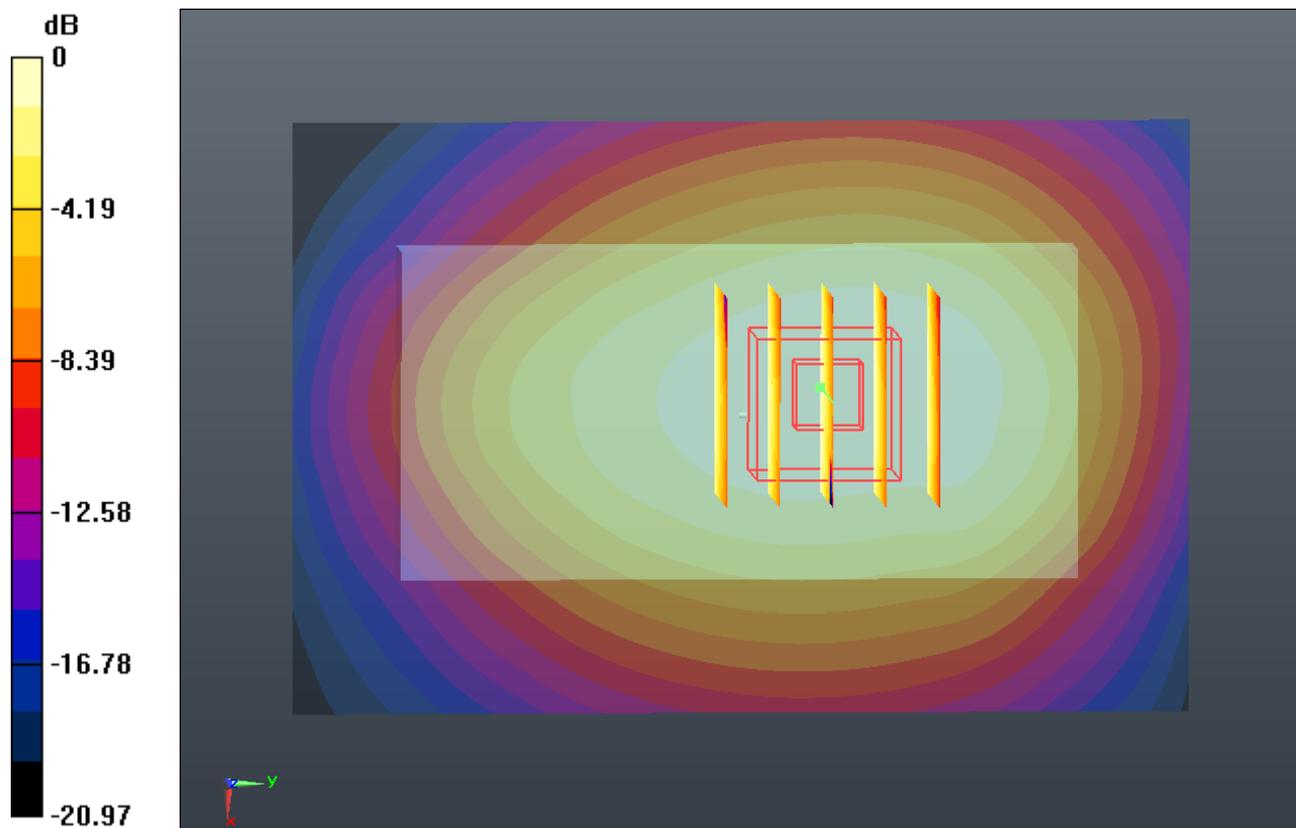**#02_GSM850_GPRS (2 Tx slots)_Back 1cm_Ch189**

DUT: 350802

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 836.4 MHz;Duty Cycle: 1:4
Medium: MSL_835_130618 Medium parameters used: f = 836.4 MHz; σ = 0.98 mho/m; ε_r =

54.077; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(9.07, 9.07, 9.07); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch189/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.806 mW/g

Ch189/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.040 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.899 W/kg
SAR(1 g) = 0.688 mW/g; SAR(10 g) = 0.500 mW/g
Maximum value of SAR (measured) = 0.808 mW/g

0 dB = 0.810mW/g

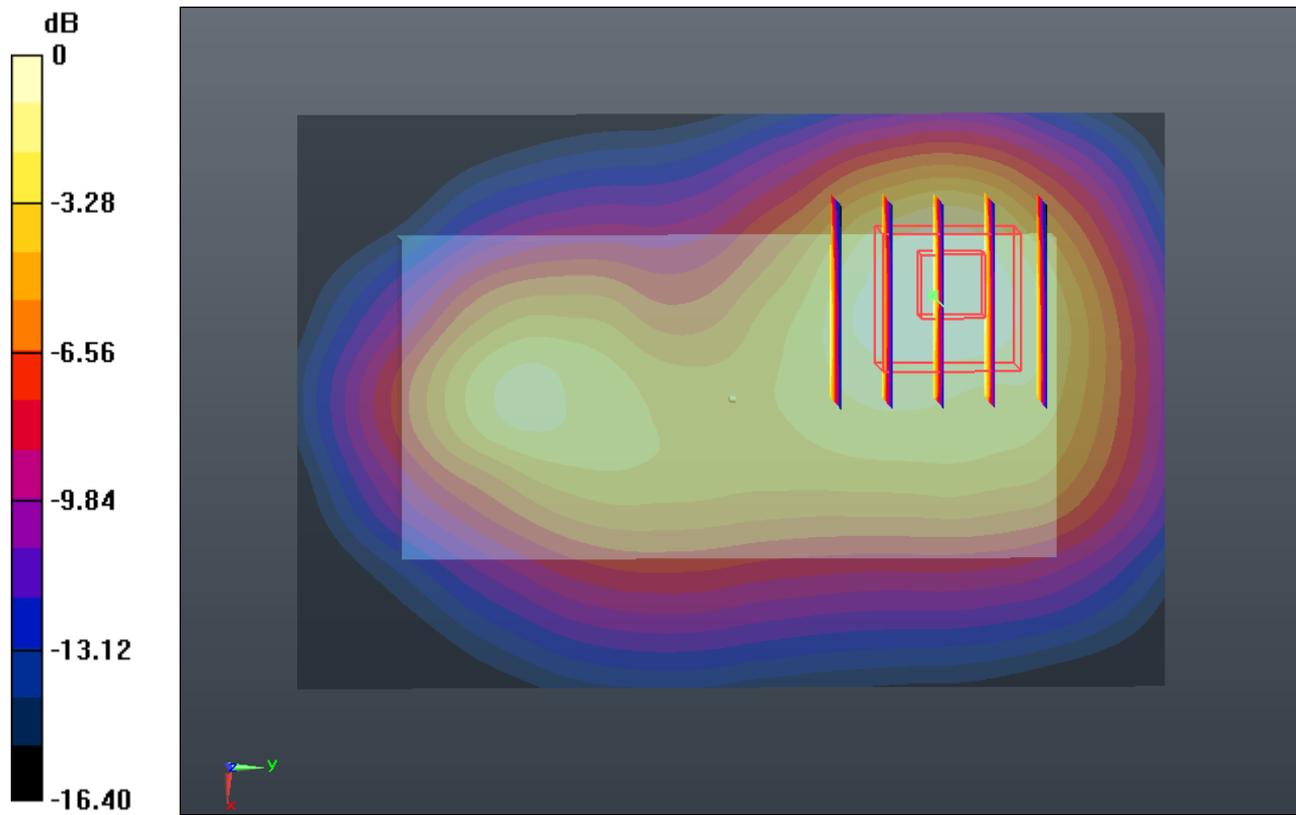**#03_GSM850_GPRS (2 Tx slots)_Left Side 1cm_Ch189**

DUT: 350802

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 836.4 MHz;Duty Cycle: 1:4
Medium: MSL_835_130618 Medium parameters used: f = 836.4 MHz; σ = 0.98 mho/m; ε_r = 54.077; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(9.07, 9.07, 9.07); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch189/Area Scan (31x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.542 mW/g

Ch189/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.163 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.623 W/kg
SAR(1 g) = 0.439 mW/g; SAR(10 g) = 0.299 mW/g
Maximum value of SAR (measured) = 0.541 mW/g

0 dB = 0.540mW/g

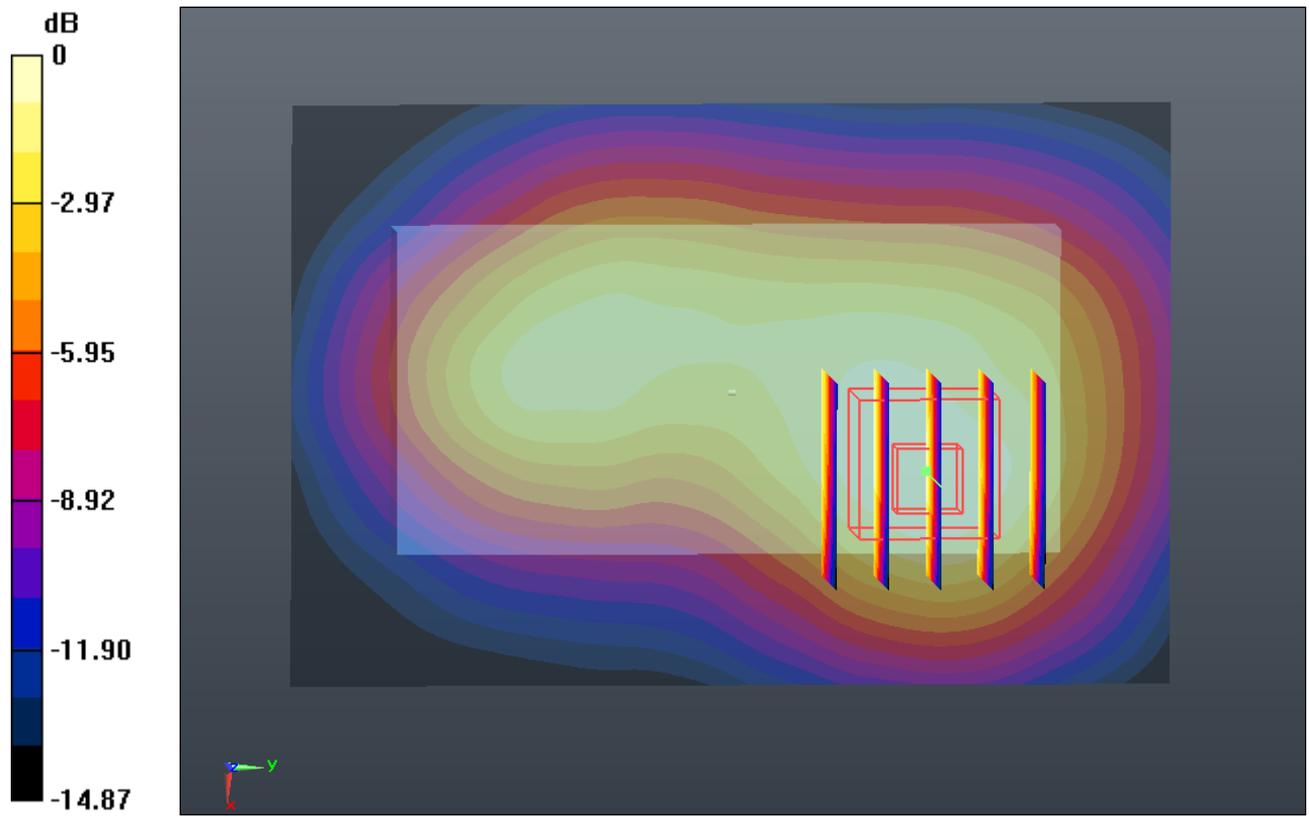**#04_GSM850_GPRS (2 Tx slots)_Right Side 1cm_Ch189**

DUT: 350802

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 836.4 MHz;Duty Cycle: 1:4
Medium: MSL_835_130618 Medium parameters used: f = 836.4 MHz; σ = 0.98 mho/m; ε_r =

54.077; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(9.07, 9.07, 9.07); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch189/Area Scan (31x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.644 mW/g

Ch189/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.675 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.730 W/kg
SAR(1 g) = 0.533 mW/g; SAR(10 g) = 0.374 mW/g
Maximum value of SAR (measured) = 0.639 mW/g

0 dB = 0.640mW/g

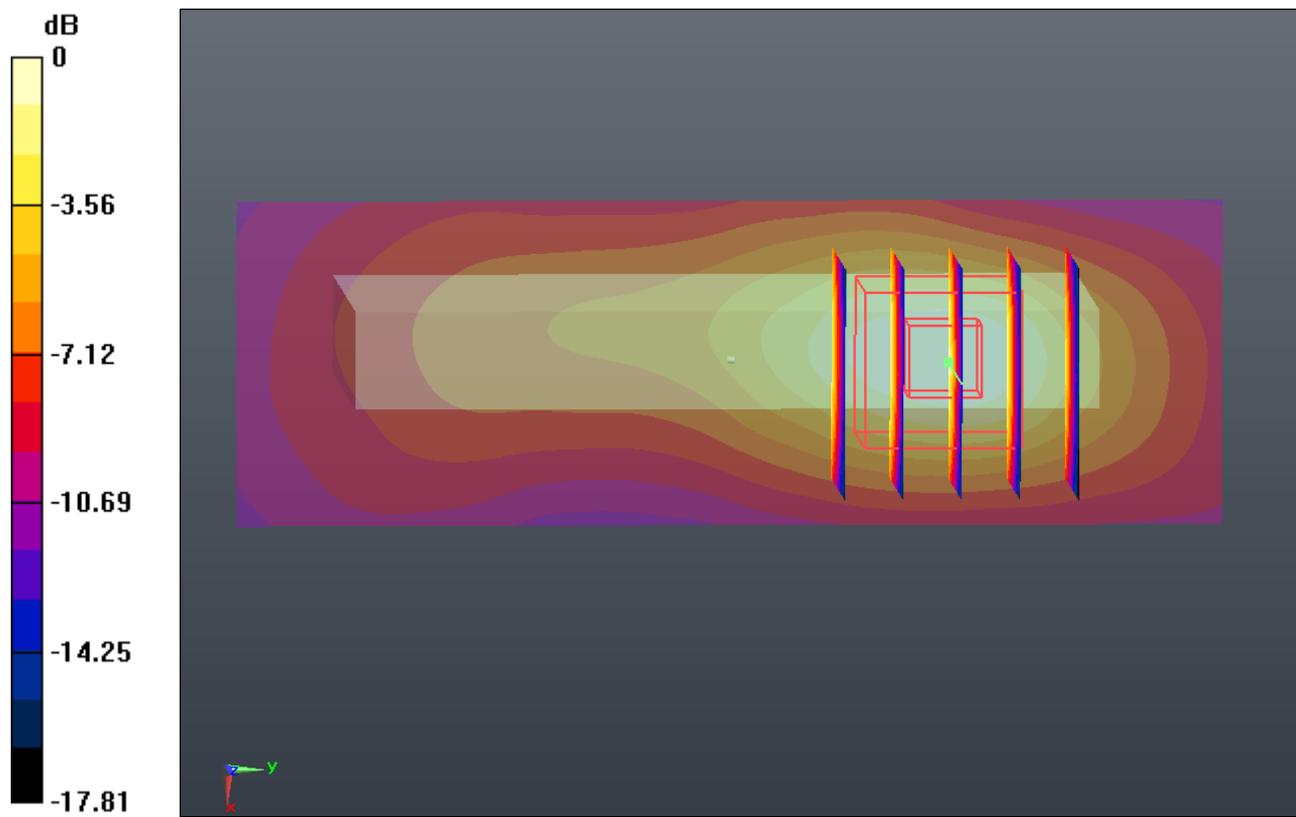## #05_GSM850_GPRS (2 Tx slots)_Top Side 1cm_Ch189

DUT: 350802

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 836.4 MHz;Duty Cycle: 1:4
Medium: MSL_835_130618 Medium parameters used: f = 836.4 MHz; σ = 0.98 mho/m; ε$_r$ = 54.077; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(9.07, 9.07, 9.07); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch189/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.074 mW/g

Ch189/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.873 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 0.094 W/kg
SAR(1 g) = 0.057 mW/g; SAR(10 g) = 0.038 mW/g
Maximum value of SAR (measured) = 0.075 mW/g

0 dB = 0.070mW/g

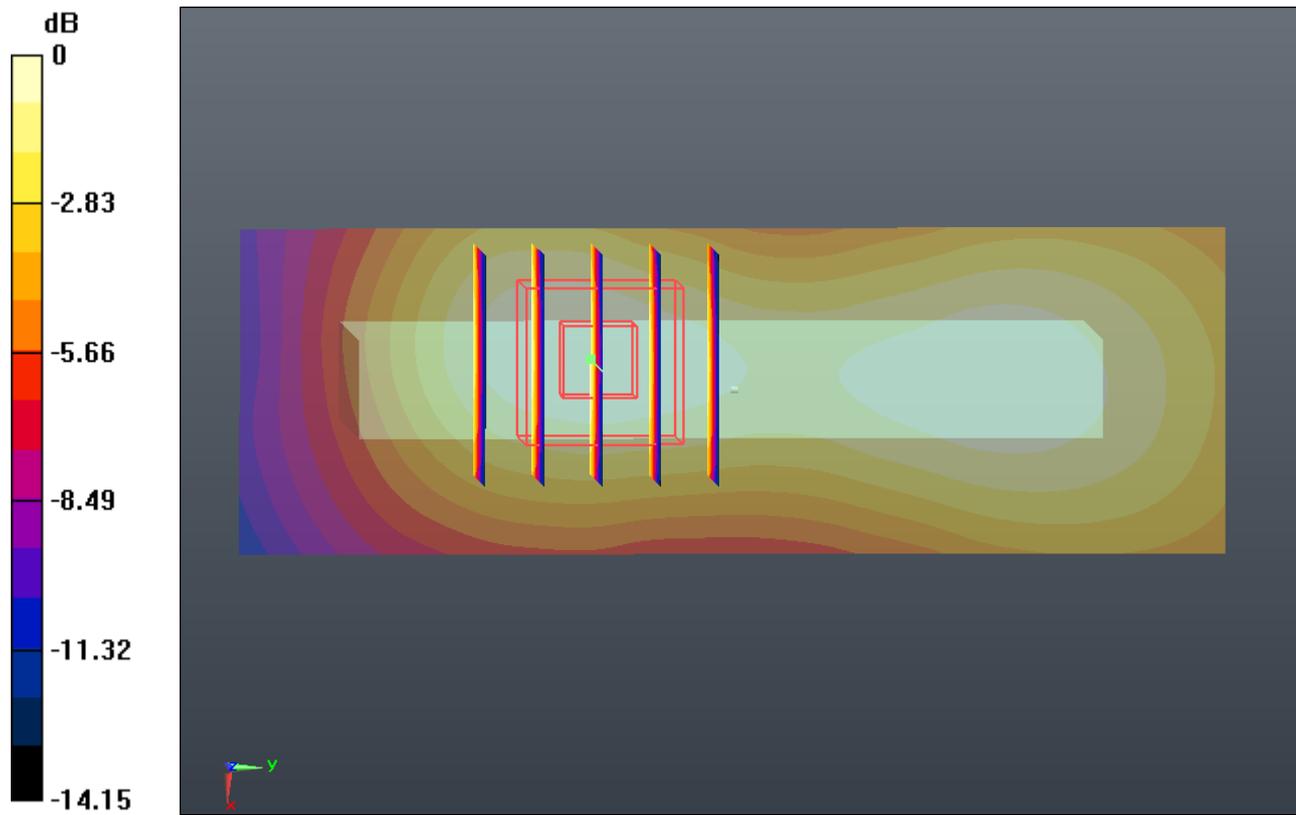## #06_GSM850_GPRS (2 Tx slots)_Front 1cm_Ch128

DUT: 350802

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 824.6 MHz;Duty Cycle: 1:4
Medium: MSL_835_130618 Medium parameters used: f = 825 MHz; σ = 0.969 mho/m; ε_r = 54.182;

ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(9.07, 9.07, 9.07); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch128/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.072 mW/g

Ch128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.345 V/m; Power Drift = -0.0071 dB
Peak SAR (extrapolated) = 1.218 W/kg
SAR(1 g) = 0.916 mW/g; SAR(10 g) = 0.660 mW/g
Maximum value of SAR (measured) = 1.082 mW/g
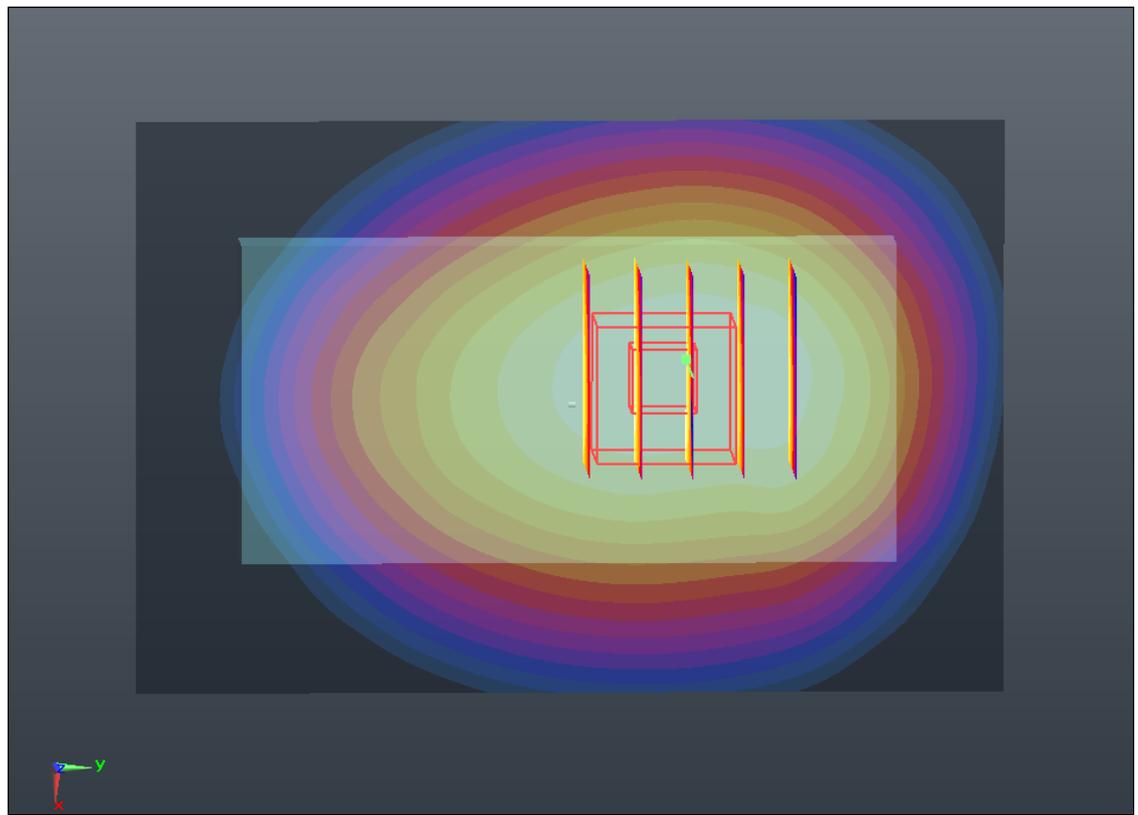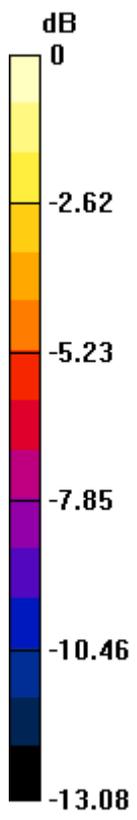
0 dB = 1.080mW/g

#07_GSM850_GPRS (2 Tx slots)_Front 1cm_Ch251

DUT: 350802

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 848.8 MHz;Duty Cycle: 1:4
Medium: MSL_835_130618 Medium parameters used: f = 849 MHz; σ = 0.993 mho/m; ε_r = 53.932;

ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(9.07, 9.07, 9.07); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch251/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.249 mW/g

Ch251/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 32.200 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.420 W/kg
SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.772 mW/g
Maximum value of SAR (measured) = 1.267 mW/g

0 dB = 1.270mW/g

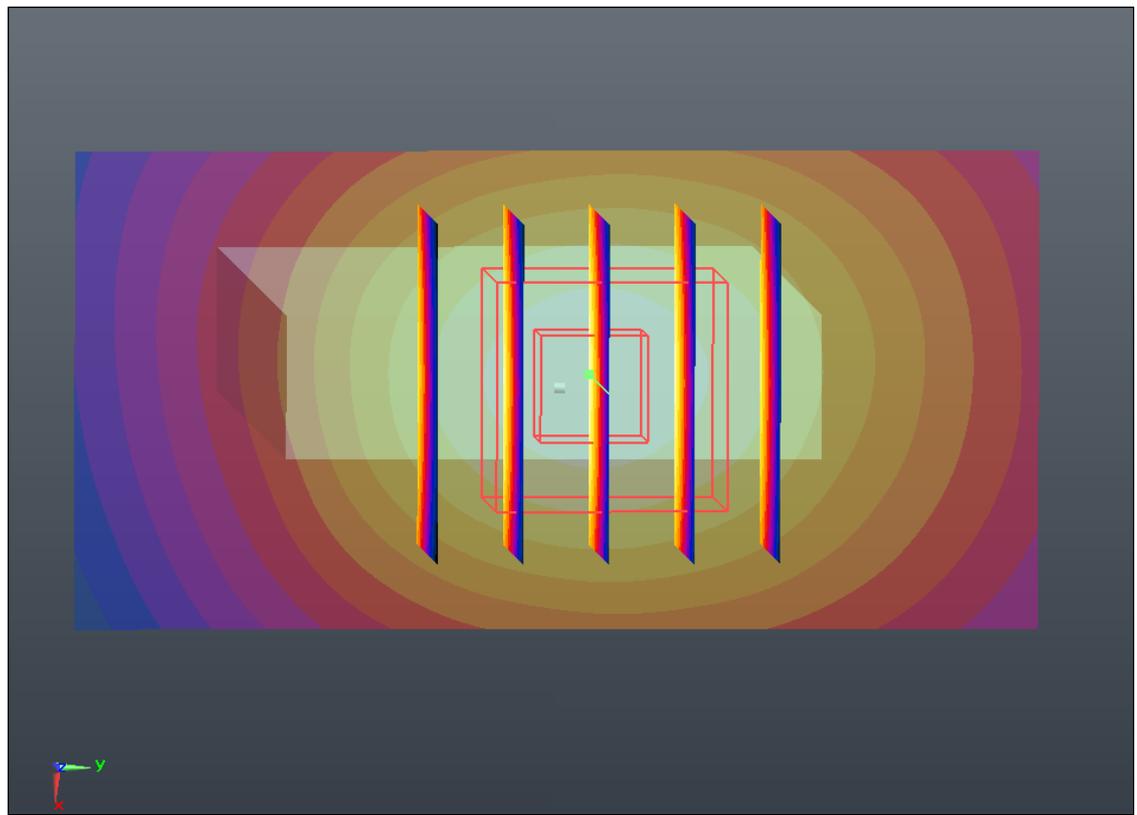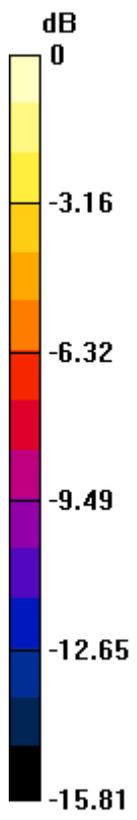**#27_GSM850_GPRS (2 Tx slots)_Front 1cm_Ch251_Repeat SAR**

DUT: 350802

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 848.8 MHz;Duty Cycle: 1:4
Medium: MSL_835_130618 Medium parameters used: f = 849 MHz; σ = 0.993 mho/m; ε_r = 53.932;

ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(9.07, 9.07, 9.07); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch251/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.240 mW/g

Ch251/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 32.200 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.410 W/kg
SAR(1 g) = 1.06 mW/g; SAR(10 g) = 0.767 mW/g
Maximum value of SAR (measured) = 1.258 mW/g

0 dB = 1.260mW/g

#08_GSM1900_GPRS (2 Tx slots)_Front 1cm_Ch810

DUT: 350802

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 1909.8 MHz;Duty Cycle: 1:4
Medium: MSL_1900_130618 Medium parameters used: f = 1910 MHz; σ = 1.561 mho/m; ε_r =

53.121; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(7.3, 7.3, 7.3); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch810/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
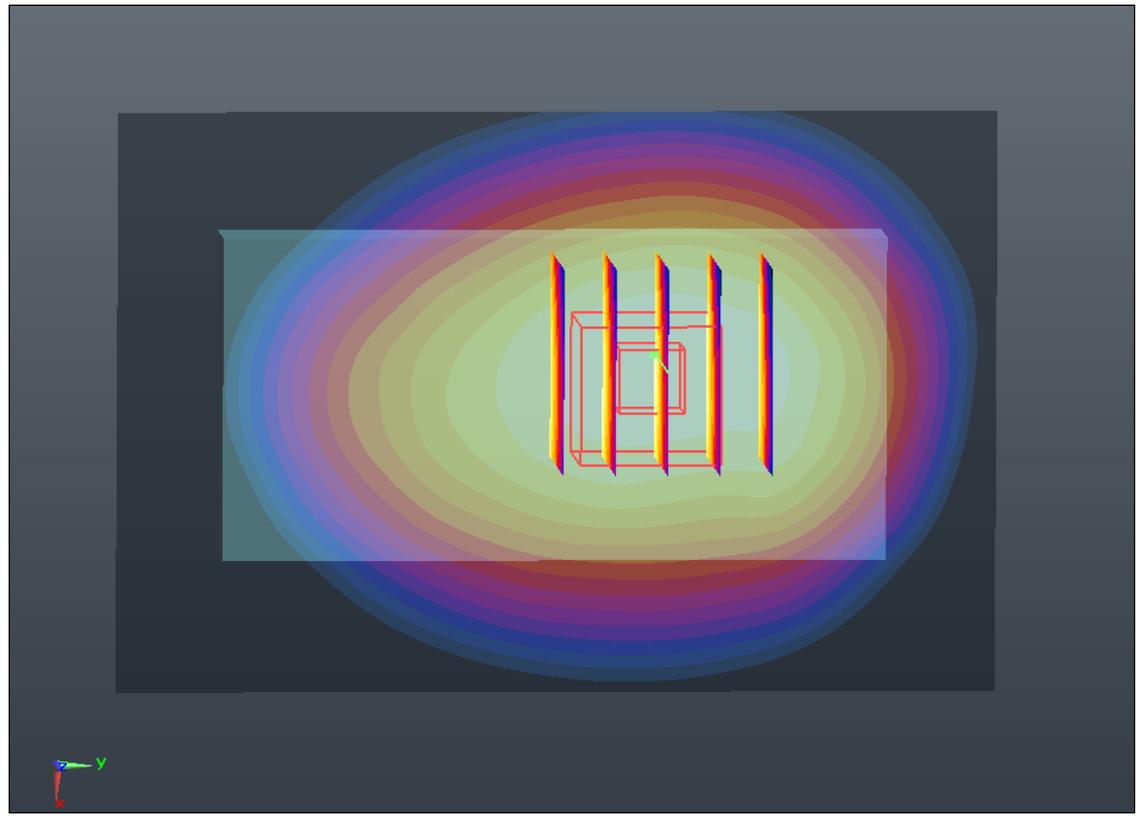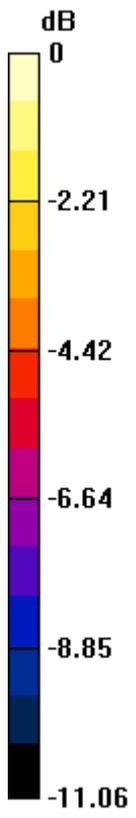Maximum value of SAR (interpolated) = 0.904 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.680 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 1.101 W/kg
SAR(1 g) = 0.655 mW/g; SAR(10 g) = 0.377 mW/g
Maximum value of SAR (measured) = 0.853 mW/g

0 dB = 0.850mW/g

#09_GSM1900_GPRS (2 Tx slots)_Back 1cm_Ch810

DUT: 350802

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 1909.8 MHz;Duty Cycle: 1:4
Medium: MSL_1900_130618 Medium parameters used: f = 1910 MHz; σ = 1.561 mho/m; ε$_r$ =
53.121; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(7.3, 7.3, 7.3); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch810/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.614 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.344 V/m; Power Drift = 0.008 dB
Peak SAR (extrapolated) = 0.692 W/kg
SAR(1 g) = 0.431 mW/g; SAR(10 g) = 0.265 mW/g
Maximum value of SAR (measured) = 0.566 mW/g

0 dB = 0.570mW/g

#10_GSM1900_GPRS (2 Tx slots)_Left Side 1cm_Ch810

DUT: 350802

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 1909.8 MHz;Duty Cycle: 1:4
Medium: MSL_1900_130618 Medium parameters used: f = 1910 MHz; σ = 1.561 mho/m; ε$_r$ =

53.121; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(7.3, 7.3, 7.3); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch810/Area Scan (31x91x1): Measurement grid: dx=15mm, dy=15mm
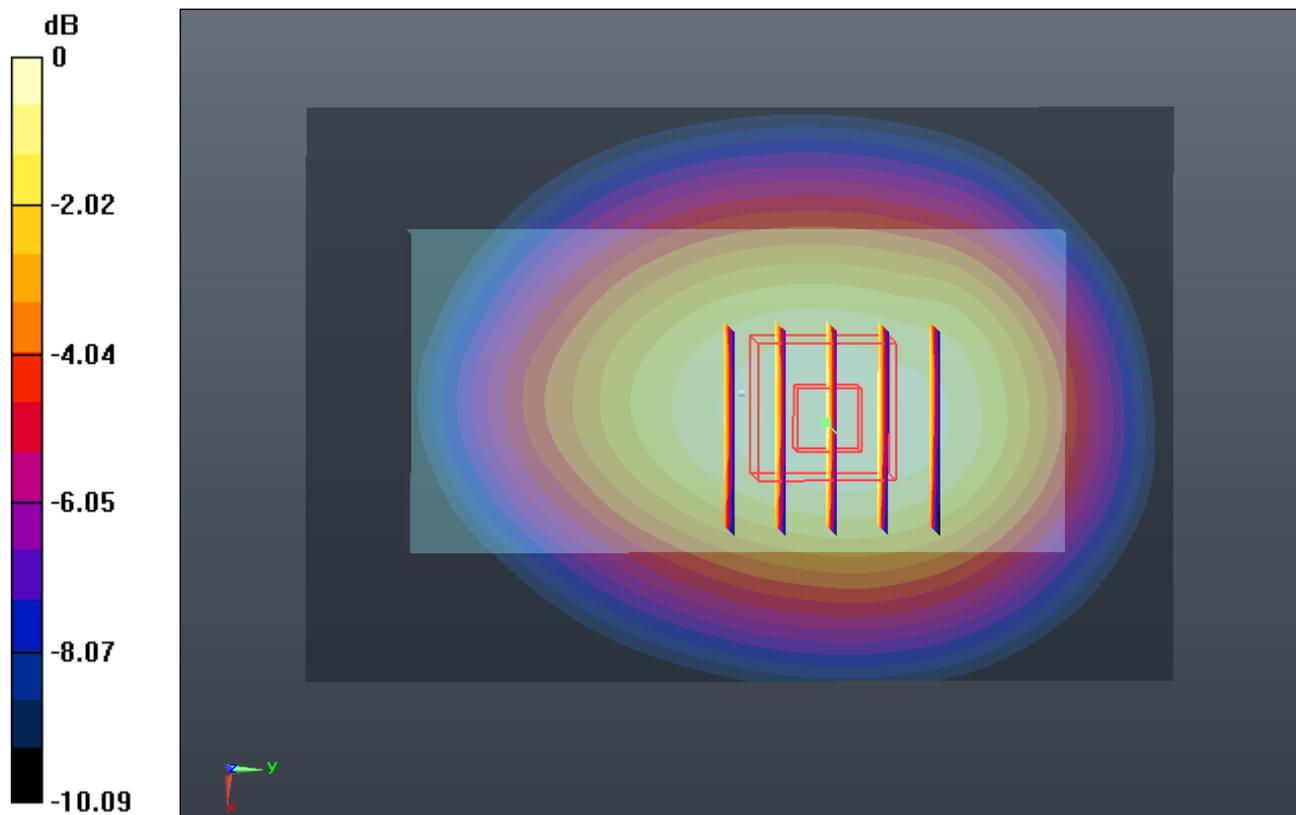Maximum value of SAR (interpolated) = 0.341 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.745 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.380 W/kg
SAR(1 g) = 0.217 mW/g; SAR(10 g) = 0.116 mW/g
Maximum value of SAR (measured) = 0.305 mW/g

0 dB = 0.310mW/g

#11_GSM1900_GPRS (2 Tx slots)_Right Side 1cm_Ch810

DUT: 350802

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 1909.8 MHz;Duty Cycle: 1:4
Medium: MSL_1900_130618 Medium parameters used: f = 1910 MHz; σ = 1.561 mho/m; ε$_r$ =

53.121; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(7.3, 7.3, 7.3); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch810/Area Scan (31x91x1): Measurement grid: dx=15mm, dy=15mm
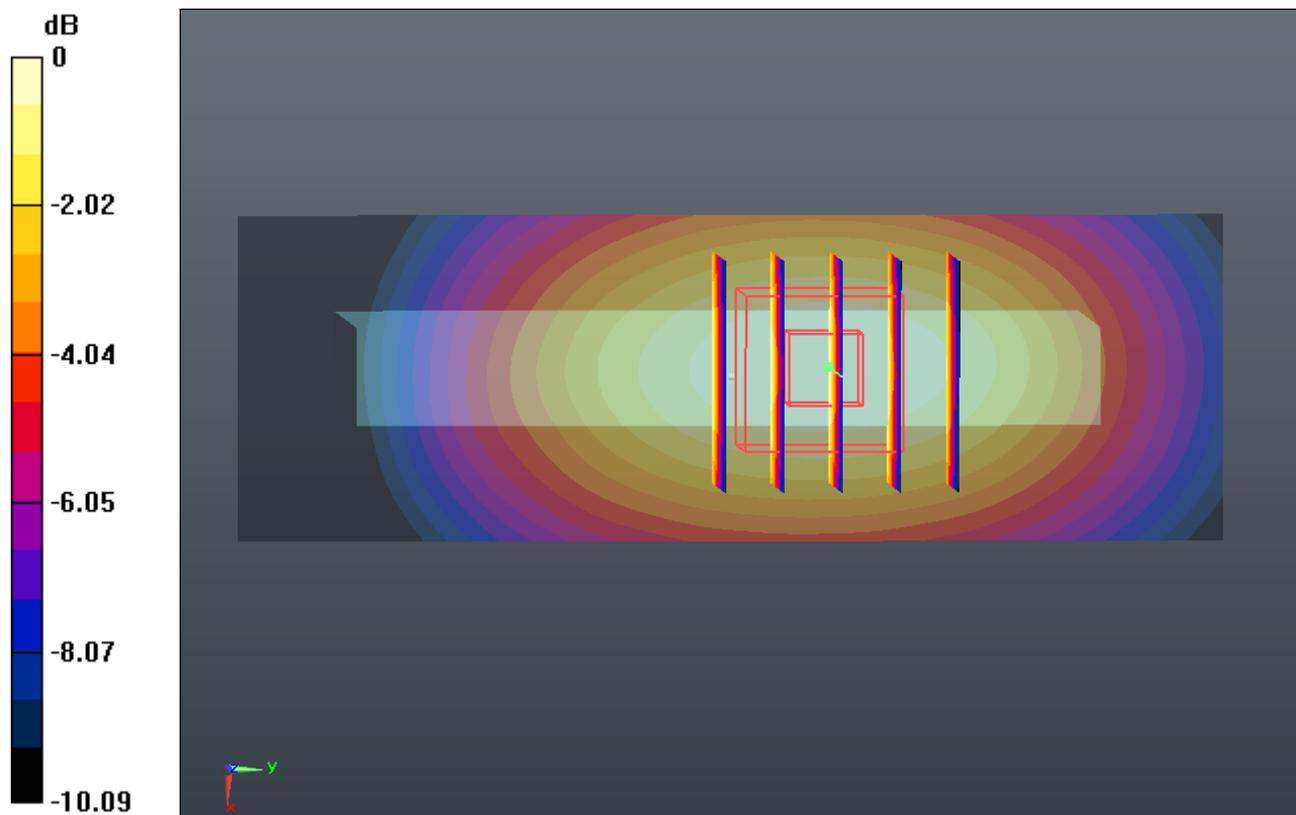Maximum value of SAR (interpolated) = 0.174 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.694 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.208 W/kg
SAR(1 g) = 0.132 mW/g; SAR(10 g) = 0.081 mW/g
Maximum value of SAR (measured) = 0.173 mW/g

0 dB = 0.170mW/g

#12_GSM1900_GPRS (2 Tx slots)_Top Side 1cm_Ch810

DUT: 350802

Communication System: GPRS/EDGE (2 Tx slots); Frequency: 1909.8 MHz;Duty Cycle: 1:4
Medium: MSL_1900_130618 Medium parameters used: f = 1910 MHz; σ = 1.561 mho/m; ε_r =

53.121; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(7.3, 7.3, 7.3); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch810/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm
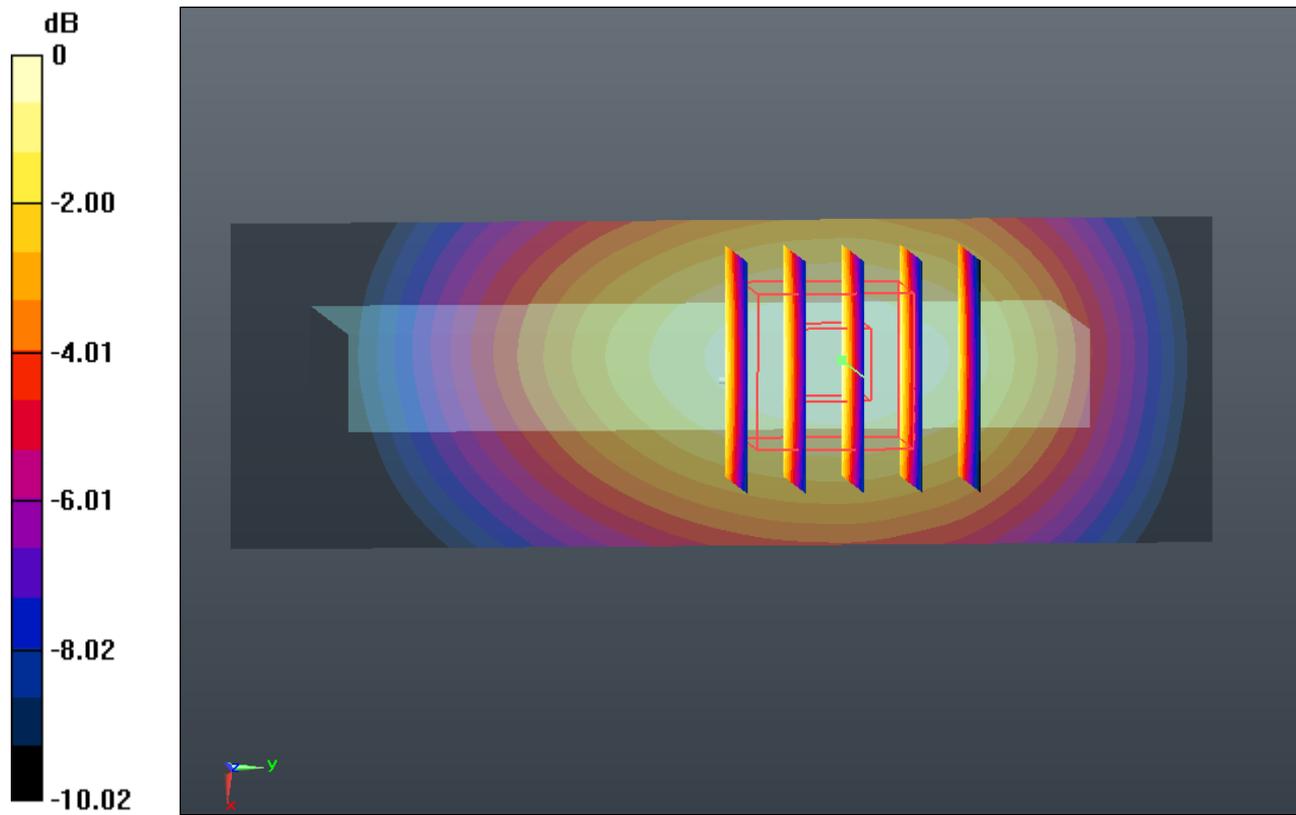Maximum value of SAR (interpolated) = 0.498 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.365 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.618 W/kg
SAR(1 g) = 0.380 mW/g; SAR(10 g) = 0.218 mW/g
Maximum value of SAR (measured) = 0.511 mW/g

0 dB = 0.510mW/g

#13_WCDMA band V_RMC12.2Kbps_Front 1cm_Ch4182

DUT: 350802

Communication System: UMTS; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: MSL_835_130618 Medium parameters used: f = 836.4 MHz; σ = 0.98 mho/m; ε$_r$ =
54.077; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(9.07, 9.07, 9.07); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch4182/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.956 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.804 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.088 W/kg
SAR(1 g) = 0.814 mW/g; SAR(10 g) = 0.585 mW/g
Maximum value of SAR (measured) = 0.962 mW/g

0 dB = 0.960mW/g

#14_WCDMA band V_RMC12.2Kbps_Back 1cm_Ch4182

DUT: 350802

Communication System: UMTS; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: MSL_835_130618 Medium parameters used: f = 836.4 MHz; σ = 0.98 mho/m; ε_r =
54.077; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(9.07, 9.07, 9.07); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch4182/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.754 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.060 V/m; Power Drift = -0.0053 dB
Peak SAR (extrapolated) = 0.840 W/kg
SAR(1 g) = 0.642 mW/g; SAR(10 g) = 0.466 mW/g
Maximum value of SAR (measured) = 0.756 mW/g

0 dB = 0.760mW/g

#15_WCDMA band V_RMC12.2Kbps_Left Side 1cm_Ch4182

DUT: 350802

Communication System: UMTS; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: MSL_835_130618 Medium parameters used: f = 836.4 MHz; σ = 0.98 mho/m; ε$_r$ = 54.077; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(9.07, 9.07, 9.07); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch4182/Area Scan (31x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.547 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.118 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.621 W/kg
SAR(1 g) = 0.441 mW/g; SAR(10 g) = 0.302 mW/g
Maximum value of SAR (measured) = 0.542 mW/g

0 dB = 0.540mW/g

#16_WCDMA band V_RMC12.2Kbps_Right Side 1cm_Ch4182

DUT: 350802

Communication System: UMTS; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: MSL_835_130618 Medium parameters used: f = 836.4 MHz; σ = 0.98 mho/m; ε_r = 54.077; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(9.07, 9.07, 9.07); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch4182/Area Scan (31x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.569 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.457 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.659 W/kg
SAR(1 g) = 0.474 mW/g; SAR(10 g) = 0.331 mW/g
Maximum value of SAR (measured) = 0.580 mW/g

0 dB = 0.580mW/g

#17_WCDMA band V_RMC12.2Kbps_Top Side 1cm_Ch4182

DUT: 350802

Communication System: UMTS; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: MSL_835_130618 Medium parameters used: f = 836.4 MHz; σ = 0.98 mho/m; ε_r = 54.077; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(9.07, 9.07, 9.07); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch4182/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.044 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.181 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.057 W/kg
SAR(1 g) = 0.035 mW/g; SAR(10 g) = 0.023 mW/g
Maximum value of SAR (measured) = 0.045 mW/g
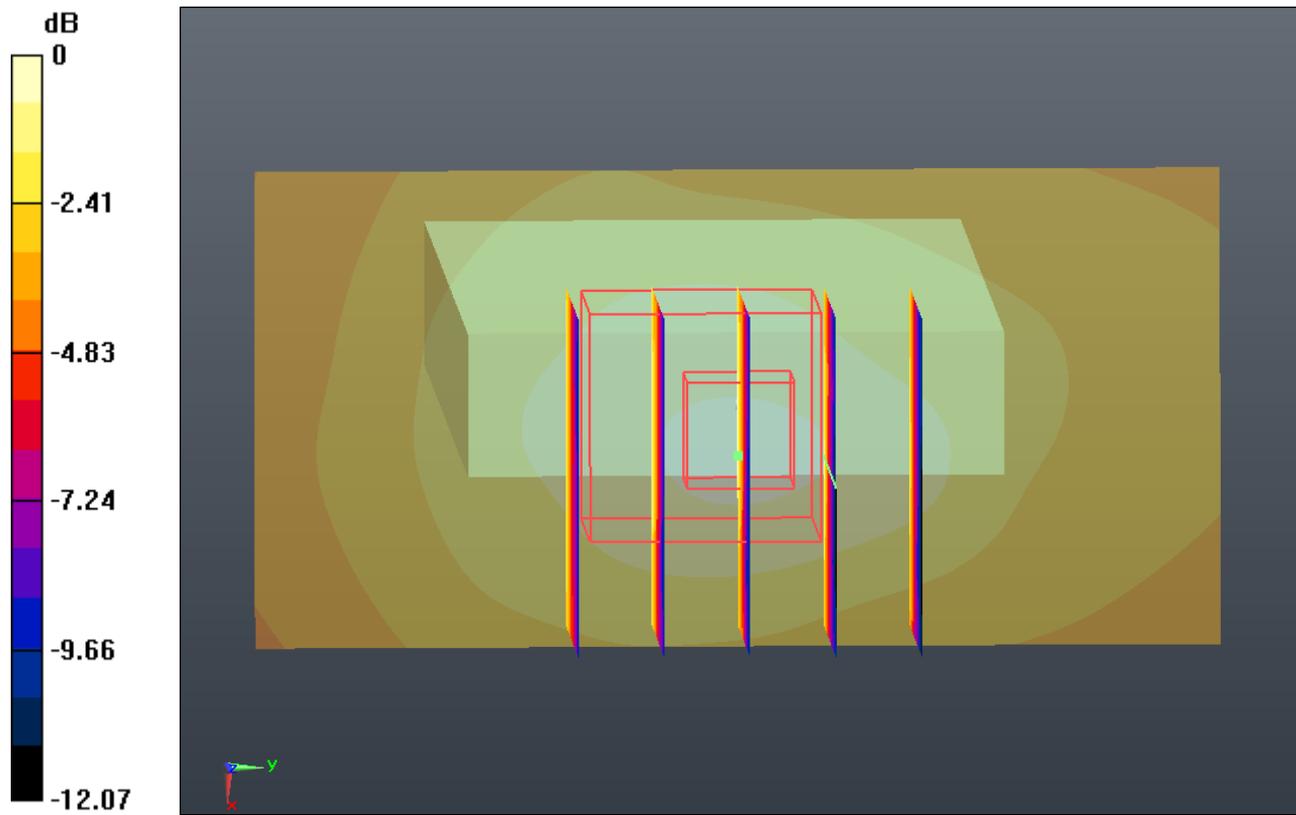
0 dB = 0.050mW/g

#18_WCDMA band V_RMC12.2Kbps_Front 1cm_Ch4132

DUT: 350802

Communication System: UMTS; Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium: MSL_835_130618 Medium parameters used: f = 826.4 MHz; σ = 0.97 mho/m; ε_r = 54.171; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(9.07, 9.07, 9.07); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch4132/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.884 mW/g

Ch4132/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.708 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.015 W/kg
SAR(1 g) = 0.756 mW/g; SAR(10 g) = 0.544 mW/g
Maximum value of SAR (measured) = 0.900 mW/g
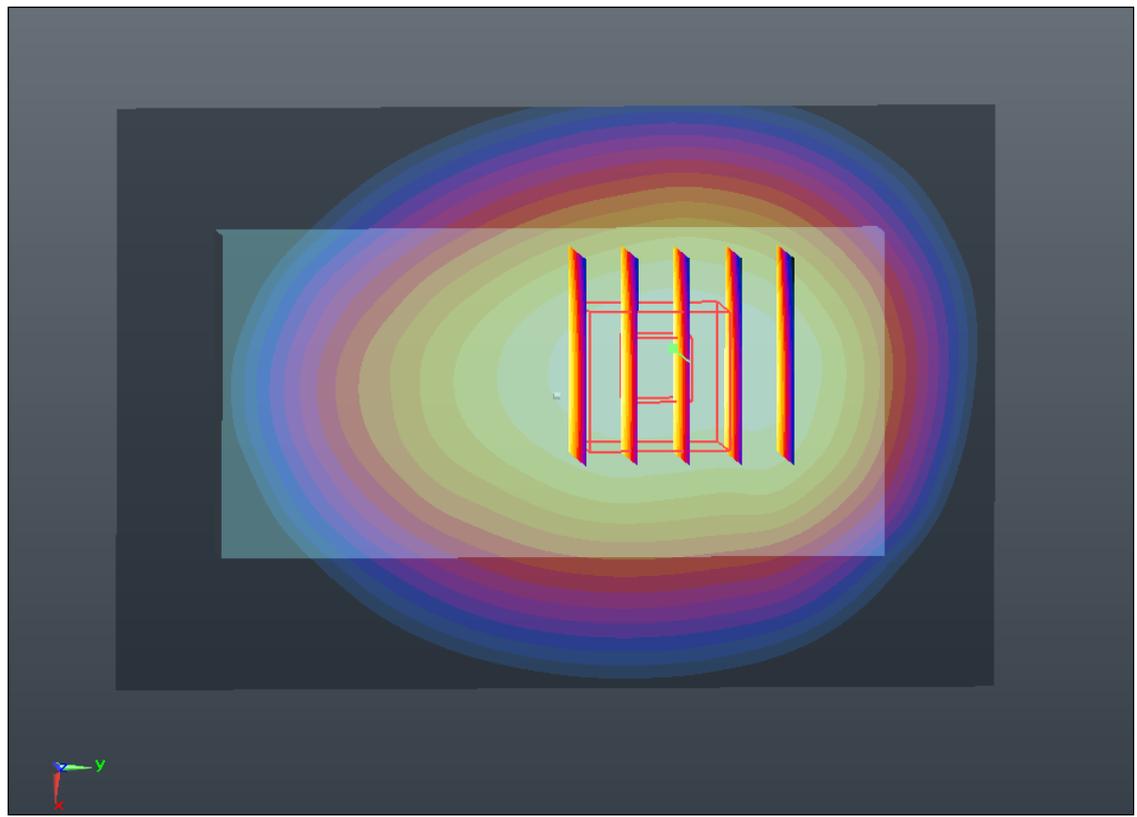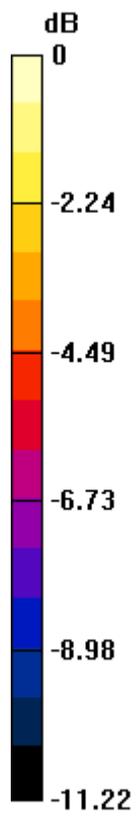
0 dB = 0.900mW/g

#19_WCDMA band V_RMC12.2Kbps_Front 1cm_Ch4233

DUT: 350802

Communication System: UMTS; Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium: MSL_835_130618 Medium parameters used: f = 847 MHz; σ = 0.991 mho/m; $ε_r$ = 53.959;

ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(9.07, 9.07, 9.07); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM1; Type: SAM; Serial: TP-1479
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch4233/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.936 mW/g

Ch4233/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.765 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.062 W/kg
SAR(1 g) = 0.799 mW/g; SAR(10 g) = 0.576 mW/g
Maximum value of SAR (measured) = 0.936 mW/g

0 dB = 0.940mW/g
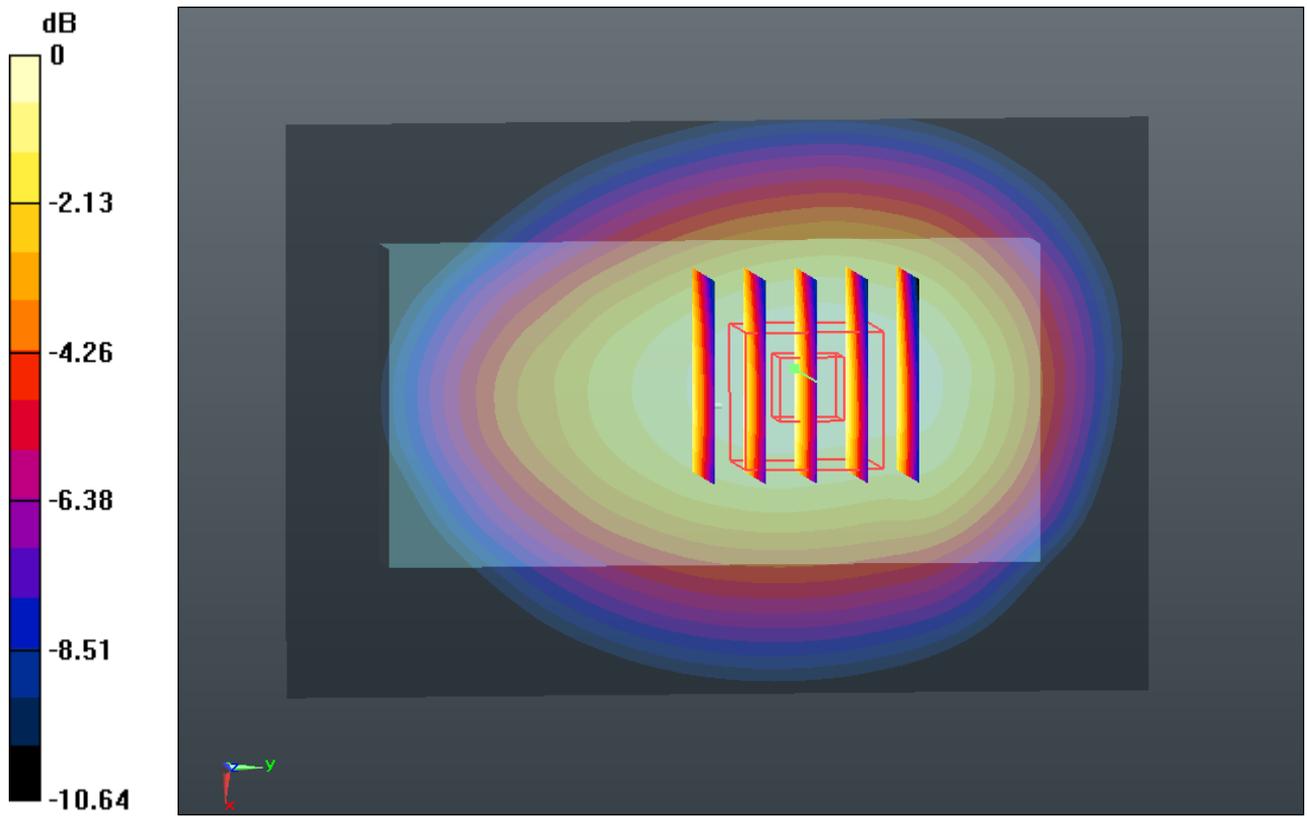
#20_WCDMA band II_RMC12.2Kbps_Front 1cm_Ch9538

DUT: 350802

Communication System: UMTS; Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130618 Medium parameters used: f = 1908 MHz; σ = 1.559 mho/m; ε_r =

53.128; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(7.3, 7.3, 7.3); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch9538/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.275 mW/g

Ch9538/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.931 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.592 W/kg
SAR(1 g) = 0.932 mW/g; SAR(10 g) = 0.533 mW/g
Maximum value of SAR (measured) = 1.201 mW/g
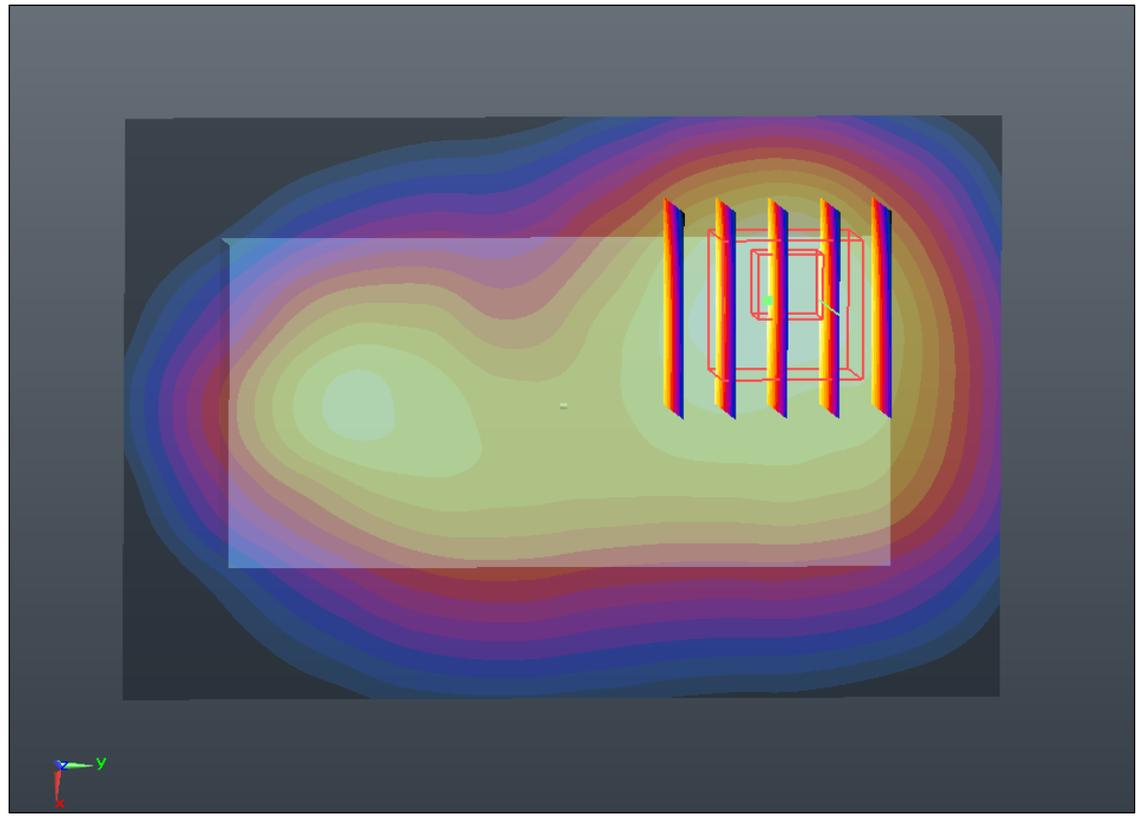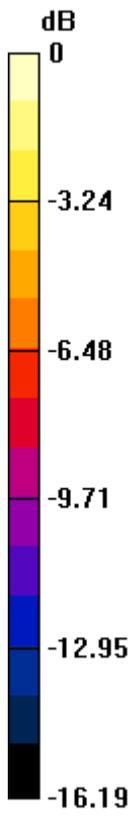
0 dB = 1.200mW/g

#21_WCDMA band II_RMC12.2Kbps_Back 1cm_Ch9538

DUT: 350802

Communication System: UMTS; Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130618 Medium parameters used: f = 1908 MHz; σ = 1.559 mho/m; ε$_r$ =

53.128; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(7.3, 7.3, 7.3); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch9538/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.885 mW/g

Ch9538/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.577 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.995 W/kg
SAR(1 g) = 0.619 mW/g; SAR(10 g) = 0.378 mW/g
Maximum value of SAR (measured) = 0.815 mW/g
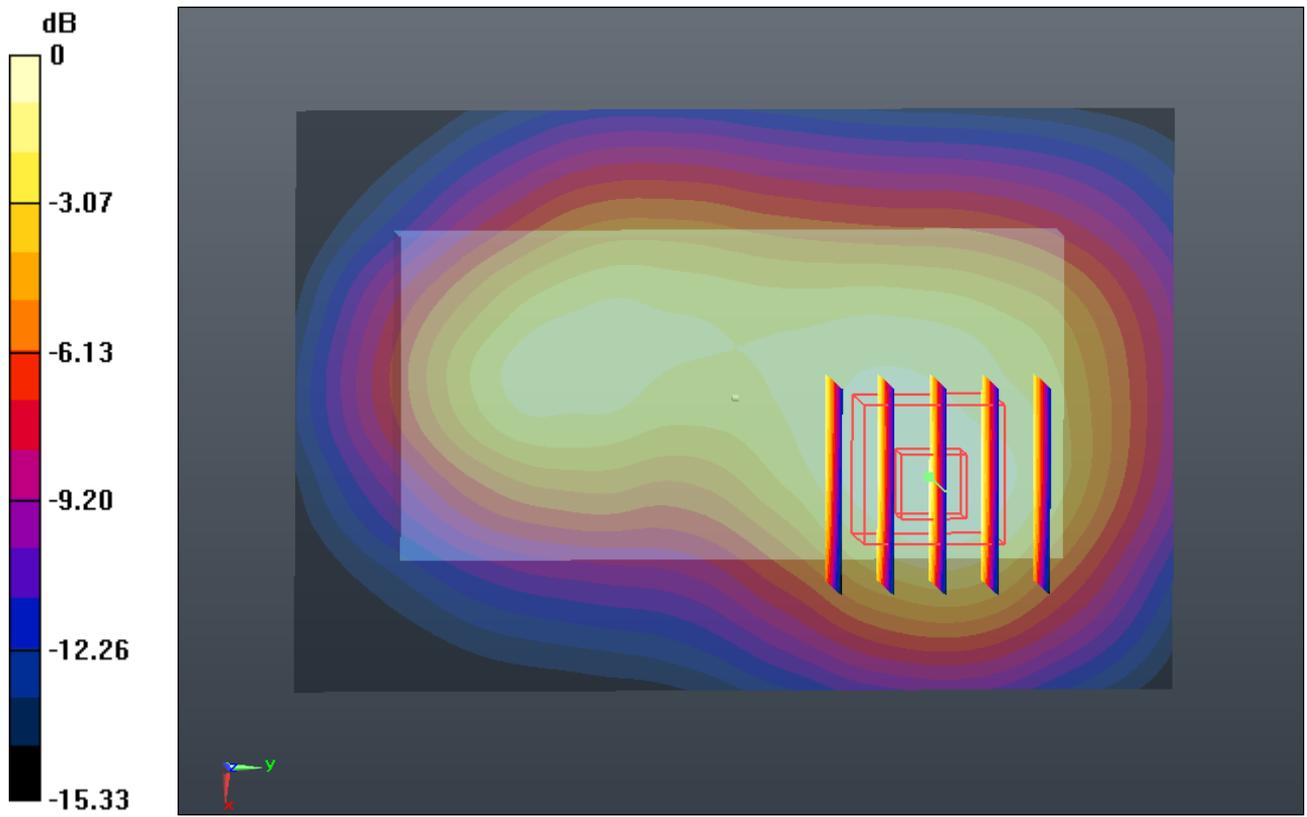
0 dB = 0.810mW/g

#22_WCDMA band II_RMC12.2Kbps_Left Side 1cm_Ch9538

DUT: 350802

Communication System: UMTS; Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130618 Medium parameters used: f = 1908 MHz; σ = 1.559 mho/m; ε_r = 53.128; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(7.3, 7.3, 7.3); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch9538/Area Scan (31x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.553 mW/g

Ch9538/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.124 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.600 W/kg
SAR(1 g) = 0.343 mW/g; SAR(10 g) = 0.183 mW/g
Maximum value of SAR (measured) = 0.481 mW/g
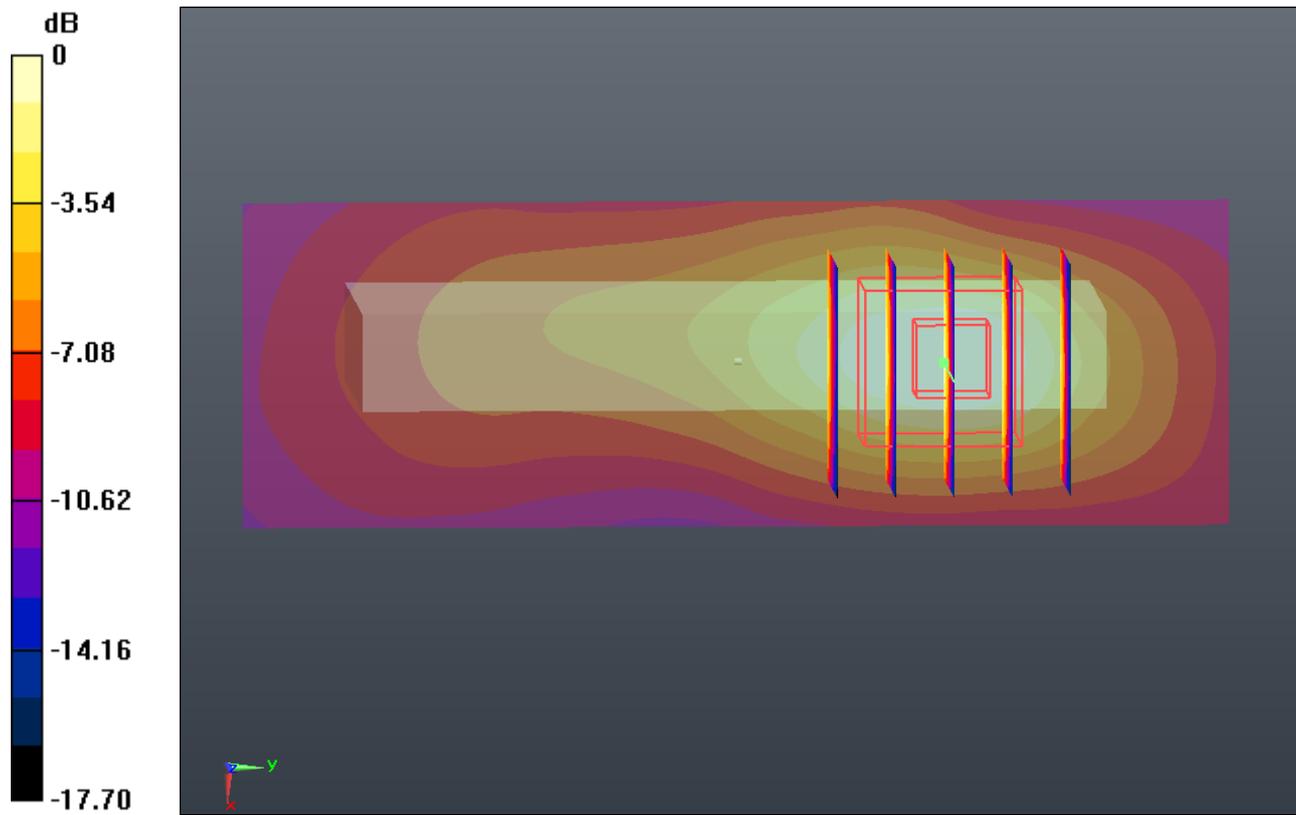
0 dB = 0.480mW/g

#23_WCDMA band II_RMC12.2Kbps_Right Side 1cm_Ch9538

DUT: 350802

Communication System: UMTS; Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130618 Medium parameters used: f = 1908 MHz; σ = 1.559 mho/m; ε_r =

53.128; ρ = 1000 kg/m^3
Ambient Temperature：23.3℃；Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(7.3, 7.3, 7.3); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch9538/Area Scan (31x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.274 mW/g

Ch9538/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.761 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.327 W/kg
SAR(1 g) = 0.207 mW/g; SAR(10 g) = 0.126 mW/g
Maximum value of SAR (measured) = 0.272 mW/g
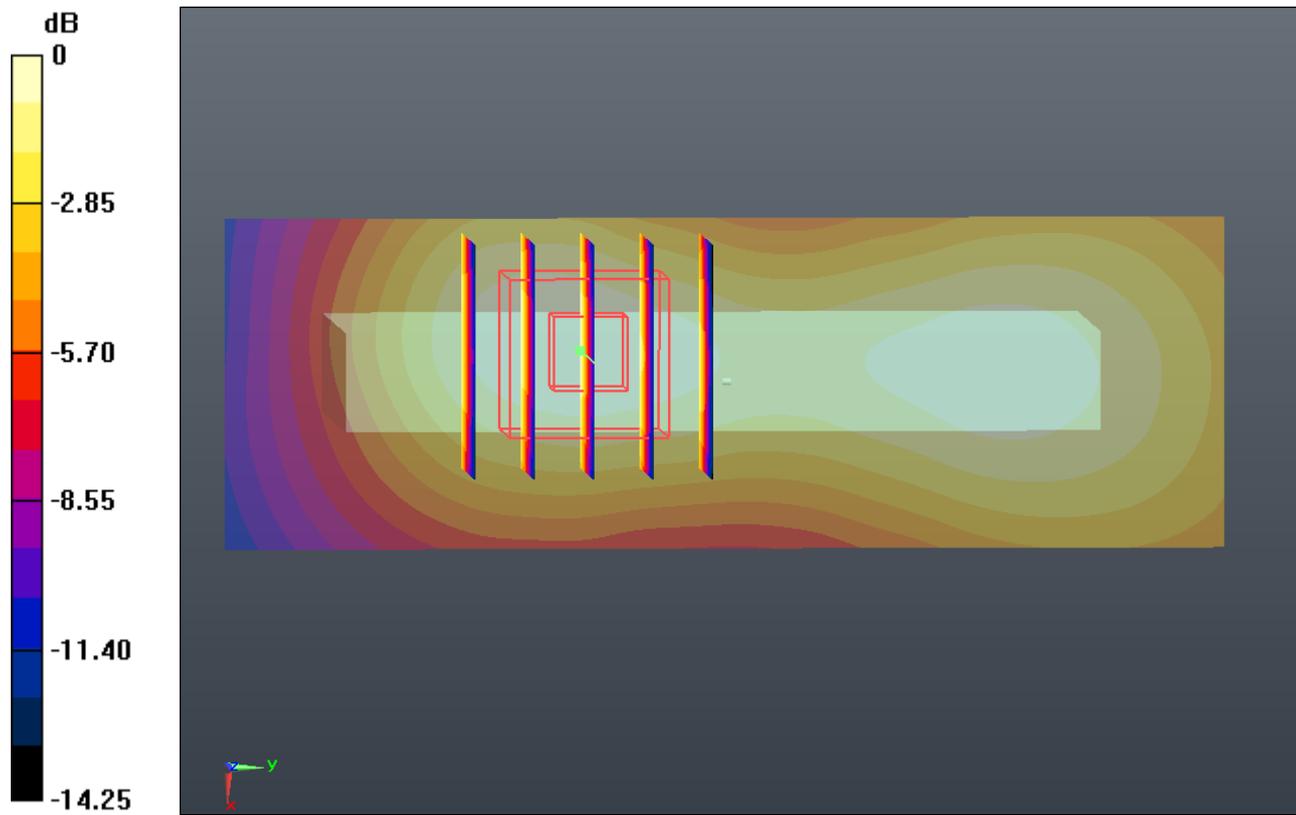
0 dB = 0.270mW/g

#24_WCDMA band II_RMC12.2Kbps_Top Side 1cm_Ch9538

DUT: 350802

Communication System: UMTS; Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130618 Medium parameters used: f = 1908 MHz; σ = 1.559 mho/m; ε_r =

53.128; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(7.3, 7.3, 7.3); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch9538/Area Scan (31x61x1): Measurement grid: dx=15mm, dy=15mm
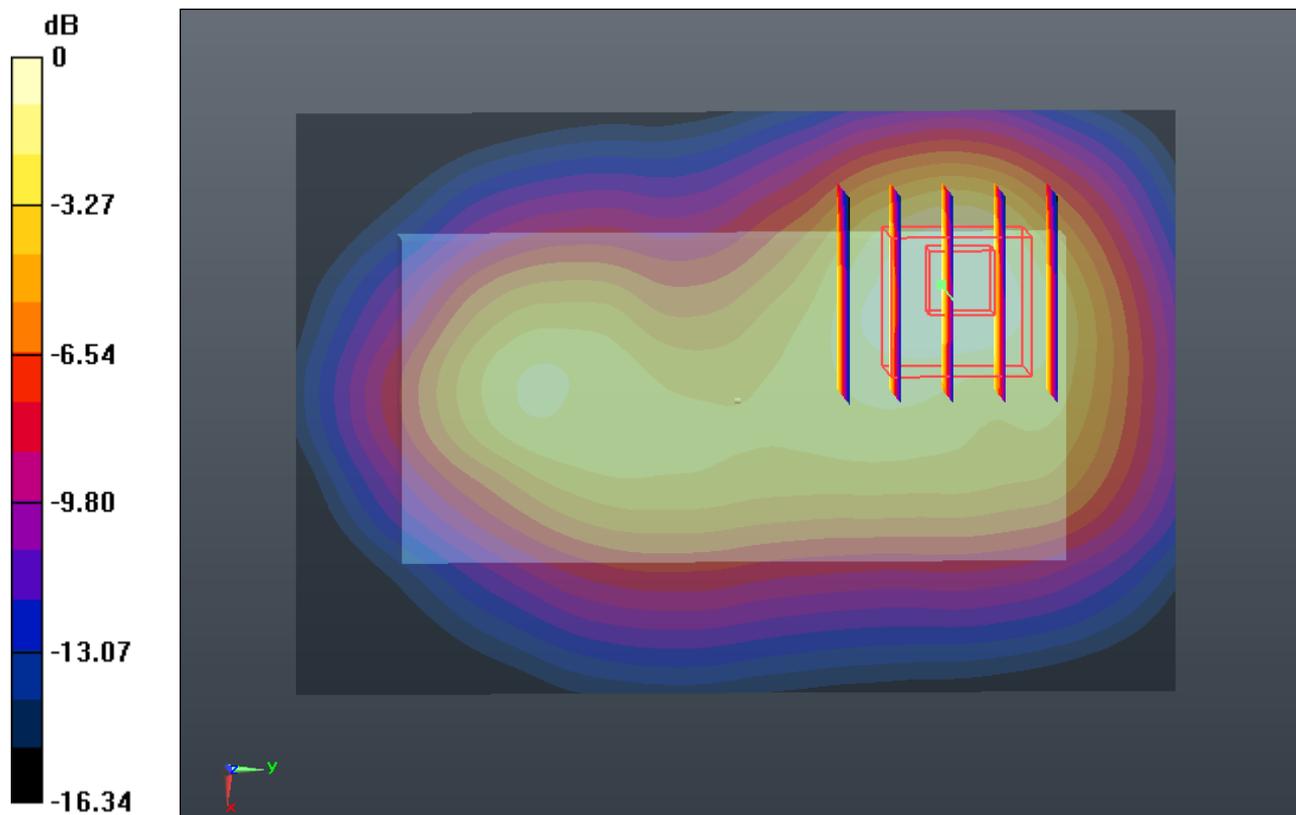Maximum value of SAR (interpolated) = 0.520 mW/g

Ch9538/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.204 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.645 W/kg
SAR(1 g) = 0.397 mW/g; SAR(10 g) = 0.227 mW/g
Maximum value of SAR (measured) = 0.532 mW/g

0 dB = 0.530mW/g
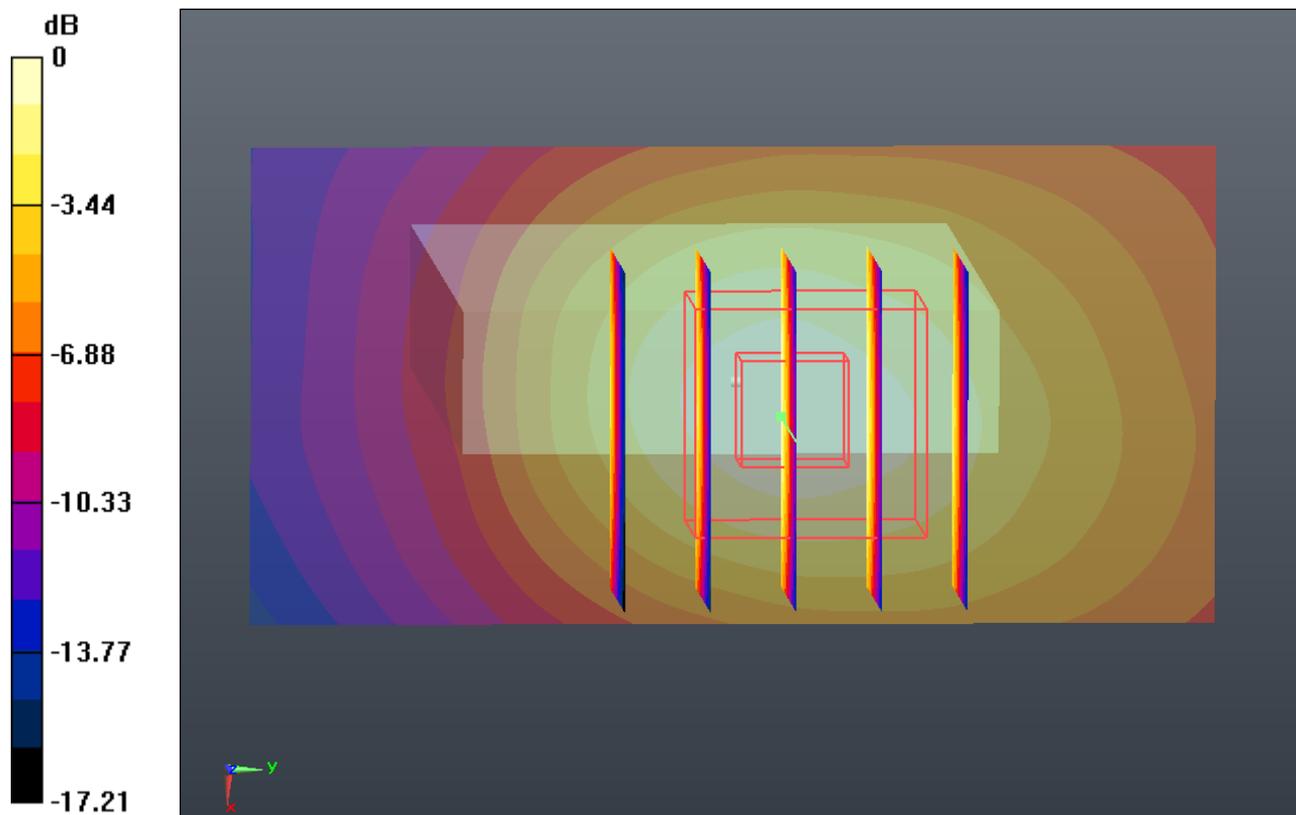
#25_WCDMA band II_RMC12.2Kbps_Front 1cm_Ch9262

DUT: 350802

Communication System: UMTS; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130618 Medium parameters used: f = 1852.4 MHz; σ = 1.493 mho/m; ε_r =

53.262; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(7.3, 7.3, 7.3); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch9262/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.120 mW/g

Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.972 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 1.366 W/kg
SAR(1 g) = 0.817 mW/g; SAR(10 g) = 0.469 mW/g
Maximum value of SAR (measured) = 1.051 mW/g
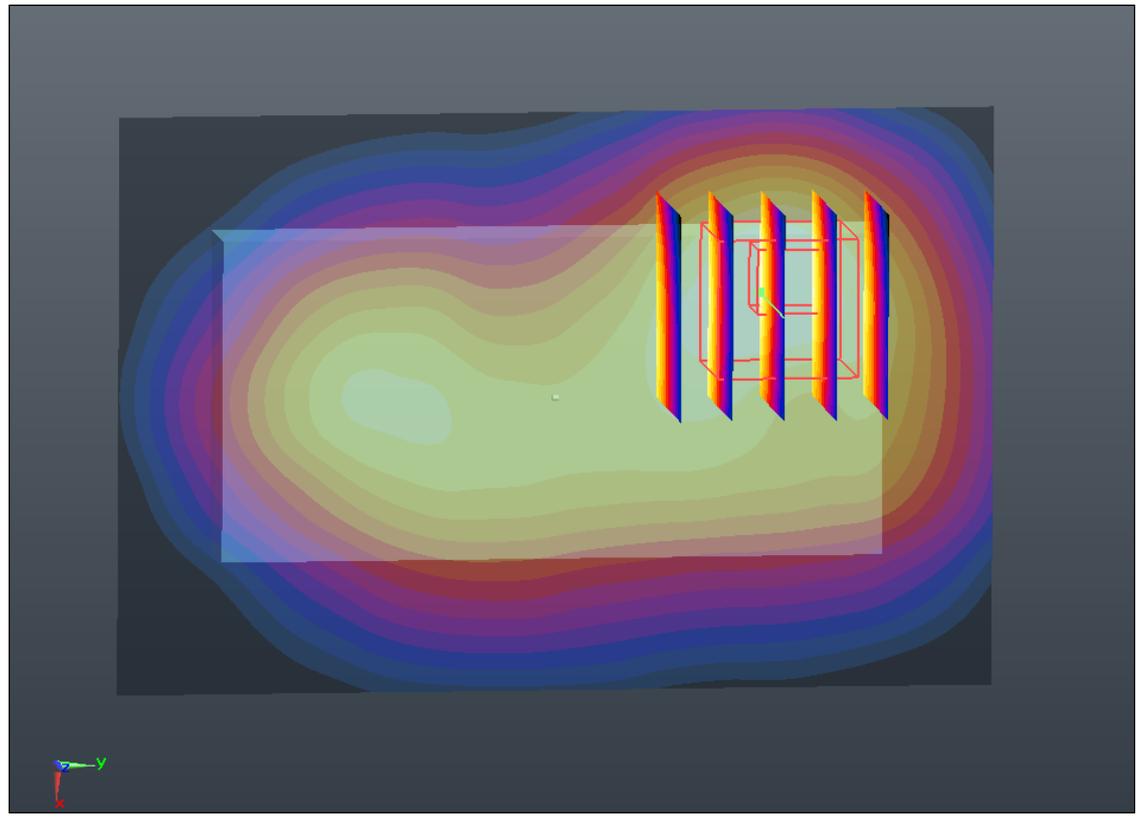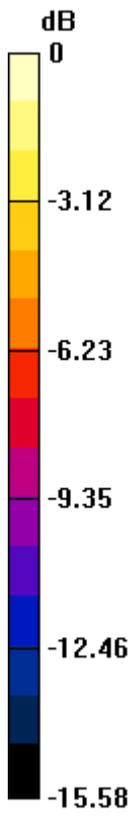
0 dB = 1.050mW/g

#26_WCDMA band II_RMC12.2Kbps_Front 1cm_Ch9400

DUT: 350802

Communication System: UMTS; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130618 Medium parameters used: f = 1880 MHz; σ = 1.526 mho/m; ε$_r$ =

53.206; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(7.3, 7.3, 7.3); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch9400/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.356 mW/g

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.036 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.649 W/kg
SAR(1 g) = 0.990 mW/g; SAR(10 g) = 0.571 mW/g
Maximum value of SAR (measured) = 1.307 mW/g

0 dB = 1.310mW/g

#28_WCDMA band II_RMC12.2Kbps_Front 1cm_Ch9400_Repeat SAR

DUT: 350802

Communication System: UMTS; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130618 Medium parameters used: f = 1880 MHz; σ = 1.526 mho/m; ε$_r$ =

53.206; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(7.3, 7.3, 7.3); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch9400/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
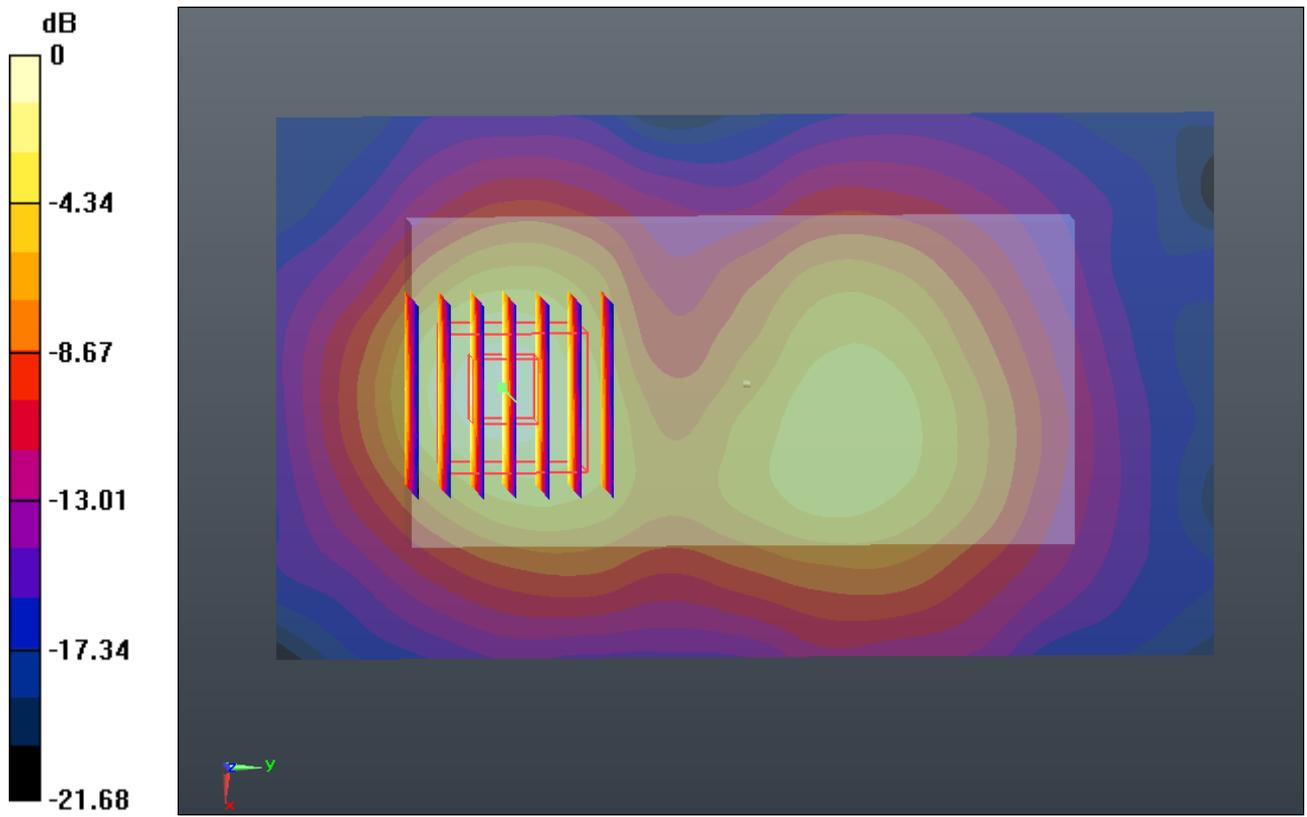Maximum value of SAR (interpolated) = 1.320 mW/g

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.341 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 1.623 W/kg
SAR(1 g) = 0.964 mW/g; SAR(10 g) = 0.553 mW/g
Maximum value of SAR (measured) = 1.259 mW/g
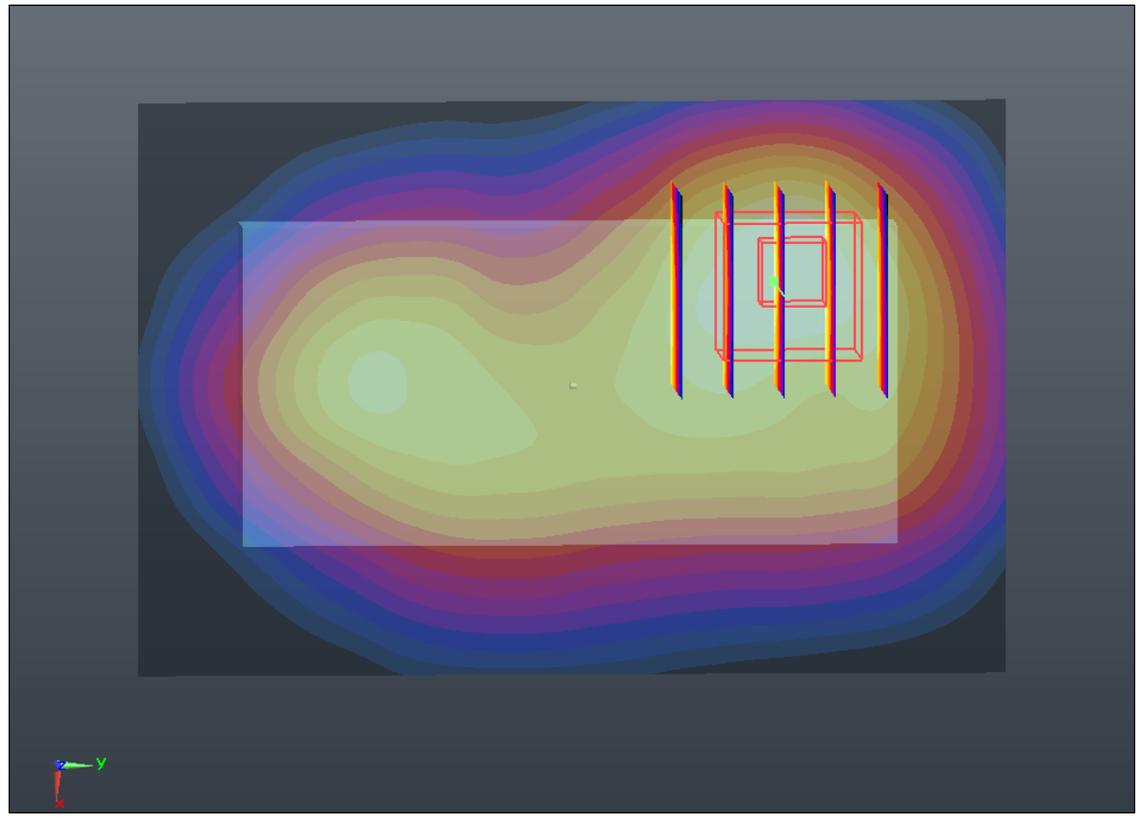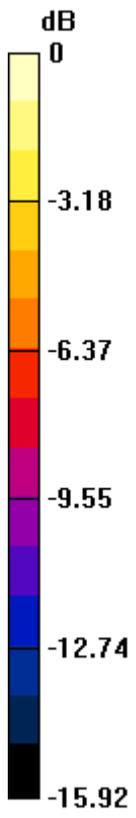
0 dB = 1.260mW/g

#29_802.11b_1M_Front 1cm_Ch11

DUT: 350802

Communication System: WIFI; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: MSL_2450_130619 Medium parameters used: f = 2462 MHz; σ = 1.971 mho/m; ε$_r$ =

51.475; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃；Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(6.84, 6.84, 6.84); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch11/Area Scan (71x121x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.301 mW/g

Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.540 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.438 W/kg
SAR(1 g) = 0.219 mW/g; SAR(10 g) = 0.110 mW/g
Maximum value of SAR (measured) = 0.325 mW/g

#29_802.11b_1M_Front 1cm_Ch11

0 dB = 0.330mW/g

#30_802.11b_1M_Back 1cm_Ch11

DUT: 350802

Communication System: WIFI; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: MSL_2450_130619 Medium parameters used: f = 2462 MHz; σ = 1.971 mho/m; ε_r =

51.475; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃；Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(6.84, 6.84, 6.84); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch11/Area Scan (71x121x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.206 mW/g

Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.555 V/m; Power Drift = 0.043 dB
Peak SAR (extrapolated) = 0.284 W/kg
SAR(1 g) = 0.149 mW/g; SAR(10 g) = 0.080 mW/g
Maximum value of SAR (measured) = 0.215 mW/g
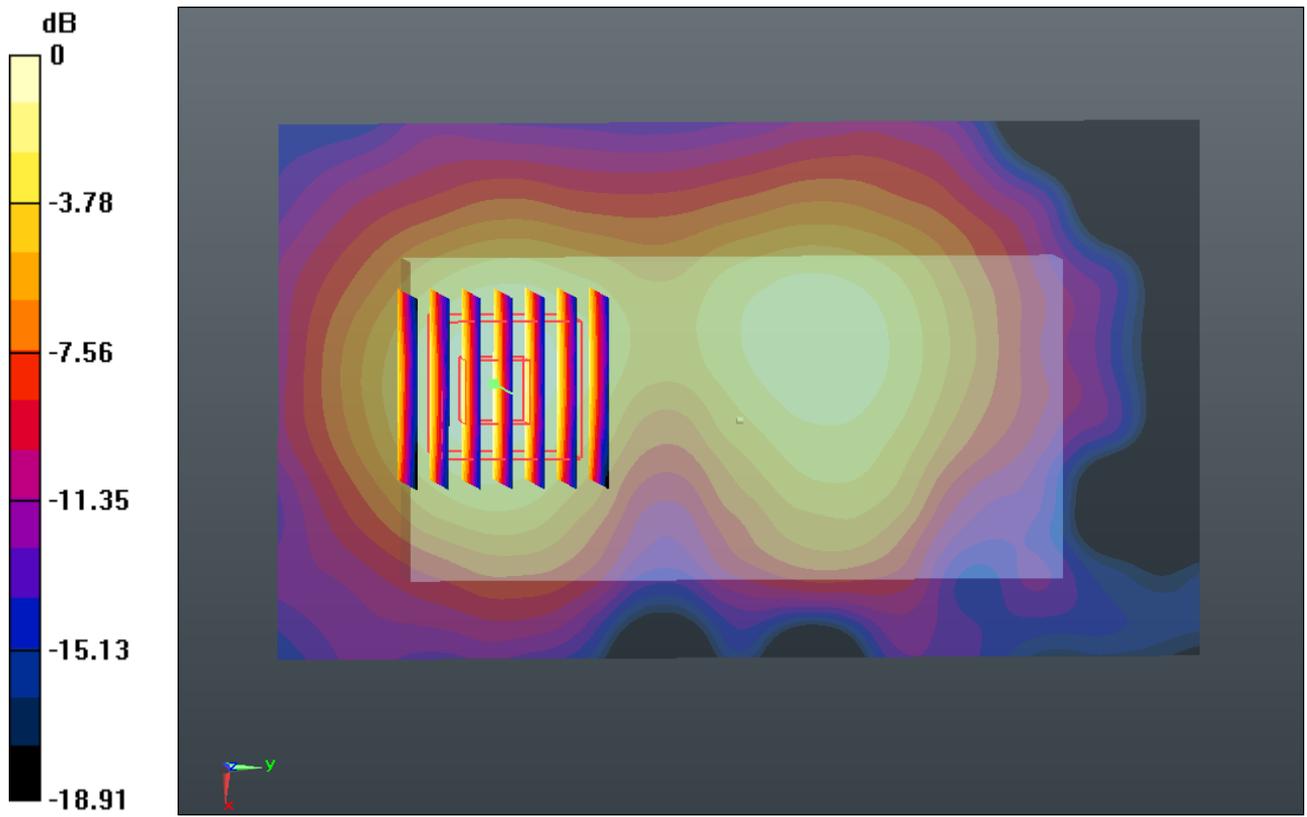
0 dB = 0.210mW/g

#31_802.11b_1M_Right Side 1cm_Ch11

DUT: 350802

Communication System: WIFI; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: MSL_2450_130619 Medium parameters used: f = 2462 MHz; σ = 1.971 mho/m; ε$_r$ =

51.475; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃；Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(6.84, 6.84, 6.84); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch11/Area Scan (41x121x1): Measurement grid: dx=12mm, dy=12mm
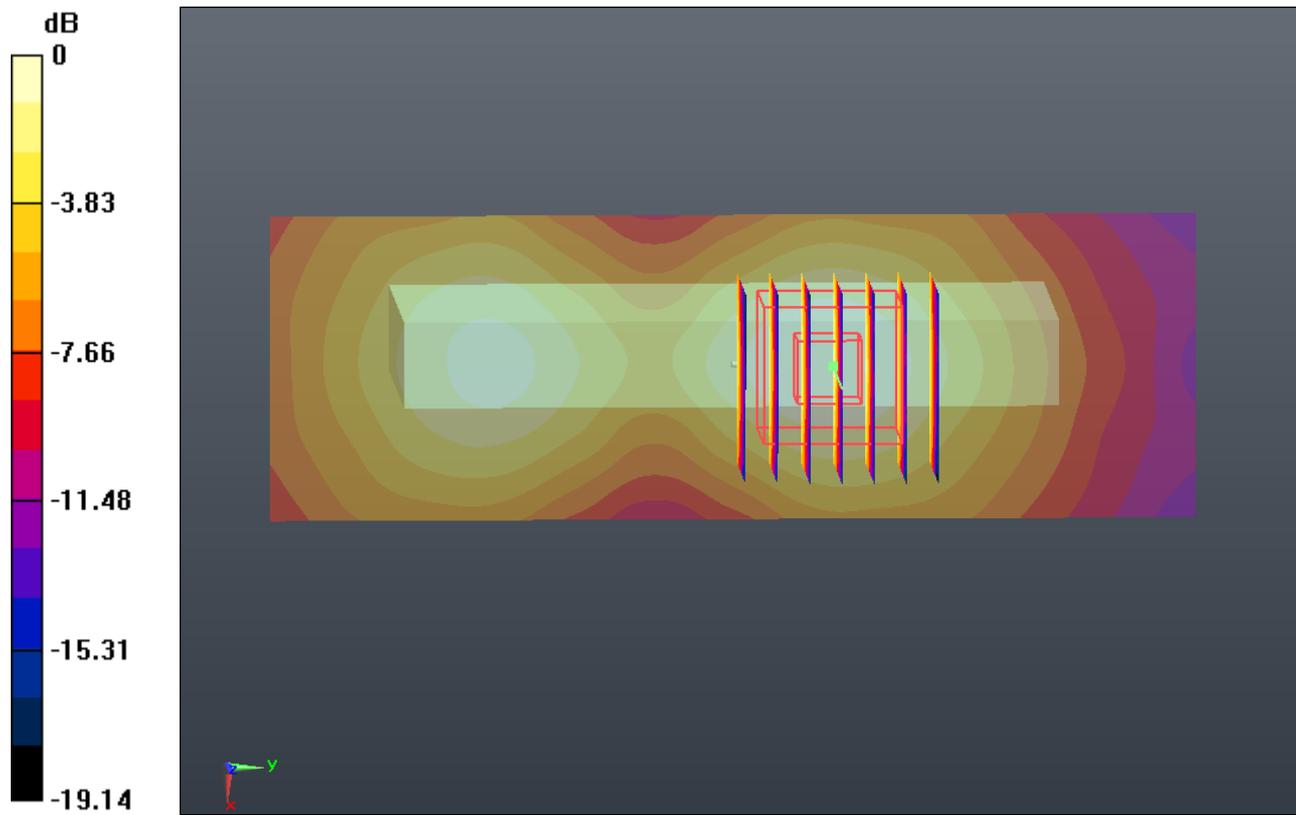Maximum value of SAR (interpolated) = 0.159 mW/g

Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.408 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.199 W/kg
SAR(1 g) = 0.110 mW/g; SAR(10 g) = 0.060 mW/g
Maximum value of SAR (measured) = 0.153 mW/g

0 dB = 0.150mW/g

#32_802.11b_1M_Bottom Side 1cm_Ch11

DUT: 350802

Communication System: WIFI; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: MSL_2450_130619 Medium parameters used: f = 2462 MHz; σ = 1.971 mho/m; ε$_r$ = 51.475; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃；Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3820; ConvF(6.84, 6.84, 6.84); Calibrated: 2012-12-10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2013-1-16
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (4); SEMCAD X Version 14.4.5 (3634)

Ch11/Area Scan (41x71x1): Measurement grid: dx=12mm, dy=12mm
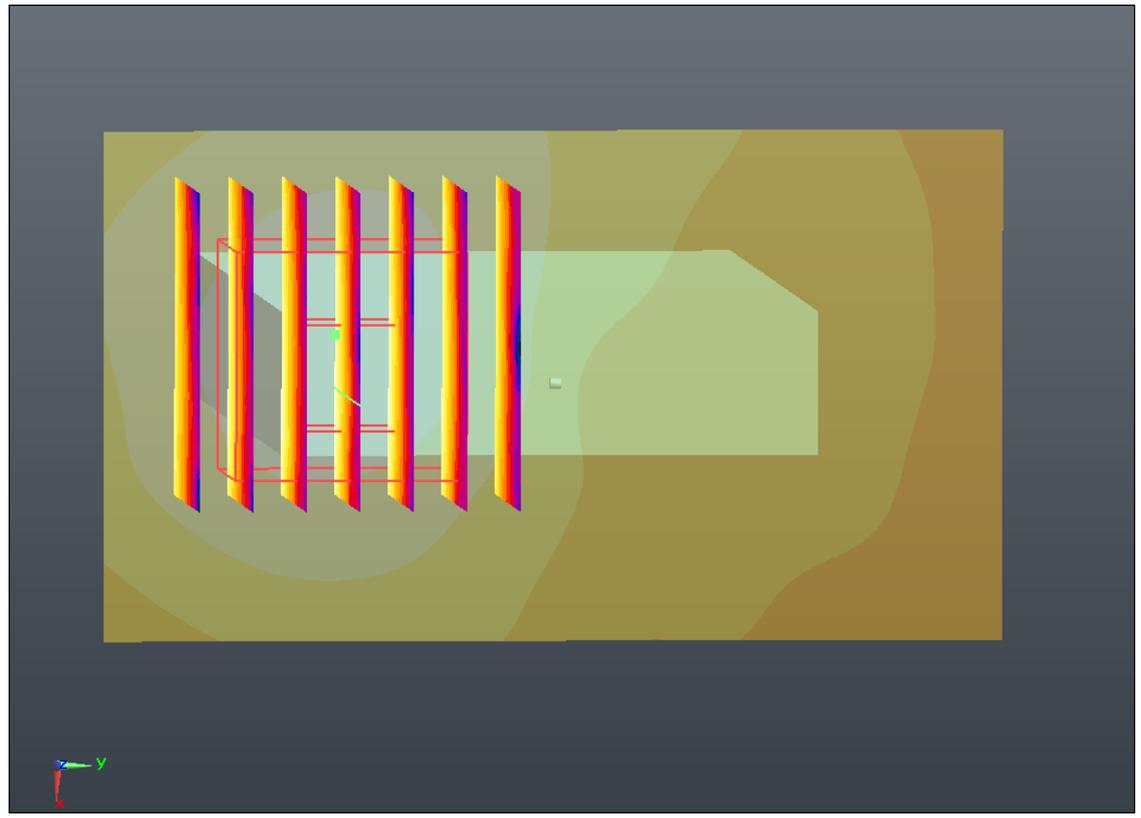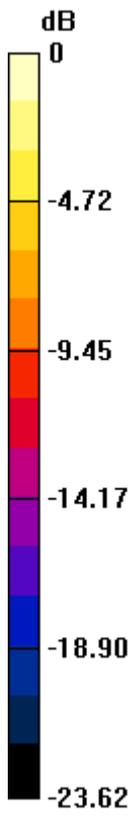Maximum value of SAR (interpolated) = 0.084 mW/g

Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.754 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.112 W/kg
SAR(1 g) = 0.060 mW/g; SAR(10 g) = 0.034 mW/g
Maximum value of SAR (measured) = 0.087 mW/g

0 dB = 0.090mW/g