



# FCC SAR Test Report

**APPLICANT** : HTC Corporation  
**EQUIPMENT** : Smartphone  
**MODEL NAME** : PG58100  
**FCC ID** : NM8PG58100  
**STANDARD** : FCC 47 CFR Part 2 (2.1093)  
IEEE C95.1-1991  
IEEE 1528-2003  
FCC OET Bulletin 65 Supplement C (Edition 01-01)

The product was received on Feb. 10, 2011 and completely tested on Apr. 02, 2011. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown the compliance with the applicable technical standards.

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

Reviewed by:

Roy Wu / Manager



## **SPORTON INTERNATIONAL INC.**

No. 52, Hwa Ya 1<sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.



Table of Contents

Revision History.....3
1. Statement of Compliance.....4
2. Administration Data.....5
2.1 Testing Laboratory.....5
2.2 Applicant.....5
2.3 Manufacturer.....5
2.4 Application Details.....5
3. General Information.....6
3.1 Description of Device Under Test (DUT).....6
3.2 Applied Standards.....7
3.3 Device Category and SAR Limits.....7
3.4 Test Conditions.....7
3.4.1 Ambient Condition.....7
3.4.2 Test Configuration.....7
4. Specific Absorption Rate (SAR).....9
4.1 Introduction.....9
4.2 SAR Definition.....9
5. SAR Measurement System.....10
5.1 E-Field Probe.....11
5.1.1 E-Field Probe Specification.....11
5.1.2 E-Field Probe Calibration.....12
5.2 Data Acquisition Electronics (DAE).....12
5.3 Robot.....12
5.4 Measurement Server.....13
5.5 Phantom.....14
5.6 Device Holder.....15
5.7 Data Storage and Evaluation.....17
5.7.1 Data Storage.....17
5.7.2 Data Evaluation.....17
5.8 Test Equipment List.....19
6. Tissue Simulating Liquids.....20
7. Uncertainty Assessment.....23
8. SAR Measurement Evaluation.....25
8.1 Purpose of System Performance check.....25
8.2 System Setup.....25
8.3 Validation Results.....26
9. DUT Testing Position.....28
10. Measurement Procedures.....31
10.1 Spatial Peak SAR Evaluation.....31
10.2 Area & Zoom Scan Procedures.....32
10.3 Volume Scan Procedures.....32
10.4 SAR Averaged Methods.....32
10.5 Power Drift Monitoring.....32
11. SAR Test Results.....33
11.1 Conducted Power (Unit: dBm).....33
11.2 Test Records for Head SAR Test.....34
11.3 Test Records for Body SAR Test.....35
11.4 Simultaneous Transmission SAR Analysis and Measurements.....37
12. References.....39

- Appendix A. Plots of System Performance Check
Appendix B. Plots of SAR Measurement
Appendix C. DASY Calibration Certificate
Appendix D. Test Setup Photos
Appendix E. FCC 3G SAR Measurement Procedures





### 1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **HTC Corporation Smartphone PG58100** are as follows (with expanded uncertainty 21.4 % for 300 MHz to 3 GHz).

Band	Position	SAR <sub>1g</sub> (W/kg)
GSM850	Head	0.371
	Body	1.35
GSM1900	Head	0.336
	Body	1.38
WCDMA Band IV	Head	0.776
	Body	1.38

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 C95.1-1991, 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).



## 2. Administration Data

### 2.1 Testing Laboratory

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 52, Hwa Ya 1 <sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978

### 2.2 Applicant

Company Name	HTC Corporation
Address	No.23, Xinghua Rd., Taoyuan City, Taoyuan County 330, Taiwan

### 2.3 Manufacturer

Company Name	HTC Corporation
Address	No.23, Xinghua Rd., Taoyuan City, Taoyuan County 330, Taiwan

### 2.4 Application Details

Date of Receipt of Application	Feb. 10, 2011
Date of Start during the Test	Mar. 03, 2011
Date of End during the Test	Apr. 02, 2011

### 3. General Information

#### 3.1 Description of Device Under Test (DUT)

Product Feature & Specification	
DUT Type	Smartphone
Model Name	PG58100
Sample 1	EUT with LCM-Main, Camera-Main and Video Camera 1
Sample 2	EUT with LCM-2 <sup>nd</sup> , Camera-2 <sup>nd</sup> and Video Camera 2
FCC ID	NM8PG58100
Tx Frequency	GSM850 : 824 MHz ~ 849 MHz GSM1900 : 1850 MHz ~ 1910 MHz WCDMA Band IV : 1710 MHz ~ 1755 MHz
Rx Frequency	GSM850 : 869 MHz ~ 894 MHz GSM1900 : 1930 MHz ~ 1990 MHz WCDMA Band IV : 2110 MHz ~ 2155 MHz
Maximum Output Power to Antenna	GSM850 : 33.33 dBm GSM1900 : 29.99 dBm WCDMA Band IV : 23.55 dBm
Antenna Type	Fixed Internal Antenna
Type of Modulation	GSM / GPRS : GMSK EDGE : 8PSK WCDMA : QPSK HSDPA : QPSK / 16QAM HSUPA : BPSK
DUT Stage	Identical Prototype

**Remark:** The above DUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.



### 3.2 Applied Standards

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)
- IEEE C95.1-1991
- IEEE 1528-2003
- FCC OET Bulletin 65 Supplement C (Edition 01-01)
- FCC KDB 648474 D01 v01r05
- FCC KDB 941225 D01 v02
- FCC KDB 941225 D03 v01
- FCC KDB 941225 D04 v01

### 3.3 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.

### 3.4 Test Conditions

#### 3.4.1 **Ambient Condition**

Ambient Temperature	20 to 24 °C
Humidity	< 60 %

#### 3.4.2 **Test Configuration**

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 DUT 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 DUT. The DUT was set from the emulator to radiate maximum output power during all tests.

For WWAN SAR testing, the DUT is in GPRS or WCDMA link mode.

In general, the crest factor is 8.3 for GSM and GPRS/EDGE multi-slot class 8, 4 for GPRS/EDGE multi-slot class 10, and 1 for WCDMA/HSDPA/HSUPA.



For GSM/GPRS/EDGE body SAR testing, the DUT was set in GPRS multi-slot class 10 with 2 uplink slots due to maximum source-based time-averaged output power as following table:

Source-Based Time-Averaged Power						
Band	GSM850			GSM1900		
Channel	128	189	251	512	661	810
GSM (1 Uplink)	24.18	24.23	24.33	20.86	20.89	20.99
GPRS 8 (1 Uplink)	24.05	24.17	24.20	20.76	20.84	20.99
GPRS 10 (2 Uplink)	26.48	26.52	26.59	23.47	23.56	23.48
EDGE 8 (1 Uplink)	17.44	17.48	17.48	16.74	16.76	16.72
EDGE 10 (2 Uplink)	19.16	19.31	19.42	18.72	18.73	18.67

**Note:**  
The source-based time-averaged power is linearly scaled the maximum burst averaged power based on time slots. The calculated method are shown as below:  
Source based time averaged power = Maximum burst averaged power (1 Uplink) - 9 dB  
Source based time averaged power = Maximum burst averaged power (2 Uplink) - 6 dB  
The maximum burst averaged power can be referred to section 11.1 of this report.

## **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 ( $\rho$ ). The equation description is as below:

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

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

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

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

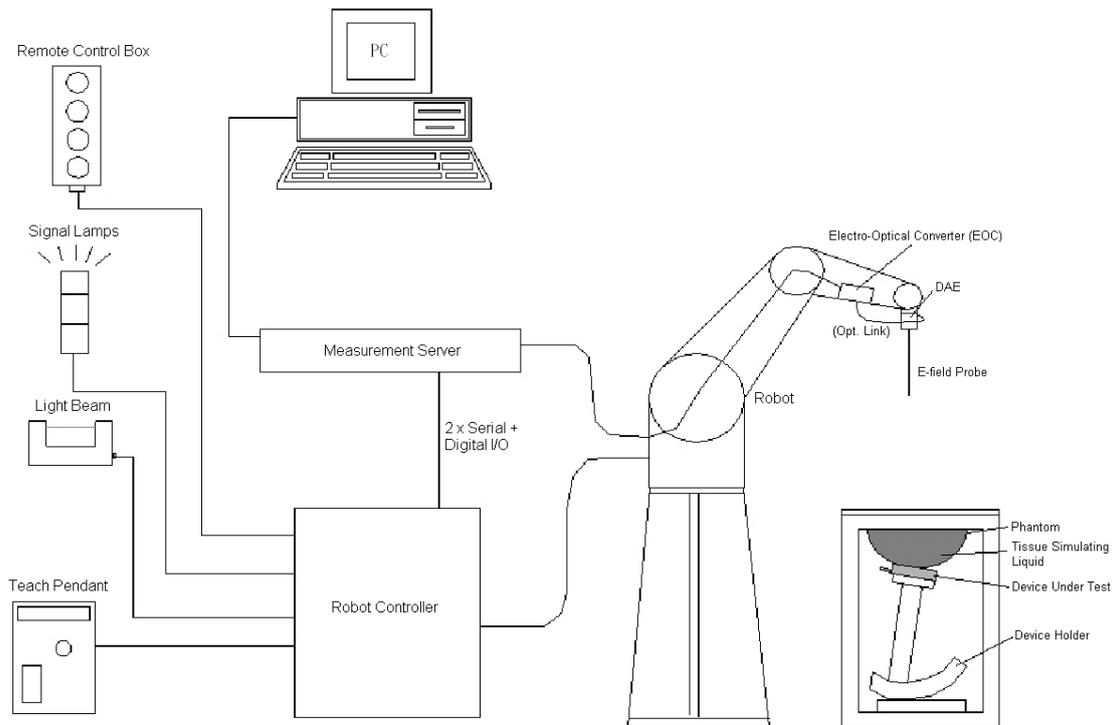
Where: C is the specific heat capacity,  $\delta T$  is the temperature rise and  $\delta t$  is the exposure duration, or related to the electrical field in the tissue by

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

Where:  $\sigma$  is the conductivity of the tissue,  $\rho$  is the mass density of the tissue and E is the RMS electrical field strength.

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

## 5. SAR Measurement System



**Fig 5.1 SPEAG DASY4 or DASY5 System Configurations**

The DASY4 or DASY5 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 (ECO) 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
- DASY4 or DASY5 software
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom
- A device holder
- Tissue simulating liquid
- Dipole for evaluating the proper functioning of the system

Some of the components are described in details 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

##### <ET3DV6>

<b>Construction</b>	Symmetrical design with triangular core Built-in optical fiber for surface detection system. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
<b>Frequency</b>	10 MHz to 3 GHz; Linearity: $\pm 0.2$ dB
<b>Directivity</b>	$\pm 0.2$ dB in HSL (rotation around probe axis) $\pm 0.4$ dB in HSL (rotation normal to probe axis)
<b>Dynamic Range</b>	5 $\mu$ W/g to 100 mW/g; Linearity: $\pm 0.2$ dB
<b>Dimensions</b>	Overall length: 330 mm (Tip: 16 mm) Tip diameter: 6.8 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.7 mm



Fig 5.2 Photo of ET3DV6

##### <EX3DV4 Probe>

<b>Construction</b>	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
<b>Frequency</b>	10 MHz to 6 GHz; Linearity: $\pm 0.2$ dB
<b>Directivity</b>	$\pm 0.3$ dB in HSL (rotation around probe axis) $\pm 0.5$ dB in tissue material (rotation normal to probe axis)
<b>Dynamic Range</b>	10 $\mu$ W/g to 100 mW/g; Linearity: $\pm 0.2$ dB (noise: typically $< 1$ $\mu$ W/g)
<b>Dimensions</b>	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 5.3 Photo of EX3DV4

### 5.1.2 E-Field Probe Calibration

Each probe needs to be calibrated according to a dosimetric assessment procedure with accuracy better than  $\pm 10\%$ . The spherical isotropy shall be evaluated and within  $\pm 0.25$  dB. 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 5.4 Photo of DAE**

### 5.3 Robot

The SPEAG DASY system uses the high precision robots (DASY4: RX90BL; DASY5: TX90XL) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY4: CS7MB; DASY5: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

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



**Fig 5.5 Photo of DASY4**



**Fig 5.6 Photo of DASY5**

### **5.4 Measurement Server**

The measurement server is based on a PC/104 CPU board with CPU (DASY4: 166 MHz, Intel Pentium; DASY5: 400 MHz, Intel Celeron), chipdisk (DASY4: 32 MB; DASY5: 128 MB), RAM (DASY4: 64 MB, 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 5.7 Photo of Server for DASY4**



**Fig 5.8 Photo of Server for DASY5**

### 5.5 Phantom

#### <SAM Twin Phantom>

<b>Shell Thickness</b>	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm	 <p><b>Fig 5.9 Photo of SAM Phantom</b></p>
<b>Filling Volume</b>	Approx. 25 liters	
<b>Dimensions</b>	Length: 1000 mm; Width: 500 mm; Height: adjustable feet	
<b>Measurement Areas</b>	Left Hand, Right Hand, Flat 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.

#### <ELI4 Phantom>

<b>Shell Thickness</b>	2 ± 0.2 mm (sagging: <1%)	 <p><b>Fig 5.10 Photo of ELI4 Phantom</b></p>
<b>Filling Volume</b>	Approx. 30 liters	
<b>Dimensions</b>	Major ellipse axis: 600 mm Minor axis: 400 mm	

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

## 5.6 Device Holder

### <Device Holder for SAM Twin Phantom>

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5 mm distance, a positioning uncertainty of  $\pm 0.5$  mm would produce a SAR uncertainty of  $\pm 20$  %. 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 (EPR). Thus the device needs no repositioning when changing the angles.

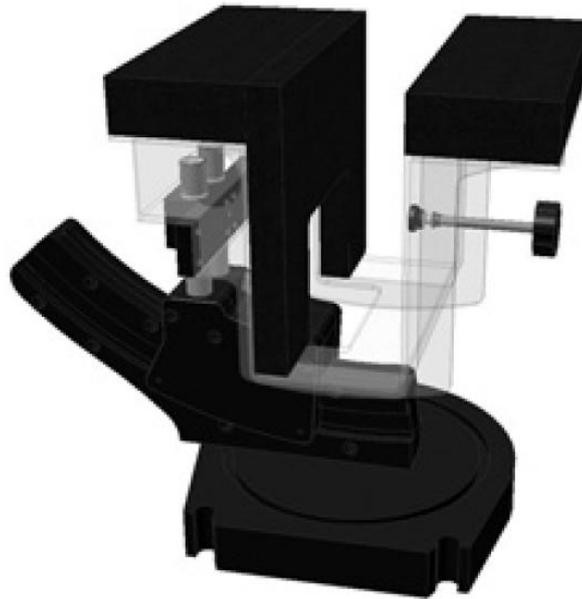
The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity  $\epsilon = 3$  and loss tangent  $\delta = 0.02$ . The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested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



Fig 5.11 Device Holder

**<Laptop Extension Kit>**

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



**Fig 5.12 Laptop Extension Kit**



5.7 Data Storage and Evaluation

5.7.1 Data Storage

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

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

5.7.2 Data Evaluation

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

- Probe parameters :**
  - Sensitivity Norm<sub>i</sub>, a<sub>10</sub>, a<sub>11</sub>, a<sub>12</sub>
  - Conversion factor ConvF<sub>i</sub>
  - Diode compression point dcp<sub>i</sub>
- 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<sub>i</sub> = diode compression point (DASY parameter)

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

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

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

with  $V_i$  = compensated signal of channel i, (i = x, y, z)  
 Norm<sub>i</sub> = sensor sensitivity of channel i, (i = x, y, z),  $\mu\text{V}/(\text{V/m})^2$  for E-field Probes  
 ConvF = sensitivity enhancement in solution  
 a<sub>ij</sub> = sensor sensitivity factors for H-field probes  
 f = carrier frequency [GHz]  
 E<sub>i</sub> = electric field strength of channel i in V/m  
 H<sub>i</sub> = magnetic field strength of channel i in A/m

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

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

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

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

with SAR = local specific absorption rate in mW/g  
 E<sub>tot</sub> = total field strength in V/m  
 σ = conductivity in [mho/m] or [Siemens/m]  
 ρ = equivalent tissue density in g/cm<sup>3</sup>

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	Dosimetric E-Field Probe	ET3DV6	1787	May 18, 2010	May 17, 2011
SPEAG	Dosimetric E-Field Probe	ET3DV6	1788	Sep. 21, 2010	Sep. 20, 2011
SPEAG	Dosimetric E-Field Probe	EX3DV4	3731	Sep. 20, 2010	Sep. 19, 2011
SPEAG	835MHz System Validation Kit	D835V2	4d082	Jul. 20, 2010	Jul. 19, 2012
SPEAG	1800MHz System Validation Kit	D1800V2	2d052	Jun. 15, 2010	Jun. 14, 2012
SPEAG	1900MHz System Validation Kit	D1900V2	5d018	Jun. 15, 2010	Jun. 14, 2012
SPEAG	Data Acquisition Electronics	DAE3	577	Jan. 13, 2011	Jan. 12, 2012
SPEAG	Data Acquisition Electronics	DAE4	778	Oct. 22, 2010	Oct. 21, 2011
SPEAG	Device Holder	N/A	N/A	NCR	NCR
SPEAG	SAM Phantom	QD 000 P40 C	TP-1303	NCR	NCR
SPEAG	SAM Phantom	QD 000 P40 C	TP-1383	NCR	NCR
SPEAG	SAM Phantom	QD 000 P40 C	TP-1446	NCR	NCR
SPEAG	SAM Phantom	QD 000 P40 C	TP-1478	NCR	NCR
SPEAG	ELI4 Phantom	QD 0VA 001 BB	1026	NCR	NCR
SPEAG	ELI4 Phantom	QD 0VA 001 BA	1029	NCR	NCR
Agilent	PNA Series Network Analyzer	E8358A	US40260131	May 06, 2010	May 05, 2011
Agilent	Wireless Communication Test Set	E5515C	MY48360820	Jan. 12, 2010	Jan. 11, 2012
Agilent	Wireless Communication Test Set	E5515C	GB46311322	Mar. 23, 2011	Mar. 22, 2013
R&S	Universal Radio Communication Tester	CMU200	114256	Feb. 08, 2010	Feb. 07, 2012
Agilent	Dielectric Probe Kit	85070D	US01440205	NCR	NCR
Agilent	Dual Directional Coupler	778D	50422	NCR	NCR
AR	Power Amplifier	5S1G4M2	0328767	NCR	NCR
R&S	Spectrum Analyzer	FSP30	101329	Apr. 26, 2010	Apr. 25, 2011

**Table 5.1 Test Equipment List**

**Note:** The calibration certificate of DASy can be referred to appendix C of this report.

## 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.

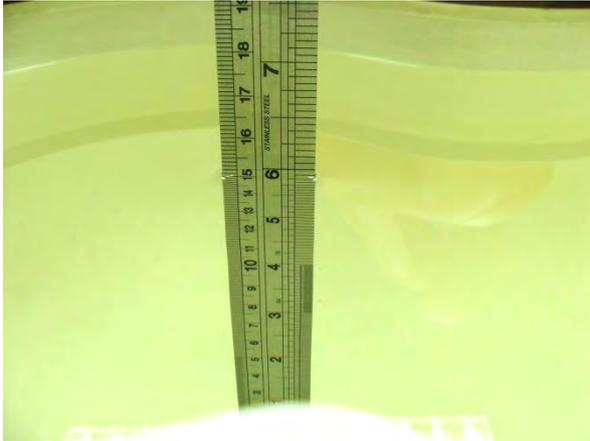


Fig 6.1 Photo of Liquid Height for Head SAR



Fig 6.2 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 ( $\sigma$ )	Permittivity ( $\epsilon_r$ )
<b>For Head</b>								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
900	40.3	57.9	0.2	1.4	0.2	0	0.97	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
<b>For Body</b>								
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
900	50.8	48.2	0	0.9	0.1	0	1.05	55.0
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 following table gives the targets for tissue simulating liquid.

Frequency (MHz)	Liquid Type	Conductivity ( $\sigma$ )	$\pm 5\%$ Range	Permittivity ( $\epsilon_r$ )	$\pm 5\%$ Range
750	Head	0.89	0.85 ~ 0.93	41.9	39.8 ~ 44.0
835	Head	0.90	0.86 ~ 0.95	41.5	39.4 ~ 43.6
900	Head	0.97	0.92 ~ 1.02	41.5	39.4 ~ 43.6
1800, 1900, 2000	Head	1.40	1.33 ~ 1.47	40.0	38.0 ~ 42.0
2450	Head	1.80	1.71 ~ 1.89	39.2	37.2 ~ 41.2
750	Body	0.96	0.91 ~ 1.01	55.5	52.7 ~ 58.3
835	Body	0.97	0.92 ~ 1.02	55.2	52.4 ~ 58.0
900	Body	1.05	1.00 ~ 1.10	55.0	52.3 ~ 57.8
1800, 1900, 2000	Body	1.52	1.44 ~ 1.60	53.3	50.6 ~ 56.0
2450	Body	1.95	1.85 ~ 2.05	52.7	50.1 ~ 55.3

Table 6.2 Targets 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	Temperature (°C)	Conductivity ( $\sigma$ )	Permittivity ( $\epsilon_r$ )	Measurement Date
835	Head	21.3	0.876	43.3	Mar. 03, 2011
835	Head	21.6	0.921	41.3	Mar. 28, 2011
835	Body	21.6	0.963	54.5	Mar. 11, 2011
835	Body	21.3	0.963	54.6	Mar. 25, 2011
835	Body	21.6	0.955	52.7	Mar. 28, 2011
1800	Head	21.5	1.44	39.9	Mar. 26, 2011
1800	Body	21.6	1.54	53.4	Mar. 04, 2011
1800	Body	21.1	1.58	51.6	Mar. 25, 2011
1800	Body	21.5	1.57	51.7	Mar. 28, 2011
1800	Body	21.5	1.55	51.7	Apr. 02, 2011
1900	Head	21.5	1.42	41.1	Mar. 26, 2011
1900	Body	21.6	1.55	52.9	Mar. 11, 2011
1900	Body	21.1	1.53	52.9	Mar. 25, 2011
1900	Body	21.5	1.55	53.2	Mar. 26, 2011
1900	Body	21.5	1.53	52.0	Mar. 28, 2011
1900	Body	21.5	1.54	53.5	Mar. 29, 2011
1900	Body	21.2	1.53	52.5	Apr. 02, 2011

Table 6.3 Measuring Results for Simulating Liquid

## **7. Uncertainty Assessment**

The component of uncertainty may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainty by the statistical analysis of a series of observations is termed a Type A 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 7.1

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

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

(b)  $\kappa$  is the coverage factor

**Table 7.1 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 showed in Table 7.2.



Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (1g)	Standard Uncertainty (1g)
<b>Measurement System</b>					
Probe Calibration	5.5	Normal	1	1	± 5.5 %
Axial Isotropy	4.7	Rectangular	√3	0.7	± 1.9 %
Hemispherical Isotropy	9.6	Rectangular	√3	0.7	± 3.9 %
Boundary Effects	1.0	Rectangular	√3	1	± 0.6 %
Linearity	4.7	Rectangular	√3	1	± 2.7 %
System Detection Limits	1.0	Rectangular	√3	1	± 0.6 %
Readout Electronics	0.3	Normal	1	1	± 0.3 %
Response Time	0.8	Rectangular	√3	1	± 0.5 %
Integration Time	2.6	Rectangular	√3	1	± 1.5 %
RF Ambient Noise	3.0	Rectangular	√3	1	± 1.7 %
RF Ambient Reflections	3.0	Rectangular	√3	1	± 1.7 %
Probe Positioner	0.4	Rectangular	√3	1	± 0.2 %
Probe Positioning	2.9	Rectangular	√3	1	± 1.7 %
Max. SAR Eval.	1.0	Rectangular	√3	1	± 0.6 %
<b>Test Sample Related</b>					
Device Positioning	2.9	Normal	1	1	± 2.9 %
Device Holder	3.6	Normal	1	1	± 3.6 %
Power Drift	5.0	Rectangular	√3	1	± 2.9 %
<b>Phantom and Setup</b>					
Phantom Uncertainty	4.0	Rectangular	√3	1	± 2.3 %
Liquid Conductivity (Target)	5.0	Rectangular	√3	0.64	± 1.8 %
Liquid Conductivity (Meas.)	2.5	Normal	1	0.64	± 1.6 %
Liquid Permittivity (Target)	5.0	Rectangular	√3	0.6	± 1.7 %
Liquid Permittivity (Meas.)	2.5	Normal	1	0.6	± 1.5 %
<b>Combined Standard Uncertainty</b>					± 10.7 %
<b>Coverage Factor for 95 %</b>					K = 2
<b>Expanded Uncertainty</b>					± 21.4 %

Table 7.2 Uncertainty Budget of DASY for frequency range 300 MHz to 3 GHz

## 8. SAR Measurement Evaluation

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.

### 8.1 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.

### 8.2 System Setup

In the simplified setup for system evaluation, the DUT 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:

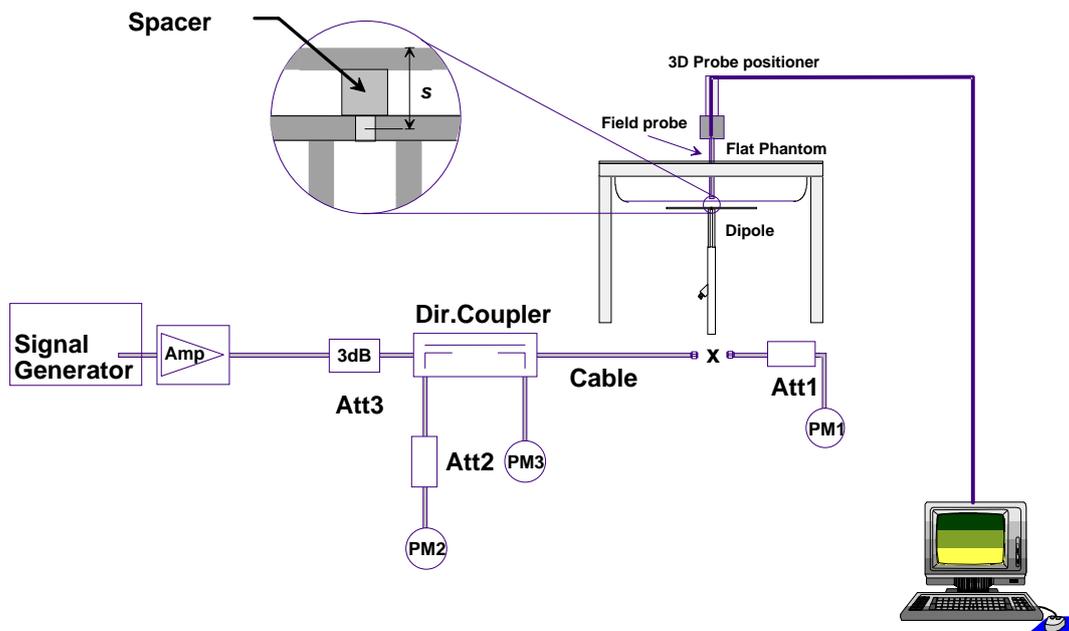
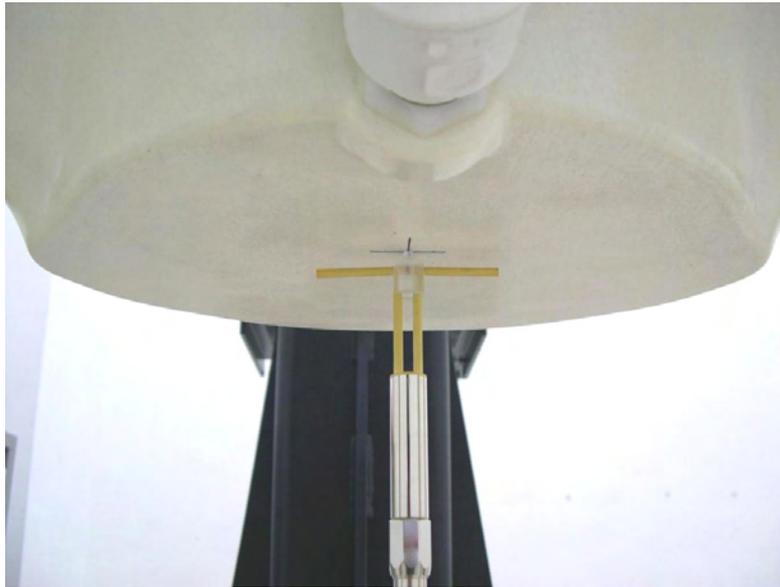


Fig 8.1 System Setup for System Evaluation

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

The output power on dipole port must be calibrated to 24 dBm (250 mW) or 20 dBm (100 mW) before dipole is connected.



**Fig 8.2 Photo of Dipole Setup**

### **8.3 Validation Results**

Comparing to the original SAR value provided by SPEAG, the validation data should be within its specification of 10 %. Table 8.1 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.



Measurement Date	Frequency (MHz)	Targeted SAR <sub>1g</sub> (W/kg)	Measured SAR <sub>1g</sub> (W/kg)	Normalized SAR <sub>1g</sub> (W/kg)	Deviation (%)
Mar. 03, 2011	835	9.65	2.40	9.60	-0.52
Mar. 28, 2011	835	9.65	2.53	10.12	4.87
Mar. 11, 2011	835	10.00	2.55	10.20	2.00
Mar. 25, 2011	835	10.00	0.917	9.17	-8.30
Mar. 28, 2011	835	10.00	2.37	9.48	-5.20
Mar. 26, 2011	1800	38.80	9.99	39.96	2.99
Mar. 04, 2011	1800	38.90	9.88	39.52	1.59
Mar. 25, 2011	1800	38.90	8.82	35.28	-9.31
Mar. 28, 2011	1800	38.90	10.10	40.40	3.86
Apr. 02, 2011	1800	38.90	9.68	38.72	-0.46
Mar. 26, 2011	1900	39.20	10.70	42.80	9.18
Mar. 11, 2011	1900	40.90	10.80	43.20	5.62
Mar. 25, 2011	1900	40.90	3.99	39.90	-2.44
Mar. 26, 2011	1900	40.90	10.70	42.80	4.65
Mar. 28, 2011	1900	40.90	10.70	42.80	4.65
Mar. 29, 2011	1900	40.90	10.80	43.20	5.62
Apr. 02, 2011	1900	40.90	10.30	41.20	0.73

Table 8.1 Target and Measurement SAR after Normalized

## 9. DUT Testing Position

This DUT was tested in nine different positions. They are right cheek, right tilted, left cheek, left tilted, front face of the DUT with phantom 1 cm gap, rear face of the DUT with phantom 1 cm gap, left side of the DUT with phantom 1 cm gap, right side of the DUT with phantom 1 cm gap, and bottom side of the DUT with phantom 1 cm gap as illustrated below:

### 1. Define two imaginary lines on the handset

- (a) The vertical centerline passes through two points on the front side of the handset - the midpoint of the width  $w_t$  of the handset at the level of the acoustic output, and the midpoint of the width  $w_b$  of the bottom of the handset.
- (b) The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output. The horizontal line is also tangential to the face of the handset at point A.
- (c) The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.

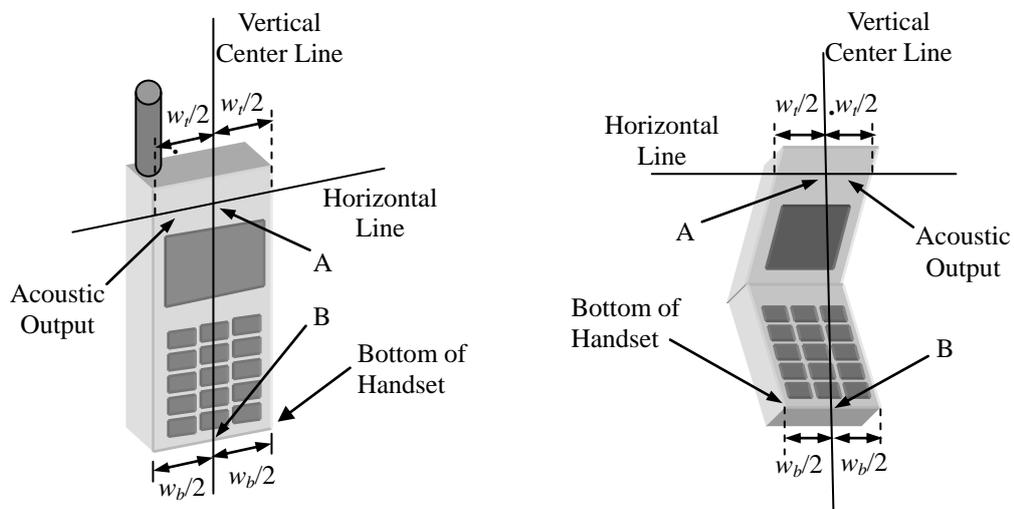
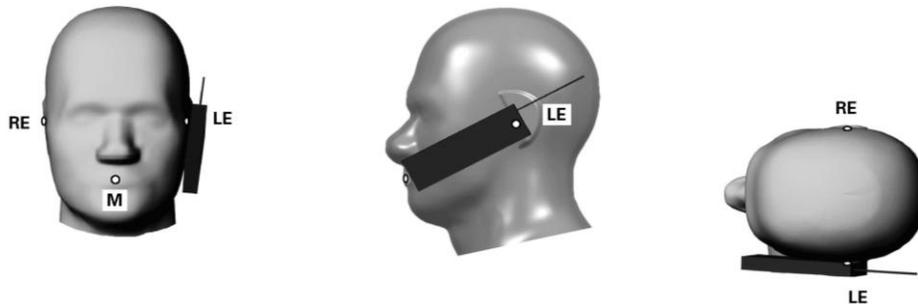


Fig 9.1 Illustration for Handset Vertical and Horizontal Reference Lines

**2. Cheek Position**

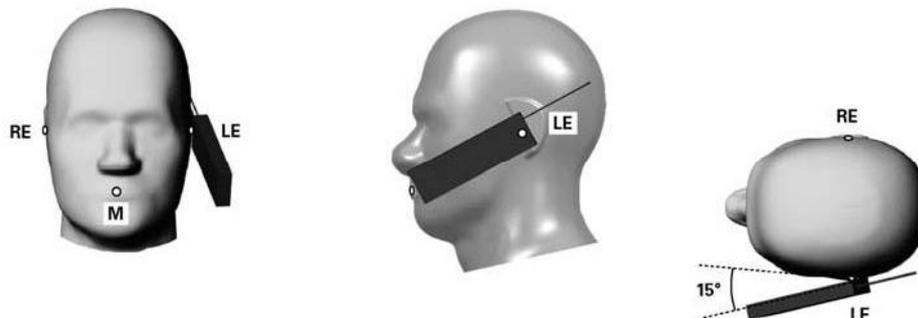
- (a) To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the three ear and mouth reference point (M: Mouth, RE: Right Ear, and LE: Left Ear) and align the center of the ear piece with the line RE-LE.
- (b) To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost (see Fig. 9.2).



**Fig 9.2 Illustration for Cheek Position**

**3. Tilted Position**

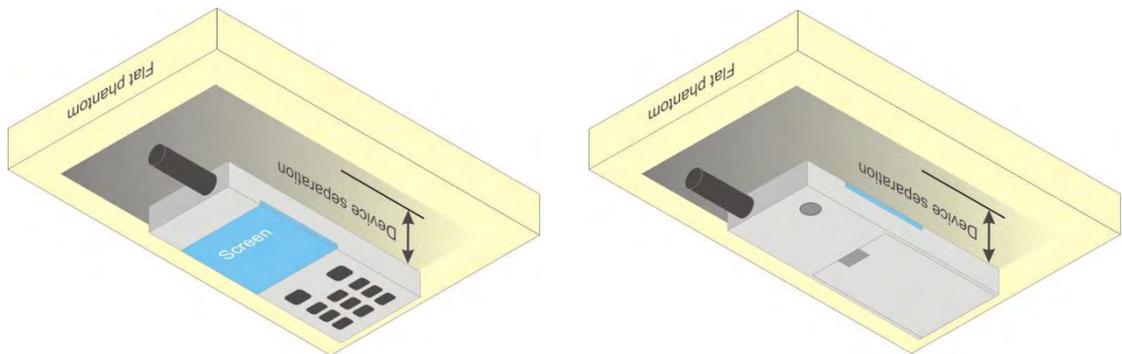
- (a) To position the device in the “cheek” position described above.
- (b) While maintaining the device the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost (see Fig. 9.3).



**Fig 9.3 Illustration for Tilted Position**

#### 4. Body Worn Position

- (a) To position the device parallel to the phantom surface.
- (b) To adjust the device parallel to the flat phantom.
- (c) To adjust the distance between the device surface and the flat phantom to 1 cm.



**Fig 9.4 Illustration for Body Worn Position**

#### 5. DUT Setup Photos

Please refer to Appendix D for the test setup photos.

## **10. Measurement Procedures**

The measurement procedures are as follows:

- (a) For WWAN function, link DUT with base station emulator in highest power channel
- (b) Set base station emulator to allow DUT to radiate maximum output power
- (c) Measure output power through RF cable and power meter
- (d) Place the DUT in the positions described in the last section
- (e) Set scan area, grid size and other setting on the DASY software
- (f) Taking data for the middle channel on each testing position
- (g) Find out the largest SAR result on these testing positions of each band
- (h) Measure SAR results for other channels in worst SAR testing position if the 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

### **10.1 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 from 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



## **10.2 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 measures 5x5x7 points with step size 8, 8 and 5 mm for 300 MHz to 3 GHz, and 8x8x8 points with step size 4, 4 and 2.5 mm for 3 GHz to 6 GHz. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g.

## **10.3 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 DUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing (step-size is 4, 4 and 2.5 mm). When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

## **10.4 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.

## **10.5 Power Drift Monitoring**

All SAR testing is under the DUT 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 DUT 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 drift more than 5%, the SAR will be retested.



### 11. SAR Test Results

#### 11.1 Conducted Power (Unit: dBm)

Band	GSM850			GSM1900		
Channel	128	189	251	512	661	810
Frequency (MHz)	824.2	836.4	848.8	1850.2	1880.0	1909.8
GSM (1 Uplink)	33.18	33.23	33.33	29.86	29.89	29.99
GPRS 8 (1 Uplink)	33.05	33.17	33.20	29.76	29.84	29.99
GPRS 10 (2 Uplink)	32.48	32.52	32.59	29.47	29.56	29.48
EDGE 8 (1 Uplink)	26.44	26.48	26.48	25.74	25.76	25.72
EDGE 10 (2 Uplink)	25.16	25.31	25.42	24.72	24.73	24.67

Band	WCDMA Band IV		
Channel	1312	1413	1513
Frequency (MHz)	1712.4	1732.6	1752.6
RMC 12.2K	23.23	23.55	23.33
HSDPA Subtest-1	22.84	23.08	23.17
HSDPA Subtest-2	22.86	23.05	23.04
HSDPA Subtest-3	22.38	22.68	22.62
HSDPA Subtest-4	21.98	22.69	22.33
HSUPA Subtest-1	22.13	22.52	22.68
HSUPA Subtest-2	21.24	21.44	21.51
HSUPA Subtest-3	21.74	21.61	21.82
HSUPA Subtest-4	21.48	21.81	21.91
HSUPA Subtest-5	22.83	22.34	22.81



11.2 Test Records for Head SAR Test

Plot No.	Band	Mode	Test Position	Channel	Sample	Battery	SAR <sub>1g</sub> (W/kg)	SAR <sub>10g</sub> (W/kg)
1	GSM850	-	Right Cheek	251	1	1	0.354	0.268
2	GSM850	-	Right Cheek	251	2	2	0.261	0.195
3	<b>GSM850</b>	-	<b>Right Cheek</b>	<b>251</b>	<b>1</b>	<b>3</b>	<b>0.371</b>	<b>0.279</b>
4	GSM850	-	Right Tilted	251	1	3	0.23	0.176
5	GSM850	-	Left Cheek	251	1	3	0.275	0.205
6	GSM850	-	Left Tilted	251	1	3	0.146	0.115
41	<b>GSM1900</b>	-	<b>Right Cheek</b>	<b>810</b>	<b>1</b>	<b>1</b>	<b>0.336</b>	<b>0.217</b>
42	GSM1900	-	Right Cheek	810	2	2	0.263	0.171
43	GSM1900	-	Right Cheek	810	1	3	0.303	0.197
44	GSM1900	-	Right Tilted	810	1	1	0.126	0.073
45	GSM1900	-	Left Cheek	810	1	1	0.241	0.149
46	GSM1900	-	Left Tilted	810	1	1	0.111	0.072
53	<b>WCDMA Band IV</b>	<b>RMC12.2K</b>	<b>Right Cheek</b>	<b>1413</b>	<b>1</b>	<b>1</b>	<b>0.776</b>	<b>0.504</b>
54	WCDMA Band IV	RMC12.2K	Right Cheek	1413	2	2	0.532	0.349
55	WCDMA Band IV	RMC12.2K	Right Cheek	1413	1	3	0.69	0.45
56	WCDMA Band IV	RMC12.2K	Right Tilted	1413	1	1	0.236	0.141
57	WCDMA Band IV	RMC12.2K	Left Cheek	1413	1	1	0.537	0.335
58	WCDMA Band IV	RMC12.2K	Left Tilted	1413	1	1	0.283	0.184



**11.3 Test Records for Body SAR Test**

Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Ch.	Sample	Battery	Ear-phone	SAR <sub>1g</sub> (W/kg)	SAR <sub>10g</sub> (W/kg)
18	GSM850	GPRS10	Rear Face	1	251	1	1	-	1.22	0.885
49	GSM850	GPRS10	Rear Face	1	251	2	2	-	1.04	0.744
<b>20</b>	<b>GSM850</b>	<b>GPRS10</b>	<b>Rear Face</b>	<b>1</b>	<b>251</b>	<b>1</b>	<b>3</b>	-	<b>1.35</b>	<b>1.01</b>
21	GSM850	GPRS10	Front Face	1	251	1	3	-	0.873	0.667
22	GSM850	GPRS10	Left Side	1	251	1	3	-	0.84	0.559
23	GSM850	GPRS10	Right Side	1	251	1	3	-	0.656	0.45
25	GSM850	GPRS10	Bottom Side	1	251	1	3	-	0.309	0.158
26	GSM850	GPRS10	Rear Face	1	189	1	3	-	1.12	0.818
27	GSM850	GPRS10	Rear Face	1	128	1	3	-	0.978	0.717
69	GSM850	GPRS10	Rear Face	1	189	1	1	-	0.722	0.555
70	GSM850	GPRS10	Rear Face	1	128	1	1	-	0.535	0.408
71	GSM850	GPRS10	Rear Face	1	189	2	2	-	0.549	0.401
72	GSM850	GPRS10	Rear Face	1	128	2	2	-	0.55	0.403
28	GSM850	GPRS10	Rear Face	1	251	1	1	1	1.2	0.82
60	GSM850	GPRS10	Rear Face	1	251	2	2	2	0.636	0.415
29	GSM850	GPRS10	Rear Face	1	251	1	3	3	1.15	0.752
73	GSM850	GPRS10	Rear Face	1	189	1	1	1	0.96	0.633
74	GSM850	GPRS10	Rear Face	1	128	1	1	1	0.81	0.534
94	GSM1900	GPRS10	Rear Face	1	661	1	1	-	1.27	0.734
47	GSM1900	GPRS10	Rear Face	1	661	2	2	-	1.02	0.586
95	GSM1900	GPRS10	Rear Face	1	661	1	3	-	1.29	0.739
32	GSM1900	GPRS10	Front Face	1	661	1	3	-	0.641	0.38
33	GSM1900	GPRS10	Left Side	1	661	1	3	-	0.223	0.137
34	GSM1900	GPRS10	Right Side	1	661	1	3	-	0.24	0.147
36	GSM1900	GPRS10	Bottom Side	1	661	1	3	-	1.11	0.619
39	GSM1900	GPRS10	Rear Face	1	512	1	3	-	1.25	0.764
96	GSM1900	GPRS10	Rear Face	1	810	1	3	-	1.25	0.715
67	GSM1900	GPRS10	Rear Face	1	512	1	1	-	1.06	0.643
97	GSM1900	GPRS10	Rear Face	1	810	1	1	-	1.25	0.715
92	GSM1900	GPRS10	Bottom Side	1	512	1	3	-	1.16	0.638
<b>93</b>	<b>GSM1900</b>	<b>GPRS10</b>	<b>Bottom Side</b>	<b>1</b>	<b>810</b>	<b>1</b>	<b>3</b>	-	<b>1.38</b>	<b>0.741</b>
37	GSM1900	GPRS10	Rear Face	1	810	1	1	1	1.12	0.652
59	GSM1900	GPRS10	Rear Face	1	810	2	2	2	1.37	0.792
38	GSM1900	GPRS10	Rear Face	1	810	1	3	3	1.18	0.691
100	GSM1900	GPRS10	Rear Face	1	661	2	2	2	1.15	0.693
101	GSM1900	GPRS10	Rear Face	1	512	2	2	2	1.08	0.652



Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Ch.	Sample	Battery	Ear-phone	SAR <sub>1g</sub> (W/kg)	SAR <sub>10g</sub> (W/kg)
7	WCDMA IV	RMC12.2K	Rear Face	1	1413	1	1	-	1.31	0.82
98	WCDMA IV	RMC12.2K	Rear Face	1	1413	2	2	-	1.2	0.732
9	WCDMA IV	RMC12.2K	Rear Face	1	1413	1	3	-	1.28	0.811
10	WCDMA IV	RMC12.2K	Front Face	1	1413	1	1	-	0.674	0.441
11	WCDMA IV	RMC12.2K	Left Side	1	1413	1	1	-	0.214	0.137
12	WCDMA IV	RMC12.2K	Right Side	1	1413	1	1	-	0.207	0.132
14	WCDMA IV	RMC12.2K	Bottom Side	1	1413	1	1	-	1.25	0.727
15	WCDMA IV	RMC12.2K	Rear Face	1	1312	1	1	-	1.17	0.737
16	WCDMA IV	RMC12.2K	Rear Face	1	1513	1	1	-	1.38	0.873
102	WCDMA IV	RMC12.2K	Rear Face	1	1312	1	3	-	1.1	0.697
103	WCDMA IV	RMC12.2K	Rear Face	1	1513	1	3	-	1.35	0.842
104	WCDMA IV	RMC12.2K	Bottom Side	1	1312	1	1	-	1.23	0.693
105	WCDMA IV	RMC12.2K	Bottom Side	1	1513	1	1	-	1.35	0.749
61	WCDMA IV	RMC12.2K	Rear Face	1	1413	1	1	1	1.35	0.872
<b>17</b>	<b>WCDMA IV</b>	<b>RMC12.2K</b>	<b>Rear Face</b>	<b>1</b>	<b>1413</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1.38</b>	<b>0.862</b>
99	WCDMA IV	RMC12.2K	Rear Face	1	1413	1	3	3	1.22	0.738
63	WCDMA IV	RMC12.2K	Rear Face	1	1312	2	2	2	1.24	0.809
64	WCDMA IV	RMC12.2K	Rear Face	1	1513	2	2	2	1.37	0.877

**Note:**

1. For GSM/GPRS/EDGE body SAR testing, the DUT was set in GPRS multi-slot class 10 with 2 uplink slots due to maximum source-based time-averaged output power.
2. According to October 2010 TCB Workshop RF Exposure Procedures Update, the WWAN Antenna SAR for hotspot mode only Front Face, Rear Face, Bottom Side, Left Side, and Right Side are needed due to the antenna location is within 2.5 cm from the edge.

**Test Engineer :** Michael Yang and Jack Wu



### **11.4 Simultaneous Transmission SAR Analysis and Measurements**

#### **<SPLSR calculation procedure>**

- 1) Use DASYS software to open SAR data file with zoom scan results.
- 2) Export data file to SEMCAD using 'Field Data Export' function.
- 3) Search for highest SAR based on the imported measured/interpolated data and identify the X, Y, and Z coordinates. Per the SAR system manufacture, DASYS stores the individual coordinates of each measurement point in the measurement file where the center coordinate (x=0, y=0) is always the Grid Reference Point as set in DASYS for a phantom section.
- 4) Calculate the peak SAR separation distances using the Pythagoras' theorem where  
Peak SAR separation distance =  $\sqrt{(X_1 - X_2)^2 + (Y_1 - Y_2)^2 + (Z_1 - Z_2)^2}$
- 5) Calculate SPLSR = (SAR1 + SAR2) / Peak SAR separation distance.
- 6) The SPLSR calculation plots shown in test report are for reference only as the images were generated in a separate software program to add the antenna and arrow references. The distance information in the calculations below each plot is derived from the DASYS SAR zoom scan data as specified in this procedure.



Table 11.1 Co-located Simultaneous Transmission Analysis

Position	GSM850	GSM1900	WCDMA IV	WLAN	SAR Summation	SPLSR	Note
Head-Right Cheek	0.371	0.336	<b>0.776</b>	<b>0.086</b>	<b>0.862</b>	N/A	SUM SAR<1.6, Simul-TX SAR not required
Head-Right Tilted	0.23	0.126	<b>0.236</b>	<b>0.115</b>	<b>0.351</b>	N/A	SUM SAR<1.6, Simul-TX SAR not required
Head-Left Cheek	0.275	0.241	<b>0.537</b>	<b>0.168</b>	<b>0.705</b>	N/A	SUM SAR<1.6, Simul-TX SAR not required
Head-Left Tilted	0.146	0.111	<b>0.283</b>	<b>0.122</b>	<b>0.405</b>	N/A	SUM SAR<1.6, Simul-TX SAR not required
Body-Front Face	<b>0.873</b>	0.641	0.674	<b>0.041</b>	<b>0.914</b>	N/A	SUM SAR<1.6, Simul-TX SAR not required
Body-Rear Face	1.35	1.37	<b>1.38</b>	<b>0.311</b>	<b>1.691</b>	0.161	SPLSR<0.3, Simul-TX SAR not required
Body-Bottom Side	0.309	<b>1.38</b>	1.35	<b>0</b>	<b>1.38</b>	N/A	SUM SAR<1.6, Simul-TX SAR not required
Body-Top Side	0	0	0	<b>0.133</b>	<b>0.133</b>	N/A	SUM SAR<1.6, Simul-TX SAR not required
Body-Left Side	<b>0.84</b>	0.223	0.214	<b>0.017</b>	<b>0.857</b>	N/A	SUM SAR<1.6, Simul-TX SAR not required
Body-Right Side	<b>0.656</b>	0.24	0.207	<b>0.041</b>	<b>0.697</b>	N/A	SUM SAR<1.6, Simul-TX SAR not required

Note: The calculation of SPLSR is as follows.

The calculation of SPLSR for (Body-Rear Face, WCDMA IV + WLAN) is as below:

Coordinate of Peak SAR Location (X, Y, Z) :

WCDMA Band IV (-0.0296, 0.0494, -0.206)

WLAN (0.0114, -0.0434, -0.180)

Peak Location Spacing = 10.5 cm

SPLSR (SAR to Peak Location Spacing Ratio) = (1.38 + 0.311) / 10.5 = 0.161

According to KDB 648474, Bluetooth standalone SAR and simultaneous transmission SAR for WWAN and BT were not required, because the separation distance between these antennas (7.6 cm) is larger than 5 cm and the output power of Bluetooth (2.94 dBm) is less than 2P<sub>Ref</sub> (13.8 dBm). The WLAN and Bluetooth cannot transmit simultaneously, so there is no co-location test requirement for WLAN and Bluetooth.



## **12. References**

- [1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”
- [2] IEEE Std. C95.1-1991, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, 1991
- [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 v04, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, November 2009
- [8] FCC KDB 447498 D02 v02, “SAR Measurement Procedures for USB Dongle Transmitters”, November 2009
- [9] FCC KDB 616217 D01 v01r01, “SAR Evaluation Considerations for Laptop Computers with Antennas Built-in on Display Screens”, November 2009
- [10] FCC KDB 616217 D03 v01, “SAR Evaluation Considerations for Laptop/Notebook/Netbook and Tablet Computers”, November 2009
- [11] FCC KDB 648474 D01 v01r05, “SAR Evaluation Considerations for Handsets with Multiple Transmitters and Antennas”, September 2008
- [12] FCC KDB 941225 D01 v02, “SAR Measurement Procedures for 3G Devices – CDMA 2000 / Ev-Do / WCDMA / HSDPA / HSPA”, October 2007
- [13] FCC KDB 941225 D03 v01, “Recommended SAR Test Reduction Procedures for GSM / GPRS / EDGE”, December 2008
- [14] FCC KDB 941225 D04 v01, “Evaluating SAR for GSM/(E)GPRS Dual Transfer Mode”, January 27 2010



## **Appendix A. Plots of System Performance Check**

The plots are shown as follows.

### System Check\_Head\_835MHz\_110303

#### DUT: Dipole 835 MHz

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL\_850\_110303 Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.876 \text{ mho/m}$ ;  $\epsilon_r = 43.3$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : 22.5 °C; Liquid Temperature : 21.3 °C

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.21, 6.21, 6.21); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Pin=250mW/Area Scan (61x61x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 2.60 mW/g

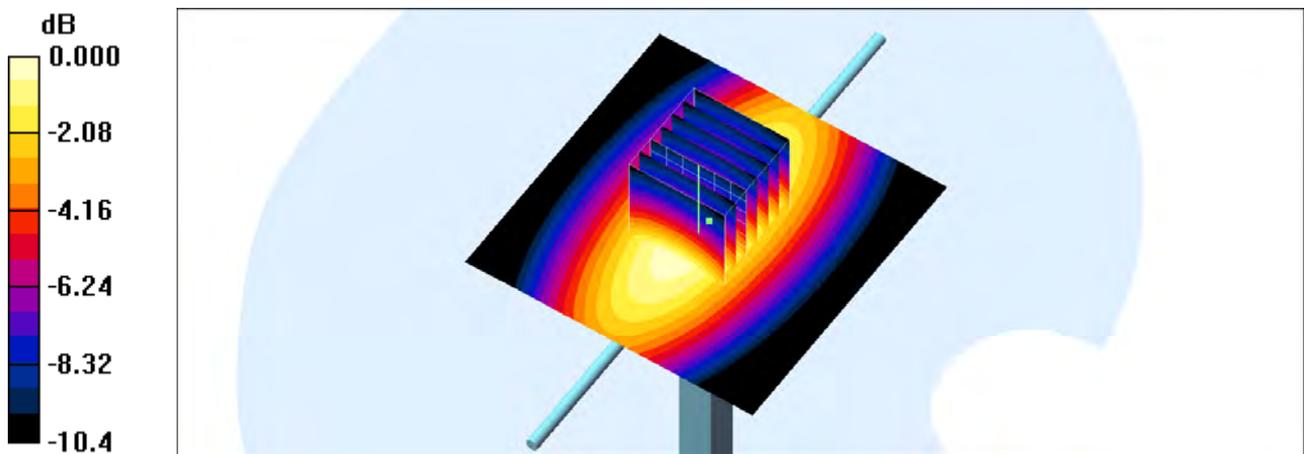
**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 56.1 V/m; Power Drift = 0.035 dB

Peak SAR (extrapolated) = 3.50 W/kg

**SAR(1 g) = 2.4 mW/g; SAR(10 g) = 1.58 mW/g**

Maximum value of SAR (measured) = 2.59 mW/g



0 dB = 2.59mW/g

## System Check\_Head\_835MHz\_110328

### DUT: Dipole 835 MHz

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL\_850\_110328 Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.921 \text{ mho/m}$ ;  $\epsilon_r = 41.3$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature :  $22.0 \text{ }^\circ\text{C}$ ; Liquid Temperature :  $21.6 \text{ }^\circ\text{C}$

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.21, 6.21, 6.21); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Pin=250mW/Area Scan (61x61x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) =  $2.74 \text{ mW/g}$

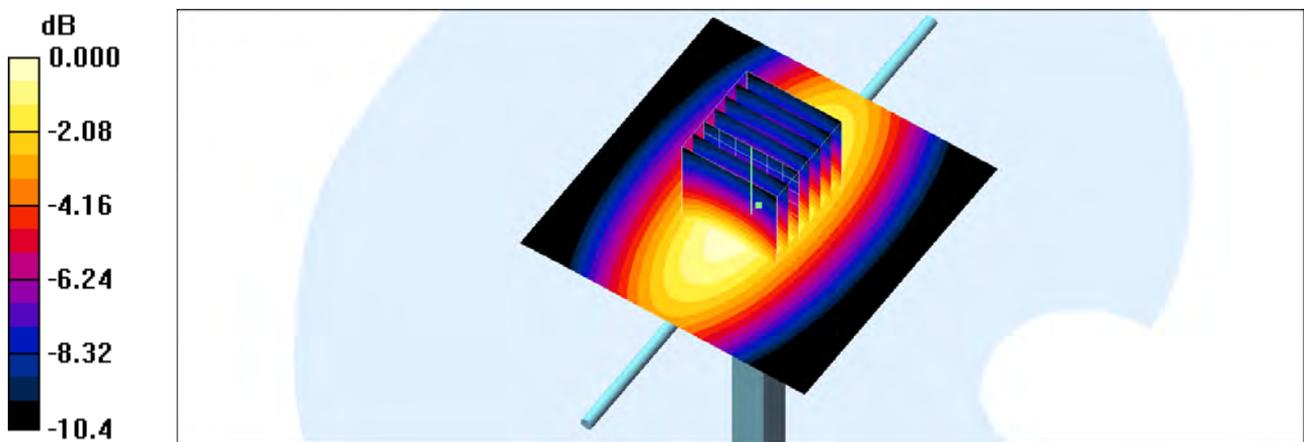
**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $56.5 \text{ V/m}$ ; Power Drift =  $0.030 \text{ dB}$

Peak SAR (extrapolated) =  $3.69 \text{ W/kg}$

**SAR(1 g) =  $2.53 \text{ mW/g}$ ; SAR(10 g) =  $1.66 \text{ mW/g}$**

Maximum value of SAR (measured) =  $2.73 \text{ mW/g}$



0 dB =  $2.73\text{mW/g}$

## System Check\_Body\_835MHz\_110311

### DUT: Dipole 835 MHz

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: MSL\_850\_110311 Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.963 \text{ mho/m}$ ;  $\epsilon_r = 54.5$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature :  $22.6 \text{ }^\circ\text{C}$ ; Liquid Temperature :  $21.6 \text{ }^\circ\text{C}$

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.12, 6.12, 6.12); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Pin=250mW/Area Scan (61x61x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) =  $2.76 \text{ mW/g}$

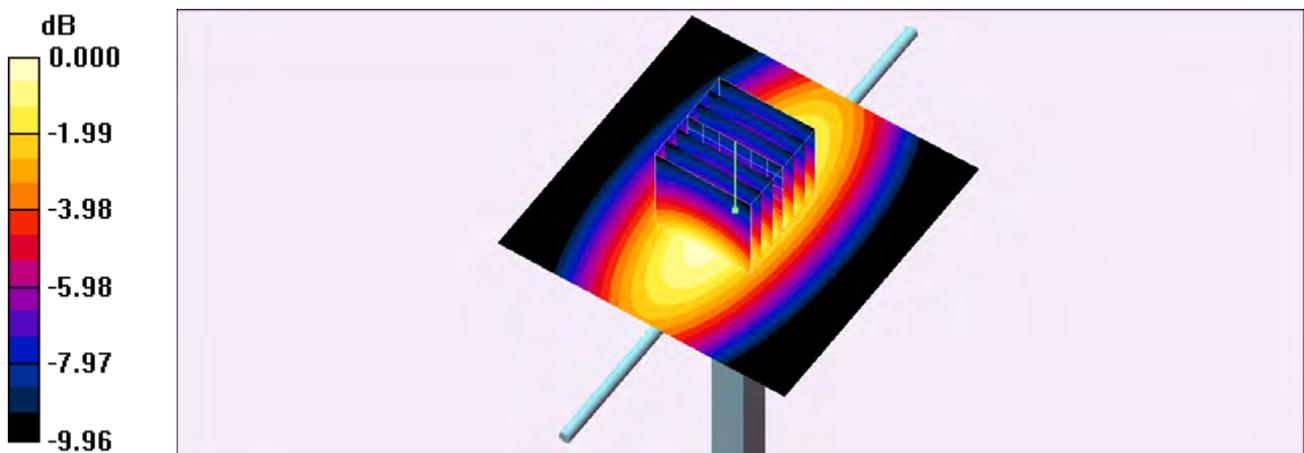
**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $55.8 \text{ V/m}$ ; Power Drift =  $-0.031 \text{ dB}$

Peak SAR (extrapolated) =  $3.59 \text{ W/kg}$

**SAR(1 g) =  $2.55 \text{ mW/g}$ ; SAR(10 g) =  $1.69 \text{ mW/g}$**

Maximum value of SAR (measured) =  $2.76 \text{ mW/g}$



0 dB =  $2.76\text{mW/g}$

## **System Check\_Body\_835MHz\_110325**

### **DUT: Dipole 835 MHz**

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1  
Medium: MSL\_850\_110325 Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.963$   
 $\text{mho/m}$ ;  $\epsilon_r = 54.6$ ;  $\rho = 1000 \text{ kg/m}^3$   
Ambient Temperature :  $21.8 \text{ }^\circ\text{C}$ ; Liquid Temperature :  $21.3 \text{ }^\circ\text{C}$

### **DASY4 Configuration:**

- Probe: EX3DV4 - SN3731; ConvF(8.84, 8.84, 8.84); Calibrated: 2010/9/20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2010/8/18
- Phantom: SAM\_Right; Type: SAM; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Pin=100mW/Area Scan (61x61x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) =  $0.994 \text{ mW/g}$

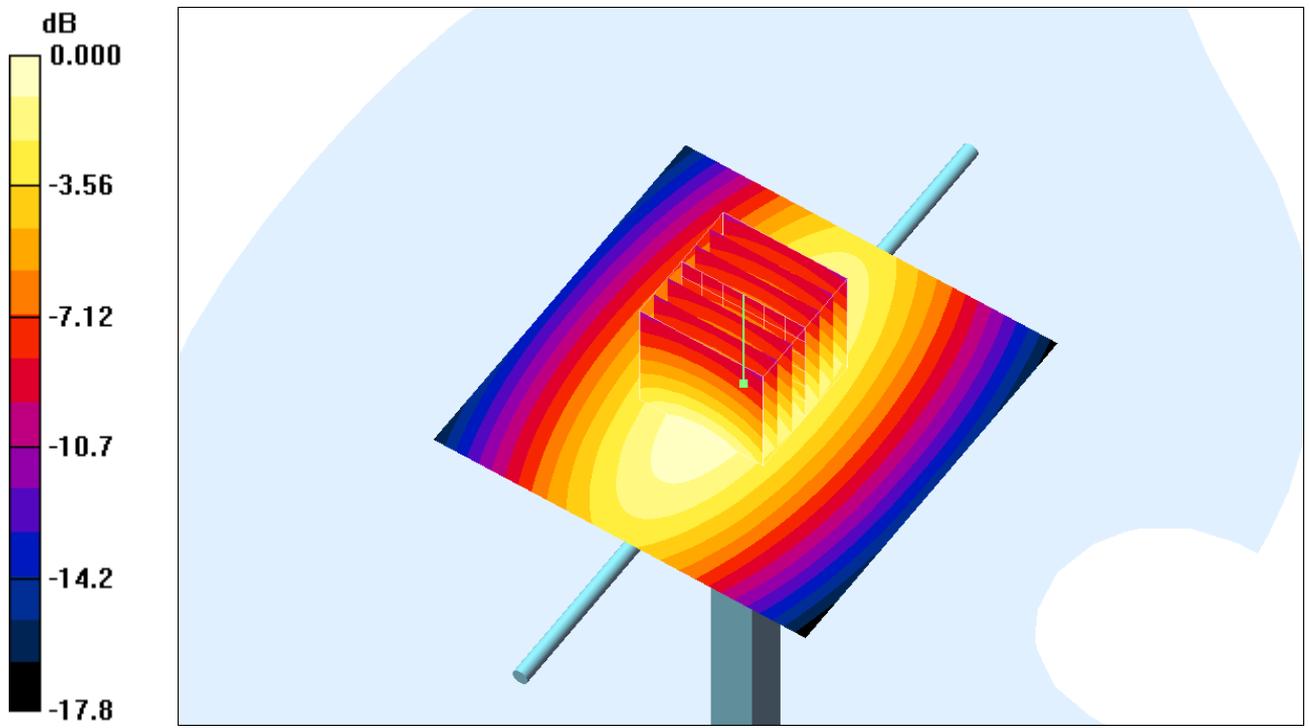
**Pin=100mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  
 $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $32.2 \text{ V/m}$ ; Power Drift =  $-0.054 \text{ dB}$

Peak SAR (extrapolated) =  $1.37 \text{ W/kg}$

**SAR(1 g) =  $0.917 \text{ mW/g}$ ; SAR(10 g) =  $0.603 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.988 \text{ mW/g}$



0 dB = 0.988mW/g

### System Check\_Body\_835MHz\_110328

#### DUT: Dipole 835 MHz

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: MSL\_850\_110328 Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.955 \text{ mho/m}$ ;  $\epsilon_r = 52.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature :  $22.0 \text{ }^\circ\text{C}$ ; Liquid Temperature :  $21.6 \text{ }^\circ\text{C}$

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.12, 6.12, 6.12); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Pin=250mW/Area Scan (61x61x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) =  $2.57 \text{ mW/g}$

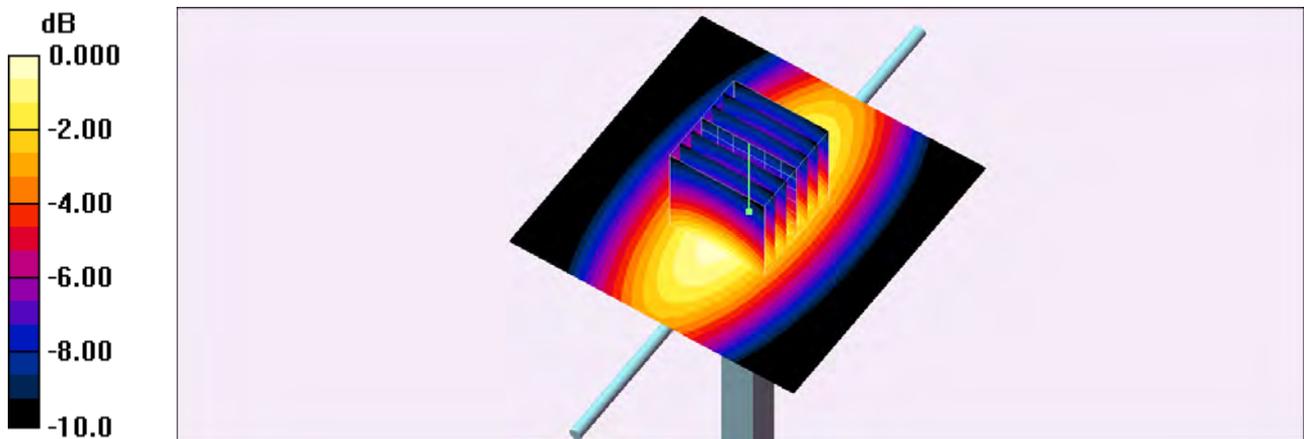
**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $53.8 \text{ V/m}$ ; Power Drift =  $-0.010 \text{ dB}$

Peak SAR (extrapolated) =  $3.34 \text{ W/kg}$

**SAR(1 g) =  $2.37 \text{ mW/g}$ ; SAR(10 g) =  $1.57 \text{ mW/g}$**

Maximum value of SAR (measured) =  $2.57 \text{ mW/g}$



0 dB =  $2.57\text{mW/g}$

## **System Check\_Head\_1800MHz\_110326**

### **DUT: Dipole 1800 MHz**

Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: HSL\_1800\_110326 Medium parameters used:  $f = 1800$  MHz;  $\sigma = 1.44$  mho/m;  $\epsilon_r = 39.3$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.0 ; Liquid Temperature : 21.5

#### **DASY5 Configuration:**

- Probe: ET3DV6 - SN1788; ConvF(5.29, 5.29, 5.29); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: SAM-Back; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Pin=250mW/Area Scan (61x61x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 11.7 mW/g

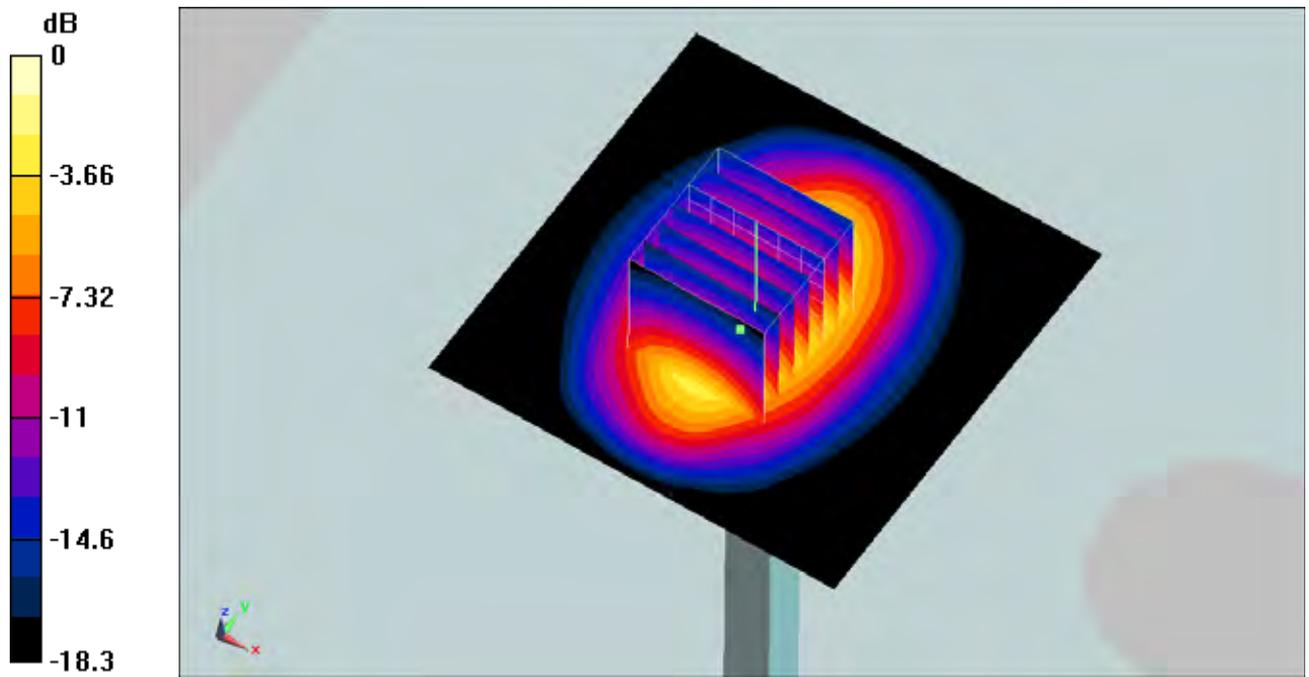
**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 93.2 V/m; Power Drift = -0.00491 dB

Peak SAR (extrapolated) = 17.4 W/kg

**SAR(1 g) = 9.99 mW/g; SAR(10 g) = 5.28 mW/g**

Maximum value of SAR (measured) = 11.3 mW/g



0 dB = 11.3mW/g

## System Check\_Body\_1800MHz\_110304

### DUT: Dipole 1800 MHz

Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: MSL\_1800\_110304 Medium parameters used:  $f = 1800$  MHz;  $\sigma = 1.54$  mho/m;  $\epsilon_r = 53.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.3 °C; Liquid Temperature : 21.6 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.72, 4.72, 4.72); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2009/9/18
- Phantom: SAM - Front; Type: SAM; Serial: TP-1446
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Pin=250mW/Area Scan (61x61x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 11.6 mW/g

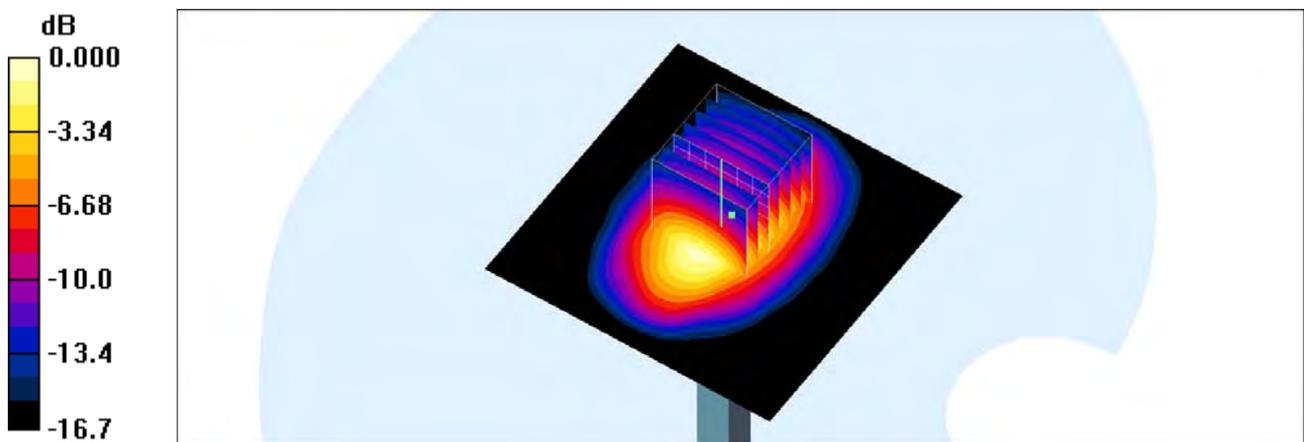
**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 93.0 V/m; Power Drift = 0.030 dB

Peak SAR (extrapolated) = 14.9 W/kg

**SAR(1 g) = 9.88 mW/g; SAR(10 g) = 5.44 mW/g**

Maximum value of SAR (measured) = 11.3 mW/g



0 dB = 11.3mW/g

## **System Check\_Body\_1800MHz\_110325**

### **DUT: Dipole 1800 MHz**

Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1  
Medium: MSL\_1800\_110325 Medium parameters used:  $f = 1800 \text{ MHz}$ ;  $\sigma = 1.58 \text{ mho/m}$ ;  $\epsilon_r = 51.6$ ;  $\rho = 1000 \text{ kg/m}^3$   
Ambient Temperature : 22.7 °C; Liquid Temperature : 21.1 °C

### **DASY4 Configuration:**

- Probe: ET3DV6 - SN1787; ConvF(4.72, 4.72, 4.72); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2010/8/18
- Phantom: SAM\_Right; Type: SAM; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Pin=250mW/Area Scan (61x61x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (interpolated) = 10.4 mW/g

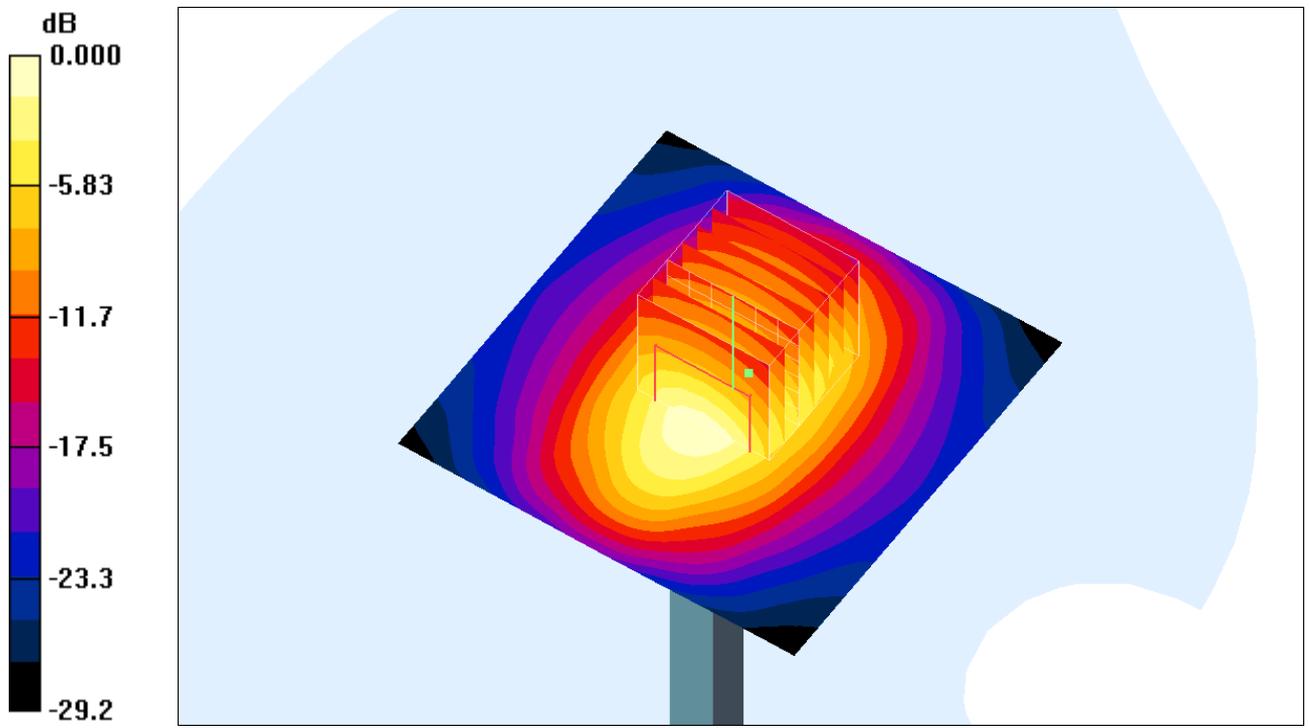
**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 86.9 V/m; Power Drift = 0.025 dB

Peak SAR (extrapolated) = 13.2 W/kg

**SAR(1 g) = 8.82 mW/g; SAR(10 g) = 4.96 mW/g**

Maximum value of SAR (measured) = 9.99 mW/g



0 dB = 9.99mW/g

### System Check\_Body\_1800MHz\_110328

#### DUT: Dipole 1800 MHz

Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: MSL\_1800\_110328 Medium parameters used:  $f = 1800$  MHz;  $\sigma = 1.57$  mho/m;  $\epsilon_r = 51.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.0 °C ; Liquid Temperature : 21.5 °C

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.72, 4.72, 4.72); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Pin=250mW/Area Scan (61x61x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 11.8 mW/g

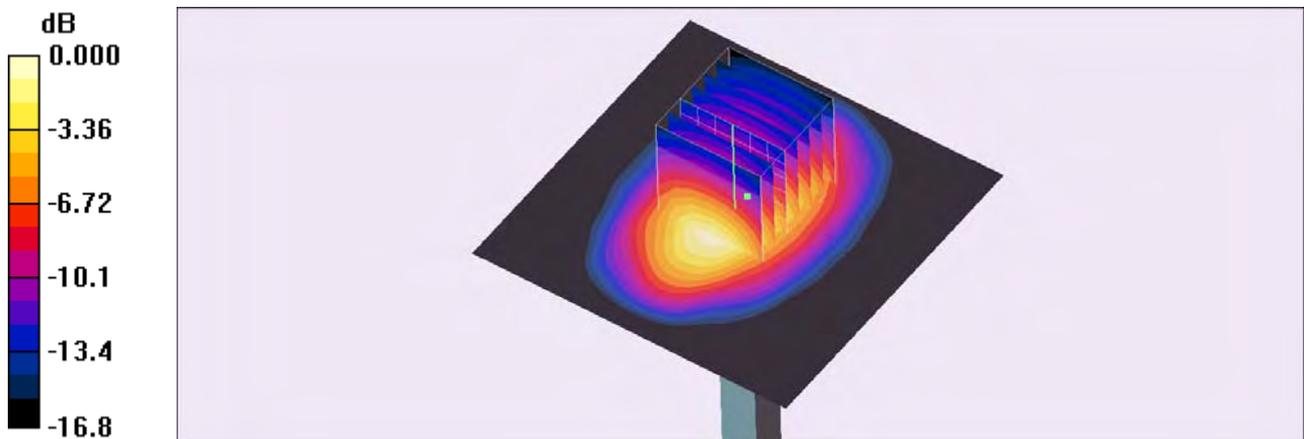
**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 92.9 V/m; Power Drift = 0.030 dB

Peak SAR (extrapolated) = 15.2 W/kg

**SAR(1 g) = 10.1 mW/g; SAR(10 g) = 5.54 mW/g**

Maximum value of SAR (measured) = 11.5 mW/g



0 dB = 11.5mW/g

### System Check\_Body\_1800MHz\_110402

#### DUT: Dipole 1800 MHz

Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: MSL\_1800\_110402 Medium parameters used:  $f = 1800 \text{ MHz}$ ;  $\sigma = 1.55 \text{ mho/m}$ ;  $\epsilon_r = 51.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature :  $22.0 \text{ }^\circ\text{C}$ ; Liquid Temperature :  $21.5 \text{ }^\circ\text{C}$

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.67, 4.67, 4.67); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Pin=250mW/Area Scan (61x61x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) =  $11.4 \text{ mW/g}$

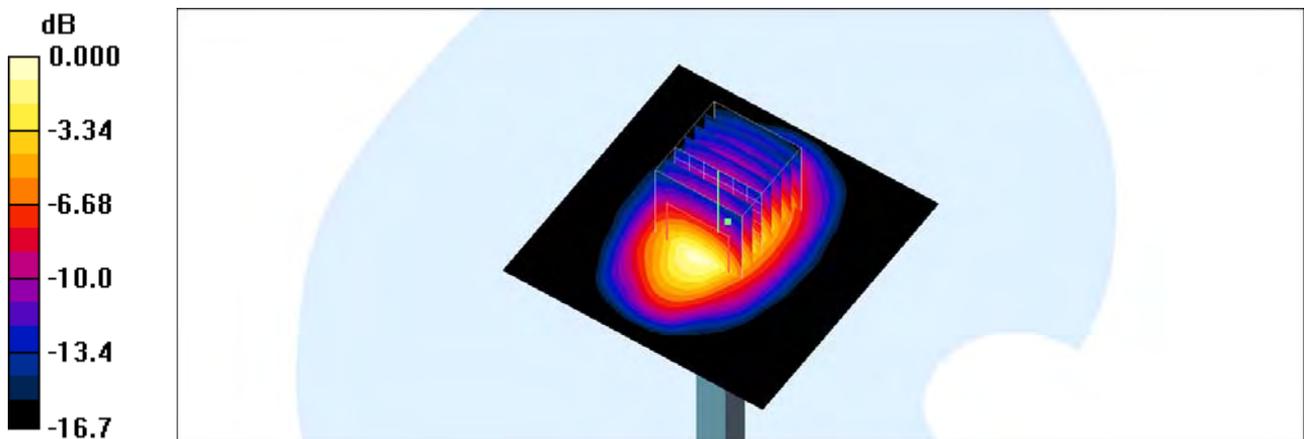
**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $92.3 \text{ V/m}$ ; Power Drift =  $0.035 \text{ dB}$

Peak SAR (extrapolated) =  $14.4 \text{ W/kg}$

**SAR(1 g) =  $9.68 \text{ mW/g}$ ; SAR(10 g) =  $5.35 \text{ mW/g}$**

Maximum value of SAR (measured) =  $11.1 \text{ mW/g}$



0 dB =  $11.1 \text{ mW/g}$

## **System Check\_Head\_1900MHz\_110326**

### **DUT: Dipole 1900 MHz**

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL\_1900\_110326 Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.42$  mho/m;  $\epsilon_r = 41.1$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.0 ; Liquid Temperature : 21.5

#### **DASY5 Configuration:**

- Probe: ET3DV6 - SN1788; ConvF(5.03, 5.03, 5.03); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: SAM-Back; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Pin=250mW/Area Scan (61x61x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 12.5 mW/g

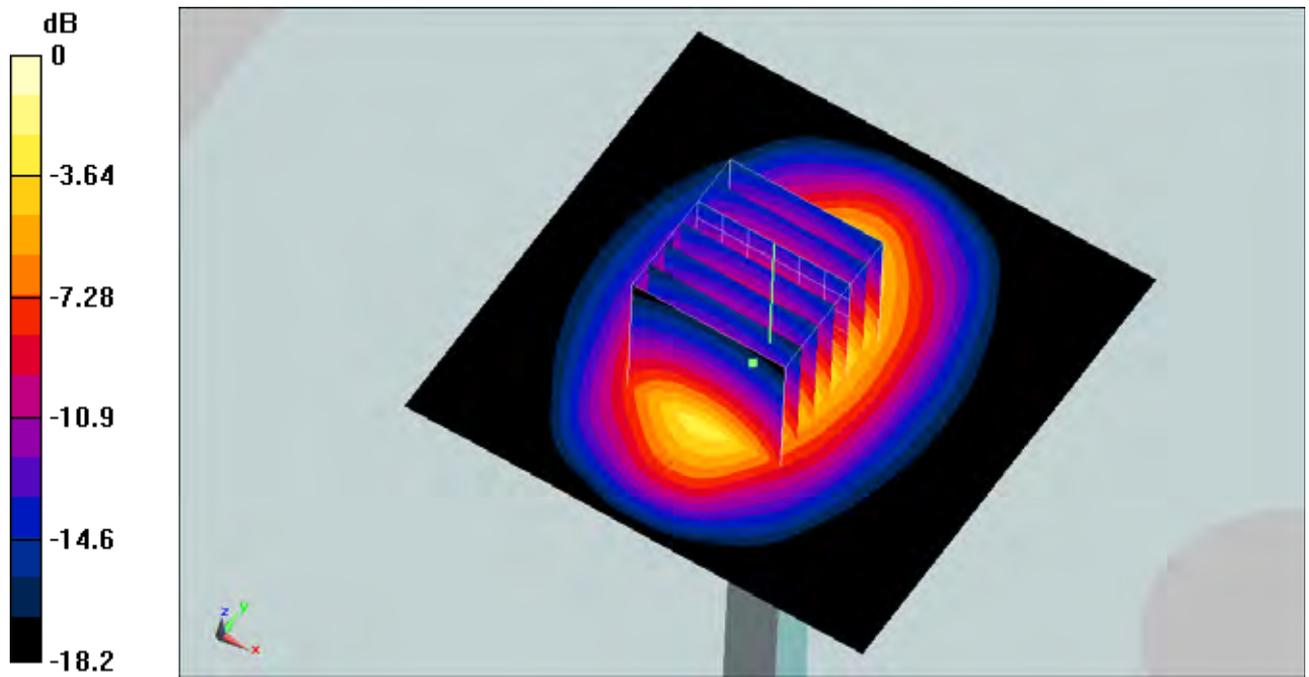
**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 96.4 V/m; Power Drift = -0.00219 dB

Peak SAR (extrapolated) = 18.3 W/kg

**SAR(1 g) = 10.7 mW/g; SAR(10 g) = 5.65 mW/g**

Maximum value of SAR (measured) = 12.1 mW/g



0 dB = 12.1mW/g

## System Check\_Body\_1900MHz\_110311

### DUT: Dipole 1900 MHz

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: MSL\_1900\_110311 Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.55$  mho/m;  $\epsilon_r = 52.9$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.8 ; Liquid Temperature : 21.6

#### DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.39, 4.39, 4.39); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Pin=250mW/Area Scan (61x61x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 13 mW/g

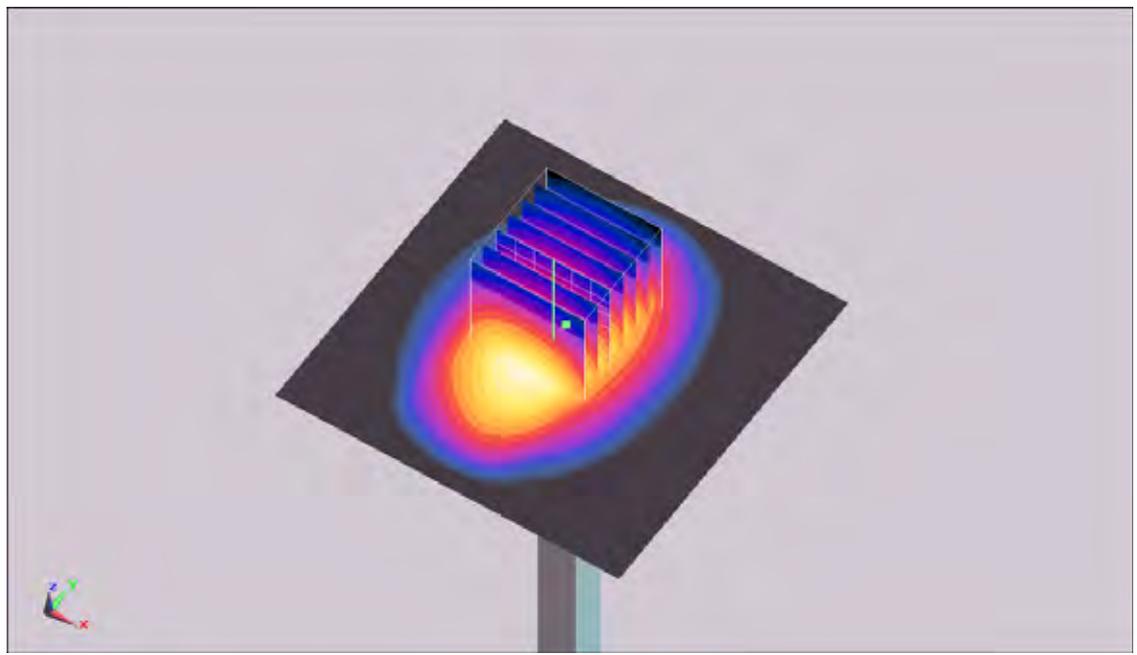
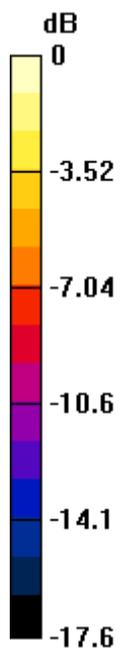
**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 95.2 V/m; Power Drift = 0.00357 dB

Peak SAR (extrapolated) = 16.7 W/kg

**SAR(1 g) = 10.8 mW/g; SAR(10 g) = 5.84 mW/g**

Maximum value of SAR (measured) = 12.4 mW/g



0 dB = 12.4mW/g

## **System Check\_Body\_1900MHz\_110325**

### **DUT: Dipole 1900 MHz**

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1  
Medium: MSL\_1900\_110325 Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.53$  mho/m;  $\epsilon_r = 52.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Ambient Temperature : 21.7 °C; Liquid Temperature : 21.1 °C

### **DASY4 Configuration:**

- Probe: EX3DV4 - SN3731; ConvF(7.13, 7.13, 7.13); Calibrated: 2010/9/20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2010/8/18
- Phantom: SAM\_Right; Type: SAM; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Pin=100mW/Area Scan (61x61x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (interpolated) = 4.68 mW/g

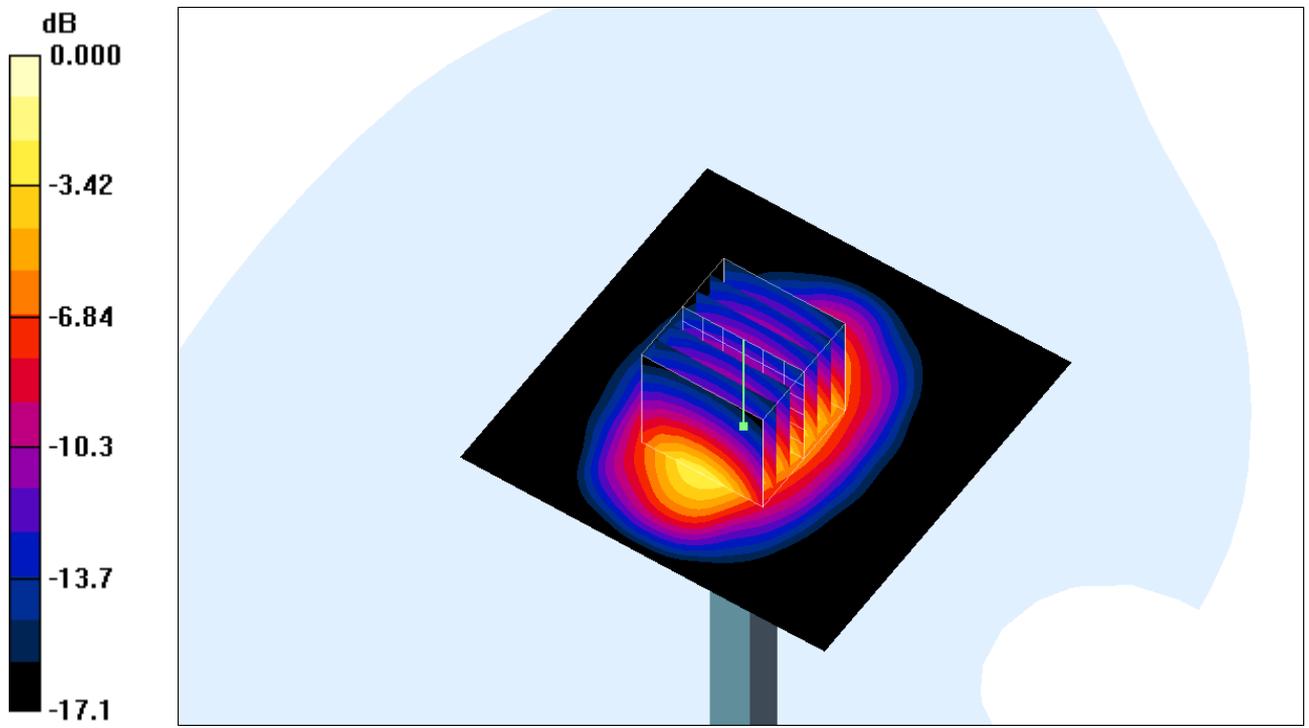
**Pin=100mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 53.4 V/m; Power Drift = 0.067 dB

Peak SAR (extrapolated) = 7.26 W/kg

**SAR(1 g) = 3.99 mW/g; SAR(10 g) = 2.07 mW/g**

Maximum value of SAR (measured) = 4.51 mW/g



0 dB = 4.51mW/g

## System Check\_Body\_1900MHz\_110326

### DUT: Dipole 1900 MHz

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: MSL\_1900\_110326 Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.55$  mho/m;  $\epsilon_r = 53.2$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.0 ; Liquid Temperature : 21.5

#### DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.39, 4.39, 4.39); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Pin=250mW/Area Scan (61x61x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 13.1 mW/g

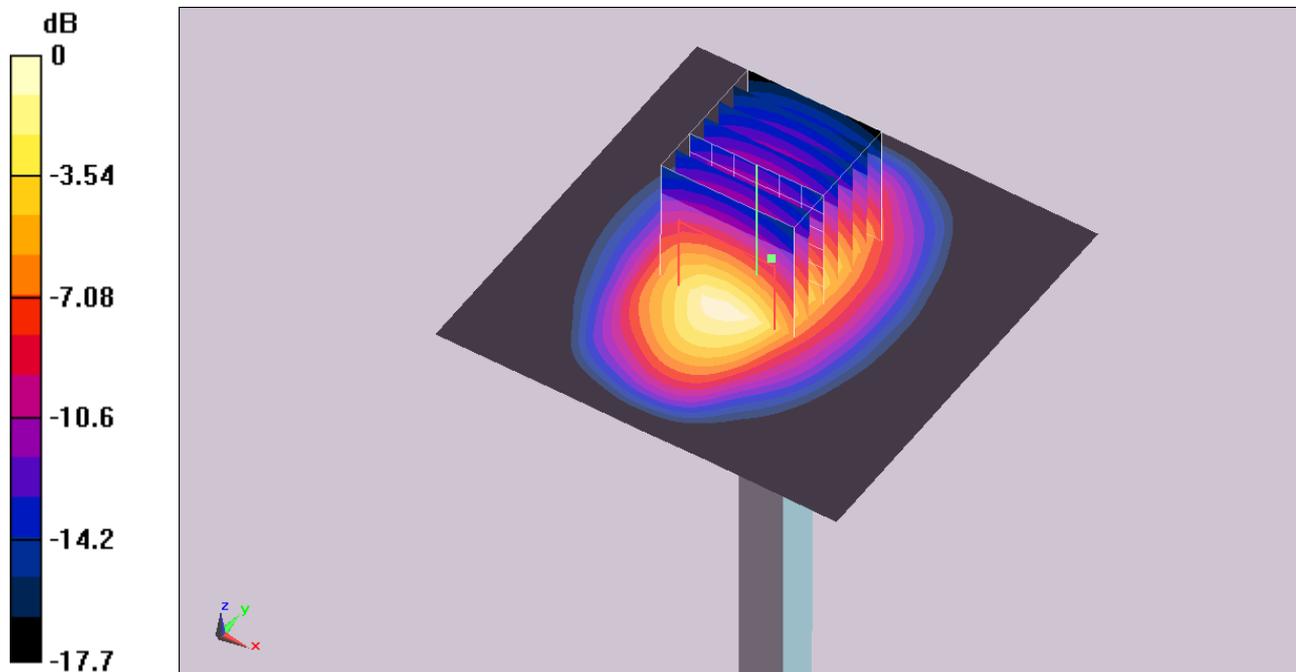
**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 94.1 V/m; Power Drift = 0.036 dB

Peak SAR (extrapolated) = 16.6 W/kg

**SAR(1 g) = 10.7 mW/g; SAR(10 g) = 5.8 mW/g**

Maximum value of SAR (measured) = 12.3 mW/g



0 dB = 12.3mW/g

## System Check\_Body\_1900MHz\_110328

### DUT: Dipole 1900 MHz

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: MSL\_1900\_110328 Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.53$  mho/m;  $\epsilon_r = 52$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.0 °C; Liquid Temperature : 21.5 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.47, 4.47, 4.47); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Pin=250mW/Area Scan (61x61x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 12.7 mW/g

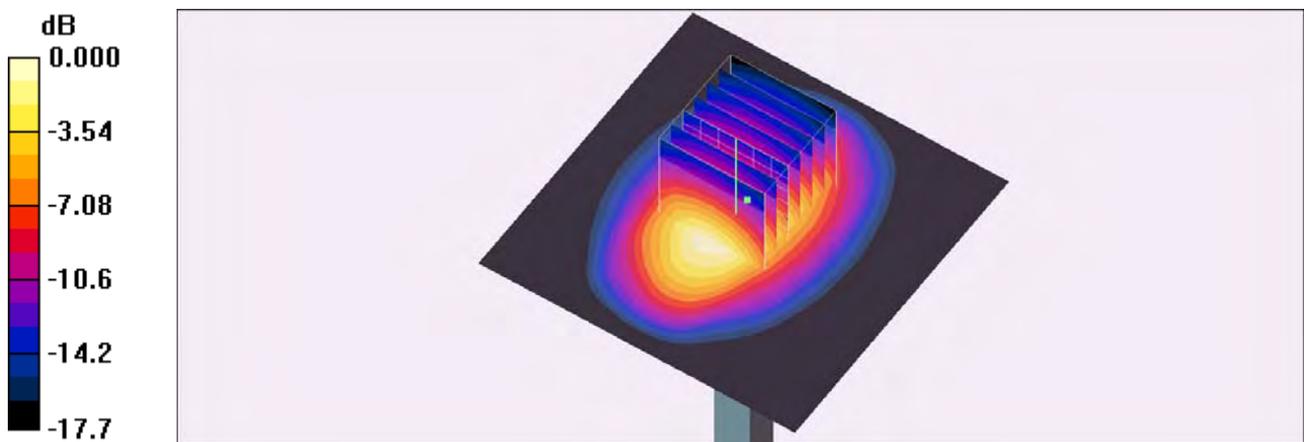
**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 94.2 V/m; Power Drift = -0.006 dB

Peak SAR (extrapolated) = 16.8 W/kg

**SAR(1 g) = 10.7 mW/g; SAR(10 g) = 5.73 mW/g**

Maximum value of SAR (measured) = 12.2 mW/g



0 dB = 12.2mW/g

## System Check\_Body\_1900MHz\_110329

### DUT: Dipole 1900 MHz

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: MSL\_1900\_110329 Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.54$  mho/m;  $\epsilon_r = 53.5$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.6 ; Liquid Temperature : 21.5

#### DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.39, 4.39, 4.39); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Pin=250mW/Area Scan (61x61x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 12.9 mW/g

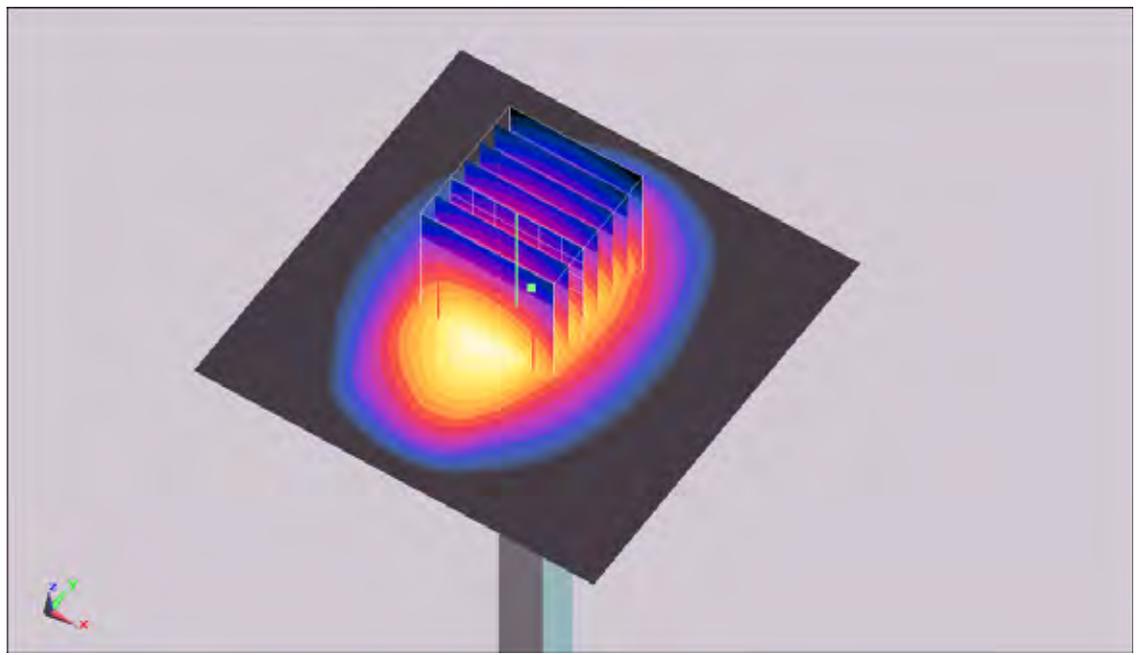
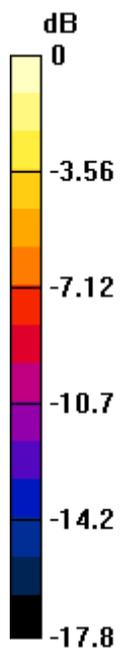
**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 94.8 V/m; Power Drift = 0.042 dB

Peak SAR (extrapolated) = 16.8 W/kg

**SAR(1 g) = 10.8 mW/g; SAR(10 g) = 5.84 mW/g**

Maximum value of SAR (measured) = 12.4 mW/g



0 dB = 12.4mW/g

### System Check\_Body\_1900MHz\_110402

#### DUT: Dipole 1900 MHz

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: MSL\_1900\_110402 Medium parameters used:  $f = 1900 \text{ MHz}$ ;  $\sigma = 1.53 \text{ mho/m}$ ;  $\epsilon_r = 52.5$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : 21.8 °C; Liquid Temperature : 21.2 °C

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.39, 4.39, 4.39); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Pin=250mW/Area Scan (61x61x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 12.5 mW/g

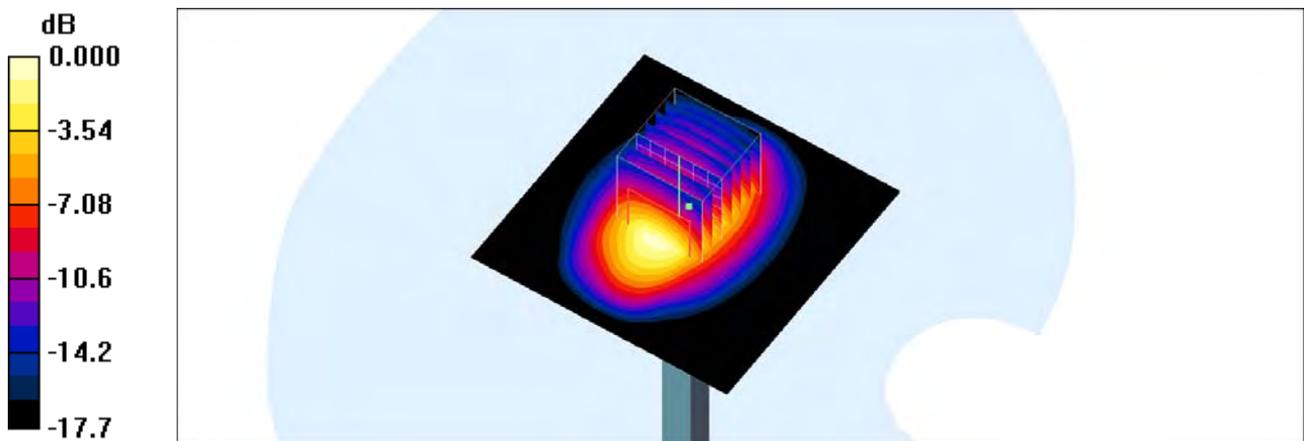
**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 92.2 V/m; Power Drift = 0.081 dB

Peak SAR (extrapolated) = 16.0 W/kg

**SAR(1 g) = 10.3 mW/g; SAR(10 g) = 5.6 mW/g**

Maximum value of SAR (measured) = 11.8 mW/g



0 dB = 11.8mW/g



## ***Appendix B. Plots of SAR Measurement***

The plots are shown as follows.

## #01 GSM850\_Right Cheek\_Ch251\_Sample1\_Battery1

### DUT: 121019

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: HSL\_850\_110303 Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.89$  mho/m;  $\epsilon_r = 43.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.6 °C ; Liquid Temperature : 21.3 °C

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.21, 6.21, 6.21); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch251/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.380 mW/g

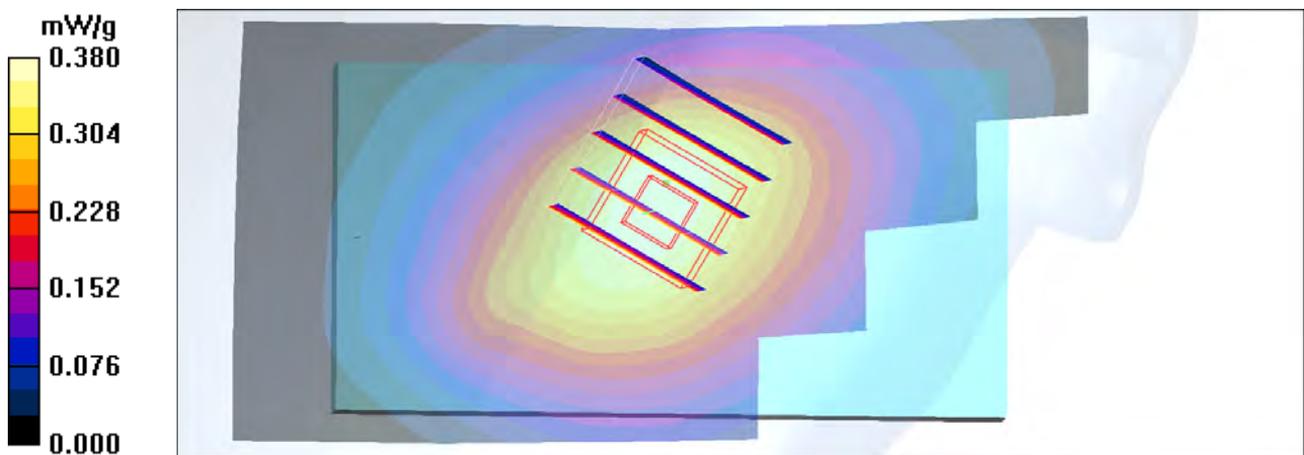
**Ch251/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 8.15 V/m; Power Drift = -0.182 dB

Peak SAR (extrapolated) = 0.437 W/kg

**SAR(1 g) = 0.354 mW/g; SAR(10 g) = 0.268 mW/g**

Maximum value of SAR (measured) = 0.371 mW/g



## #02 GSM850\_Right Cheek\_Ch251\_Sample2\_Battery2

**DUT: 121019**

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: HSL\_850\_110328 Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.934$  mho/m;  $\epsilon_r = 41.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.0 °C ; Liquid Temperature : 21.6 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.21, 6.21, 6.21); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch251/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.292 mW/g

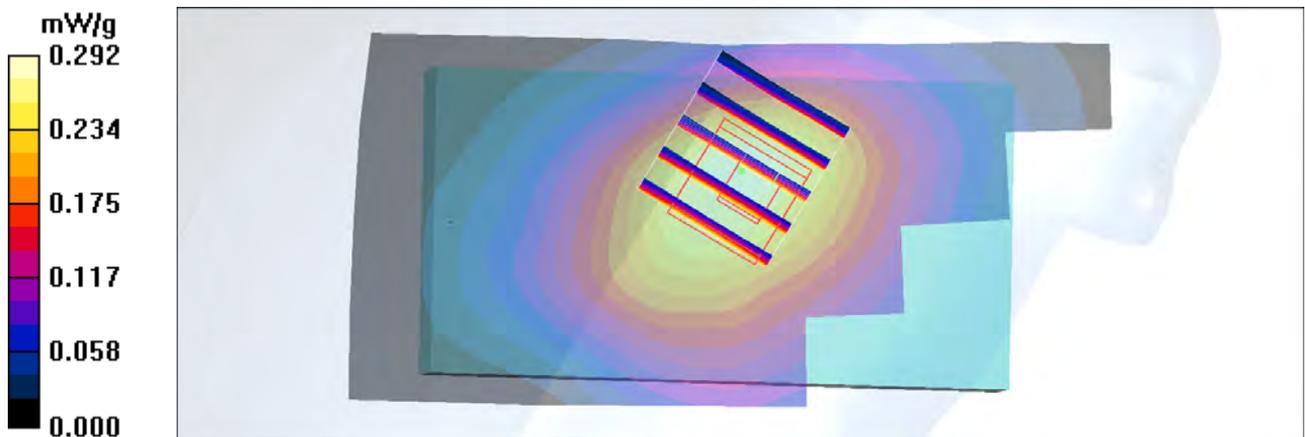
**Ch251/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.22 V/m; Power Drift = -0.014 dB

Peak SAR (extrapolated) = 0.326 W/kg

**SAR(1 g) = 0.261 mW/g; SAR(10 g) = 0.195 mW/g**

Maximum value of SAR (measured) = 0.273 mW/g



### #03 GSM850\_Right Cheek\_Ch251\_Sample1\_Battery3

**DUT: 121019**

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: HSL\_850\_110303 Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.89$  mho/m;  $\epsilon_r = 43.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.6 °C ; Liquid Temperature : 21.3 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.21, 6.21, 6.21); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch251/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.409 mW/g

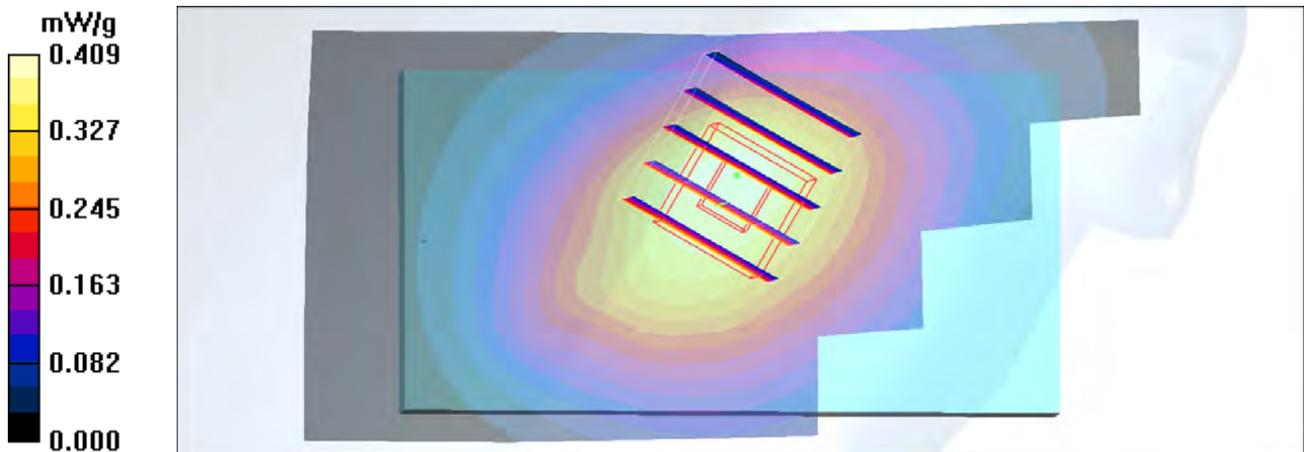
**Ch251/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.22 V/m; Power Drift = -0.084 dB

Peak SAR (extrapolated) = 0.471 W/kg

**SAR(1 g) = 0.371 mW/g; SAR(10 g) = 0.279 mW/g**

Maximum value of SAR (measured) = 0.388 mW/g



### #03 GSM850\_Right Cheek\_Ch251\_Sample1\_Battery3\_2D

#### DUT: 121019

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: HSL\_850\_110303 Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.89$  mho/m;  $\epsilon_r = 43.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.3 °C ; Liquid Temperature : 21.6 °C

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.21, 6.21, 6.21); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch251/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.409 mW/g

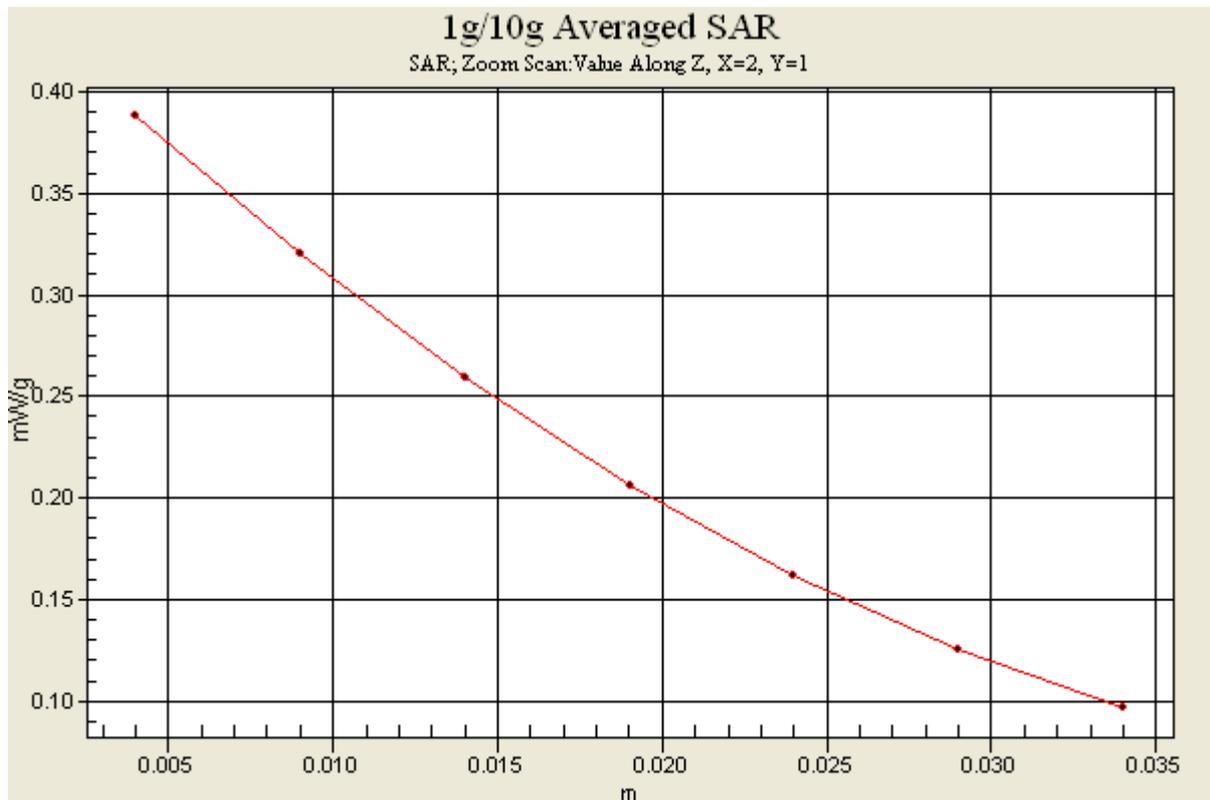
**Ch251/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.22 V/m; Power Drift = -0.084 dB

Peak SAR (extrapolated) = 0.471 W/kg

**SAR(1 g) = 0.371 mW/g; SAR(10 g) = 0.279 mW/g**

Maximum value of SAR (measured) = 0.388 mW/g



### #04 GSM850\_Right Tilted\_Ch251\_Sample1\_Battery3

**DUT: 121019**

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: HSL\_850\_110303 Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.89$  mho/m;  $\epsilon_r = 43.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.6 °C ; Liquid Temperature : 21.3 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.21, 6.21, 6.21); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch251/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.244 mW/g

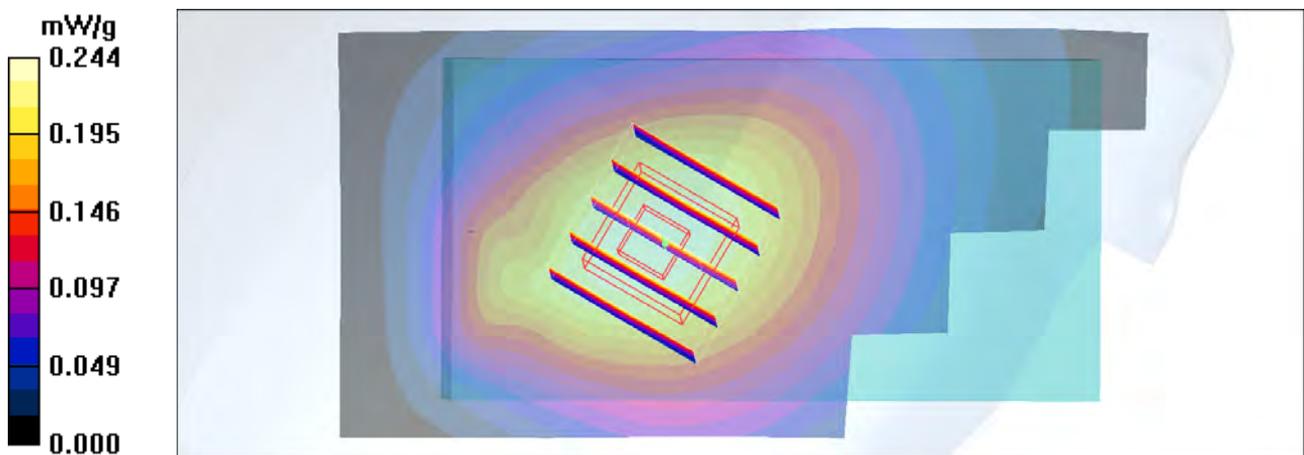
**Ch251/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.3 V/m; Power Drift = -0.064 dB

Peak SAR (extrapolated) = 0.271 W/kg

**SAR(1 g) = 0.230 mW/g; SAR(10 g) = 0.176 mW/g**

Maximum value of SAR (measured) = 0.242 mW/g



### #05 GSM850\_Left Cheek\_Ch251\_Sample1\_Battery3

**DUT: 121019**

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: HSL\_850\_110303 Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.89$  mho/m;  $\epsilon_r = 43.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.4 °C ; Liquid Temperature : 21.3 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.21, 6.21, 6.21); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch251/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.288 mW/g

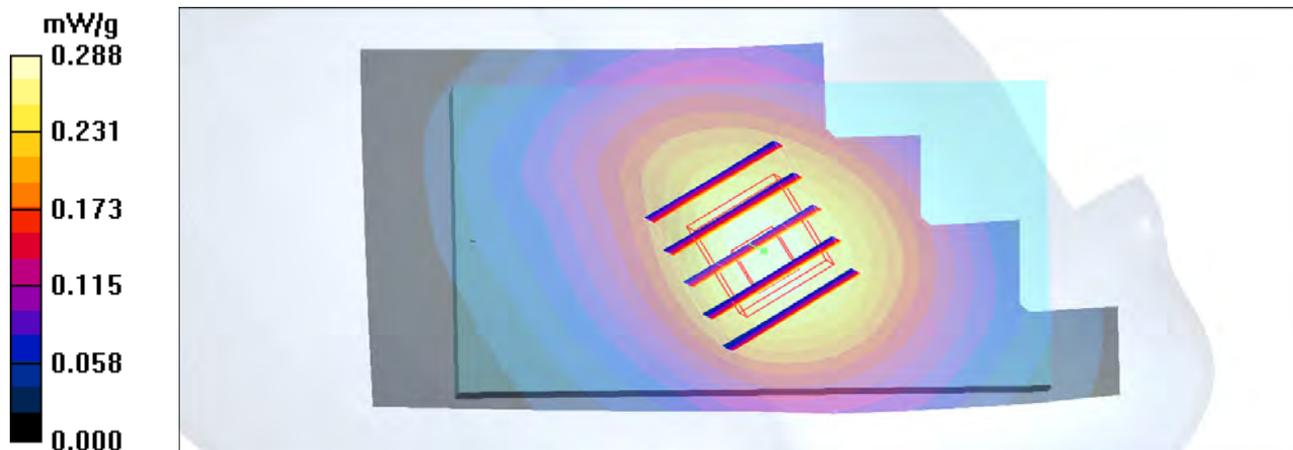
**Ch251/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.91 V/m; Power Drift = -0.157 dB

Peak SAR (extrapolated) = 0.356 W/kg

**SAR(1 g) = 0.275 mW/g; SAR(10 g) = 0.205 mW/g**

Maximum value of SAR (measured) = 0.288 mW/g



### #06 GSM850\_Left Tilted\_Ch251\_Sample1\_Battery3

**DUT: 121019**

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: HSL\_850\_110303 Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.89$  mho/m;  $\epsilon_r = 43.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.5 °C ; Liquid Temperature : 21.3 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.21, 6.21, 6.21); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch251/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.157 mW/g

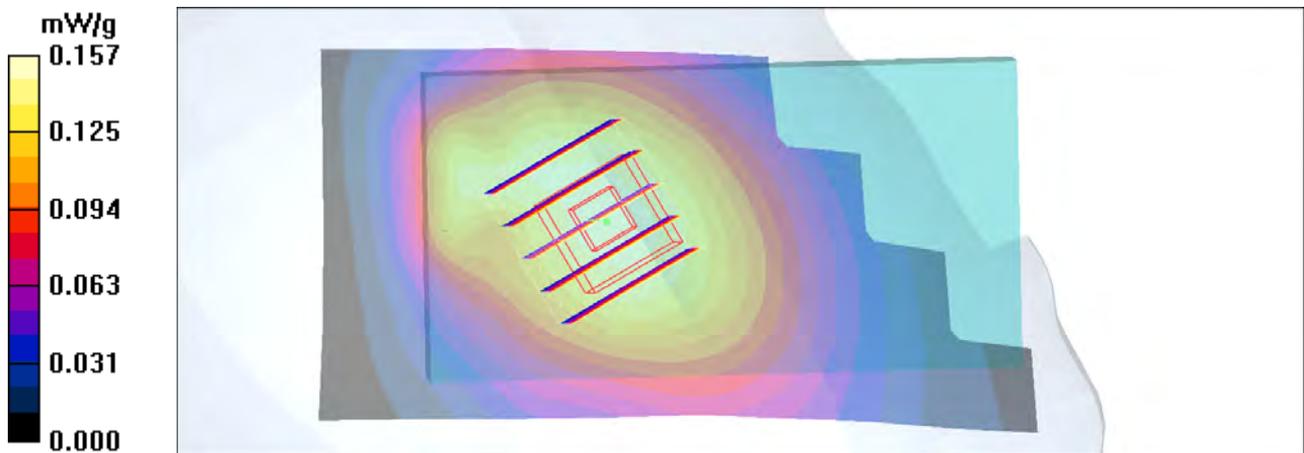
**Ch251/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.7 V/m; Power Drift = -0.065 dB

Peak SAR (extrapolated) = 0.174 W/kg

**SAR(1 g) = 0.146 mW/g; SAR(10 g) = 0.115 mW/g**

Maximum value of SAR (measured) = 0.152 mW/g



**#41 GSM1900\_Right Cheek\_Ch810\_Sample1\_Battery1**

**DUT: 121019**

Communication System: PCS; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium: HSL\_1900\_110326 Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.43$  mho/m;  $\epsilon_r = 41$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.0 ; Liquid Temperature : 21.5

**DASY5 Configuration:**

- Probe: ET3DV6 - SN1788; ConvF(5.03, 5.03, 5.03); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: SAM-Back; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch810/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.367 mW/g

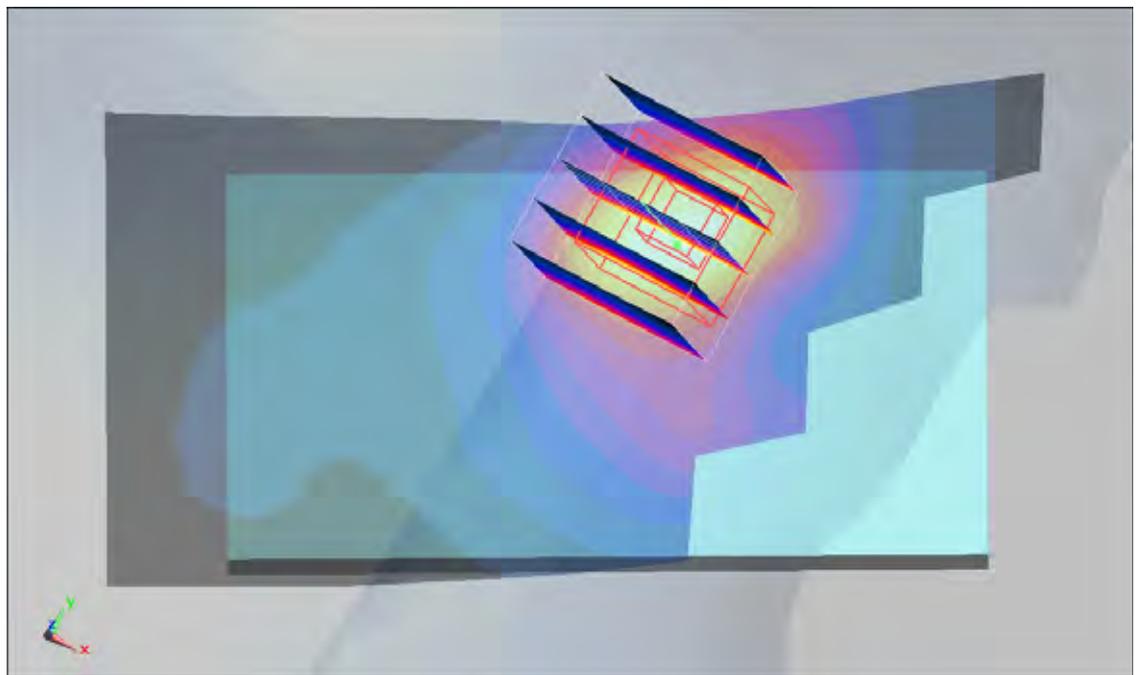
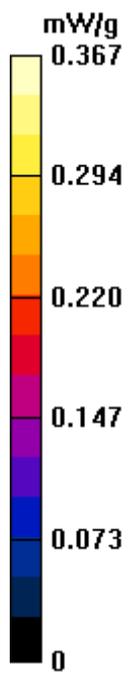
**Ch810/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.44 V/m; Power Drift = -0.099 dB

Peak SAR (extrapolated) = 0.460 W/kg

**SAR(1 g) = 0.336 mW/g; SAR(10 g) = 0.217 mW/g**

Maximum value of SAR (measured) = 0.360 mW/g



**#41 GSM1900\_Right Cheek\_Ch810\_Sample1\_Battery1\_2D**

**DUT: 121019**

Communication System: PCS; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium: HSL\_1900\_110326 Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.43$  mho/m;  $\epsilon_r = 41$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.3 ; Liquid Temperature : 21.6

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.03, 5.03, 5.03); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: SAM-Back; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch810/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.367 mW/g

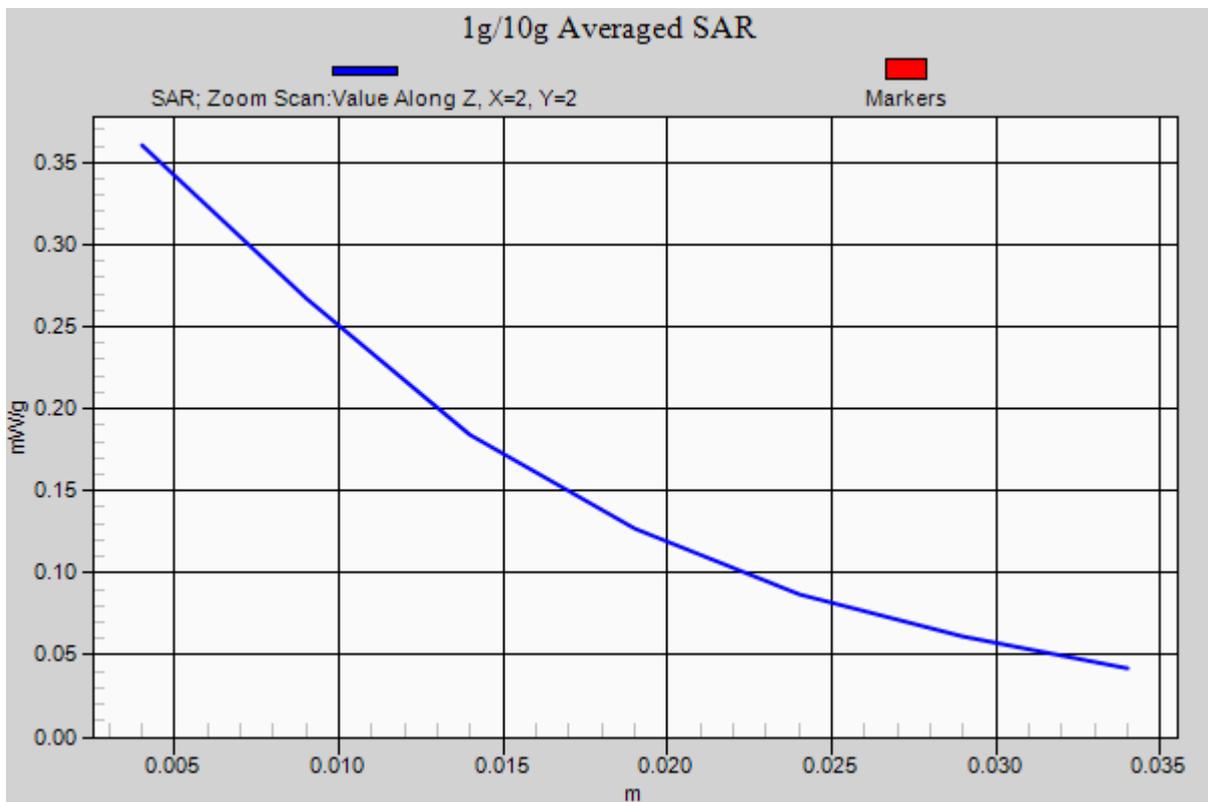
**Ch810/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.44 V/m; Power Drift = -0.099 dB

Peak SAR (extrapolated) = 0.460 W/kg

**SAR(1 g) = 0.336 mW/g; SAR(10 g) = 0.217 mW/g**

Maximum value of SAR (measured) = 0.360 mW/g



**#42 GSM1900\_Right Cheek\_Ch810\_Sample2\_Battery2**

**DUT: 121019**

Communication System: PCS; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium: HSL\_1900\_110326 Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.43$  mho/m;  $\epsilon_r = 41$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.0 ; Liquid Temperature : 21.5

**DASY5 Configuration:**

- Probe: ET3DV6 - SN1788; ConvF(5.03, 5.03, 5.03); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: SAM-Back; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch810/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.275 mW/g

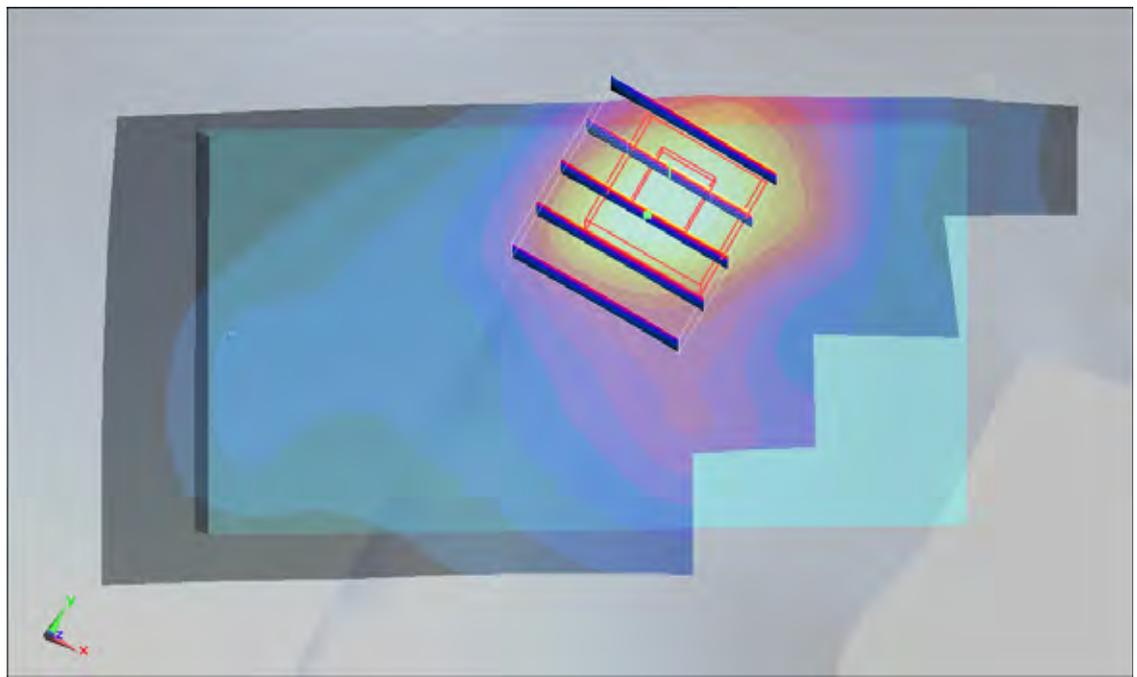
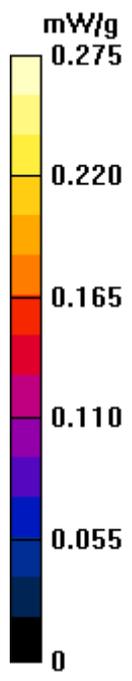
**Ch810/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.93 V/m; Power Drift = 0.117 dB

Peak SAR (extrapolated) = 0.369 W/kg

**SAR(1 g) = 0.263 mW/g; SAR(10 g) = 0.171 mW/g**

Maximum value of SAR (measured) = 0.277 mW/g



**#43 GSM1900\_Right Cheek\_Ch810\_Sample1\_Battery3**

**DUT: 121019**

Communication System: PCS; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium: HSL\_1900\_110326 Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.43$  mho/m;  $\epsilon_r = 41$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.0 ; Liquid Temperature : 21.5

**DASY5 Configuration:**

- Probe: ET3DV6 - SN1788; ConvF(5.03, 5.03, 5.03); Calibrated: 2010/9/21

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE4 Sn778; Calibrated: 2010/10/22

- Phantom: SAM-Back; Type: QD 000 P40 C; Serial: TP-1383

- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch810/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.329 mW/g

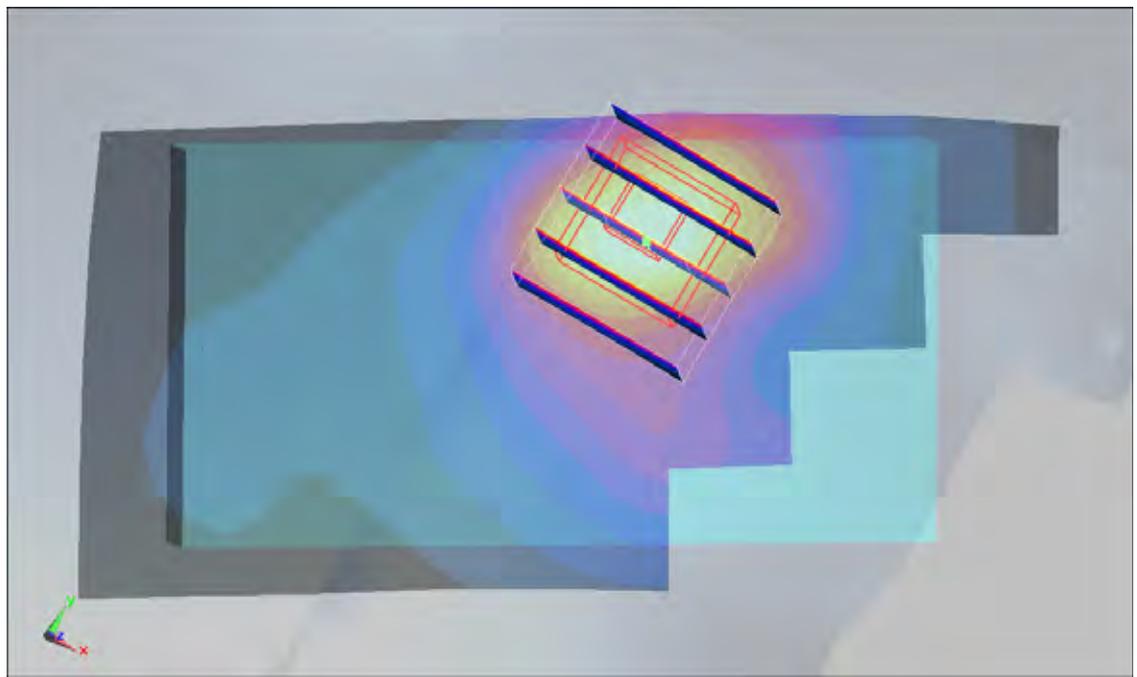
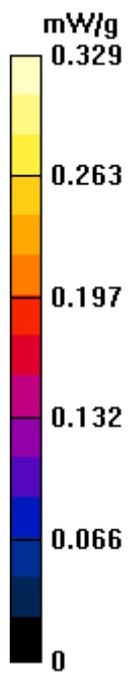
**Ch810/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.26 V/m; Power Drift = 0.046 dB

Peak SAR (extrapolated) = 0.416 W/kg

**SAR(1 g) = 0.303 mW/g; SAR(10 g) = 0.197 mW/g**

Maximum value of SAR (measured) = 0.321 mW/g



## #44 GSM1900\_Right Tilted\_Ch810\_Sample1\_Battery1

### DUT: 121019

Communication System: PCS; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium: HSL\_1900\_110326 Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.43$  mho/m;  $\epsilon_r = 41$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.0 ; Liquid Temperature : 21.5

### DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.03, 5.03, 5.03); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: SAM-Back; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch810/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.142 mW/g

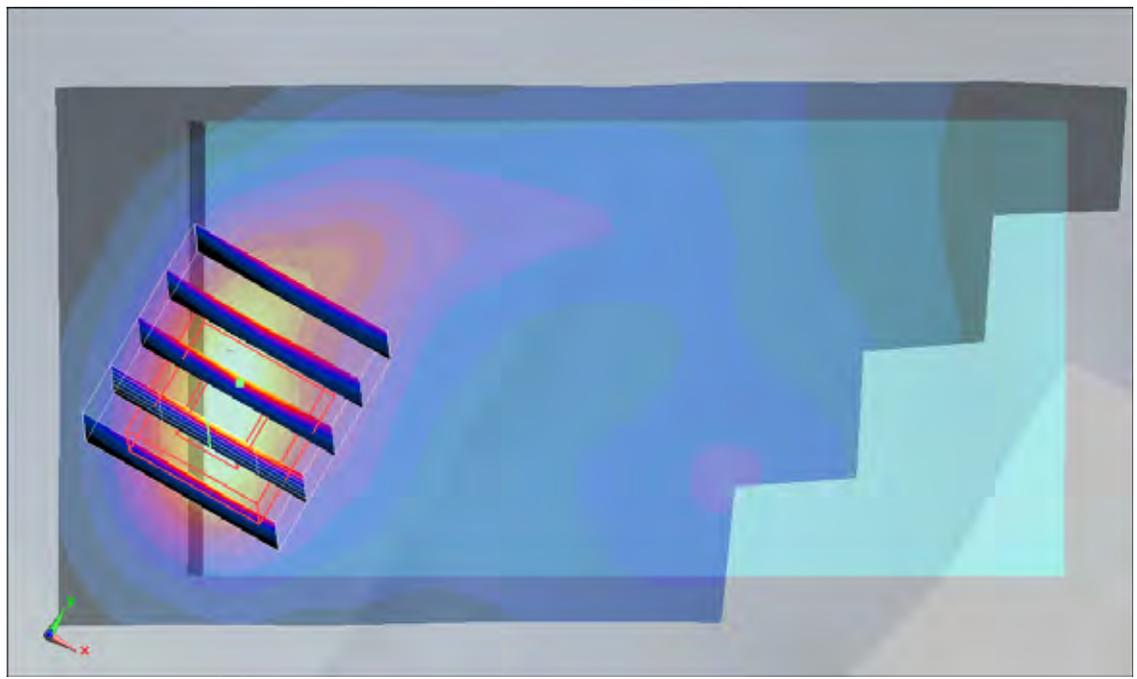
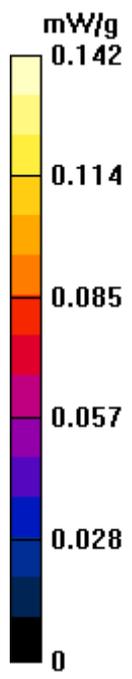
**Ch810/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.74 V/m; Power Drift = 0.023 dB

Peak SAR (extrapolated) = 0.183 W/kg

**SAR(1 g) = 0.126 mW/g; SAR(10 g) = 0.073 mW/g**

Maximum value of SAR (measured) = 0.140 mW/g



**#45 GSM1900\_Left Cheek\_Ch810\_Sample1\_Battery1**

**DUT: 121019**

Communication System: PCS; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium: HSL\_1900\_110326 Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.43$  mho/m;  $\epsilon_r = 41$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.0 ; Liquid Temperature : 21.5

**DASY5 Configuration:**

- Probe: ET3DV6 - SN1788; ConvF(5.03, 5.03, 5.03); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: SAM-Back; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch810/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.236 mW/g

**Ch810/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.1 V/m; Power Drift = -0.098 dB

Peak SAR (extrapolated) = 0.348 W/kg

**SAR(1 g) = 0.241 mW/g; SAR(10 g) = 0.149 mW/g**

Maximum value of SAR (measured) = 0.268 mW/g

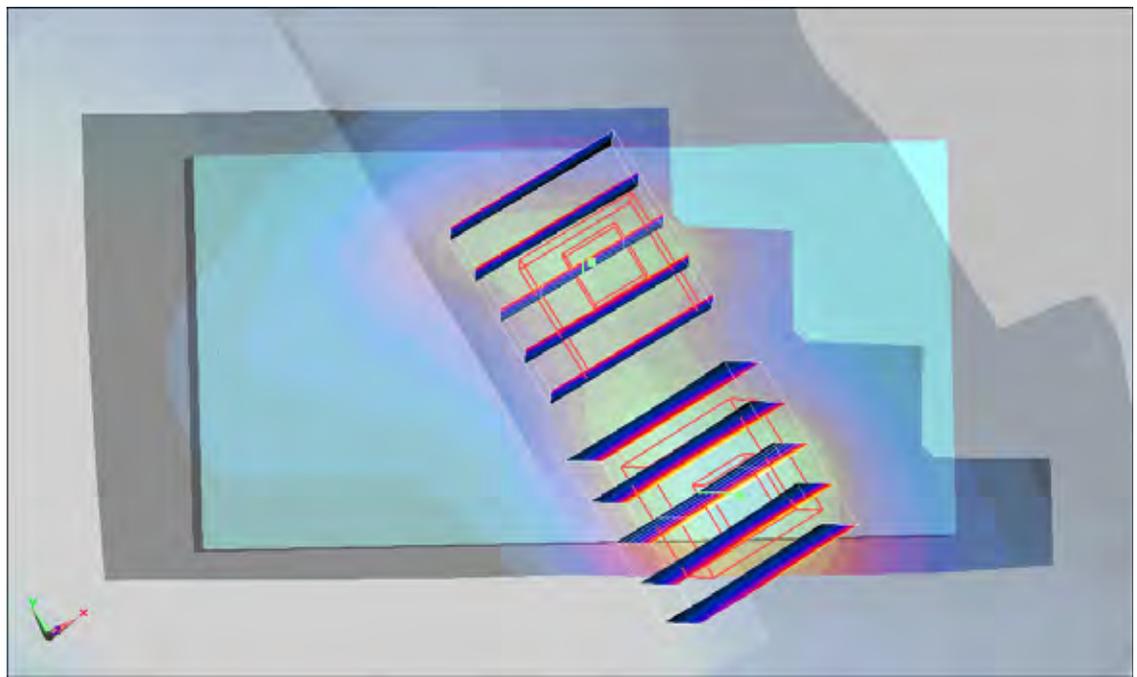
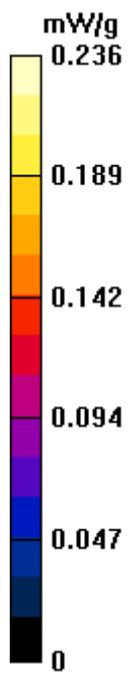
**Ch810/Zoom Scan (5x5x7)/Cube 1:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.1 V/m; Power Drift = -0.098 dB

Peak SAR (extrapolated) = 0.213 W/kg

**SAR(1 g) = 0.162 mW/g; SAR(10 g) = 0.113 mW/g**

Maximum value of SAR (measured) = 0.174 mW/g



## #46 GSM1900\_Left Tilted\_Ch810\_Sample1\_Battery1

### DUT: 121019

Communication System: PCS; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium: HSL\_1900\_110326 Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.43$  mho/m;  $\epsilon_r = 41$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.0 ; Liquid Temperature : 21.5

### DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.03, 5.03, 5.03); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: SAM-Back; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch810/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.131 mW/g

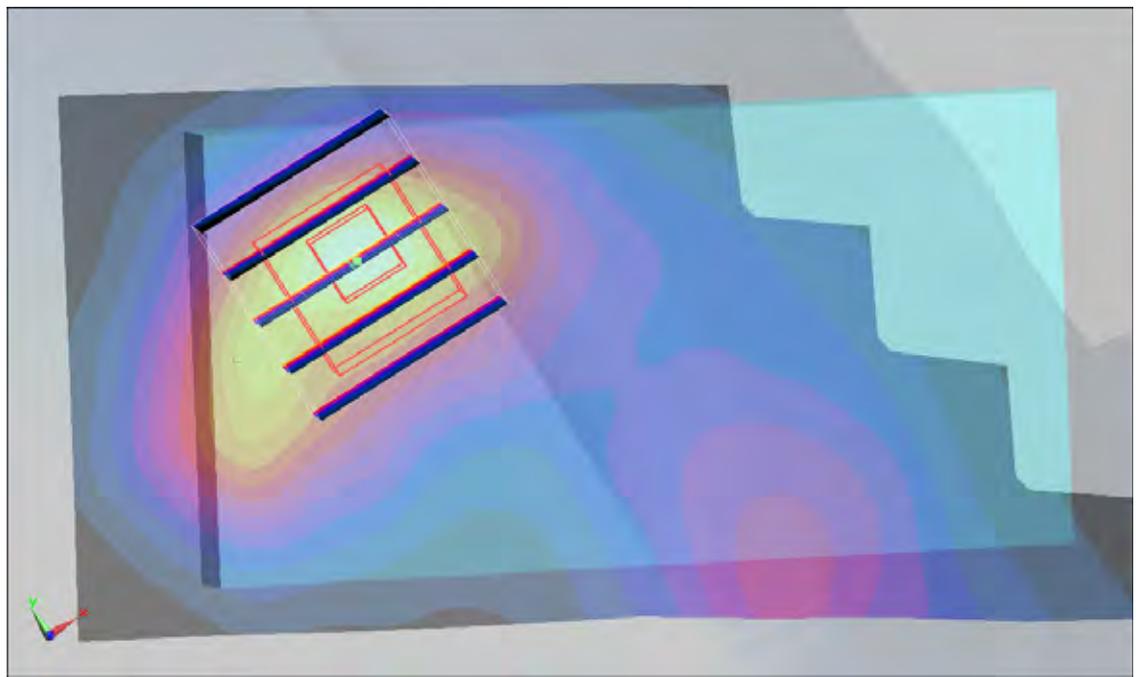
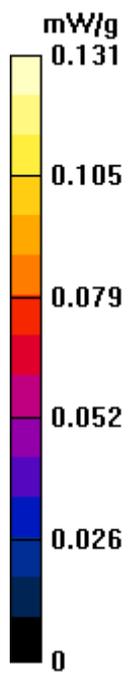
**Ch810/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 8.65 V/m; Power Drift = -0.027 dB

Peak SAR (extrapolated) = 0.150 W/kg

**SAR(1 g) = 0.111 mW/g; SAR(10 g) = 0.072 mW/g**

Maximum value of SAR (measured) = 0.121 mW/g



## #53 WCDMA VI\_12.2K\_Right Cheek\_Ch1413\_Sample1\_Battery1

**DUT: 121019**

Communication System: WCDMA; Frequency: 1732.6 MHz; Duty Cycle: 1:1

Medium: HSL\_1800\_110326 Medium parameters used:  $f = 1733$  MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39.5$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.0 ; Liquid Temperature : 21.5

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.29, 5.29, 5.29); Calibrated: 2010/9/21

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE4 Sn778; Calibrated: 2010/10/22

- Phantom: SAM-Back; Type: QD 000 P40 C; Serial: TP-1383

- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch1413/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.798 mW/g

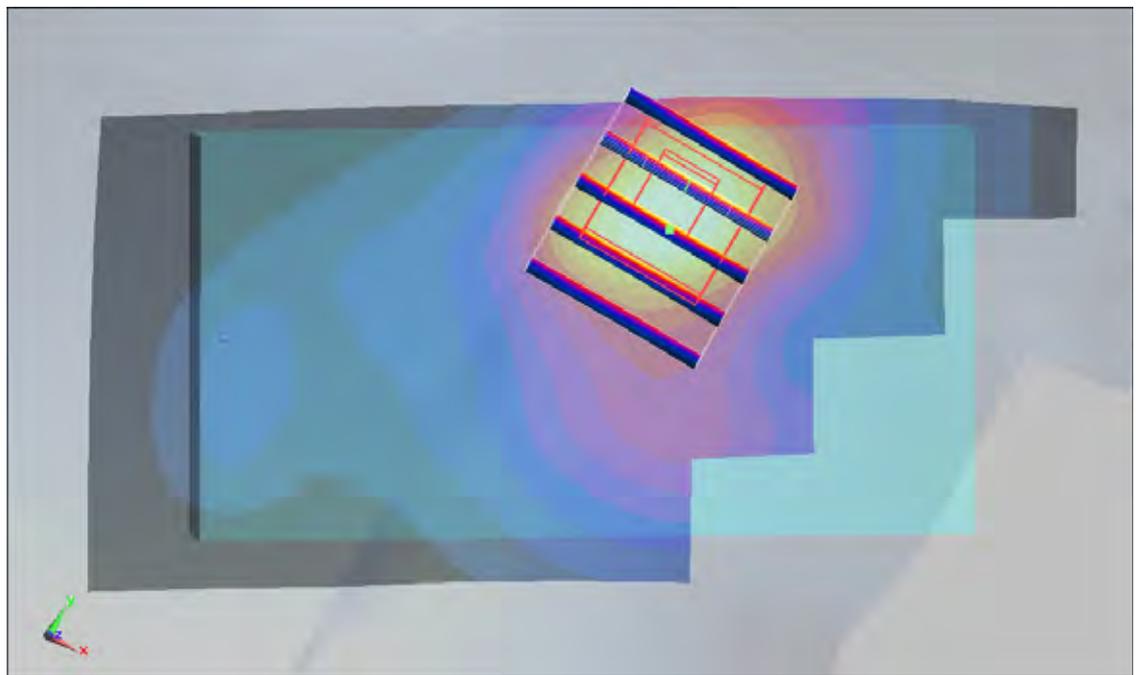
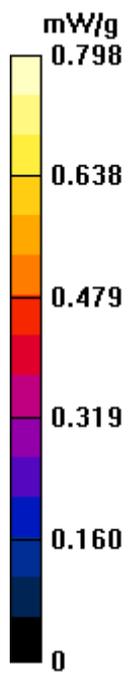
**Ch1413/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.73 V/m; Power Drift = 0.160 dB

Peak SAR (extrapolated) = 1.07 W/kg

**SAR(1 g) = 0.776 mW/g; SAR(10 g) = 0.504 mW/g**

Maximum value of SAR (measured) = 0.823 mW/g



#53 WCDMA VI\_12.2K\_Right Cheek\_Ch1413\_Sample1\_Battery1\_2D

DUT: 121019

Communication System: WCDMA; Frequency: 1732.6 MHz; Duty Cycle: 1:1

Medium: HSL\_1800\_110326 Medium parameters used:  $f = 1733 \text{ MHz}$ ;  $\sigma = 1.38 \text{ mho/m}$ ;  $\epsilon_r = 39.5$ ;  $\rho = 1000$

$\text{kg/m}^3$

Ambient Temperature : 22.3 ; Liquid Temperature : 21.6

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.29, 5.29, 5.29); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: SAM-Back; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch1413/Area Scan (41x81x1):** Measurement grid:  $dx=20\text{mm}$ ,  $dy=20\text{mm}$

Maximum value of SAR (interpolated) = 0.798 mW/g

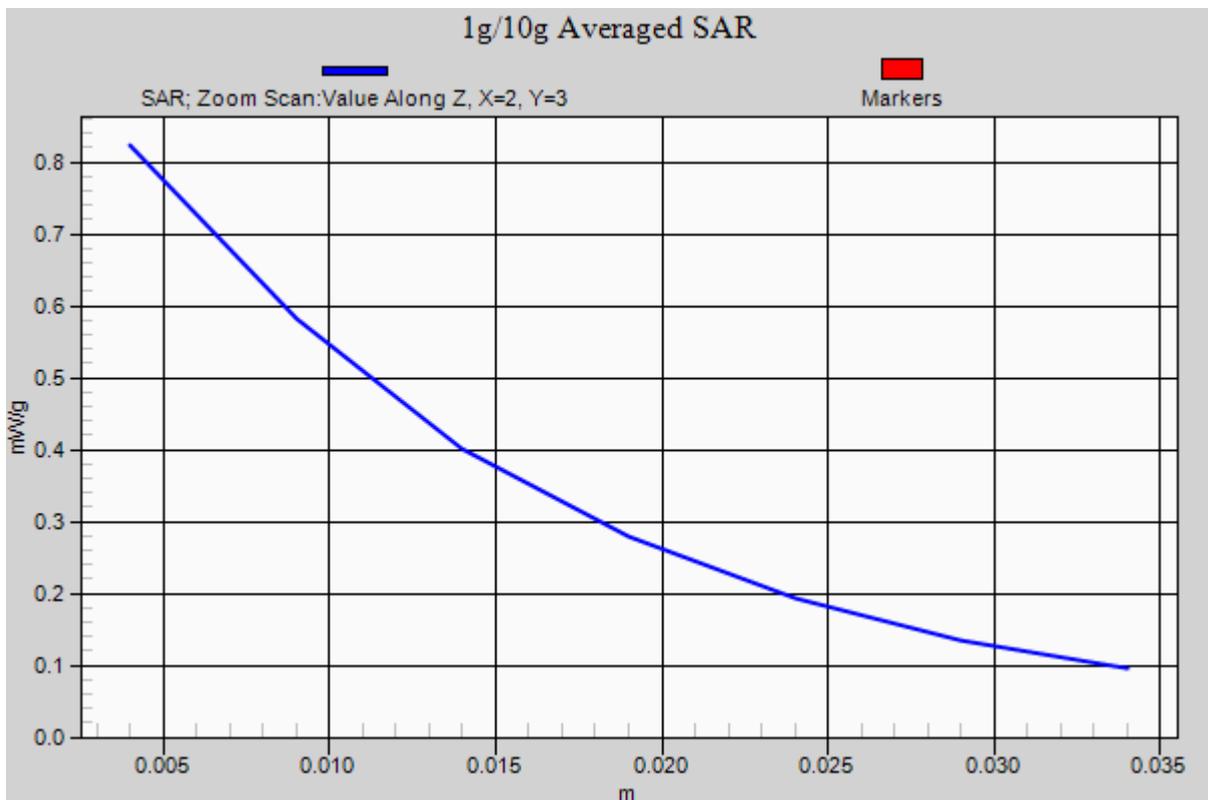
**Ch1413/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 9.73 V/m; Power Drift = 0.160 dB

Peak SAR (extrapolated) = 1.07 W/kg

**SAR(1 g) = 0.776 mW/g; SAR(10 g) = 0.504 mW/g**

Maximum value of SAR (measured) = 0.823 mW/g



## #54 WCDMA VI\_12.2K\_Right Cheek\_Ch1413\_Sample2\_Battery2

### DUT: 121019

Communication System: WCDMA; Frequency: 1732.6 MHz; Duty Cycle: 1:1

Medium: HSL\_1800\_110326 Medium parameters used:  $f = 1733$  MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39.5$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.0 ; Liquid Temperature : 21.5

### DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.29, 5.29, 5.29); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: SAM-Back; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch1413/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.556 mW/g

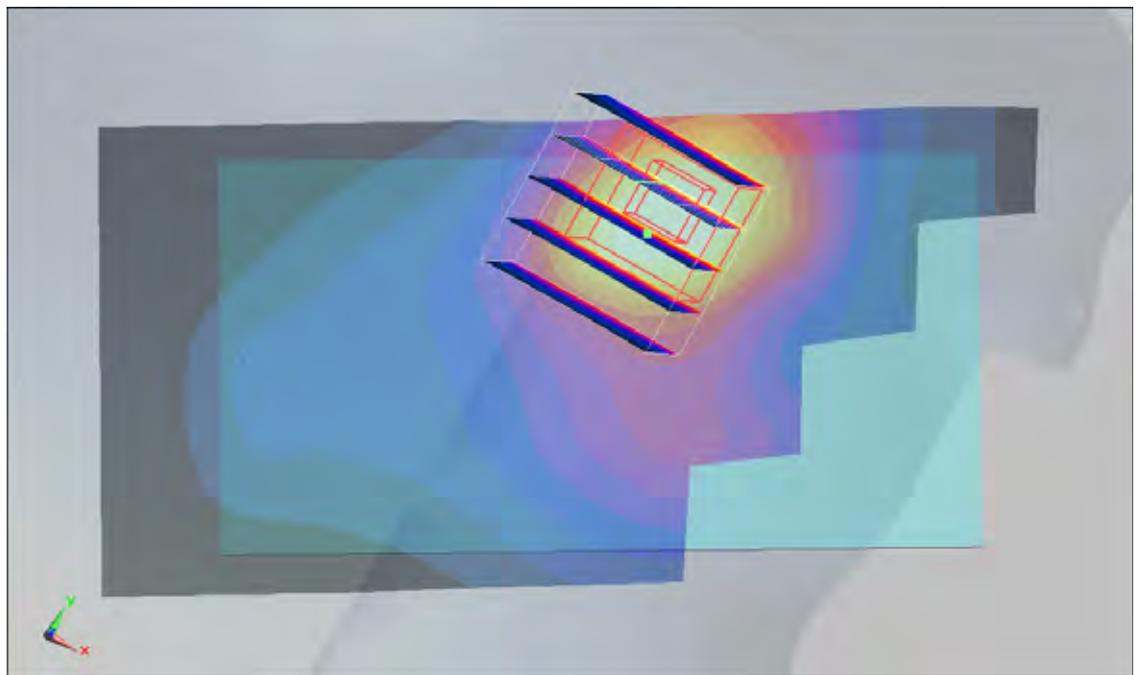
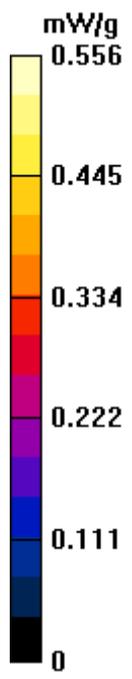
**Ch1413/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 8.28 V/m; Power Drift = 0.108 dB

Peak SAR (extrapolated) = 0.740 W/kg

**SAR(1 g) = 0.532 mW/g; SAR(10 g) = 0.349 mW/g**

Maximum value of SAR (measured) = 0.564 mW/g



**#55 WCDMA VI\_12.2K\_Right Cheek\_Ch1413\_Sample1\_Battery3**

**DUT: 121019**

Communication System: WCDMA; Frequency: 1732.6 MHz; Duty Cycle: 1:1

Medium: HSL\_1800\_110326 Medium parameters used:  $f = 1733$  MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39.5$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.0 ; Liquid Temperature : 21.5

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.29, 5.29, 5.29); Calibrated: 2010/9/21

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE4 Sn778; Calibrated: 2010/10/22

- Phantom: SAM-Back; Type: QD 000 P40 C; Serial: TP-1383

- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch1413/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.752 mW/g

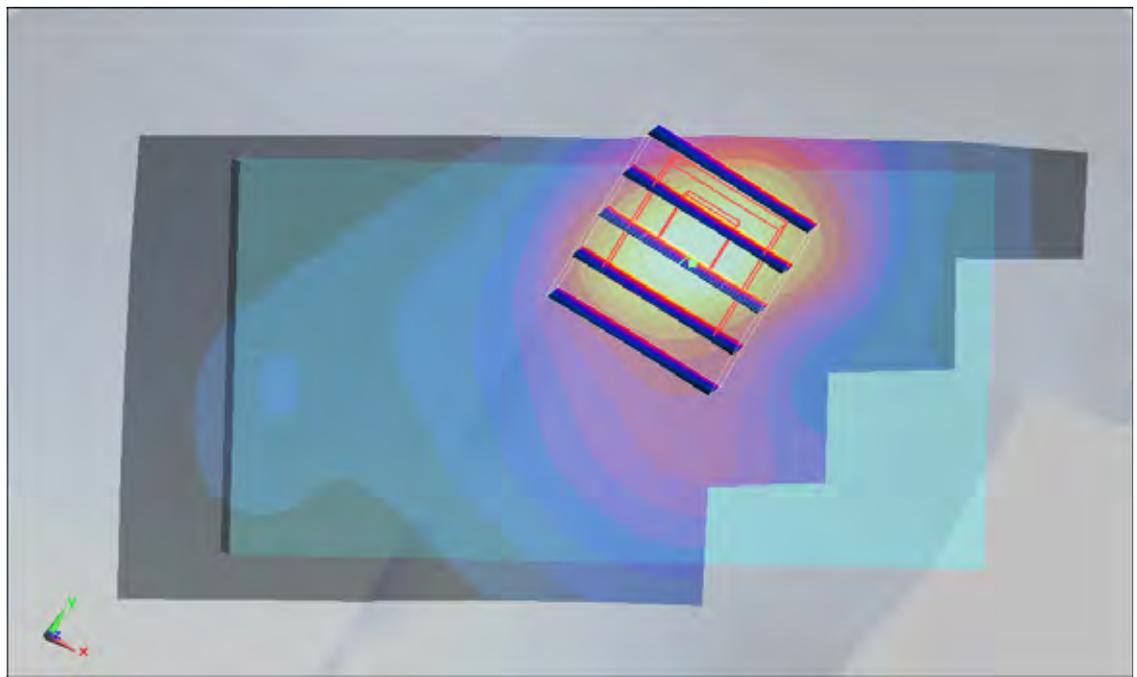
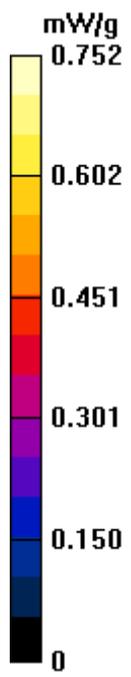
**Ch1413/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.01 V/m; Power Drift = -0.148 dB

Peak SAR (extrapolated) = 0.955 W/kg

**SAR(1 g) = 0.690 mW/g; SAR(10 g) = 0.450 mW/g**

Maximum value of SAR (measured) = 0.724 mW/g



## #56 WCDMA VI\_12.2K\_Right Tilted\_Ch1413\_Sample1\_Battery1

### DUT: 121019

Communication System: WCDMA; Frequency: 1732.6 MHz; Duty Cycle: 1:1

Medium: HSL\_1800\_110326 Medium parameters used:  $f = 1733$  MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39.5$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.0 ; Liquid Temperature : 21.5

### DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.29, 5.29, 5.29); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: SAM-Back; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch1413/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.257 mW/g

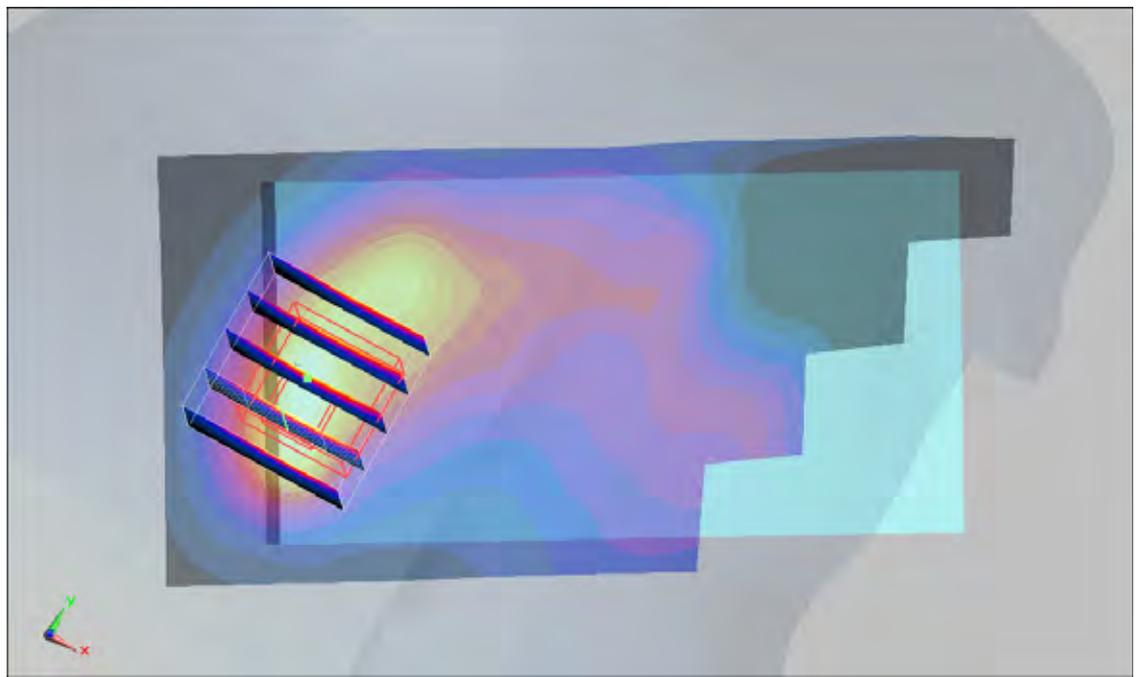
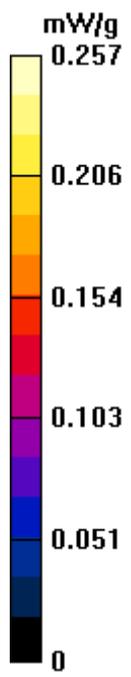
**Ch1413/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.5 V/m; Power Drift = 0.138 dB

Peak SAR (extrapolated) = 0.376 W/kg

**SAR(1 g) = 0.236 mW/g; SAR(10 g) = 0.141 mW/g**

Maximum value of SAR (measured) = 0.262 mW/g



## #57 WCDMA VI\_12.2K\_Left Cheek\_Ch1413\_Sample1\_Battery1

**DUT: 121019**

Communication System: WCDMA; Frequency: 1732.6 MHz; Duty Cycle: 1:1

Medium: HSL\_1800\_110326 Medium parameters used:  $f = 1733$  MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39.5$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.0 ; Liquid Temperature : 21.5

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.29, 5.29, 5.29); Calibrated: 2010/9/21

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE4 Sn778; Calibrated: 2010/10/22

- Phantom: SAM-Back; Type: QD 000 P40 C; Serial: TP-1383

- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch1413/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.506 mW/g

**Ch1413/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.88 V/m; Power Drift = 0.078 dB

Peak SAR (extrapolated) = 0.774 W/kg

**SAR(1 g) = 0.537 mW/g; SAR(10 g) = 0.335 mW/g**

Maximum value of SAR (measured) = 0.590 mW/g

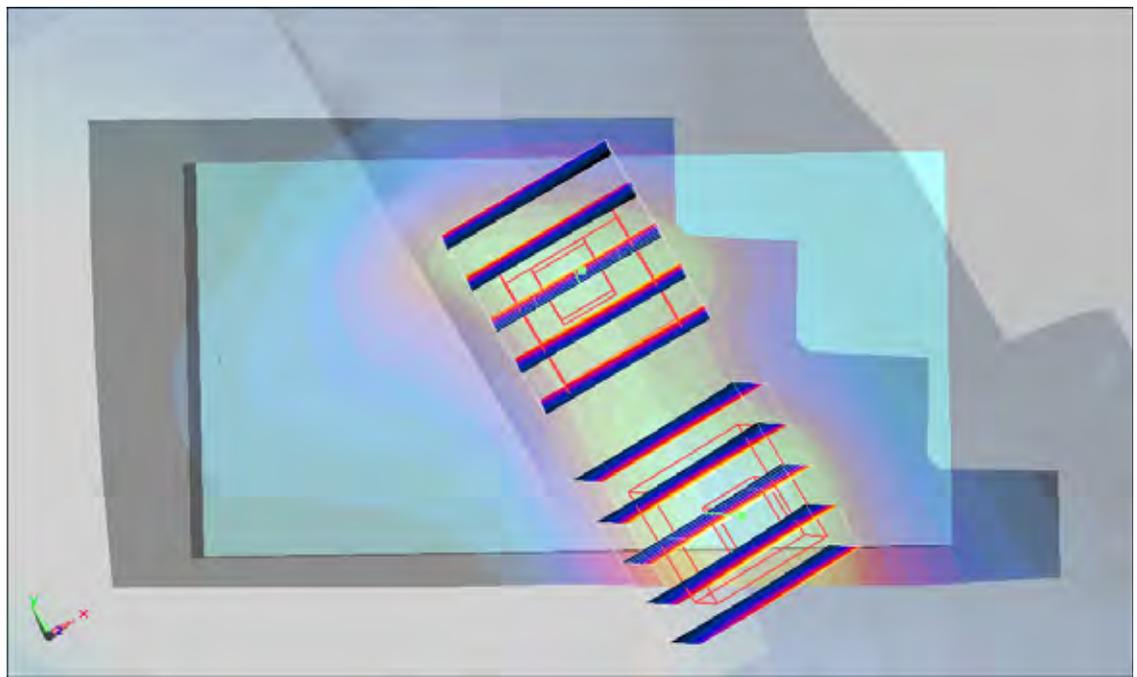
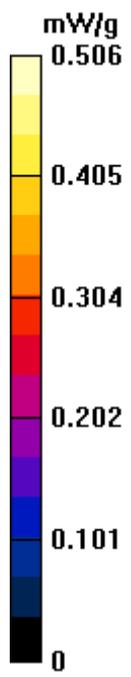
**Ch1413/Zoom Scan (5x5x7)/Cube 1:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.88 V/m; Power Drift = 0.078 dB

Peak SAR (extrapolated) = 0.550 W/kg

**SAR(1 g) = 0.415 mW/g; SAR(10 g) = 0.287 mW/g**

Maximum value of SAR (measured) = 0.446 mW/g



## #58 WCDMA VI\_12.2K\_Left Tilted\_Ch1413\_Sample1\_Battery1

### DUT: 121019

Communication System: WCDMA; Frequency: 1732.6 MHz; Duty Cycle: 1:1

Medium: HSL\_1800\_110326 Medium parameters used:  $f = 1733$  MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39.5$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.0 ; Liquid Temperature : 21.5

### DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(5.29, 5.29, 5.29); Calibrated: 2010/9/21

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE4 Sn778; Calibrated: 2010/10/22

- Phantom: SAM-Back; Type: QD 000 P40 C; Serial: TP-1383

- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch1413/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.351 mW/g

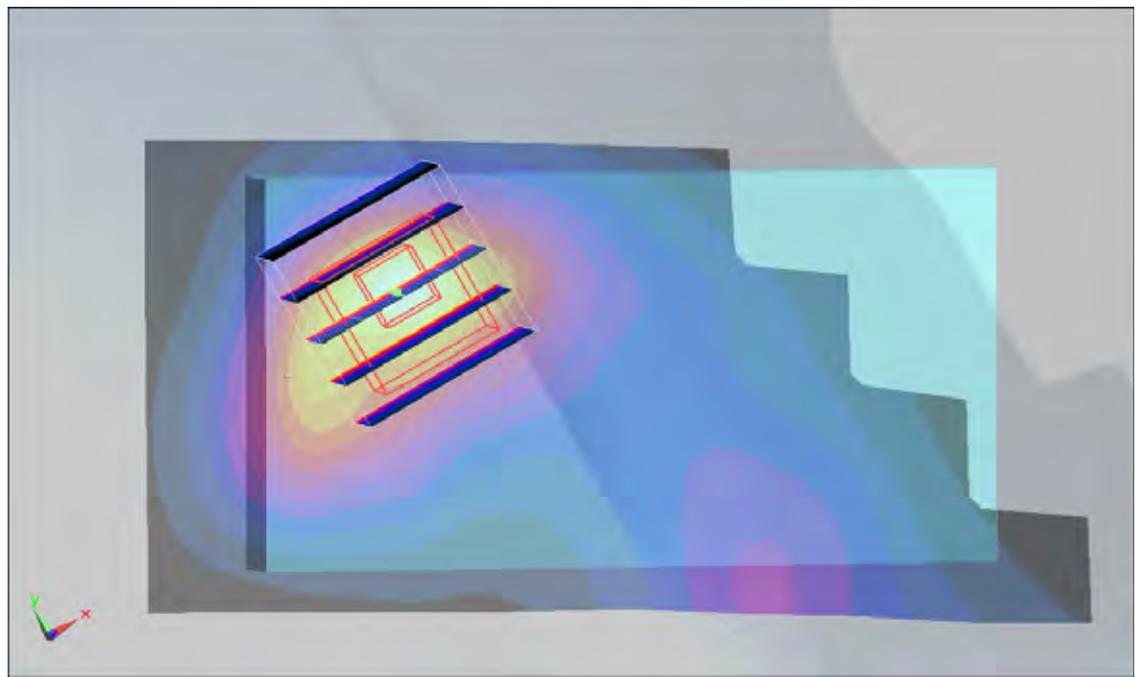
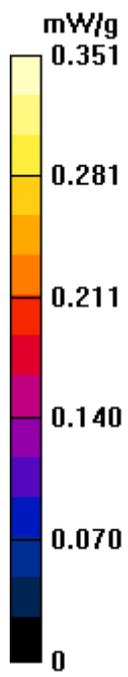
**Ch1413/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.2 V/m; Power Drift = -0.037 dB

Peak SAR (extrapolated) = 0.384 W/kg

**SAR(1 g) = 0.283 mW/g; SAR(10 g) = 0.184 mW/g**

Maximum value of SAR (measured) = 0.307 mW/g



## #18 GSM850\_GPRS10\_Bottom\_1cm\_Ch251\_Sample1\_Battery1

**DUT: 121019**

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:4

Medium: MSL\_850\_110311 Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.976$  mho/m;  $\epsilon_r = 54.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.6 °C ; Liquid Temperature : 21.6 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.12, 6.12, 6.12); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch251/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.38 mW/g

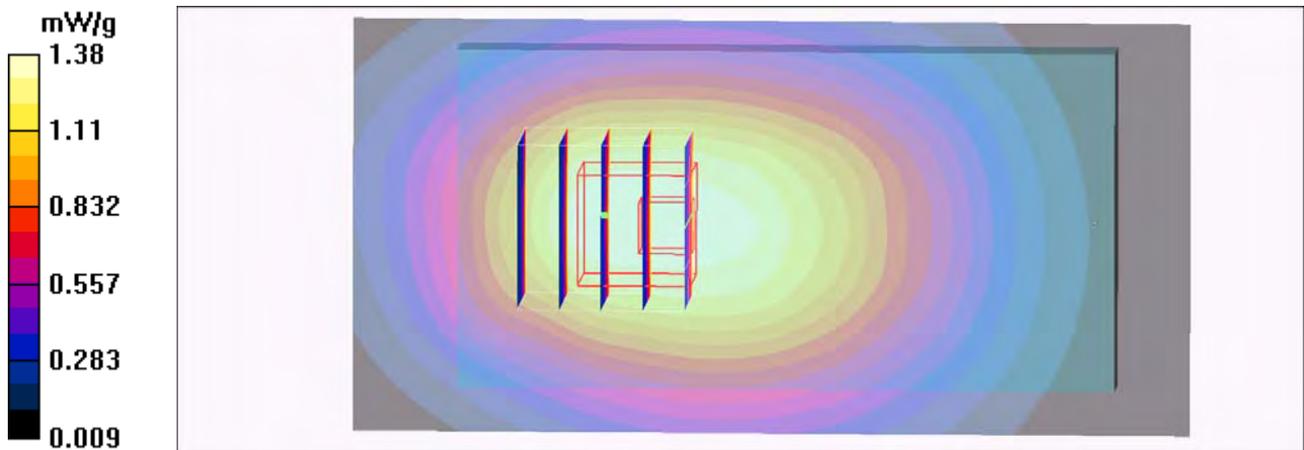
**Ch251/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 38.3 V/m; Power Drift = -0.159 dB

Peak SAR (extrapolated) = 1.74 W/kg

**SAR(1 g) = 1.22 mW/g; SAR(10 g) = 0.885 mW/g**

Maximum value of SAR (measured) = 1.29 mW/g



## #49 GSM850\_GPRS10\_Bottom\_1cm\_Ch251\_Sample2\_Battery2

**DUT: 121019**

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:4  
Medium: MSL\_850\_110325 Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.976$   
mho/m;  $\epsilon_r = 54.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 21.8 °C; Liquid Temperature : 21.3 °C

DASY4 Configuration:

- Probe: EX3DV4 - SN3731; ConvF(8.84, 8.84, 8.84); Calibrated: 2010/9/20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: SAM\_Right; Type: SAM; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch251/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm  
Maximum value of SAR (interpolated) = 1.12 mW/g

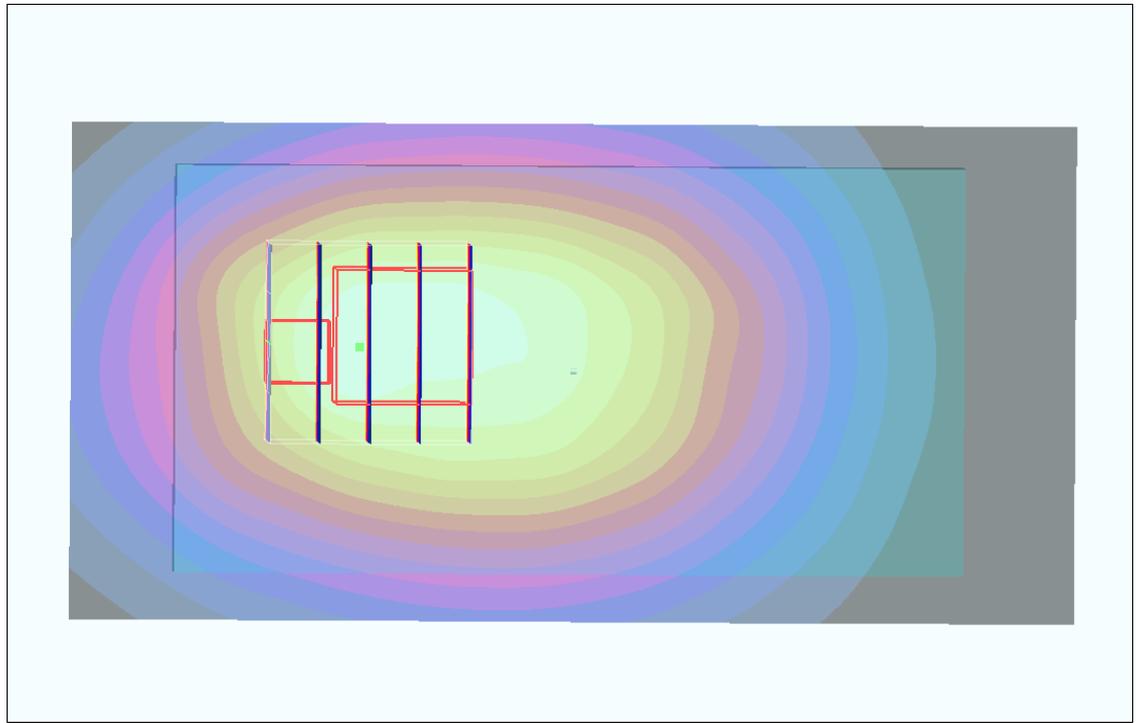
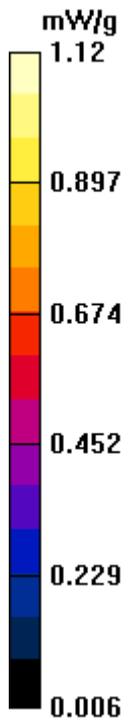
**Ch251/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm,  
dz=5mm

Reference Value = 32.3 V/m; Power Drift = -0.158 dB

Peak SAR (extrapolated) = 1.90 W/kg

**SAR(1 g) = 1.04 mW/g; SAR(10 g) = 0.744 mW/g**

Maximum value of SAR (measured) = 1.18 mW/g



## #20 GSM850\_GPRS10\_Bottom\_1cm\_Ch251\_Sample1\_Battery3

**DUT: 121019**

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:4

Medium: MSL\_850\_110311 Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.976$  mho/m;  $\epsilon_r = 54.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.6 °C ; Liquid Temperature : 21.6 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.12, 6.12, 6.12); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch251/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.49 mW/g

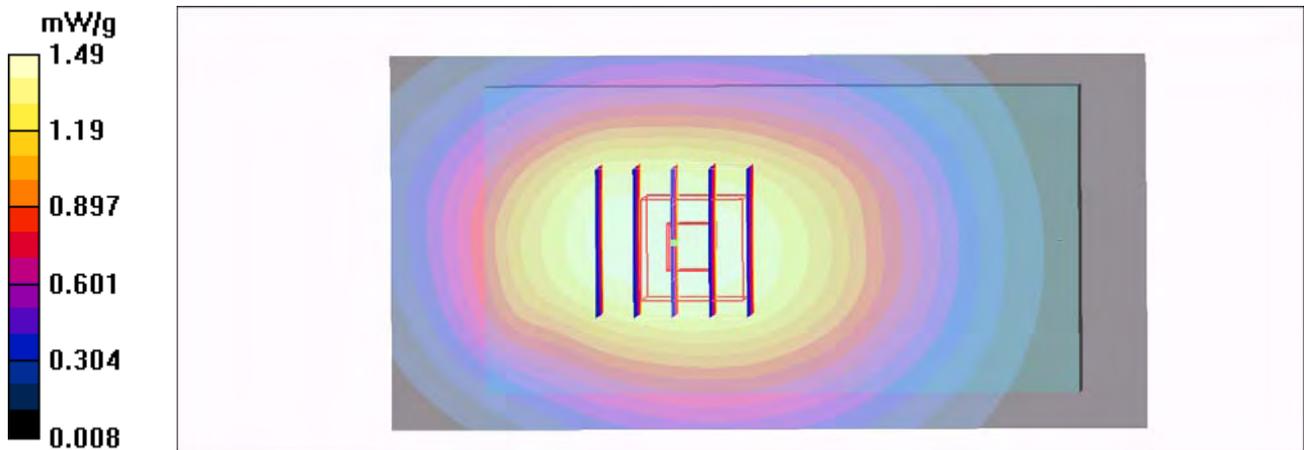
**Ch251/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 39.9 V/m; Power Drift = -0.151 dB

Peak SAR (extrapolated) = 1.64 W/kg

**SAR(1 g) = 1.35 mW/g; SAR(10 g) = 1.01 mW/g**

Maximum value of SAR (measured) = 1.43 mW/g



## #20 GSM850\_GPRS10\_Bottom\_1cm\_Ch251\_Sample1\_Battery3\_2D

**DUT: 121019**

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:4

Medium: MSL\_850\_110311 Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.976$  mho/m;  $\epsilon_r = 54.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.3 °C ; Liquid Temperature : 21.6 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.12, 6.12, 6.12); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch251/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.49 mW/g

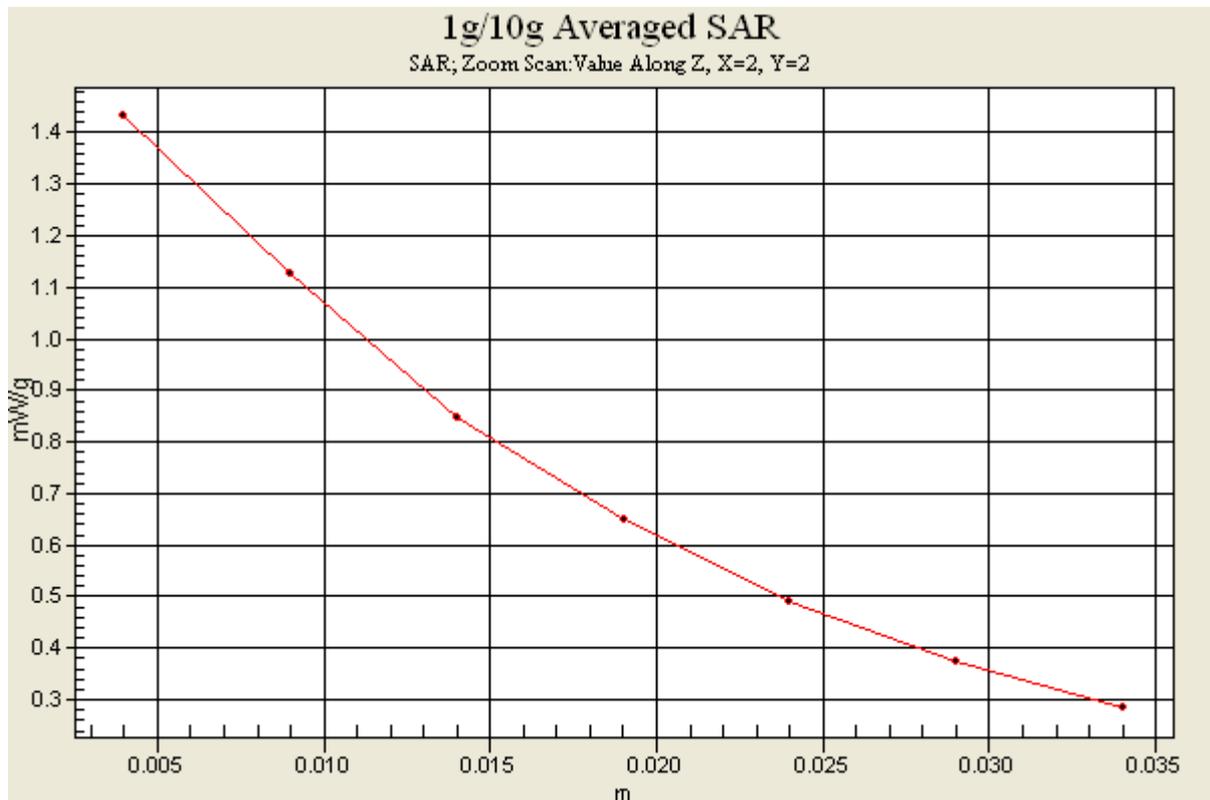
**Ch251/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 39.9 V/m; Power Drift = -0.114 dB

Peak SAR (extrapolated) = 1.64 W/kg

**SAR(1 g) = 1.35 mW/g; SAR(10 g) = 1.01 mW/g**

Maximum value of SAR (measured) = 1.43 mW/g



## #21 GSM850\_GPRS10\_Face\_1cm\_Ch251\_Sample1\_Battery3

### DUT: 121019

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:4

Medium: MSL\_850\_110311 Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.976$  mho/m;  $\epsilon_r = 54.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.6 °C ; Liquid Temperature : 21.6 °C

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.12, 6.12, 6.12); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch251/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.964 mW/g

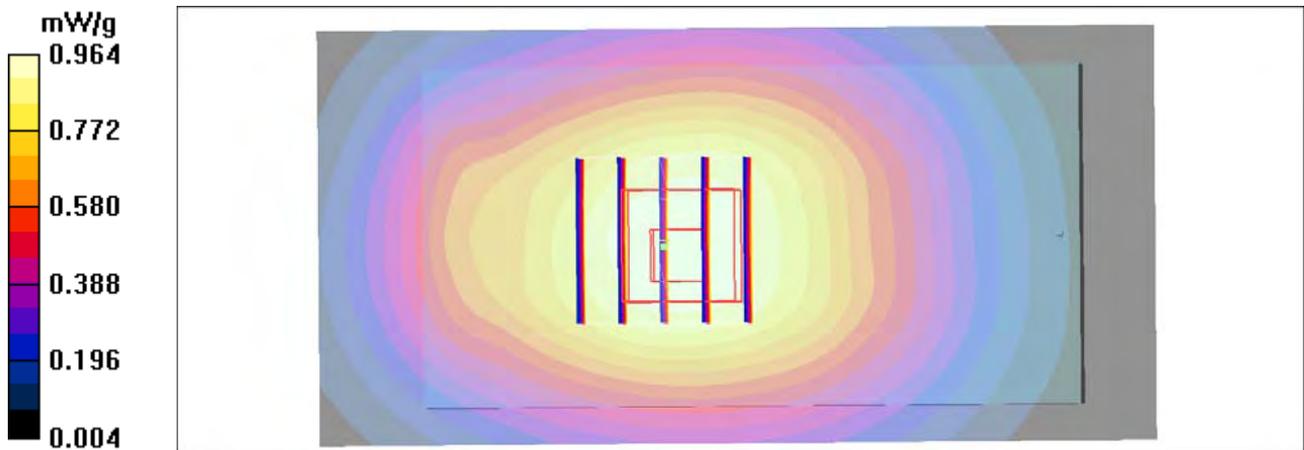
**Ch251/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 32.8 V/m; Power Drift = -0.156 dB

Peak SAR (extrapolated) = 1.06 W/kg

**SAR(1 g) = 0.873 mW/g; SAR(10 g) = 0.667 mW/g**

Maximum value of SAR (measured) = 0.914 mW/g



## #22 GSM850\_GPRS10\_Left Side\_1cm\_Ch251\_Sample1\_Battery3

### DUT: 121019

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:4

Medium: MSL\_850\_110311 Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.976$  mho/m;  $\epsilon_r = 54.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.6 °C ; Liquid Temperature : 21.6 °C

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.12, 6.12, 6.12); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch251/Area Scan (21x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.874 mW/g

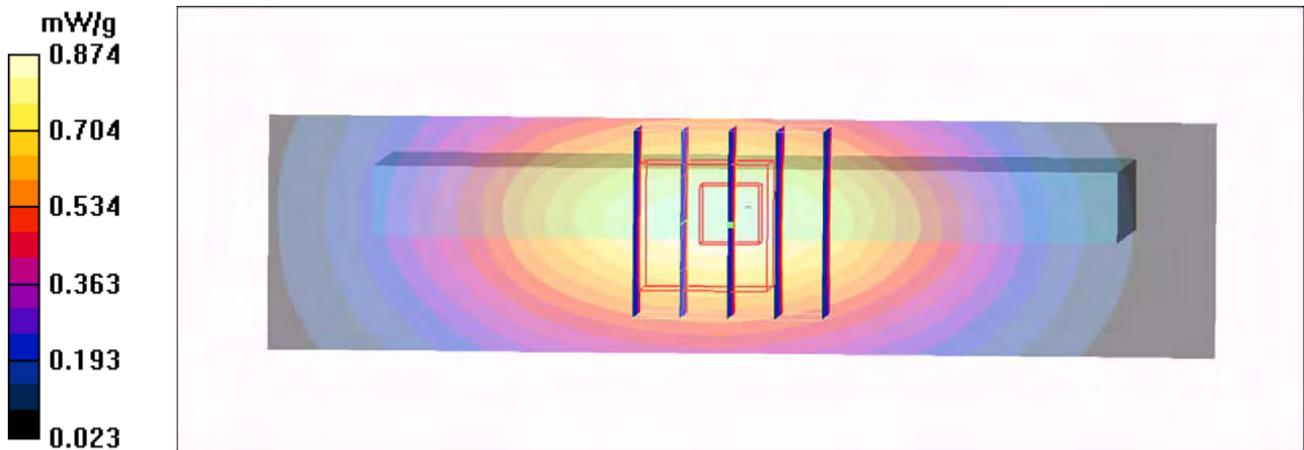
**Ch251/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 30.8 V/m; Power Drift = 0.004 dB

Peak SAR (extrapolated) = 1.20 W/kg

**SAR(1 g) = 0.840 mW/g; SAR(10 g) = 0.559 mW/g**

Maximum value of SAR (measured) = 0.868 mW/g



### #23 GSM850\_GPRS10\_Right Side\_1cm\_Ch251\_Sample1\_Battery3

**DUT: 121019**

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:4

Medium: MSL\_850\_110311 Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.976$  mho/m;  $\epsilon_r = 54.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.6 °C ; Liquid Temperature : 21.6 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.12, 6.12, 6.12); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch251/Area Scan (21x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.727 mW/g

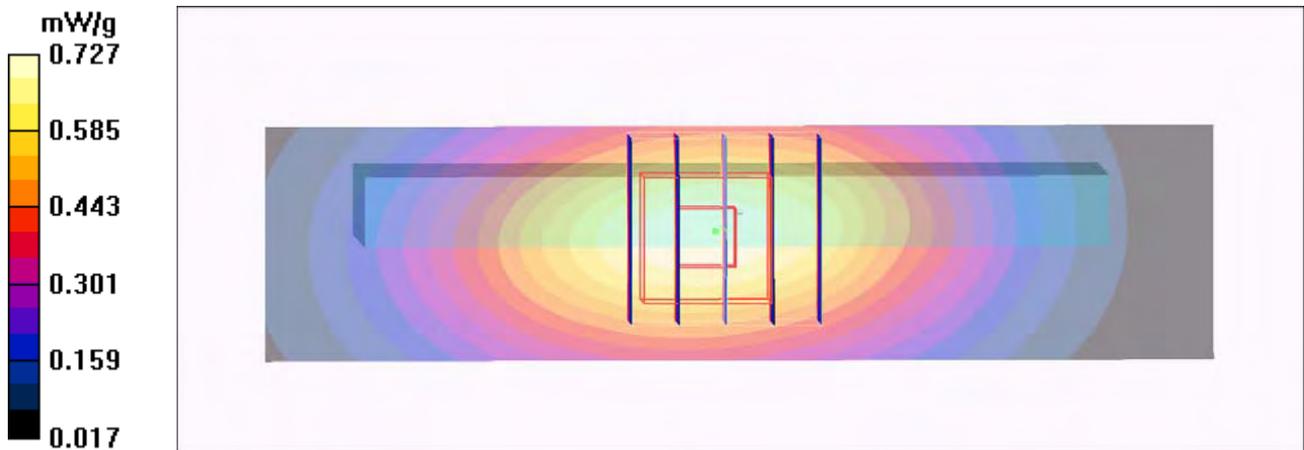
**Ch251/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 28.2 V/m; Power Drift = -0.155 dB

Peak SAR (extrapolated) = 0.906 W/kg

**SAR(1 g) = 0.656 mW/g; SAR(10 g) = 0.450 mW/g**

Maximum value of SAR (measured) = 0.698 mW/g



### #25 GSM850\_GPRS10\_Down Side\_1cm\_Ch251\_Sample1\_Battery3

**DUT: 121019**

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:4

Medium: MSL\_850\_110311 Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.976$  mho/m;  $\epsilon_r = 54.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.6 °C ; Liquid Temperature : 21.6 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.12, 6.12, 6.12); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch251/Area Scan (21x41x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.299 mW/g

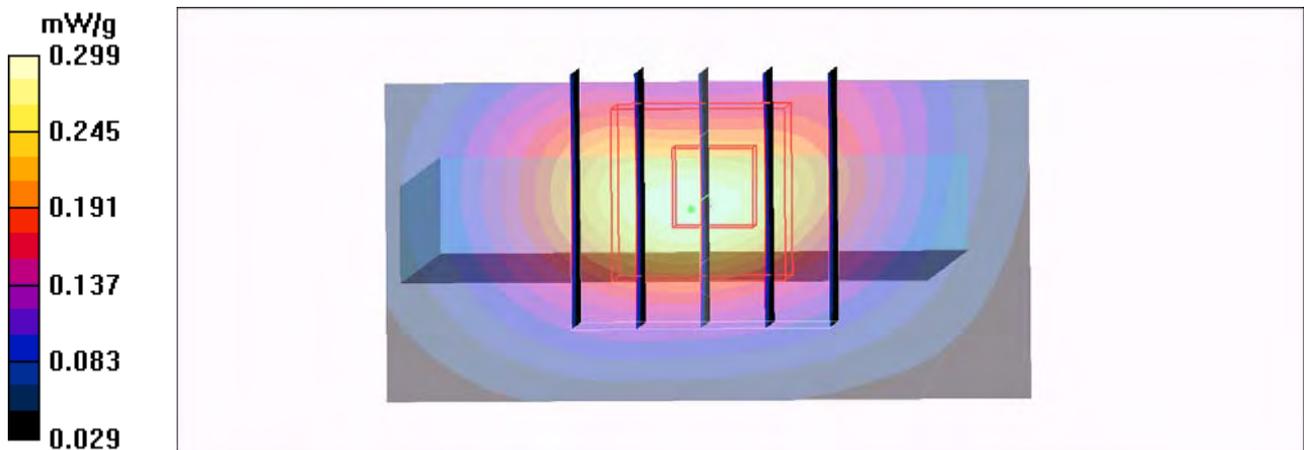
**Ch251/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.0 V/m; Power Drift = -0.187 dB

Peak SAR (extrapolated) = 0.661 W/kg

**SAR(1 g) = 0.309 mW/g; SAR(10 g) = 0.158 mW/g**

Maximum value of SAR (measured) = 0.339 mW/g



## #26 GSM850\_GPRS10\_Bottom\_1cm\_Ch189\_Sample1\_Battery3

**DUT: 121019**

Communication System: GSM850; Frequency: 836.4 MHz; Duty Cycle: 1:4

Medium: MSL\_850\_110311 Medium parameters used:  $f = 836.4$  MHz;  $\sigma = 0.964$  mho/m;  $\epsilon_r = 54.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.6 °C; Liquid Temperature : 21.6 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.12, 6.12, 6.12); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch189/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.29 mW/g

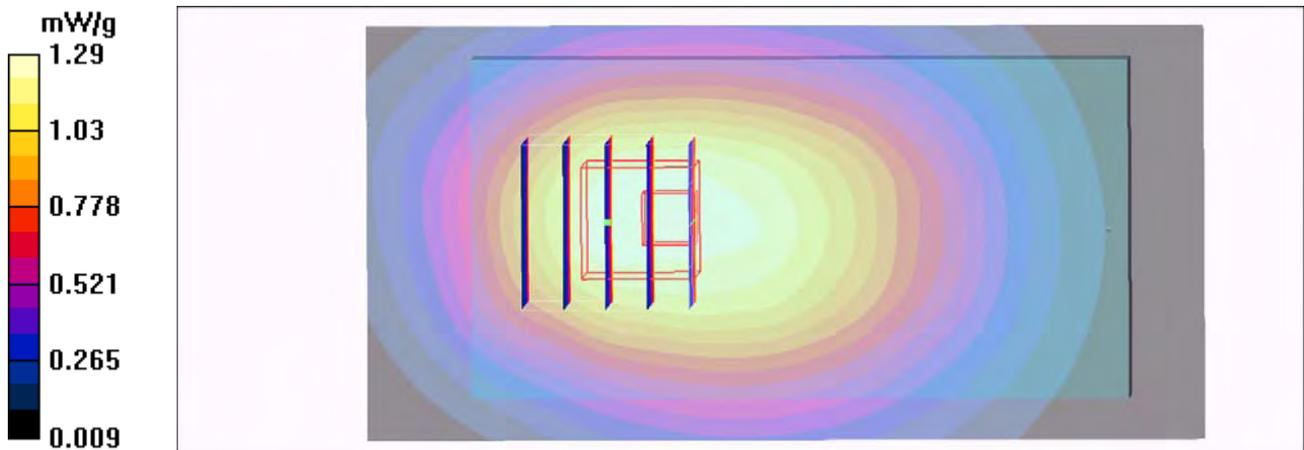
**Ch189/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 37.3 V/m; Power Drift = -0.156 dB

Peak SAR (extrapolated) = 1.62 W/kg

**SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.818 mW/g**

Maximum value of SAR (measured) = 1.20 mW/g



### #27 GSM850\_GPRS10\_Bottom\_1cm\_Ch128\_Sample1\_Battery3

**DUT: 121019**

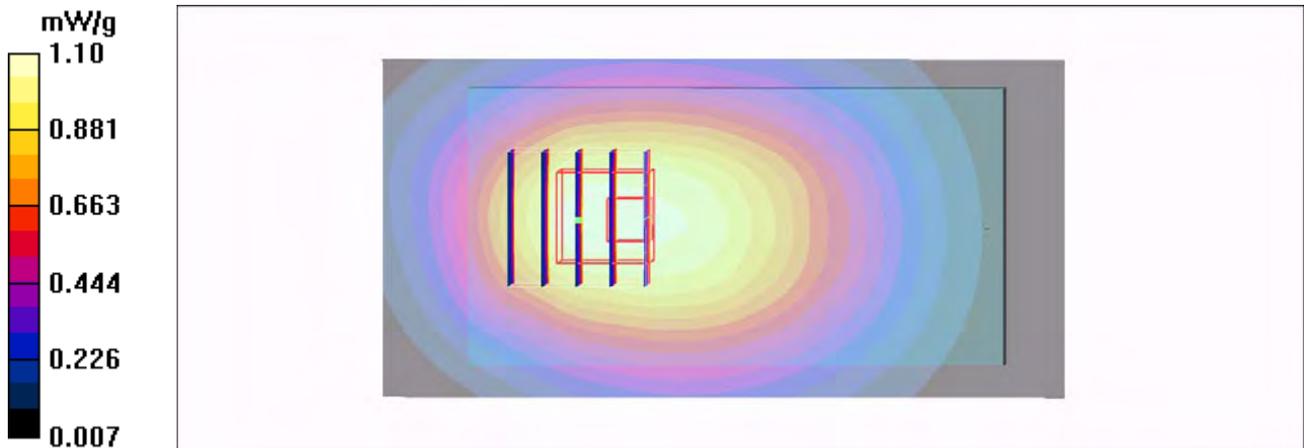
Communication System: GSM850; Frequency: 824.2 MHz; Duty Cycle: 1:4  
Medium: MSL\_850\_110311 Medium parameters used:  $f = 824.2$  MHz;  $\sigma = 0.953$  mho/m;  $\epsilon_r = 54.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Ambient Temperature : 22.6 °C ; Liquid Temperature : 21.6 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.12, 6.12, 6.12); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch128/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm  
Maximum value of SAR (interpolated) = 1.10 mW/g

**Ch128/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
Reference Value = 33.2 V/m; Power Drift = -0.115 dB  
Peak SAR (extrapolated) = 1.43 W/kg  
**SAR(1 g) = 0.978 mW/g; SAR(10 g) = 0.717 mW/g**  
Maximum value of SAR (measured) = 1.04 mW/g



## #69 GSM850\_GPRS10\_Bottom\_1cm\_Ch189\_Sample1\_Battery1

**DUT: 121019**

Communication System: GSM850; Frequency: 836.4 MHz; Duty Cycle: 1:4

Medium: MSL\_850\_110328 Medium parameters used:  $f = 836.4$  MHz;  $\sigma = 0.956$  mho/m;  $\epsilon_r = 52.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.0 °C ; Liquid Temperature : 21.6 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.12, 6.12, 6.12); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch189/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.762 mW/g

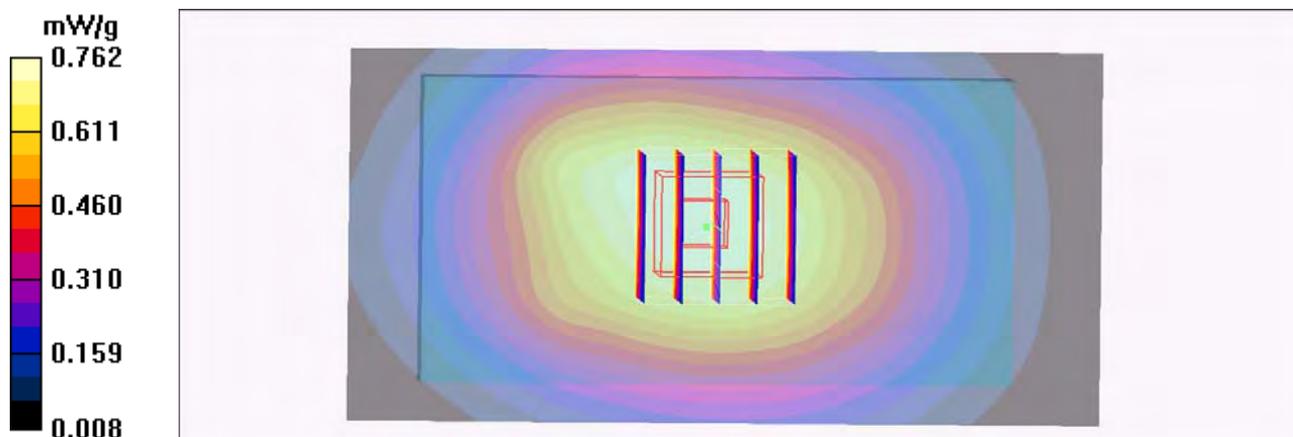
**Ch189/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 29.3 V/m; Power Drift = -0.090 dB

Peak SAR (extrapolated) = 0.867 W/kg

**SAR(1 g) = 0.722 mW/g; SAR(10 g) = 0.555 mW/g**

Maximum value of SAR (measured) = 0.756 mW/g



## #70 GSM850\_GPRS10\_Bottom\_1cm\_Ch128\_Sample1\_Battery1

### DUT: 121019

Communication System: GSM850; Frequency: 824.2 MHz; Duty Cycle: 1:4

Medium: MSL\_850\_110328 Medium parameters used:  $f = 824.2$  MHz;  $\sigma = 0.943$  mho/m;  $\epsilon_r = 52.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.0 °C; Liquid Temperature : 21.6 °C

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.12, 6.12, 6.12); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch128/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.576 mW/g

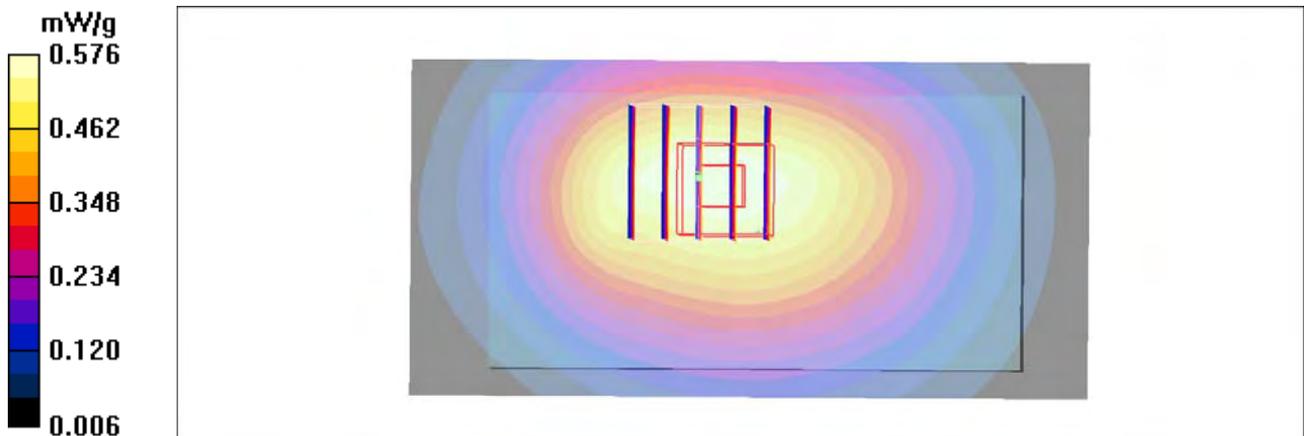
**Ch128/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 27.1 V/m; Power Drift = -0.191 dB

Peak SAR (extrapolated) = 0.652 W/kg

**SAR(1 g) = 0.535 mW/g; SAR(10 g) = 0.408 mW/g**

Maximum value of SAR (measured) = 0.557 mW/g



## #71 GSM850\_GPRS10\_Bottom\_1cm\_Ch189\_Sample2\_Battery2

### DUT: 121019

Communication System: GSM850; Frequency: 836.4 MHz; Duty Cycle: 1:4

Medium: MSL\_850\_110328 Medium parameters used:  $f = 836.4$  MHz;  $\sigma = 0.956$  mho/m;  $\epsilon_r = 52.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.0 °C; Liquid Temperature : 21.6 °C

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.12, 6.12, 6.12); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch189/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.626 mW/g

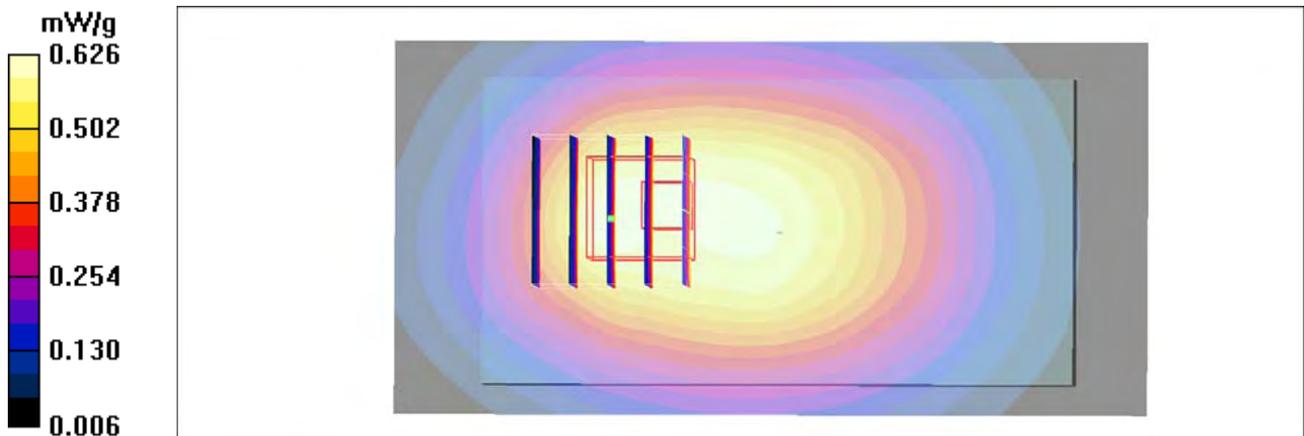
**Ch189/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 25.8 V/m; Power Drift = -0.065 dB

Peak SAR (extrapolated) = 0.802 W/kg

**SAR(1 g) = 0.549 mW/g; SAR(10 g) = 0.401 mW/g**

Maximum value of SAR (measured) = 0.589 mW/g



## #72 GSM850\_GPRS10\_Bottom\_1cm\_Ch128\_Sample2\_Battery2

### DUT: 121019

Communication System: GSM850; Frequency: 824.2 MHz; Duty Cycle: 1:4

Medium: MSL\_850\_110328 Medium parameters used:  $f = 824.2$  MHz;  $\sigma = 0.943$  mho/m;  $\epsilon_r = 52.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.0 °C; Liquid Temperature : 21.6 °C

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.12, 6.12, 6.12); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch128/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.625 mW/g

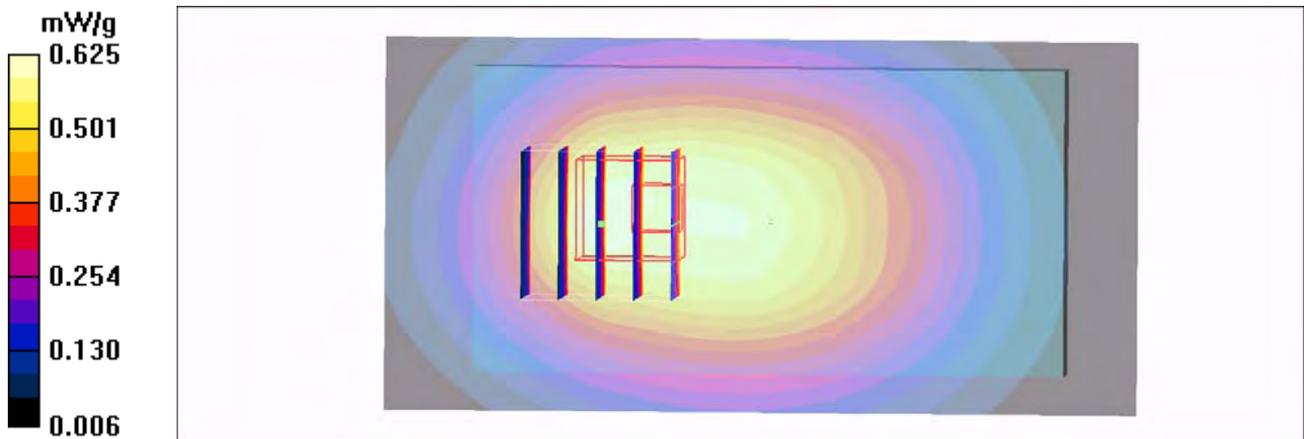
**Ch128/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 25.9 V/m; Power Drift = -0.083 dB

Peak SAR (extrapolated) = 0.778 W/kg

**SAR(1 g) = 0.550 mW/g; SAR(10 g) = 0.403 mW/g**

Maximum value of SAR (measured) = 0.586 mW/g



## #28 GSM850\_GPRS10\_Bottom\_1cm\_Ch251\_Sample1\_Battery3\_Earphone1

**DUT: 121019**

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:4

Medium: MSL\_850\_110311 Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.976$  mho/m;  $\epsilon_r = 54.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.6 °C; Liquid Temperature : 21.6 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.12, 6.12, 6.12); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch251/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.46 mW/g

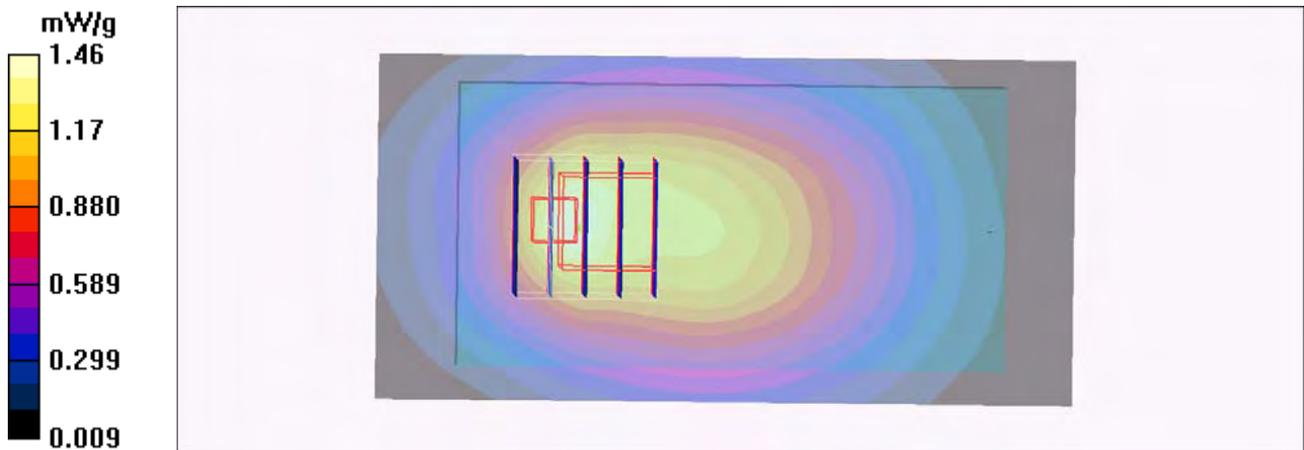
**Ch251/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 37.0 V/m; Power Drift = -0.138 dB

Peak SAR (extrapolated) = 1.87 W/kg

**SAR(1 g) = 1.2 mW/g; SAR(10 g) = 0.820 mW/g**

Maximum value of SAR (measured) = 1.34 mW/g



**#60 GSM850\_GPRS10\_Bottom\_1cm\_Ch251\_Sample2\_Battery3\_Earphone2**

**DUT: 121019**

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:4

Medium: MSL\_850\_110328 Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.969$  mho/m;  $\epsilon_r = 52.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.0 °C ; Liquid Temperature : 21.6 °C

**DASY4 Configuration:**

- Probe: ET3DV6 - SN1787; ConvF(6.12, 6.12, 6.12); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch251/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.697 mW/g

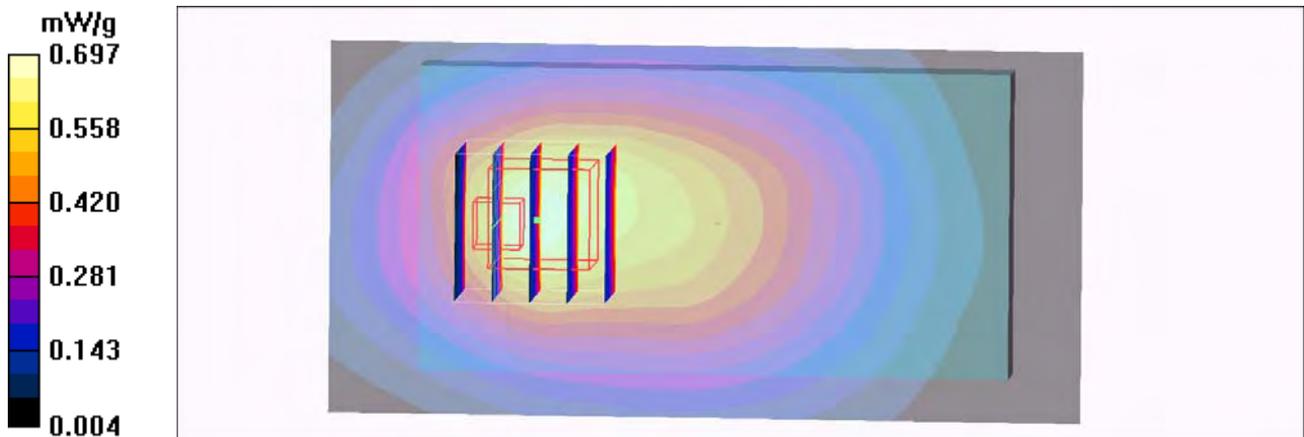
**Ch251/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.7 V/m; Power Drift = -0.069 dB

Peak SAR (extrapolated) = 1.05 W/kg

**SAR(1 g) = 0.636 mW/g; SAR(10 g) = 0.415 mW/g**

Maximum value of SAR (measured) = 0.691 mW/g



## #29 GSM850\_GPRS10\_Bottom\_1cm\_Ch251\_Sample1\_Battery3\_Earphone3

**DUT: 121019**

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:4

Medium: MSL\_850\_110311 Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.976$  mho/m;  $\epsilon_r = 54.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.6 °C; Liquid Temperature : 21.6 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.12, 6.12, 6.12); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch251/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.32 mW/g

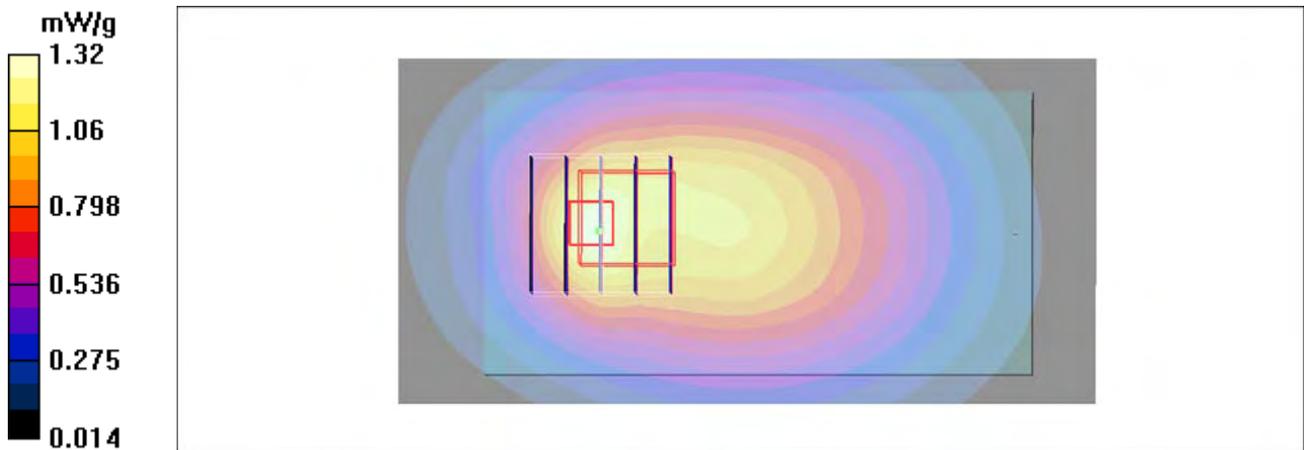
**Ch251/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 34.3 V/m; Power Drift = -0.020 dB

Peak SAR (extrapolated) = 1.85 W/kg

**SAR(1 g) = 1.15 mW/g; SAR(10 g) = 0.752 mW/g**

Maximum value of SAR (measured) = 1.22 mW/g



**#73**  
**GSM850\_GPRS10\_Bottom\_1cm\_Ch189\_Sample1\_Battery3\_Earphon**

**DUT: 121019**

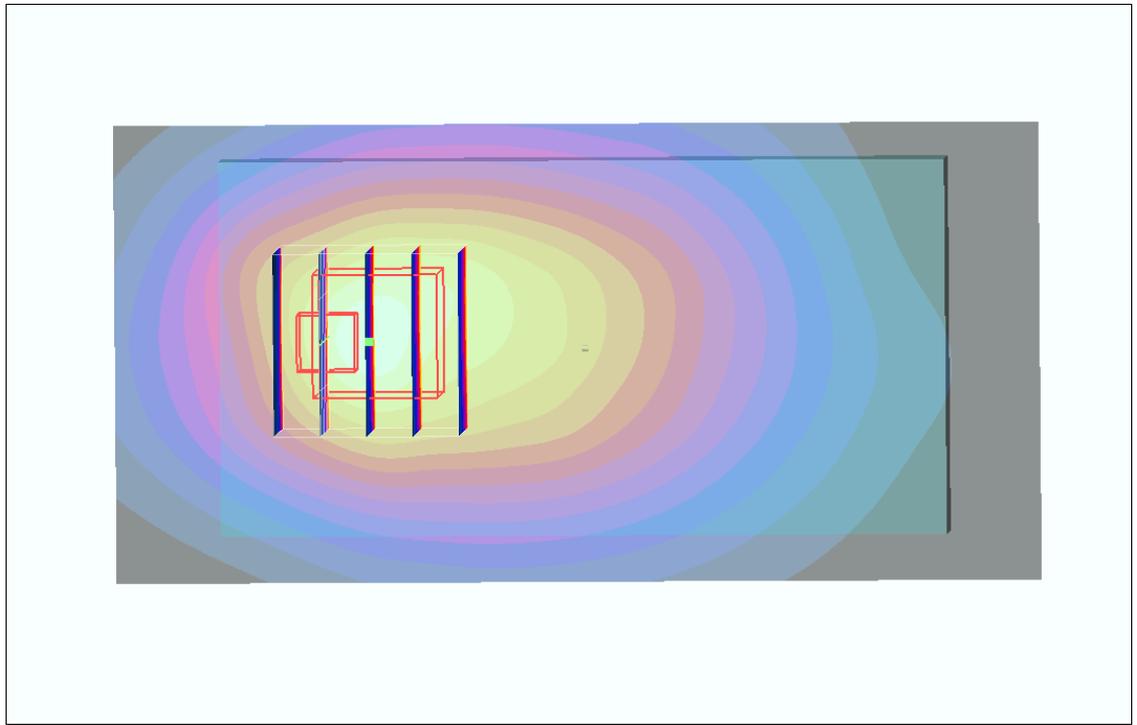
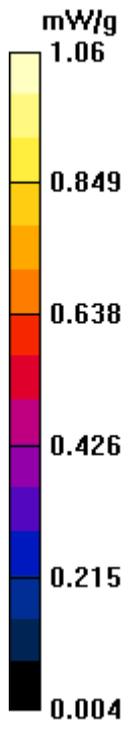
Communication System: GSM850; Frequency: 836.4 MHz; Duty Cycle: 1:4  
Medium: MSL\_850\_110328 Medium parameters used :  $f = 836.4 \text{ MHz}$ ;  $\sigma = 0.956$   
 $\text{mho/m}$ ;  $\epsilon_r = 52.7$ ;  $\rho = 1000 \text{ kg/m}^3$   
Ambient Temperature :  $22.3 \text{ }^\circ\text{C}$ ; Liquid Temperature :  $21.5 \text{ }^\circ\text{C}$

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.12, 6.12, 6.12); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2010/8/18
- Phantom: SAM\_Right; Type: SAM; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch189/Area Scan (41x81x1):** Measurement grid:  $dx=20\text{mm}$ ,  $dy=20\text{mm}$   
Maximum value of SAR (interpolated) =  $1.06 \text{ mW/g}$

**Ch189/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  
 $dz=5\text{mm}$   
Reference Value =  $29.5 \text{ V/m}$ ; Power Drift =  $-0.161 \text{ dB}$   
Peak SAR (extrapolated) =  $1.54 \text{ W/kg}$   
**SAR(1 g) =  $0.960 \text{ mW/g}$ ; SAR(10 g) =  $0.633 \text{ mW/g}$**   
Maximum value of SAR (measured) =  $1.05 \text{ mW/g}$



**#74**  
**GSM850\_GPRS10\_Bottom\_1cm\_Ch128\_Sample1\_Battery3\_Earphon**

**DUT: 121019**

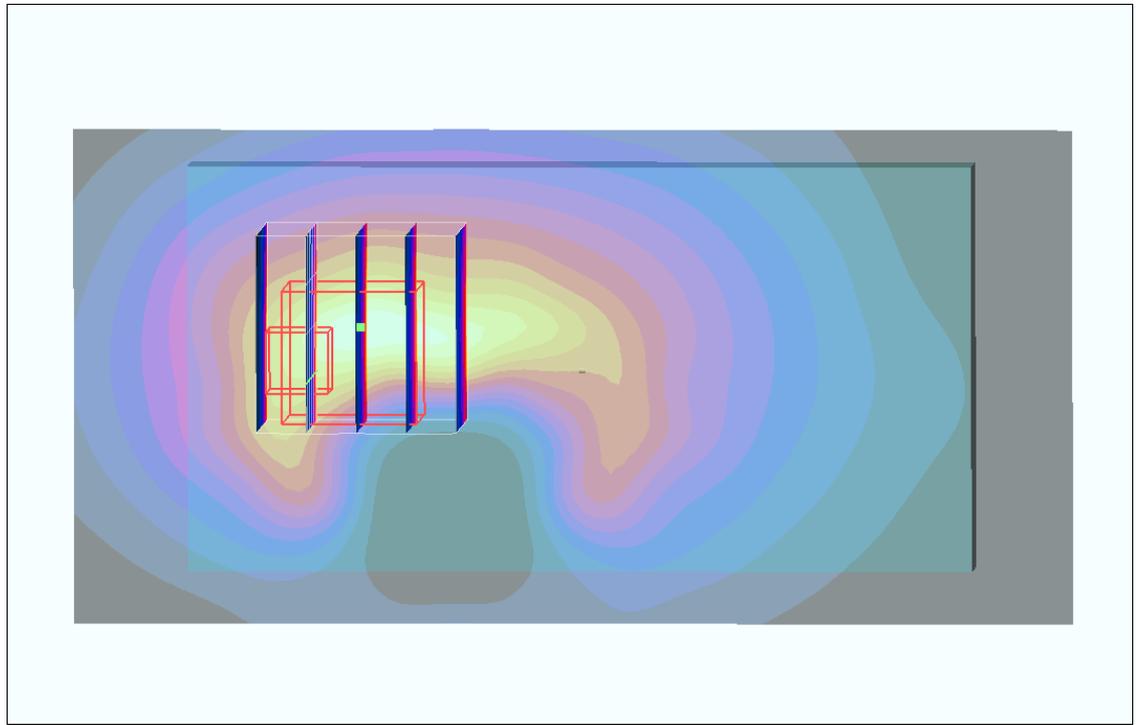
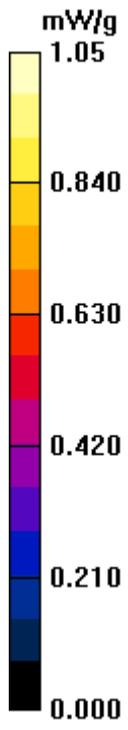
Communication System: GSM850; Frequency: 824.2 MHz; Duty Cycle: 1:4  
Medium: MSL\_850\_110328 Medium parameters used :  $f = 824.2$  MHz;  $\sigma = 0.943$   
mho/m;  $\epsilon_r = 52.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Ambient Temperature : 22.3 °C; Liquid Temperature : 21.4 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(6.12, 6.12, 6.12); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2010/8/18
- Phantom: SAM\_Right; Type: SAM; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch128/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm  
Maximum value of SAR (interpolated) = 1.05 mW/g

**Ch128/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm,  
dz=5mm  
Reference Value = 26.4 V/m; Power Drift = -0.113 dB  
Peak SAR (extrapolated) = 1.35 W/kg  
**SAR(1 g) = 0.810 mW/g; SAR(10 g) = 0.534 mW/g**  
Maximum value of SAR (measured) = 0.859 mW/g



### #94 GSM1900\_GPRS10\_Bottom\_1cm\_Ch661\_Sample1\_Battery1

**DUT: 121019**

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:4

Medium: MSL\_1900\_110402 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.52$  mho/m;  $\epsilon_r = 52.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 21.8 °C ; Liquid Temperature : 21.5 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.39, 4.39, 4.39); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch661/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.32 mW/g

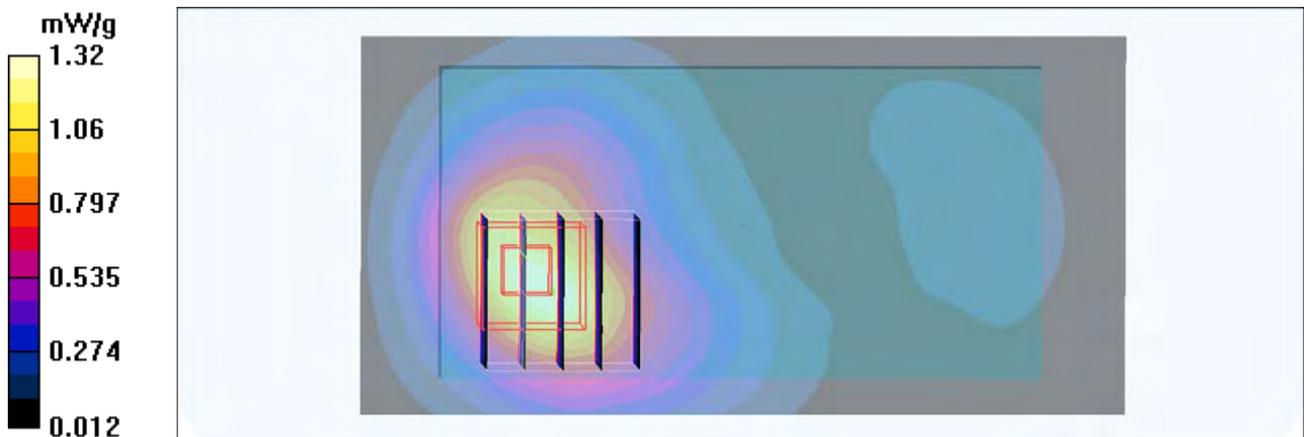
**Ch661/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.7 V/m; Power Drift = -0.071 dB

Peak SAR (extrapolated) = 1.87 W/kg

**SAR(1 g) = 1.27 mW/g; SAR(10 g) = 0.734 mW/g**

Maximum value of SAR (measured) = 1.38 mW/g



## #47 GSM1900\_GPRS10\_Bottom\_1cm\_Ch661\_Sample2\_Battery2

**DUT: 121019**

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:4  
Medium: MSL\_1900\_110325 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.51$   
mho/m;  $\epsilon_r = 53$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 21.7 °C; Liquid Temperature : 21.1 °C

DASY4 Configuration:

- Probe: EX3DV4 - SN3731; ConvF(7.13, 7.13, 7.13); Calibrated: 2010/9/20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: SAM\_Right; Type: SAM; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch661/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.07 mW/g

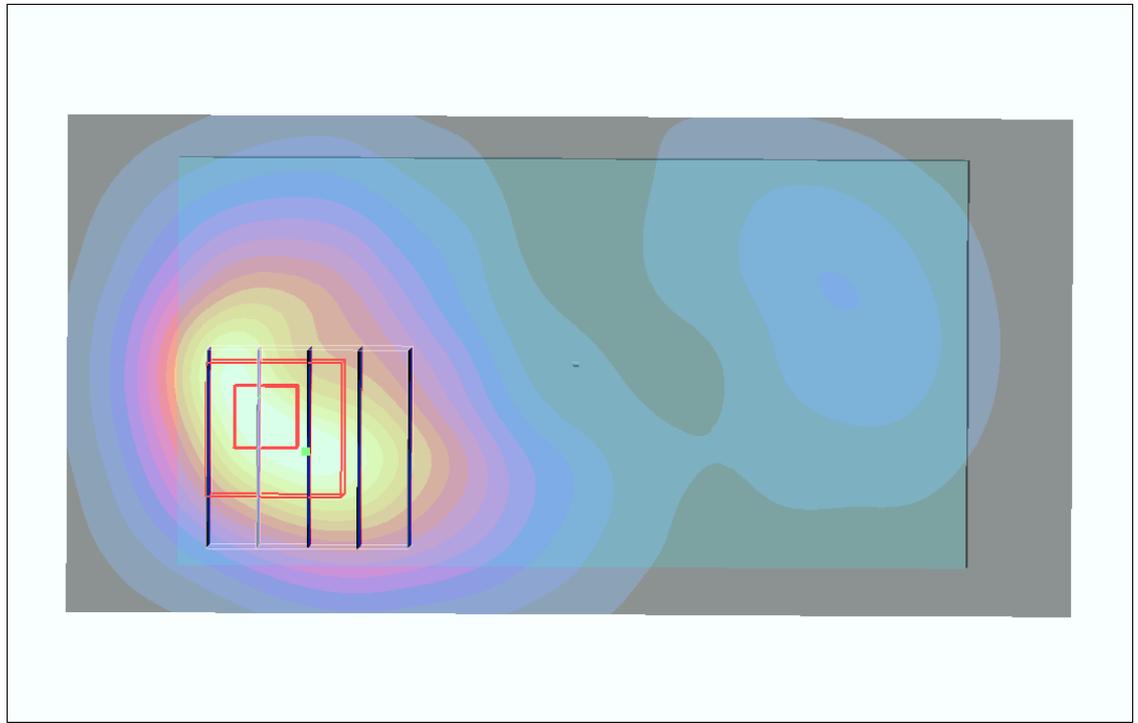
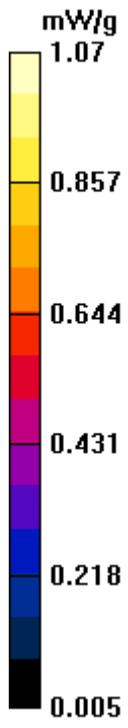
**Ch661/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 8.32 V/m; Power Drift = -0.133 dB

Peak SAR (extrapolated) = 1.67 W/kg

**SAR(1 g) = 1.02 mW/g; SAR(10 g) = 0.586 mW/g**

Maximum value of SAR (measured) = 1.09 mW/g



### #95 GSM1900\_GPRS10\_Bottom\_1cm\_Ch661\_Sample1\_Battery3

**DUT: 121019**

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:4

Medium: MSL\_1900\_110402 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.52$  mho/m;  $\epsilon_r = 52.6$ ;  $\rho$

$= 1000$  kg/m<sup>3</sup>

Ambient Temperature : 21.8 °C ; Liquid Temperature : 21.5 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.39, 4.39, 4.39); Calibrated: 2010/9/21

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn577; Calibrated: 2011/1/13

- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch661/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.40 mW/g

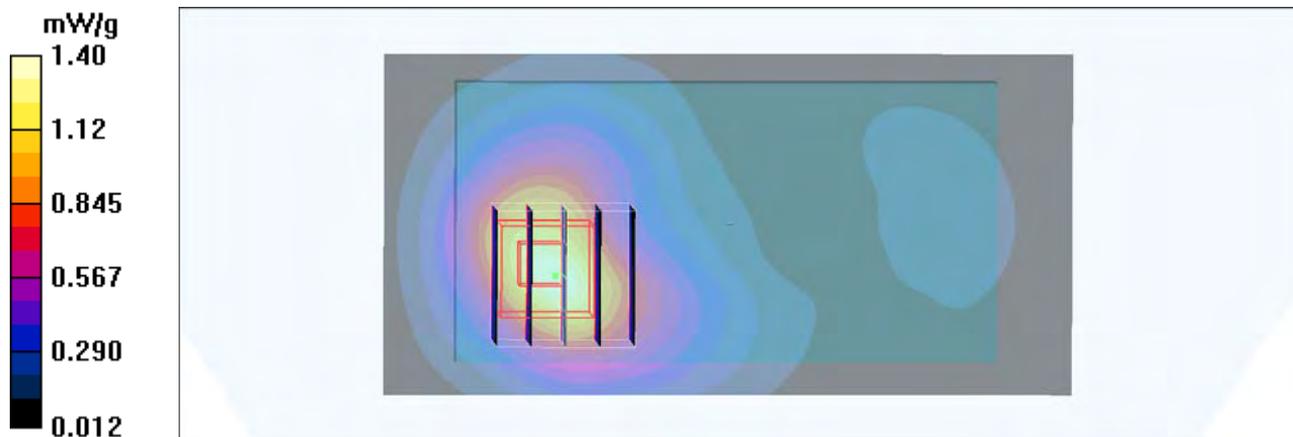
**Ch661/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.4 V/m; Power Drift = -0.194 dB

Peak SAR (extrapolated) = 1.91 W/kg

**SAR(1 g) = 1.29 mW/g; SAR(10 g) = 0.739 mW/g**

Maximum value of SAR (measured) = 1.39 mW/g



**#32 GSM1900\_GPRS10\_Face\_1cm\_Ch661\_Sample1\_Battery3**

**DUT: 121019**

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:4

Medium: MSL\_1900\_110311 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.53$  mho/m;  $\epsilon_r = 52.9$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.8 ; Liquid Temperature : 21.6

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.39, 4.39, 4.39); Calibrated: 2010/9/21

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn577; Calibrated: 2011/1/13

- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029

- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch661/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.712 mW/g

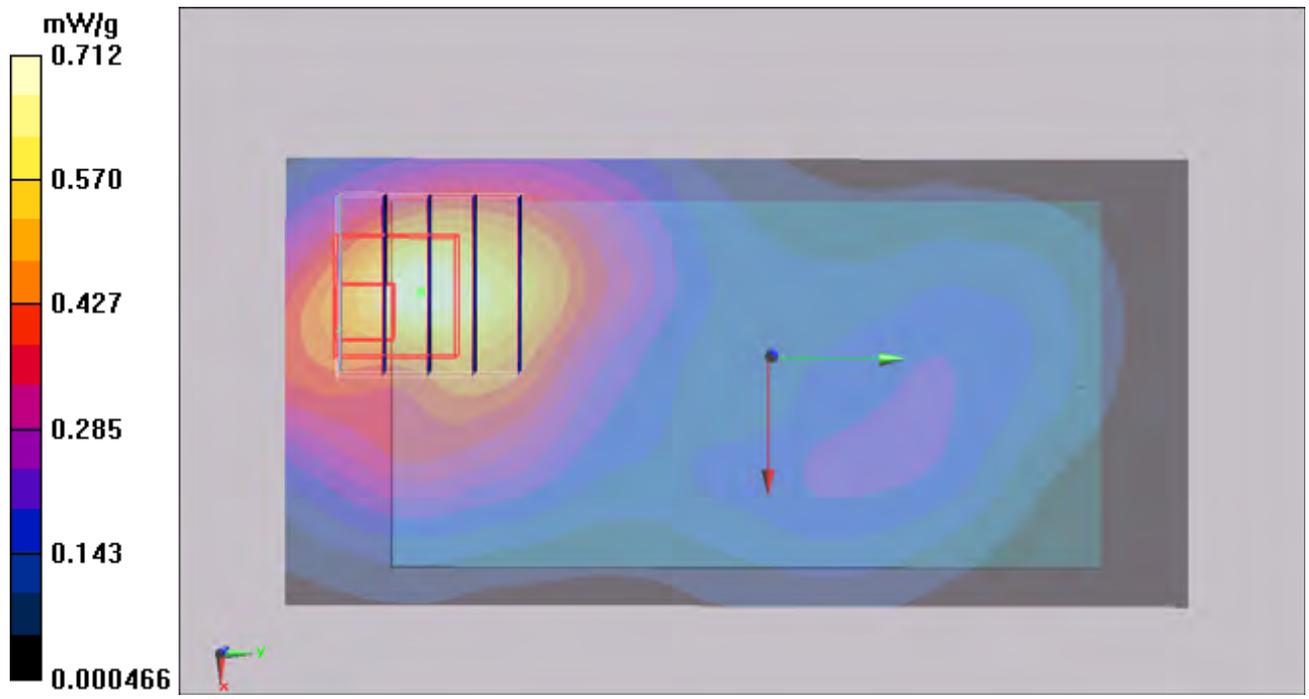
**Ch661/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.59 V/m; Power Drift = -0.195 dB

Peak SAR (extrapolated) = 0.954 W/kg

**SAR(1 g) = 0.641 mW/g; SAR(10 g) = 0.380 mW/g**

Maximum value of SAR (measured) = 0.713 mW/g



**#33 GSM1900\_GPRS10\_Left Side\_1cm\_Ch661\_Sample1\_Battery3**

**DUT: 121019**

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:4

Medium: MSL\_1900\_110311 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.53$  mho/m;  $\epsilon_r = 52.9$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.8 ; Liquid Temperature : 21.6

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.39, 4.39, 4.39); Calibrated: 2010/9/21

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn577; Calibrated: 2011/1/13

- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029

- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch661/Area Scan (21x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.262 mW/g

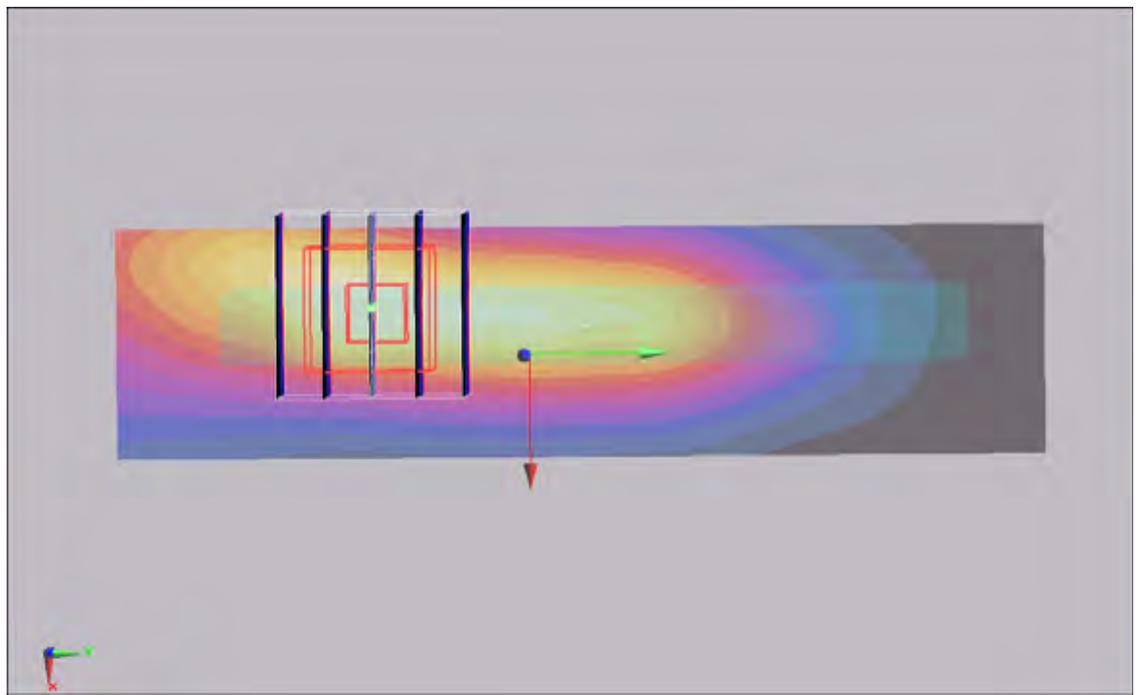
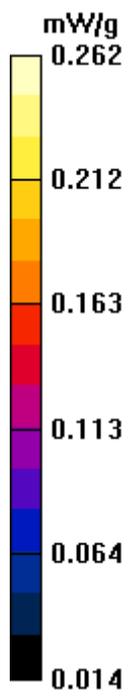
**Ch661/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.5 V/m; Power Drift = -0.142 dB

Peak SAR (extrapolated) = 0.326 W/kg

**SAR(1 g) = 0.223 mW/g; SAR(10 g) = 0.137 mW/g**

Maximum value of SAR (measured) = 0.242 mW/g



**#34 GSM1900\_GPRS10\_Right Side\_1cm\_Ch661\_Sample1\_Battery3**

**DUT: 121019**

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:4

Medium: MSL\_1900\_110311 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.53$  mho/m;  $\epsilon_r = 52.9$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.8 ; Liquid Temperature : 21.6

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.39, 4.39, 4.39); Calibrated: 2010/9/21

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn577; Calibrated: 2011/1/13

- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029

- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch661/Area Scan (21x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.257 mW/g

**Ch661/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.1 V/m; Power Drift = -0.118 dB

Peak SAR (extrapolated) = 0.351 W/kg

**SAR(1 g) = 0.240 mW/g; SAR(10 g) = 0.147 mW/g**

Maximum value of SAR (measured) = 0.262 mW/g

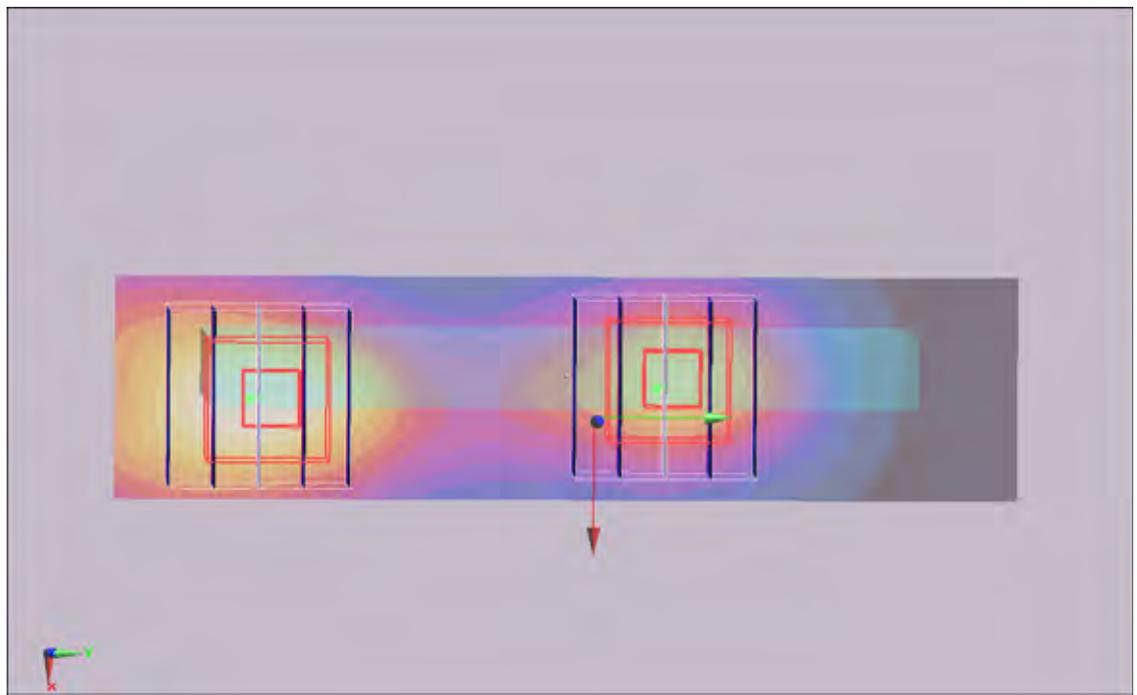
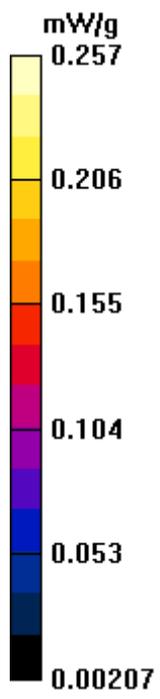
**Ch661/Zoom Scan (5x5x7)/Cube 1:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.1 V/m; Power Drift = -0.118 dB

Peak SAR (extrapolated) = 0.275 W/kg

**SAR(1 g) = 0.192 mW/g; SAR(10 g) = 0.116 mW/g**

Maximum value of SAR (measured) = 0.212 mW/g



**#36 GSM1900\_GPRS10\_Down Side\_1cm\_Ch661\_Sample1\_Battery3**

**DUT: 121019**

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:4

Medium: MSL\_1900\_110311 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.53$  mho/m;  $\epsilon_r = 52.9$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.8 ; Liquid Temperature : 21.6

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.39, 4.39, 4.39); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch661/Area Scan (21x41x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.12 mW/g

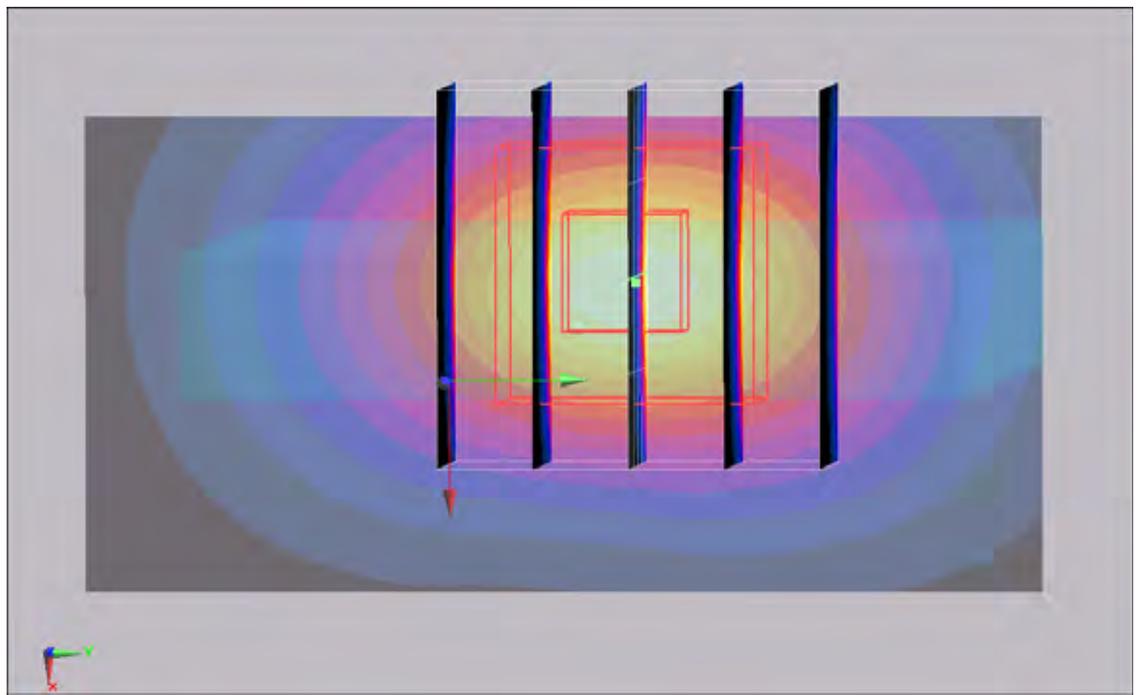
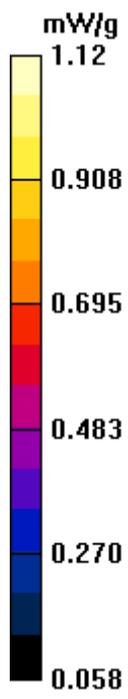
**Ch661/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 28.7 V/m; Power Drift = 0.181 dB

Peak SAR (extrapolated) = 1.66 W/kg

**SAR(1 g) = 1.11 mW/g; SAR(10 g) = 0.619 mW/g**

Maximum value of SAR (measured) = 1.25 mW/g



**#39 GSM1900\_GPRS10\_Bottom\_1cm\_Ch512\_Sample1\_Battery3**

**DUT: 121019**

Communication System: PCS 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:4

Medium: MSL\_1900\_110311 Medium parameters used (interpolated):  $f = 1850.2$  MHz;  $\sigma = 1.5$  mho/m;  $\epsilon_r =$

53;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.8 ; Liquid Temperature : 21.6

**DASY5 Configuration:**

- Probe: ET3DV6 - SN1788; ConvF(4.39, 4.39, 4.39); Calibrated: 2010/9/21

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn577; Calibrated: 2011/1/13

- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029

- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch512/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.3 mW/g

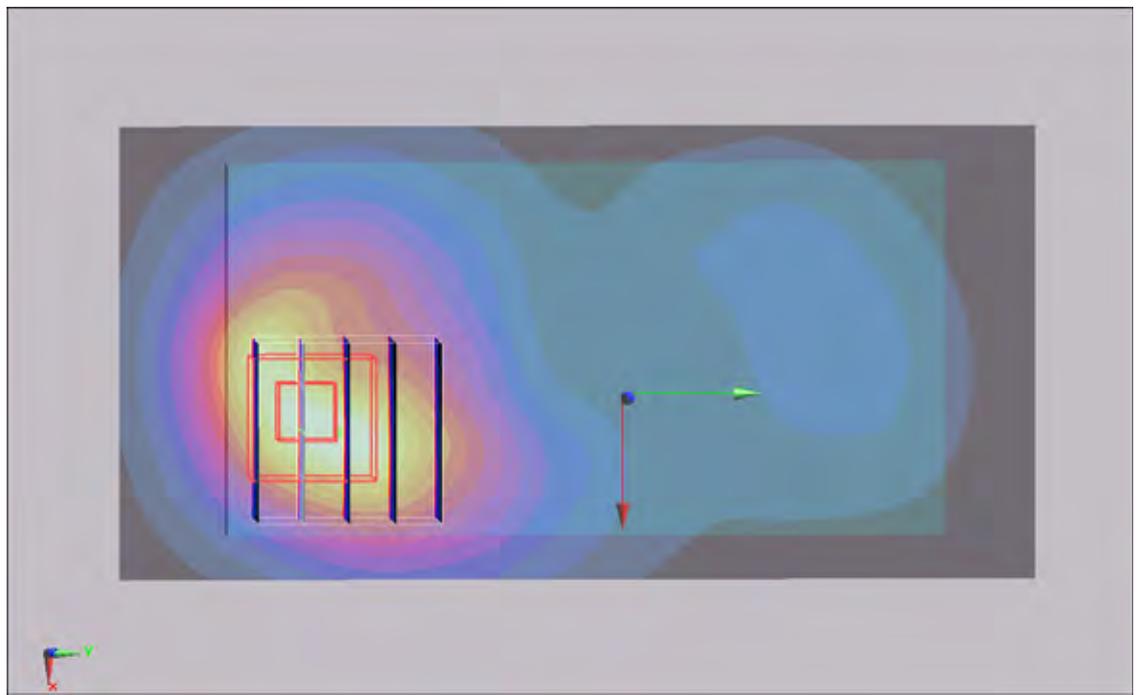
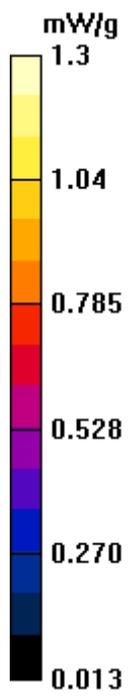
**Ch512/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11 V/m; Power Drift = -0.147 dB

Peak SAR (extrapolated) = 1.72 W/kg

**SAR(1 g) = 1.25 mW/g; SAR(10 g) = 0.764 mW/g**

Maximum value of SAR (measured) = 1.35 mW/g



### #96 GSM1900\_GPRS10\_Bottom\_1cm\_Ch810\_Sample1\_Battery3

#### DUT: 121019

Communication System: PCS 1900; Frequency: 1909.8 MHz; Duty Cycle: 1:4

Medium: MSL\_1900\_110402 Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.54$  mho/m;  $\epsilon_r = 52.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 21.8 °C; Liquid Temperature : 21.5 °C

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.39, 4.39, 4.39); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch810/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.32 mW/g

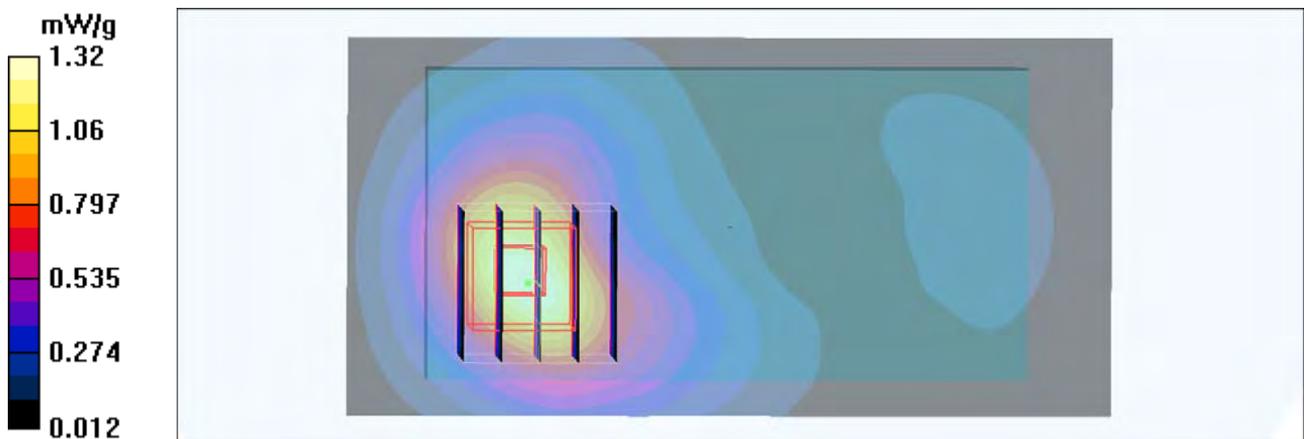
**Ch810/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.5 V/m; Power Drift = -0.091 dB

Peak SAR (extrapolated) = 1.85 W/kg

**SAR(1 g) = 1.25 mW/g; SAR(10 g) = 0.715 mW/g**

Maximum value of SAR (measured) = 1.37 mW/g



## #67 GSM1900\_GPRS10\_Bottom\_1cm\_Ch512\_Sample1\_Battery1

### DUT: 121019

Communication System: PCS; Frequency: 1850.2 MHz; Duty Cycle: 1:4

Medium: MSL\_1900\_110328 Medium parameters used :  $f = 1850.2$  MHz;  $\sigma = 1.49$  mho/m;  $\epsilon_r = 52.2$ ;

$\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.0 °C ; Liquid Temperature : 21.5 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.47, 4.47, 4.47); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch512/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.15 mW/g

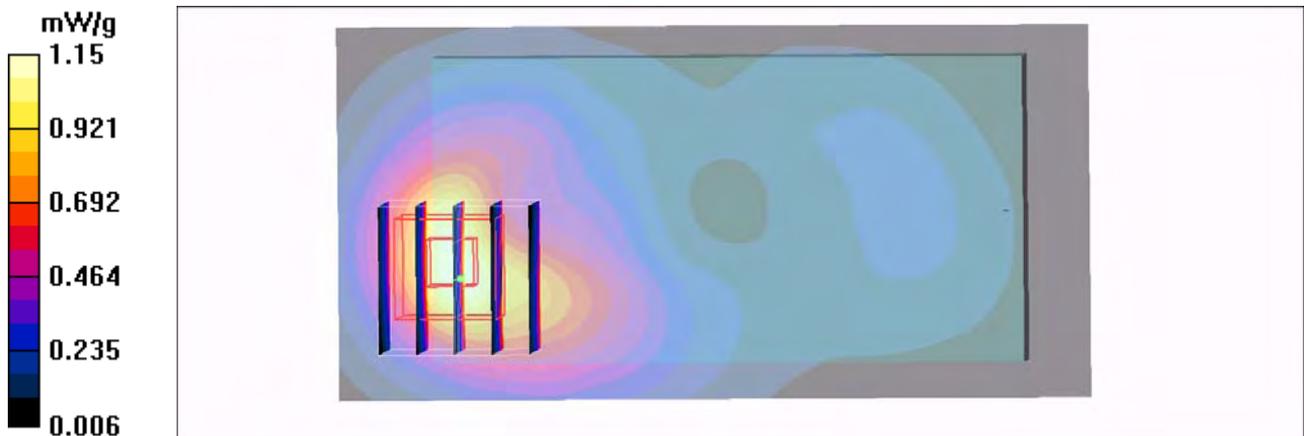
**Ch512/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.60 V/m; Power Drift = -0.105 dB

Peak SAR (extrapolated) = 2.33 W/kg

**SAR(1 g) = 1.06 mW/g; SAR(10 g) = 0.643 mW/g**

Maximum value of SAR (measured) = 1.12 mW/g



### #97 GSM1900\_GPRS10\_Bottom\_1cm\_Ch810\_Sample1\_Battery1

#### DUT: 121019

Communication System: PCS 1900; Frequency: 1909.8 MHz; Duty Cycle: 1:4

Medium: MSL\_1900\_110402 Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.54$  mho/m;  $\epsilon_r = 52.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 21.8 °C; Liquid Temperature : 21.5 °C

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.39, 4.39, 4.39); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch810/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.32 mW/g

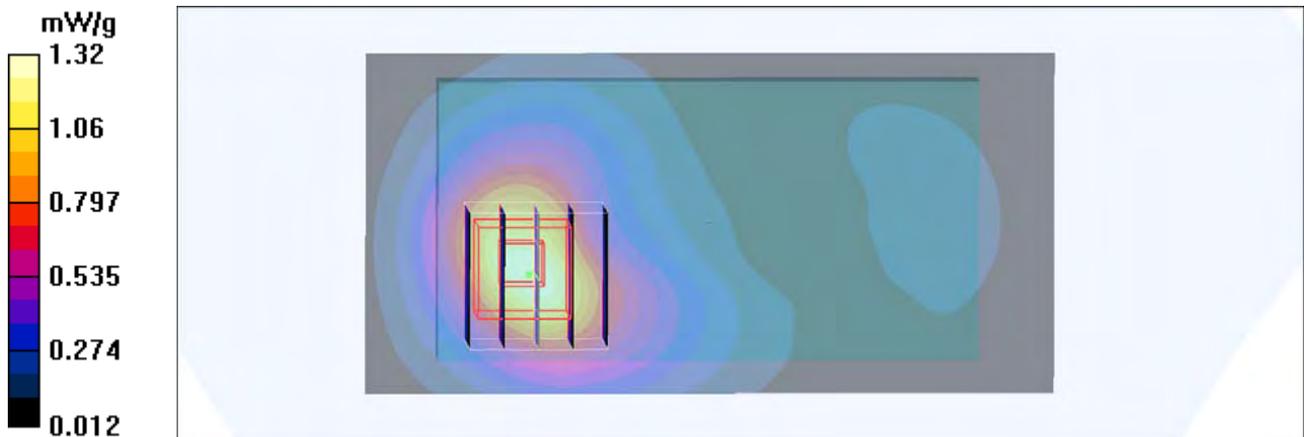
**Ch810/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.5 V/m; Power Drift = -0.076 dB

Peak SAR (extrapolated) = 1.85 W/kg

**SAR(1 g) = 1.24 mW/g; SAR(10 g) = 0.710 mW/g**

Maximum value of SAR (measured) = 1.37 mW/g



**#92 GSM1900\_GPRS10\_Down Side\_1cm\_Ch512\_Sample1\_Battery3**

**DUT: 121019**

Communication System: PCS 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:4

Medium: MSL\_1900\_110329 Medium parameters used :  $f = 1850.2$  MHz;  $\sigma = 1.48$  mho/m;  $\epsilon_r = 53.6$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.5 ; Liquid Temperature : 21.5

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.39, 4.39, 4.39); Calibrated: 2010/9/21

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE4 Sn778; Calibrated: 2010/10/22

- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029

- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch512/Area Scan (21x41x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.13 mW/g

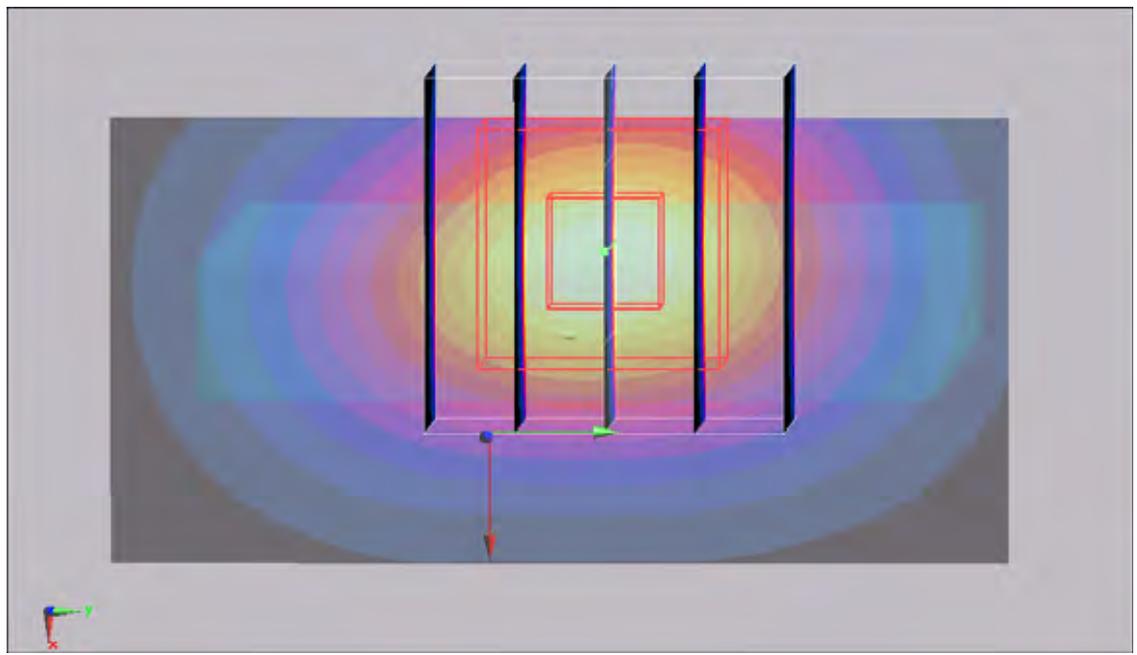
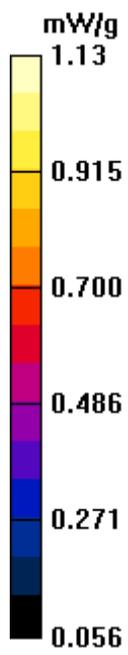
**Ch512/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 27.1 V/m; Power Drift = -0.019 dB

Peak SAR (extrapolated) = 1.73 W/kg

**SAR(1 g) = 1.16 mW/g; SAR(10 g) = 0.638 mW/g**

Maximum value of SAR (measured) = 1.32 mW/g



**#93 GSM1900\_GPRS10\_Down Side\_1cm\_Ch810\_Sample1\_Battery3**

**DUT: 121019**

Communication System: PCS 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:4

Medium: MSL\_1900\_110329 Medium parameters used :  $f = 1850.2$  MHz;  $\sigma = 1.48$  mho/m;  $\epsilon_r = 53.6$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.5 ; Liquid Temperature : 21.5

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.39, 4.39, 4.39); Calibrated: 2010/9/21

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE4 Sn778; Calibrated: 2010/10/22

- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029

- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch512/Area Scan (21x41x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.35 mW/g

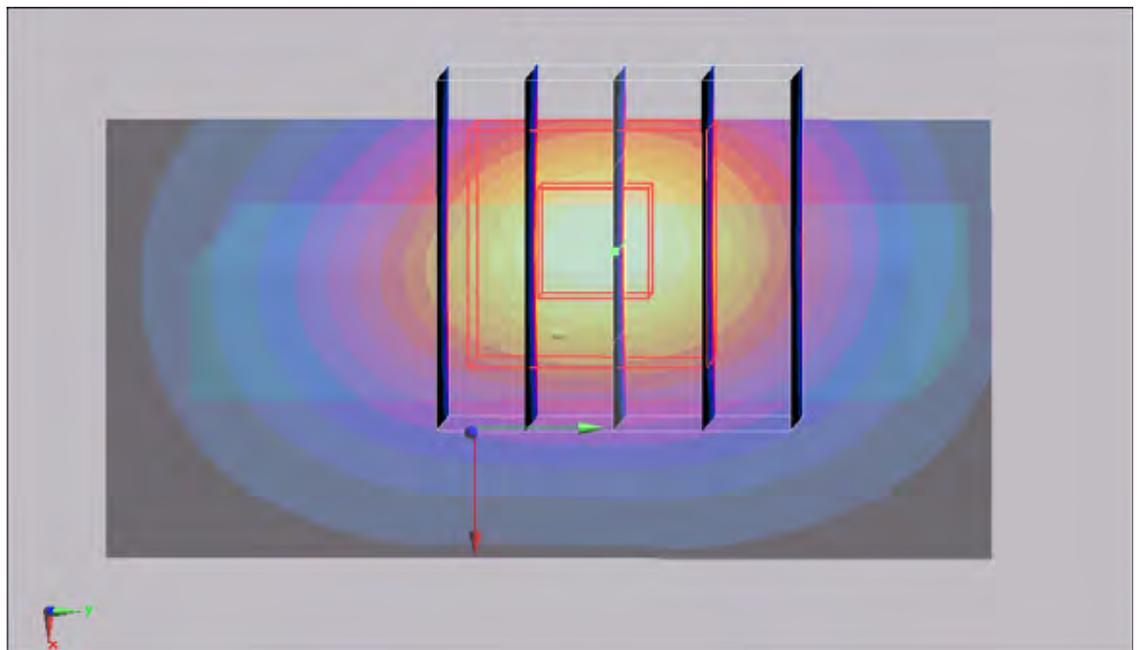
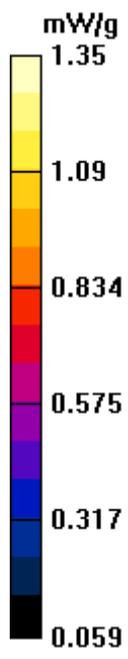
**Ch512/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 28.2 V/m; Power Drift = 0.308 dB

Peak SAR (extrapolated) = 2.16 W/kg

**SAR(1 g) = 1.38 mW/g; SAR(10 g) = 0.741 mW/g**

Maximum value of SAR (measured) = 1.57 mW/g



#93 GSM1900\_GPRS10\_Down Side\_1cm\_Ch810\_Sample1\_Battery3\_2D

DUT: 121019

Communication System: PCS 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:4

Medium: MSL\_1900\_110329 Medium parameters used :  $f = 1850.2$  MHz;  $\sigma = 1.48$  mho/m;  $\epsilon_r = 53.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.3 ; Liquid Temperature : 21.6

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.39, 4.39, 4.39); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch512/Area Scan (21x41x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.35 mW/g

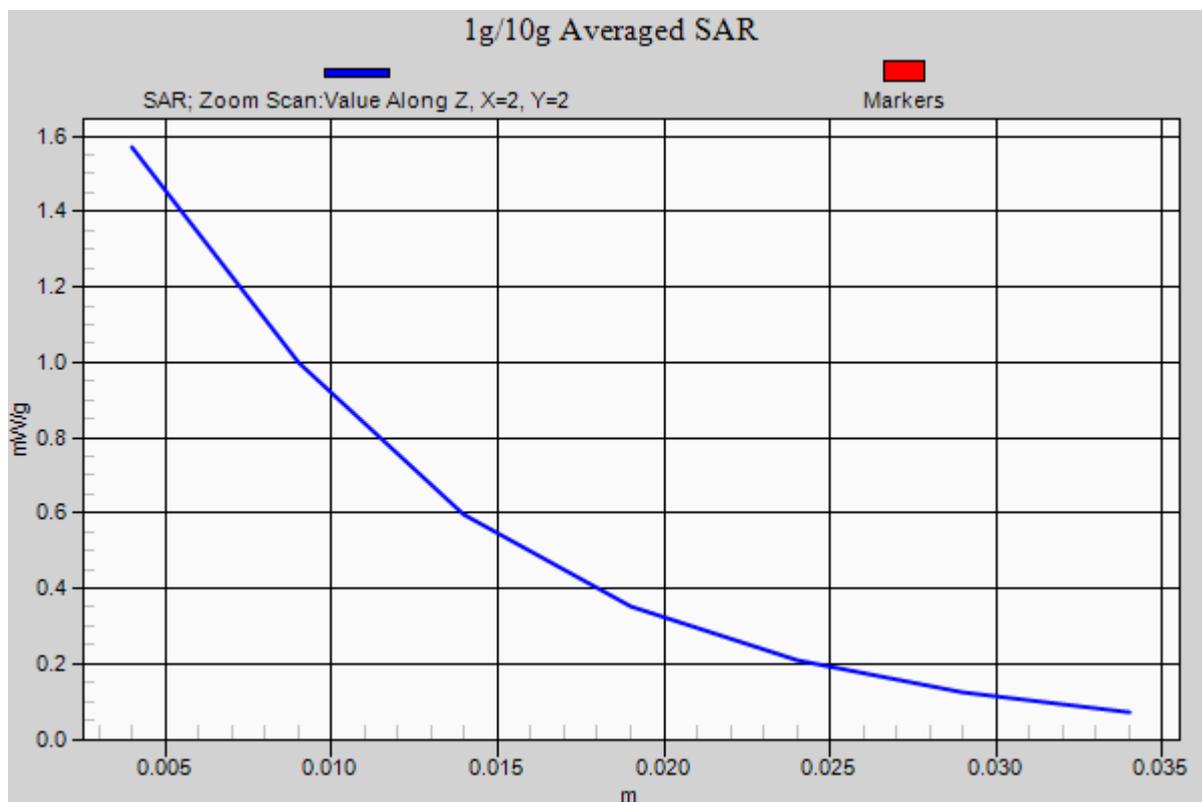
**Ch512/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 28.2 V/m; Power Drift = 0.108 dB

Peak SAR (extrapolated) = 2.16 W/kg

**SAR(1 g) = 1.38 mW/g; SAR(10 g) = 0.741 mW/g**

Maximum value of SAR (measured) = 1.57 mW/g



**#37 GSM1900\_GPRS10\_Bottom\_1cm\_Ch810\_Sample1\_Battery3\_Earphone1**

**DUT: 121019**

Communication System: PCS 1900; Frequency: 1909.8 MHz; Duty Cycle: 1:4

Medium: MSL\_1900\_110326 Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.56$  mho/m;  $\epsilon_r = 53.2$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.0 ; Liquid Temperature : 21.5

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.39, 4.39, 4.39); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch810/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.2 mW/g

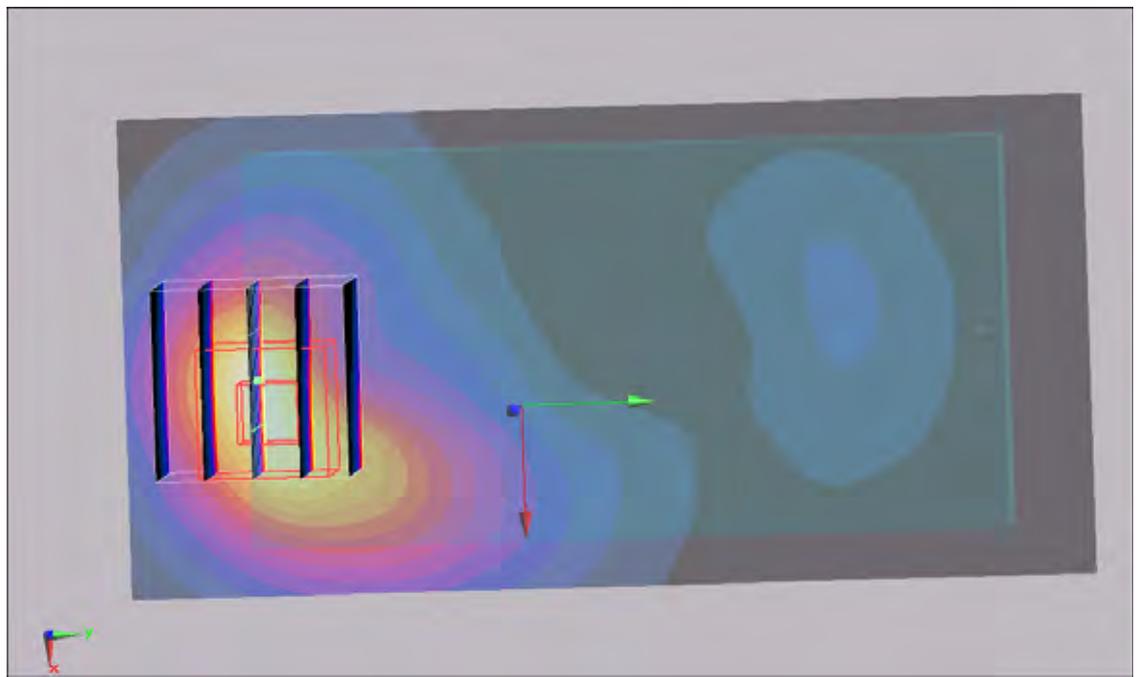
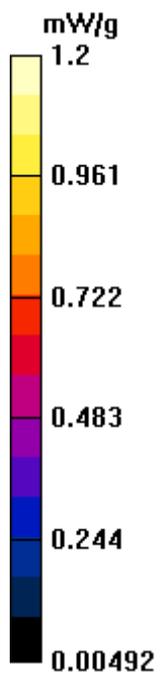
**Ch810/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.3 V/m; Power Drift = -0.119 dB

Peak SAR (extrapolated) = 1.66 W/kg

**SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.652 mW/g**

Maximum value of SAR (measured) = 1.22 mW/g



**#59 GSM1900\_GPRS10\_Bottom\_1cm\_Ch810\_Sample2\_Battery3\_Earphone2**

**DUT: 121019**

Communication System: PCS 1900; Frequency: 1909.8 MHz; Duty Cycle: 1:4

Medium: MSL\_1900\_110326 Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.56$  mho/m;  $\epsilon_r = 53.2$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.0 ; Liquid Temperature : 21.5

**DASY5 Configuration:**

- Probe: ET3DV6 - SN1788; ConvF(4.39, 4.39, 4.39); Calibrated: 2010/9/21

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE4 Sn778; Calibrated: 2010/10/22

- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029

- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch810/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.42 mW/g

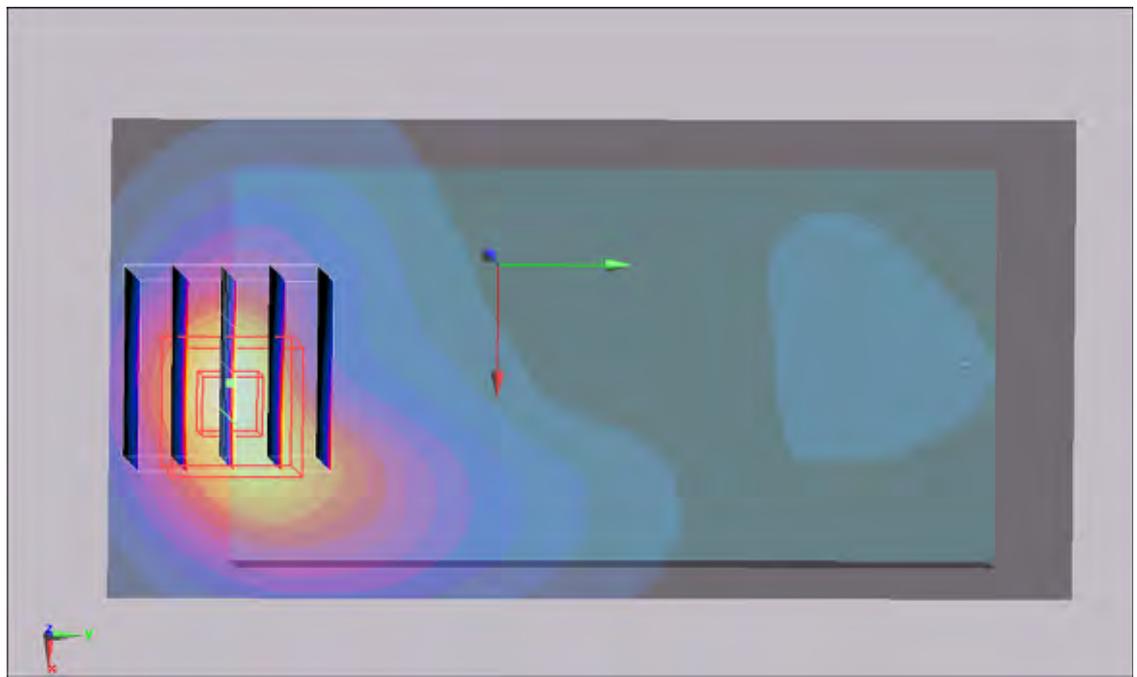
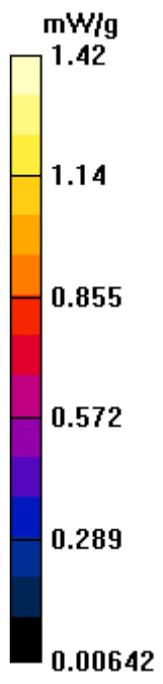
**Ch810/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.62 V/m; Power Drift = -0.174 dB

Peak SAR (extrapolated) = 2.95 W/kg

**SAR(1 g) = 1.37 mW/g; SAR(10 g) = 0.792 mW/g**

Maximum value of SAR (measured) = 1.45 mW/g



**#38 GSM1900\_GPRS10\_Bottom\_1cm\_Ch661\_Sample1\_Battery3\_Earphone3**

**DUT: 121019**

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:4

Medium: MSL\_1900\_110311 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.53$  mho/m;  $\epsilon_r = 52.9$ ;  $\rho = 1000$

kg/m<sup>3</sup>

Ambient Temperature : 22.8 ; Liquid Temperature : 21.6

**DASY5 Configuration:**

- Probe: ET3DV6 - SN1788; ConvF(4.39, 4.39, 4.39); Calibrated: 2010/9/21

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn577; Calibrated: 2011/1/13

- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029

- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**Ch661/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.29 mW/g

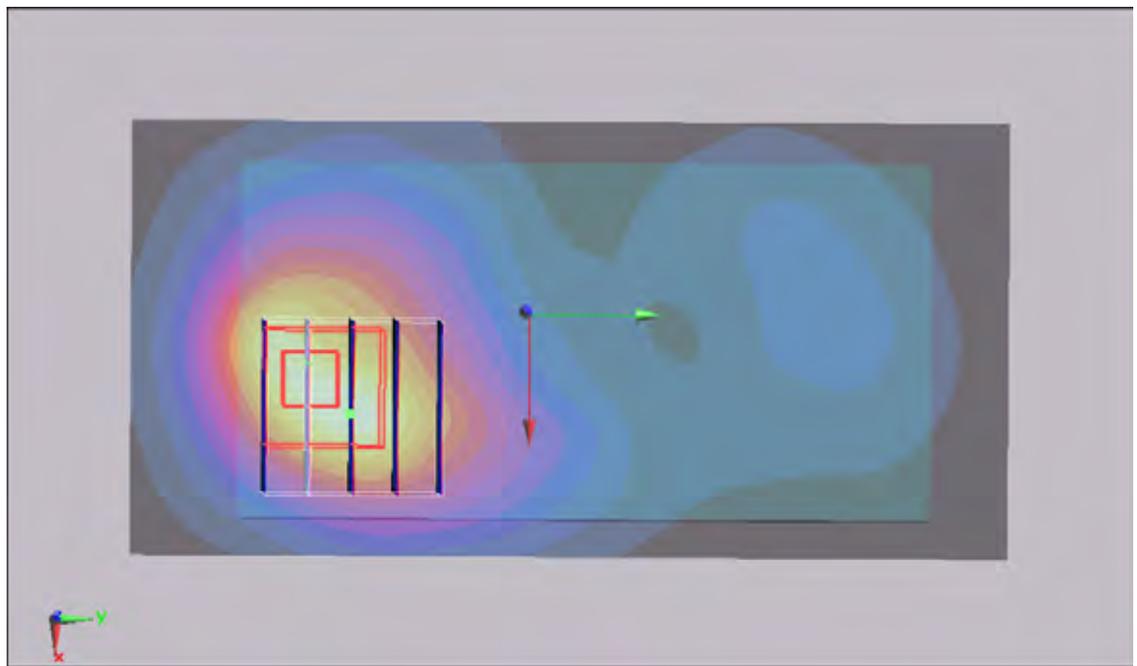
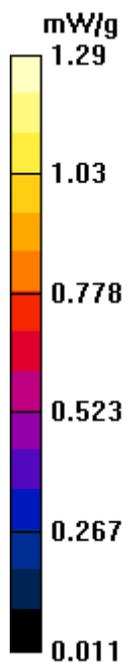
**Ch661/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12 V/m; Power Drift = -0.151 dB

Peak SAR (extrapolated) = 1.81 W/kg

**SAR(1 g) = 1.29 mW/g; SAR(10 g) = 0.771 mW/g**

Maximum value of SAR (measured) = 1.42 mW/g



**#100**

**GSM1900\_GPRS10\_Bottom\_1cm\_Ch661\_Sample2\_Battery3\_Earphoi**

**DUT: 121019**

Communication System: PCS; Frequency: 1880 MHz; Duty Cycle: 1:4

Medium: MSL\_1900\_110328 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.52$

$\text{mho/m}$ ;  $\epsilon_r = 52.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.0 °C; Liquid Temperature : 21.5 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.47, 4.47, 4.47); Calibrated: 2010/5/18

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn577; Calibrated: 2010/8/18

- Phantom: SAM\_Right; Type: SAM; Serial: TP-1303

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch661/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.14 mW/g

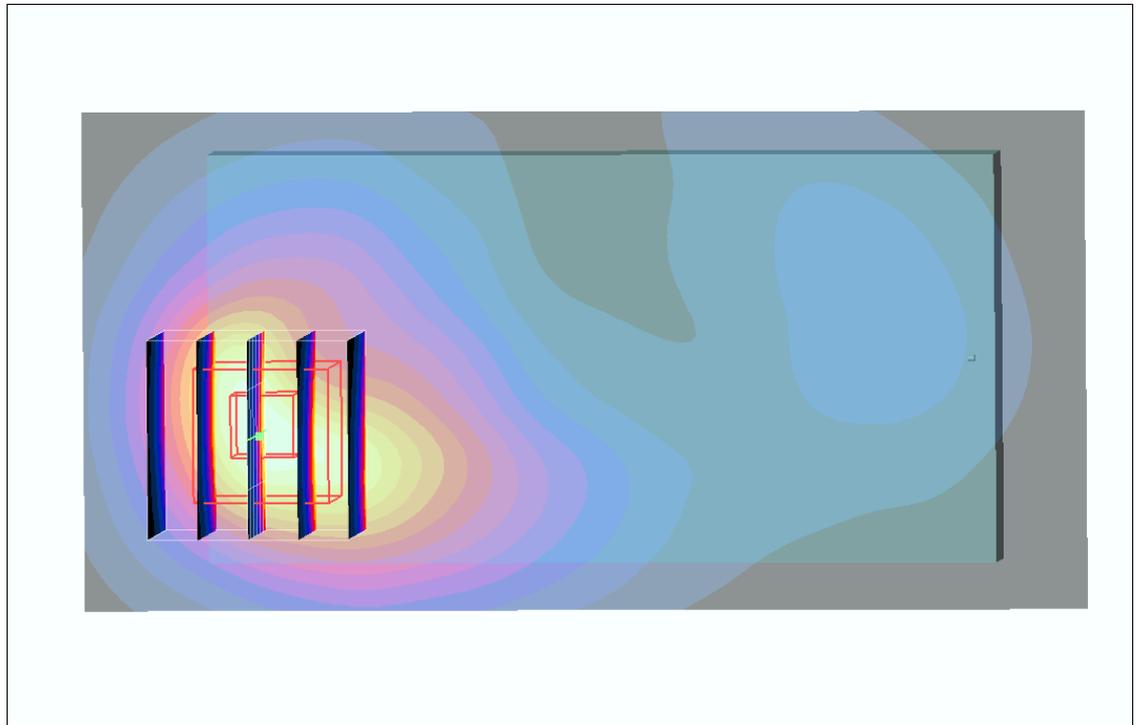
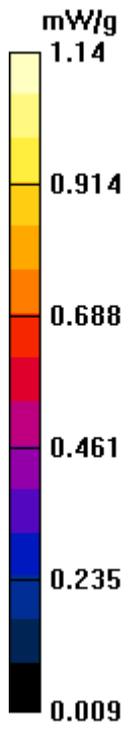
**Ch661/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.4 V/m; Power Drift = -0.123 dB

Peak SAR (extrapolated) = 1.63 W/kg

**SAR(1 g) = 1.15 mW/g; SAR(10 g) = 0.693 mW/g**

Maximum value of SAR (measured) = 1.26 mW/g



**#101**

**GSM1900\_GPRS10\_Bottom\_1cm\_Ch512\_Sample2\_Battery3\_Earphoi**

**DUT: 121019**

Communication System: PCS; Frequency: 1850.2 MHz; Duty Cycle: 1:4

Medium: MSL\_1900\_110328 Medium parameters used:  $f = 1850.2$  MHz;  $\sigma = 1.49$

mho/m;  $\epsilon_r = 52.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.0 °C; Liquid Temperature : 21.5 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.47, 4.47, 4.47); Calibrated: 2010/5/18

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn577; Calibrated: 2010/8/18

- Phantom: SAM\_Right; Type: SAM; Serial: TP-1303

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch512/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.16 mW/g

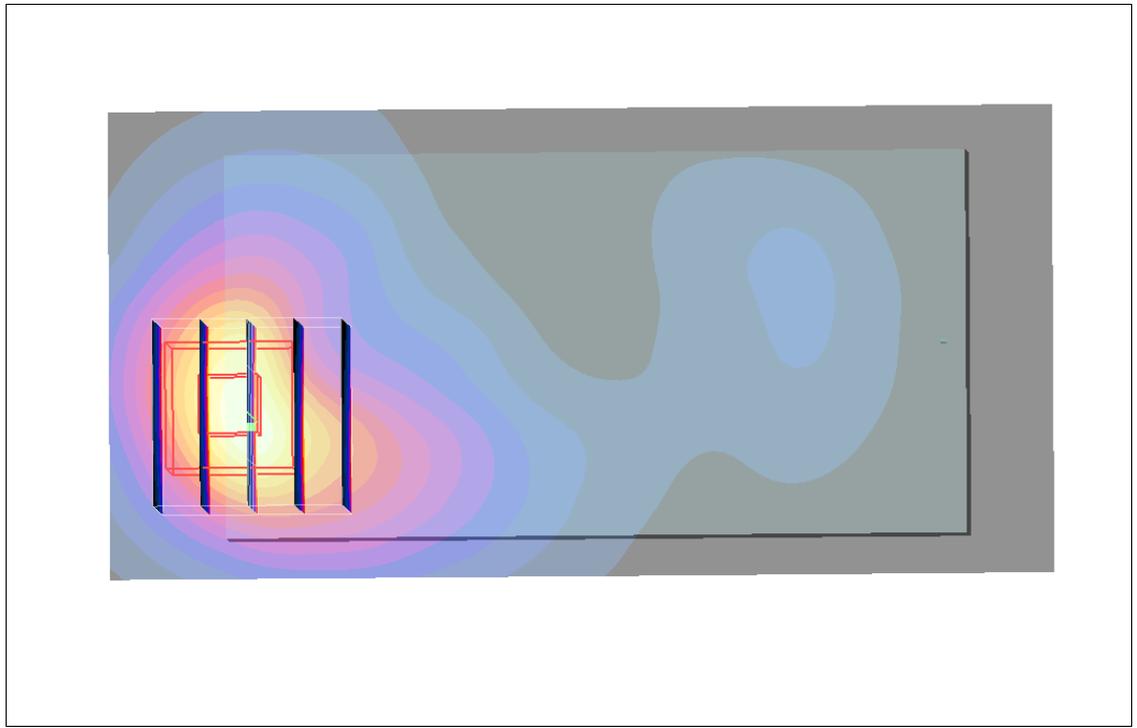
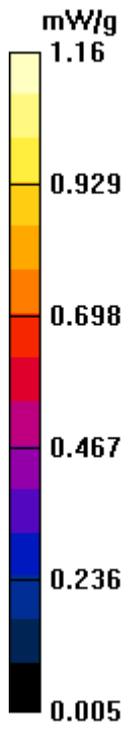
**Ch512/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.58 V/m; Power Drift = 0.022 dB

Peak SAR (extrapolated) = 1.53 W/kg

**SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.652 mW/g**

Maximum value of SAR (measured) = 1.14 mW/g



## #07 WCDMA IV\_Bottom\_1cm\_Ch1413\_Sample1\_Battery1

### DUT: 121019

Communication System: WCDMA; Frequency: 1732.6 MHz; Duty Cycle: 1:1

Medium: MSL\_1800\_110304 Medium parameters used:  $f = 1733$  MHz;  $\sigma = 1.48$  mho/m;  $\epsilon_r = 53.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.0 °C; Liquid Temperature : 21.2 °C

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.72, 4.72, 4.72); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch1413/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.41 mW/g

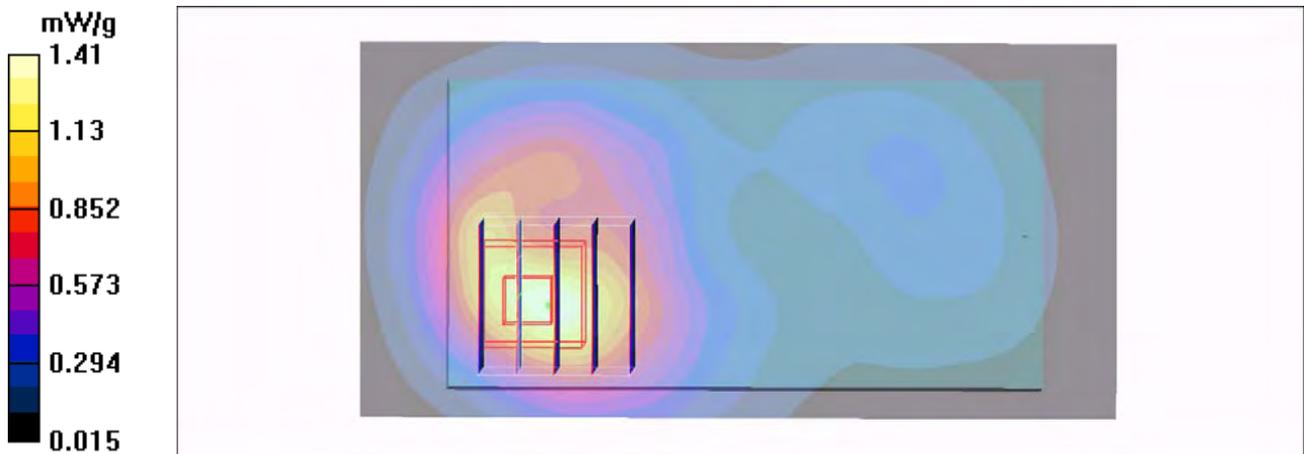
**Ch1413/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.6 V/m; Power Drift = 0.033 dB

Peak SAR (extrapolated) = 1.77 W/kg

**SAR(1 g) = 1.31 mW/g; SAR(10 g) = 0.820 mW/g**

Maximum value of SAR (measured) = 1.44 mW/g



## #07 WCDMA IV\_Bottom\_1cm\_Ch1413\_Sample1\_Battery1\_2D

### DUT: 121019

Communication System: WCDMA; Frequency: 1732.6 MHz; Duty Cycle: 1:1

Medium: MSL\_1800\_110304 Medium parameters used:  $f = 1733$  MHz;  $\sigma = 1.48$  mho/m;  $\epsilon_r = 53.5$ ;

$\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.3 °C ; Liquid Temperature : 21.6 °C

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.72, 4.72, 4.72); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch1413/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.41 mW/g

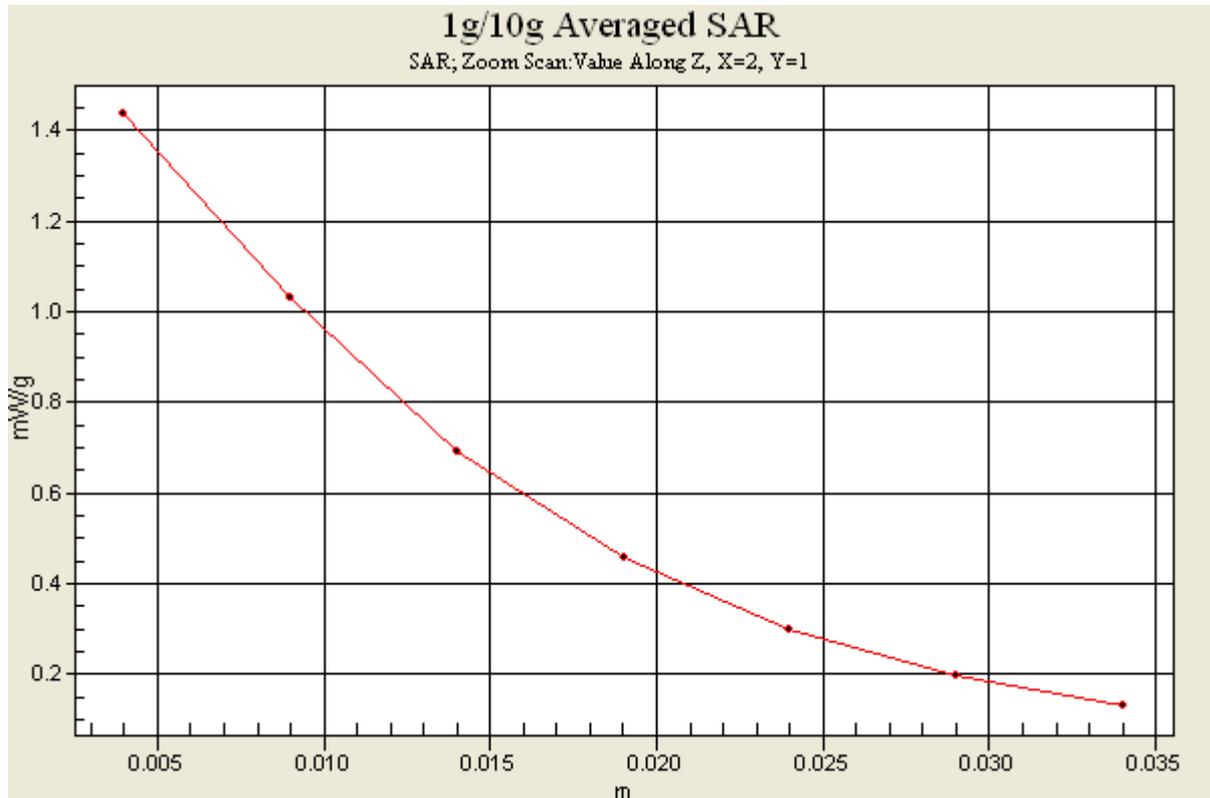
**Ch1413/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.6 V/m; Power Drift = 0.033 dB

Peak SAR (extrapolated) = 1.77 W/kg

**SAR(1 g) = 1.31 mW/g; SAR(10 g) = 0.820 mW/g**

Maximum value of SAR (measured) = 1.44 mW/g



## #98 WCDMA IV\_RMC12.2K\_Bottom\_1cm\_Ch1413\_Sample2\_Battery2

### DUT: 121019

Communication System: WCDMA; Frequency: 1732.6 MHz; Duty Cycle: 1:1

Medium: MSL\_1800\_110402 Medium parameters used:  $f = 1733 \text{ MHz}$ ;  $\sigma = 1.5 \text{ mho/m}$ ;  $\epsilon_r = 52$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature :  $22.0 \text{ }^\circ\text{C}$ ; Liquid Temperature :  $21.5 \text{ }^\circ\text{C}$

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.67, 4.67, 4.67); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch1413/Area Scan (41x81x1):** Measurement grid:  $dx=20\text{mm}$ ,  $dy=20\text{mm}$

Maximum value of SAR (interpolated) =  $1.73 \text{ mW/g}$

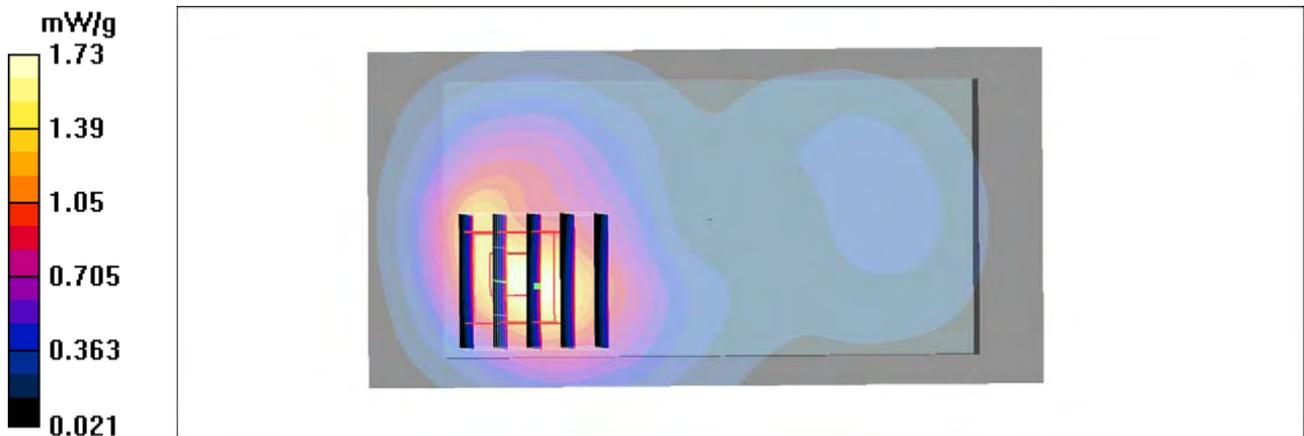
**Ch1413/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $11.9 \text{ V/m}$ ; Power Drift =  $-0.121 \text{ dB}$

Peak SAR (extrapolated) =  $1.68 \text{ W/kg}$

**SAR(1 g) =  $1.2 \text{ mW/g}$ ; SAR(10 g) =  $0.732 \text{ mW/g}$**

Maximum value of SAR (measured) =  $1.32 \text{ mW/g}$



### #09 WCDMA IV\_Bottom\_1cm\_Ch1413\_Sample1\_Battery3

**DUT: 121019**

Communication System: WCDMA; Frequency: 1732.6 MHz; Duty Cycle: 1:1

Medium: MSL\_1800\_110304 Medium parameters used:  $f = 1733$  MHz;  $\sigma = 1.48$  mho/m;  $\epsilon_r = 53.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.0 °C ; Liquid Temperature : 21.2 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.72, 4.72, 4.72); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch1413/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.43 mW/g

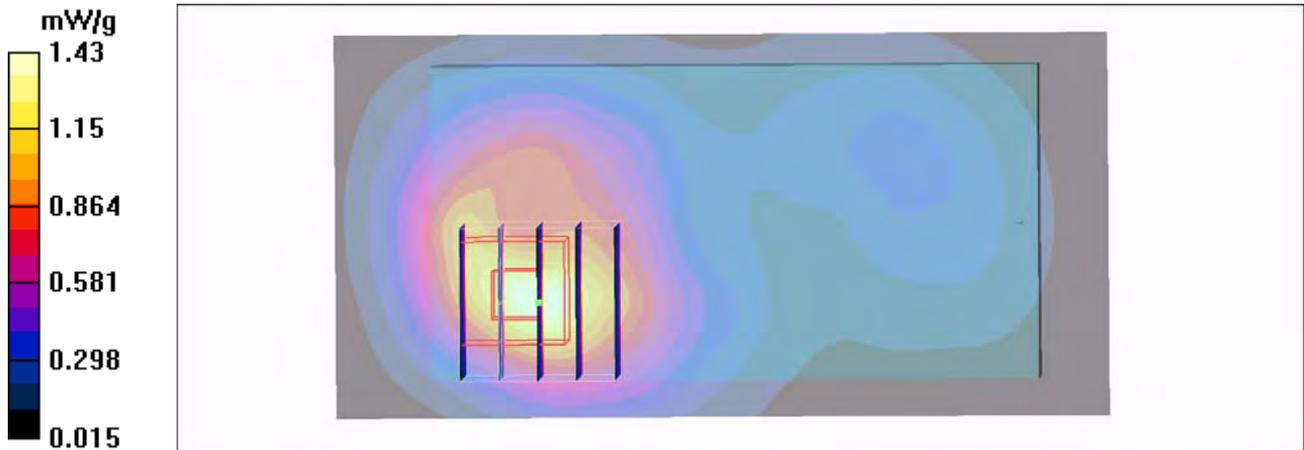
**Ch1413/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.6 V/m; Power Drift = 0.082 dB

Peak SAR (extrapolated) = 1.72 W/kg

**SAR(1 g) = 1.28 mW/g; SAR(10 g) = 0.811 mW/g**

Maximum value of SAR (measured) = 1.39 mW/g



## #10 WCDMA IV\_Face\_1cm\_Ch1413\_Sample1\_Battery2

### DUT: 121019

Communication System: WCDMA; Frequency: 1732.6 MHz; Duty Cycle: 1:1

Medium: MSL\_1800\_110304 Medium parameters used:  $f = 1733$  MHz;  $\sigma = 1.48$  mho/m;  $\epsilon_r = 53.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.0 °C ; Liquid Temperature : 21.2 °C

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.72, 4.72, 4.72); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch1413/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.761 mW/g

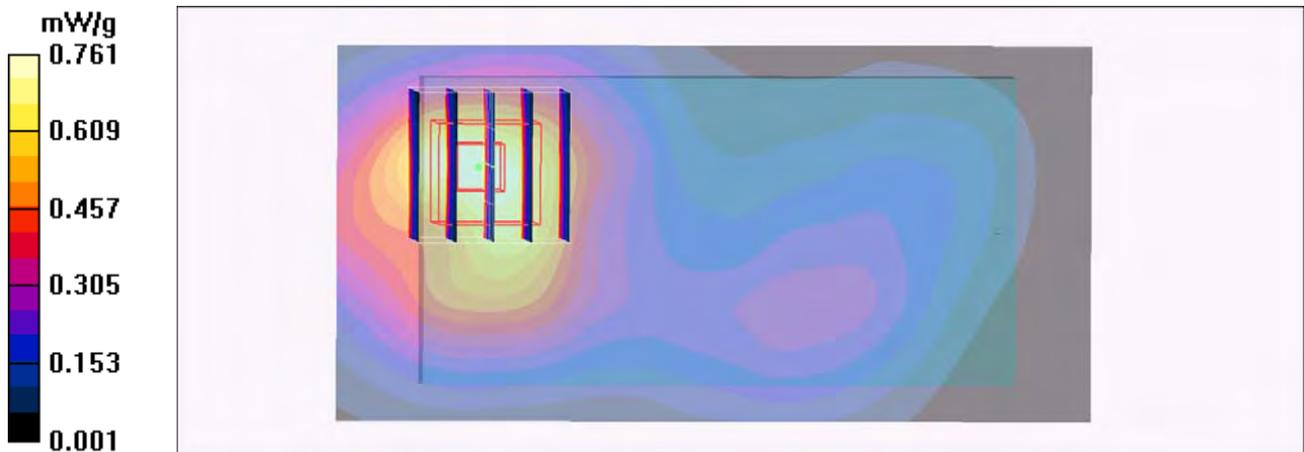
**Ch1413/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.7 V/m; Power Drift = 0.071 dB

Peak SAR (extrapolated) = 0.963 W/kg

**SAR(1 g) = 0.674 mW/g; SAR(10 g) = 0.441 mW/g**

Maximum value of SAR (measured) = 0.728 mW/g



## #11 WCDMA IV\_Left Side\_1cm\_Ch1413\_Sample1\_Battery2

### DUT: 121019

Communication System: WCDMA; Frequency: 1732.6 MHz; Duty Cycle: 1:1

Medium: MSL\_1800\_110304 Medium parameters used:  $f = 1733$  MHz;  $\sigma = 1.48$  mho/m;  $\epsilon_r = 53.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.1 °C; Liquid Temperature : 21.2 °C

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.72, 4.72, 4.72); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch1413/Area Scan (31x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.212 mW/g

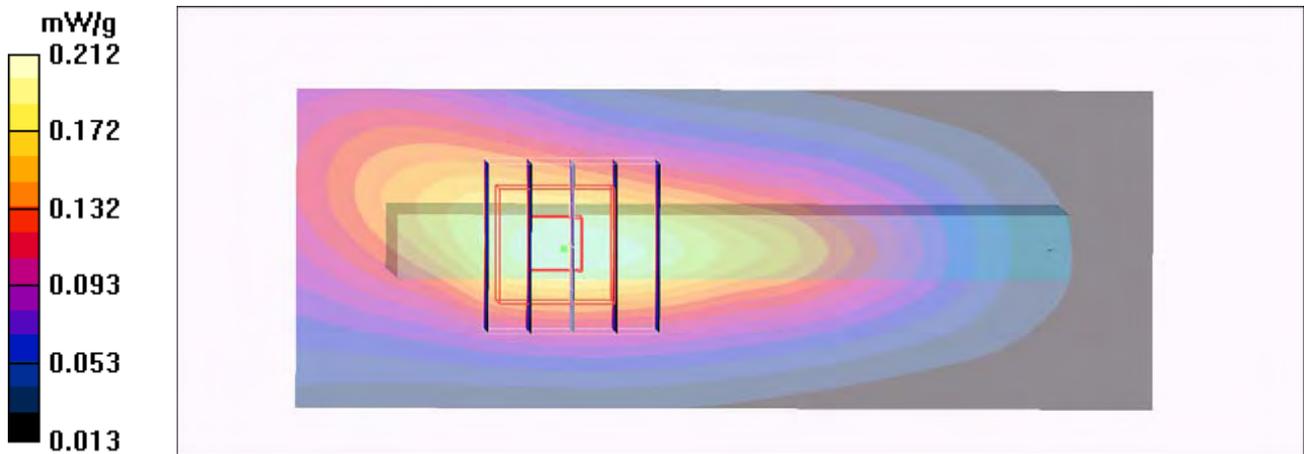
**Ch1413/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.0 V/m; Power Drift = -0.051 dB

Peak SAR (extrapolated) = 0.293 W/kg

**SAR(1 g) = 0.214 mW/g; SAR(10 g) = 0.137 mW/g**

Maximum value of SAR (measured) = 0.235 mW/g



## #12 WCDMA IV\_Right Side\_1cm\_Ch1413\_Sample1\_Battery2

### DUT: 121019

Communication System: WCDMA; Frequency: 1732.6 MHz; Duty Cycle: 1:1

Medium: MSL\_1800\_110304 Medium parameters used:  $f = 1733$  MHz;  $\sigma = 1.48$  mho/m;  $\epsilon_r = 53.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.6 °C; Liquid Temperature : 21.2 °C

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.72, 4.72, 4.72); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch1413/Area Scan (31x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 0.228 mW/g

**Ch1413/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.4 V/m; Power Drift = 0.077 dB

Peak SAR (extrapolated) = 0.278 W/kg

**SAR(1 g) = 0.207 mW/g; SAR(10 g) = 0.132 mW/g**

Maximum value of SAR (measured) = 0.226 mW/g

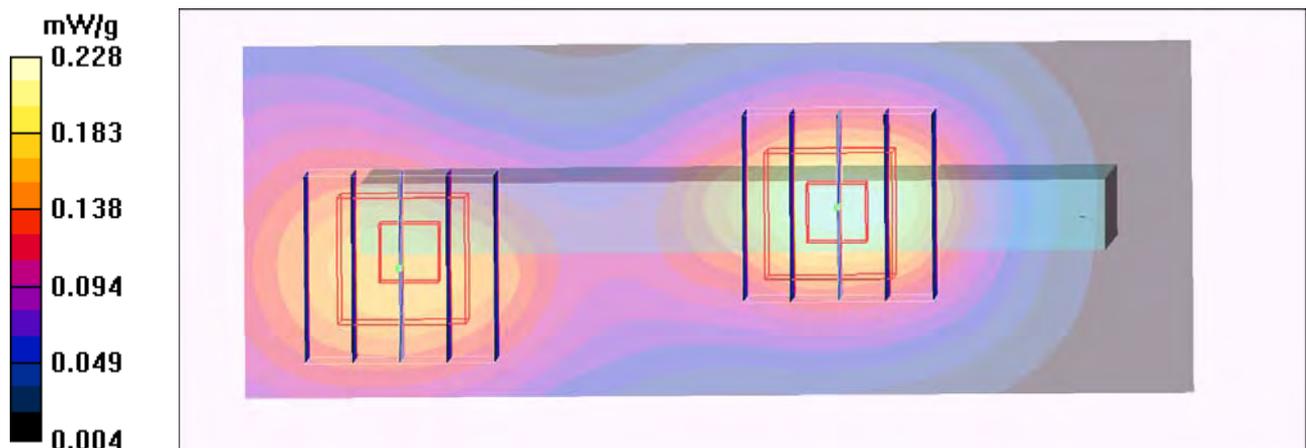
**Ch1413/Zoom Scan (5x5x7)/Cube 1:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.4 V/m; Power Drift = 0.077 dB

Peak SAR (extrapolated) = 0.255 W/kg

**SAR(1 g) = 0.187 mW/g; SAR(10 g) = 0.121 mW/g**

Maximum value of SAR (measured) = 0.201 mW/g



## #14 WCDMA IV\_Down Side\_1cm\_Ch1413\_Sample1\_Battery2

### DUT: 121019

Communication System: WCDMA; Frequency: 1732.6 MHz; Duty Cycle: 1:1

Medium: MSL\_1800\_110304 Medium parameters used:  $f = 1733$  MHz;  $\sigma = 1.48$  mho/m;  $\epsilon_r = 53.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.4 °C ; Liquid Temperature : 21.2 °C

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.72, 4.72, 4.72); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch1413/Area Scan (21x41x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.08 mW/g

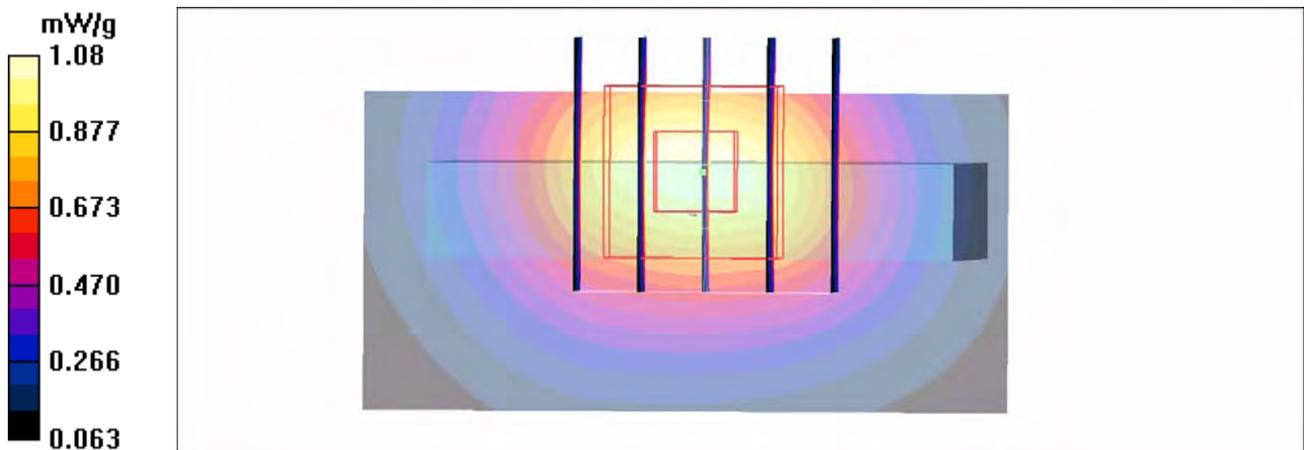
**Ch1413/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 31.2 V/m; Power Drift = 0.164 dB

Peak SAR (extrapolated) = 1.78 W/kg

**SAR(1 g) = 1.25 mW/g; SAR(10 g) = 0.727 mW/g**

Maximum value of SAR (measured) = 1.41 mW/g



## #15 WCDMA IV\_Bottom\_1cm\_Ch1312\_Sample1\_Battery2

### DUT: 121019

Communication System: WCDMA; Frequency: 1712.4 MHz; Duty Cycle: 1:1

Medium: MSL\_1800\_110304 Medium parameters used (interpolated):  $f = 1712.4$  MHz;  $\sigma = 1.45$  mho/m;  $\epsilon_r = 53.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.0 °C ; Liquid Temperature : 21.2 °C

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.72, 4.72, 4.72); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch1312/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.24 mW/g

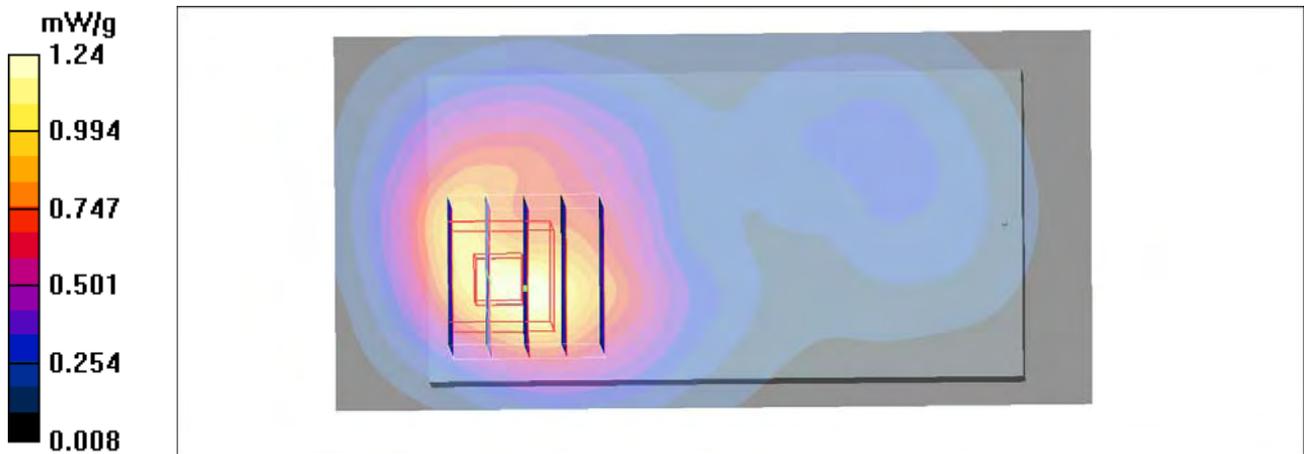
**Ch1312/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.8 V/m; Power Drift = -0.134 dB

Peak SAR (extrapolated) = 1.57 W/kg

**SAR(1 g) = 1.17 mW/g; SAR(10 g) = 0.737 mW/g**

Maximum value of SAR (measured) = 1.29 mW/g



## #16 WCDMA IV\_Bottom\_1cm\_Ch1513\_Sample1\_Battery2

### DUT: 121019

Communication System: WCDMA; Frequency: 1752.6 MHz; Duty Cycle: 1:1

Medium: MSL\_1800\_110304 Medium parameters used:  $f = 1753$  MHz;  $\sigma = 1.5$  mho/m;  $\epsilon_r = 53.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.3 °C ; Liquid Temperature : 21.2 °C

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.72, 4.72, 4.72); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch1513/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.45 mW/g

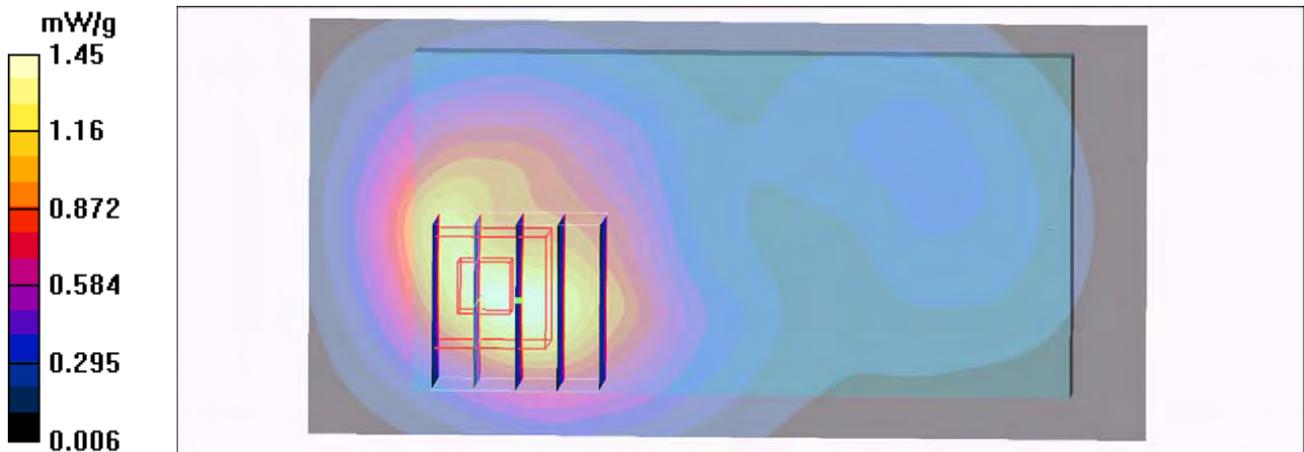
**Ch1513/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.3 V/m; Power Drift = 0.018 dB

Peak SAR (extrapolated) = 1.86 W/kg

**SAR(1 g) = 1.38 mW/g; SAR(10 g) = 0.873 mW/g**

Maximum value of SAR (measured) = 1.51 mW/g



## #16 WCDMA IV\_Bottom\_1cm\_Ch1513\_Sample1\_Battery2\_2D

**DUT: 121019**

Communication System: WCDMA; Frequency: 1752.6 MHz; Duty Cycle: 1:1  
Medium: MSL\_1800\_110304 Medium parameters used:  $f = 1753$  MHz;  $\sigma = 1.5$   
mho/m;  $\epsilon_r = 53.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.3 °C; Liquid Temperature : 21.2 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.72, 4.72, 4.72); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch1513/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm  
Maximum value of SAR (interpolated) = 1.45 mW/g

**Ch1513/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm,  
dz=5mm

Reference Value = 13.3 V/m; Power Drift = 0.018 dB

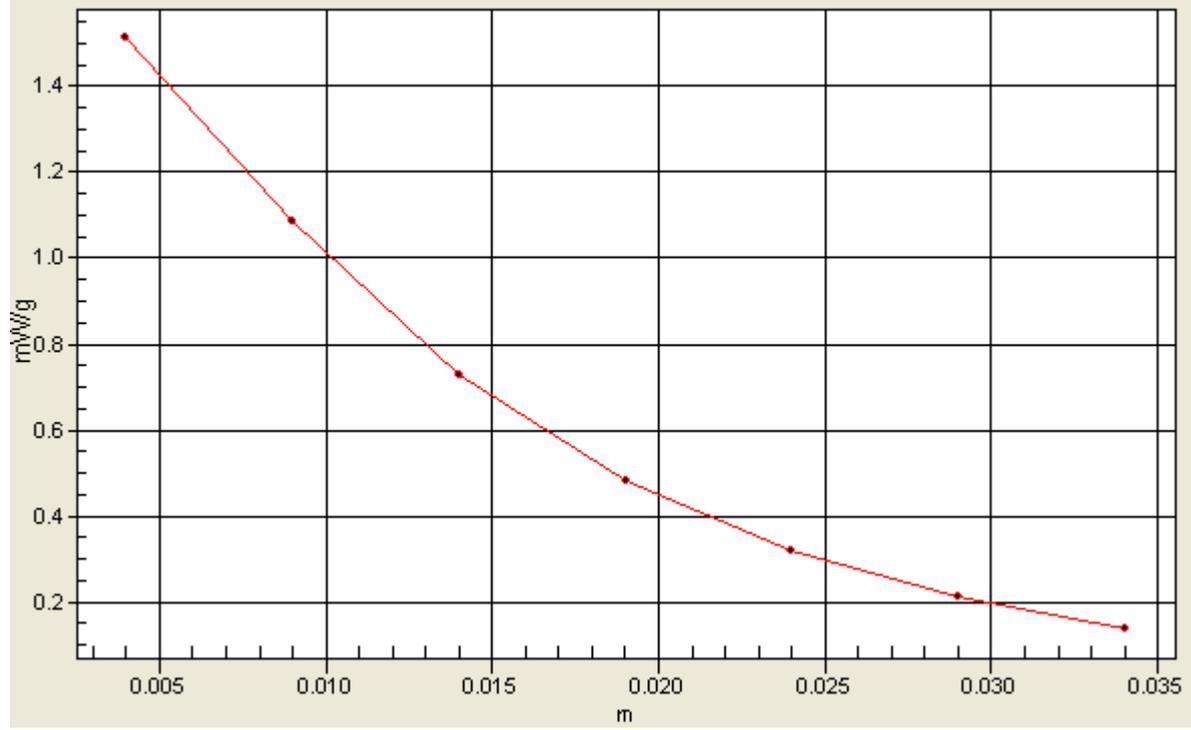
Peak SAR (extrapolated) = 1.86 W/kg

**SAR(1 g) = 1.38 mW/g; SAR(10 g) = 0.873 mW/g**

Maximum value of SAR (measured) = 1.51 mW/g

# 1g/10g Averaged SAR

SAR, Zoom Scan: Value Along Z, X=2, Y=1



## #102 WCDMA

### IV\_RMC12.2K\_Bottom\_1cm\_Ch1312\_Sample1\_Battery3

**DUT: 121019**

Communication System: WCDMA; Frequency: 1712.4 MHz; Duty Cycle: 1:1  
Medium: MSL\_1800\_110328 Medium parameters used :  $f = 1712.4$  MHz;  $\sigma = 1.48$   
mho/m;  $\epsilon_r = 52.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Ambient Temperature : 22.0 °C; Liquid Temperature : 21.5 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.72, 4.72, 4.72); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2010/8/18
- Phantom: SAM\_Right; Type: SAM; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch1312/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm  
Maximum value of SAR (interpolated) = 1.18 mW/g

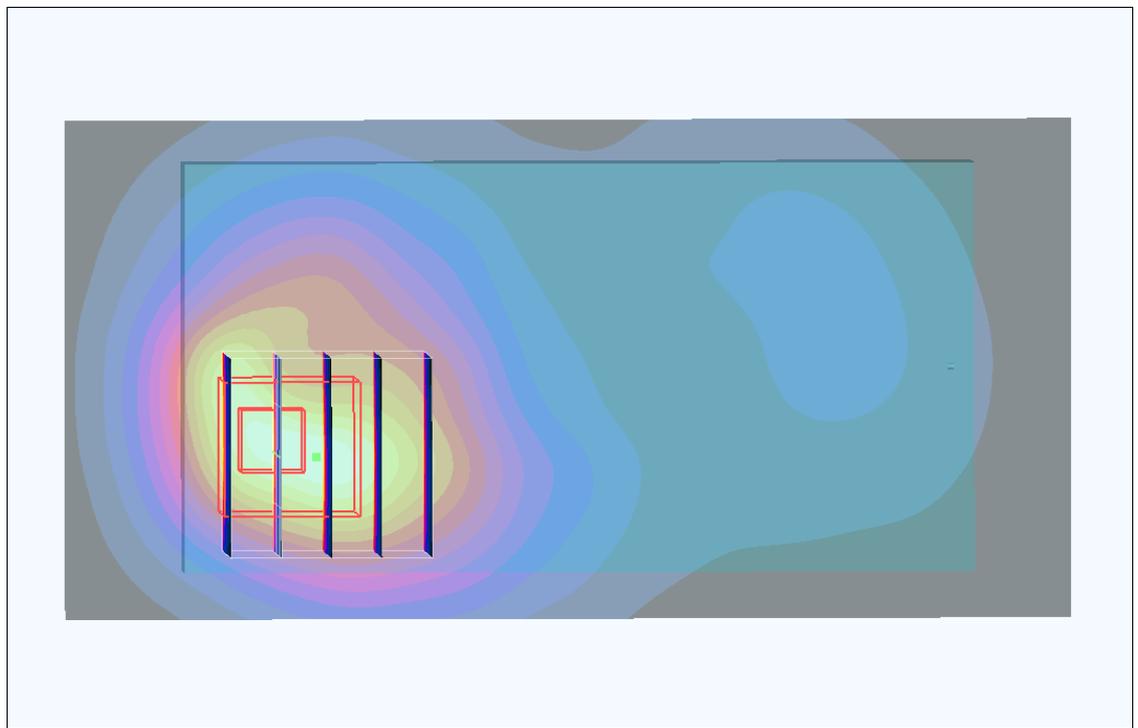
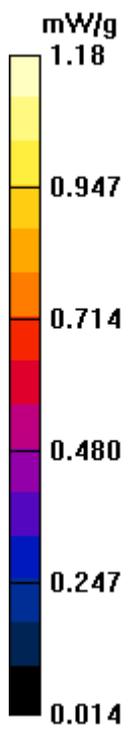
**Ch1312/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm,  
dz=5mm

Reference Value = 12.4 V/m; Power Drift = -0.108 dB

Peak SAR (extrapolated) = 1.48 W/kg

**SAR(1 g) = 1.1 mW/g; SAR(10 g) = 0.697 mW/g**

Maximum value of SAR (measured) = 1.21 mW/g



## #103 WCDMA

### IV\_RMC12.2K\_Bottom\_1cm\_Ch1513\_Sample1\_Battery3

**DUT: 121019**

Communication System: WCDMA; Frequency: 1752.6 MHz; Duty Cycle: 1:1  
Medium: MSL\_1800\_110328 Medium parameters used:  $f = 1753$  MHz;  $\sigma = 1.52$   
mho/m;  $\epsilon_r = 51.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.0 °C; Liquid Temperature : 21.5 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.72, 4.72, 4.72); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2010/8/18
- Phantom: SAM\_Right; Type: SAM; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch1513/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm  
Maximum value of SAR (interpolated) = 1.39 mW/g

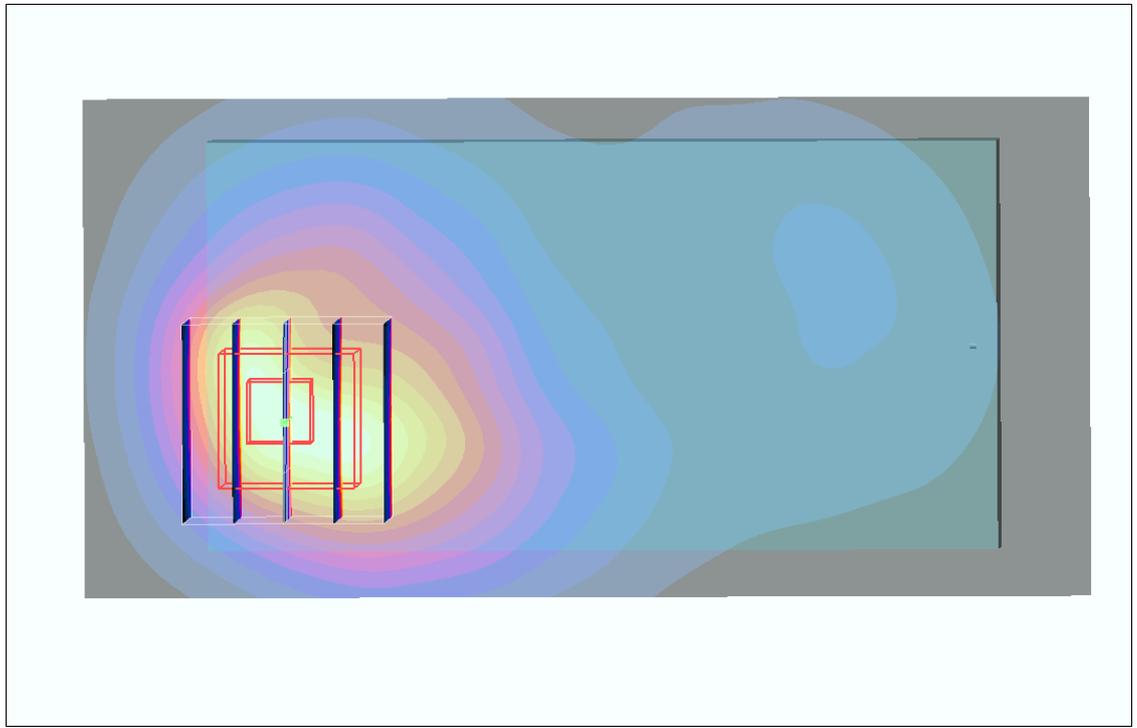
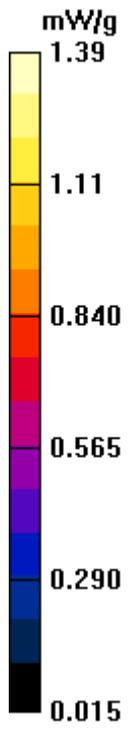
**Ch1513/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm,  
dz=5mm

Reference Value = 13.4 V/m; Power Drift = -0.066 dB

Peak SAR (extrapolated) = 1.83 W/kg

**SAR(1 g) = 1.35 mW/g; SAR(10 g) = 0.842 mW/g**

Maximum value of SAR (measured) = 1.49 mW/g



## #104 WCDMA IV\_Down Side\_1cm\_Ch1312\_Sample1\_Battery1

**DUT: 121019**

Communication System: WCDMA; Frequency: 1712.4 MHz; Duty Cycle: 1:1  
Medium: MSL\_1800\_110328 Medium parameters used :  $f = 1712.4$  MHz;  $\sigma = 1.48$   
mho/m;  $\epsilon_r = 52.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.0 °C; Liquid Temperature : 21.5 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.72, 4.72, 4.72); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch1312/Area Scan (21x41x1):** Measurement grid: dx=20mm, dy=20mm  
Maximum value of SAR (interpolated) = 1.19 mW/g

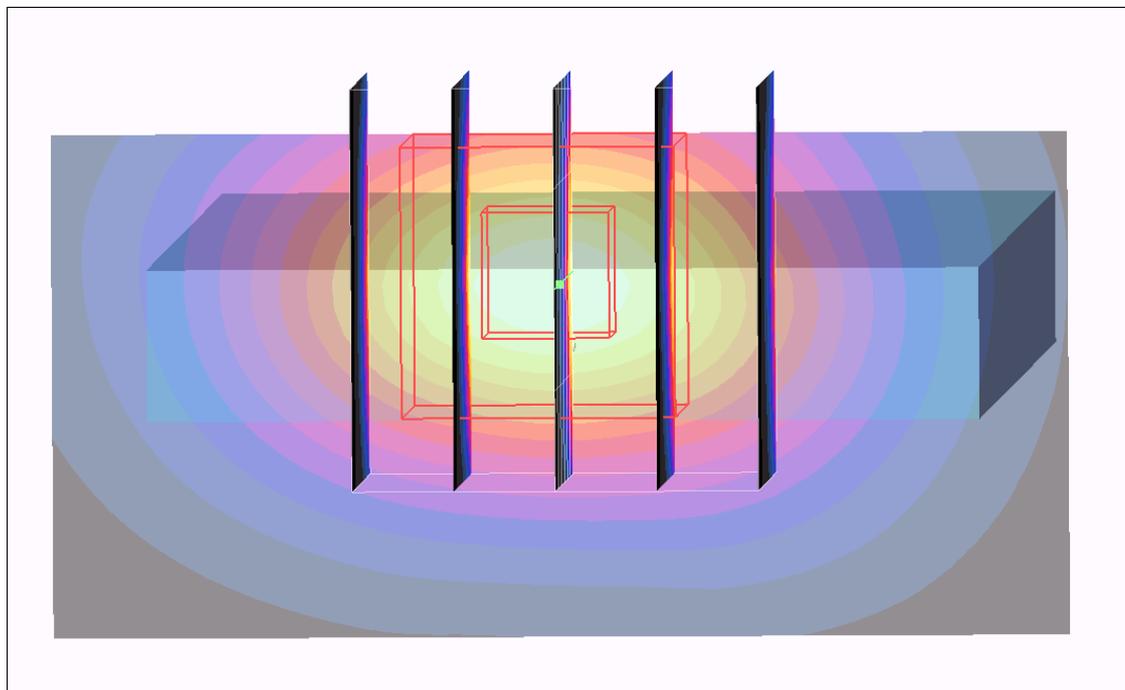
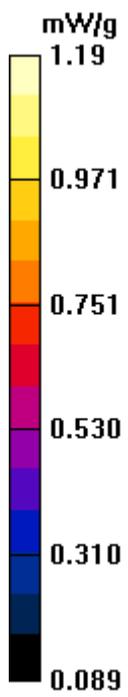
**Ch1312/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm,  
dz=5mm

Reference Value = 32.3 V/m; Power Drift = 0.100 dB

Peak SAR (extrapolated) = 1.79 W/kg

**SAR(1 g) = 1.23 mW/g; SAR(10 g) = 0.693 mW/g**

Maximum value of SAR (measured) = 1.40 mW/g



## #105 WCDMA IV\_Down Side\_1cm\_Ch1513\_Sample1\_Battery1

**DUT: 121019**

Communication System: WCDMA; Frequency: 1752.6 MHz; Duty Cycle: 1:1  
Medium: MSL\_1800\_110328 Medium parameters used:  $f = 1753$  MHz;  $\sigma = 1.52$   
mho/m;  $\epsilon_r = 51.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.0 °C; Liquid Temperature : 21.5 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.72, 4.72, 4.72); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch1513/Area Scan (21x41x1):** Measurement grid: dx=20mm, dy=20mm  
Maximum value of SAR (interpolated) = 1.29 mW/g

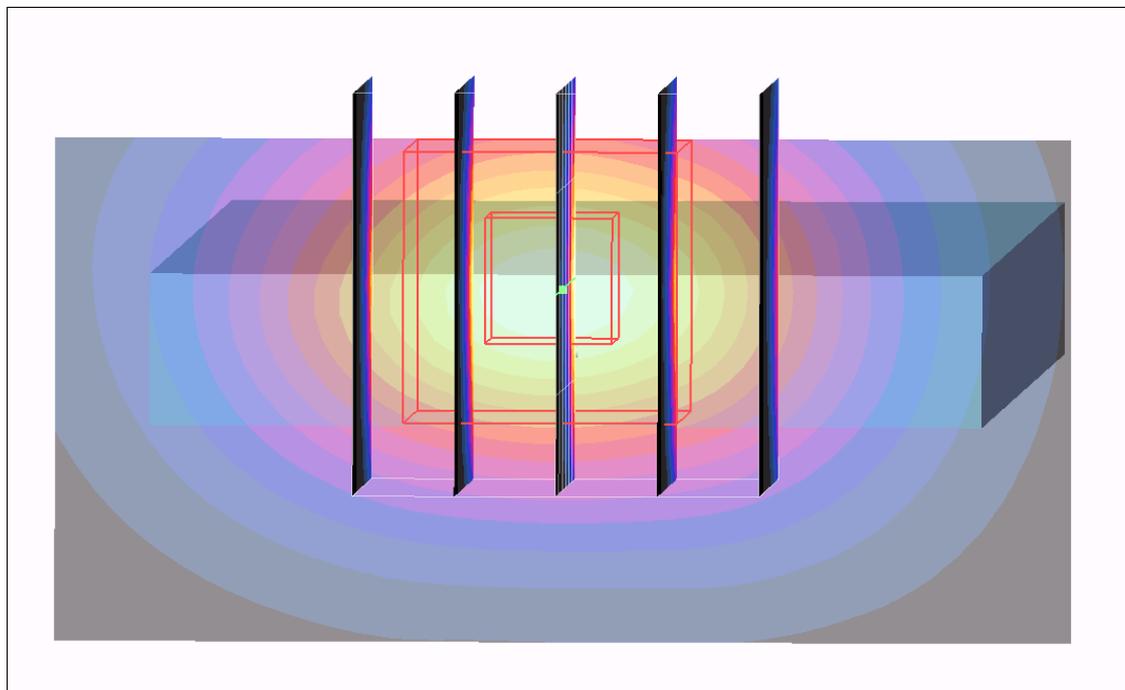
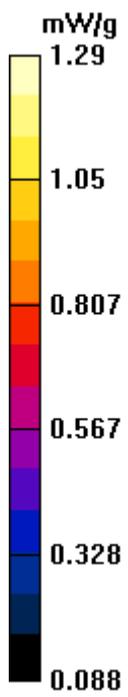
**Ch1513/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm,  
dz=5mm

Reference Value = 33.6 V/m; Power Drift = 0.104 dB

Peak SAR (extrapolated) = 2.01 W/kg

**SAR(1 g) = 1.35 mW/g; SAR(10 g) = 0.749 mW/g**

Maximum value of SAR (measured) = 1.54 mW/g



### #61 WCDMA IV\_RMC12.2K\_Bottom\_1cm\_Ch1413\_Sample1\_Battery1\_Earphone1

#### DUT: 121019

Communication System: WCDMA; Frequency: 1732.6 MHz; Duty Cycle: 1:1

Medium: MSL\_1800\_110328 Medium parameters used:  $f = 1733$  MHz;  $\sigma = 1.5$  mho/m;  $\epsilon_r = 52$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.0 °C ; Liquid Temperature : 21.5 °C

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.72, 4.72, 4.72); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch1413/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.57 mW/g

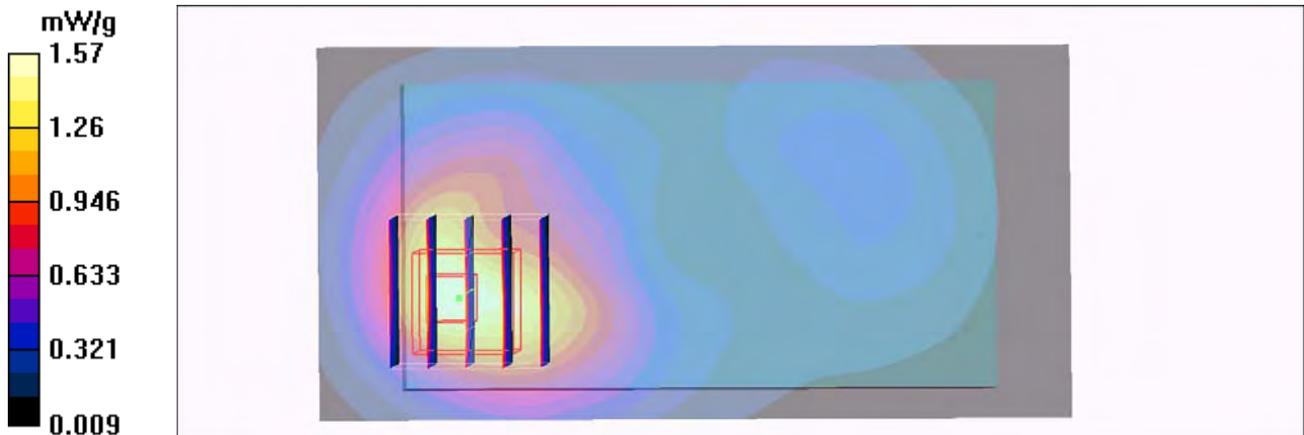
**Ch1413/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.9 V/m; Power Drift = -0.164 dB

Peak SAR (extrapolated) = 1.80 W/kg

**SAR(1 g) = 1.35 mW/g; SAR(10 g) = 0.872 mW/g**

Maximum value of SAR (measured) = 1.47 mW/g



### #17 WCDMA IV\_Bottom\_1cm\_Ch1413\_Sample1\_Battery2\_Earphone2

**DUT: 121019**

Communication System: WCDMA; Frequency: 1732.6 MHz; Duty Cycle: 1:1

Medium: MSL\_1800\_110304 Medium parameters used:  $f = 1733 \text{ MHz}$ ;  $\sigma = 1.48 \text{ mho/m}$ ;  $\epsilon_r = 53.5$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature :  $22.4 \text{ }^\circ\text{C}$ ; Liquid Temperature :  $21.2 \text{ }^\circ\text{C}$

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.72, 4.72, 4.72); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2010/10/22
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch1413/Area Scan (41x81x1):** Measurement grid:  $dx=20\text{mm}$ ,  $dy=20\text{mm}$

Maximum value of SAR (interpolated) =  $1.48 \text{ mW/g}$

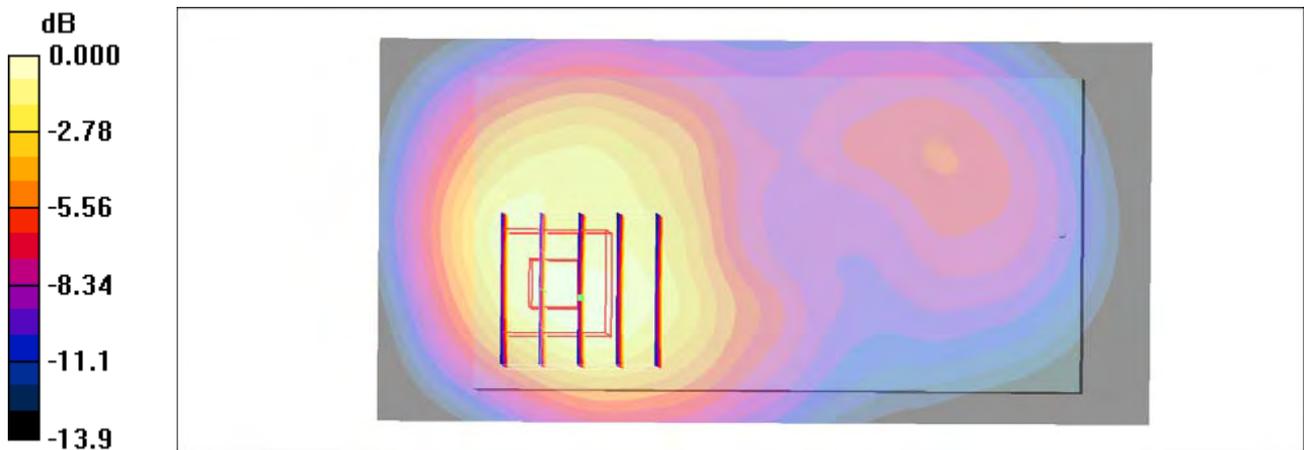
**Ch1413/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $13.5 \text{ V/m}$ ; Power Drift =  $-0.114 \text{ dB}$

Peak SAR (extrapolated) =  $1.87 \text{ W/kg}$

**SAR(1 g) =  $1.38 \text{ mW/g}$ ; SAR(10 g) =  $0.862 \text{ mW/g}$**

Maximum value of SAR (measured) =  $1.51 \text{ mW/g}$



0 dB =  $1.51 \text{ mW/g}$

### #99 WCDMA IV\_RMC12.2K\_Bottom\_1cm\_Ch1413\_Sample1\_Battery1\_Earphone3

#### DUT: 121019

Communication System: WCDMA; Frequency: 1732.6 MHz; Duty Cycle: 1:1

Medium: MSL\_1800\_110402 Medium parameters used:  $f = 1733$  MHz;  $\sigma = 1.5$  mho/m;  $\epsilon_r = 52$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.0 °C; Liquid Temperature : 21.5 °C

#### DASY4 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.67, 4.67, 4.67); Calibrated: 2010/9/21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch1413/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.32 mW/g

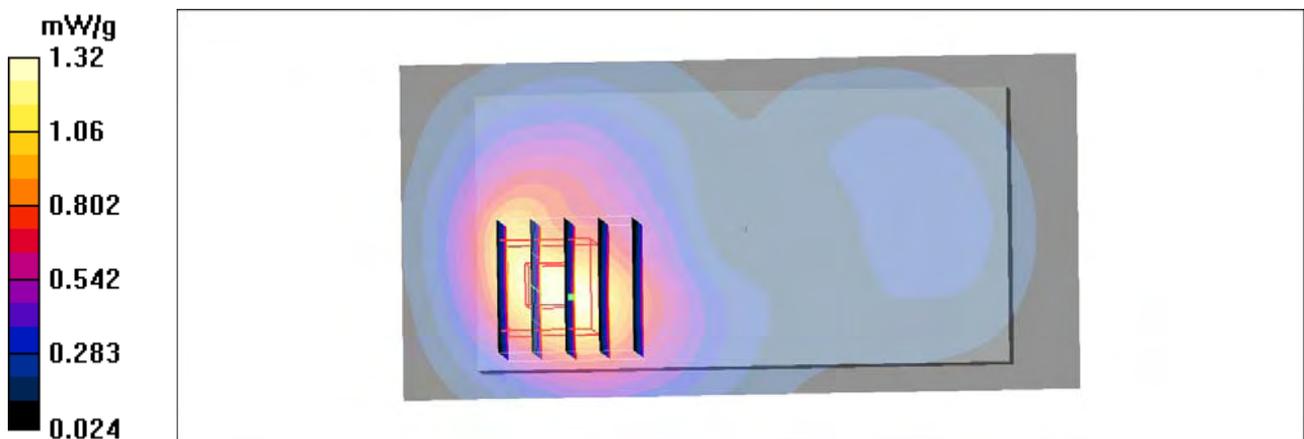
**Ch1413/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.5 V/m; Power Drift = -0.075 dB

Peak SAR (extrapolated) = 1.70 W/kg

**SAR(1 g) = 1.22 mW/g; SAR(10 g) = 0.738 mW/g**

Maximum value of SAR (measured) = 1.33 mW/g



### #63 WCDMA IV\_RMC12.2K\_Bottom\_1cm\_Ch1312\_Sample1\_Battery1\_Earphone3

**DUT: 121019**

Communication System: WCDMA; Frequency: 1712.4 MHz; Duty Cycle: 1:1

Medium: MSL\_1800\_110328 Medium parameters used (interpolated):  $f = 1712.4$  MHz;  $\sigma = 1.48$  mho/m;  $\epsilon_r = 52.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.0 °C ; Liquid Temperature : 21.5 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.72, 4.72, 4.72); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch1312/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.42 mW/g

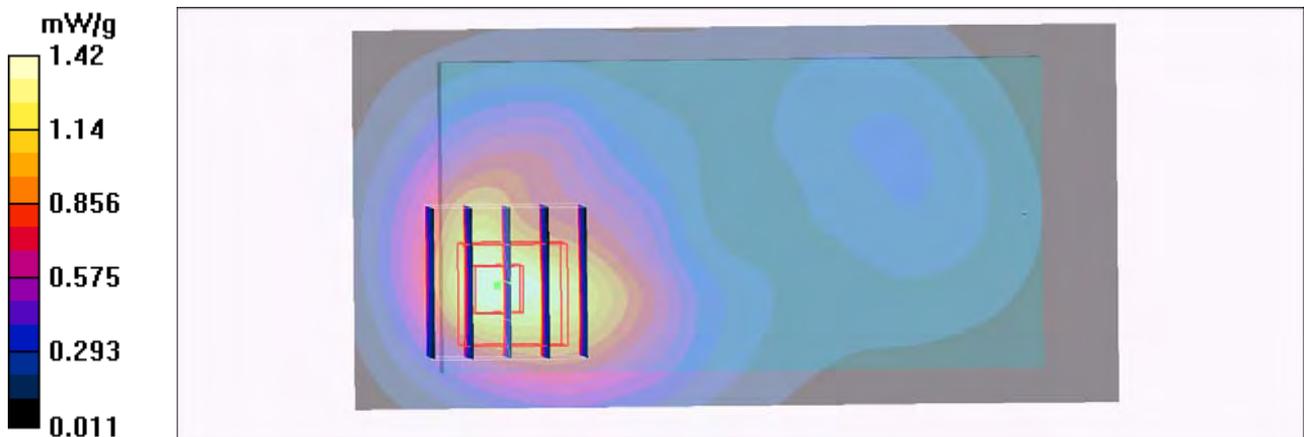
**Ch1312/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.6 V/m; Power Drift = -0.080 dB

Peak SAR (extrapolated) = 1.63 W/kg

**SAR(1 g) = 1.24 mW/g; SAR(10 g) = 0.809 mW/g**

Maximum value of SAR (measured) = 1.34 mW/g



### #64 WCDMA IV\_RMC12.2K\_Bottom\_1cm\_Ch1513\_Sample1\_Battery1\_Earphone3

**DUT: 121019**

Communication System: WCDMA; Frequency: 1752.6 MHz; Duty Cycle: 1:1

Medium: MSL\_1800\_110328 Medium parameters used:  $f = 1753$  MHz;  $\sigma = 1.52$  mho/m;  $\epsilon_r = 51.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 22.0 °C; Liquid Temperature : 21.5 °C

DASY4 Configuration:

- Probe: ET3DV6 - SN1787; ConvF(4.72, 4.72, 4.72); Calibrated: 2010/5/18
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2011/1/13
- Phantom: ELI 4.0\_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Ch1513/Area Scan (41x81x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 1.53 mW/g

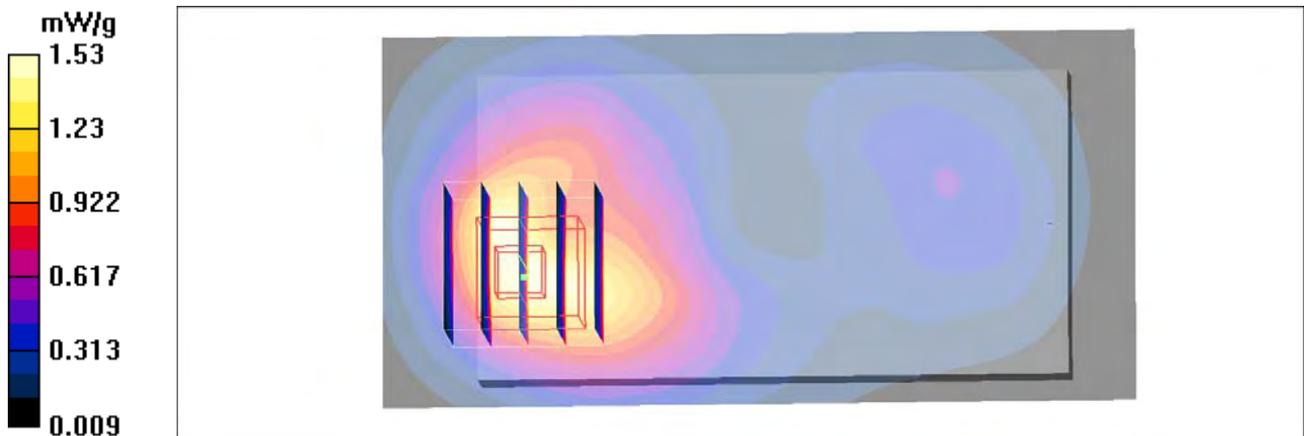
**Ch1513/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.8 V/m; Power Drift = -0.118 dB

Peak SAR (extrapolated) = 1.82 W/kg

**SAR(1 g) = 1.37 mW/g; SAR(10 g) = 0.877 mW/g**

Maximum value of SAR (measured) = 1.50 mW/g





## **Appendix C. DASYS Calibration Certificate**

The DASYS calibration certificates are shown as follows.



Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland



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The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client ATL (Auden)

Certificate No: D835V2-4d082\_Jul10

CALIBRATION CERTIFICATE

Object: D835V2 - SN: 4d082
Calibration procedure(s): QA CAL-05.v7 Calibration procedure for dipole validation kits
Calibration date: July 20, 2010

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Table with 4 columns: Primary Standards, ID #, Cal Date (Certificate No.), Scheduled Calibration. Rows include Power meter EPM-442A, Power sensor HP 8481A, Reference 20 dB Attenuator, Type-N mismatch combination, Reference Probe ES3DV3, DAE4.

Table with 4 columns: Secondary Standards, ID #, Check Date (in house), Scheduled Check. Rows include Power sensor HP 8481A, RF generator R&S SMT-06, Network Analyzer HP 8753E.

Calibrated by: Dimce Iliev, Laboratory Technician
Approved by: Katja Pokovic, Technical Manager

Issued: July 20, 2010

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

**Calibration Laboratory of**  
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Engineering AG  
Zeughausstrasse 43, 8004 Zurich, Switzerland



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**C** Service suisse d'étalonnage  
**S** Servizio svizzero di taratura  
**S** Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)  
The Swiss Accreditation Service is one of the signatories to the EA  
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

**Glossary:**

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

**Calibration is Performed According to the Following Standards:**

- IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

**Additional Documentation:**

- DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.



**Measurement Conditions**

DASY system configuration, as far as not given on page 1.

<b>DASY Version</b>	DASY5	V52.2
<b>Extrapolation</b>	Advanced Extrapolation	
<b>Phantom</b>	Modular Flat Phantom V4.9	
<b>Distance Dipole Center - TSL</b>	15 mm	with Spacer
<b>Zoom Scan Resolution</b>	dx, dy, dz = 5 mm	
<b>Frequency</b>	835 MHz ± 1 MHz	

**Head TSL parameters**

The following parameters and calculations were applied.

	<b>Temperature</b>	<b>Permittivity</b>	<b>Conductivity</b>
<b>Nominal Head TSL parameters</b>	22.0 °C	41.5	0.90 mho/m
<b>Measured Head TSL parameters</b>	(22.0 ± 0.2) °C	42.0 ± 6 %	0.90 mho/m ± 6 %
<b>Head TSL temperature during test</b>	(23.1 ± 0.2) °C	----	----

**SAR result with Head TSL**

<b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b>	Condition	
SAR measured	250 mW input power	2.40 mW / g
SAR normalized	normalized to 1W	9.60 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	<b>9.65 mW /g ± 17.0 % (k=2)</b>

<b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b>	condition	
SAR measured	250 mW input power	1.56 mW / g
SAR normalized	normalized to 1W	6.24 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	<b>6.26 mW /g ± 16.5 % (k=2)</b>



**Body TSL parameters**

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	55.0 ± 6 %	1.01 mho/m ± 6 %
Body TSL temperature during test	(22.0 ± 0.2) °C	----	----

**SAR result with Body TSL**

SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.58 mW / g
SAR normalized	normalized to 1W	10.3 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	<b>10.0 mW / g ± 17.0 % (k=2)</b>

SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.69 mW / g
SAR normalized	normalized to 1W	6.76 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	<b>6.60 mW / g ± 16.5 % (k=2)</b>



**Appendix**

**Antenna Parameters with Head TSL**

Impedance, transformed to feed point	51.7 $\Omega$ - 3.2 j $\Omega$
Return Loss	- 29.0 dB

**Antenna Parameters with Body TSL**

Impedance, transformed to feed point	48.3 $\Omega$ - 4.6 j $\Omega$
Return Loss	- 26.0 dB

**General Antenna Parameters and Design**

Electrical Delay (one direction)	1.389ns
----------------------------------	---------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

**Additional EUT Data**

Manufactured by	SPEAG
Manufactured on	October 17, 2008

**DASY5 Validation Report for Head TSL**

Date/Time: 20.07.2010 15:48:57

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d082**

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL900

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.9 \text{ mho/m}$ ;  $\epsilon_r = 42.4$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.03, 6.03, 6.03); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASYS2, V52.2 Build 0, Version 52.2.0 (163)
- Postprocessing SW: SEMCAD X, V14.2 Build 2, Version 14.2.2 (1685)

**Pin=250 mW /d=15mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 57.1 V/m; Power Drift = 0.020 dB

Peak SAR (extrapolated) = 3.63 W/kg

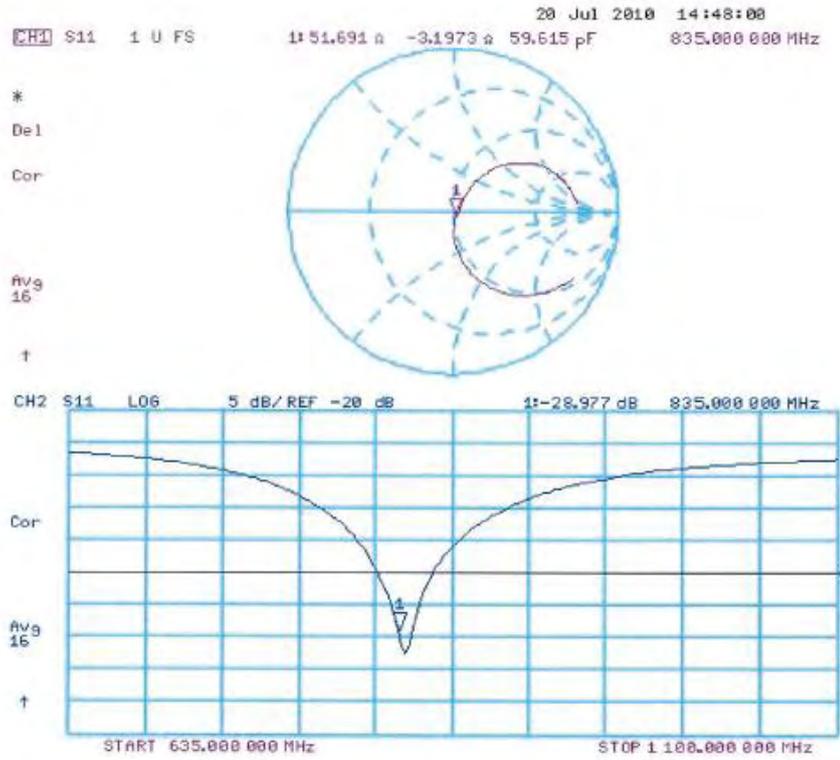
**SAR(1 g) = 2.4 mW/g; SAR(10 g) = 1.56 mW/g**

Maximum value of SAR (measured) = 2.8 mW/g





### Impedance Measurement Plot for Head TSL



**DASY5 Validation Report for Body**

Date/Time: 20.07.2010 12:03:13

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d082**

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: MSL900

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 1.01 \text{ mho/m}$ ;  $\epsilon_r = 55$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.86, 5.86, 5.86); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY52, V52.2 Build 0, Version 52.2.0 (163)
- Postprocessing SW: SEMCAD X, V14.2 Build 2, Version 14.2.2 (1685)

**Pin=250 mW /d=15mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 56.1 V/m; Power Drift = 0.017 dB

Peak SAR (extrapolated) = 3.81 W/kg

**SAR(1 g) = 2.58 mW/g; SAR(10 g) = 1.69 mW/g**

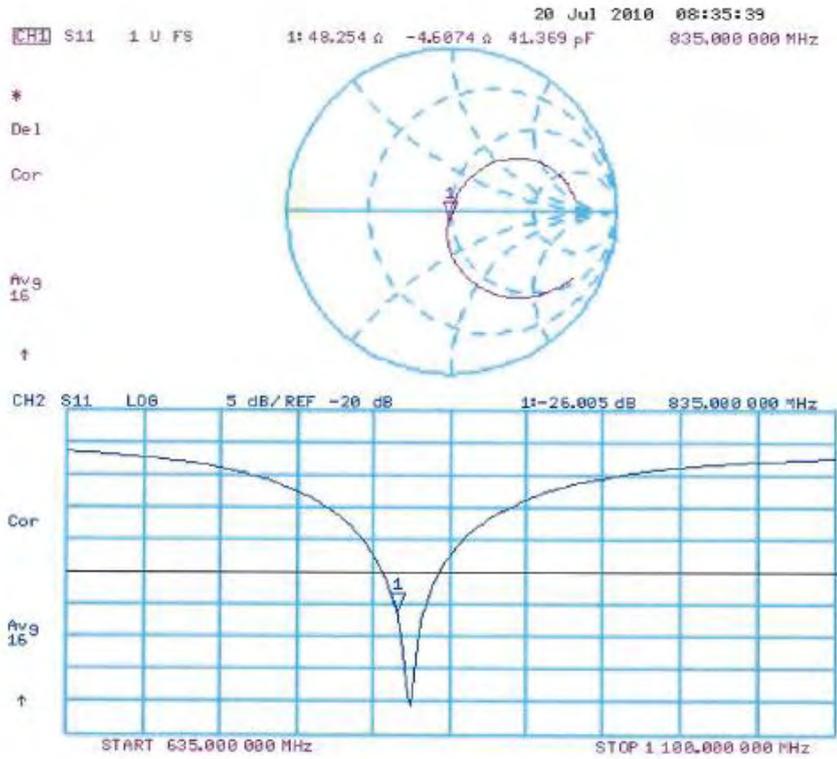
Maximum value of SAR (measured) = 2.98 mW/g



0 dB = 2.98mW/g



### Impedance Measurement Plot for Body TSL





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Accreditation No.: SCS 108

Client Auden

Certificate No: D1800V2-2d052\_Jun10

CALIBRATION CERTIFICATE

Object: D1800V2 - SN: 2d052
Calibration procedure(s): QA CAL-05.v7 Calibration procedure for dipole validation kits
Calibration date: June 15, 2010

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
All calibrations have been conducted in the closed laboratory facility: environment temperature (22 +/- 3)°C and humidity < 70%.
Calibration Equipment used (M&TE critical for calibration)

Table with 4 columns: Primary Standards, ID #, Cal Date (Certificate No.), Scheduled Calibration. Lists equipment like Power meter EPM-442A, Power sensor HP 8481A, Reference 20 dB Attenuator, etc.

Calibrated by: Dimce Iliev, Laboratory Technician
Approved by: Katja Pokovic, Technical Manager

Issued: June 16, 2010

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Accreditation No.: **SCS 108**

**Glossary:**

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

**Calibration is Performed According to the Following Standards:**

- IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

**Additional Documentation:**

- DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

- Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:* SAR measured at the stated antenna input power.
- SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.



**Measurement Conditions**

DASY system configuration, as far as not given on page 1.

<b>DASY Version</b>	DASY5	V52.2
<b>Extrapolation</b>	Advanced Extrapolation	
<b>Phantom</b>	Modular Flat Phantom V5.0	
<b>Distance Dipole Center - TSL</b>	10 mm	with Spacer
<b>Zoom Scan Resolution</b>	dx, dy, dz = 5 mm	
<b>Frequency</b>	1800 MHz ± 1 MHz	

**Head TSL parameters**

The following parameters and calculations were applied.

	<b>Temperature</b>	<b>Permittivity</b>	<b>Conductivity</b>
<b>Nominal Head TSL parameters</b>	22.0 °C	40.0	1.40 mho/m
<b>Measured Head TSL parameters</b>	(22.0 ± 0.2) °C	39.8 ± 6 %	1.38 mho/m ± 6 %
<b>Head TSL temperature during test</b>	(22.5 ± 0.2) °C	----	----

**SAR result with Head TSL**

<b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b>	Condition	
SAR measured	250 mW input power	9.64 mW / g
SAR normalized	normalized to 1W	38.6 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	<b>38.8 mW /g ± 17.0 % (k=2)</b>

<b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b>	condition	
SAR measured	250 mW input power	5.08 mW / g
SAR normalized	normalized to 1W	20.3 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	<b>20.4 mW /g ± 16.5 % (k=2)</b>



**Body TSL parameters**

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	53.5 ± 6 %	1.48 mho/m ± 6 %
Body TSL temperature during test	(22.0 ± 0.2) °C	----	----

**SAR result with Body TSL**

SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.56 mW / g
SAR normalized	normalized to 1W	38.2 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	<b>38.9 mW / g ± 17.0 % (k=2)</b>

SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.17 mW / g
SAR normalized	normalized to 1W	20.7 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	<b>20.9 mW / g ± 16.5 % (k=2)</b>



**Appendix**

**Antenna Parameters with Head TSL**

Impedance, transformed to feed point	46.5 $\Omega$ - 4.9 j $\Omega$
Return Loss	- 24.0 dB

**Antenna Parameters with Body TSL**

Impedance, transformed to feed point	43.5 $\Omega$ - 5.0 j $\Omega$
Return Loss	- 21.1 dB

**General Antenna Parameters and Design**

Electrical Delay (one direction)	1.215 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

**Additional EUT Data**

Manufactured by	SPEAG
Manufactured on	July 05, 2002

**DASY5 Validation Report for Head TSL**

Date/Time: 15.06.2010 09:54:47

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN:2d052**

Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: HSL U11 BB

Medium parameters used:  $f = 1800$  MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.05, 5.05, 5.05); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASYS2, V52.2 Build 0, Version 52.2.0 (163)
- Postprocessing SW: SEMCAD X, V14.2 Build 2, Version 14.2.2 (1685)

**Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe) /Zoom Scan (7x7x7) /Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm  
Reference Value = 96.8 V/m; Power Drift = 0.016 dB  
Peak SAR (extrapolated) = 17.6 W/kg  
**SAR(1 g) = 9.64 mW/g; SAR(10 g) = 5.08 mW/g**  
Maximum value of SAR (measured) = 12 mW/g



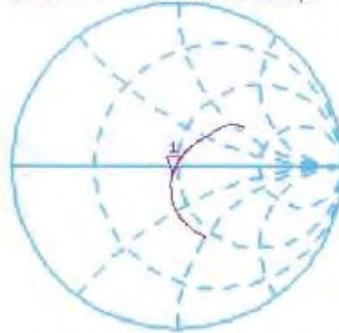
0 dB = 12mW/g



### Impedance Measurement Plot for Head TSL

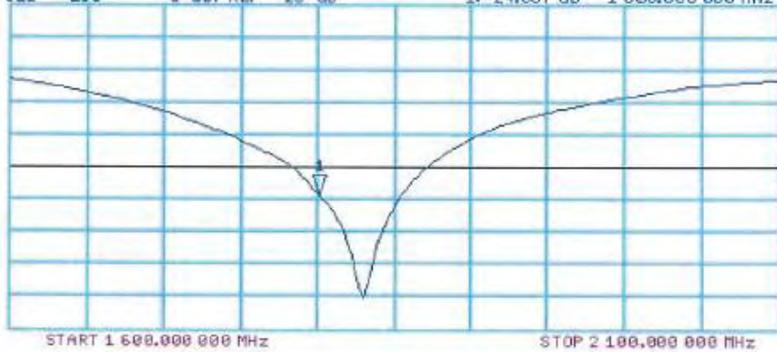
15 Jun 2010 08:33:52  
CH1 S11 1 U FS 1: 46.482  $\Omega$  -4.9473  $\Omega$  17.872 pF 1 800.000 000 MHz

\*  
De1  
Cor  
avg  
16



CH2 S11 LOG 5 dB/REF -20 dB 1:-24.037 dB 1 800.000 000 MHz

Cor  
avg  
15



**DASY5 Validation Report for Body**

Date/Time: 15.06.2010 12:04:36

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN:2d052**

Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: MSL U11 BB

Medium parameters used:  $f = 1800$  MHz;  $\sigma = 1.48$  mho/m;  $\epsilon_r = 53.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.74, 4.74, 4.74); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASYS2, V52.2 Build 0, Version 52.2.0 (163)
- Postprocessing SW: SEMCAD X, V14.2 Build 2, Version 14.2.2 (1685)

**Pin250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 94.1 V/m; Power Drift = 0.018 dB

Peak SAR (extrapolated) = 16.1 W/kg

**SAR(1 g) = 9.56 mW/g; SAR(10 g) = 5.17 mW/g**

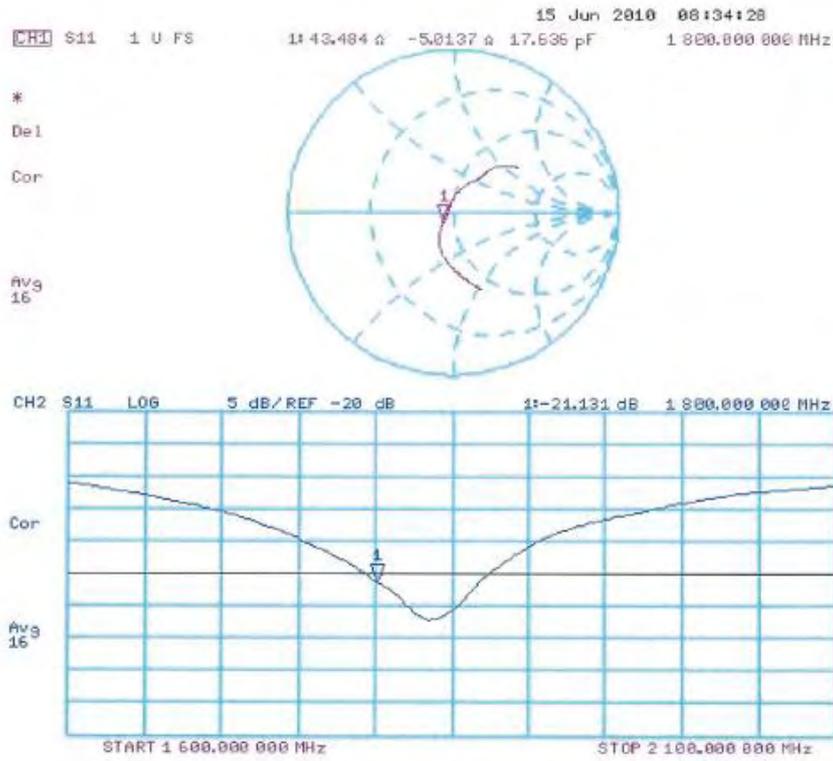
Maximum value of SAR (measured) = 11.8 mW/g



0 dB = 11.8mW/g



### Impedance Measurement Plot for Body TSL





Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland



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Accreditation No.: SCS 108

Client Auden

Certificate No: D1900V2-5d018\_Jun10

CALIBRATION CERTIFICATE

Object: D1900V2 - SN: 5d018
Calibration procedure(s): QA CAL-05.v7 Calibration procedure for dipole validation kits
Calibration date: June 15, 2010

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Table with 4 columns: Primary Standards, ID #, Cal Date (Certificate No.), Scheduled Calibration. Includes items like Power meter EPM-442A, Power sensor HP 8481A, Reference 20 dB Attenuator, etc.

Calibrated by: Dimce Iliev, Laboratory Technician
Approved by: Katja Pokovic, Technical Manager

Issued: June 17, 2010

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

**Calibration Laboratory of  
Schmid & Partner  
Engineering AG**  
Zeughausstrasse 43, 8004 Zurich, Switzerland



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Accreditation No.: **SCS 108**

**Glossary:**

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

**Calibration is Performed According to the Following Standards:**

- IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

**Additional Documentation:**

- DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

- Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:* SAR measured at the stated antenna input power.
- SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.



### Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz $\pm$ 1 MHz	

### Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	39.6 $\pm$ 6 %	1.44 mho/m $\pm$ 6 %
Head TSL temperature during test	(22.5 $\pm$ 0.2) °C	----	----

### SAR result with Head TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	10.0 mW / g
SAR normalized	normalized to 1W	40.0 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	<b>39.2 mW /g <math>\pm</math> 17.0 % (k=2)</b>

SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.22 mW / g
SAR normalized	normalized to 1W	20.9 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	<b>20.7 mW /g <math>\pm</math> 16.5 % (k=2)</b>