FCC SAR Test Report

Report No.	:	**SA120405C14**
Applicant	:	**Fujitsu Mobile Communications Ltd.**
Address	:	**1-1, Kamikodanaka 4-chome, Nakahara-ku Kawasaki 211-8588, Japan**
Product	:	**CDMA FJI13**
FCC ID	:	**YUW-FJI13**
Brand	:	**Fujitsu Mobile Communications Ltd.**
Model No.	:	**FJI13**
Standards	:	**FCC 47 CFR Part 2 (2.1093) / IEEE C95.1:1991 / IEEE 1528:2003** **FCC OET Bulletin 65 Supplement C (Edition 01-01)** **KDB 248227 D01 v01r02 / KDB 648474 D01 v01r05** **KDB 941225 D01 v02 / KDB 941225 D03 v01 / KDB 941225 D06 v01**
Date of Testing	:	**Apr. 29, 2012 ~ May 01, 2012**

CERTIFICATION: The above equipment have been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch - Taiwan HwaYa Lab**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's SAR characteristics under the conditions specified in this report.

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Release Control Record

Issue No.	Reason for Change	Date Issued
R01	Original release	May 25, 2012

1. Summary of Maximum SAR Value

Mode / Band	Test Position	SAR-1g (W/kg)
GSM1900	Head	0.128
	Body Worn (1 cm Gap)	0.305
	Hotspot Mode (1 cm Gap)	0.305
WCDMA Band V	Head	0.244
	Body Worn (1 cm Gap)	0.287
	Hotspot Mode (1 cm Gap)	0.417
CDMA2000 BC0	Head	0.347
	Body Worn (1 cm Gap)	0.405
	Hotspot Mode (1 cm Gap)	0.59
WLAN	Head	N/A
	Body Worn (1 cm Gap)	N/A
	Hotspot Mode (1 cm Gap)	N/A
Bluetooth	Head	N/A
	Body Worn (1 cm Gap)	N/A
	Hotspot Mode (1 cm Gap)	N/A

Note:

1. The SAR limit **(1.6 W/kg)** for general population/uncontrolled exposure is specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1991.
2. According to KDB 648474, SAR testing for WLAN/Bluetooth is not required because the separation distance between WWAN antennas to WLAN/Bluetooth antenna is larger than 5 cm, and WLAN/Bluetooth maximum power is less than $2P_{Ref}$.

2. Description of Equipment Under Test

EUT Type	CDMA FJI13
FCC ID	YUW-FJI13
Brand Name	Fujitsu Mobile Communications Ltd.
Model Name	FJI13
Tx Frequency Bands (Unit: MHz)	GSM1900 : 1850 ~ 1910 WCDMA Band V : 824 ~ 849 CDMA2000 BC0 : 824 ~ 849 WLAN : 2400 ~ 2483.5, 5150 ~ 5350, 5470 ~ 5725 Bluetooth : 2400 ~ 2483.5
Uplink Modulations	GSM & GPRS : GMSK WCDMA : QPSK CDMA2000 : QPSK 802.11b : DSSS 802.11a/g/n : OFDM Bluetooth : GFSK
Maximum AVG Conducted Power (Unit: dBm)	GSM1900 : 29.20 WCDMA Band V : 23.36 CDMA2000 BC0 : 24.93 802.11b : 13.03 802.11g : 12.61 802.11n HT20 (2.4GHz) : 12.42 802.11a : 8.14 802.11n HT20 (5GHz) : 8.02 Bluetooth : 8.29
Antenna Type	Fixed Internal Antenna (Peak Gain: -3.2 dBi for 2.4GHz Band, -3.5 dBi for 5GHz Band)
EUT Stage	Identical Prototype

Note:

1. The above EUT information is declared by manufacturer and for more detailed features description please refers to the manufacturer's specifications or User's Manual.

List of Accessory:

AC Adapter	**Brand Name**	HOSHIDEN
	Model Name	0204PTA
	Power Rating	I/P:100-240Vac, 220mA; O/P: 5.0Vdc, 600mA
Battery	**Brand Name**	Panasonic
	Model Name	FJI13UAA
	Power Rating	3.7Vdc, 1800mAh
	Type	Li-ion
LCD Panel	**Brand Name**	TMD
	Model Name	LT046MDY0000
Camera 1	**Brand Name**	SONY
	Model Name	IU091F-Z
Camera 2	**Brand Name**	SAMSUNG
	Model Name	S5K6AAFX13
WLAN/BT Module	**Brand Name**	TI
	Model Name	WL1283
WiMAX Module	**Brand Name**	Broadcom
	Model Name	BCSM350

3. SAR Measurement System

3.1 Definition of Specific Absorption Rate (SAR)

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.

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

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

SAR is expressed in units of Watts per kilogram (W/kg)
SAR measurement can be related to the electrical field in the tissue by

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

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

3.2 SPEAG DASY System

DASY system consists of high precision robot, probe alignment sensor, phantom, robot controller, controlled measurement server and near-field probe. The robot includes six axes that can move to the precision position of the DASY4/5 software defined. The DASY software can define the area that is detected by the probe. The robot is connected to controlled box. Controlled measurement server is connected to the controlled robot box. The DAE includes amplifier, signal multiplexing, AD converter, offset measurement and surface detection. It is connected to the Electro-optical coupler (ECO). The ECO performs the conversion form the optical into digital electric signal of the DAE and transfers data to the PC.

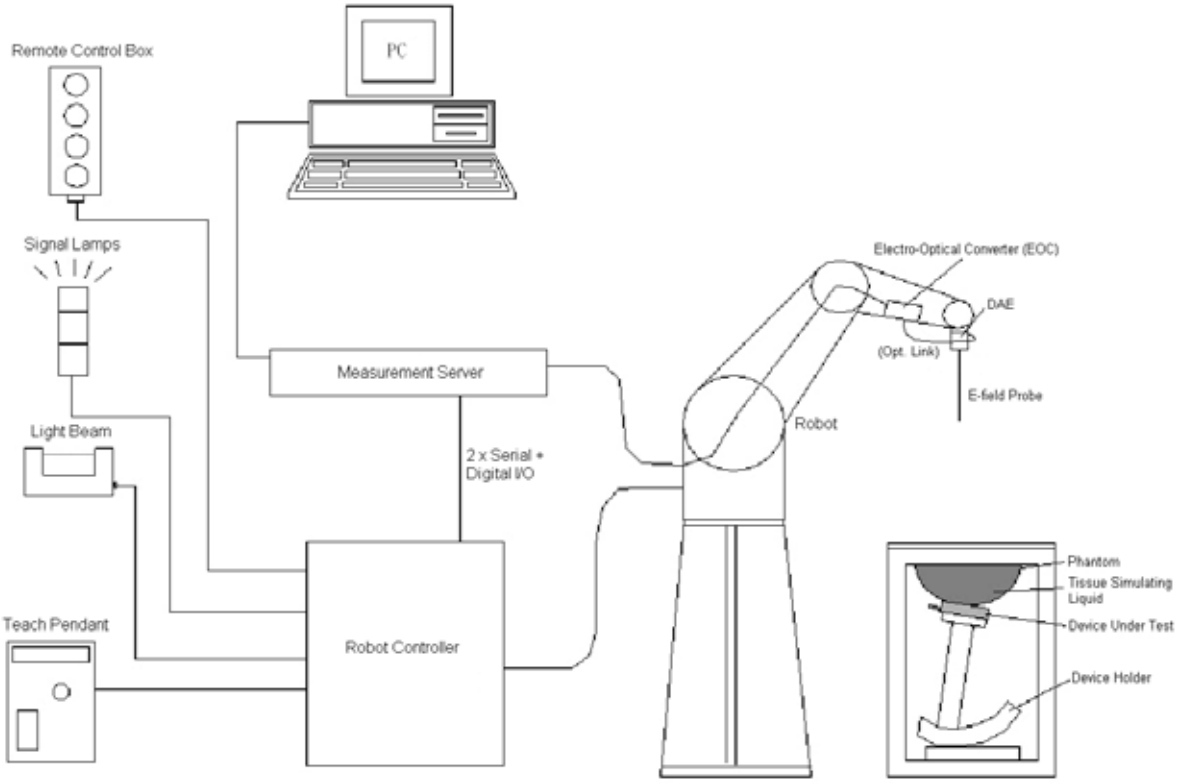


Fig-3.1 DASY System Setup

3.2.1 Robot

The DASY system uses the high precision robots 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 ±0.035 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)

Fig-3.2 DASY4

Fig-3.3 DASY5

3.2.2 Probes

The SAR measurement is conducted with the dosimetric probe. 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.

Model	EX3DV4	
Construction	Symmetrical design with triangular core. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE).	
Frequency	10 MHz to 6 GHz Linearity: ± 0.2 dB	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	10 µW/g to 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)	
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	

Model	ES3DV3	
Construction	Symmetrical design with triangular core. Interleaved sensors. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE).	
Frequency	10 MHz to 4 GHz Linearity: ± 0.2 dB	
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.3 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	5 µW/g to 100 mW/g Linearity: ± 0.2 dB	
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 3.9 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.0 mm	

3.2.3 Data Acquisition Electronics (DAE)

Model	DAE3, DAE4	
Construction	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY4/5 embedded system (fully remote controlled). Two step probe touch detector for mechanical surface detection and emergency robot stop.	
Measurement Range	-100 to +300 mV (16 bit resolution and two range settings: 4mV, 400mV)	
Input Offset Voltage	< 5µV (with auto zero)	
Input Bias Current	< 50 fA	
Dimensions	60 x 60 x 68 mm	

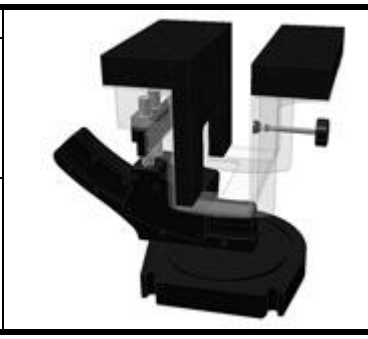
3.2.4 Phantoms

Model	Twin SAM	
Construction	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.	
Material	Vinylester, glass fiber reinforced (VE-GF)	
Shell Thickness	2 ± 0.2 mm (6 ± 0.2 mm at ear point)	
Dimensions	Length: 1000 mm Width: 500 mm Height: adjustable feet	
Filling Volume	approx. 25 liters	

Model	ELI	
Construction	Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.	
Material	Vinylester, glass fiber reinforced (VE-GF)	
Shell Thickness	2.0 ± 0.2 mm (bottom plate)	
Dimensions	Major axis: 600 mm Minor axis: 400 mm	
Filling Volume	approx. 30 liters	

3.2.5 Device Holder

Model	Mounting Device	
Construction	In combination with the Twin SAM Phantom or ELI4, the Mounting Device enables the rotation of the mounted transmitter device in spherical coordinates. Rotation point is the ear opening point. Transmitter devices can be easily and accurately positioned according to IEC, IEEE, FCC or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat).	
Material	POM	

Model	Laptop Extensions Kit	
Construction	Simple but effective and easy-to-use extension for Mounting Device that facilitates the testing of larger devices according to IEC 62209-2 (e.g., laptops, cameras, etc.). It is lightweight and fits easily on the upper part of the Mounting Device in place of the phone positioner.	
Material	POM, Acrylic glass, Foam	

3.2.6 System Validation Dipoles

Model	D-Serial	
Construction	Symmetrical dipole with l/4 balun. Enables measurement of feed point impedance with NWA. Matched for use near flat phantoms filled with tissue simulating solutions.	
Frequency	750 MHz to 5800 MHz	
Return Loss	> 20 dB	
Power Capability	> 100 W (f < 1GHz), > 40 W (f > 1GHz)	

3.2.7 Tissue Simulating Liquids

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15 cm. 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. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm. The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 5% are listed in Table-3.1.

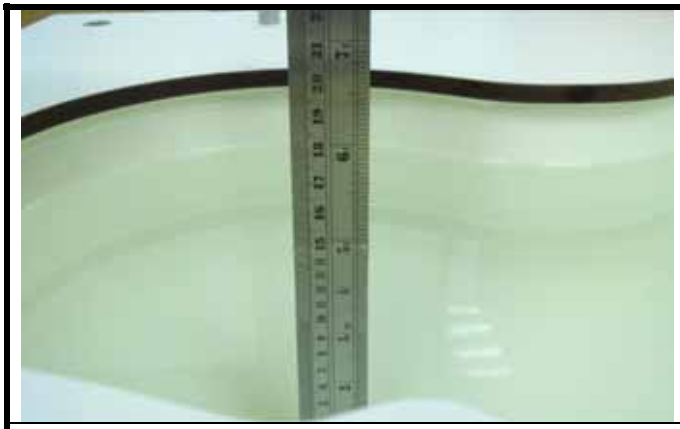


Photo of Liquid Height for Head Position

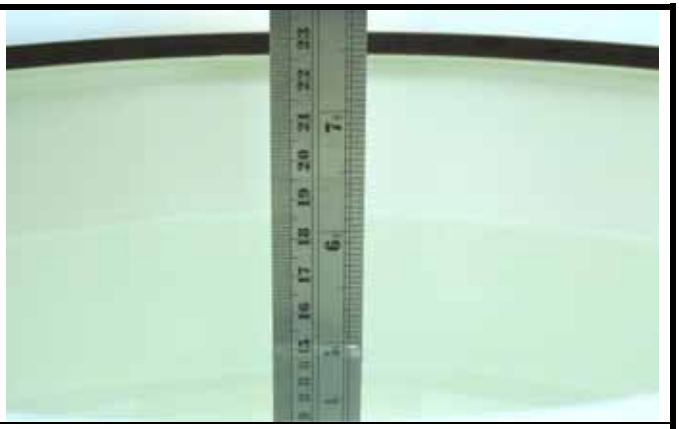


Photo of Liquid Height for Body Position

The dielectric properties of the head tissue simulating liquids are defined in IEEE 1528 and FCC OET 65 Supplement C Appendix C. For the body tissue simulating liquids, the dielectric properties are defined in FCC OET 65 Supplement C Appendix C. The dielectric properties of the tissue simulating liquids were verified prior to the SAR evaluation using an Agilent 85070D Dielectric Probe Kit and an Agilent Network Analyzer.

Table-3.1 Targets of Tissue Simulating Liquid

Frequency (MHz)	Target Permittivity	Range of ±5%	Target Conductivity	Range of ±5%
For Head				
835	41.5	39.4 ~ 43.6	0.90	0.86 ~ 0.95
1900	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
For Body				
835	55.2	52.4 ~ 58.0	0.97	0.92 ~ 1.02
1900	53.3	50.6 ~ 56.0	1.52	1.44 ~ 1.60

The following table gives the recipes for tissue simulating liquids.

Table-3.2 Recipes of Tissue Simulating Liquid

Tissue Type	Bactericide	DGBE	HEC	NaCl	Sucrose	Triton X-100	Water	Diethylene Glycol Mono-hexylether
H835	0.2	-	0.2	1.5	57.0	-	41.1	-
H1900	-	44.5	-	0.2	-	-	55.3	-
B835	0.2	-	0.2	0.9	48.5	-	50.2	-
B1900	-	29.5	-	0.3	-	-	70.2	-

3.3 SAR System Verification

The system check verifies that the system operates within its specifications. It is performed daily or before every SAR measurement. The system check uses normal SAR measurements in the flat section of the phantom with a matched dipole at a specified distance. The system verification setup is shown as below.

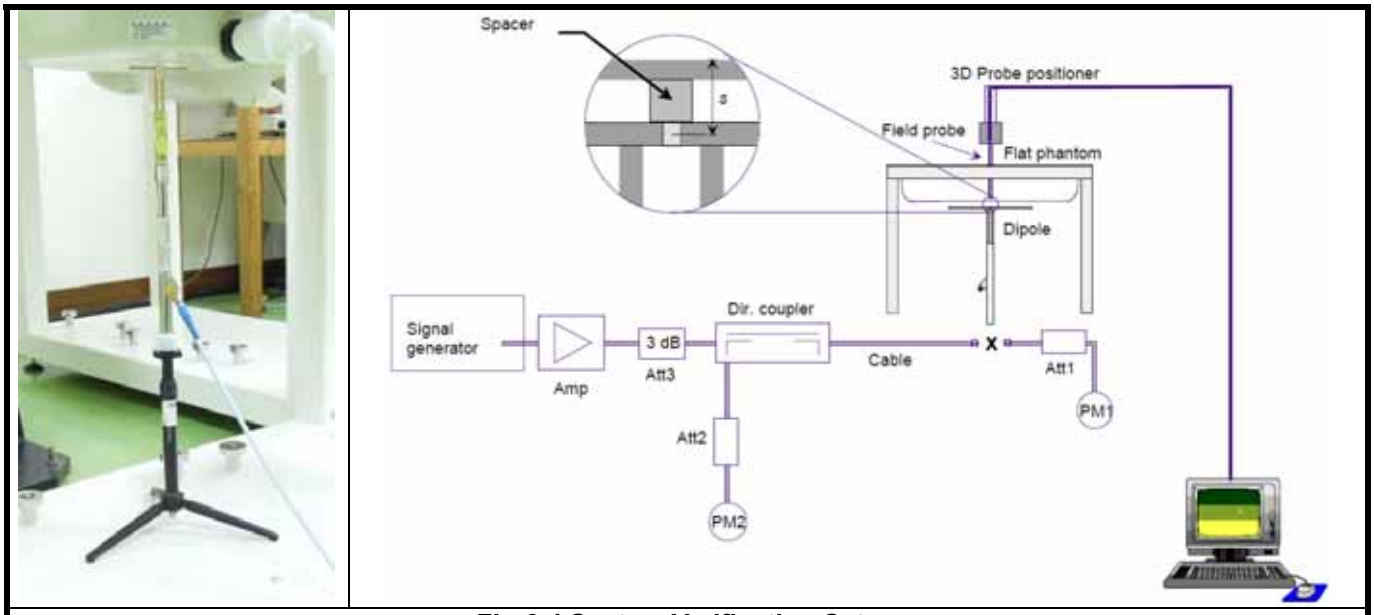


Fig-3.4 System Verification Setup

The validation dipole is placed beneath the flat phantom with the specific spacer in place. The distance spacer is touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The power meter PM1 measures the forward power at the location of the system check dipole connector. The signal generator is adjusted for the desired forward power (250 mW is used for 700 MHz to 3 GHz, 100 mW is used for 3.5 GHz to 6 GHz) at the dipole connector and the power meter PM2 is read at that level. After connecting the cable to the dipole, the signal generator is readjusted for the same reading at power meter PM2.

After system check testing, the SAR result will be normalized to 1W forward input power and compared with the reference SAR value derived from validation dipole certificate report. The deviation of system check should be within 10 %.

3.4 SAR Measurement Procedure

According to the SAR 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

The SAR measurement procedures for each of test conditions are as follows:

(a) Make EUT to transmit maximum output power
(b) Measure conducted output power through RF cable
(c) Place the EUT in the specific position of phantom
(d) Perform SAR testing steps on the DASY system
(e) Record the SAR value

3.4.1 Area & Zoom Scan Procedure

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 below 3 GHz, and 7x7x9 points with step size 4, 4 and 2.5 mm for above 5 GHz. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g.

3.4.2 Volume Scan Procedure

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

3.4.3 Power Drift Monitoring

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

3.4.4 Spatial Peak SAR Evaluation

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

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

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

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

3.4.5 SAR Averaged Methods

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

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

4. SAR Measurement Evaluation

4.1 EUT Configuration and Setting

For WWAN SAR testing, the EUT was linked and controlled by base station emulator. Communication between the EUT and the emulator was established by air link. The distance between the EUT and the communicating antenna of the emulator is larger than 50 cm and the output power radiated from the emulator antenna is at least 30 dB smaller than the output power of EUT. The EUT was set from the emulator to radiate maximum output power during SAR testing.

4.2 EUT Testing Position

This EUT was tested in **Right Cheek**, **Right Tilted**, **Left Cheek**, **Left Tilted**, **Front Face**, **Rear Face**, **Left Side**, **Right Side**, and **Bottom Side** positions as illustrated below. The separation distance between EUT and phantom for body SAR is 1.0 cm.

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.

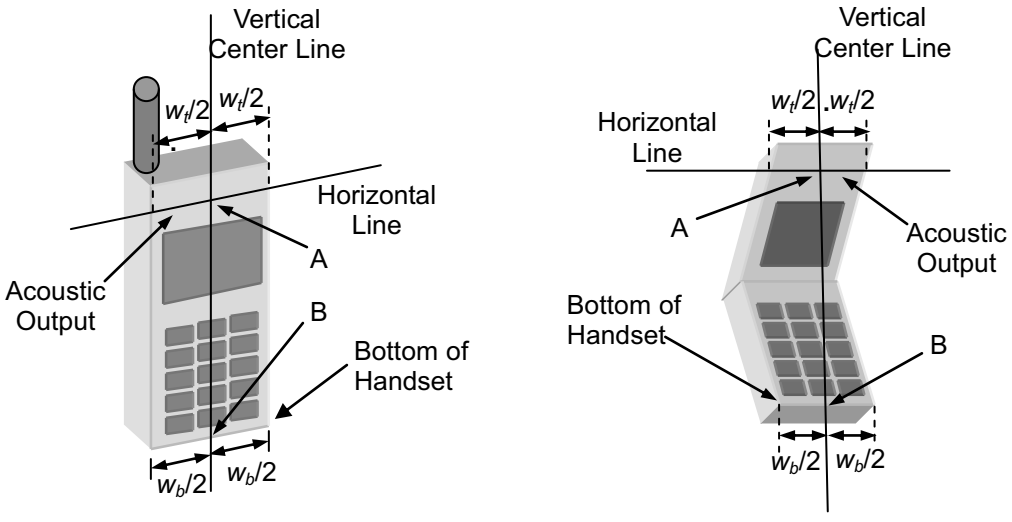


Fig-4.1 Illustration for Handset Vertical and Horizontal Reference Lines

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-4.2).

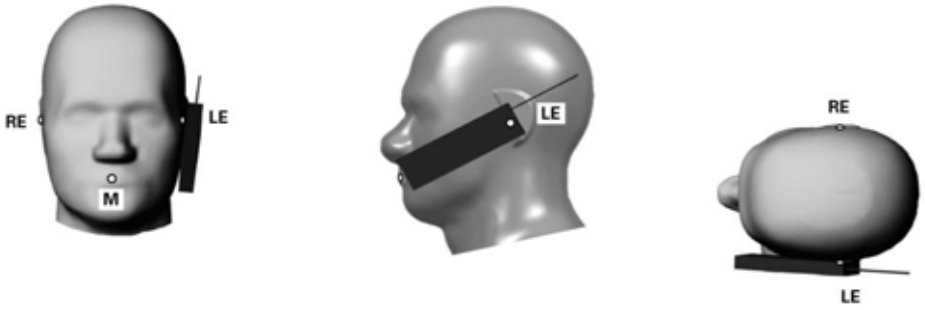


Fig-4.2 Illustration for Cheek Position

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-4.3).

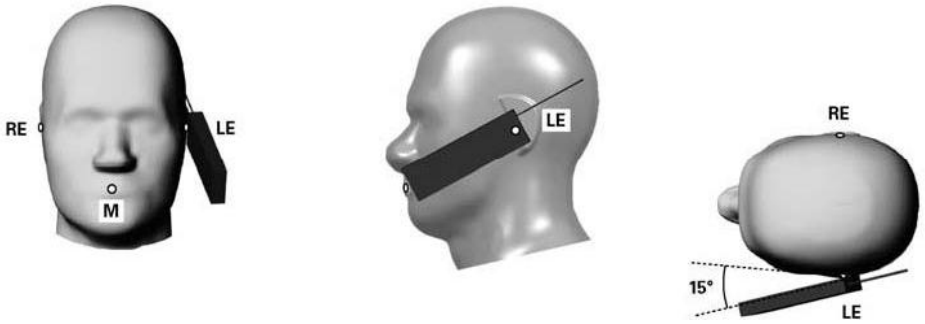


Fig-4.3 Illustration for Tilted Position

4. Body Worn Position

(a) To position the EUT parallel to the phantom surface.

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

(c) To adjust the distance between the EUT surface and the flat phantom to 1 cm.

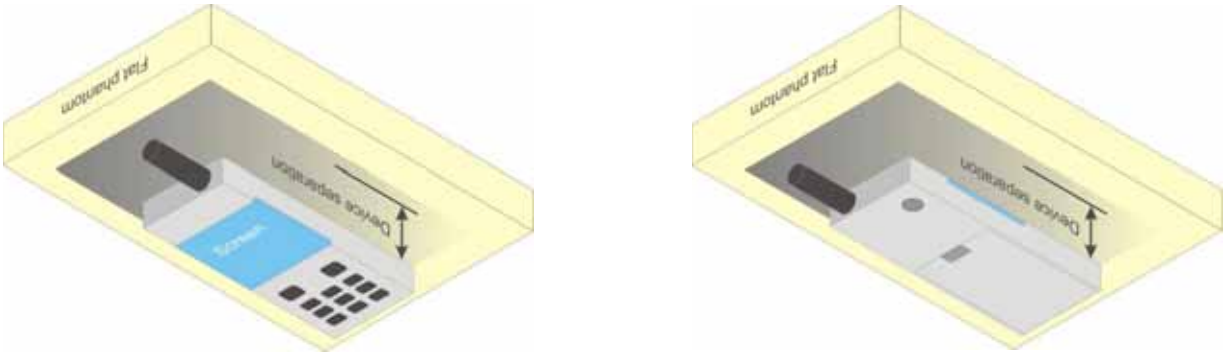


Fig-4.4 Illustration for Body Worn Position

4.3 Tissue Verification

The measuring results for tissue simulating liquid are shown as below.

Tissue Type	Frequency (MHz)	Liquid Temp. (℃)	Measured Conductivity (σ)	Measured Permittivity (ε_r)	Target Conductivity (σ)	Target Permittivity (ε_r)	Conductivity Deviation (%)	Permittivity Deviation (%)	Test Date
H835	835	21.7	0.890	41.4	0.90	41.5	-1.11	-0.24	Apr. 29, 2012
B835	835	21.5	0.994	56.0	0.97	55.2	2.47	1.45	Apr. 30, 2012
H1900	1900	21.5	1.42	41.5	1.40	40.0	1.43	3.75	Apr. 29, 2012
B1900	1900	20.7	1.55	54.3	1.52	53.3	1.97	1.88	May 01, 2012

Note:

The dielectric properties of the tissue simulating liquid must be measured within 24 hours before the SAR testing and within ±5% of the target values. Liquid temperature during the SAR testing must be within ±2 ℃.

4.4 System Verification

The measuring results for system check are shown as below.

Test Date	Frequency (MHz)	1W Target SAR-1g (W/kg)	Measured SAR-1g (W/kg)	Normalized to 1W SAR-1g (W/kg)	Deviation (%)	Dipole S/N	Probe S/N	DAE S/N
Apr. 29, 2012	835	9.52	2.36	9.44	-0.84	4d092	3650	1277
Apr. 30, 2012	835	9.65	2.45	9.80	1.55	4d092	3650	1277
Apr. 29, 2012	1900	38.90	9.41	37.64	-3.24	5d036	3650	1277
May 01, 2012	1900	38.90	10.00	40.00	2.83	5d036	3650	1277

Note:

Comparing to the reference SAR value provided by SPEAG, the validation data should be within its specification of 10 %. The result indicates the system check can meet the variation criterion and the plots can be referred to Appendix A of this report.

4.5 Conducted Power Results

The measuring conducted power (Unit: dBm) are shown as below.

Band	GSM1900		
Channel	512	661	810
Frequency (MHz)	1850.2	1880.0	1909.8
Maximum Burst-Averaged Output Power			
GSM (GMSK, 1 slot)	29.11	29.00	29.20
GPRS 8 (GMSK, 1 slot)	29.03	29.00	29.14
GPRS 10 (GMSK, 2 slot)	26.21	26.23	26.09
GPRS 11 (GMSK, 3 slot)	24.51	24.52	24.51
GPRS 12 (GMSK, 4 slot)	23.30	23.50	23.29
Maximum Frame-Averaged Output Power			
GSM (GMSK, 1 slot)	20.11	20.00	20.20
GPRS 8 (GMSK, 1 slot)	20.03	20.00	20.14
GPRS 10 (GMSK, 2 slot)	20.21	20.23	20.09
GPRS 11 (GMSK, 3 slot)	20.25	20.26	20.25
GPRS 12 (GMSK, 4 slot)	20.30	20.50	20.29

Note: Body SAR testing was performed on the maximum frame-averaged power mode.

Band	WCDMA Band V		
Channel	4132	4182	4233
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	23.19	23.36	23.36
HSDPA Subtest-1	22.12	22.20	22.32
HSDPA Subtest-2	20.15	20.18	20.31
HSDPA Subtest-3	19.80	19.81	19.94
HSDPA Subtest-4	19.69	19.65	19.85
HSUPA Subtest-1	19.67	19.56	19.81
HSUPA Subtest-2	20.71	20.62	20.82
HSUPA Subtest-3	18.66	18.74	18.91
HSUPA Subtest-4	21.04	21.02	21.13
HSUPA Subtest-5	19.97	19.93	20.06

Band	CDMA2000 BC0		
Channel	1013	384	777
Frequency (MHz)	824.70	836.52	848.31
RC1+SO55	24.79	24.91	24.62
RC3+SO55	24.79	24.92	24.55
RC3+SO32 (FCH)	24.82	24.90	24.55
RC3+SO32 (FCH+SCH)	24.81	24.93	24.53

Band	802.11b			802.11g		
Channel	1	6	11	1	6	11
Frequency (MHz)	2412	2437	2462	2412	2437	2462
Average Power	12.81	13.03	12.70	12.49	12.61	12.16

Band	802.11n (HT20)					
Channel	1	6	11	-	-	-
Frequency (MHz)	2412	2437	2462	-	-	-
Average Power	12.12	12.42	12.02	-	-	-

Band	802.11a							
Channel	36	40	44	48	52	56	60	64
Frequency (MHz)	5180	5200	5220	5240	5260	5280	5300	5320
Average Power	8.14	8.11	8.02	7.94	7.92	7.91	7.87	7.65

Band	802.11a							
Channel	100	104	108	112	116	132	136	140
Frequency (MHz)	5500	5520	5540	5560	5580	5660	5680	5700
Average Power	7.95	7.91	7.85	7.77	7.89	7.64	7.90	7.76

Band	802.11n (HT20)							
Channel	36	40	44	48	52	56	60	64
Frequency (MHz)	5180	5200	5220	5240	5260	5280	5300	5320
Average Power	8.02	7.99	7.84	7.82	7.75	7.74	7.68	7.68

Band	802.11n (HT20)							
Channel	100	104	108	112	116	132	136	140
Frequency (MHz)	5500	5520	5540	5560	5580	5660	5680	5700
Average Power	7.86	7.77	7.82	7.76	7.78	7.78	7.74	7.74

4.6 SAR Testing Results

4.6.1 SAR Results for Head

Plot No.	Band	Mode	Test Position	Channel	SAR-1g (W/kg)
5	GSM1900	GSM	Right Cheek	810	0.121
6	GSM1900	GSM	Right Tilted	810	0.042
7	GSM1900	GSM	Left Cheek	810	**0.128**
8	GSM1900	GSM	Left Tilted	810	0.059
9	WCDMA V	RMC12.2K	Right Cheek	4182	**0.244**
10	WCDMA V	RMC12.2K	Right Tilted	4182	0.15
11	WCDMA V	RMC12.2K	Left Cheek	4182	0.208
12	WCDMA V	RMC12.2K	Left Tilted	4182	0.143
1	CDMA2000 BC0	RC3+SO55	Right Cheek	384	**0.347**
2	CDMA2000 BC0	RC3+SO55	Right Tilted	384	0.217
3	CDMA2000 BC0	RC3+SO55	Left Cheek	384	0.29
4	CDMA2000 BC0	RC3+SO55	Left Tilted	384	0.198

Note:

1. SAR testing for RC1 is not required because the maximum power of RC1 is less than 1/4 dB higher than RC3.

4.6.2 SAR Results for Body

<Body Worn Mode>

Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Channel	SAR-1g (W/kg)
29	GSM1900	GPRS12	Front Face	1	661	0.204
30	GSM1900	GPRS12	Rear Face	1	661	**0.305**
40	WCDMA V	RMC12.2K	Front Face	1	4182	0.232
41	WCDMA V	RMC12.2K	Rear Face	1	4182	**0.287**
18	CDMA2000 BC0	RC3+SO32	Front Face	1	384	0.314
19	CDMA2000 BC0	RC3+SO32	Rear Face	1	384	**0.405**

Note:
1. SAR testing for FCH+SCH is not required because the maximum power of FCH+SCH is less than 1/4 dB higher than FCH only.

<Hotspot Mode>

Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Channel	SAR-1g (W/kg)
22	GSM1900	GPRS12	Front Face	1	661	0.199
23	GSM1900	GPRS12	Rear Face	1	661	**0.305**
24	GSM1900	GPRS12	Left Side	1	661	0.058
25	GSM1900	GPRS12	Right Side	1	661	0.066
26	GSM1900	GPRS12	Bottom Side	1	661	0.235
33	WCDMA V	RMC12.2K	Front Face	1	4182	0.325
34	WCDMA V	RMC12.2K	Rear Face	1	4182	**0.417**
36	WCDMA V	RMC12.2K	Left Side	1	4182	0.296
35	WCDMA V	RMC12.2K	Right Side	1	4182	0.409
37	WCDMA V	RMC12.2K	Bottom Side	1	4182	0.09
13	CDMA2000 BC0	RC3+SO32	Front Face	1	384	0.43
14	CDMA2000 BC0	RC3+SO32	Rear Face	1	384	0.553
15	CDMA2000 BC0	RC3+SO32	Left Side	1	384	0.431
16	CDMA2000 BC0	RC3+SO32	Right Side	1	384	**0.59**
17	CDMA2000 BC0	RC3+SO32	Bottom Side	1	384	0.134

Note:
1. SAR testing for FCH+SCH is not required because the maximum power of FCH+SCH is less than 1/4 dB higher than FCH only.

Test Engineer：Sam Onn, and Isaac Liao

4.6.3 Simultaneous Multi-band Transmission Evaluation

According to KDB 648474, the simultaneous transmission SAR for WWAN and WLAN/BT was not required, because the closest separation distance of these antennas is larger than 5 cm and the output power of WLAN/Bluetooth is less than $2P_{Ref}$.

5. Calibration of Test Equipment

Equipment	Manufacturer	Model	SN	Cal. Date	Cal. Interval
System Validation Kit	SPEAG	D835V2	4d092	Jun. 22, 2011	Annual
System Validation Kit	SPEAG	D1900V2	5d036	Jan. 26, 2012	Annual
Dosimetric E-Field Probe	SPEAG	EX3DV4	3650	Oct. 26, 2011	Annual
Data Acquisition Electronics	SPEAG	DAE4	1277	Jul. 29, 2011	Annual
SAM Phantom	SPEAG	QD000P40CD	TP-1652	N/A	N/A
SAM Phantom	SPEAG	QD000P40CD	TP-1654	N/A	N/A
Radio Communication Tester	Agilent	E5515C	MY50266628	Sep. 26, 2011	Biennial
ENA Series Network Analyzer	Agilent	E5071C	MY46107999	Mar. 24, 2012	Annual
Signal Generator	Agilent	E8257C	MY43320668	Dec. 20, 2011	Annual
Power Meter	Anritsu	ML2487A	6K00001571	May 25, 2011	Annual
Power Sensor	Anritsu	MA2491A	030954	May 25, 2011	Annual
Dielectric Probe Kit	Agilent	85070D	N/A	N/A	N/A
Thermometer	YFE	YF-160A	110600361	Feb. 21, 2012	Annual

6. Measurement Uncertainty

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (1g)	Standard Uncertainty (1g)	Vi
Measurement System						
Probe Calibration	6.0	Normal	1	1	± 6.0 %	∞
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	0.6	Normal	1	1	± 0.6 %	∞
Response Time	0.0	Rectangular	√3	1	± 0.0 %	∞
Integration Time	1.7	Rectangular	√3	1	± 1.0 %	∞
RF Ambient Noise	3.0	Rectangular	√3	1	± 1.7 %	∞
RF Ambient Reflections	3.0	Rectangular	√3	1	± 1.7 %	∞
Probe Positioner	0.5	Rectangular	√3	1	± 0.3 %	∞
Probe Positioning	2.9	Rectangular	√3	1	± 1.7 %	∞
Max. SAR Eval.	2.3	Rectangular	√3	1	± 1.3 %	∞
Test Sample Related						
Device Positioning	3.9	Normal	1	1	± 3.9 %	31
Device Holder	2.7	Normal	1	1	± 2.7 %	19
Power Drift	5.0	Rectangular	√3	1	± 2.9 %	∞
Phantom and Setup						
Phantom Uncertainty	4.0	Rectangular	√3	1	± 2.3 %	∞
Liquid Conductivity (Target)	5.0	Rectangular	√3	0.64	± 1.8 %	∞
Liquid Conductivity (Meas.)	5.0	Normal	1	0.64	± 3.2 %	29
Liquid Permittivity (Target)	5.0	Rectangular	√3	0.6	± 1.7 %	∞
Liquid Permittivity (Meas.)	5.0	Normal	1	0.6	± 3.0 %	29
Combined Standard Uncertainty					± 11.7 %	
Expanded Uncertainty (K=2)					**± 23.4 %**	

Uncertainty budget for frequency range 300 MHz to 3 GHz

7. Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

Copies of accreditation and authorization certificates of our laboratories obtained from approval agencies can be downloaded from our web site. If you have any comments, please feel free to contact us at the following:

Taiwan HwaYa EMC/RF/Safety/Telecom Lab:
Add: No. 19, Hwa Ya 2nd Rd, Wen Hwa Vil., Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.
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Fax: 886-3-327-0892

Taiwan LinKo EMC/RF Lab:
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Fax: 886-2-2605-1924

Taiwan HsinChu EMC/RF Lab:
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Tel: 886-3-593-5343
Fax: 886-3-593-5342

Email: service.adt@tw.bureauveritas.com
Web Site: www.adt.com.tw

The road map of all our labs can be found in our web site also.

---END---

Appendix A. SAR Plots of System Verification

The plots for system verification are shown as follows.

System Check_H835_120429

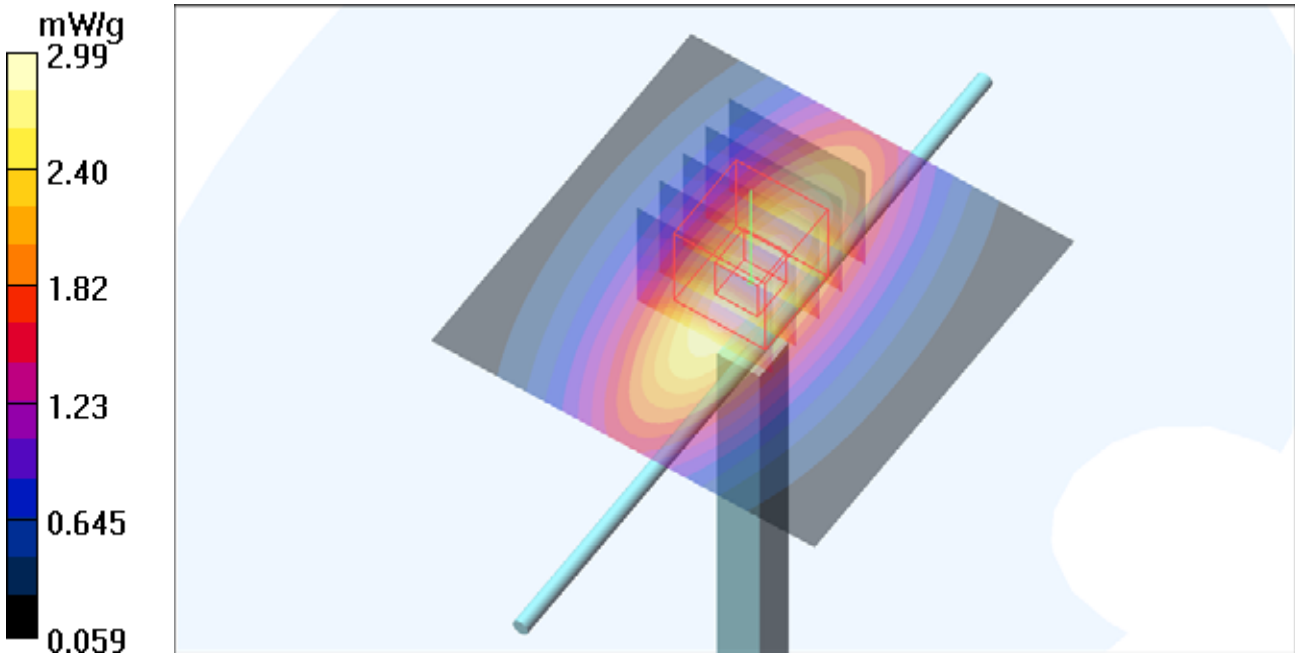
DUT: Dipole 835 MHz; Type: D835V2; SN: 4d092

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: H835_0429 Medium parameters used: f = 835 MHz; σ = 0.89 mho/m; ε_r = 41.4; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.7 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(8.87, 8.87, 8.87); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Front; Type: SAM V4.0; Serial: TP 1654
- 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) = 2.99 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 56.0 V/m; Power Drift = -0.017 dB
Peak SAR (extrapolated) = 3.46 W/kg
SAR(1 g) = 2.36 mW/g; SAR(10 g) = 1.56 mW/g
Maximum value of SAR (measured) = 2.98 mW/g



System Check_B835_120430

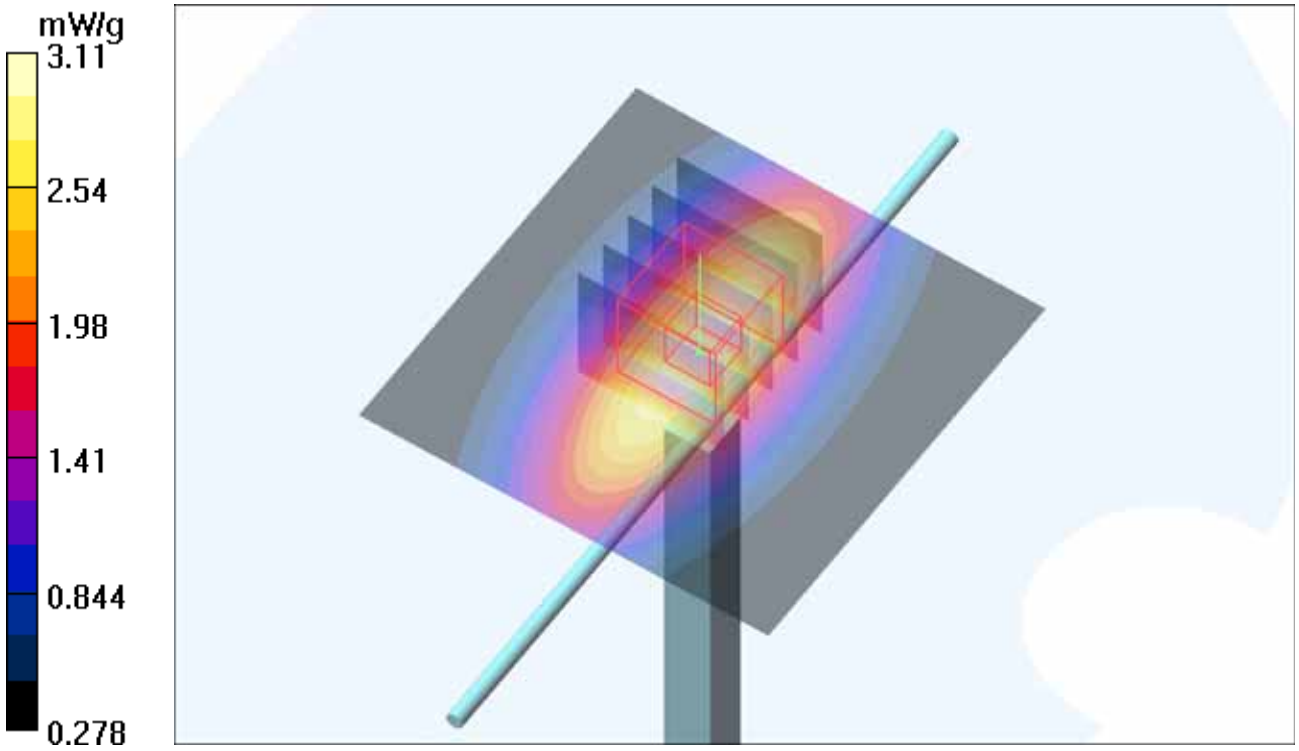
DUT: Dipole 835 MHz; Type: D835V2; SN: 4d092

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: B835_0430 Medium parameters used: f = 835 MHz; σ = 0.994 mho/m; ε_r = 56; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.12, 9.12, 9.12); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Left; Type: SAM V4.0; Serial: TP 1652
- 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) = 3.11 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 53.8 V/m; Power Drift = -0.015 dB
Peak SAR (extrapolated) = 3.63 W/kg
SAR(1 g) = 2.45 mW/g; SAR(10 g) = 1.62 mW/g
Maximum value of SAR (measured) = 3.11 mW/g



System Check_H1900_120429

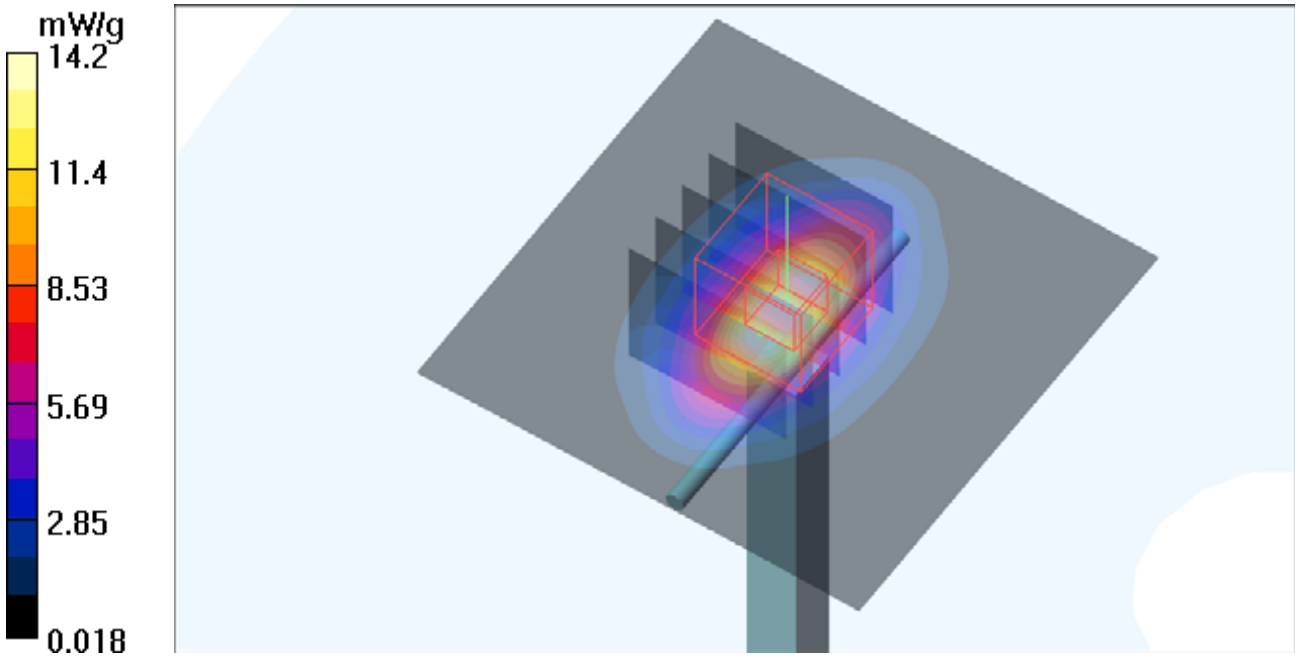
DUT: Dipole 1900 MHz; Type: D1900V2; SN: 5d036

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: H1900_0429 Medium parameters used: f = 1900 MHz; σ = 1.42 mho/m; ε_r = 41.5; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.4, 7.4, 7.4); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Left; Type: SAM V4.0; Serial: TP 1652
- 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) = 14.2 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 99.7 V/m; Power Drift = 0.014 dB
Peak SAR (extrapolated) = 17.9 W/kg
SAR(1 g) = 9.41 mW/g; SAR(10 g) = 4.85 mW/g
Maximum value of SAR (measured) = 13.7 mW/g



System Check_B1900_120501

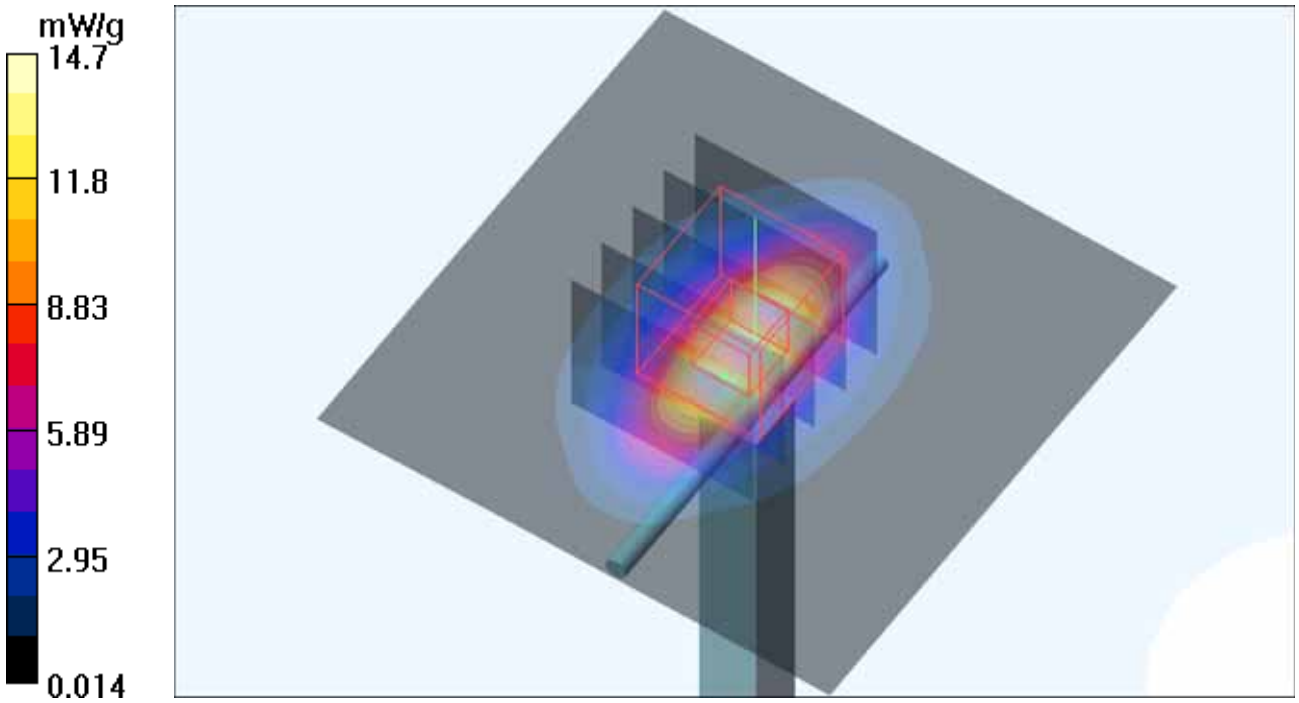
DUT: Dipole 1900 MHz; Type: D1900V2; SN: 5d036

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: B1900_0501 Medium parameters used: f = 1900 MHz; σ = 1.55 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Ambient Temperature：21.8 ℃; Liquid Temperature：20.7 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.46, 7.46, 7.46); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Front; Type: SAM V4.0; Serial: TP 1654
- 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) = 14.7 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 97.8 V/m; Power Drift = 0.004 dB
Peak SAR (extrapolated) = 18.1 W/kg
SAR(1 g) = 10 mW/g; SAR(10 g) = 5.2 mW/g
Maximum value of SAR (measured) = 14.2 mW/g



Appendix B. SAR Plots of SAR Measurement

The plots for SAR measurement are shown as follows.

P05 GSM1900_Right Cheek_Ch810

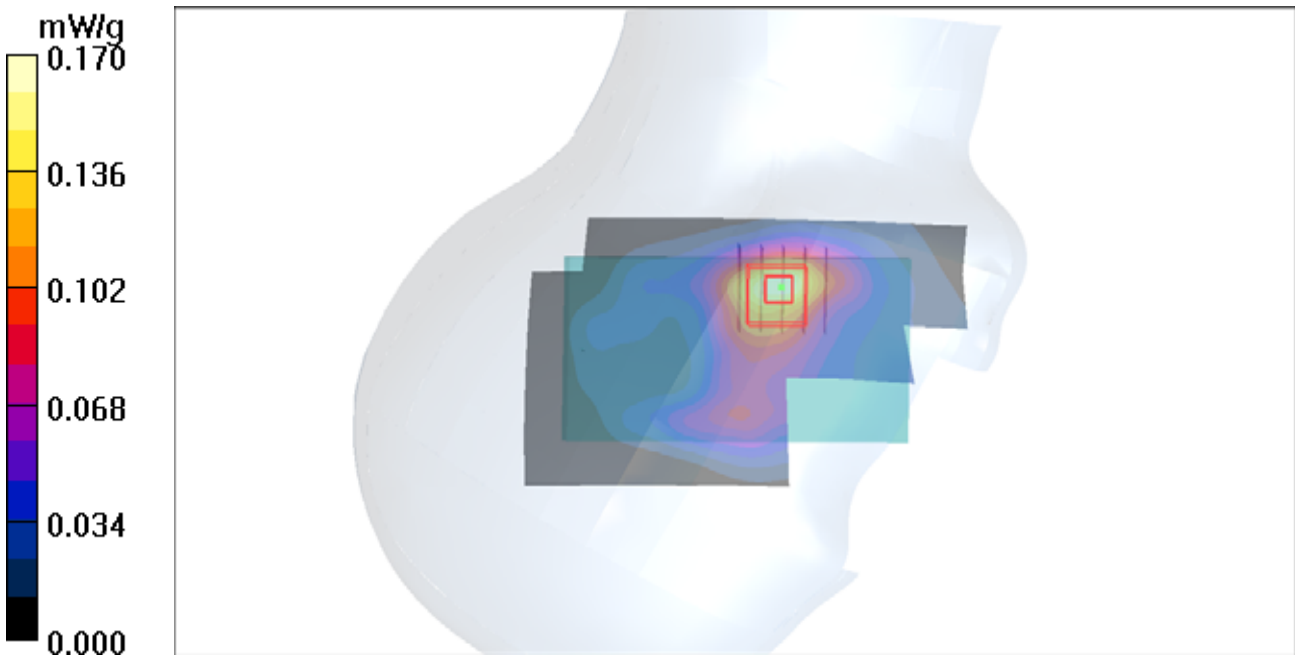
DUT: 120405C14

Communication System: GSM1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: H1900_0429 Medium parameters used: f = 1910 MHz; σ = 1.43 mho/m; ε_r = 41.5; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.4, 7.4, 7.4); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Left; Type: SAM V4.0; Serial: TP 1652
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch810/Area Scan (51x81x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.170 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.27 V/m; Power Drift = 0.174 dB
Peak SAR (extrapolated) = 0.194 W/kg
SAR(1 g) = 0.121 mW/g; SAR(10 g) = 0.073 mW/g
Maximum value of SAR (measured) = 0.159 mW/g



P06 GSM1900_Right Tilted_Ch810

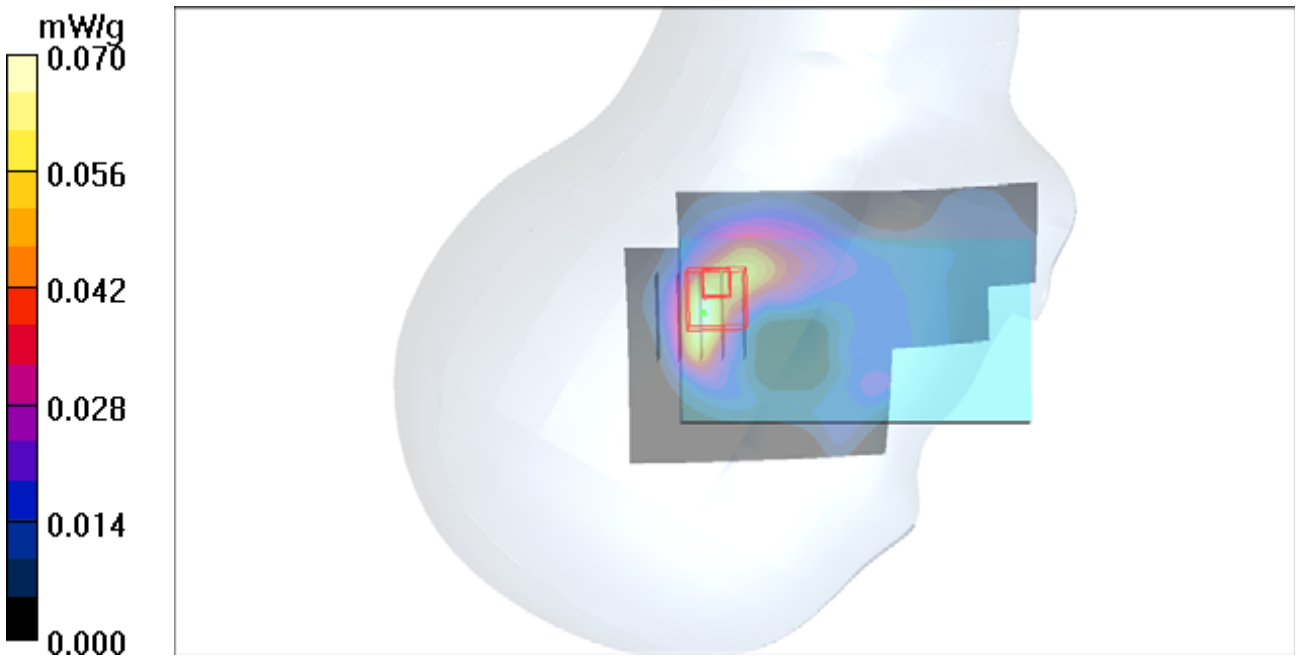
DUT: 120405C14

Communication System: GSM1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: H1900_0429 Medium parameters used: f = 1910 MHz; σ = 1.43 mho/m; ε_r = 41.5; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.4, 7.4, 7.4); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Left; Type: SAM V4.0; Serial: TP 1652
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch810/Area Scan (51x81x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.070 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.94 V/m; Power Drift = -0.192 dB
Peak SAR (extrapolated) = 0.068 W/kg
SAR(1 g) = 0.042 mW/g; SAR(10 g) = 0.024 mW/g
Maximum value of SAR (measured) = 0.056 mW/g



P07 GSM1900_Left Cheek_Ch810

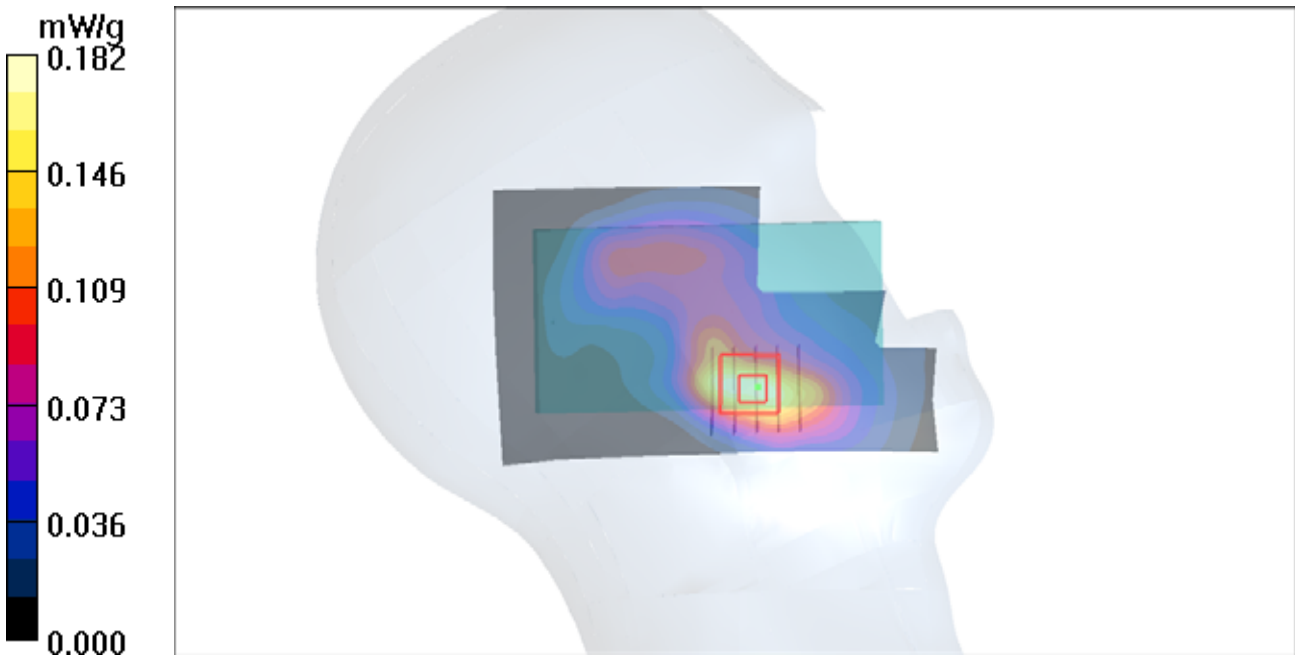
DUT: 120405C14

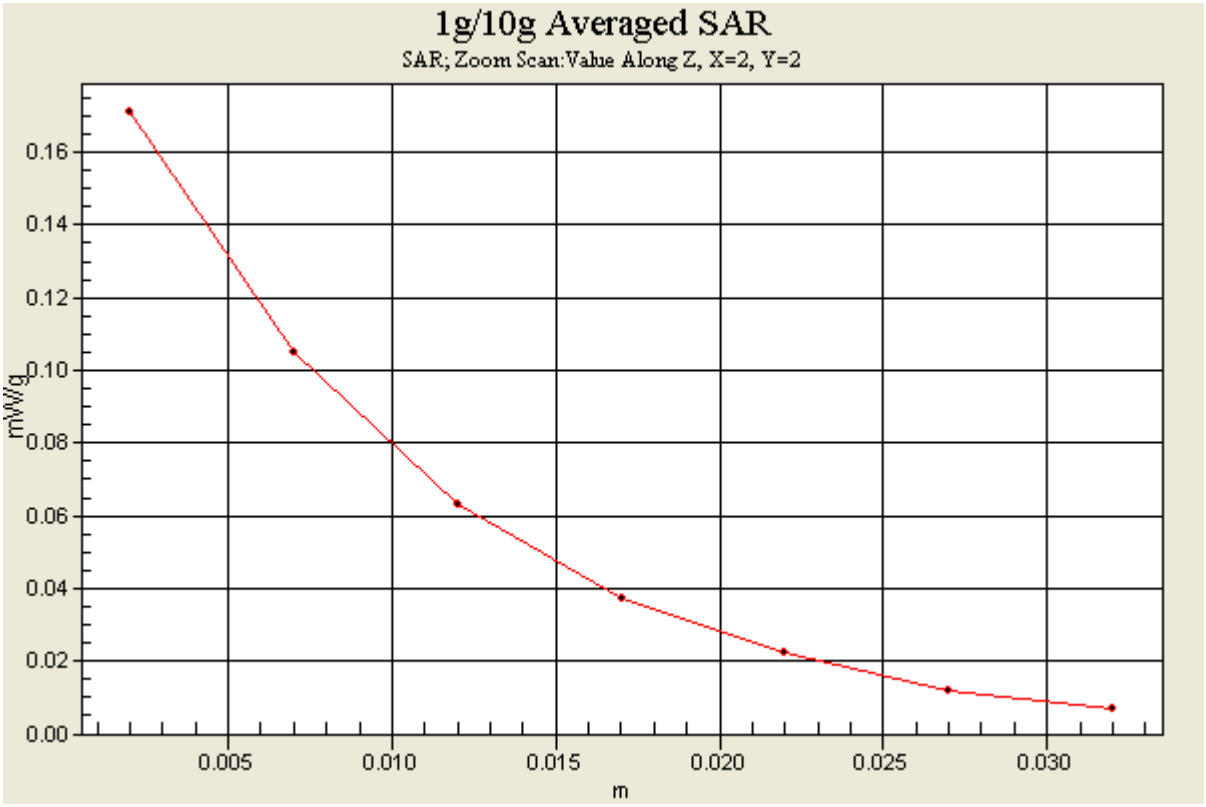
Communication System: GSM1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: H1900_0429 Medium parameters used: f = 1910 MHz; σ = 1.43 mho/m; ε_r = 41.5; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.4, 7.4, 7.4); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Left; Type: SAM V4.0; Serial: TP 1652
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch810/Area Scan (51x81x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.182 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.94 V/m; Power Drift = 0.048 dB
Peak SAR (extrapolated) = 0.211 W/kg
SAR(1 g) = 0.128 mW/g; SAR(10 g) = 0.075 mW/g
Maximum value of SAR (measured) = 0.171 mW/g




1g/10g Averaged SAR
SAR; Zoom Scan:Value Along Z, X=2, Y=2
mW/g
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
0.005
0.010
0.015
0.020
0.025
0.030
m

P08 GSM1900_Left Tilted_Ch810

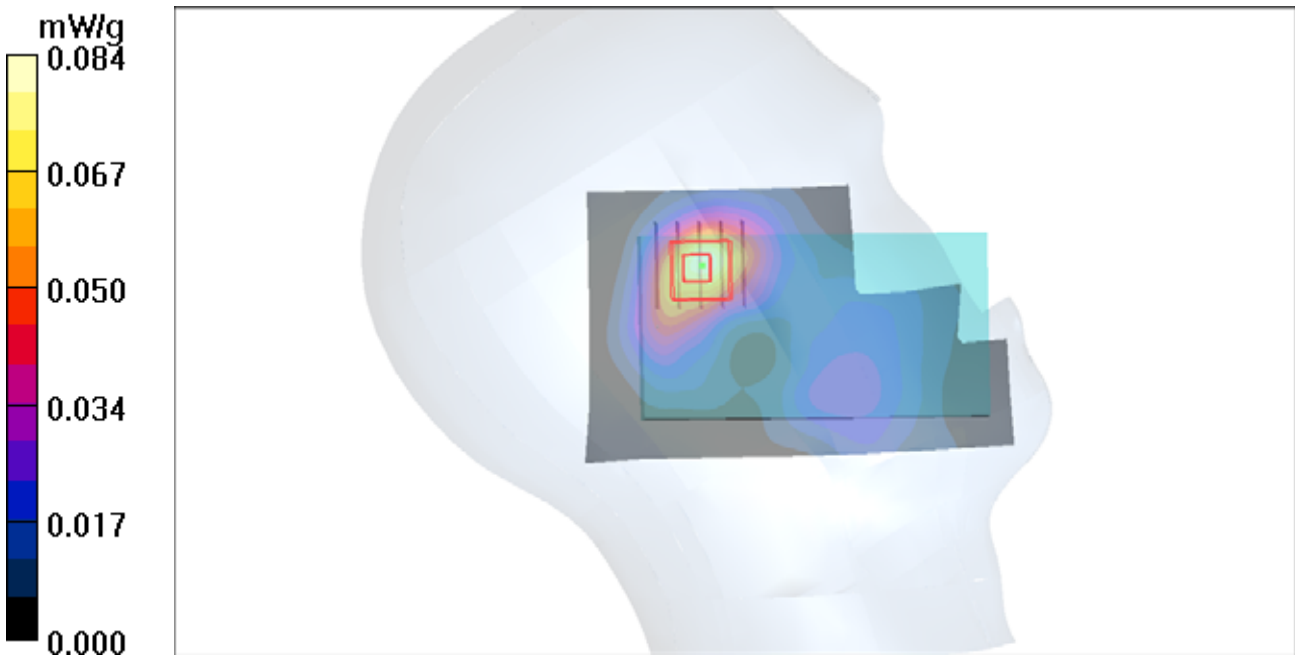
DUT: 120405C14

Communication System: GSM1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: H1900_0429 Medium parameters used: f = 1910 MHz; σ = 1.43 mho/m; ε_r = 41.5; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.4, 7.4, 7.4); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Left; Type: SAM V4.0; Serial: TP 1652
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch810/Area Scan (51x81x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.084 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.69 V/m; Power Drift = -0.173 dB
Peak SAR (extrapolated) = 0.095 W/kg
SAR(1 g) = 0.059 mW/g; SAR(10 g) = 0.034 mW/g
Maximum value of SAR (measured) = 0.078 mW/g



P09 WCDMA V_RMC12.2K_Right Cheek_Ch4182

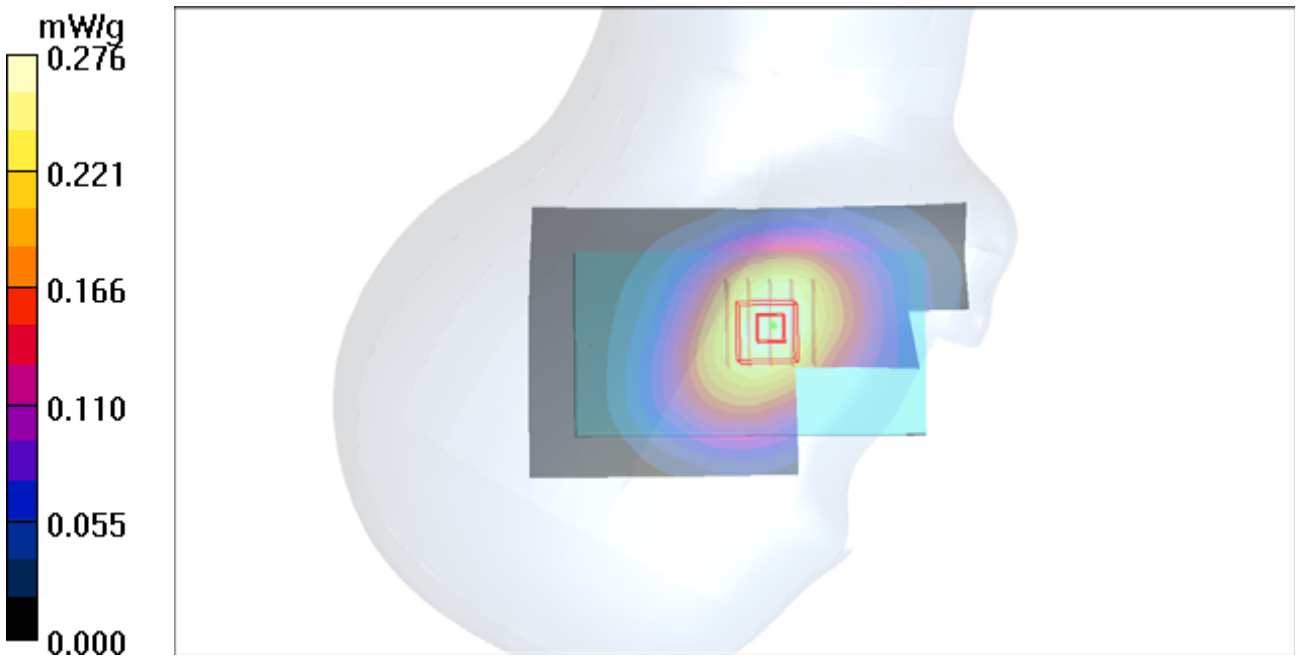
DUT: 120405C14

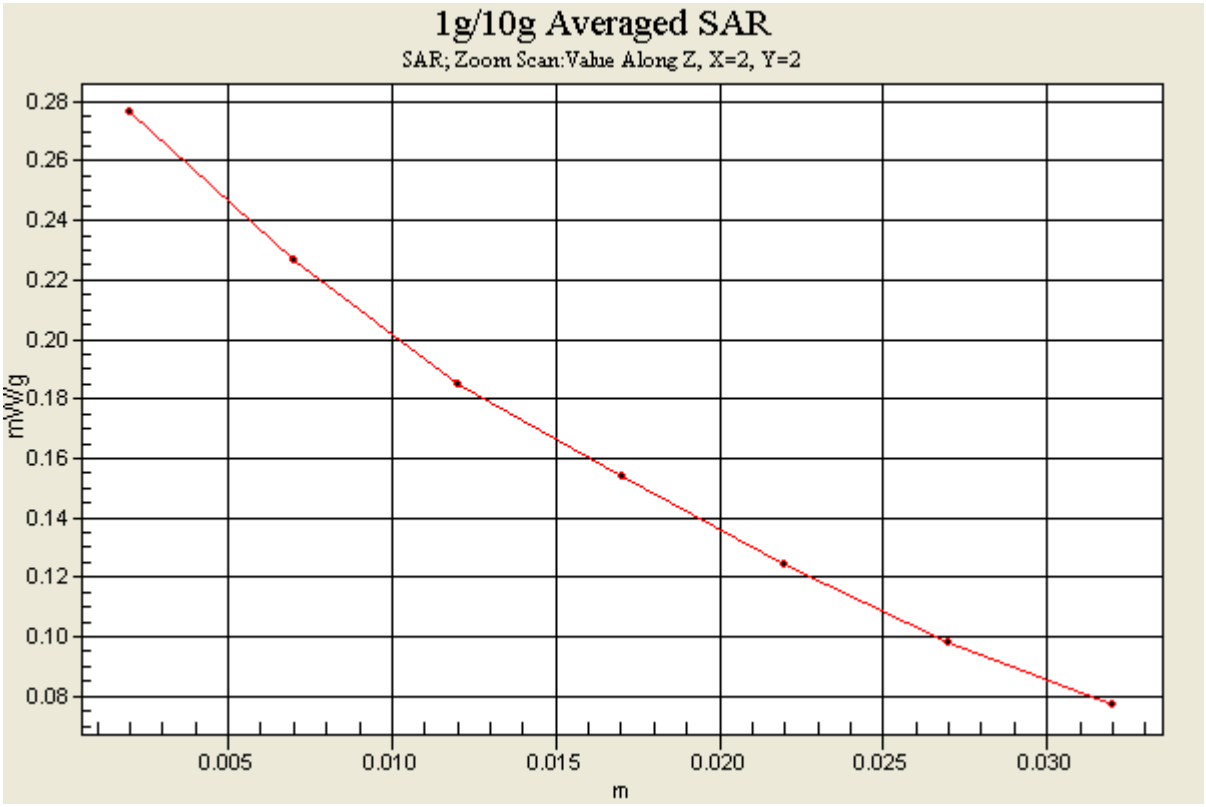
Communication System: WCDMA V; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: H835_0429 Medium parameters used : f = 836.4 MHz; σ = 0.892 mho/m; ε_r = 41.4; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃； Liquid Temperature：21.7 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(8.87, 8.87, 8.87); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Front; Type: SAM V4.0; Serial: TP 1654
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch4182/Area Scan (51x81x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.276 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.08 V/m; Power Drift = -0.171 dB
Peak SAR (extrapolated) = 0.298 W/kg
SAR(1 g) = 0.244 mW/g; SAR(10 g) = 0.189 mW/g
Maximum value of SAR (measured) = 0.276 mW/g




1g/10g Averaged SAR
SAR; Zoom Scan:Value Along Z, X=2, Y=2
mW/g
0.28
0.26
0.24
0.22
0.20
0.18
0.16
0.14
0.12
0.10
0.08
0.005
0.010
0.015
0.020
0.025
0.030
m

P10 WCDMA V_RMC12.2K_Right Tilted_Ch4182

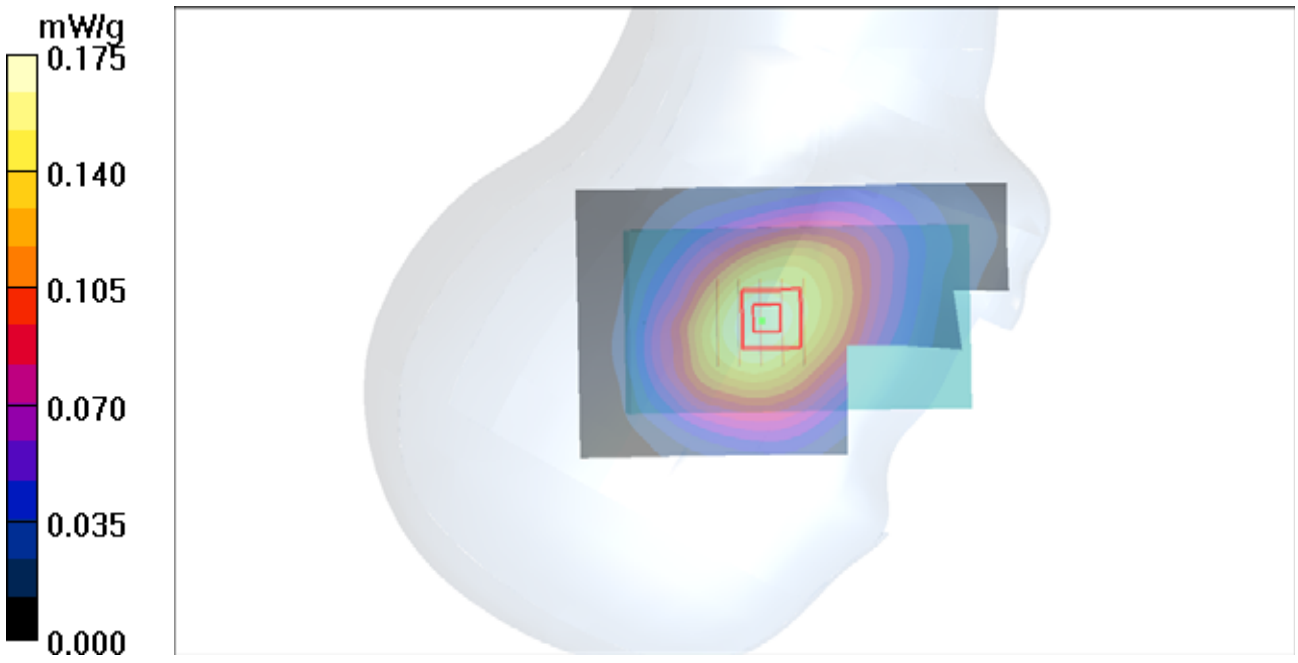
DUT: 120405C14

Communication System: WCDMA V; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: H835_0429 Medium parameters used : f = 836.4 MHz; σ = 0.892 mho/m; ε_r = 41.4; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.7 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(8.87, 8.87, 8.87); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Front; Type: SAM V4.0; Serial: TP 1654
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch4182/Area Scan (51x81x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.175 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.61 V/m; Power Drift = -0.188 dB
Peak SAR (extrapolated) = 0.181 W/kg
SAR(1 g) = 0.150 mW/g; SAR(10 g) = 0.118 mW/g
Maximum value of SAR (measured) = 0.167 mW/g



P11 WCDMA V_RMC12.2K_Left Cheek_Ch4182

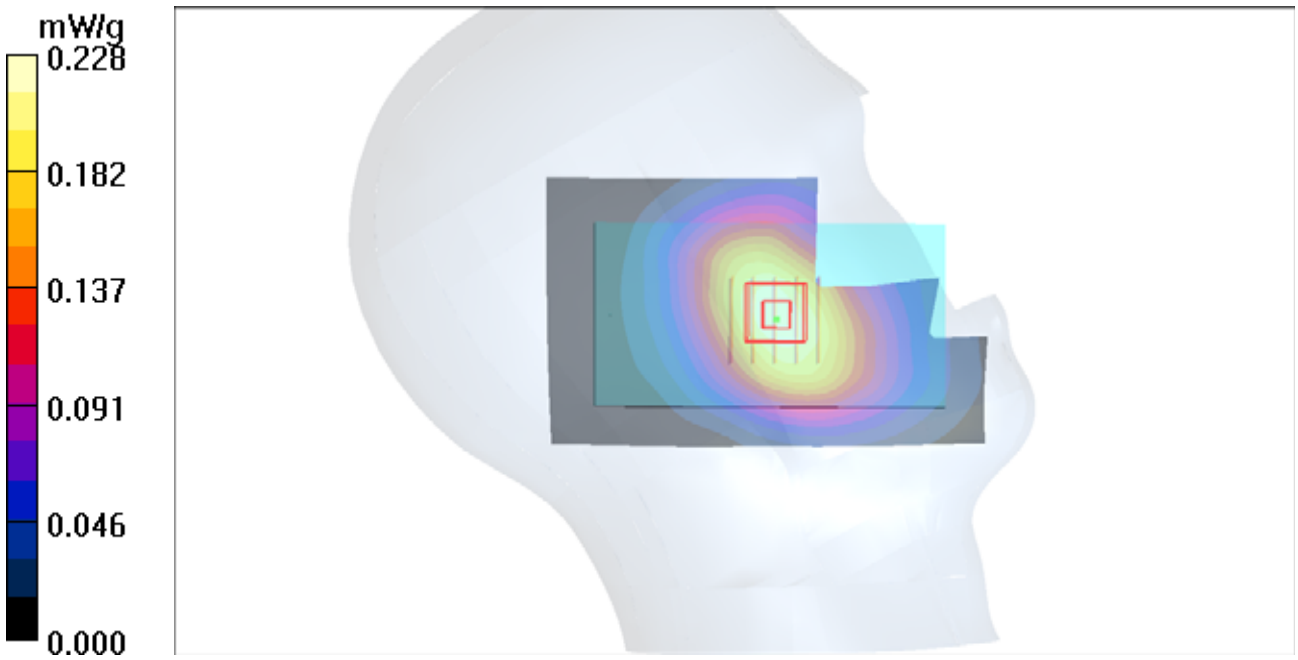
DUT: 120405C14

Communication System: WCDMA V; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: H835_0429 Medium parameters used : f = 836.4 MHz; σ = 0.892 mho/m; ε_r = 41.4; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃； Liquid Temperature：21.7 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(8.87, 8.87, 8.87); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Front; Type: SAM V4.0; Serial: TP 1654
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch4182/Area Scan (51x81x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.228 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.79 V/m; Power Drift = -0.173 dB
Peak SAR (extrapolated) = 0.256 W/kg
SAR(1 g) = 0.208 mW/g; SAR(10 g) = 0.159 mW/g
Maximum value of SAR (measured) = 0.238 mW/g



P12 WCDMA V_RMC12.2K_Left Tilted_Ch4182

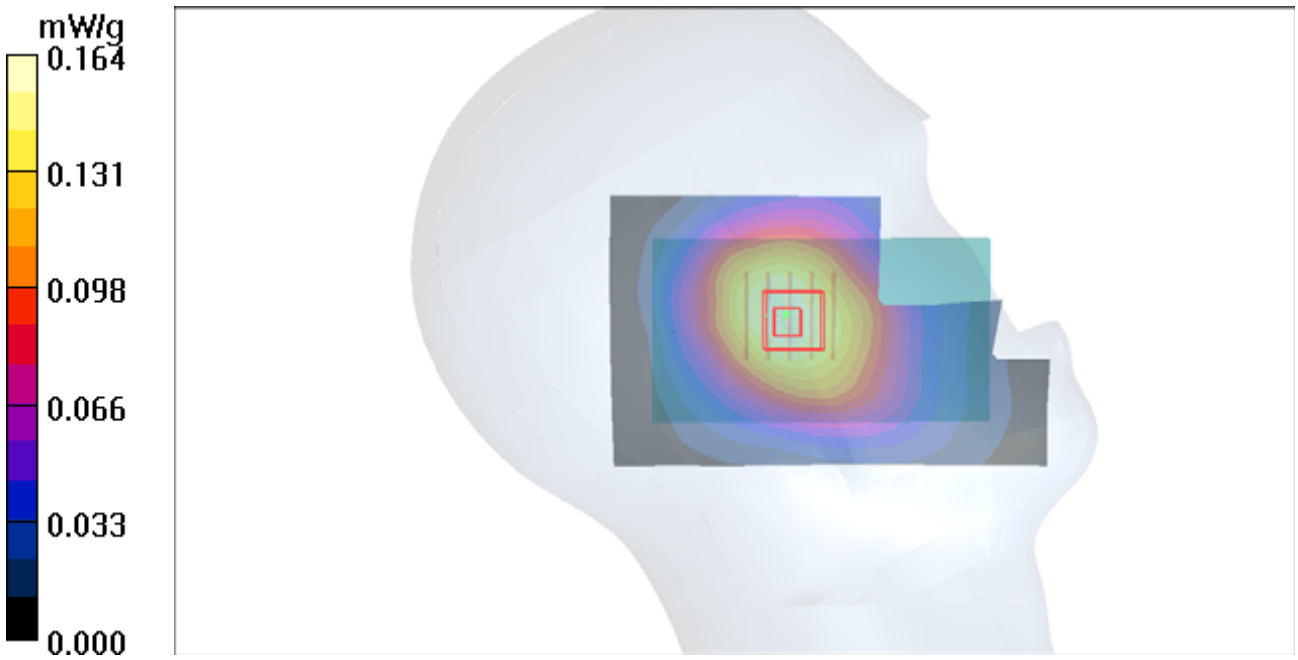
DUT: 120405C14

Communication System: WCDMA V; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: H835_0429 Medium parameters used : f = 836.4 MHz; σ = 0.892 mho/m; ε_r = 41.4; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.7 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(8.87, 8.87, 8.87); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Front; Type: SAM V4.0; Serial: TP 1654
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch4182/Area Scan (51x81x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.164 mW/g

Ch4182/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) = 0.173 W/kg
SAR(1 g) = 0.143 mW/g; SAR(10 g) = 0.112 mW/g
Maximum value of SAR (measured) = 0.160 mW/g



P01 CDMA2000 BC0_RC3+SO55_Right Cheek_Ch384

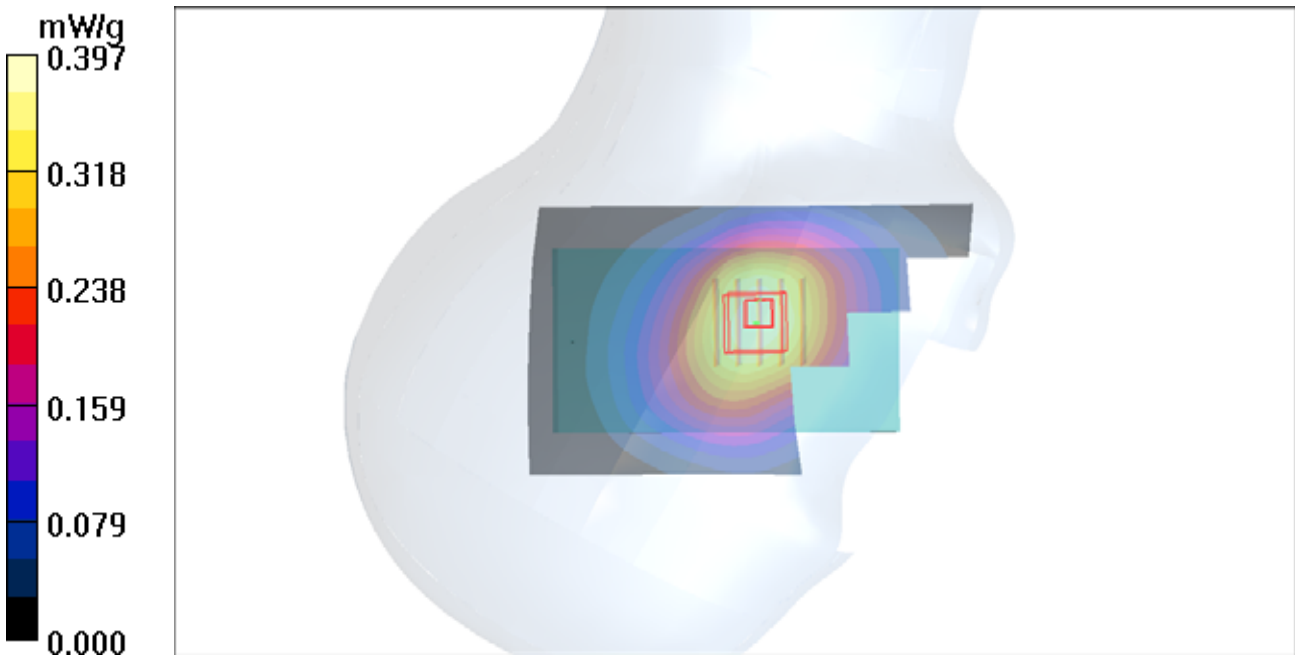
DUT: 120405C14

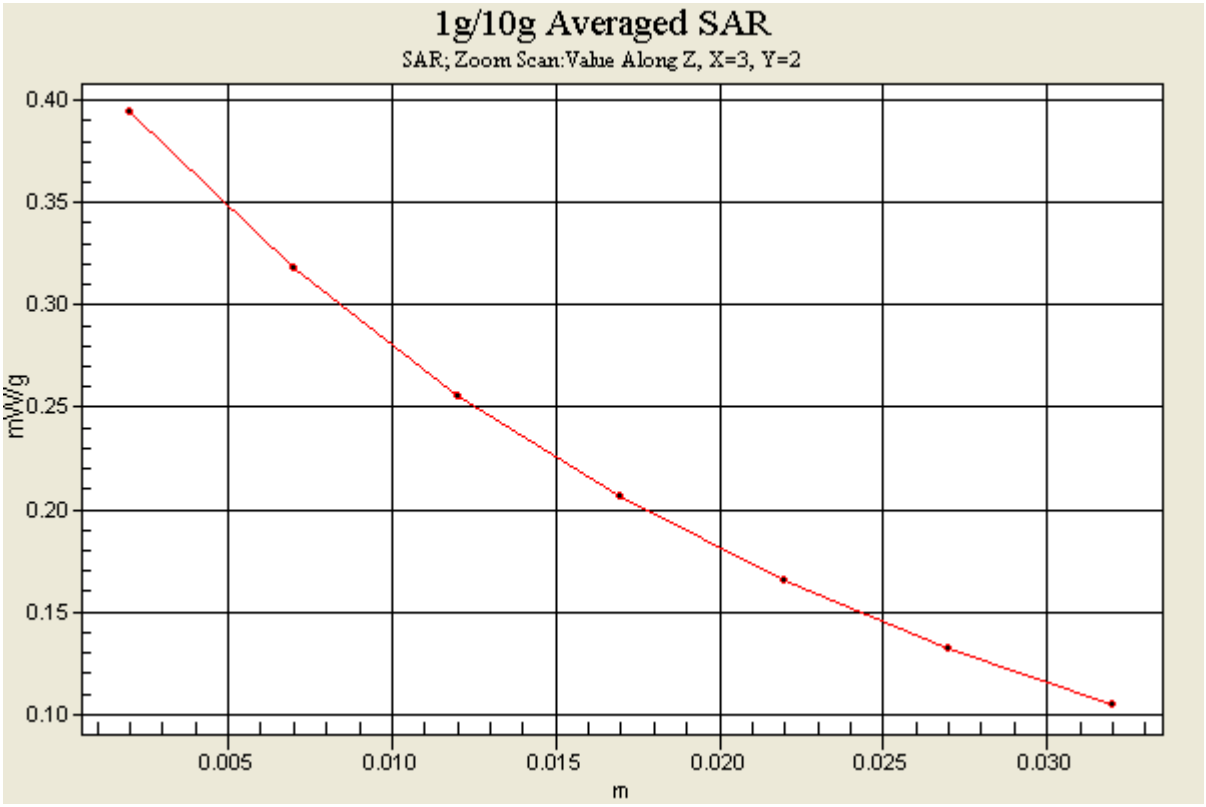
Communication System: CDMA2000 BC0; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: H835_0429 Medium parameters used: f = 837 MHz; σ = 0.892 mho/m; ε_r = 41.4; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.7 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(8.87, 8.87, 8.87); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Front; Type: SAM V4.0; Serial: TP 1654
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch384/Area Scan (51x81x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.397 mW/g

Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.85 V/m; Power Drift = 0.038 dB
Peak SAR (extrapolated) = 0.428 W/kg
SAR(1 g) = 0.347 mW/g; SAR(10 g) = 0.269 mW/g
Maximum value of SAR (measured) = 0.394 mW/g




1g/10g Averaged SAR
SAR; Zoom Scan:Value Along Z, X=3, Y=2
mW/g
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.005
0.010
0.015
0.020
0.025
0.030
m

P02 CDMA2000 BC0_RC3+SO55_Right Tilted_Ch384

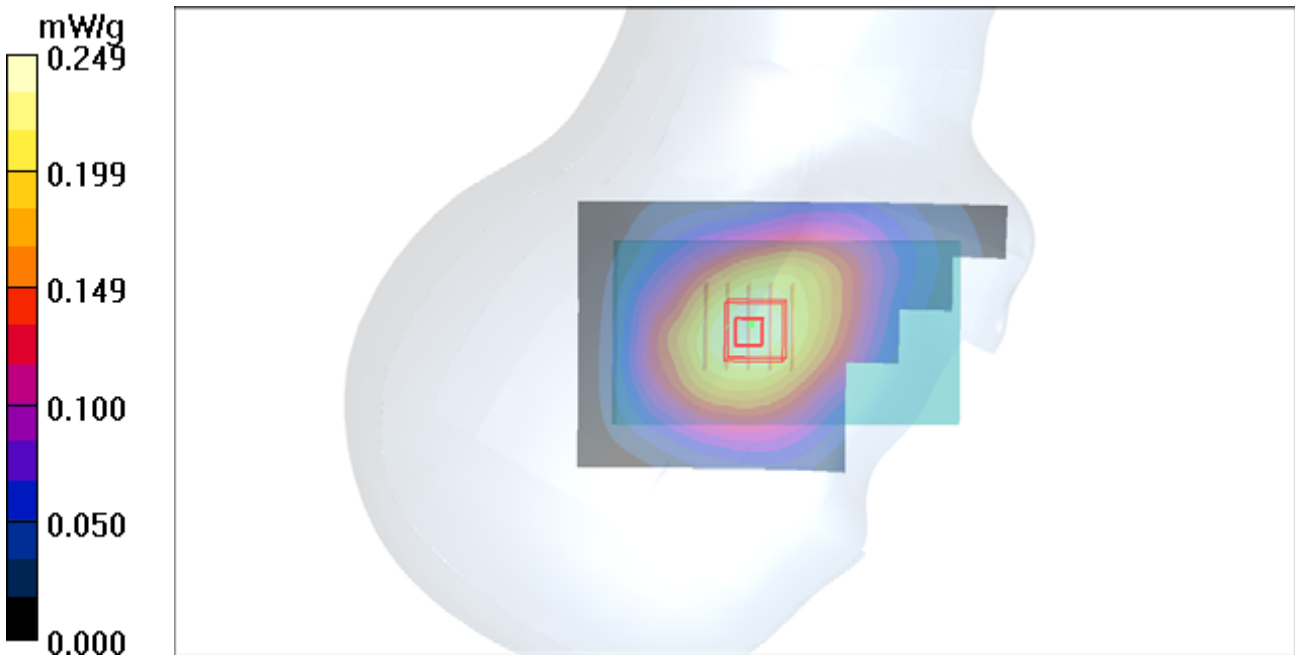
DUT: 120405C14

Communication System: CDMA2000 BC0; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: H835_0429 Medium parameters used: f = 837 MHz; σ = 0.892 mho/m; ε_r = 41.4; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.7 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(8.87, 8.87, 8.87); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Front; Type: SAM V4.0; Serial: TP 1654
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch384/Area Scan (51x81x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.249 mW/g

Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.43 V/m; Power Drift = -0.185 dB
Peak SAR (extrapolated) = 0.263 W/kg
SAR(1 g) = 0.217 mW/g; SAR(10 g) = 0.171 mW/g
Maximum value of SAR (measured) = 0.241 mW/g



P03 CDMA2000 BC0_RC3+SO55_Left Cheek_Ch384

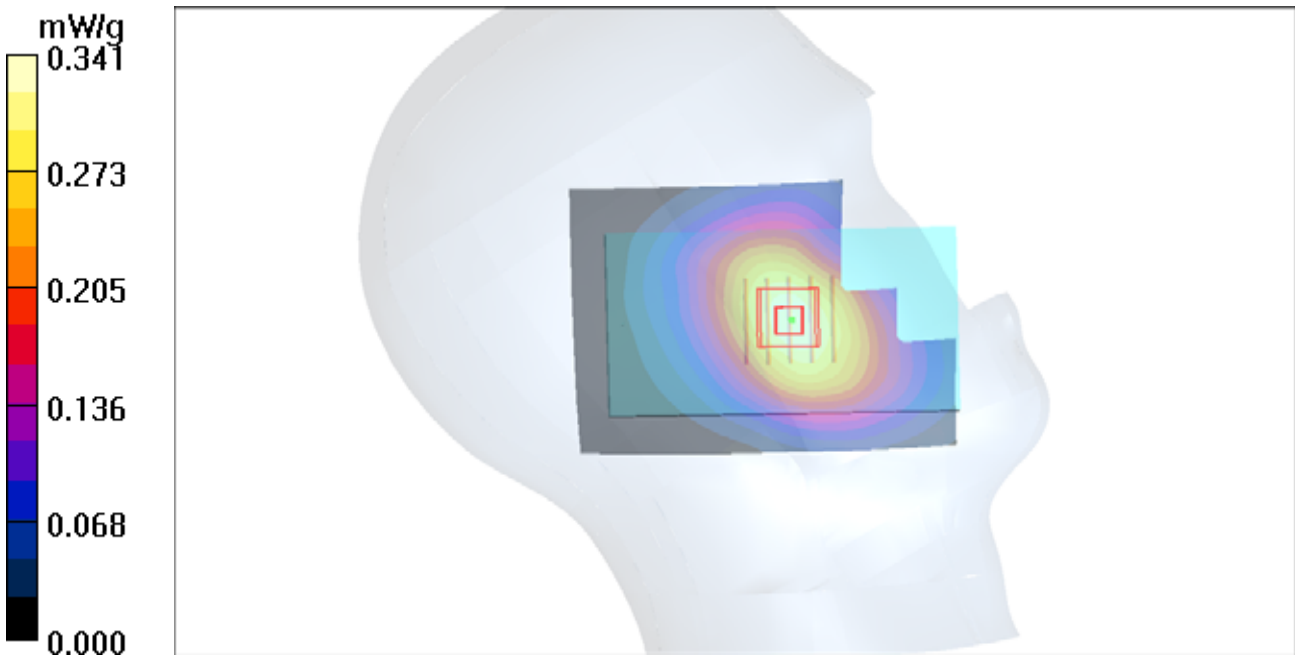
DUT: 120405C14

Communication System: CDMA2000 BC0; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: H835_0429 Medium parameters used: f = 837 MHz; σ = 0.892 mho/m; ε_r = 41.4; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃； Liquid Temperature：21.7 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(8.87, 8.87, 8.87); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Front; Type: SAM V4.0; Serial: TP 1654
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch384/Area Scan (51x81x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.341 mW/g

Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.60 V/m; Power Drift = 0.167 dB
Peak SAR (extrapolated) = 0.356 W/kg
SAR(1 g) = 0.290 mW/g; SAR(10 g) = 0.222 mW/g
Maximum value of SAR (measured) = 0.331 mW/g



P04 CDMA2000 BC0_RC3+SO55_Left Tilted_Ch384

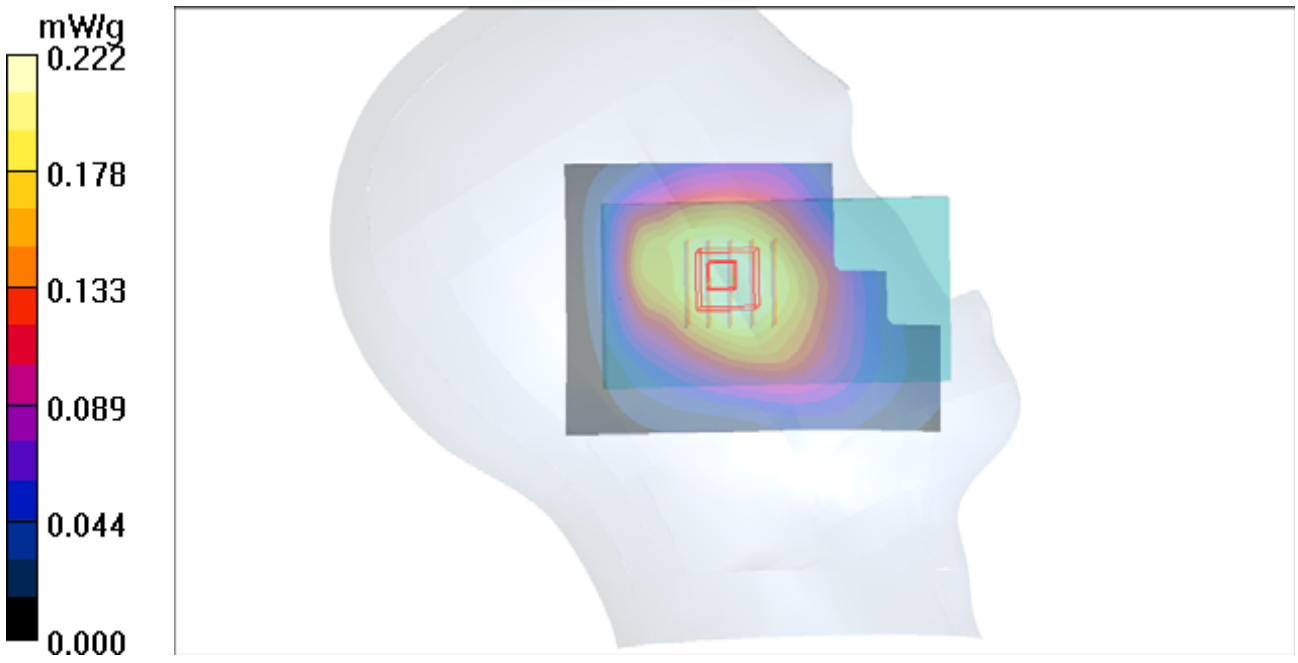
DUT: 120405C14

Communication System: CDMA2000 BC0; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: H835_0429 Medium parameters used: f = 837 MHz; σ = 0.892 mho/m; ε_r = 41.4; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.7 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(8.87, 8.87, 8.87); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Front; Type: SAM V4.0; Serial: TP 1654
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch384/Area Scan (51x81x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.222 mW/g

Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.67 V/m; Power Drift = -0.134 dB
Peak SAR (extrapolated) = 0.241 W/kg
SAR(1 g) = 0.198 mW/g; SAR(10 g) = 0.155 mW/g
Maximum value of SAR (measured) = 0.223 mW/g



P22 GSM1900_GPRS12_Front Face_1cm_Ch661

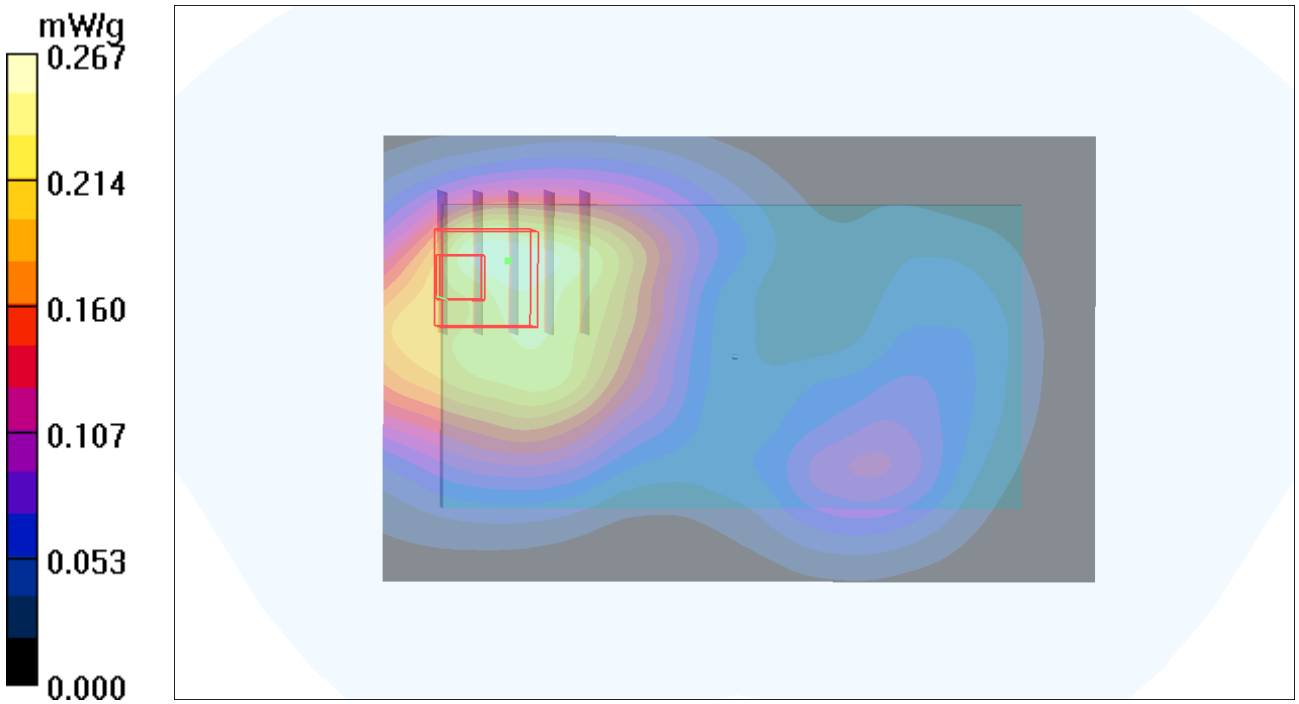
DUT: 120405C14

Communication System: GSM1900 GPRS12; Frequency: 1880 MHz;Duty Cycle: 1:2
Medium: B1900_0501 Medium parameters used: f = 1880 MHz; σ = 1.53 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Ambient Temperature：21.8 ℃; Liquid Temperature：20.7 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.46, 7.46, 7.46); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Front; Type: SAM V4.0; Serial: TP 1654
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch661/Area Scan (51x81x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.267 mW/g

Ch661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.29 V/m; Power Drift = -0.122 dB
Peak SAR (extrapolated) = 0.352 W/kg
SAR(1 g) = 0.199 mW/g; SAR(10 g) = 0.118 mW/g
Maximum value of SAR (measured) = 0.284 mW/g



P23 GSM1900_GPRS12_Rear Face_1cm_Ch661

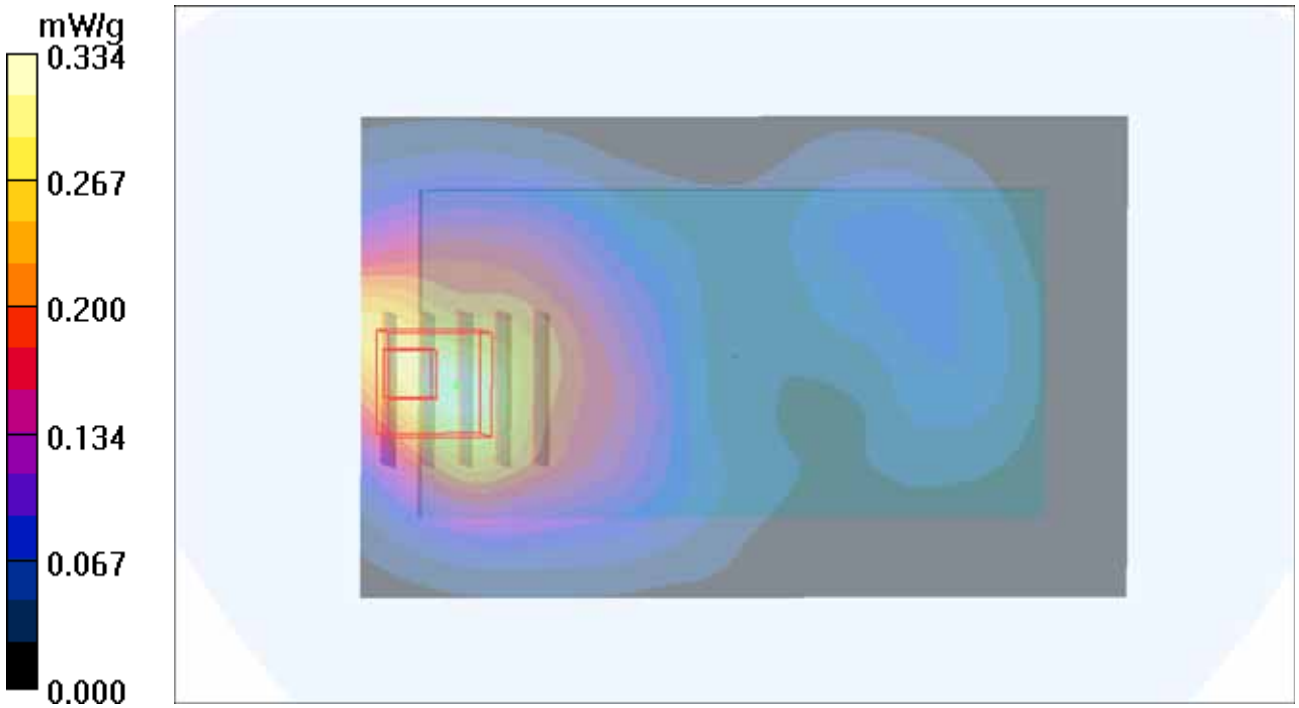
DUT: 120405C14

Communication System: GSM1900 GPRS12; Frequency: 1880 MHz;Duty Cycle: 1:2
Medium: B1900_0501 Medium parameters used: f = 1880 MHz; σ = 1.53 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Ambient Temperature：21.8 ℃; Liquid Temperature：20.7 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.46, 7.46, 7.46); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Front; Type: SAM V4.0; Serial: TP 1654
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch661/Area Scan (51x81x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.334 mW/g

Ch661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.05 V/m; Power Drift = -0.028 dB
Peak SAR (extrapolated) = 0.505 W/kg
SAR(1 g) = 0.305 mW/g; SAR(10 g) = 0.169 mW/g
Maximum value of SAR (measured) = 0.416 mW/g



P24 GSM1900_GPRS12_Left Side_1cm_Ch661

DUT: 120405C14

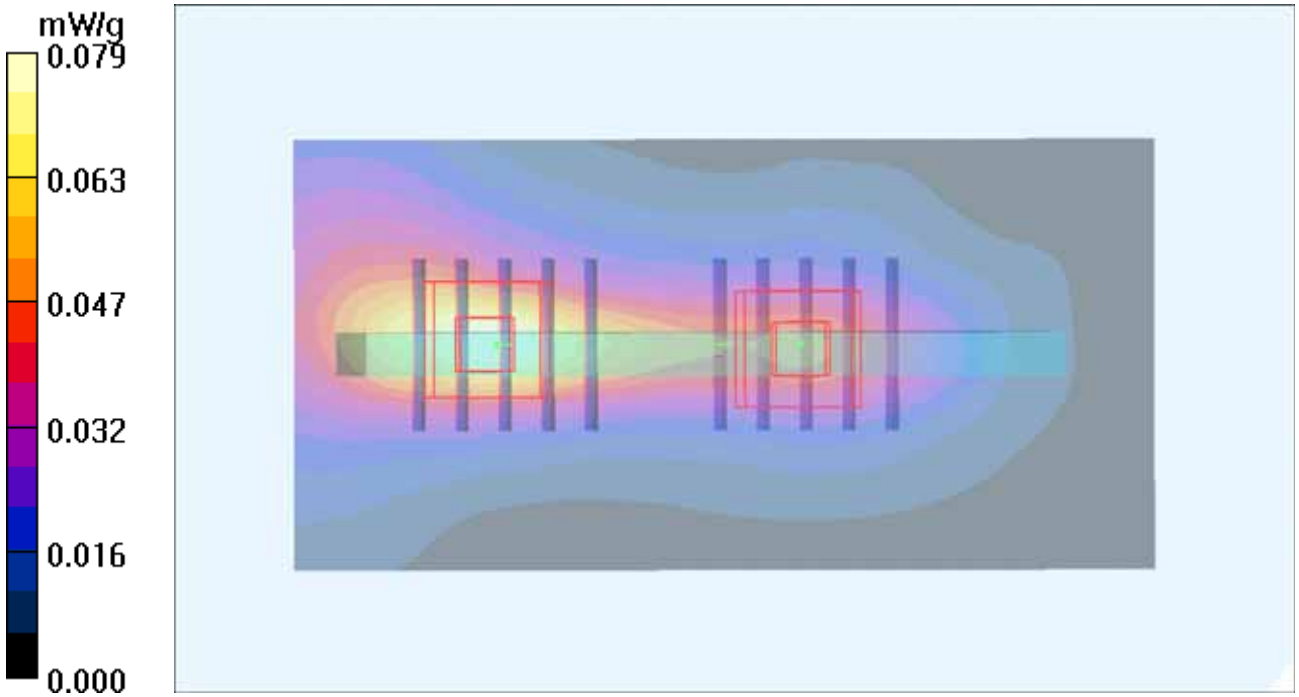
Communication System: GSM1900 GPRS12; Frequency: 1880 MHz;Duty Cycle: 1:2
Medium: B1900_0501 Medium parameters used: f = 1880 MHz; σ = 1.53 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Ambient Temperature：21.8 ℃; Liquid Temperature：20.7 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.46, 7.46, 7.46); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Front; Type: SAM V4.0; Serial: TP 1654
- 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) = 0.079 mW/g

Ch661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.74 V/m; Power Drift = -0.174 dB
Peak SAR (extrapolated) = 0.094 W/kg
SAR(1 g) = 0.058 mW/g; SAR(10 g) = 0.034 mW/g
Maximum value of SAR (measured) = 0.077 mW/g

Ch661/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.74 V/m; Power Drift = -0.174 dB
Peak SAR (extrapolated) = 0.058 W/kg
SAR(1 g) = 0.036 mW/g; SAR(10 g) = 0.022 mW/g
Maximum value of SAR (measured) = 0.048 mW/g



P25 GSM1900_GPRS12_Right Side_1cm_Ch661

DUT: 120405C14

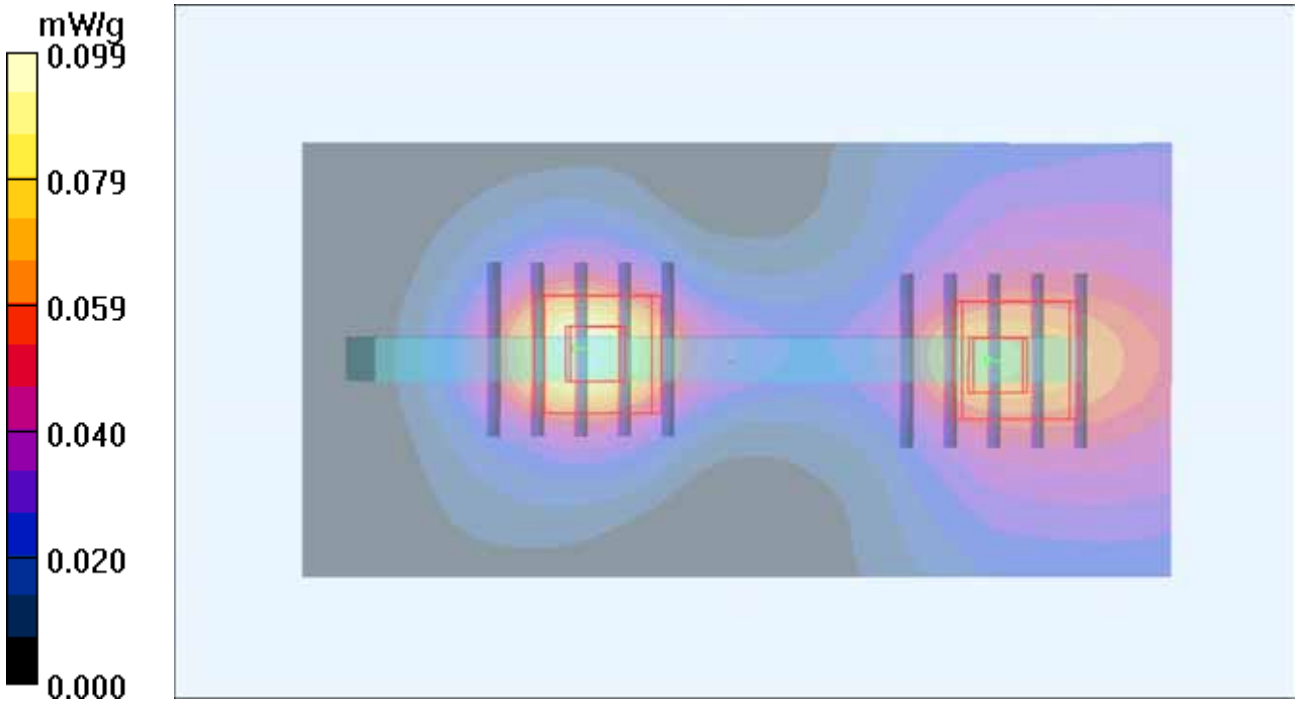
Communication System: GSM1900 GPRS12; Frequency: 1880 MHz;Duty Cycle: 1:2
Medium: B1900_0501 Medium parameters used: f = 1880 MHz; σ = 1.53 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Ambient Temperature：21.8 ℃; Liquid Temperature：20.7 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.46, 7.46, 7.46); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Front; Type: SAM V4.0; Serial: TP 1654
- 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) = 0.099 mW/g

Ch661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.72 V/m; Power Drift = -0.170 dB
Peak SAR (extrapolated) = 0.108 W/kg
SAR(1 g) = 0.066 mW/g; SAR(10 g) = 0.039 mW/g
Maximum value of SAR (measured) = 0.087 mW/g

Ch661/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.72 V/m; Power Drift = -0.170 dB
Peak SAR (extrapolated) = 0.092 W/kg
SAR(1 g) = 0.058 mW/g; SAR(10 g) = 0.036 mW/g
Maximum value of SAR (measured) = 0.076 mW/g



P26 GSM1900_GPRS12_Bottom Side_1cm_Ch661

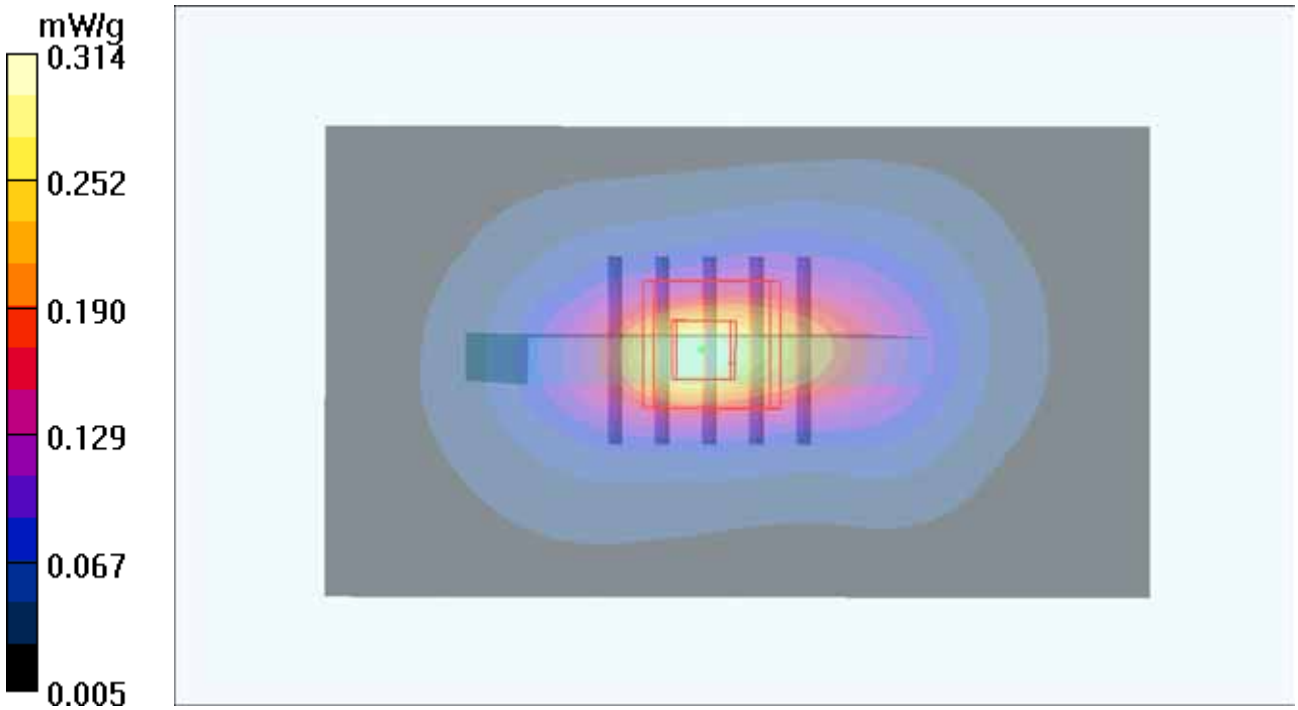
DUT: 120405C14

Communication System: GSM1900 GPRS12; Frequency: 1880 MHz;Duty Cycle: 1:2
Medium: B1900_0501 Medium parameters used: f = 1880 MHz; σ = 1.53 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Ambient Temperature：21.8 ℃; Liquid Temperature：20.7 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.46, 7.46, 7.46); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Front; Type: SAM V4.0; Serial: TP 1654
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch661/Area Scan (41x71x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.314 mW/g

Ch661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.4 V/m; Power Drift = -0.138 dB
Peak SAR (extrapolated) = 0.386 W/kg
SAR(1 g) = 0.235 mW/g; SAR(10 g) = 0.128 mW/g
Maximum value of SAR (measured) = 0.322 mW/g



P29 GSM1900_GPRS12_Front Face_1cm_Ch661_Earphone

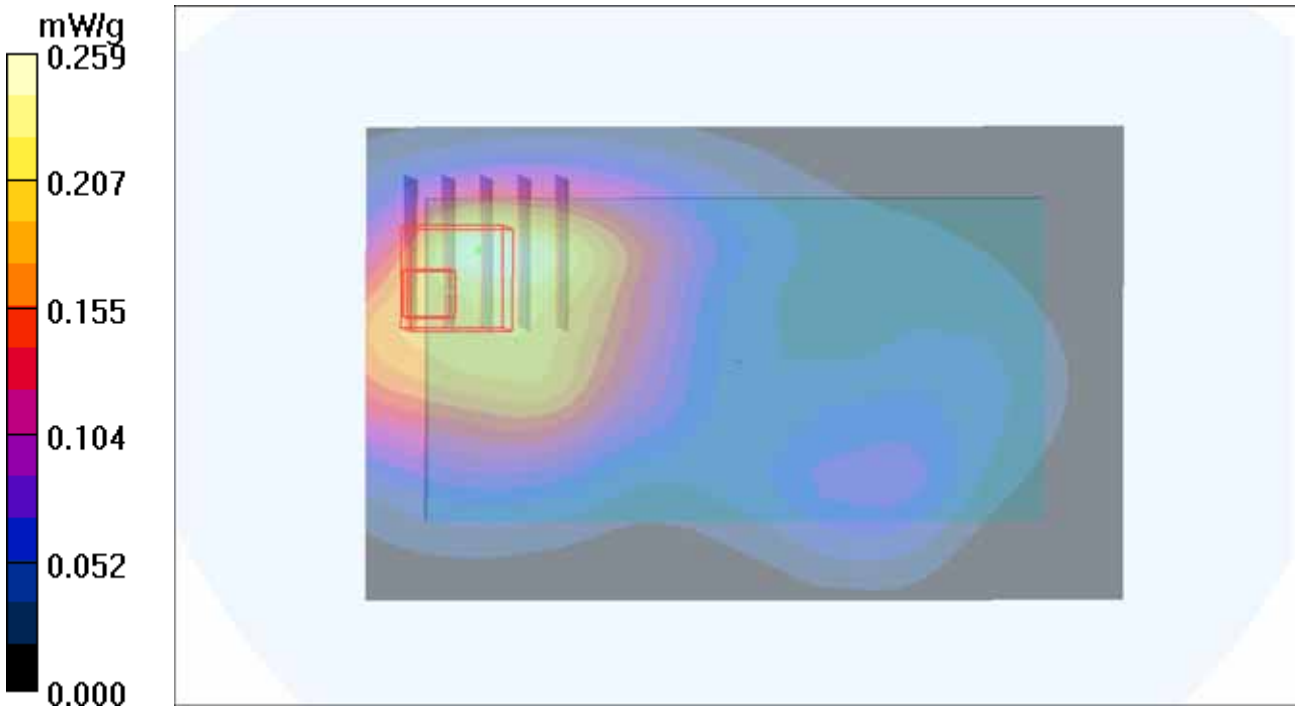
DUT: 120405C14

Communication System: GSM1900 GPRS12; Frequency: 1880 MHz;Duty Cycle: 1:2
Medium: B1900_0501 Medium parameters used: f = 1880 MHz; σ = 1.53 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Ambient Temperature：21.8 ℃; Liquid Temperature：20.7 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.46, 7.46, 7.46); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Front; Type: SAM V4.0; Serial: TP 1654
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch661/Area Scan (51x81x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.259 mW/g

Ch661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.41 V/m; Power Drift = -0.027 dB
Peak SAR (extrapolated) = 0.336 W/kg
SAR(1 g) = 0.204 mW/g; SAR(10 g) = 0.118 mW/g
Maximum value of SAR (measured) = 0.274 mW/g



P30 GSM1900_GPRS12_Rear Face_1cm_Ch661_Earphone

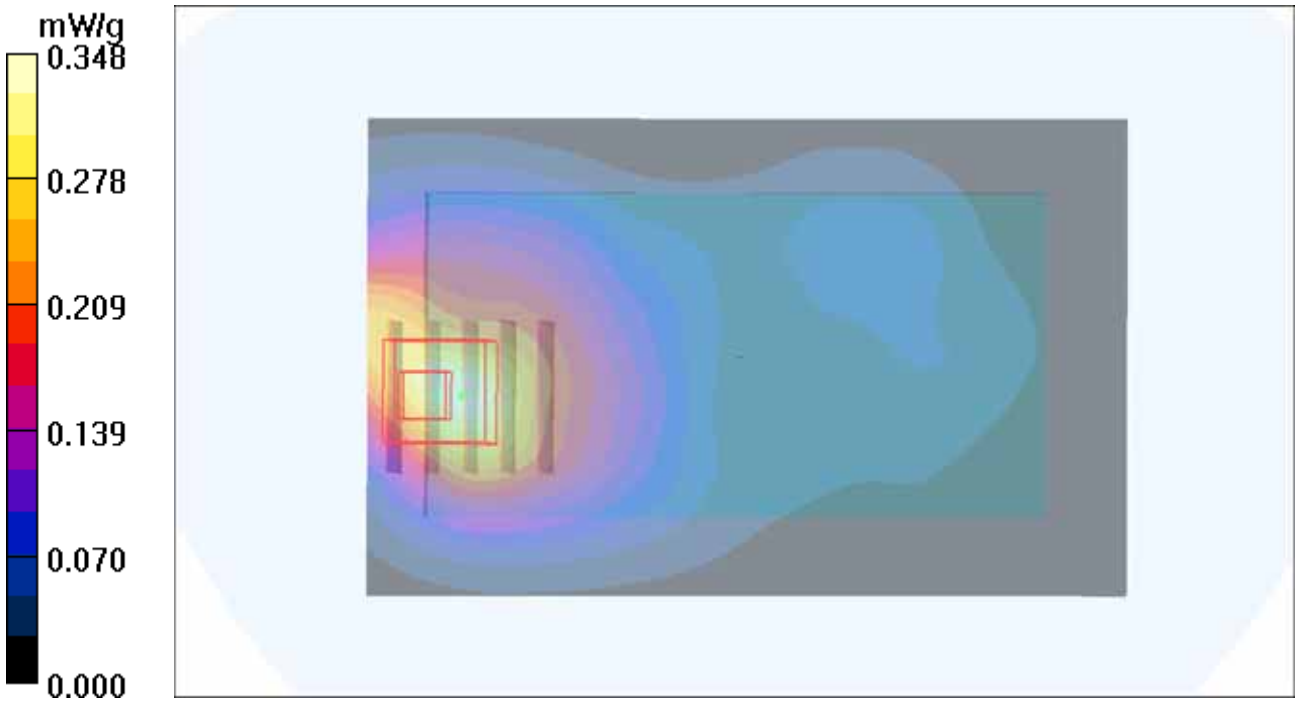
DUT: 120405C14

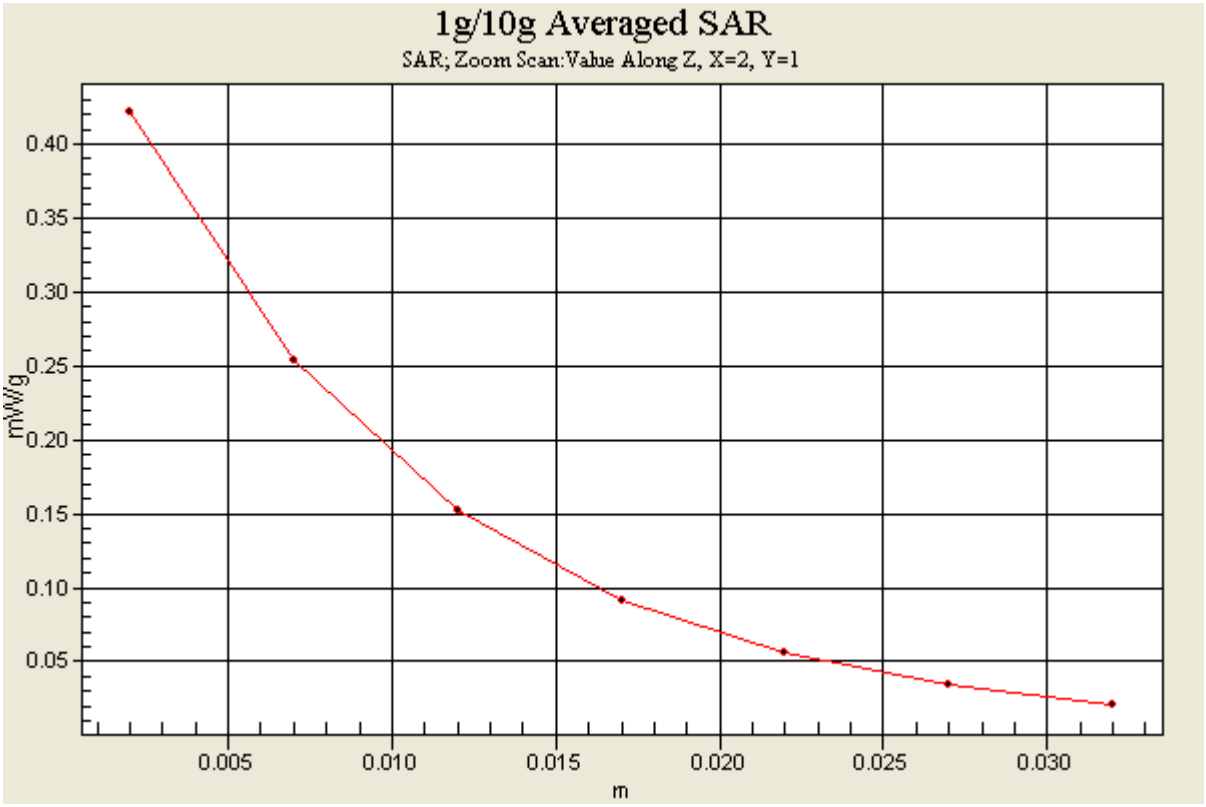
Communication System: GSM1900 GPRS12; Frequency: 1880 MHz;Duty Cycle: 1:2
Medium: B1900_0501 Medium parameters used: f = 1880 MHz; σ = 1.53 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Ambient Temperature：21.8 ℃; Liquid Temperature：20.7 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.46, 7.46, 7.46); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Front; Type: SAM V4.0; Serial: TP 1654
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch661/Area Scan (51x81x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.48 mW/g

Ch661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.62 V/m; Power Drift = 0.114 dB
Peak SAR (extrapolated) = 0.513 W/kg
SAR(1 g) = 0.305 mW/g; SAR(10 g) = 0.172 mW/g
Maximum value of SAR (measured) = 0.421 mW/g




1g/10g Averaged SAR
SAR; Zoom Scan:Value Along Z, X=2, Y=1
mW/g
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.005
0.010
0.015
0.020
0.025
0.030
m

P33 WCDMA V_RMC12.2K_Front Face_1cm_Ch4182

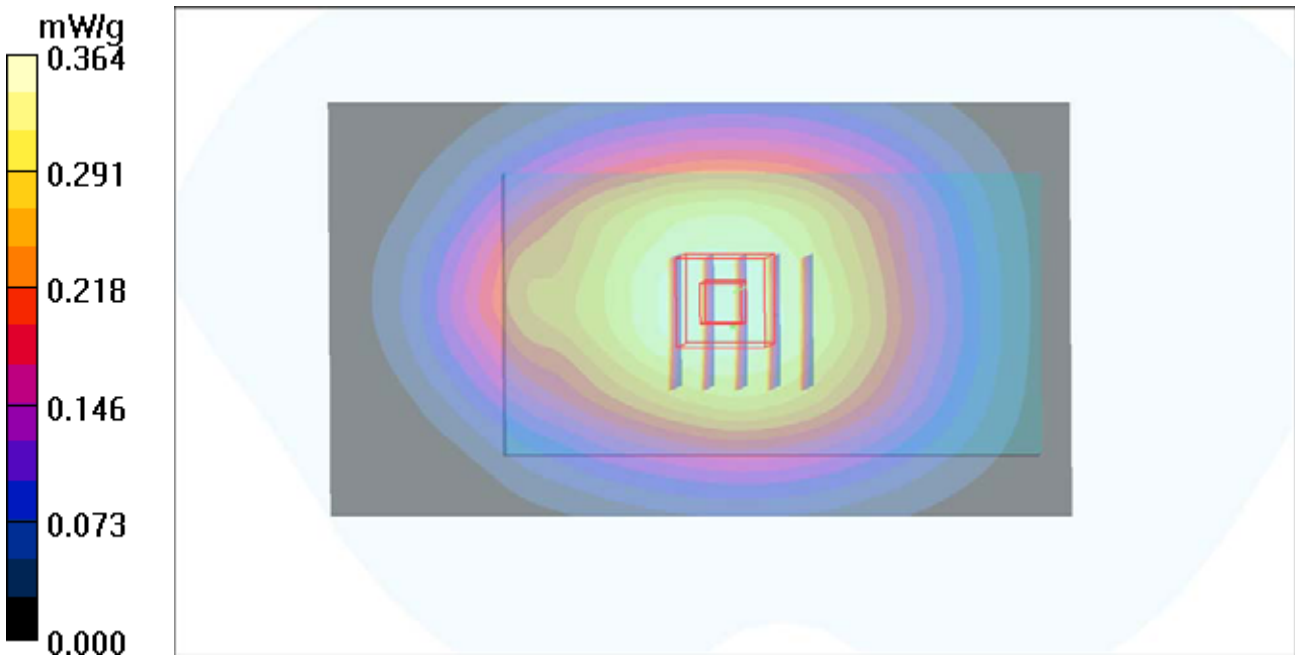
DUT: 120405C14

Communication System: WCDMA V; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: B835_0430 Medium parameters used : f = 836.4 MHz; σ = 0.995 mho/m; ε_r = 56; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.12, 9.12, 9.12); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Left; Type: SAM V4.0; Serial: TP 1652
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch4182/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.364 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.8 V/m; Power Drift = 0.097 dB
Peak SAR (extrapolated) = 0.402 W/kg
SAR(1 g) = 0.325 mW/g; SAR(10 g) = 0.252 mW/g
Maximum value of SAR (measured) = 0.368 mW/g



P34 WCDMA V_RMC12.2K_Rear Face _1cm_Ch4182

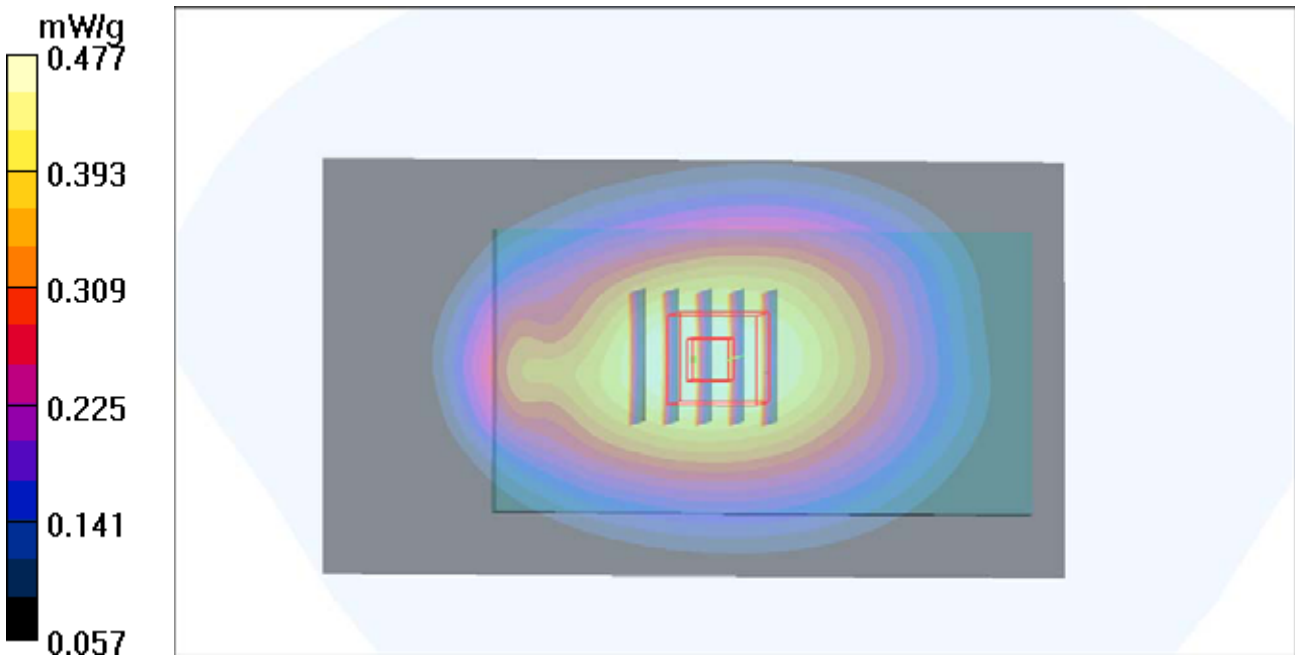
DUT: 120405C14

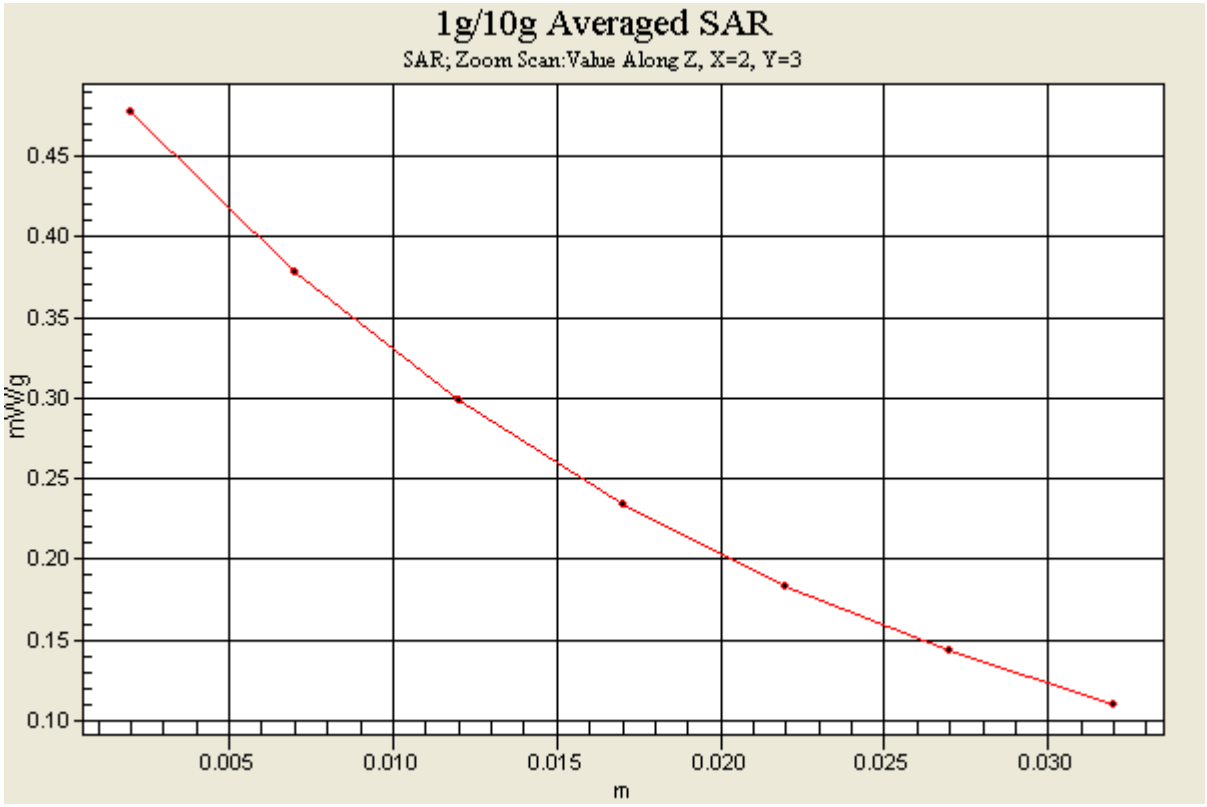
Communication System: WCDMA V; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: B835_0430 Medium parameters used: f = 836.4 MHz; σ = 0.995 mho/m; ε_r = 56; ρ = 1000 kg/m3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.12, 9.12, 9.12); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Left; Type: SAM V4.0; Serial: TP 1652
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch4182/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.488 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.6 V/m; Power Drift = 0.001 dB
Peak SAR (extrapolated) = 0.524 W/kg
SAR(1 g) = 0.417 mW/g; SAR(10 g) = 0.317 mW/g
Maximum value of SAR (measured) = 0.477 mW/g




1g/10g Averaged SAR
SAR; Zoom Scan:Value Along Z, X=2, Y=3
mW/g
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.005
0.010
0.015
0.020
0.025
0.030
m

P35 WCDMA V_RMC12.2K_Right Side _1cm_Ch4182

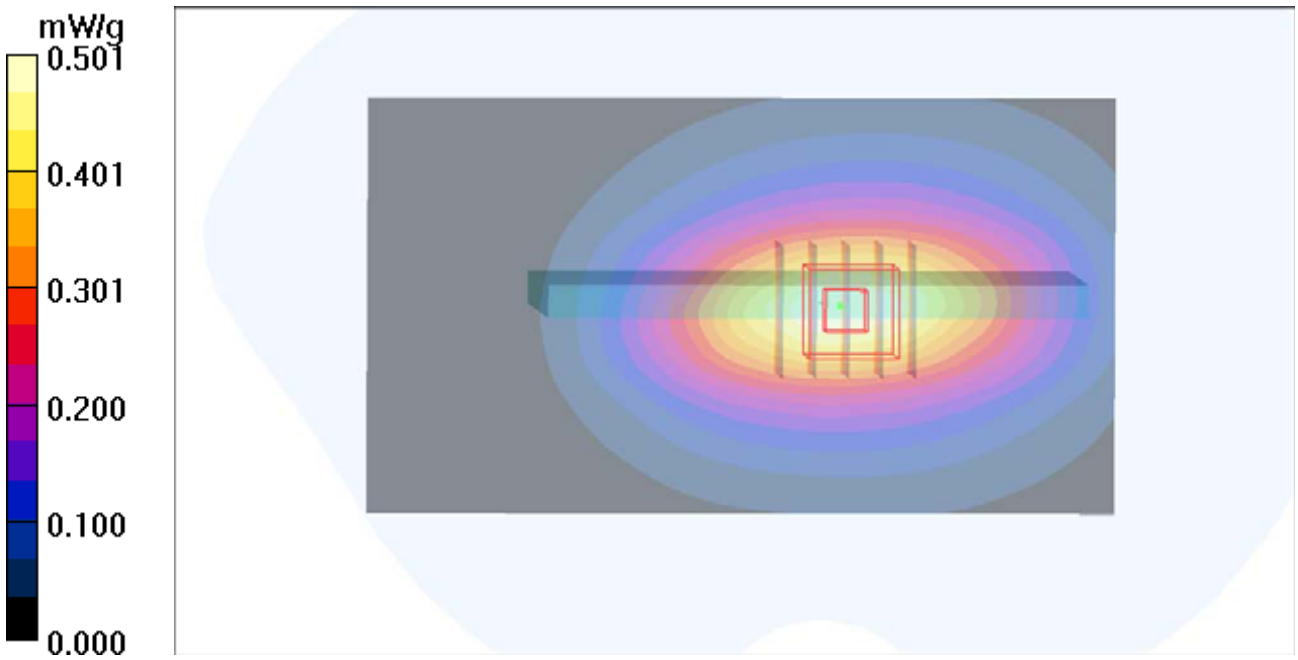
DUT: 120405C14

Communication System: WCDMA V; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: B835_0430 Medium parameters used : f = 836.4 MHz; σ = 0.995 mho/m; ε_r = 56; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.12, 9.12, 9.12); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Left; Type: SAM V4.0; Serial: TP 1652
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch4182/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.501 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.9 V/m; Power Drift = 0.058 dB
Peak SAR (extrapolated) = 0.568 W/kg
SAR(1 g) = 0.409 mW/g; SAR(10 g) = 0.287 mW/g
Maximum value of SAR (measured) = 0.497 mW/g



P36 WCDMA V_RMC12.2K_Left Side _1cm_Ch4182

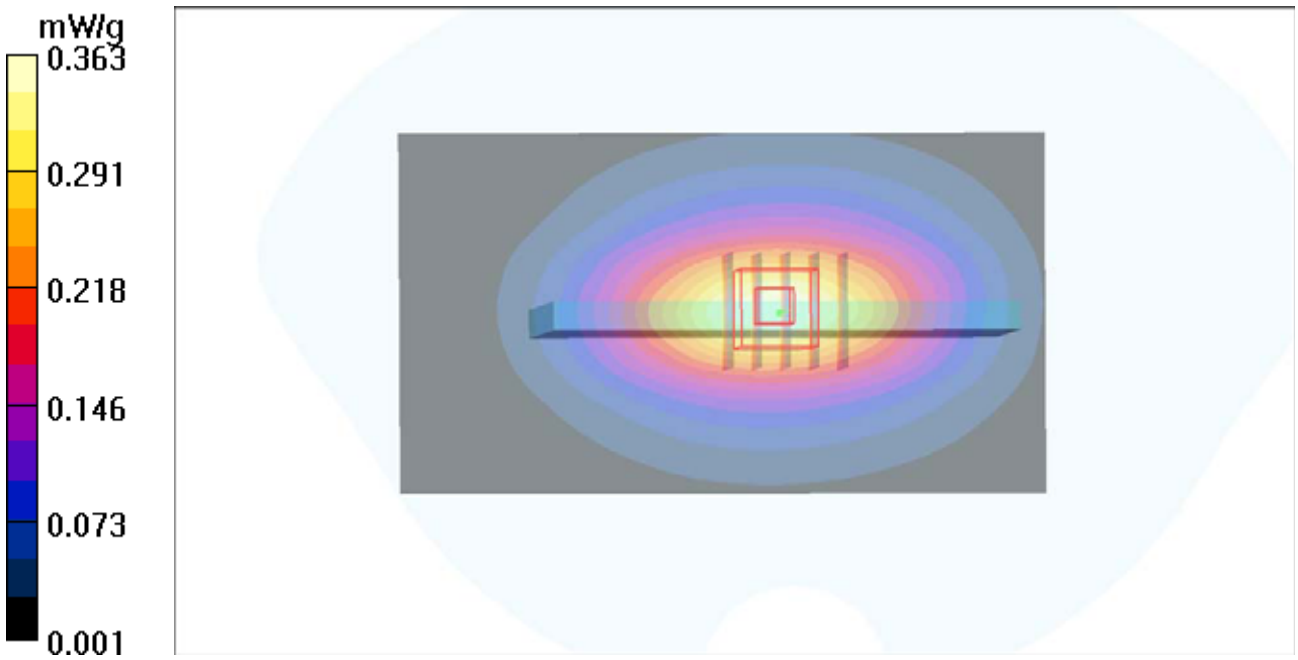
DUT: 120405C14

Communication System: WCDMA V; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: B835_0430 Medium parameters used : f = 836.4 MHz; σ = 0.995 mho/m; ε_r = 56; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.12, 9.12, 9.12); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Left; Type: SAM V4.0; Serial: TP 1652
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch4182/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.363 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.3 V/m; Power Drift = 0.058 dB
Peak SAR (extrapolated) = 0.416 W/kg
SAR(1 g) = 0.296 mW/g; SAR(10 g) = 0.205 mW/g
Maximum value of SAR (measured) = 0.361 mW/g



P37 WCDMA V_RMC12.2K_Bottom Side_1cm_Ch4182

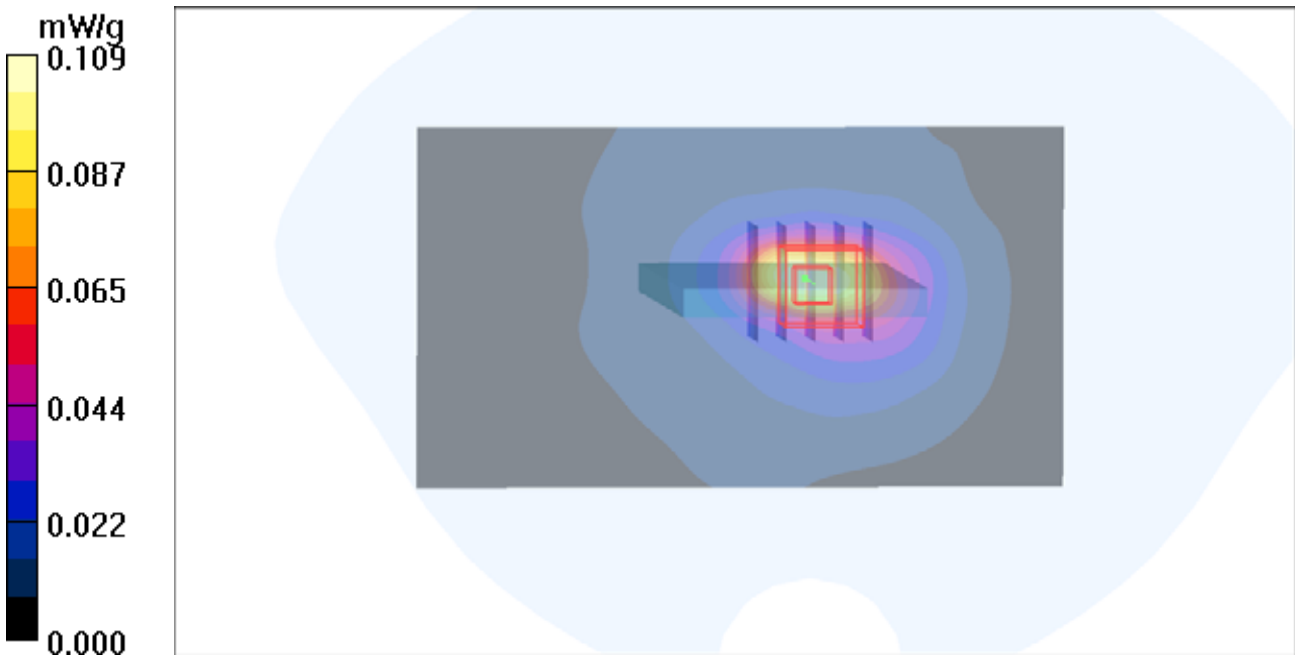
DUT: 120405C14

Communication System: WCDMA V; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: B835_0430 Medium parameters used : f = 836.4 MHz; σ = 0.995 mho/m; ε_r = 56; ρ = 1000 kg/m^3
Ambient Temperature：21.6 ℃; Liquid Temperature：20.6 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.12, 9.12, 9.12); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Left; Type: SAM V4.0; Serial: TP 1652
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch4182/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.109 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.4 V/m; Power Drift = -0.011 dB
Peak SAR (extrapolated) = 0.174 W/kg
SAR(1 g) = 0.090 mW/g; SAR(10 g) = 0.048 mW/g
Maximum value of SAR (measured) = 0.128 mW/g



P40 WCDMA V_RMC12.2K_Front Face_1cm_Ch4182_Earphone

DUT: 120405C14

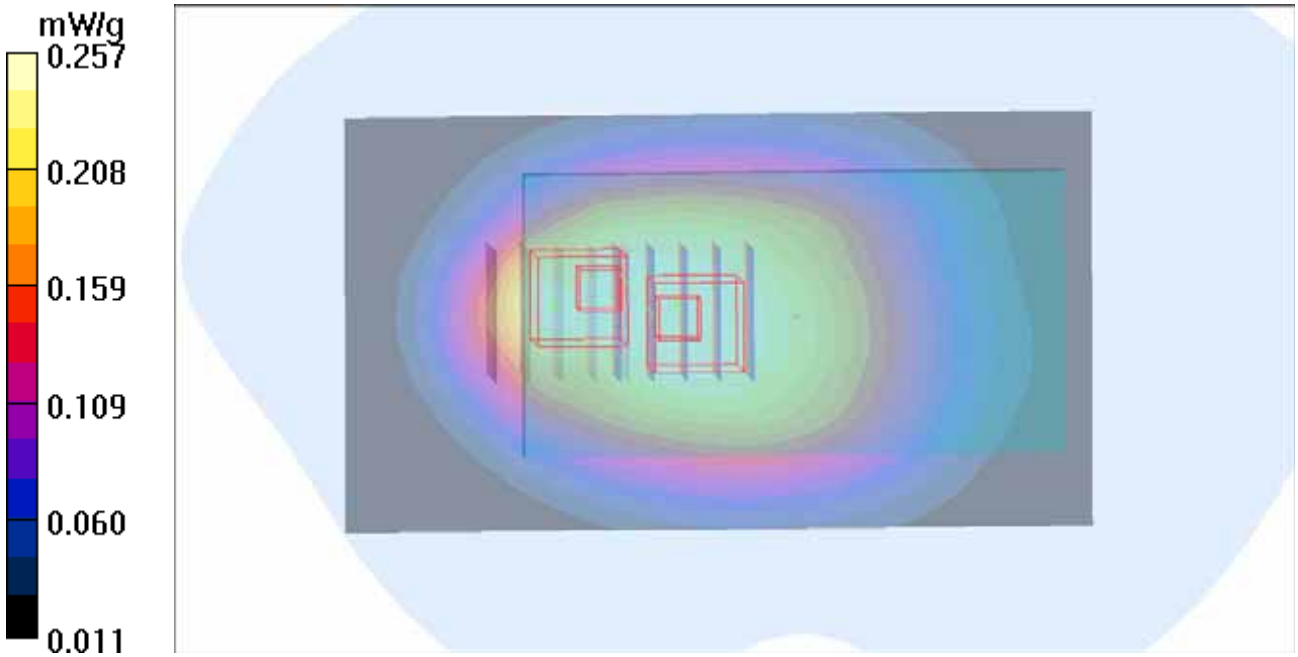
Communication System: WCDMA V; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: B835_0430 Medium parameters used: f = 836.4 MHz; σ = 0.995 mho/m; ε_r = 56; ρ = 1000 kg/m3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.12, 9.12, 9.12); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Left; Type: SAM V4.0; Serial: TP 1652
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch4182/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.271 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.9 V/m; Power Drift = -0.002 dB
Peak SAR (extrapolated) = 0.296 W/kg
SAR(1 g) = 0.232 mW/g; SAR(10 g) = 0.177 mW/g
Maximum value of SAR (measured) = 0.265 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.9 V/m; Power Drift = -0.002 dB
Peak SAR (extrapolated) = 0.299 W/kg
SAR(1 g) = 0.203 mW/g; SAR(10 g) = 0.131 mW/g
Maximum value of SAR (measured) = 0.257 mW/g



P41 WCDMA V_RMC12.2K_Rear Face _1cm_Ch4182_Earphone

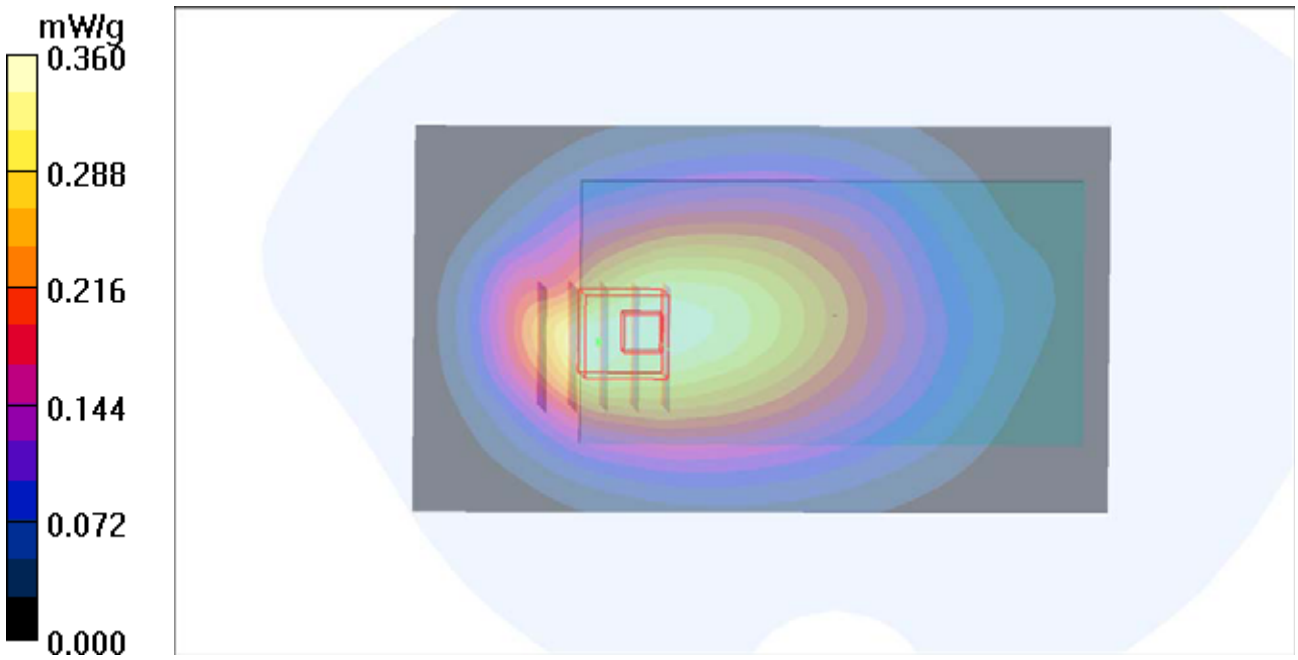
DUT: 120405C14

Communication System: WCDMA V; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: B835_0430 Medium parameters used : f = 836.4 MHz; σ = 0.995 mho/m; ε_r = 56; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.12, 9.12, 9.12); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Left; Type: SAM V4.0; Serial: TP 1652
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch4182/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.360 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.4 V/m; Power Drift = 0.090 dB
Peak SAR (extrapolated) = 0.399 W/kg
SAR(1 g) = 0.287 mW/g; SAR(10 g) = 0.188 mW/g
Maximum value of SAR (measured) = 0.352 mW/g



P13 CDMA2000 BC0_RC3+SO32_Front Face_1cm_Ch384

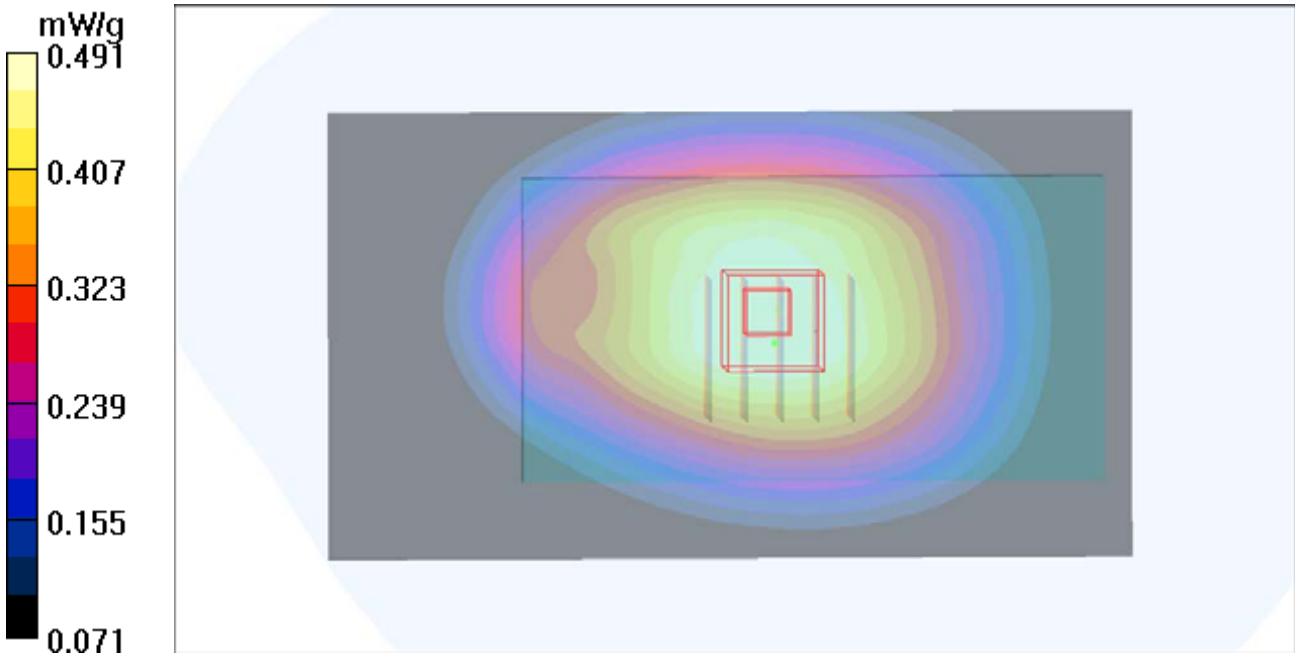
DUT: 120405C14

Communication System: CDMA2000 BC0; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: B835_0430 Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 56; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.12, 9.12, 9.12); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Left; Type: SAM V4.0; Serial: TP 1652
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch384/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.503 mW/g

Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.9 V/m; Power Drift = 0.027 dB
Peak SAR (extrapolated) = 0.536 W/kg
SAR(1 g) = 0.430 mW/g; SAR(10 g) = 0.332 mW/g
Maximum value of SAR (measured) = 0.491 mW/g



P14 CDMA2000 BC0_RC3+SO32_Rear Face _1cm_Ch384

DUT: 120405C14

Communication System: CDMA2000 BC0; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: B835_0430 Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 56; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃； Liquid Temperature：21.5 ℃

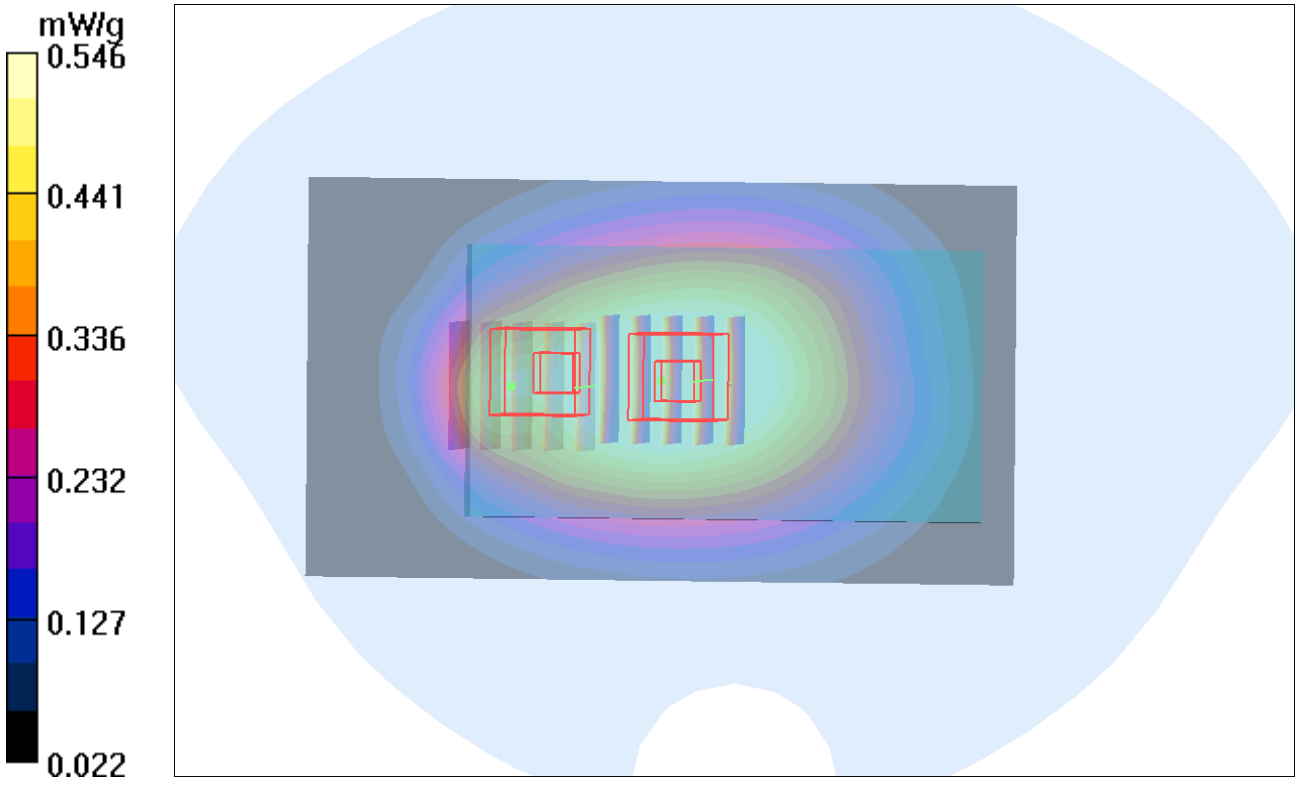
DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.12, 9.12, 9.12); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Left; Type: SAM V4.0; Serial: TP 1652
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch384/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.641 mW/g

Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.2 V/m; Power Drift = -0.153 dB
Peak SAR (extrapolated) = 0.695 W/kg
SAR(1 g) = 0.553 mW/g; SAR(10 g) = 0.421 mW/g
Maximum value of SAR (measured) = 0.632 mW/g

Ch384/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.2 V/m; Power Drift = -0.153 dB
Peak SAR (extrapolated) = 0.615 W/kg
SAR(1 g) = 0.408 mW/g; SAR(10 g) = 0.257 mW/g

Maximum value of SAR (measured) = 0.546 mW/g



P15 CDMA2000 BC0_RC3+SO32_Left Side _1cm_Ch384

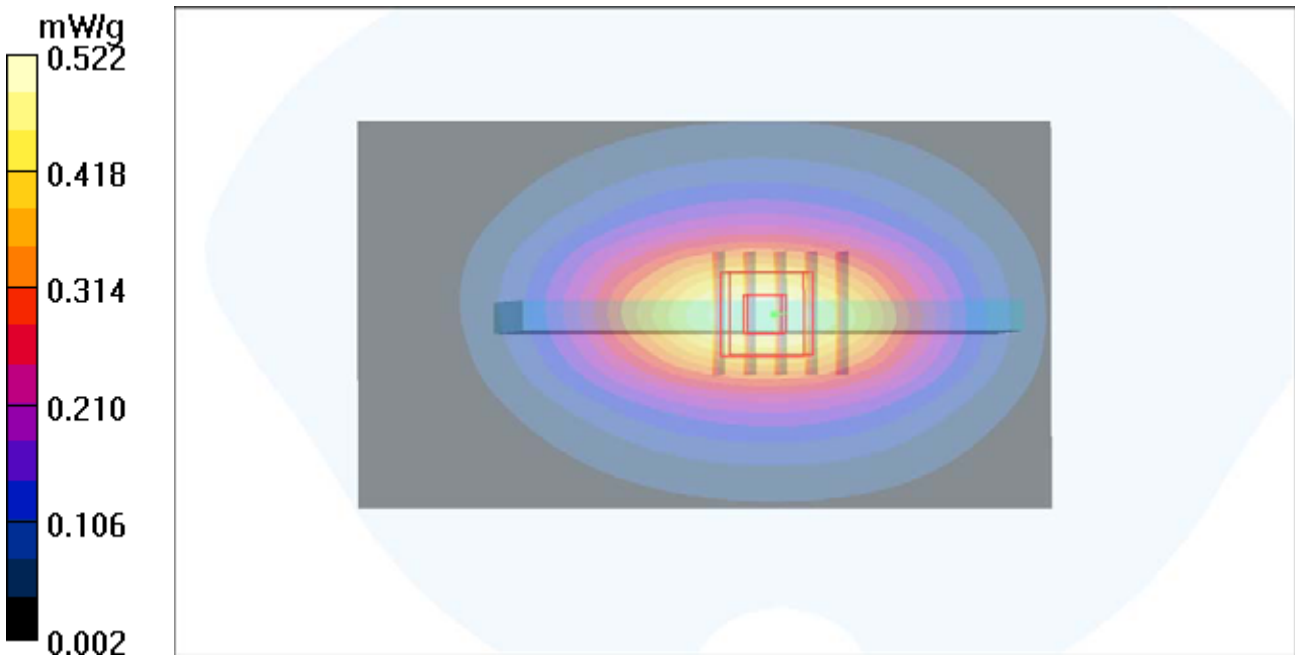
DUT: 120405C14

Communication System: CDMA2000 BC0; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: B835_0430 Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 56; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.12, 9.12, 9.12); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Left; Type: SAM V4.0; Serial: TP 1652
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch384/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.522 mW/g

Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.6 V/m; Power Drift = -0.056 dB
Peak SAR (extrapolated) = 0.606 W/kg
SAR(1 g) = 0.431 mW/g; SAR(10 g) = 0.299 mW/g
Maximum value of SAR (measured) = 0.527 mW/g



P16 CDMA2000 BC0_RC3+SO32_Right Side _1cm_Ch384

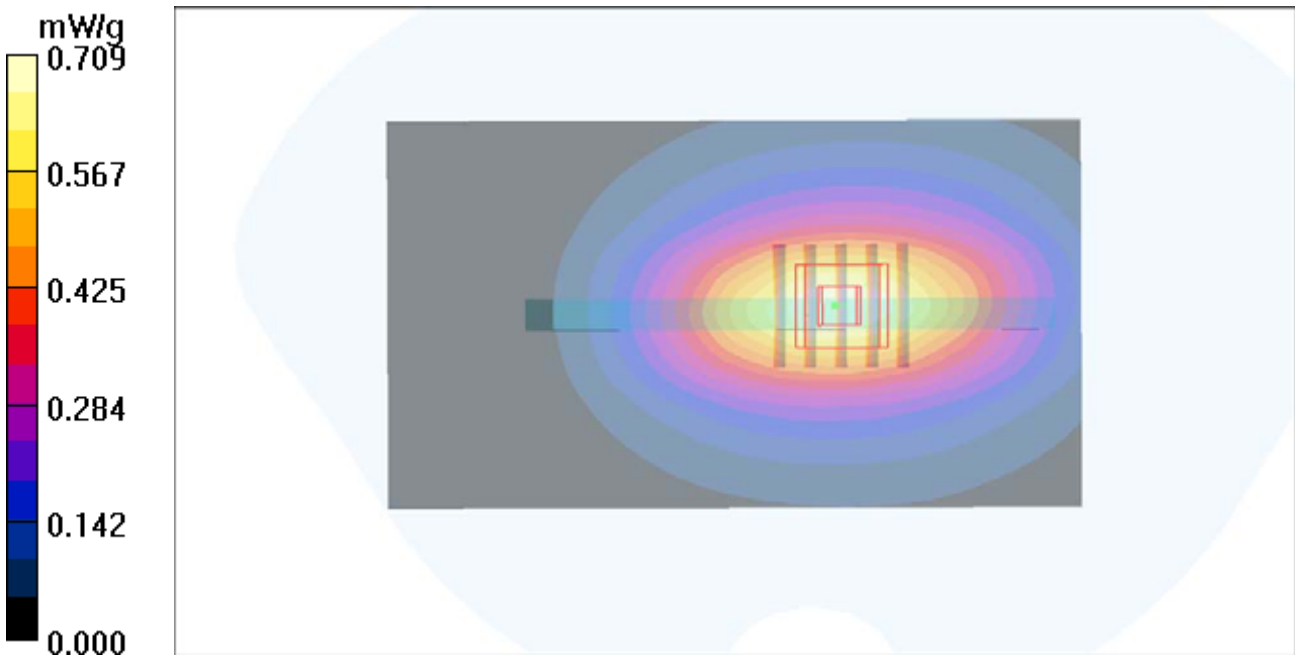
DUT: 120405C14

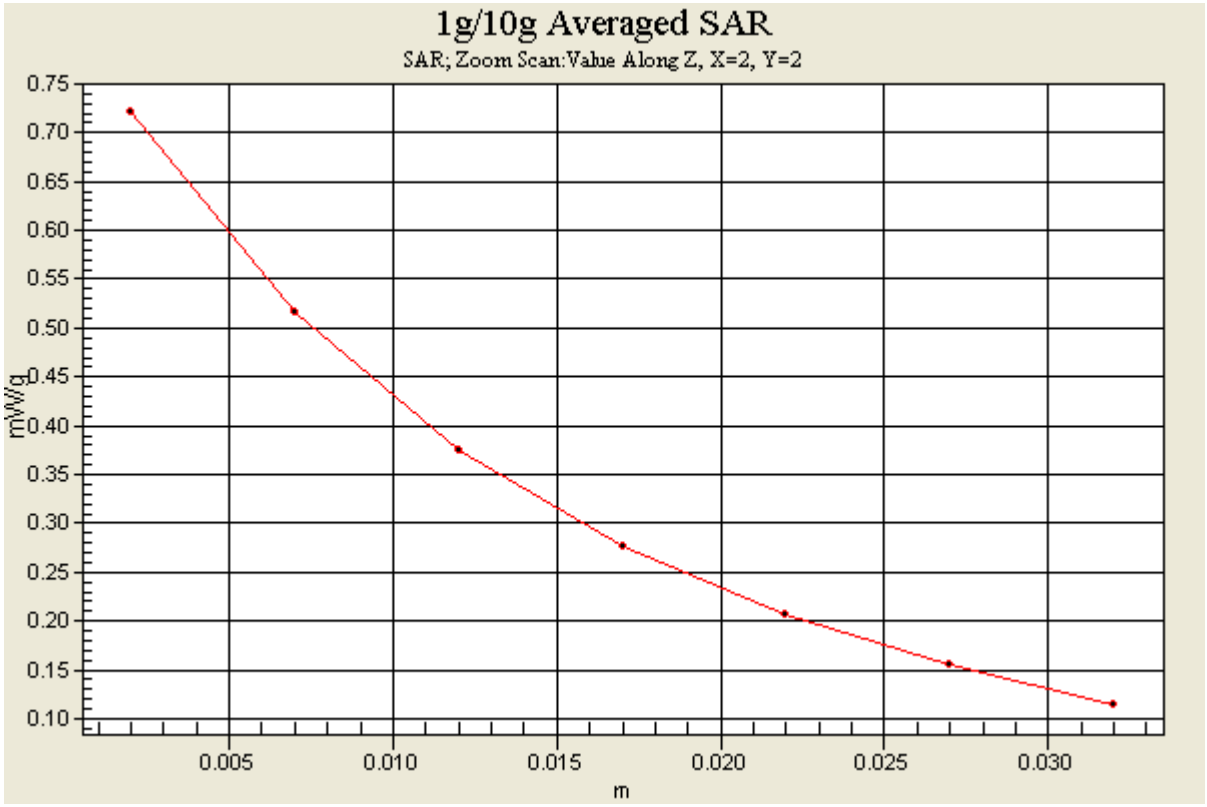
Communication System: CDMA2000 BC0; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: B835_0430 Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 56; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.12, 9.12, 9.12); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Left; Type: SAM V4.0; Serial: TP 1652
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch384/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.709 mW/g

Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.1 V/m; Power Drift = -0.037 dB
Peak SAR (extrapolated) = 0.823 W/kg
SAR(1 g) = 0.590 mW/g; SAR(10 g) = 0.412 mW/g
Maximum value of SAR (measured) = 0.721 mW/g




1g/10g Averaged SAR
SAR; Zoom Scan:Value Along Z, X=2, Y=2
mW/g
0.75
0.70
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.005
0.010
0.015
0.020
0.025
0.030
m

P17 CDMA2000 BC0_RC3+SO32_Bottom Side _1cm_Ch384

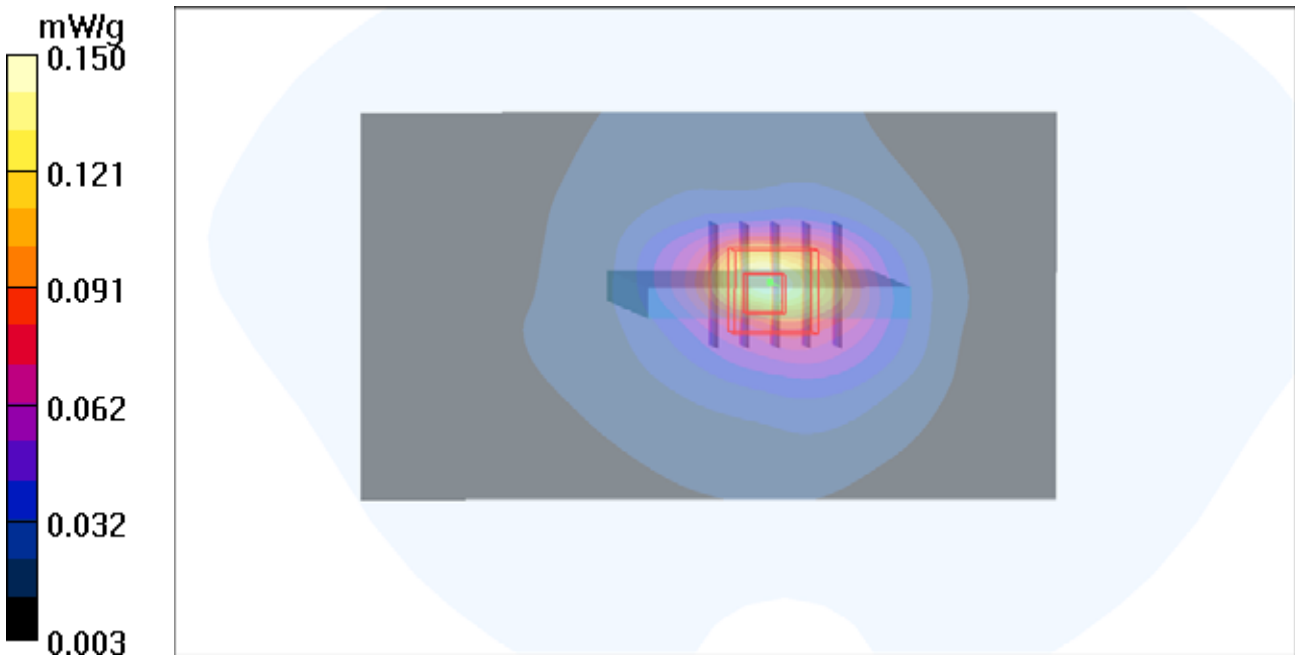
DUT: 120405C14

Communication System: CDMA2000 BC0; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: B835_0430 Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 56; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.12, 9.12, 9.12); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Left; Type: SAM V4.0; Serial: TP 1652
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch384/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.150 mW/g

Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.5 V/m; Power Drift = -0.016 dB
Peak SAR (extrapolated) = 0.255 W/kg
SAR(1 g) = 0.134 mW/g; SAR(10 g) = 0.071 mW/g
Maximum value of SAR (measured) = 0.185 mW/g



P18 CDMA2000 BC0_RC3+SO32_Front Face_1cm_Ch384_Earphone

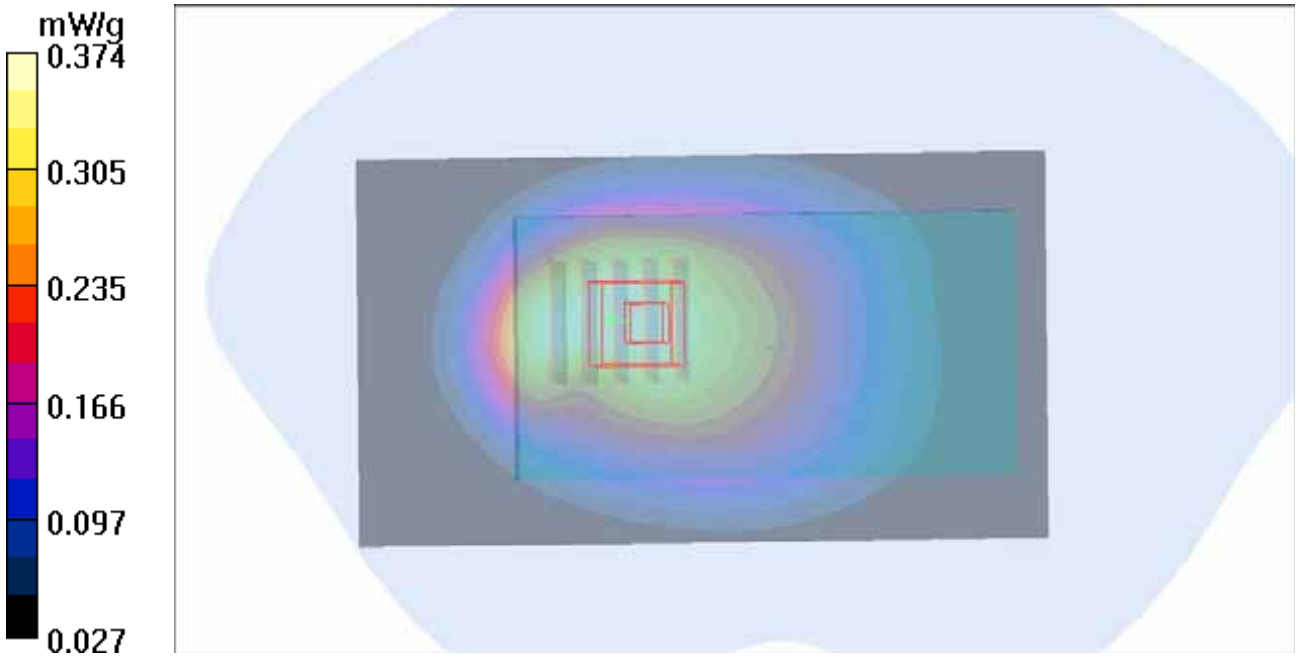
DUT: 120405C14

Communication System: CDMA2000 BC0; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: B835_0430 Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 56; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.12, 9.12, 9.12); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Left; Type: SAM V4.0; Serial: TP 1652
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch384/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.388 mW/g

Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.6 V/m; Power Drift = -0.021 dB
Peak SAR (extrapolated) = 0.437 W/kg
SAR(1 g) = 0.314 mW/g; SAR(10 g) = 0.225 mW/g
Maximum value of SAR (measured) = 0.374 mW/g



P19 CDMA2000 BC0_RC3+SO32_Rear Face_1cm_Ch384_Earphone

DUT: 120405C14

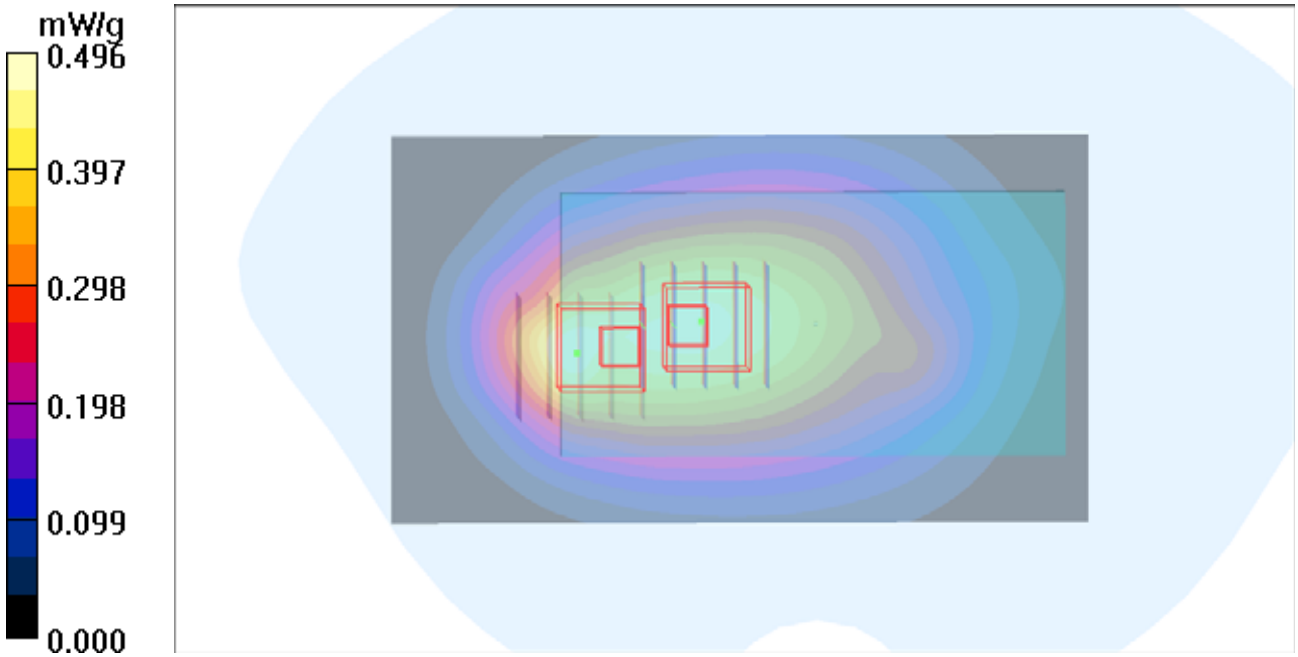
Communication System: CDMA2000 BC0; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: B835_0430 Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 56; ρ = 1000 kg/m^3
Ambient Temperature：21.6 ℃; Liquid Temperature：20.6 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.12, 9.12, 9.12); Calibrated: 2011/10/26
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2011/07/29
- Phantom: SAM Phantom_Left; Type: SAM V4.0; Serial: TP 1652
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Ch384/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.496 mW/g

Ch384/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.9 V/m; Power Drift = -0.083 dB
Peak SAR (extrapolated) = 0.521 W/kg
SAR(1 g) = 0.405 mW/g; SAR(10 g) = 0.305 mW/g
Maximum value of SAR (measured) = 0.469 mW/g

Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.9 V/m; Power Drift = -0.083 dB
Peak SAR (extrapolated) = 0.511 W/kg
SAR(1 g) = 0.350 mW/g; SAR(10 g) = 0.227 mW/g
Maximum value of SAR (measured) = 0.448 mW/g



Appendix C. Calibration Certificate for Probe and Dipole

The SPEAG calibration certificates are shown as follows.

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
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

Client **Auden**

Certificate No: D835V2-4d092_Jun11

CALIBRATION CERTIFICATE

Object	D835V2 - SN: 4d092
Calibration procedure(s)	QA CAL-05.v8 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	June 22, 2011

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)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-10 (No. 217-01266)	Oct-11
Power sensor HP 8481A	US37292783	06-Oct-10 (No. 217-01266)	Oct-11
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	29-Apr-11 (No. ES3-3205_Apr11)	Apr-12
DAE4	SN: 601	8-Jun-11 (No. DAE4-601_Jun11)	Jun-12

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: June 22, 2011

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
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:

a) 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
b) 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
c) 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:

d) 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	V52.6.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.8 ± 6 %	0.89 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.37 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**9.52 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.55 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**6.22 mW /g ± 16.5 % (k=2)**

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	53.1 ± 6 %	0.99 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.47 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**9.65 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.62 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**6.38 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.2 Ω - 2.2 jΩ
Return Loss	- 30.4 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.2 Ω - 4.8 jΩ
Return Loss	- 25.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.391 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	September 15, 2009

DASY5 Validation Report for Head TSL

Date: 22.06.2011

Test Laboratory: SPEAG, Zurich, Switzerland

D835_4d092_H_110622_CL

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d092

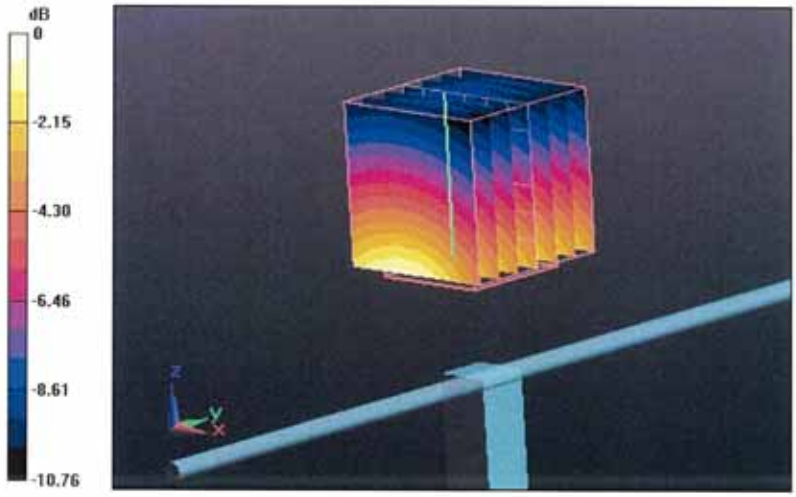
Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.89 mho/m; ε_r = 40.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.07, 6.07, 6.07); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 08.06.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

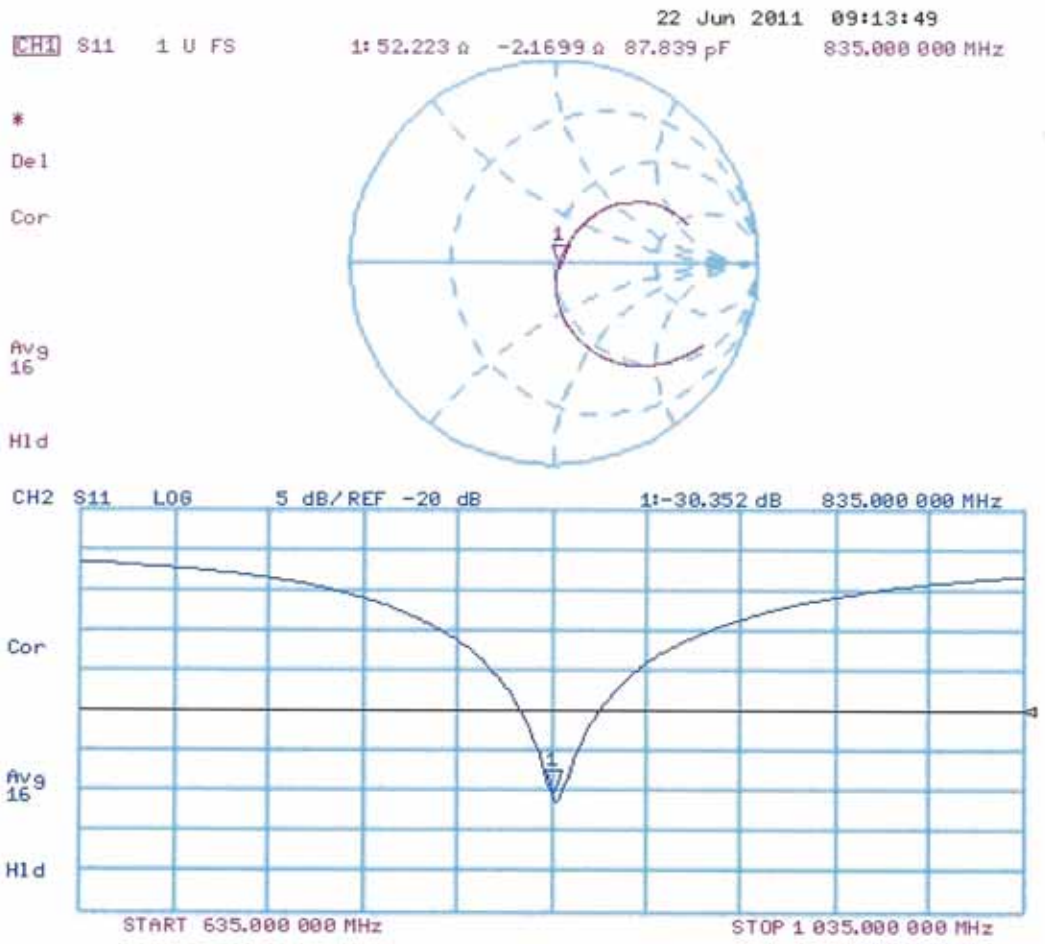
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.812 V/m; Power Drift = 0.0016 dB
Peak SAR (extrapolated) = 3.508 W/kg
SAR(1 g) = 2.37 mW/g; SAR(10 g) = 1.55 mW/g
Maximum value of SAR (measured) = 2.748 mW/g



0 dB = 2.750mW/g

Impedance Measurement Plot for Head TSL



Date: 22.06.2011

Test Laboratory: SPEAG, Zurich, Switzerland

D835_4d092_M_110622_CL

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d092

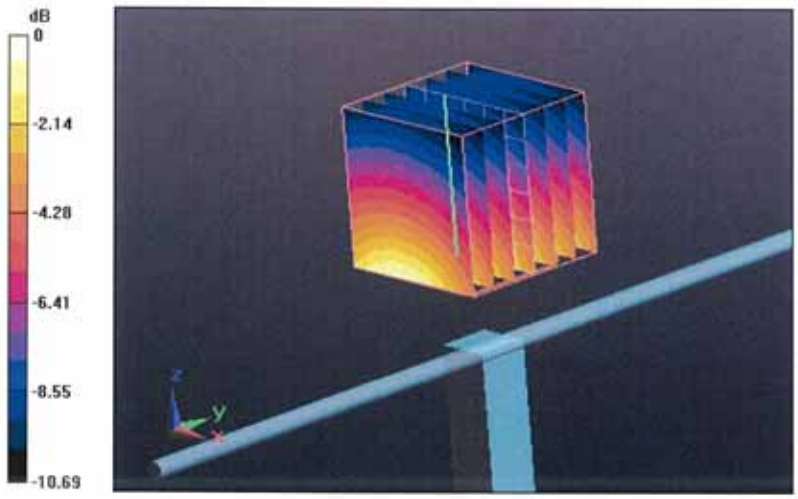
Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.99 mho/m; ε_r = 53.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.02, 6.02, 6.02); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 08.06.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

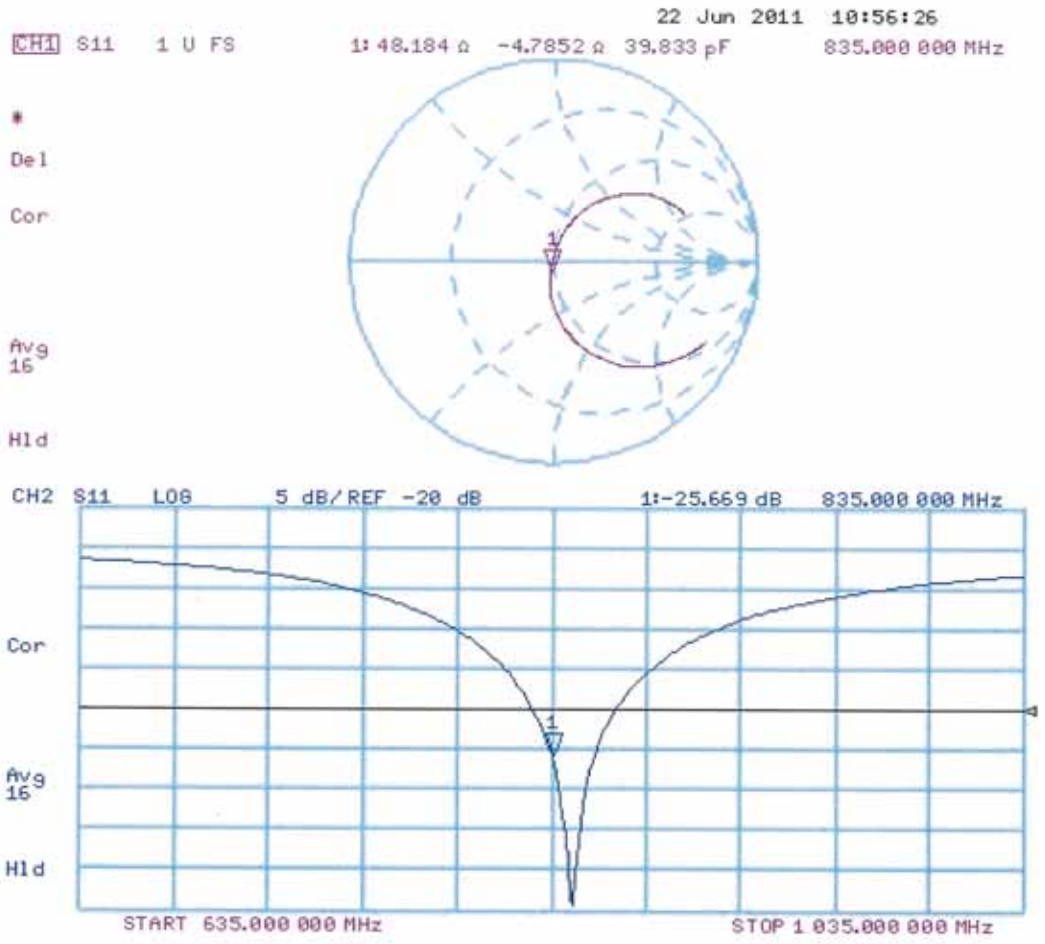
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.717 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 3.594 W/kg
SAR(1 g) = 2.47 mW/g; SAR(10 g) = 1.62 mW/g
Maximum value of SAR (measured) = 2.864 mW/g



0 dB = 2.860mW/g

Impedance Measurement Plot for Body TSL



Calibration Laboratory of
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Accreditation No.: SCS 108

Client **B.V.ADT (Auden)**

Certificate No: D1900V2-5d036_Jan12

CALIBRATION CERTIFICATE

Object	D1900V2 - SN: 5d036
Calibration procedure(s)	QA CAL-05.v8 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	January 26, 2012

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)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	05-Oct-11 (No. 217-01451)	Oct-12
Power sensor HP 8481A	US37292783	05-Oct-11 (No. 217-01451)	Oct-12
Reference 20 dB Attenuator	SN: 5086 (20g)	29-Mar-11 (No. 217-01368)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Dimce Iliev	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 26, 2012

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:

a) 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
b) 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
c) 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:

d) 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	V52.8.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 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 ± 0.2) °C	40.8 ± 6 %	1.39 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.65 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**38.9 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.05 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**20.3 mW /g ± 16.5 % (k=2)**

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	52.9 ± 6 %	1.52 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.74 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**38.9 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.10 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**20.4 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.0 Ω + 4.9 jΩ
Return Loss	- 26.1 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.3 Ω + 5.6 jΩ
Return Loss	- 23.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.195 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. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
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	May 08, 2003

Date: 26.01.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d036

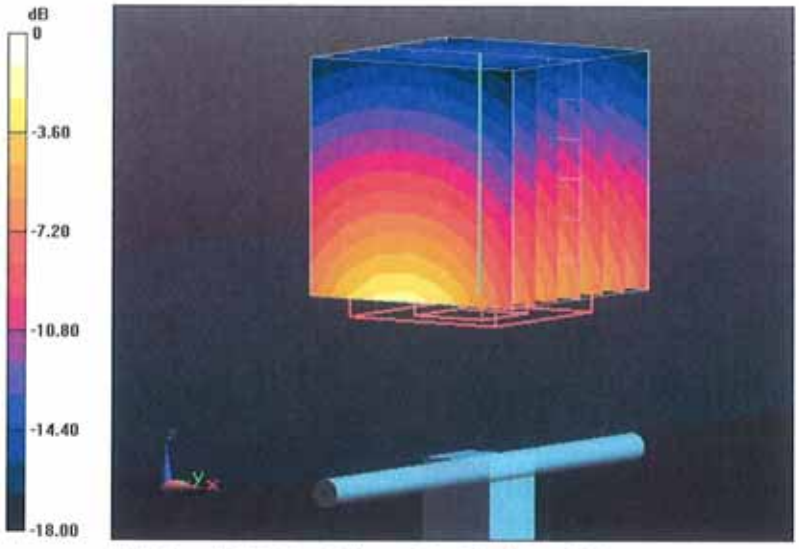
Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.39 mho/m; ε_r = 40.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.01, 5.01, 5.01); Calibrated: 30.12.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

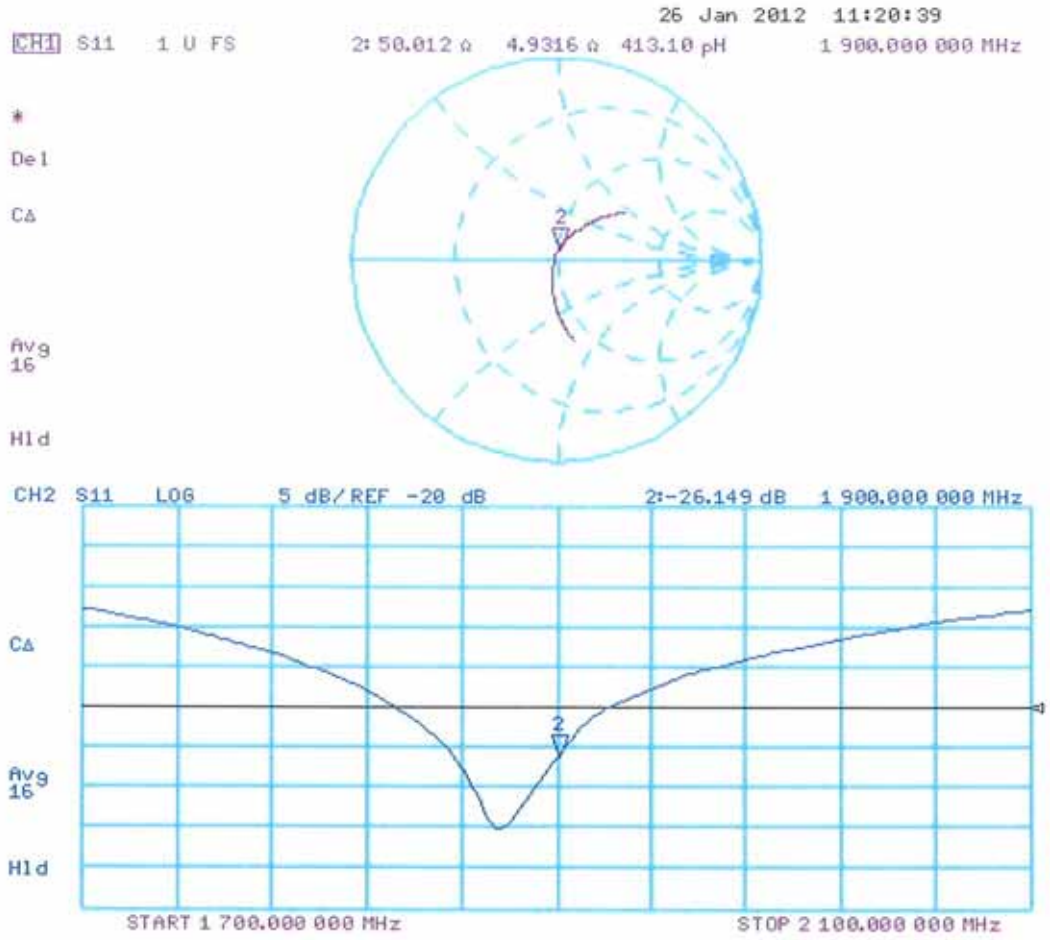
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.850 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 17.7040
SAR(1 g) = 9.65 mW/g; SAR(10 g) = 5.05 mW/g
Maximum value of SAR (measured) = 12.055 mW/g



0 dB = 12.060mW/g = 21.63 dB mW/g

Impedance Measurement Plot for Head TSL



Date: 26.01.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d036

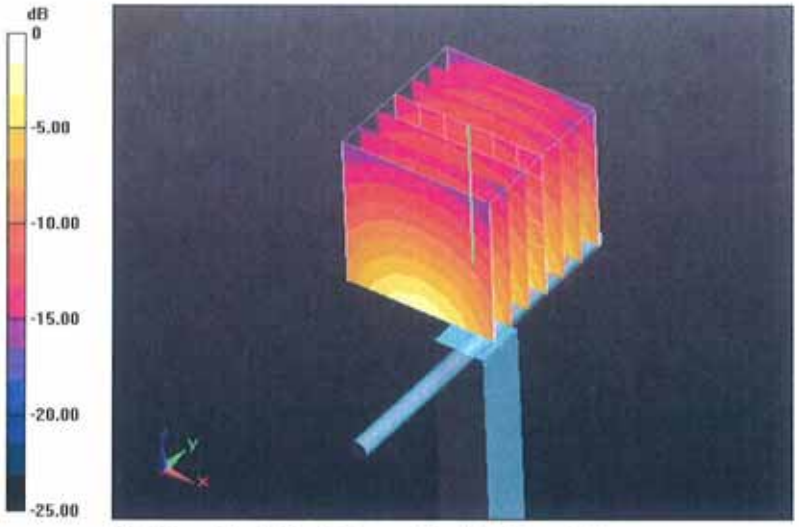
Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.52 mho/m; ε_r = 52.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.62, 4.62, 4.62); Calibrated: 30.12.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

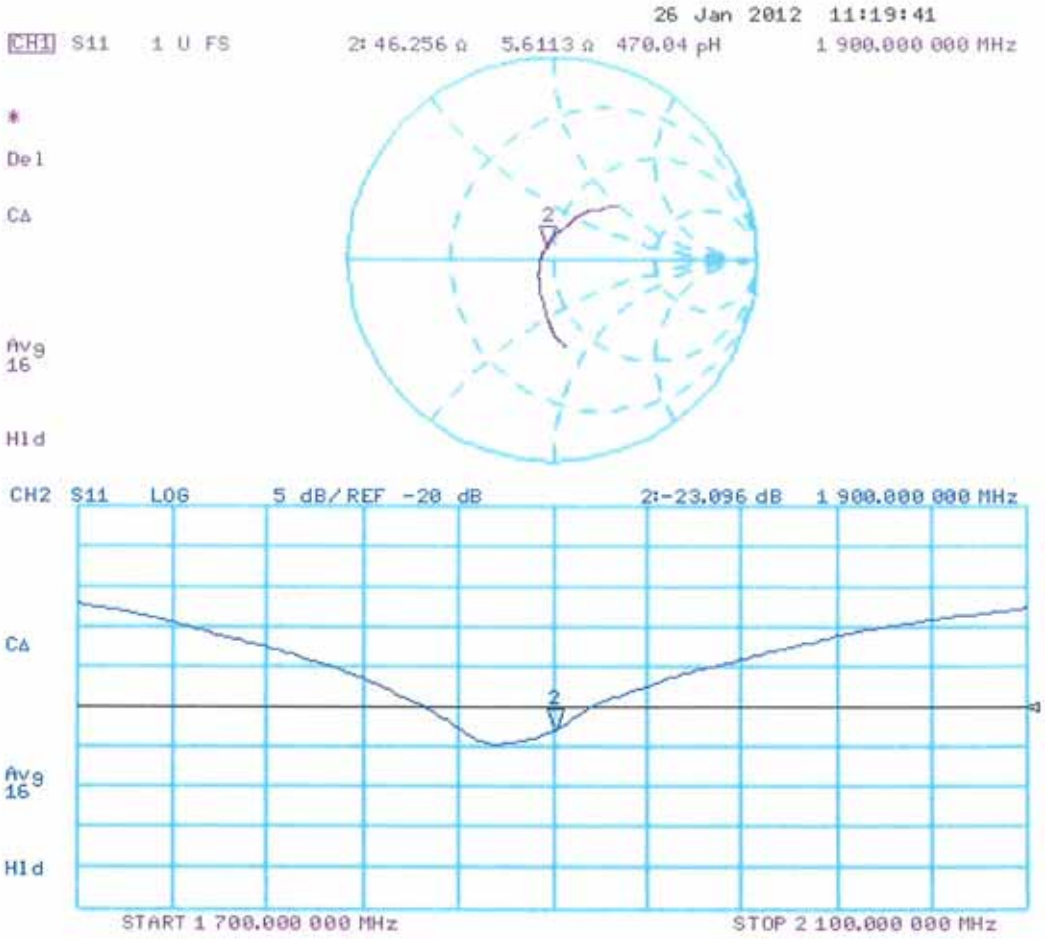
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.423 V/m; Power Drift = -0.0044 dB
Peak SAR (extrapolated) = 17.2700
SAR(1 g) = 9.74 mW/g; SAR(10 g) = 5.1 mW/g
Maximum value of SAR (measured) = 12.419 mW/g



0 dB = 12.420mW/g = 21.88 dB mW/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 B.V. ADT (Auden)

Certificate No: EX3-3650_Oct11

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3650

Calibration procedure(s): QA CAL-01.v8, QA CAL-14.v3, QA CAL-23.v4, QA CAL-25.v4
Calibration procedure for dosimetric E-field probes

Calibration date: October 26, 2011

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)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41498087	31-Mar-11 (No. 217-01372)	Apr-12
Reference 3 dB Attenuator	SN: S5054 (3c)	29-Mar-11 (No. 217-01369)	Apr-12
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Reference 30 dB Attenuator	SN: S5129 (30b)	29-Mar-11 (No. 217-01370)	Apr-12
Reference Probe ES3DV2	SN: 3013	29-Dec-10 (No. ES3-3013_Dec10)	Dec-11
DAE4	SN: 654	3-May-11 (No. DAE4-654_May11)	May-12
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-11)	In house check: Apr-13
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: October 27, 2011

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Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis

Calibration is Performed According to the Following Standards:

a) 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
b) 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

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z, VRx,y,z*: *A, B, C* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Probe EX3DV4

SN:3650

Manufactured: March 18, 2008
Calibrated: October 26, 2011

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3650

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.36	0.37	0.46	± 10.1 %
DCP (mV)[B]	98.5	94.0	98.2	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc[E] (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	94.9	±2.5 %
			Y	0.00	0.00	1.00	90.7	
			Z	0.00	0.00	1.00	114.0	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3650

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	41.9	0.89	9.20	9.20	9.20	0.79	0.69	± 12.0 %
835	41.5	0.90	8.87	8.87	8.87	0.79	0.69	± 12.0 %
1450	40.5	1.20	8.32	8.32	8.32	0.79	0.65	± 12.0 %
1750	40.1	1.37	7.92	7.92	7.92	0.70	0.63	± 12.0 %
1950	40.0	1.40	7.40	7.40	7.40	0.79	0.54	± 12.0 %
2450	39.2	1.80	6.80	6.80	6.80	0.59	0.62	± 12.0 %
2600	39.0	1.96	6.68	6.68	6.68	0.50	0.74	± 12.0 %
5200	36.0	4.66	5.05	5.05	5.05	0.35	1.80	± 13.1 %
5300	35.9	4.76	4.71	4.71	4.71	0.40	1.80	± 13.1 %
5500	35.6	4.96	4.56	4.56	4.56	0.45	1.80	± 13.1 %
5600	35.5	5.07	4.42	4.42	4.42	0.45	1.80	± 13.1 %
5800	35.3	5.27	4.30	4.30	4.30	0.50	1.80	± 13.1 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

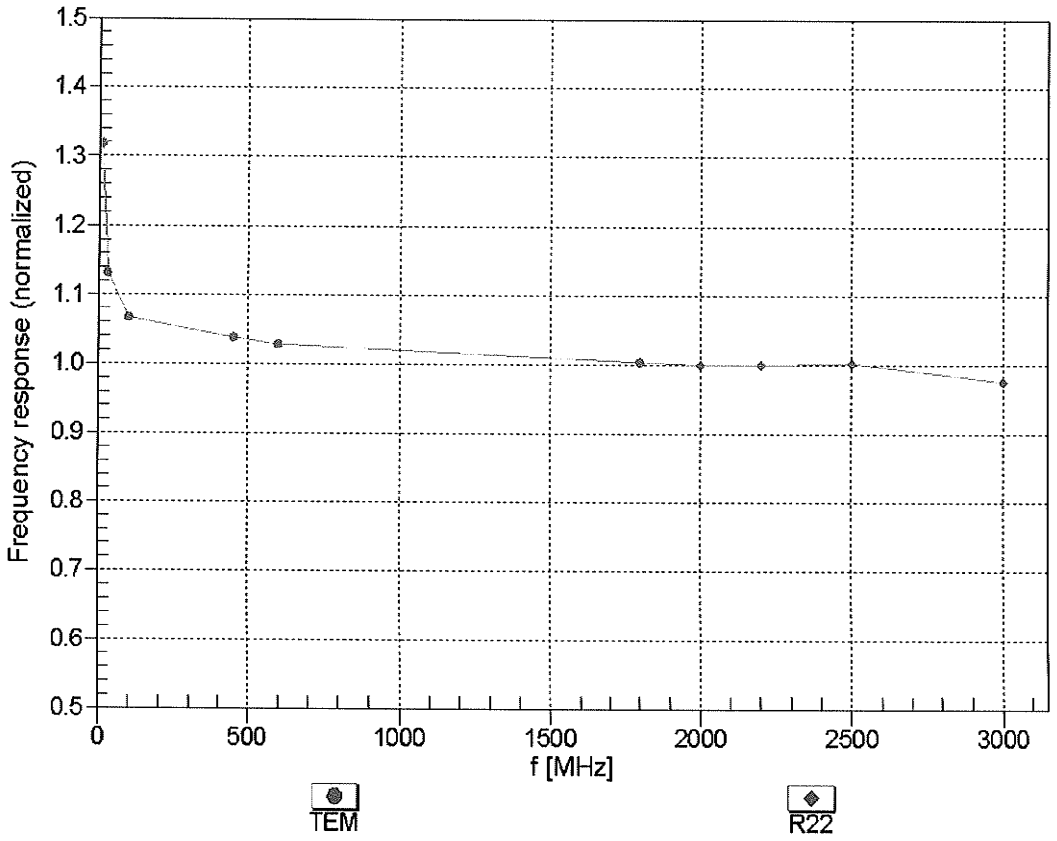
DASY/EASY - Parameters of Probe: EX3DV4 - SN:3650

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	55.5	0.96	9.21	9.21	9.21	0.78	0.69	± 12.0 %
835	55.2	0.97	9.12	9.12	9.12	0.79	0.67	± 12.0 %
1450	54.0	1.30	8.09	8.09	8.09	0.79	0.63	± 12.0 %
1750	53.4	1.49	7.49	7.49	7.49	0.79	0.64	± 12.0 %
1950	53.3	1.52	7.46	7.46	7.46	0.79	0.65	± 12.0 %
2450	52.7	1.95	6.89	6.89	6.89	0.79	0.60	± 12.0 %
2600	52.5	2.16	6.79	6.79	6.79	0.72	0.58	± 12.0 %
5200	49.0	5.30	4.28	4.28	4.28	0.50	1.95	± 13.1 %
5300	48.9	5.42	4.11	4.11	4.11	0.50	1.95	± 13.1 %
5500	48.6	5.65	3.73	3.73	3.73	0.60	1.95	± 13.1 %
5600	48.5	5.77	3.57	3.57	3.57	0.60	1.95	± 13.1 %
5800	48.2	6.00	3.81	3.81	3.81	0.60	1.95	± 13.1 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

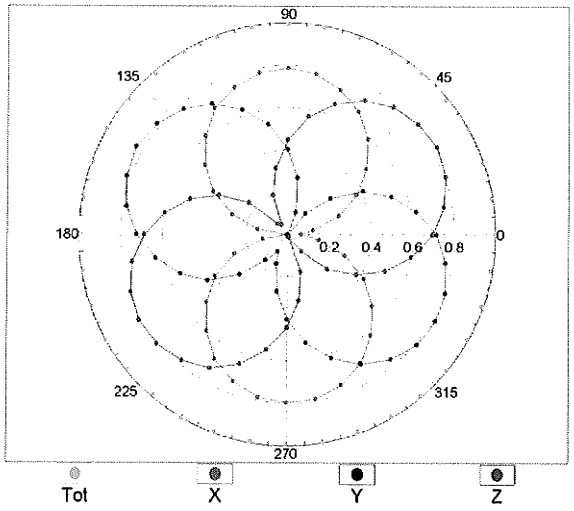
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



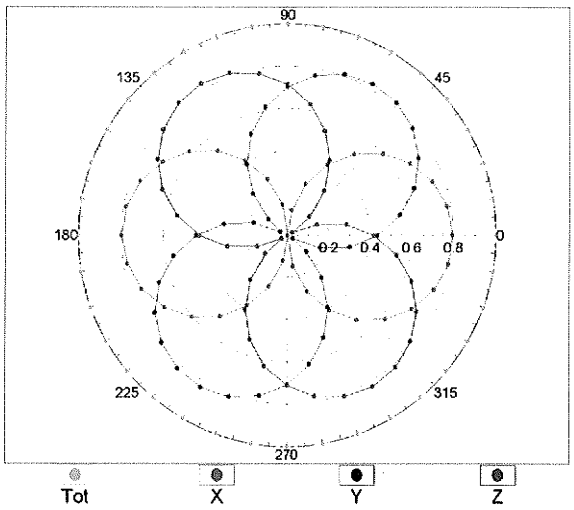
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

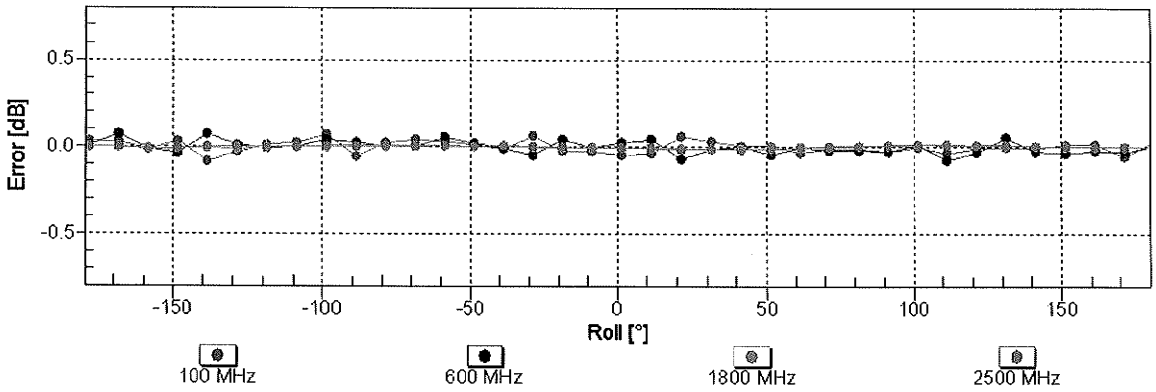
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



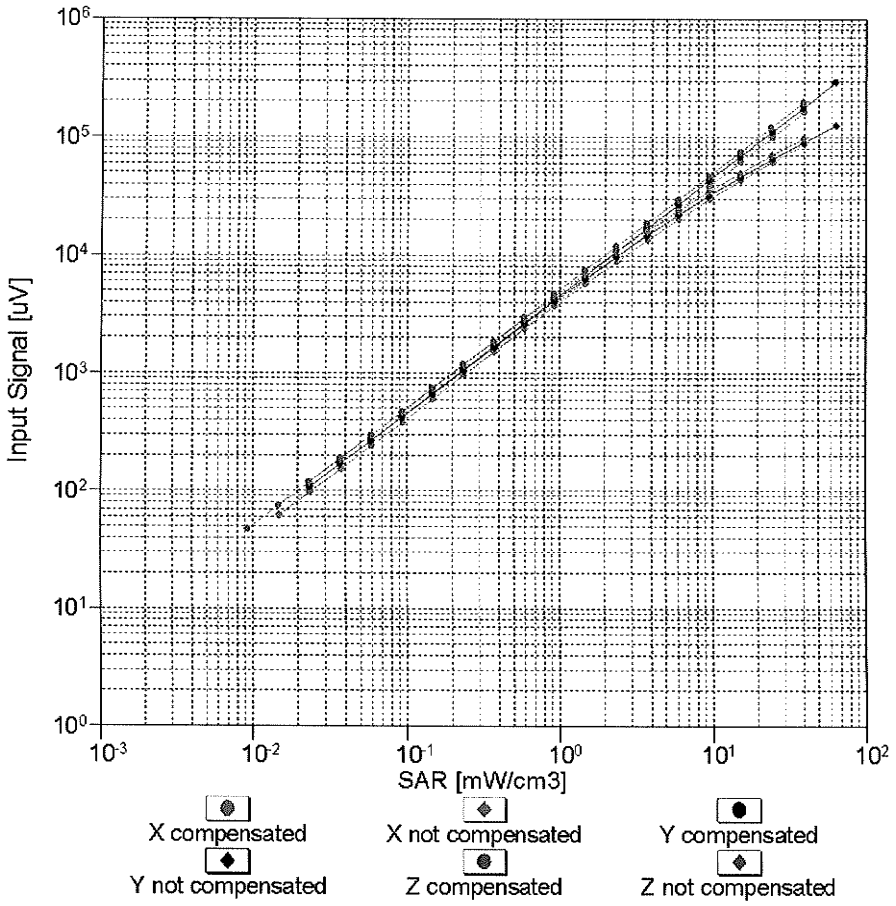
f=1800 MHz,R22

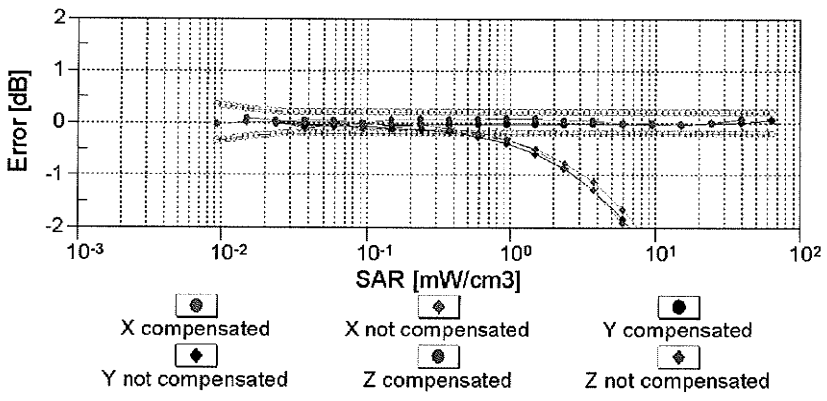




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})
(TEM cell , f = 900 MHz)

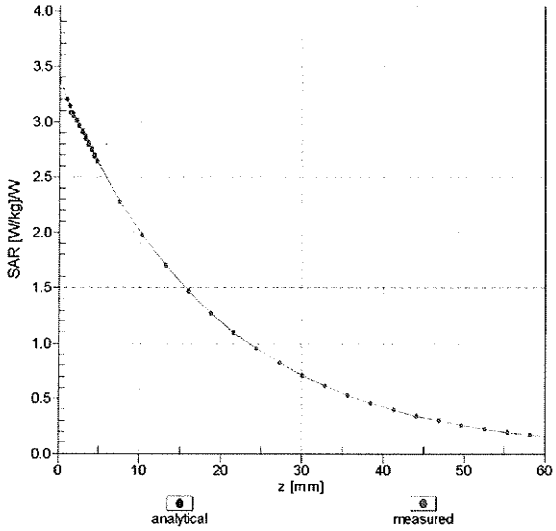




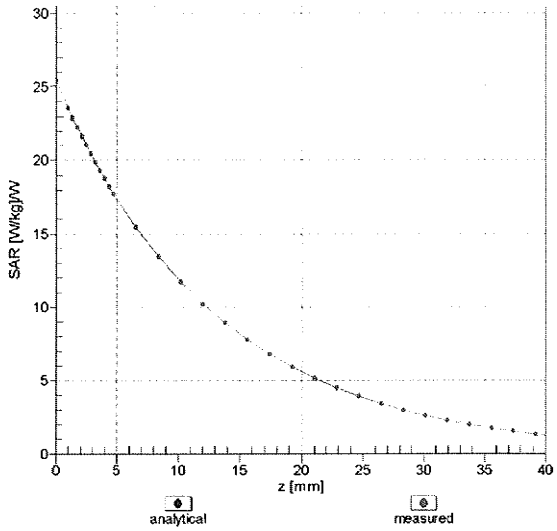
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

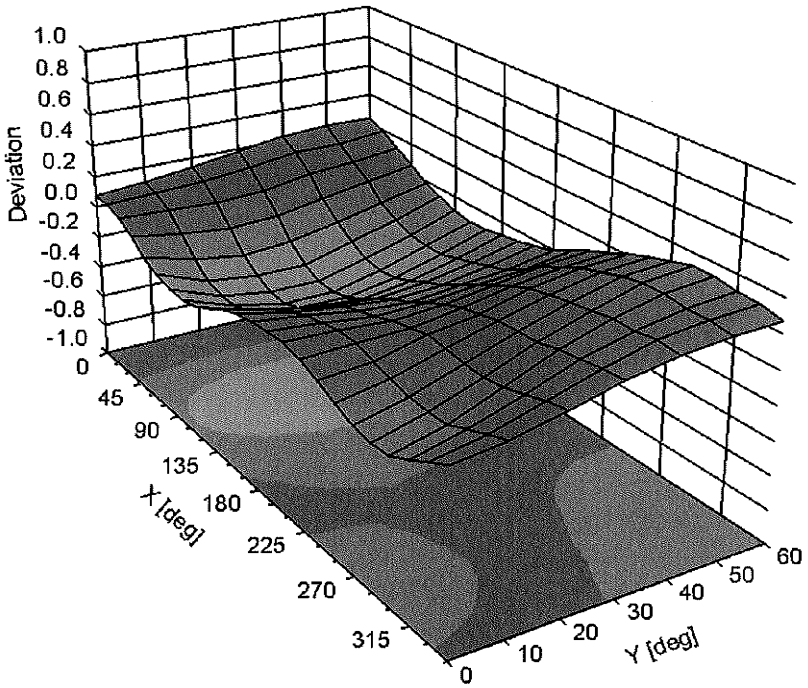


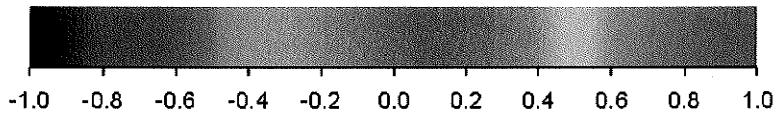
f = 1750 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz





Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3650

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	Not applicable
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	2 mm

Appendix D. Photographs of EUT and Setup