SAR TEST REPORT

Eequipment Under Test :	GSM 850&PCS1900 MOBILE PHONE
Model No. :	R2811
Market name:	Rainbow
FCC ID :	T6LR2811
Applicant :	E28 Ltd.
Address of Applicant :	689 BEIJING EAST ROAD. 2nd FLOOR, SHANGHAI.. 200001
Date of Receipt :	2006.04.05
Date of Test :	2006.04.18 – 2006.05.26
Date of Issue :	2006.06.19

Standards:

FCC OET Bulletin 65 supplement C,
ANSI/IEEE C95.1, C95.3, IEEE 1528-2003

In the configuration tested, the EUT complied with the standards specified above.

Remarks:

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS-CSTC Shanghai GSM Lab or testing done by SGS-CSTC Shanghai GSM Lab must approve SGS Shanghai GSM Lab in connection with distribution or use of the product described in this report in writing.

Tested by :	Roger. Ruan	Date :	2006.06.19
Approved by :	Zhiang Yuan	Date :	2006.06.19

Contents

1. General Information

1.1 Test Laboratory

GSM Lab
SGS-CSTC Standards Technical Services Co.Ltd Shanghai Branch
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Telephone: +86 (0) 21 6495 1616
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Internet: http://www.cn.sgs.com

1.2 Details of Applicant

Name: E28 Ltd.
Address: 689 BEIJING EAST ROAD. 2nd FLOOR

SHANGHAI 200001

1.3 Description of EUT(s)

Brand name	E28	
Model No.	R2811	
Market Name	Rainbow	
Serial No.	IMEI: 00440000350111-9	
State of sample	Production	
Battery Type	Lithium-Ion	
Antenna Type	Inner Antenna	
Operation Mode	GSM850/PCS1900	
Modulation Mode	GMSK	
Frequency range	GSM850	Tx: 824~849 MHz
		Rx: 869~894 MHz
	PCS1900	Tx: 1850~1910 MHz
		Rx: 1930~1990 MHz
Maximum RF Conducted Power	GSM850: 33dBm, PCS1900: 30dBm	
GPRS	MultiSlot class 10 uplink 2TS	
802.11b Max Conducted Power	17dBm	
802.11b Modulation Type	DSSS	
802.11b Data Rate	11Mbps	

1.4 Test Environment

Ambient temperature: 22.0° C

Tissue Simulating Liquid: 22° C

Relative Humidity: 29%~35%

1.5 Operation Configuration

Configuration 1: GSM 850, LeftHandSide Cheek & 15° Tilt Position

Configuration 2: GSM 850, RightHandSide Cheek & 15° Tilt Position

Configuration 3: GPRS 850, BodyWorn (1.5 cm between EUT and phantom)

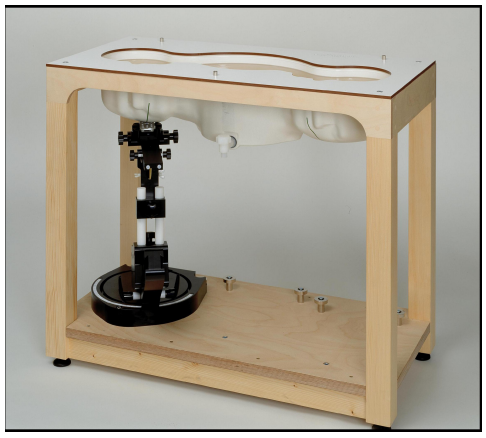
Configuration 4: PCS 1900, LeftHandSide Cheek & 15° Tilt Position

Configuration 5: PCS 1900, RightHandSide Cheek & 15° Tilt Position

Configuration 6: GPRS 1900, BodyWorn (1.5 cm between EUT and phantom)

Configuration 7: 802.11b, BodyWorn (1.5 cm between EUT and phantom)

1.6 SAM Twin Phantom



The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region where shell thickness increases to 6mm). It has three measurement areas:

• Left hand

• Right hand
• Flat phantom

A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. Free space scans of devices on the cover are possible.

On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

Phantom specification:

Construction:	The shell corresponds to the specifications of Specific Anthropomorphic Mannequin(SAM) Phantom defined in IEEE 1528-2003,EN 50361:2001 and IEC 62209.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.
Shell Thickness	2±0.2mm
Filling Volume	Approx.25 liters
Dimensions	Height: 850mm Length: 1000mm Width: 500mm

1.7 Device Holder for Transmitters

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

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

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

1.8 Description of Test Position

1.8.1 SAM Phantom Shape

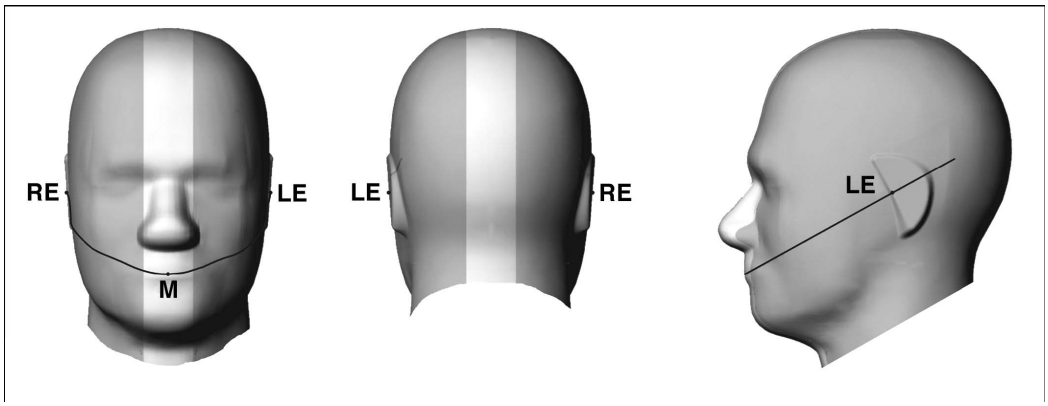


Figure1—front, back, and side views of SAM (model for the phantom shell). Full-head model is for illustration purposes only—procedures in this recommended practice are intended primarily for the phantom setup of Figure 2. Note: The center strip including the nose region has a different thickness tolerance.

Figure 2—Sagittally bisected phantom with extended perimeter (shown placed on its side as used for SAR measurements)

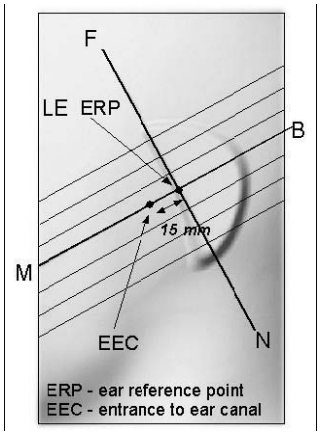


Figure 3—Close-up side view of phantom showing the ear region, N-F and B-M lines, and seven cross-sectional plane locations

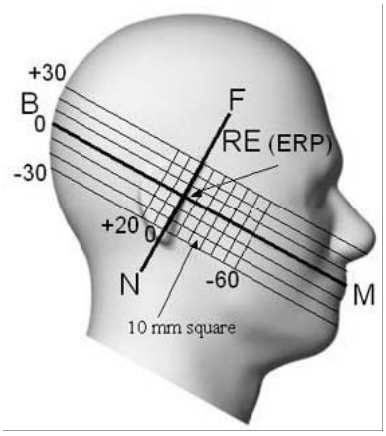


Figure 4—Side view of the phantom showing relevant markings and seven cross-sectional plane locations

1.8.2 The following pictures present the different DUT constructions.

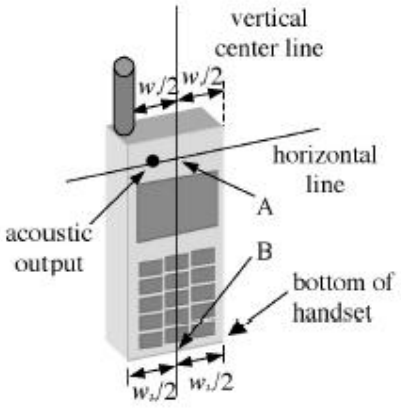


Figure 5a—Handset vertical and horizontal reference lines—"fixed case"

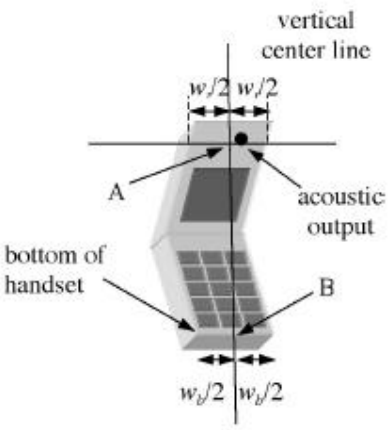


Figure 5b—Handset vertical and horizontal reference lines—"clam-shell case"

1.8.3 Definition of the "cheek" position:

a) Position the device with the vertical centre line of the body of the device and the horizontal line crossing the centre of the ear piece in a plane parallel to the sagittal plane of the phantom ("initial position" see Figure 6). While maintaining the device in this plane, align the vertical centre line with the reference plane containing the three ear and mouth reference points (M, RE and LE) and align the centre of the ear piece with the line RE-LE;

b) Translate the mobile phone box towards the phantom with the ear piece aligned with the line LE-RE until the phone touches the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the box until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost.

1.8.4 Definition of the "tilted" position:

a) Position the device in the "cheek" position described above;

b) While maintaining the device in the reference plane described above and pivoting against the ear, move it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost.

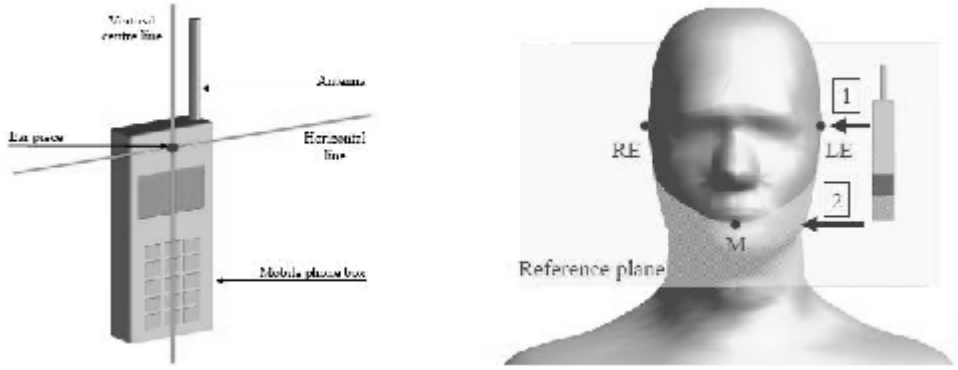


Figure 6 - Definition of the reference lines and points, on the phone and on the phantom and initial position

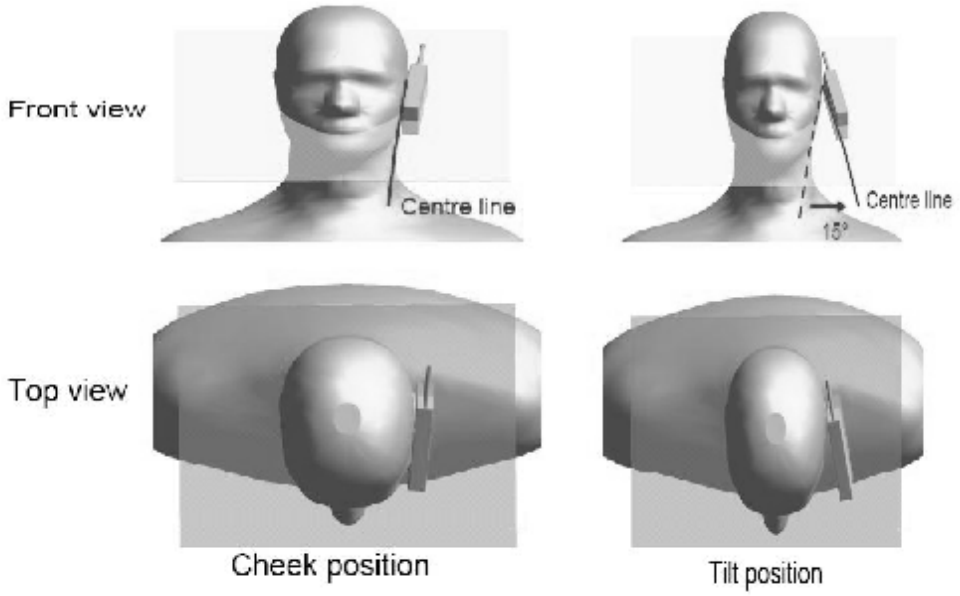


Figure 7 -"Cheek" and "tilt" positions of the mobile phone on the left side

1.9 Recipes for Tissue Simulating Liquid

The following tables give the recipes for tissue simulating liquids to be used in different frequency bands.

Ingredient	835MHz	1900MHz
Water	40.29%	55.24%
Sugar	57.90%	-
Salt (NaCl)	1.38%	0.31%
DGBE	-	44.45%
Preventol	0.18%	-
HEC	0.24%	-
Relative Permittivity	41.5	40.0
Conductivity (S/m)	0.90	1.40

Table 1: Composition of the Brain Tissue Equivalent Matter

Ingredient	835MHz	1900MHz
Water	50.75%	70.17%
Sugar	48.21%	-

Salt (NaCl)	0.94%	0.39%
DGBE	-	29.44%
Preventol	0.10%	-
HEC	0.00	-
Relative Permittivity	55.2	53.3
Conductivity (S/m)	0.97	1.52

Table 2: Composition of the Body Tissue Equivalent Matter

2.0 Measurement procedure

Step 1: Power reference measurement

The SAR measurement was taken at a selected spatial reference point to monitor power variations during testing. This fixed location point was measured and used as a reference value.

Step 2: *Area scan*

The SAR distribution at the exposed side of the head was measured at a distance of 3.9mm from the inner surface of the shell. The area covered the entire dimension of the head and the horizontal grid spacing was 20mm*20mm.Based on the area scan data, the area of the maximum absorption was determined by spline interpolation.

Step 3: *Zoom scan*

Around this point, a volume of 30mm*30mm*34mm (fine resolution volume scan, zoom scan) was assessed by measuring 7*7*7 points. On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:
The data at the surface was extrapolated, since the center of the dipoles is 2.1mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.2mm. (This can be variable. Refer to the probe specification) The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluated the points between the surface and the probe tip. The maximum interpolated value was searched with a straight-forward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1g or 10g) were computed using the 3D-Spline interpolation algorithm. The volume was integrated with the trapezoidal algorithm. One thousand points (10*10*10) were interpolated to calculate the average. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

Step 4: Power reference measurement (drift)

The SAR value at the same location as in step 1 was again measured. (If the value changed by more than 5%, the evaluation is repeated.)

2.1 The SAR Measurement System

A photograph of the SAR measurement System is given in Fig.8.

This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (Speag Dasy 4 professional system). A Model ES3DV3 3088 E-field probe is used to determine the internal electric fields. The SAR can be obtained from the equation SAR= $\sigma (|Ei|^2)/ \rho$ where σ and ρ are the conductivity and mass density of the tissue-simulant.

The DASY4 system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot (Stabile RX family) with controller, teach pendant and software. An arm extension for accommodation the data acquisition electronics (DAE).

- A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.

- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.

- The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.

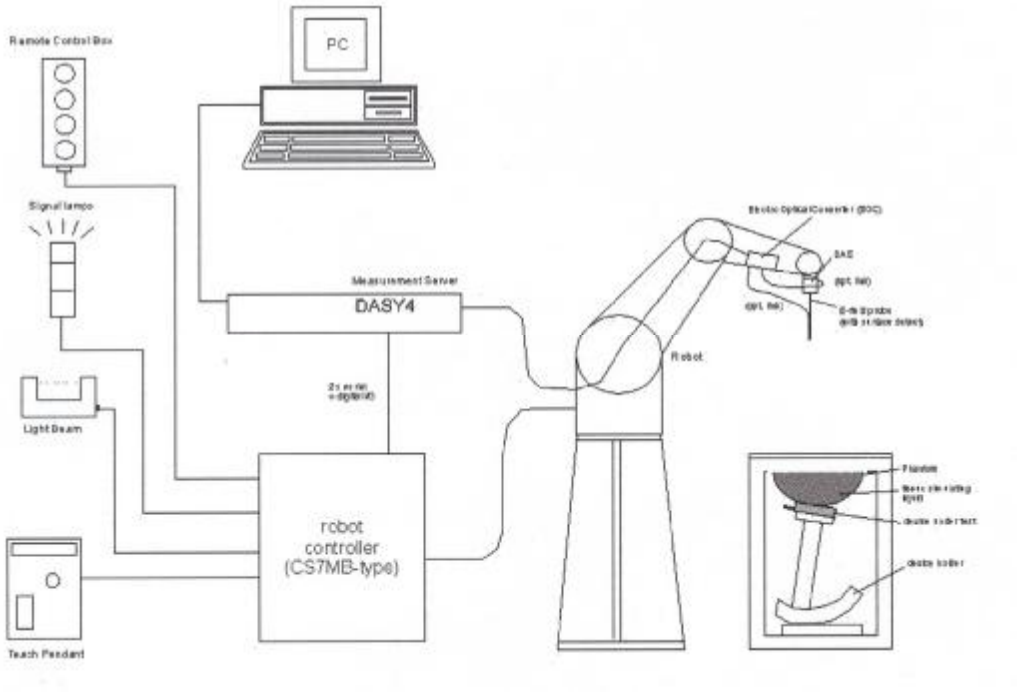


Fig. 8 SAR System Configuration

- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows 2000.
- DASY4 software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand, right-hand and body-worn usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- Validation dipole kits allowing to validate the proper functioning of the system.

2.2 SAR System Verification

The microwave circuit arrangement for system verification is sketched in Fig. 9. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% from the target SAR values. These tests were done at 900MHz &1900MHz &2450 MHz. The tests were conducted on the same days as the measurement of the DUT. The obtained results from the system accuracy verification are displayed in the table 1 (SAR values are normalized to 1W forward power delivered to the dipole). During the tests, the ambient temperature of the laboratory was in the range 22°C, the relative humidity was in the range 60% and the liquid depth above the ear reference points was above 15 cm in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.

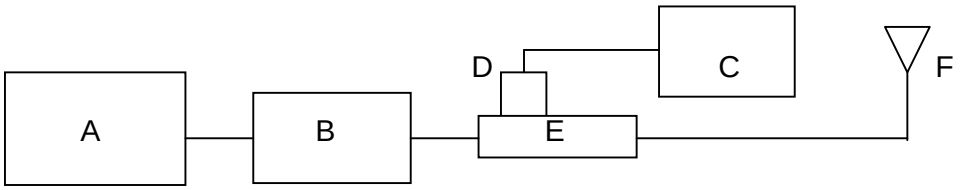


Fig. 9 the microwave circuit arrangement used for SAR system verification

A. Agilent Model E4438C Signal Generator

B. Mini-Circuit Model ZHL-42 Preamplifier

C. Agilent Model E4416A Power Meter

D. Agilent Model 8481H Power Sensor

E. HT CP6100 20N Dual directional coupler

F. Reference dipole antenna

Validation Kit	Frequency MHz	Target SAR 1g (250mW)	Target SAR 10g (250mW)	Measured SAR 1g	Measured SAR 10g	Measured Date
ES3DV3 SN3088	900 Head	2.6	1.67	2.69	1.68	2006-04-27
ES3DV3 SN3088	900 Body	2.69	1.74	2.77	1.75	2006-04-25
ES3DV3 SN3088	1900 Head	9.89	5.16	9.63	5.05	2006-04-18
ES3DV3 SN3088	1900 Body	9.81	5.22	9.62	5.14	2006-04-24
ES3DV3 SN3088	2450 Body	13.1	6.03	13.23	6.12	2006-05-26

Table 3. Result System Validation

2.3 Tissue Simulant Fluid for the Frequency Band 850MHz &1900MHZ&2450MHz

The dielectric properties for this body-simulant fluid were measured by using the HP Model 85070D Dielectric Probe (rates frequency band 200 MHz to 20 GHz) in conjunction with Agilent E5071B Network Analyzer (300 KHz-8500 MHz). The Conductivity (σ) and Permittivity (ρ) are listed in Table 2.For the SAR measurement given in this report. The temperature variation of the Tissue Simulant Fluid was 22°C.

Frequency (MHz)	Tissue Type	Limit/Measured	Permittivity (ρ)	Conductivity (σ)	Simulated Tissue Temp (°C)
850	Head	Measured, 2006-04-27	41.67	0.877	22.5
		Recommended Limit	41.5±5%	0.97±5%	20-24
	Body	Measured, 2006-04-25	52.55	0.996	22.5
		Recommended Limit	55.0±5%	1.05±5%	20-24
1900	Head	Measured, 2006-04-18	39.53	1.443	22.3
		Recommended Limit	40.0±5%	1.40±5%	20-24

	Body	**Measured, 2006-04-24**	**51.55**	**1.524**	**22.6**
		Recommended Limit	**53.3±5%**	**1.52±5%**	**20-24**
2450	**Body**	**Measured, 2006-05-26**	**51.62**	**1.943**	**22.6**
		Recommended Limit	**52.5±5%**	**2.00±5%**	**20-24**

Table 4. Dielectric parameters for the Frequency Band 850MHz&1900MHZ&2450MHz

2.4 Test Standards and Limits

According to FCC 47 CFR §2.1093(d) the limits to be used for evalutation are based generally on criteria published by the American National Standards Institute (ANSI) for localized specifice absorption rate (SAR) in Section 4.2 of "IEEE Standard for Safty Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3KHz to 300GHz," ANSI/IEEE C95.1-1992, Conpyright 1992 by the Institute of Electrical & Electronics Engineers, Inc., New York, New York 10071.

Human Exposure	**Uncontrolled Environment General Population**
Spatial Peak SAR (Brain)	1.60 mW/g (averaged over a mass of 1g)

Table 5. RF Exposure Limits

Notes:

1. Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.

2. Summary of Results

Results of Fast SAR scan

Frequency Band(MHz)	EUT position	Conducted Output Power (dBm)	1g Avg. (mW/g)	Power Drift	Amb. Temp (℃)	Verdict
850	LeftHandSide Cheek, Low Channel	32.7	0.531	-0.155	22	**PASS**
	LeftHandSide Cheek, Mid Channel	32.7	0.574	0.026	22	**PASS**
	LeftHandSide Cheek, High Channel	32.8	0.584	0.025	22	**PASS**
	LeftHandSide Tilt, Low Channel	32.7	0.341	0.008	22	**PASS**
	LeftHandSide Tilt, Mid Channel	32.7	0.381	0.062	22	**PASS**
	LeftHandSide Tilt, High Channel	32.8	0.389	0.065	22	**PASS**
	RightHandSide Cheek, Low Channel	32.7	0.507	0.125	22	**PASS**
	RightHandSide Cheek, Mid Channel	32.7	0.577	0.060	22	**PASS**
	RightHandSide Cheek, High Channel	32.8	0.587	0.047	22	**PASS**
	RightHandSide Tilt, Low Channel	32.7	0.354	-0.011	22	**PASS**
	RightHandSide Tilt, Mid Channel	32.7	0.380	0.034	22	**PASS**
	RightHandSide Tilt, High Channel	32.8	0.390	0.052	22	**PASS**
	GPRS,BodyWorn, Low Channel	32.6	1.18	-0.138	22	**PASS**
	GPRS,BodyWorn, Mid Channel	32.6	1.19	0.015	22	**PASS**
	GPRS,BodyWorn, High Channel	32.7	1.22	-0.009	22	**PASS**
1900	LeftHandSide Cheek, Low Channel	29.9	0.571	-0.021	22	**PASS**
	LeftHandSide Cheek, Mid Channel	29.7	0.643	-0.056	22	**PASS**
	LeftHandSide Cheek, High Channel	29.6	0.595	0.014	22	**PASS**
	LeftHandSide Tilt, Low Channel	29.9	0.657	-0.002	22	**PASS**
	LeftHandSide Tilt, Mid Channel	29.7	0.710	0.000	22	**PASS**
	LeftHandSide Tilt, High Channel	29.6	0.642	0.011	22	**PASS**

	RightHandSide Cheek, Low Channel	29.9	0.722	0.176	22	**PASS**
	RightHandSide Cheek, Mid Channel	29.7	0.790	0.049	22	**PASS**
	RightHandSide Cheek, High Channel	29.6	0.723	0.068	22	**PASS**
	RightHandSide Tilt, Low Channel	29.9	0.850	-0.076	22	**PASS**
	RightHandSide Tilt, Mid Channel	29.7	0.948	-0.001	22	**PASS**
	RightHandSide Tilt, High Channel	29.6	0.850	0.029	22	**PASS**
	GPRS,BodyWorn, Low Channel	29.9	1.01	-0.024	22	**PASS**
	GPRS,BodyWorn, Mid Channel	29.7	1.01	-0.031	22	**PASS**
	GPRS,BodyWorn, High Channel	29.6	0.905	0.025	22	**PASS**
2450	802.11b,BodyWorn,Low Channel(front)	16.7	0.015	-0.113	22	**PASS**
	802.11b,BodyWorn,Low Channel(rear)	16.7	0.018	-0.135	22	**PASS**
	802.11b,BodyWorn,Mid Channel(rear)	16.4	0.023	-0.004	22	**PASS**
	802.11b,BodyWorn,High Channel(rear)	16.0	0.025	0.079	22	**PASS**

Maximum Values of 1g SAR

Frequency Band(MHz)	**EUT position**	**Conducted Output Power (dBm)**	**1g Average (W/Kg)**	**Power Drift (dB)**	**Amb. Temp (℃)**	**Verdict**
850	LeftHandSide Cheek, High Channel	32.8	0.563	-0.094	22	**PASS**
	RightHandSide Cheek, High Channel	32.8	0.591	-0.024	22	**PASS**
	GPRS,BodyWorn, High Channel	32.7	1.22	0.062	22	**PASS**
1900	LeftHandSide Tilt, Mid Channel	29.7	0.686	-0.022	22	**PASS**
	RightHandSideTilt ,Mid Channel	29.7	0.985	0.082	22	**PASS**
	GPRS,BodyWorn, Mid Channel	29.7	0.918	-0.054	22	**PASS**
2450	802.11b ,BodyWorn,High Channel(rear)	16.0	0.025	-0.036	22	**PASS**

Note:

1. In GSM 850 band, the low, middle and high channels are CH128/824.2MHz, CH189/836.4MHz and CH251/848.8MHz separately.

2. In PCS 1900 band, the low, middle and high channels are CH512/1805.2MHz, CH661/1880.0MHz and CH810/1909.8MHz separately.

3. In ISM 2450 band, the low, middle and high channels are CH01/2412MHz, CH06/2437MHz and CH11/2462MHz separately

4. For the Bodyworn measurements the sample was only placed with the antenna toward the phantom since this position delivers the highest SAR values.

5. For the Bodyworn measurements, the distance from the sample to the phantom is 1.5 cm.

6. As the Mobile Station(MS) can not have the GSM/GPRS established simultaneously with 802.11b enabled, the 802.11b SAR tests were performed separately.

3. Instruments List

Instrument	Model	Serial number	NO.	Date of last Calibration
Desktop PC	COMPAQ EVO	N/A	GSM-SAR-025	N/A
Dasy 4 software	V 4.6 build 23	N/A	GSM-SAR-001	N/A
Probe	ES3DV3	3088	GSM-SAR-034	2005.09.13
DAE	DAE3	569	GSM-SAR-023	2005.11.17
Phantom	SAM 12	TP-1283	GSM-SAR-005	N/A
Robot	RX90L	F03/5V32A1/A01	GSM-SAR-008	N/A
900MHz system validation dipole	D900V2	184	GSM-SAR-013	2005.8.22
1900MHz system validation dipole	D1900V2	5d028	GSM-SAR-020	2005.8.25
2450MHz system validation dipole	D2450V2	733	GSM-SAR-019	2005.8.27
Dielectric probe kit	85070D	US01440168	GSM-SAR-016	2005.12.19
Agilent network analyzer	E5071B	MY42100549	GSM-SAR-007	2005.12.19
Agilent signal generator	E4438	14438CATO-19719	GSM-SAR-008	2005.12.19
Mini-Circuits preamplifier	ZHL-42	D041905	GSM-SAR-033	2006.05.10
Agilent power meter	E4416A	GB41292095	GSM-SAR-010	2005.12.19
Agilent power sensor	8481H	MY41091234	GSM-SAR-011	2005.12.19
HT CP6100 20N Coupling	6100	SCP301480120	GSM-SAR-012	2005.12.19
R&S Universal radio communication tester	CMU200	103633	GSM-AUD-002	2005.12.20

4. Measurements

4.1LeftHandSide-Cheek-GSM850-Low

Date/Time: 2006-4-28 18:34:03

Test Laboratory: SGS-GSM

GSM850-LeftHandSide-Cheek-Low

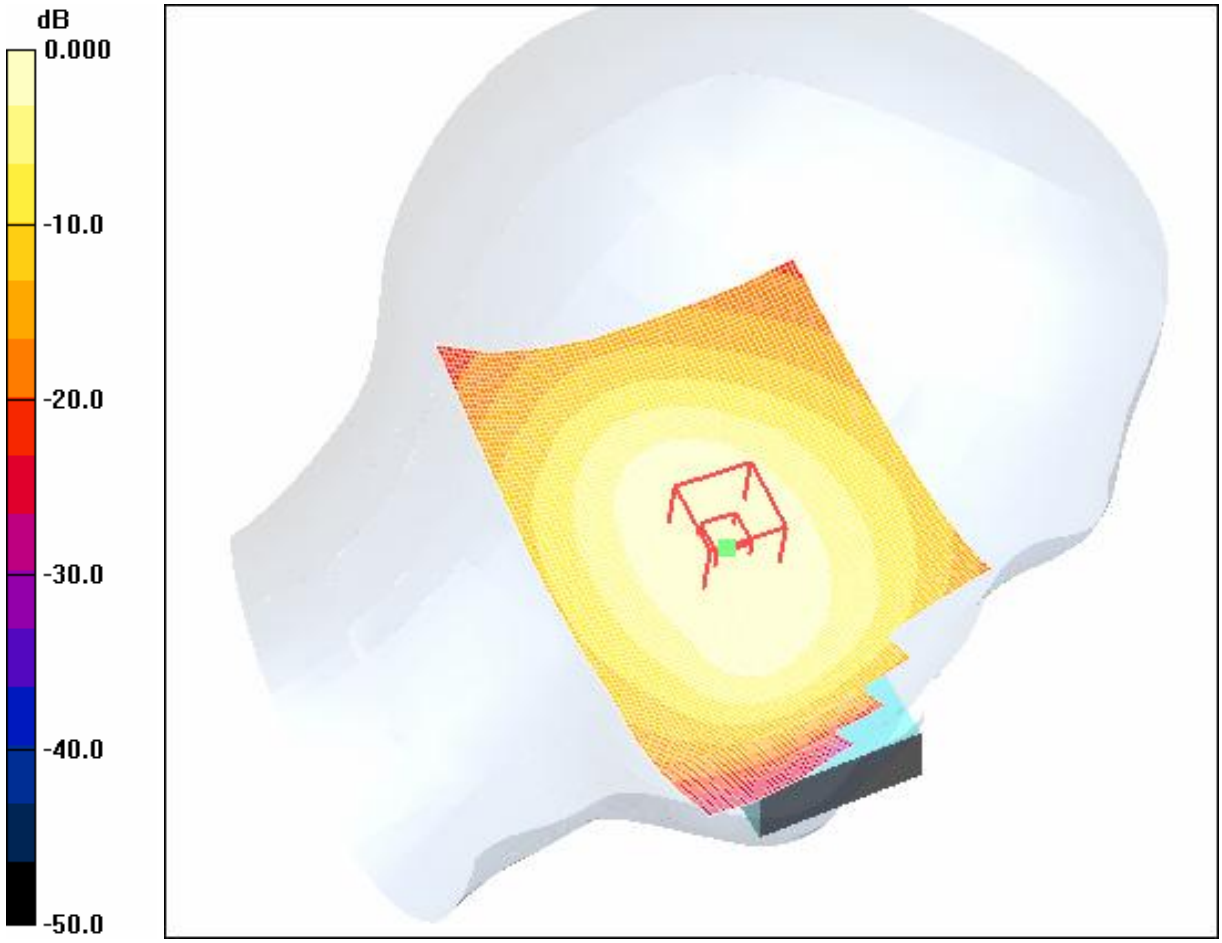
DUT: GSM60047B; Type: Head; Serial: 20060410

Communication System: GSM850-GSM Mode; Frequency: 824.2 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.866 mho/m; ε_r = 41.8; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.91, 5.91, 5.91); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Cheek Position - Low/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 22.3 V/m; Power Drift = -0.155 dB
Motorola Fast SAR: SAR(1 g) = 0.531 mW/g; SAR(10 g) = 0.371 mW/g
Maximum value of SAR (interpolated) = 0.566 mW/g



0 dB = 0.566mW/g

4.2LeftHandSide-Cheek-GSM850-Middle

Date/Time: 2006-4-28 18:44:58

Test Laboratory: SGS-GSM

GSM850-LeftHandSide-Cheek-Mid

DUT: GSM60047B; Type: Head; Serial: 20060410

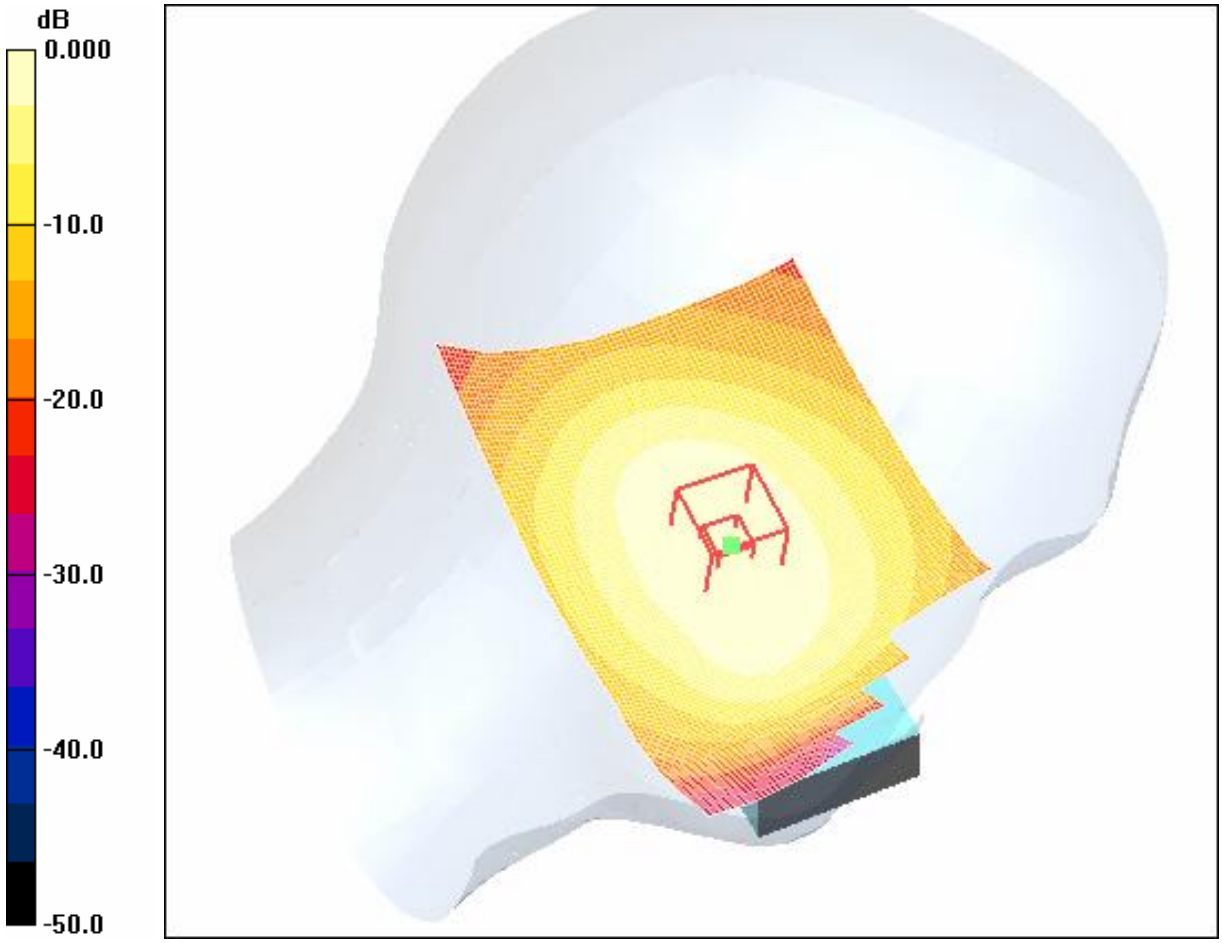
Communication System: GSM850-GSM Mode; Frequency: 836.4 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.878 mho/m; ε_r = 41.7;

ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.91, 5.91, 5.91); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Cheek Position - Middle/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 22.7 V/m; Power Drift = 0.026 dB
Motorola Fast SAR: SAR(1 g) = 0.574 mW/g; SAR(10 g) = 0.400 mW/g
Maximum value of SAR (interpolated) = 0.612 mW/g



0 dB = 0.612mW/g

4.3LeftHandSide-Cheek-GSM850-High

Date/Time: 2006-4-28 18:59:25

Test Laboratory: SGS-GSM

GSM850-LeftHandSide-Cheek-High

DUT: GSM60047B; Type: Head; Serial: 20060410

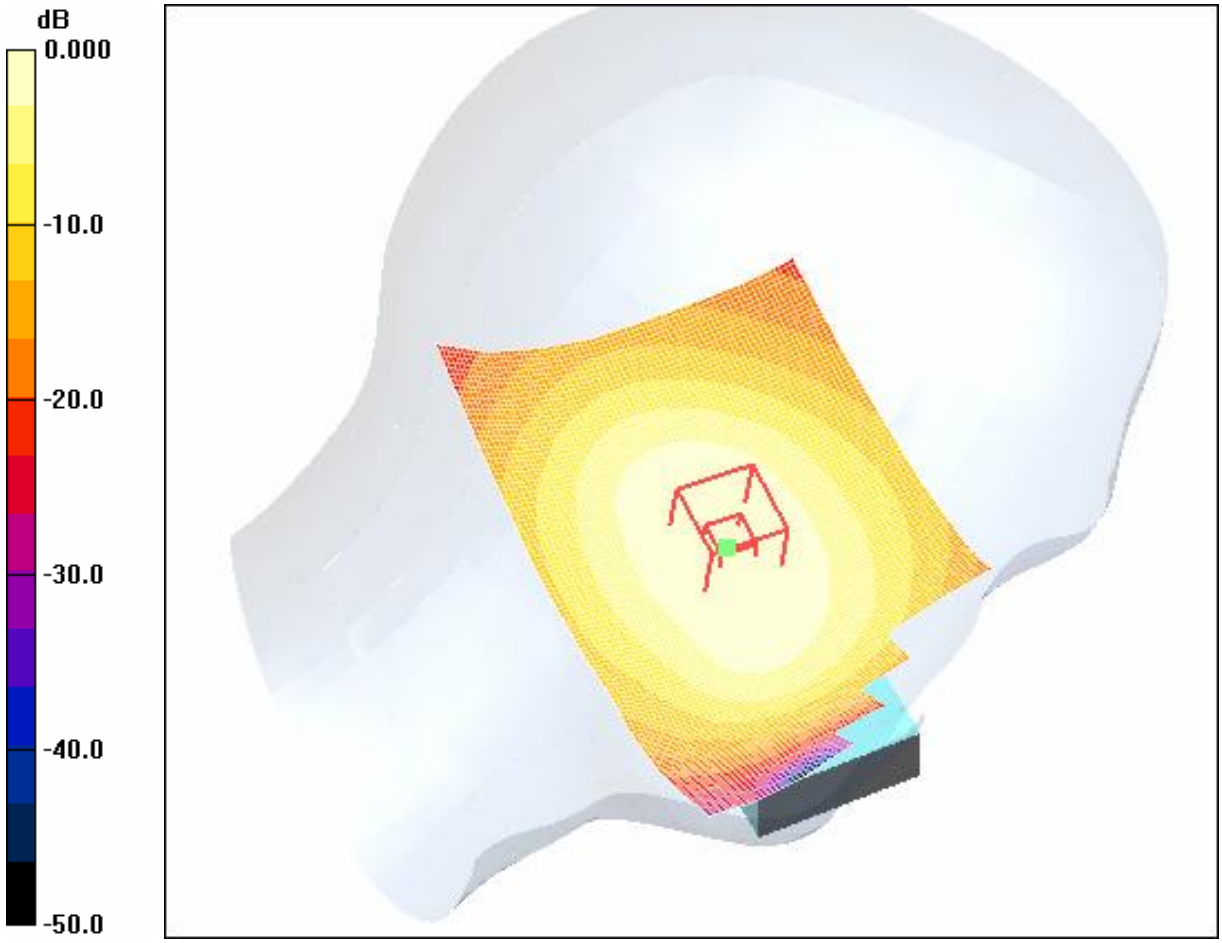
Communication System: GSM850-GSM Mode; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used: f = 849 MHz; σ = 0.89 mho/m; ε_r = 41.6; ρ = 1000 kg/m^3

Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.91, 5.91, 5.91); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Cheek Position - High/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 22.7 V/m; Power Drift = 0.025 dB
Motorola Fast SAR: SAR(1 g) = 0.584 mW/g; SAR(10 g) = 0.406 mW/g
Maximum value of SAR (interpolated) = 0.623 mW/g



0 dB = 0.623mW/g

4.4LeftHandSide-Tilt-GSM850-Low

Date/Time: 2006-4-28 19:11:22

Test Laboratory: SGS-GSM

GSM850-LeftHandSide-Tilt-Low

DUT: GSM60047B; Type: Head; Serial: 20060410

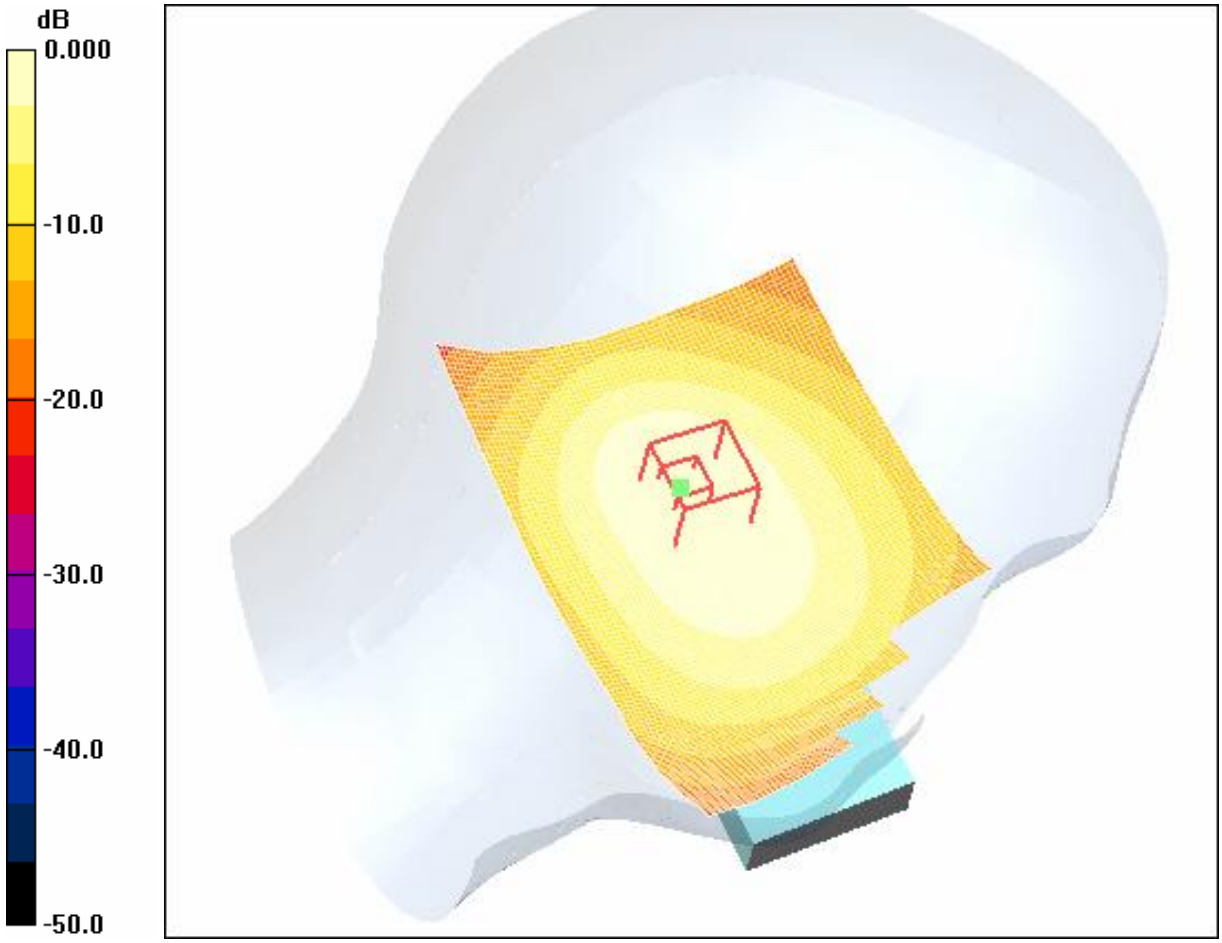
Communication System: GSM850-GSM Mode; Frequency: 824.2 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.866 mho/m; ε_r = 41.8;

ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.91, 5.91, 5.91); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Tilt Position - Low/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 20.5 V/m; Power Drift = 0.008 dB
Motorola Fast SAR: SAR(1 g) = 0.341 mW/g; SAR(10 g) = 0.237 mW/g
Maximum value of SAR (interpolated) = 0.365 mW/g



0 dB = 0.365mW/g

4.5LeftHandSide-Tilt-GSM850-Middle

Date/Time: 2006-4-28 19:23:40

Test Laboratory: SGS-GSM

GSM850-LeftHandSide-Tilt-Mid

DUT: GSM60047B; Type: Head; Serial: 20060410

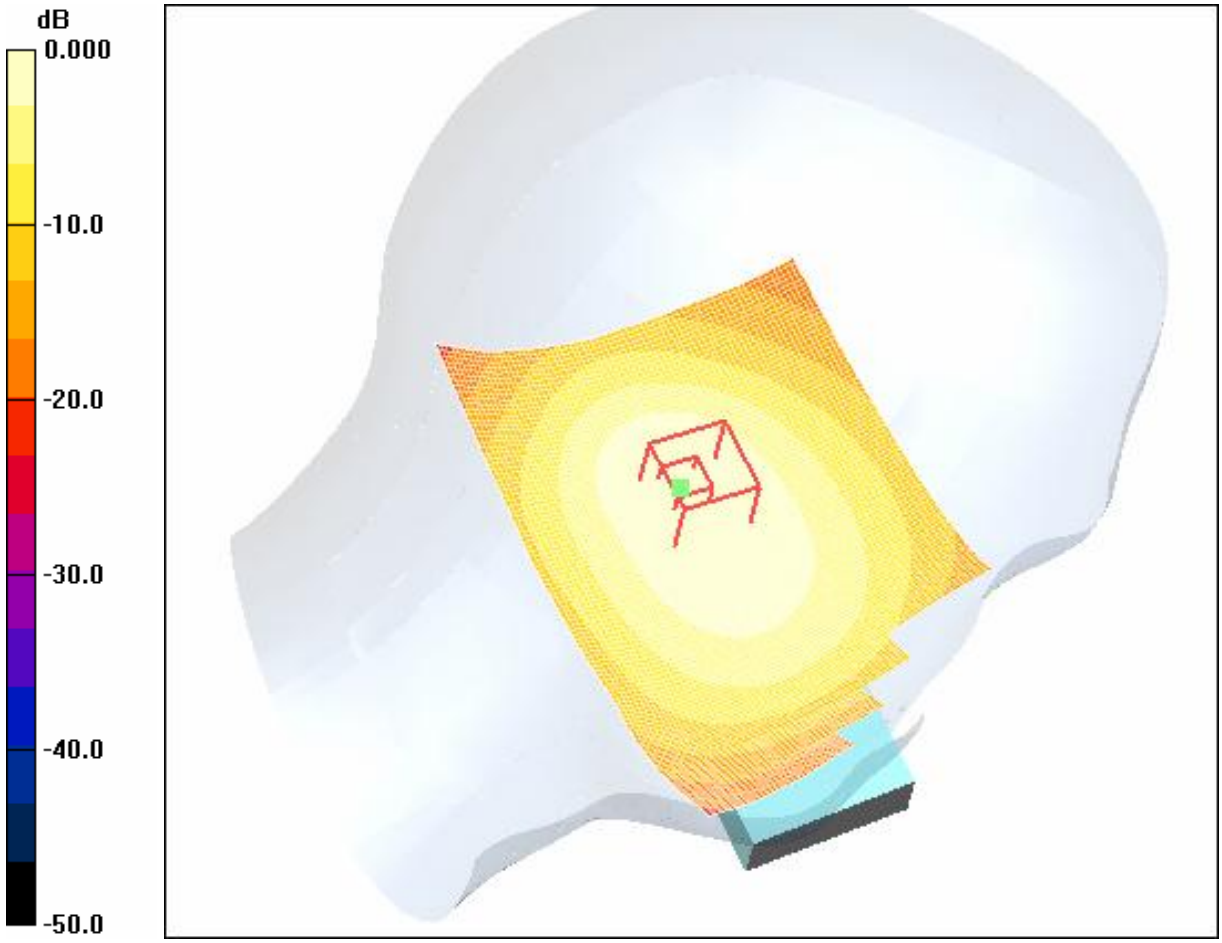
Communication System: GSM850-GSM Mode; Frequency: 836.4 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.878 mho/m; ε_r = 41.7;

ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.91, 5.91, 5.91); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Tilt Position - Middle/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 21.3 V/m; Power Drift = 0.062 dB
Motorola Fast SAR: SAR(1 g) = 0.381 mW/g; SAR(10 g) = 0.263 mW/g
Maximum value of SAR (interpolated) = 0.410 mW/g



0 dB = 0.410mW/g

4.6LeftHandSide-Tilt-GSM850-High

Date/Time: 2006-4-28 19:39:36

Test Laboratory: SGS-GSM

GSM850-LeftHandSide-Tilt-High

DUT: GSM60047B; Type:Head; Serial: 20060410

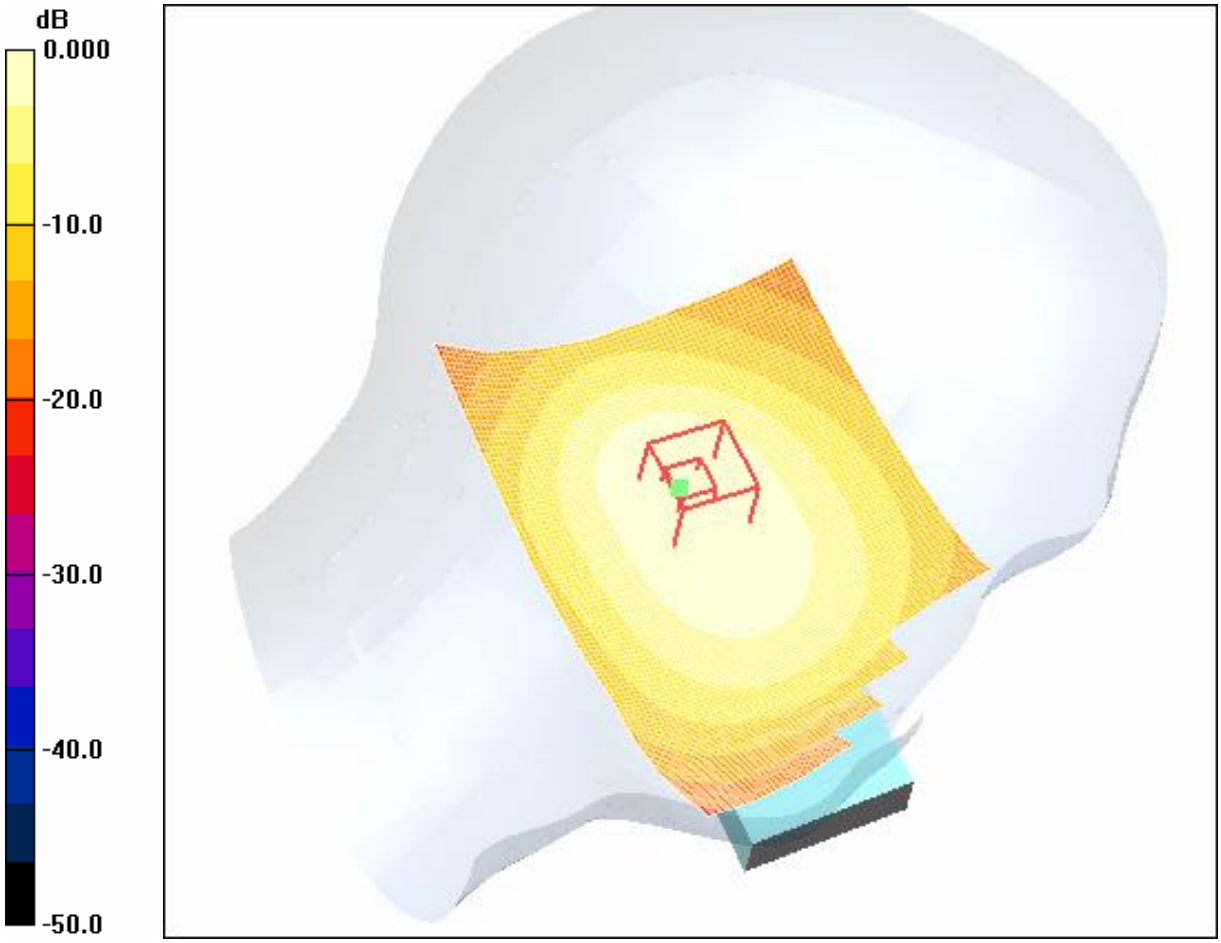
Communication System: GSM850-GSM Mode; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used: f = 849 MHz; σ = 0.89 mho/m; ε_r = 41.6; ρ = 1000 kg/m^3

Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.91, 5.91, 5.91); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Tilt Position - High/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 21.4 V/m; Power Drift = 0.065 dB
Motorola Fast SAR: SAR(1 g) = 0.389 mW/g; SAR(10 g) = 0.269 mW/g
Maximum value of SAR (interpolated) = 0.419 mW/g



0 dB = 0.419mW/g

LeftHandSide-Cheek-GSM850-High (Maximum Value)

Date/Time: 2006-4-28 20:38:13

Test Laboratory: SGS-GSM

GSM850-LeftHandSide-Cheek-High(conventional)

DUT: GSM60047B; Type: Head; Serial: 20060410

Communication System: GSM850-GSM Mode; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used: f = 849 MHz; σ = 0.89 mho/m; ε_r = 41.6; ρ = 1000 kg/m^3

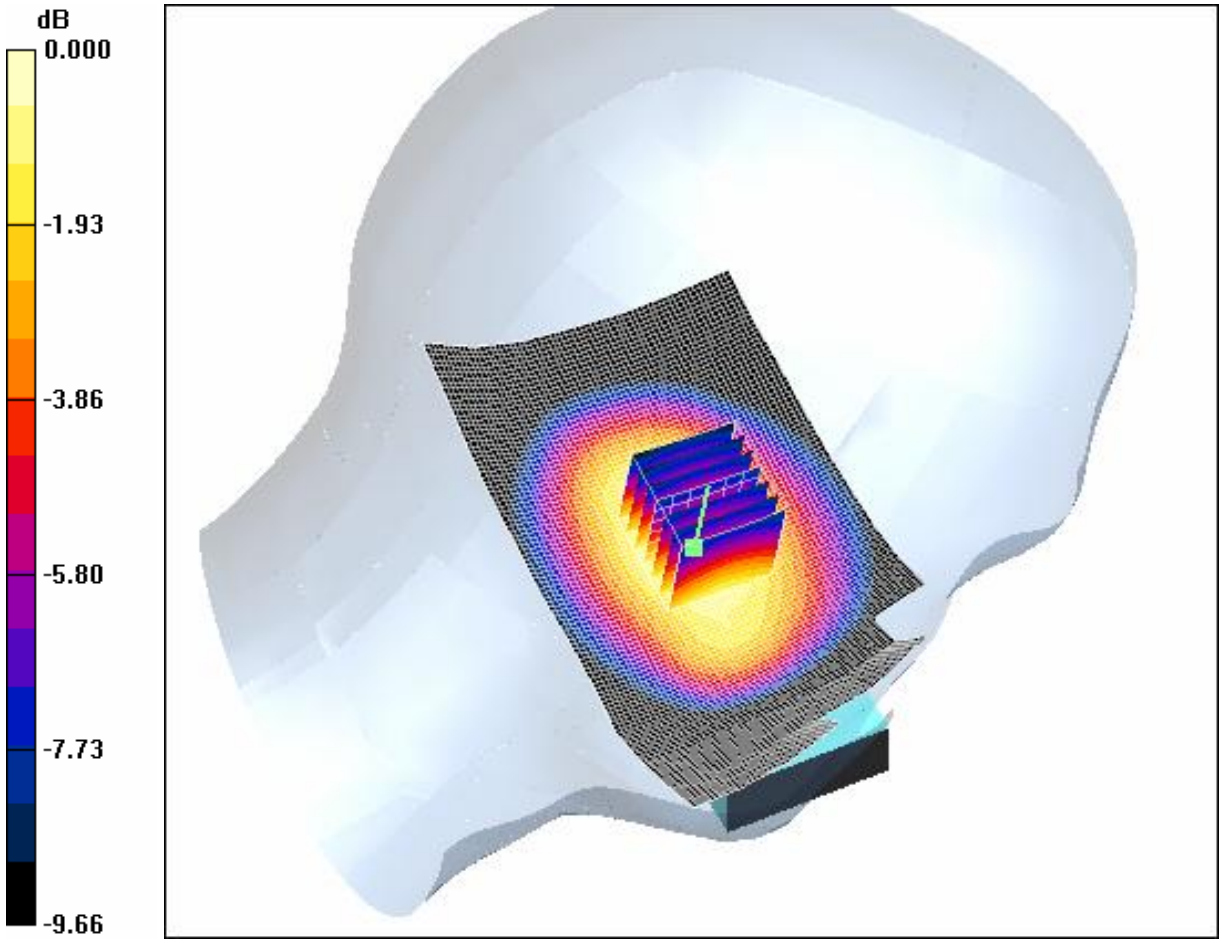
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.91, 5.91, 5.91); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Maximum Position - Traditional Method/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.602 mW/g

Maximum Position - Traditional Method/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 22.8 V/m; Power Drift = -0.094 dB
Peak SAR (extrapolated) = 0.749 W/kg
SAR(1 g) = 0.563 mW/g; SAR(10 g) = 0.399 mW/g
Maximum value of SAR (measured) = 0.601 mW/g



0 dB = 0.601mW/g

4.7RightHandSide-Cheek-GSM850-Low

Date/Time: 2006-4-27 15:06:57

Test Laboratory: SGS-GSM

GSM850-RightHandSide-Cheek-Low

DUT: GSM60047B; Type: Head; Serial: 20060410

Communication System: GSM850-GSM Mode; Frequency: 824.2 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.866 mho/m; ε_r = 41.8;

ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.91, 5.91, 5.91); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Cheek Position - Low/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 22.0 V/m; Power Drift = 0.125 dB
Motorola Fast SAR: SAR(1 g) = 0.507 mW/g; SAR(10 g) = 0.353 mW/g
Maximum value of SAR (interpolated) = 0.544 mW/g

0 dB = 0.544mW/g

4.8RightHandSide-Cheek-GSM850-Middle

Date/Time: 2006-4-27 15:18:21

Test Laboratory: SGS-GSM

GSM850-RightHandSide-Cheek-Mid

DUT: GSM60047B; Type: Head; Serial: 20060410

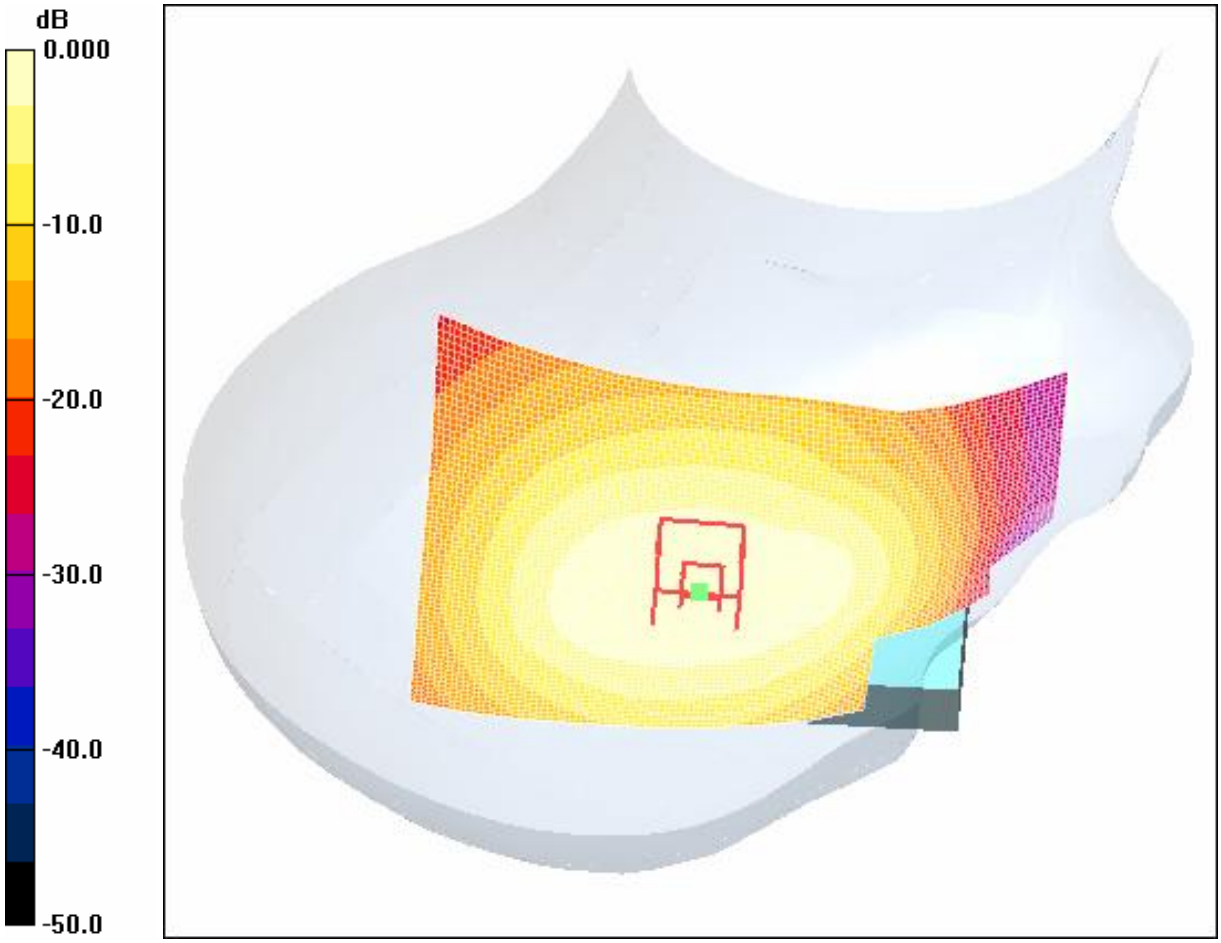
Communication System: GSM850-GSM Mode; Frequency: 836.4 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.878 mho/m; ε_r = 41.7;

ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.91, 5.91, 5.91); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Cheek Position - Middle/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 22.9 V/m; Power Drift = 0.060 dB
Motorola Fast SAR: SAR(1 g) = 0.577 mW/g; SAR(10 g) = 0.399 mW/g
Maximum value of SAR (interpolated) = 0.619 mW/g



0 dB = 0.619mW/g

4.9RightHandSide-Cheek-GSM850-High

Date/Time: 2006-4-27 15:29:45

Test Laboratory: SGS-GSM

GSM850-RightHandSide-Cheek-High

DUT: GSM60047B; Type: Head; Serial: 20060410

Communication System: GSM850-GSM Mode; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used: f = 849 MHz; σ = 0.89 mho/m; ε_r = 41.6; ρ = 1000 kg/m^3

Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.91, 5.91, 5.91); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Cheek Position - High/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 22.7 V/m; Power Drift = 0.047 dB
Motorola Fast SAR: SAR(1 g) = 0.587 mW/g; SAR(10 g) = 0.405 mW/g
Maximum value of SAR (interpolated) = 0.630 mW/g

0 dB = 0.630mW/g

4.10RightHandSide-Tilt-GSM850-Low

Date/Time: 2006-4-27 15:42:46

Test Laboratory: SGS-GSM

GSM850-RightHandSide-Tilt-Low

DUT: GSM60047B; Type: Head; Serial: 20060410

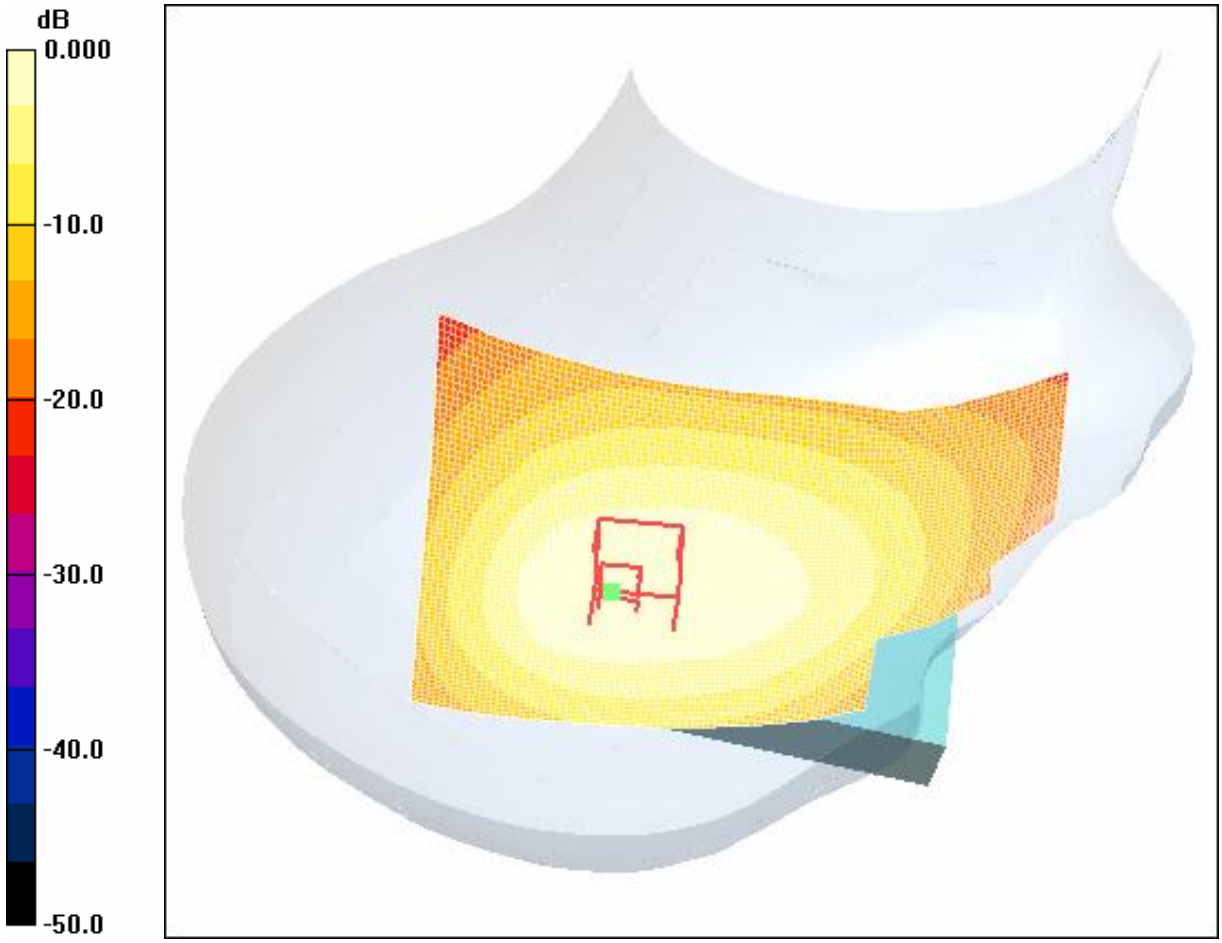
Communication System: GSM850-GSM Mode; Frequency: 824.2 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.866 mho/m; ε_r = 41.8;

ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.91, 5.91, 5.91); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Tilt position - Low/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 20.3 V/m; Power Drift = -0.011 dB
Motorola Fast SAR: SAR(1 g) = 0.354 mW/g; SAR(10 g) = 0.245 mW/g
Maximum value of SAR (interpolated) = 0.380 mW/g



0 dB = 0.380mW/g

4.11RightHandSide-Tilt-GSM850-Middle

Date/Time: 2006-4-27 15:54:13

Test Laboratory: SGS-GSM

GSM850-RightHandSide-Tilt-Mid

DUT: GSM60047B; Type: Head; Serial: 20060410

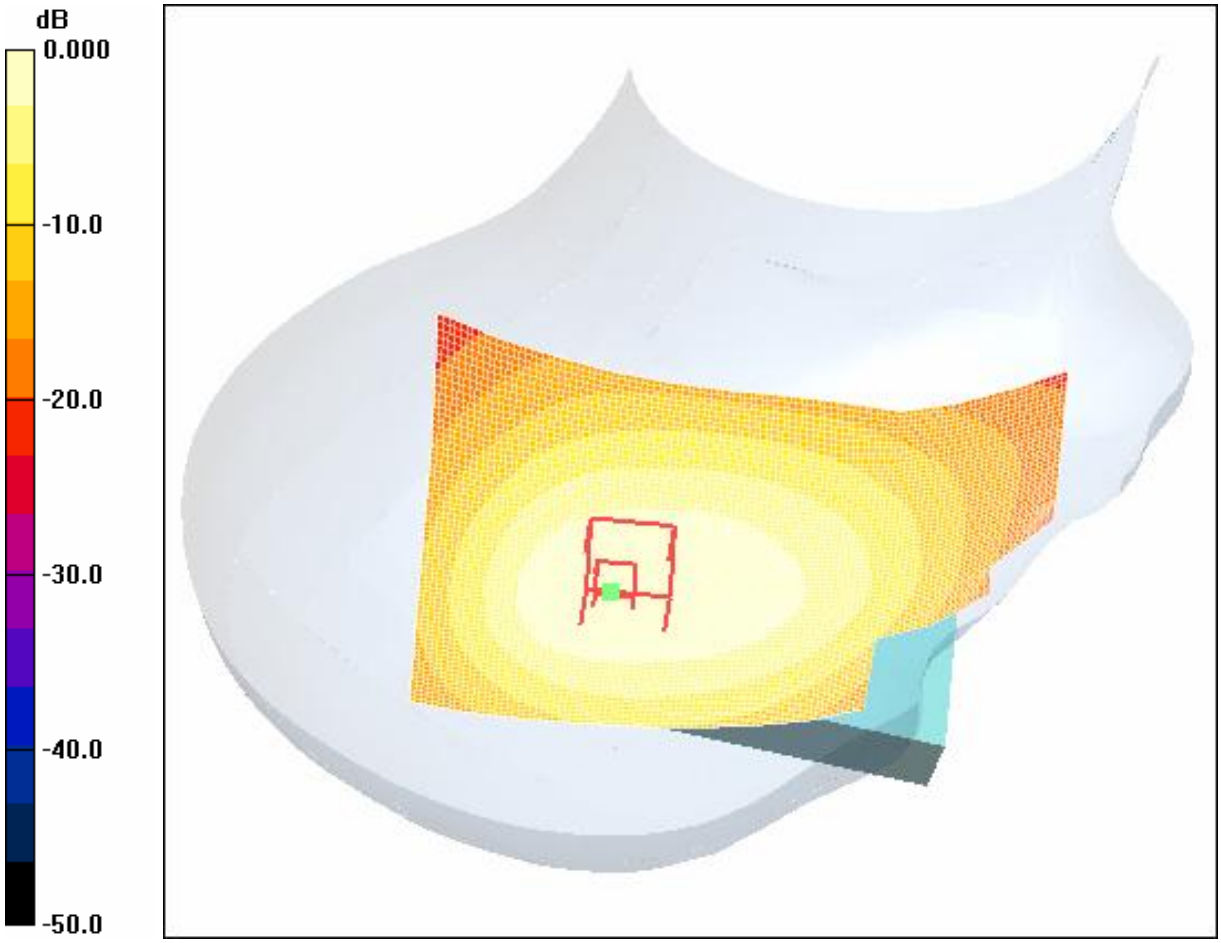
Communication System: GSM850-GSM Mode; Frequency: 836.4 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.878 mho/m; ε_r = 41.7;

ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.91, 5.91, 5.91); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Tilt position -Middle/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 20.7 V/m; Power Drift = 0.034 dB
Motorola Fast SAR: SAR(1 g) = 0.380 mW/g; SAR(10 g) = 0.261 mW/g
Maximum value of SAR (interpolated) = 0.411 mW/g



0 dB = 0.411mW/g

6.12 RightHandSide-Tilt-GSM850-High

Date/Time: 2006-4-27 16:05:37

Test Laboratory: SGS-GSM

GSM850-RightHandSide-Tilt-High

DUT: GSM60047B; Type: Head; Serial: 20060410

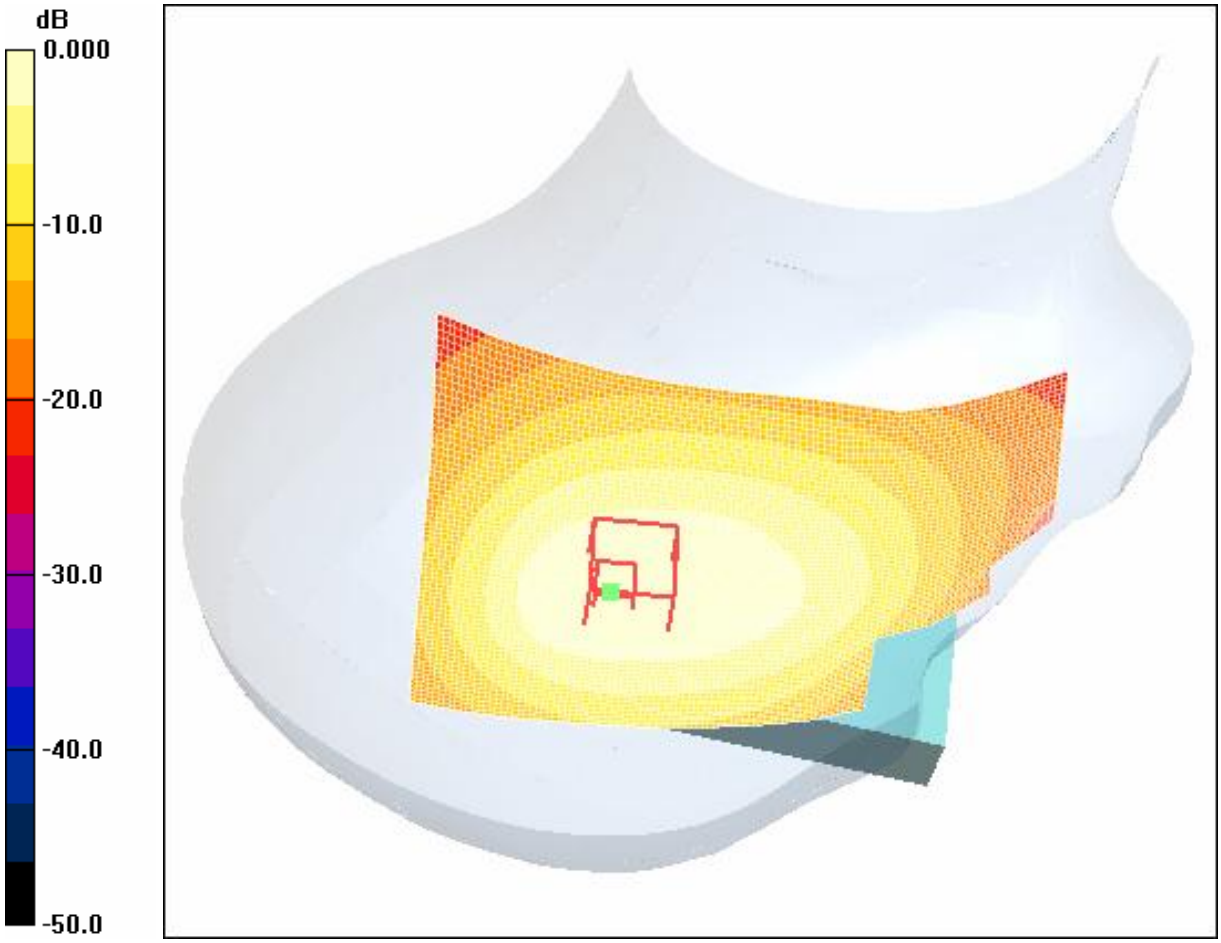
Communication System: GSM850-GSM Mode; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used: f = 849 MHz; σ = 0.89 mho/m; ε_r = 41.6; ρ = 1000 kg/m^3

Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.91, 5.91, 5.91); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Tilt position - High/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 20.8 V/m; Power Drift = 0.052 dB
Motorola Fast SAR: SAR(1 g) = 0.390 mW/g; SAR(10 g) = 0.268 mW/g
Maximum value of SAR (interpolated) = 0.421 mW/g



0 dB = 0.421mW/g

RightHandSide-Cheek-GSM850-High (Maximum Value)

Date/Time: 2006-4-27 16:23:16

Test Laboratory: SGS-GSM

GSM850-RightHandSide-Cheek-High(conventional)

DUT: GSM60047B; Type: Head; Serial: 20060410

Communication System: GSM850-GSM Mode; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used: f = 849 MHz; σ = 0.89 mho/m; ε_r = 41.6; ρ = 1000 kg/m^3

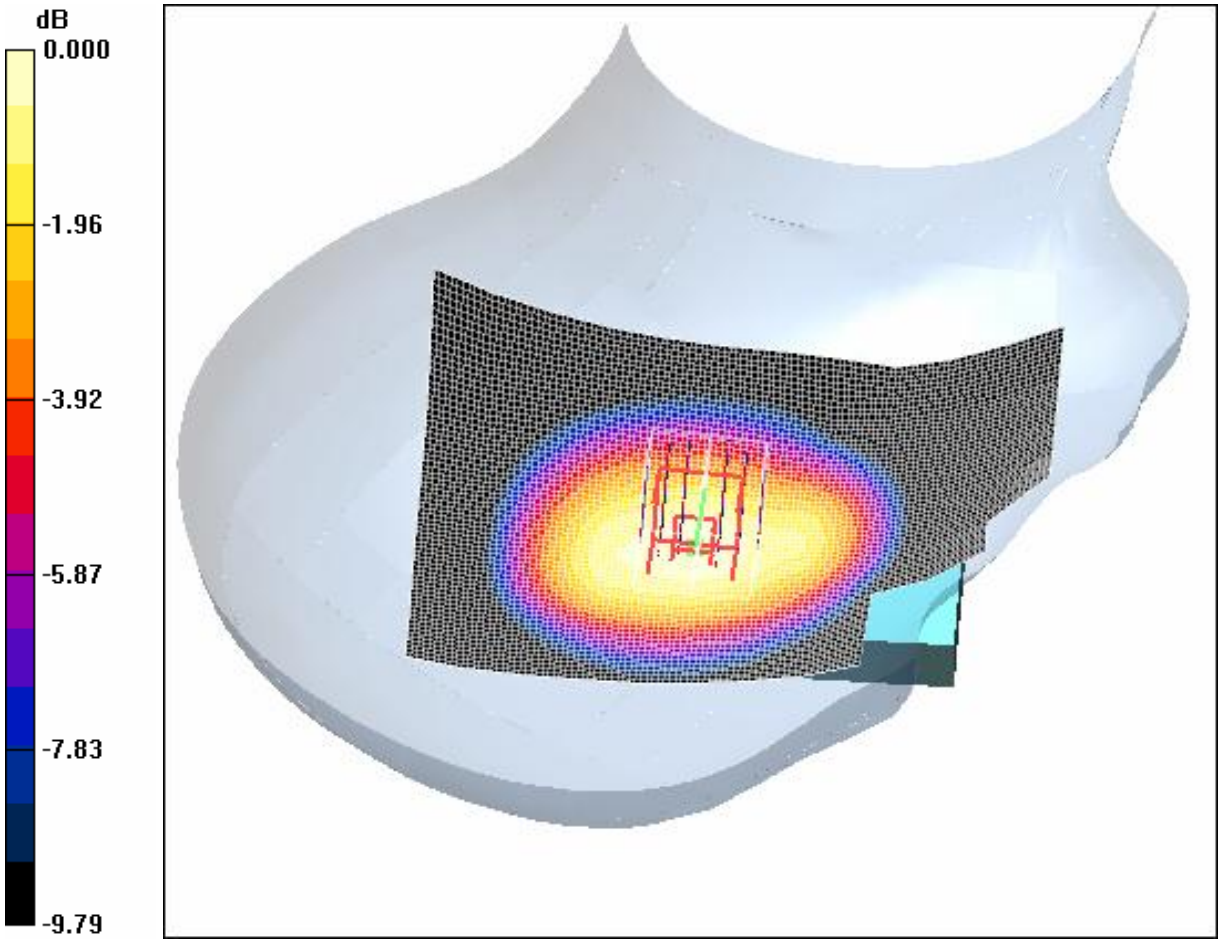
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.91, 5.91, 5.91); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Maximum Position - Traditional Method/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.629 mW/g

Maximum Position - Traditional Method/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 22.8 V/m; Power Drift = -0.024 dB
Peak SAR (extrapolated) = 0.793 W/kg
SAR(1 g) = 0.591 mW/g; SAR(10 g) = 0.416 mW/g
Maximum value of SAR (measured) = 0.633 mW/g



0 dB = 0.633mW/g

4.13Body-Worn-GSM850-GPRS-Low

Date/Time: 2006-4-25 12:27:36

Test Laboratory: SGS-GSM

GSM850-GPRS-Body-Worn-Low

DUT: GSM60047B; Type: Body; Serial: 20060410

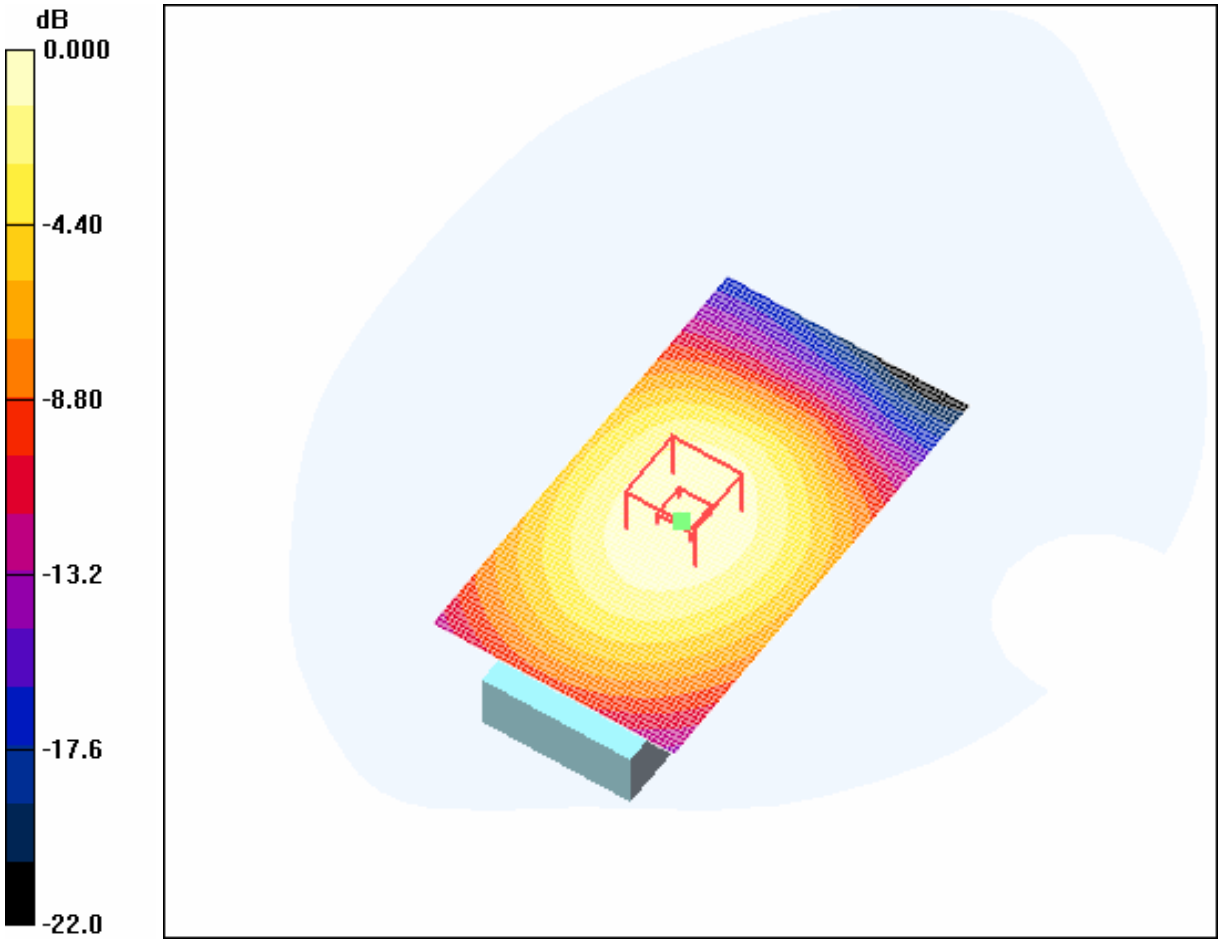
Communication System: GSM850-GPRS Mode; Frequency: 824.2 MHz;Duty Cycle: 1:4
Medium: HSL850-Body Medium parameters used: f = 824.2 MHz; σ = 0.984 mho/m; ε_r = 52.6; ρ =

1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.83, 5.83, 5.83); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Body Worn - Low/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 21.8 V/m; Power Drift = -0.138 dB
Motorola Fast SAR: SAR(1 g) = 1.18 mW/g; SAR(10 g) = 0.831 mW/g
Maximum value of SAR (interpolated) = 1.25 mW/g



0 dB = 1.25mW/g

4.14Body-Worn-GSM850-GPRS-Middle

Date/Time: 2006-4-25 12:41:22

Test Laboratory: SGS-GSM

GSM850-GPRS-Body-Worn-Mid

DUT: GSM60047B; Type: Body; Serial: 20060410

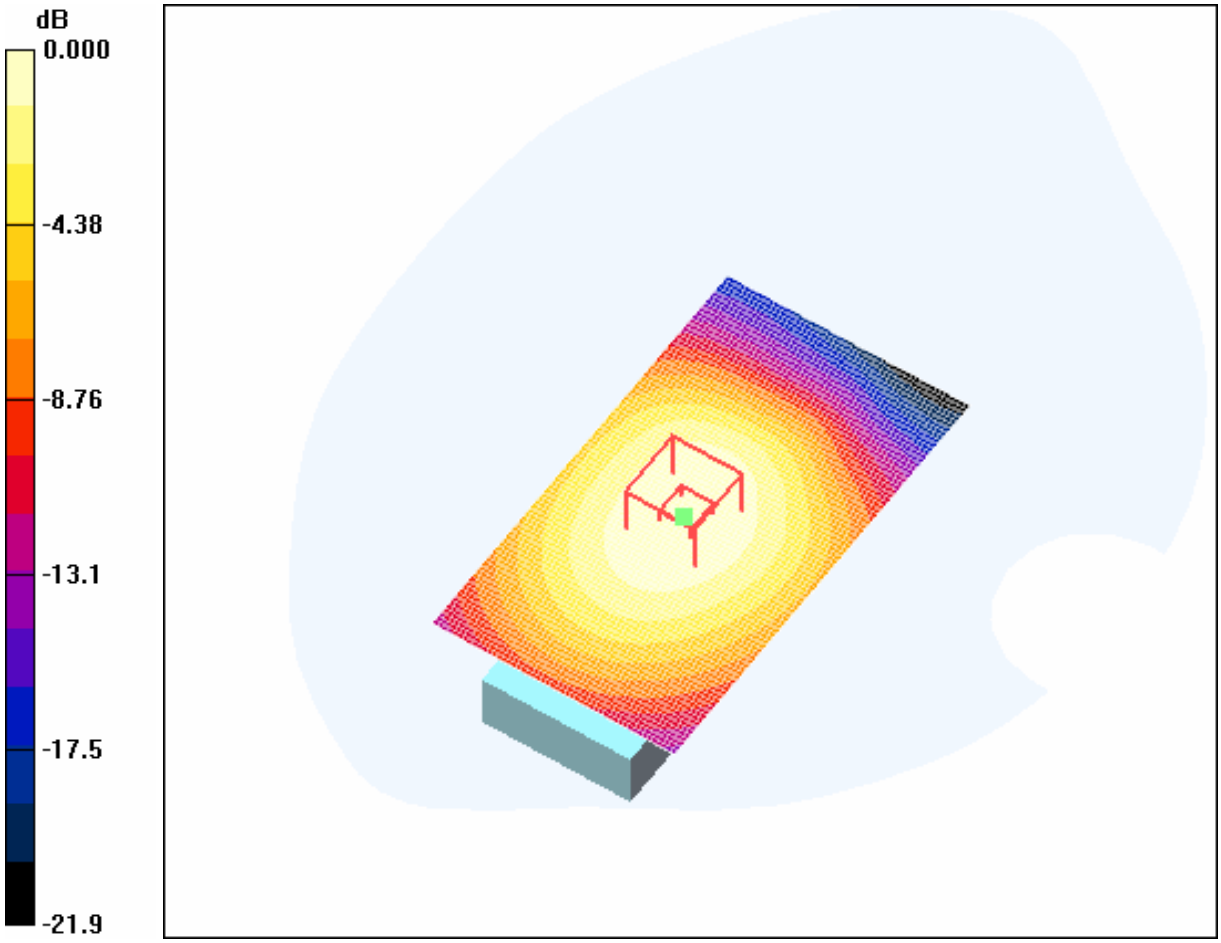
Communication System: GSM850-GPRS Mode; Frequency: 836.4 MHz;Duty Cycle: 1:4
Medium: HSL850-Body Medium parameters used: f = 836.4 MHz; σ = 0.998 mho/m; ε_r = 52.5; ρ =

1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.83, 5.83, 5.83); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Body Worn - Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 21.6 V/m; Power Drift = 0.015 dB
Motorola Fast SAR: SAR(1 g) = 1.19 mW/g; SAR(10 g) = 0.838 mW/g
Maximum value of SAR (interpolated) = 1.26 mW/g



0 dB = 1.26mW/g

4.15Body-Worn-GSM850-GPRS-High

Date/Time: 2006-4-25 13:00:15

Test Laboratory: SGS-GSM

GSM850-GPRS-Body-Worn-High

DUT: GSM60047B; Type: Body; Serial: 20060410

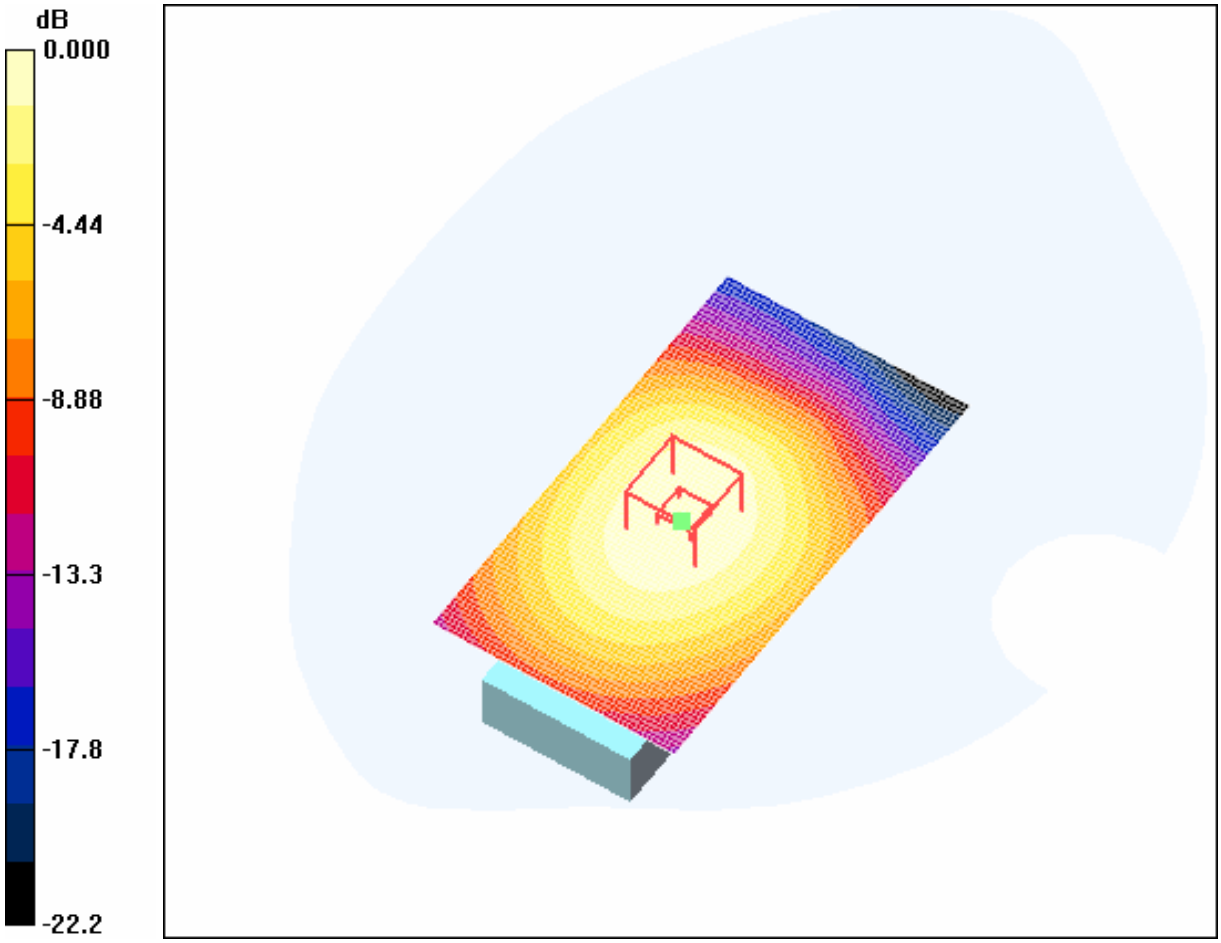
Communication System: GSM850-GPRS Mode; Frequency: 848.8 MHz;Duty Cycle: 1:4
Medium: HSL850-Body Medium parameters used: f = 848.8 MHz; σ = 1.01 mho/m; ε_r = 52.5; ρ =

1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.83, 5.83, 5.83); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Body Worn - High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 21.5 V/m; Power Drift = -0.009 dB
Motorola Fast SAR: SAR(1 g) = 1.22 mW/g; SAR(10 g) = 0.853 mW/g
Maximum value of SAR (interpolated) = 1.29 mW/g



0 dB = 1.29mW/g

Body-Worn-GSM850-GPRS-High (Maximum Value)

Date/Time: 2006-4-25 13:10:11

Test Laboratory: SGS-GSM

GSM850-GPRS-Body-Worn-High(conventional)

DUT: GSM60047B; Type: Body; Serial: 20060410

Communication System: GSM850-GPRS Mode; Frequency: 848.8 MHz;Duty Cycle: 1:4
Medium: HSL850-Body Medium parameters used: f = 848.8 MHz; σ = 1.01 mho/m; ε_r = 52.5; ρ =

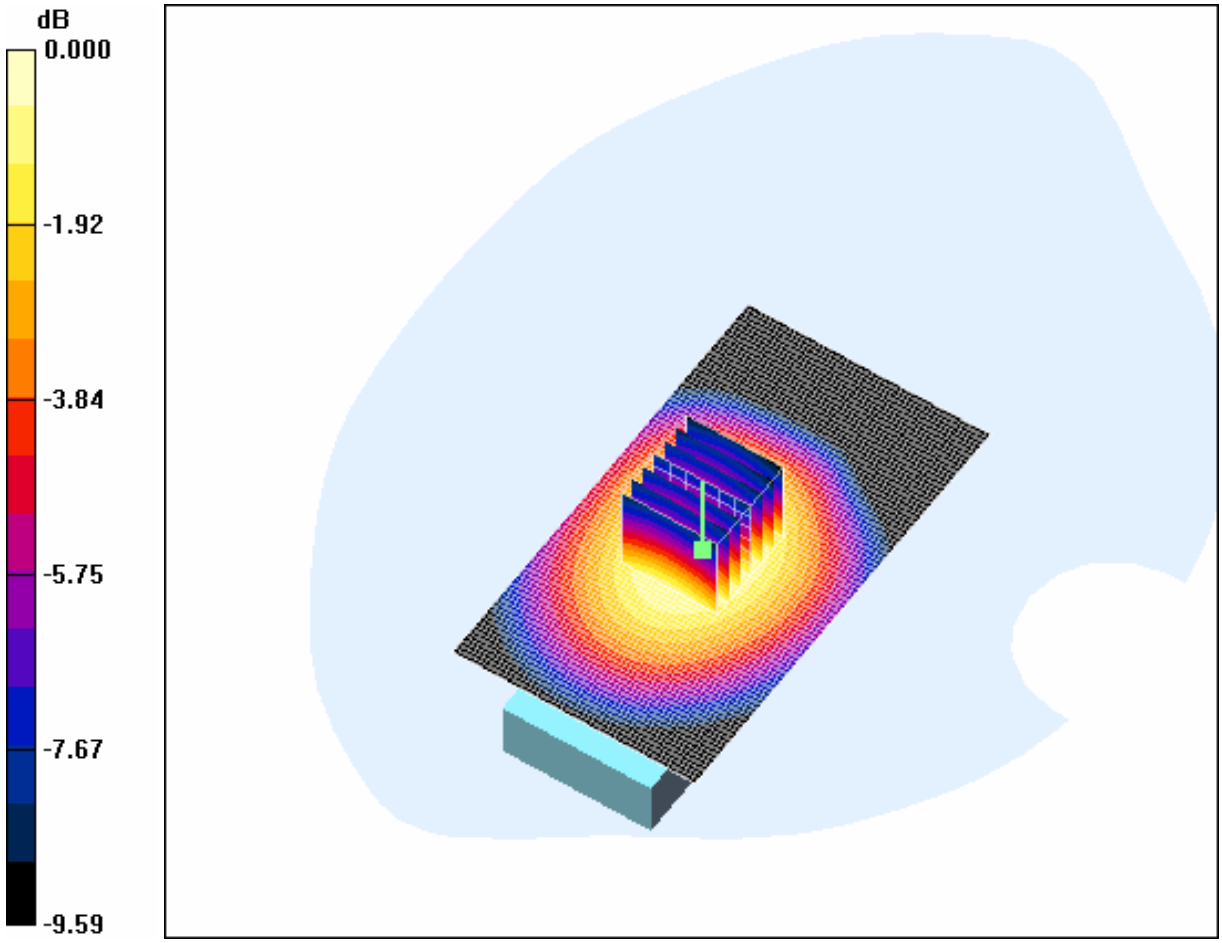
1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.83, 5.83, 5.83); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Maximum Position - Taditional Method/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.28 mW/g

Maximum Position - Taditional Method/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 21.5 V/m; Power Drift = 0.062 dB
Peak SAR (extrapolated) = 1.66 W/kg
SAR(1 g) = 1.22 mW/g; SAR(10 g) = 0.866 mW/g
Maximum value of SAR (measured) = 1.30 mW/g



0 dB = 1.30mW/g

4.16LeftHandSide-Cheek-PCS1900-Low

Date/Time: 2006-4-18 13:14:35

Test Laboratory: SGS-GSM

PCS1900-LeftHandSide-Cheek-Low

DUT: GSM60047B; Type: Head; Serial: 20060410

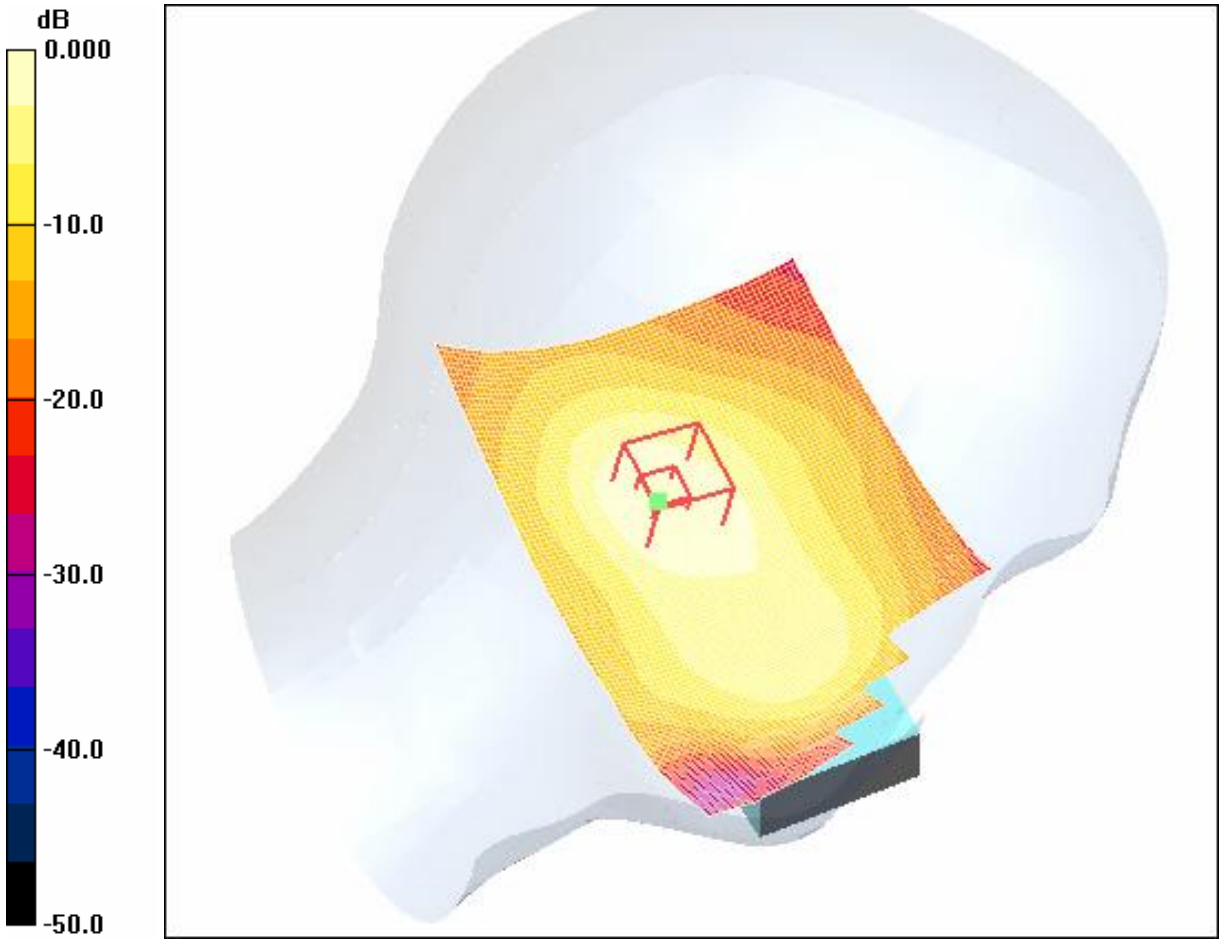
Communication System: PCS1900-GSM Mode; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium: HSL1800-2000MHz[Head] Medium parameters used: f = 1850.2 MHz; σ = 1.41 mho/m; ε_r =

39.7; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Cheek Position - Low/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 18.4 V/m; Power Drift = -0.021 dB
Motorola Fast SAR: SAR(1 g) = 0.571 mW/g; SAR(10 g) = 0.332 mW/g
Maximum value of SAR (interpolated) = 0.644 mW/g



0 dB = 0.644mW/g

4.17LeftHandSide-Cheek-PCS1900-Middle

Date/Time: 2006-4-18 13:26:53

Test Laboratory: SGS-GSM

PCS1900-LeftHandSide-Cheek-Mid

DUT: GSM60047B; Type: Head; Serial: 20060410

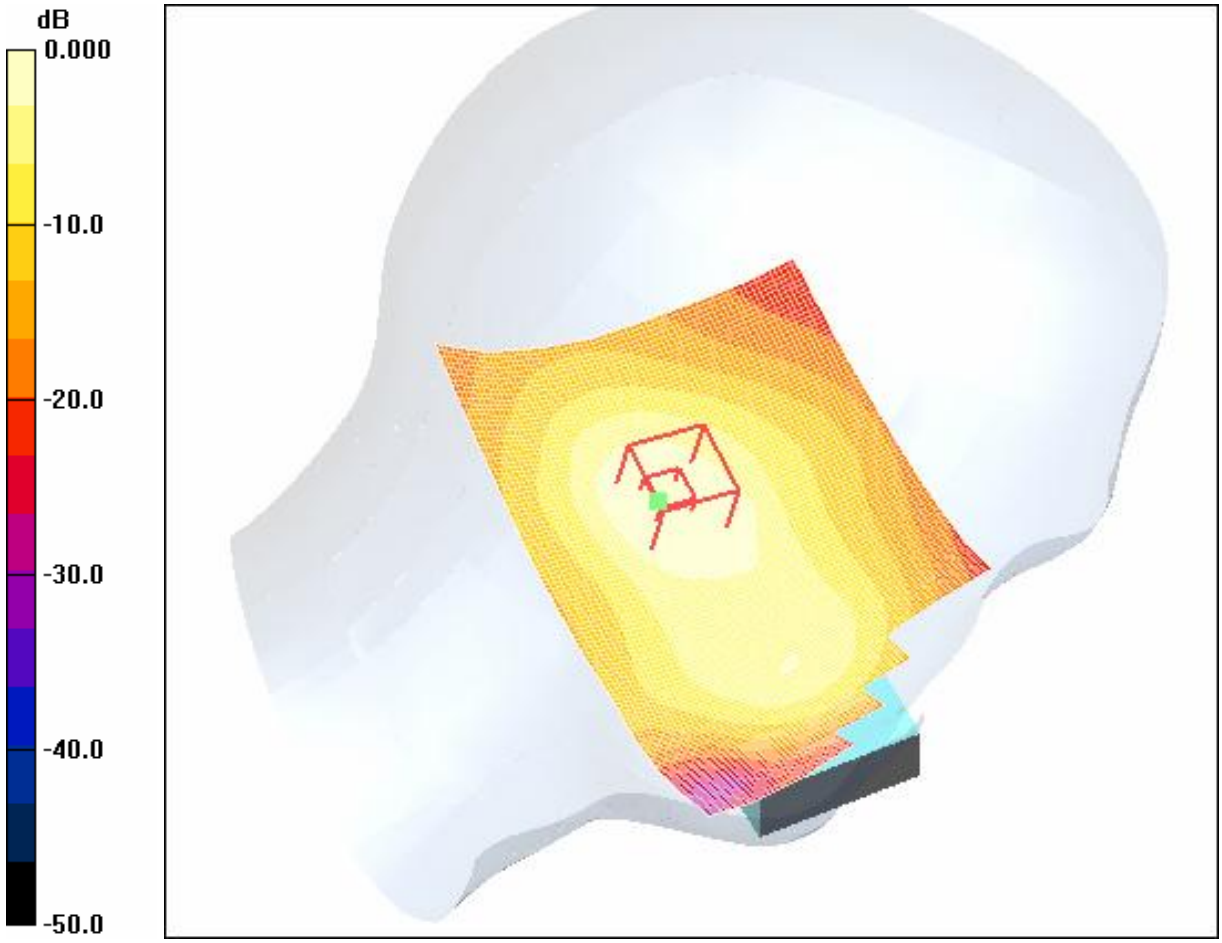
Communication System: PCS1900-GSM Mode; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: HSL1800-2000MHz[Head] Medium parameters used: f = 1880 MHz; σ = 1.44 mho/m; ε_r =

39.9; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Cheek Position - Middle/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 19.6 V/m; Power Drift = -0.056 dB
Motorola Fast SAR: SAR(1 g) = 0.643 mW/g; SAR(10 g) = 0.374 mW/g
Maximum value of SAR (interpolated) = 0.722 mW/g



0 dB = 0.722mW/g

4.18LeftHandSide-Cheek-PCS1900-High

Date/Time: 2006-4-18 13:38:55

Test Laboratory: SGS-GSM

PCS1900-LeftHandSide-Cheek-High

DUT: GSM60047B; Type: Head; Serial: 20060410

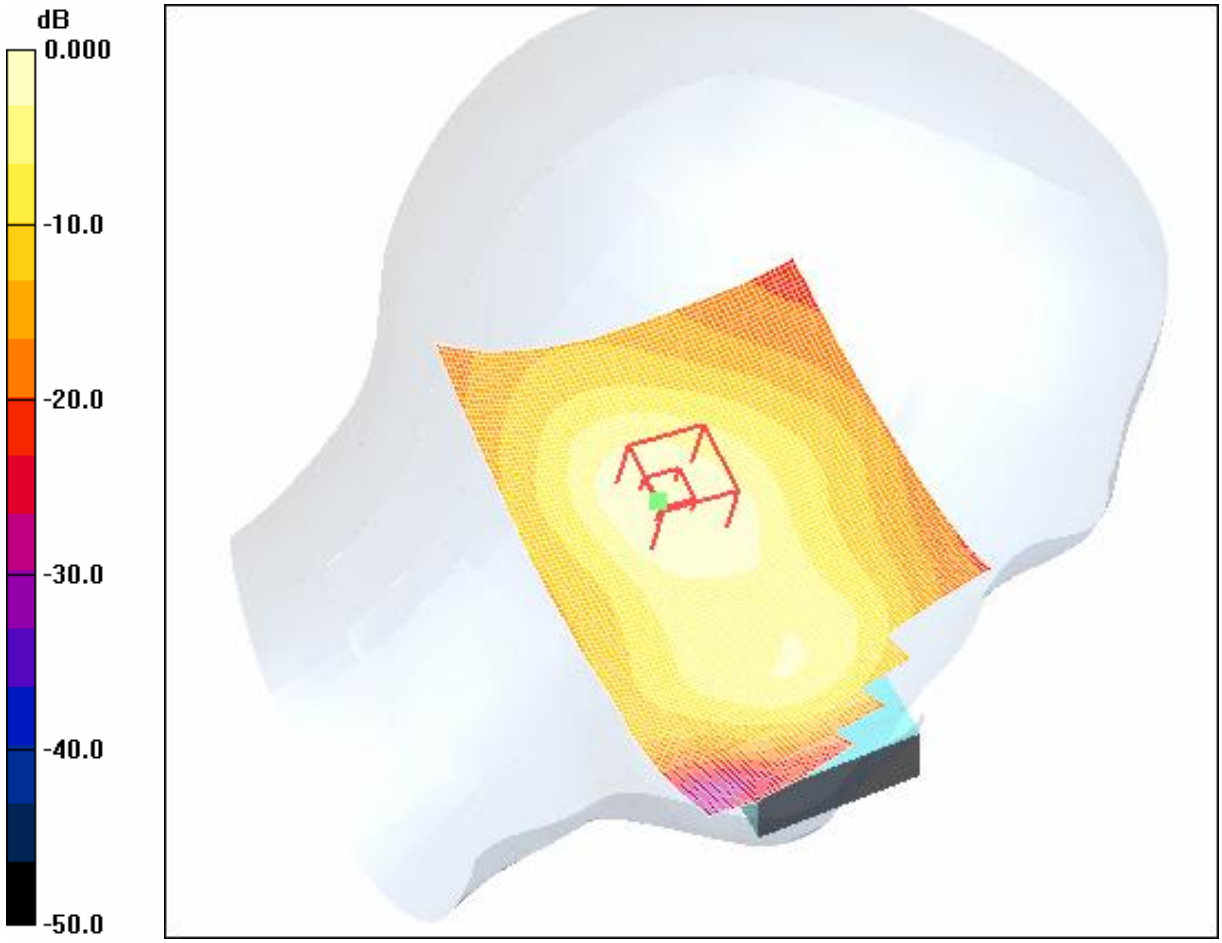
Communication System: PCS1900-GSM Mode; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: HSL1800-2000MHz[Head] Medium parameters used: f = 1909.8 MHz; σ = 1.46 mho/m; ε_r =

39.3; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Cheek Position - High/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 18.7 V/m; Power Drift = 0.014 dB
Motorola Fast SAR: SAR(1 g) = 0.595 mW/g; SAR(10 g) = 0.345 mW/g
Maximum value of SAR (interpolated) = 0.665 mW/g



0 dB = 0.665mW/g

4.19LeftHandSide-Tilt-PCS1900-Low

Date/Time: 2006-4-20 10:07:06

Test Laboratory: SGS-GSM

PCS1900-LeftHandSide-Tilt-Low

DUT: GSM60047B; Type: Head; Serial: 20060410

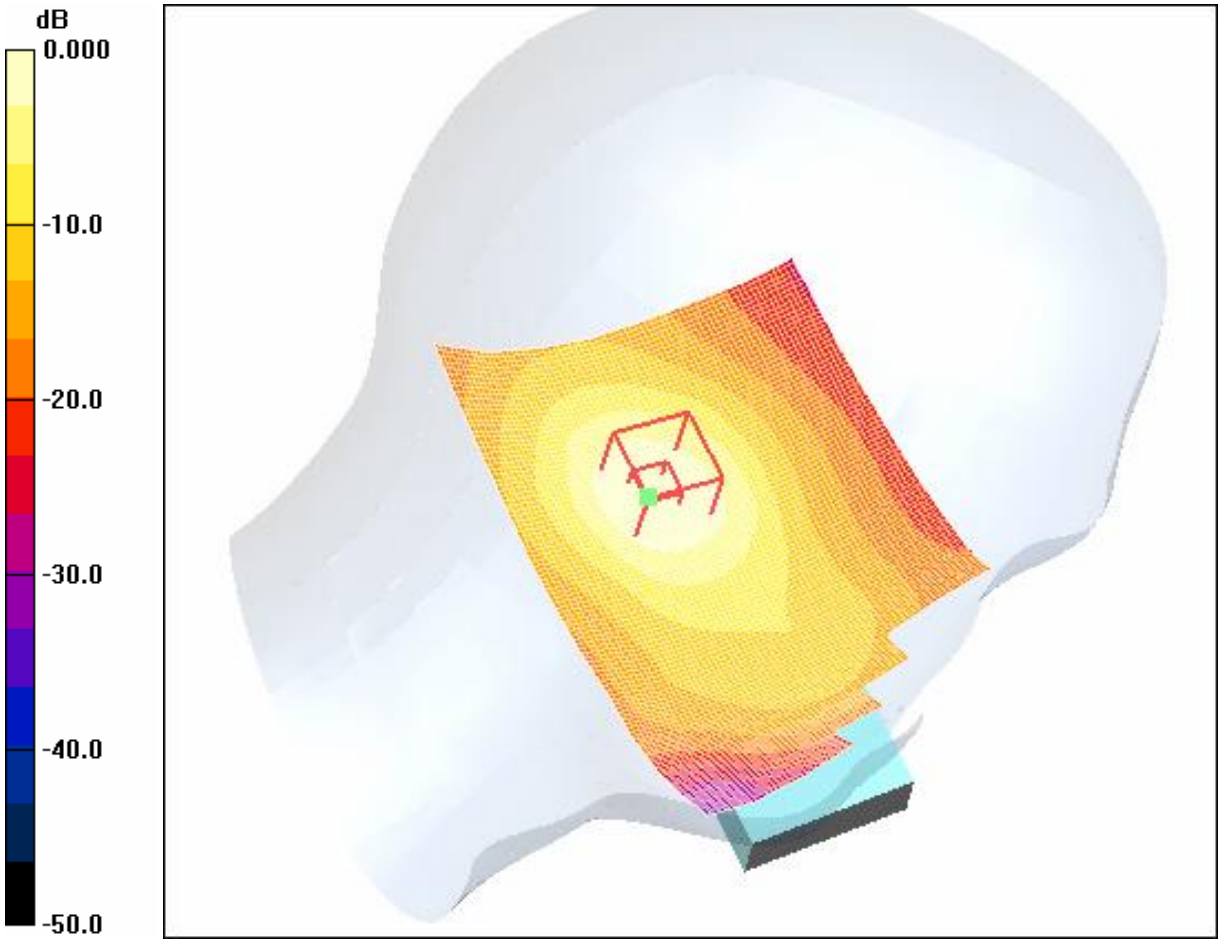
Communication System: PCS1900-GSM Mode; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium: HSL1800-2000MHz[Head] Medium parameters used: f = 1850.2 MHz; σ = 1.41 mho/m; ε_r =

39.7; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Tilt Position - Low/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 19.7 V/m; Power Drift = -0.002 dB
Motorola Fast SAR: SAR(1 g) = 0.657 mW/g; SAR(10 g) = 0.368 mW/g
Maximum value of SAR (interpolated) = 0.749 mW/g



0 dB = 0.749mW/g

4.20LeftHandSide-Tilt-PCS1900-Middle

Date/Time: 2006-4-20 9:48:52

Test Laboratory: SGS-GSM

PCS1900-LeftHandSide-Tilt-Mid

DUT: GSM60047B; Type: Head; Serial: 20060410

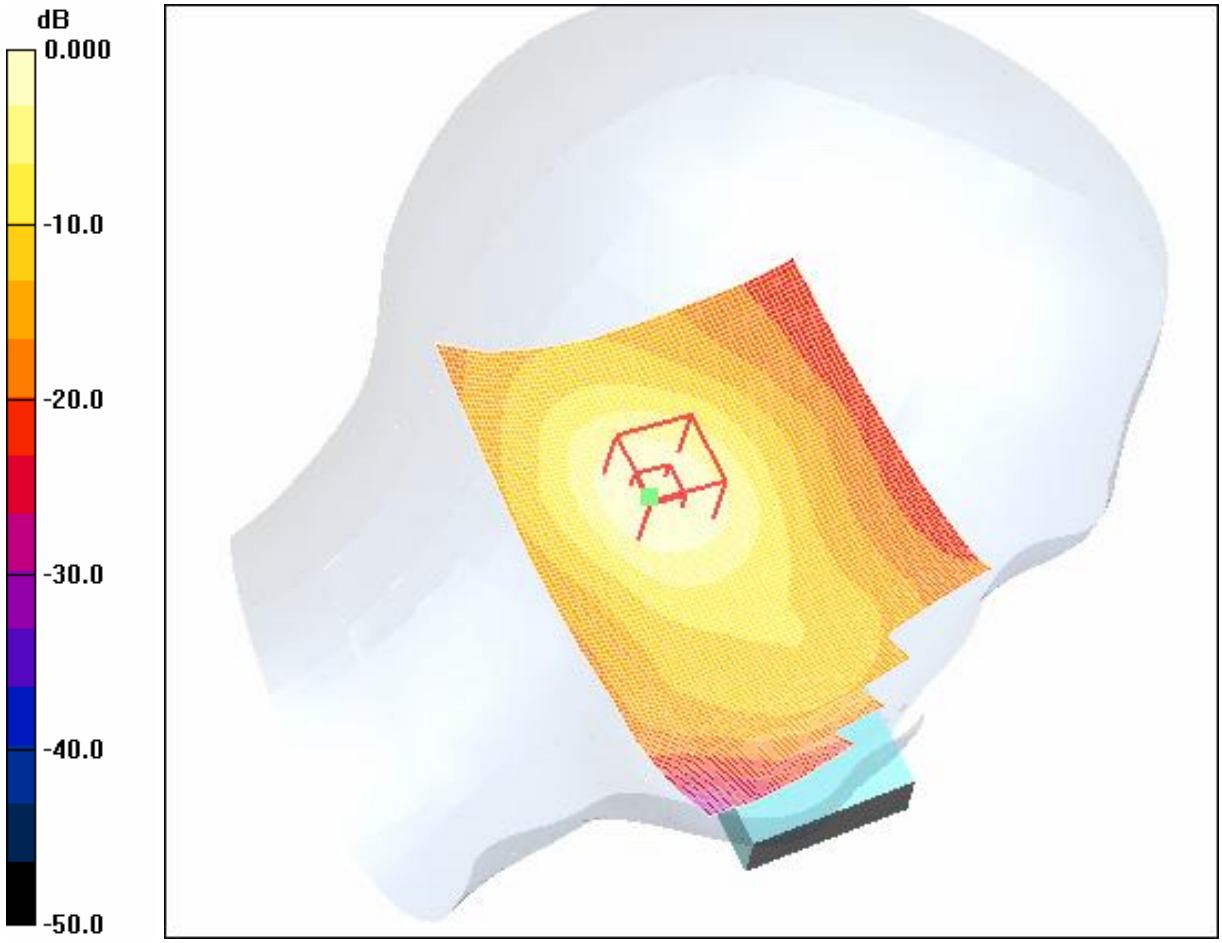
Communication System: PCS1900-GSM Mode; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: HSL1800-2000MHz[Head] Medium parameters used: f = 1880 MHz; σ = 1.44 mho/m; ε_r =

39.9; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Tilt Position - Middle/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 20.5 V/m; Power Drift = 0.000 dB
Motorola Fast SAR: SAR(1 g) = 0.710 mW/g; SAR(10 g) = 0.397 mW/g
Maximum value of SAR (interpolated) = 0.808 mW/g



0 dB = 0.808mW/g

4.21LeftHandSide-Tilt-PCS1900-High

Date/Time: 2006-4-20 10:23:05

Test Laboratory: SGS-GSM

PCS1900-LeftHandSide-Tilt-High

DUT: GSM60047B; Type: Head; Serial: 20060410

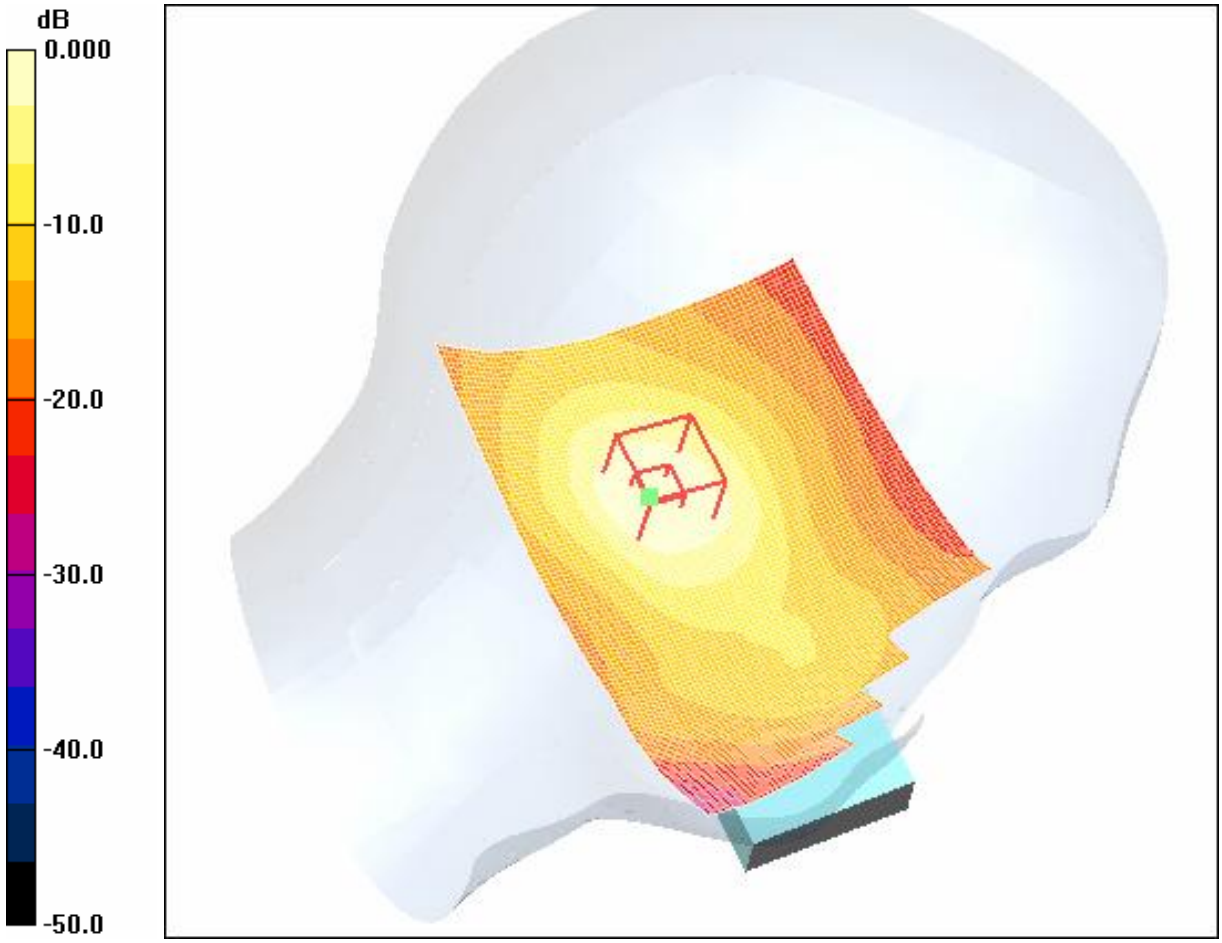
Communication System: PCS1900-GSM Mode; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: HSL1800-2000MHz[Head] Medium parameters used: f = 1909.8 MHz; σ = 1.46 mho/m; ε_r =

39.3; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Tilt Position - High/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 19.2 V/m; Power Drift = 0.011 dB
Motorola Fast SAR: SAR(1 g) = 0.642 mW/g; SAR(10 g) = 0.358 mW/g
Maximum value of SAR (interpolated) = 0.730 mW/g



0 dB = 0.730mW/g

LeftHandSide-Tilt-PCS1900-Middle (Maximum Value)

Date/Time: 2006-4-20 10:40:31

Test Laboratory: SGS-GSM

PCS1900-LeftHandSide-Tilt-Mid(conventional)

DUT: GSM60047B; Type: Head; Serial: 20060410

Communication System: PCS1900-GSM Mode; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: HSL1800-2000MHz[Head] Medium parameters used: f = 1880 MHz; σ = 1.44 mho/m; ε_r =

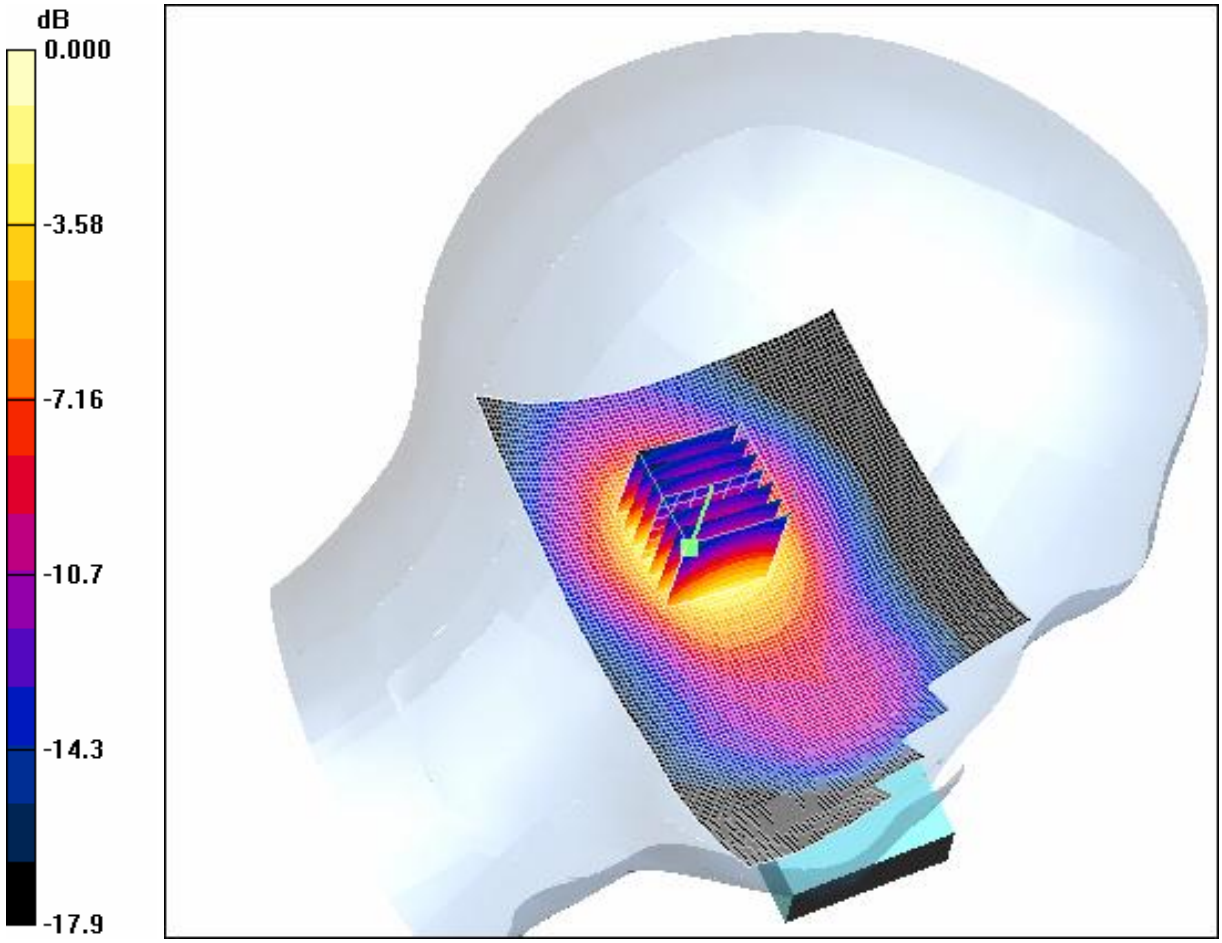
39.9; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Maximum Position - Traditional Method/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.805 mW/g

Maximum Position - Traditional Method/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.3 V/m; Power Drift = -0.022 dB
Peak SAR (extrapolated) = 1.15 W/kg
SAR(1 g) = 0.686 mW/g; SAR(10 g) = 0.384 mW/g
Maximum value of SAR (measured) = 0.756 mW/g



0 dB = 0.756mW/g

4.22RightHandSide-Cheek-PCS1900-Low

Date/Time: 2006-4-20 11:28:03

Test Laboratory: SGS-GSM

PCS1900-RightHandSide-Cheek-Low

DUT: GSM60047B; Type: Head; Serial: 20060410

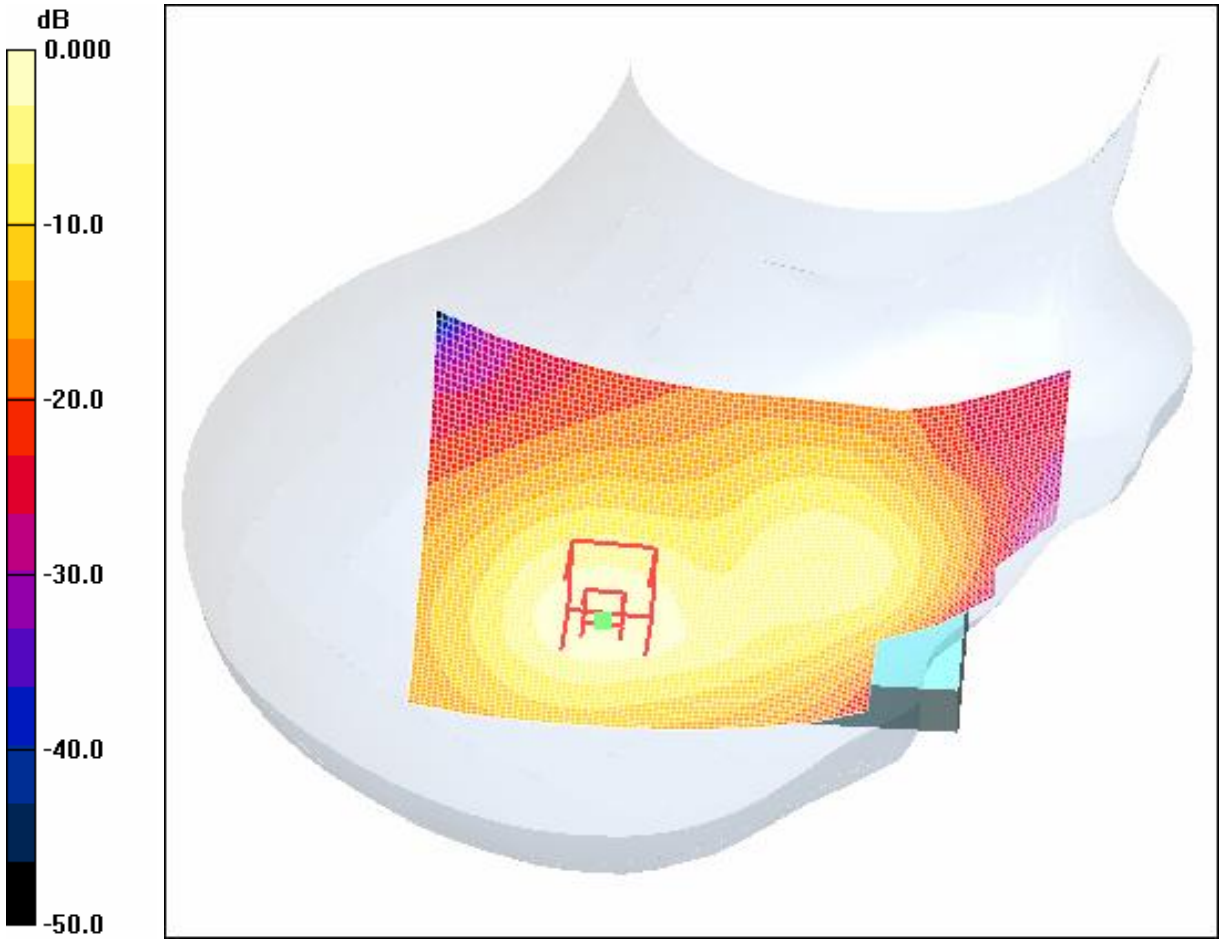
Communication System: PCS1900-GSM Mode; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium: HSL1800-2000MHz[Head] Medium parameters used: f = 1850.2 MHz; σ = 1.41 mho/m; ε_r =

39.7; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Cheek Position - Low/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 18.8 V/m; Power Drift = 0.176 dB
Motorola Fast SAR: SAR(1 g) = 0.722 mW/g; SAR(10 g) = 0.399 mW/g
Maximum value of SAR (interpolated) = 0.841 mW/g



0 dB = 0.841mW/g

4.23RightHandSide-Cheek-PCS1900-Middle

Date/Time: 2006-4-20 12:09:18

Test Laboratory: SGS-GSM

PCS1900-RightHandSide-Cheek-Mid

DUT: GSM60047B; Type: Head; Serial: 20060410

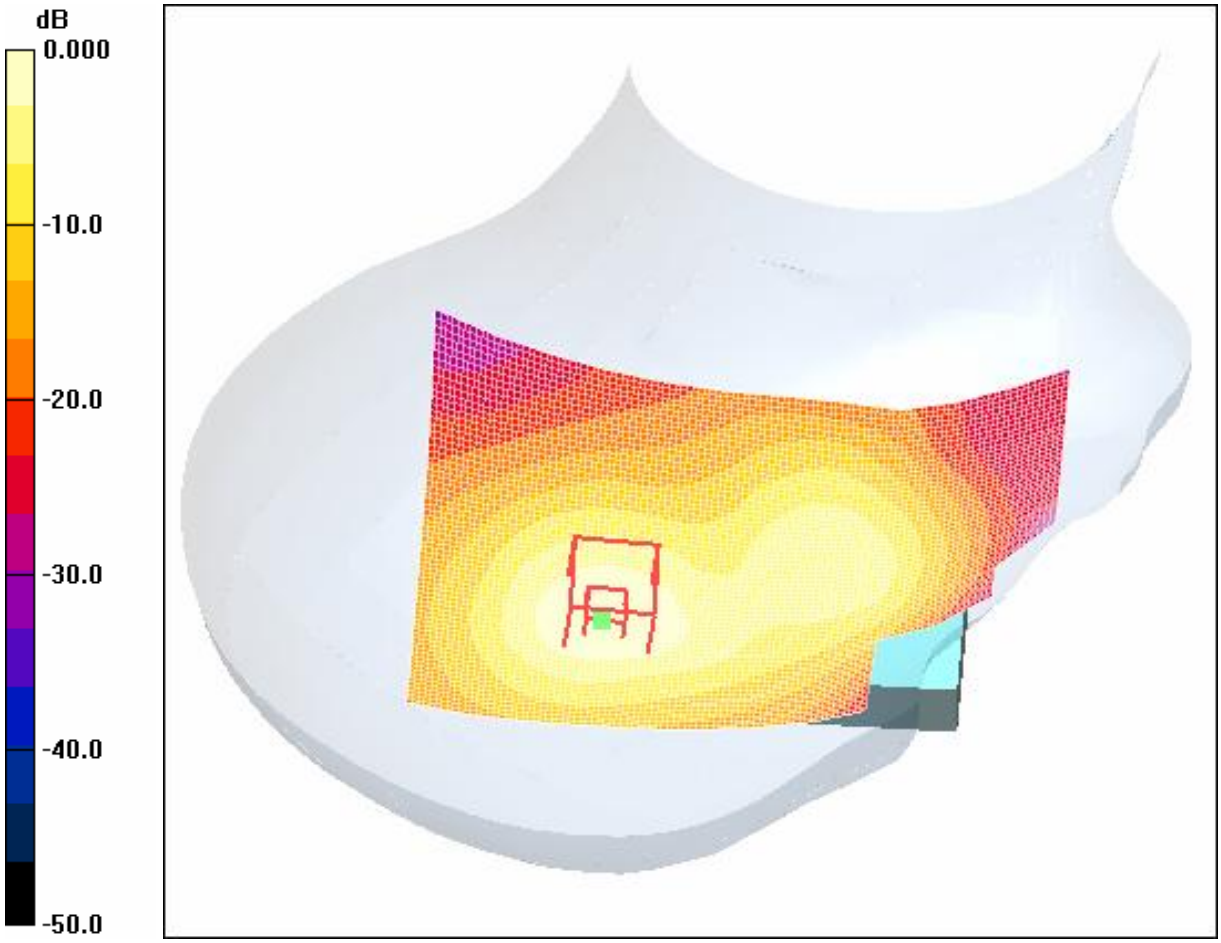
Communication System: PCS1900-GSM Mode; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: HSL1800-2000MHz[Head] Medium parameters used: f = 1880 MHz; σ = 1.44 mho/m; ε_r =

39.9; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Cheek Position - Middle/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 19.7 V/m; Power Drift = 0.049 dB
Motorola Fast SAR: SAR(1 g) = 0.790 mW/g; SAR(10 g) = 0.435 mW/g
Maximum value of SAR (interpolated) = 0.921 mW/g



0 dB = 0.921mW/g

4.24RightHandSide-Cheek-PCS1900-High

Date/Time: 2006-4-20 12:23:57

Test Laboratory: SGS-GSM

PCS1900-RightHandSide-Cheek-High

DUT: GSM60047B; Type: Head; Serial: 20060410

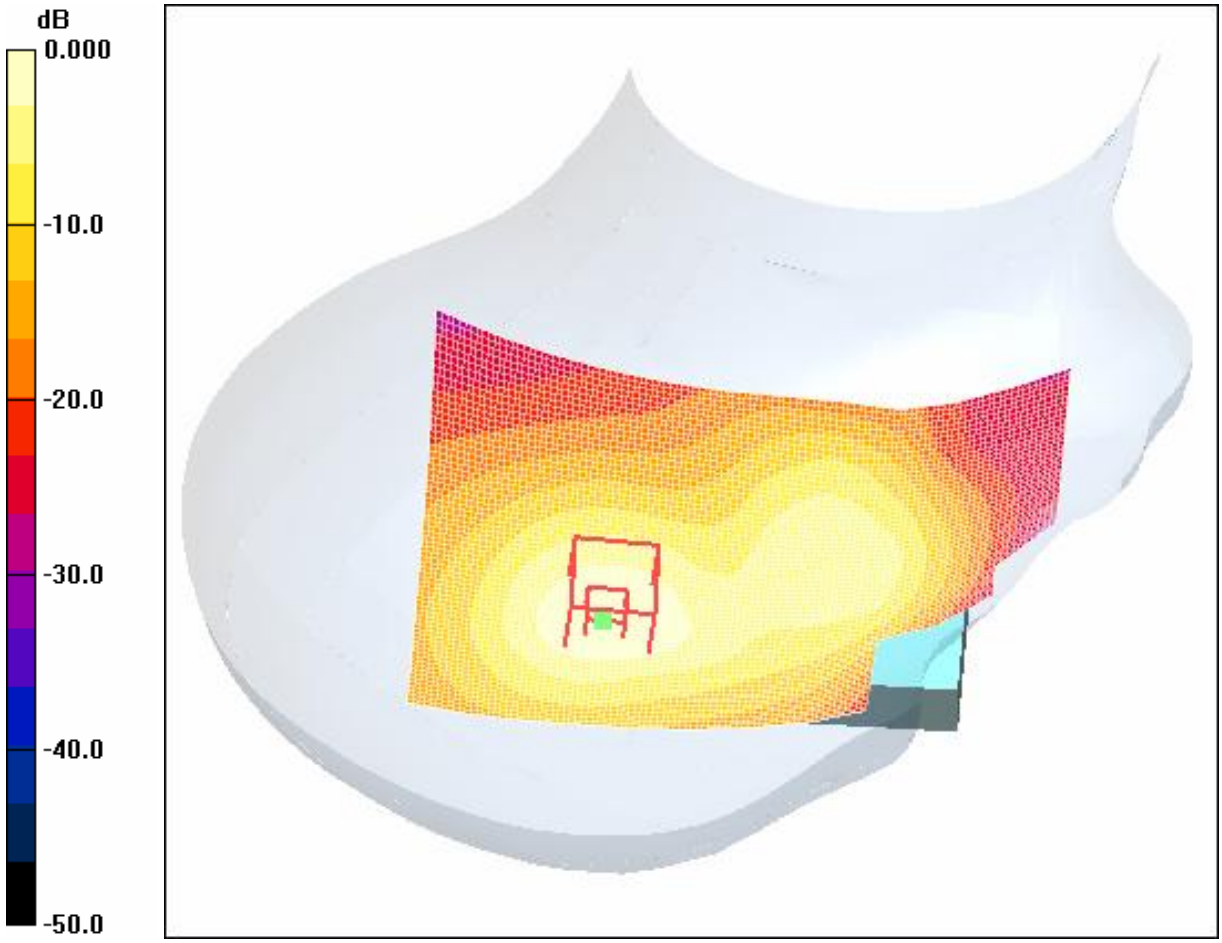
Communication System: PCS1900-GSM Mode; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: HSL1800-2000MHz[Head] Medium parameters used: f = 1909.8 MHz; σ = 1.46 mho/m; ε_r =

39.3; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Cheek Position - High/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 18.8 V/m; Power Drift = 0.068 dB
Motorola Fast SAR: SAR(1 g) = 0.723 mW/g; SAR(10 g) = 0.397 mW/g
Maximum value of SAR (interpolated) = 0.842 mW/g



0 dB = 0.842mW/g

4.25RightHandSide-Tilt-PCS1900-Low

Date/Time: 2006-4-20 13:21:28

Test Laboratory: SGS-GSM

PCS1900-RightHandSide-Tilt-Low

DUT: GSM60047B; Type: Head; Serial: 20060410

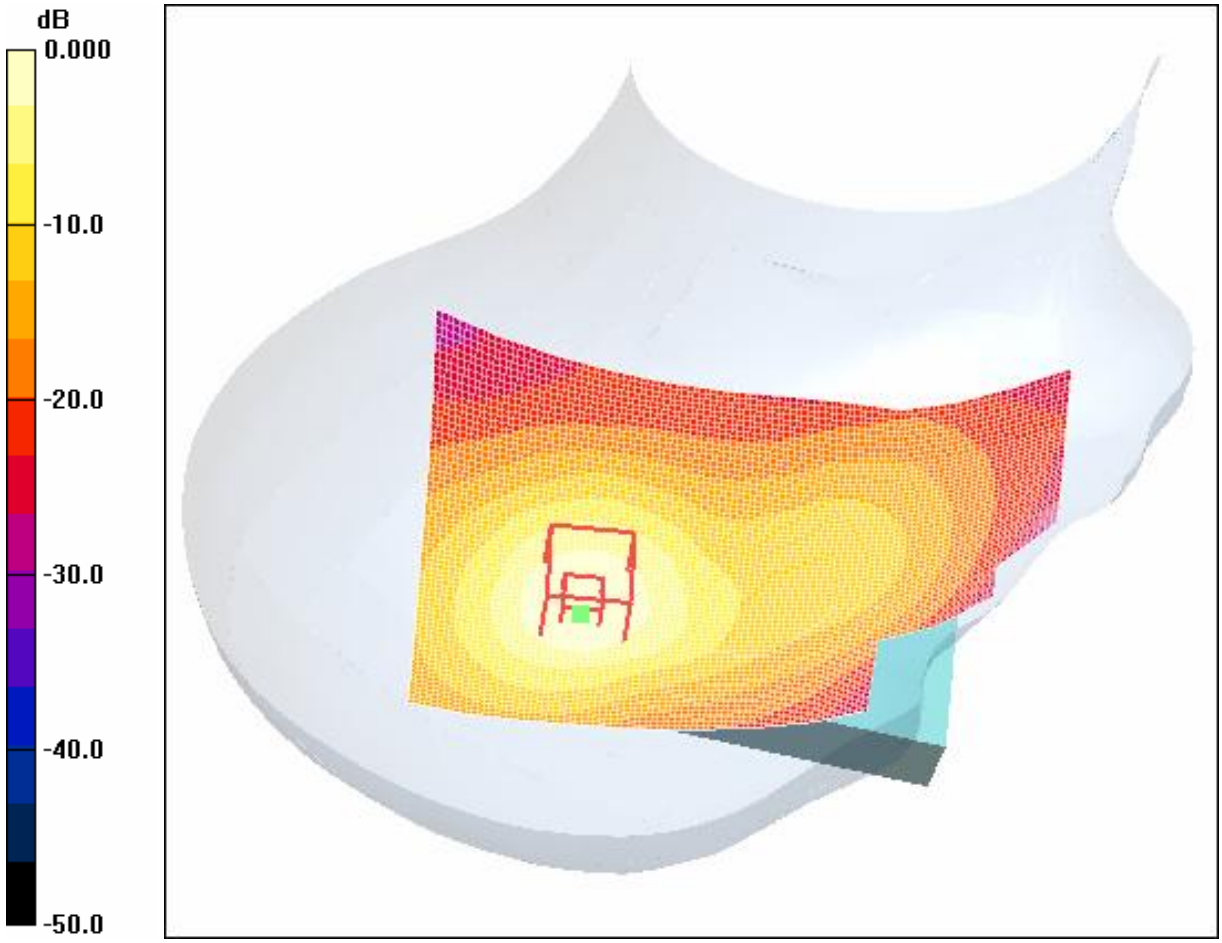
Communication System: PCS1900-GSM Mode; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium: HSL1800-2000MHz[Head] Medium parameters used: f = 1850.2 MHz; σ = 1.41 mho/m; ε_r =

39.7; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Tilt position - Low/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 23.3 V/m; Power Drift = -0.076 dB
Motorola Fast SAR: SAR(1 g) = 0.850 mW/g; SAR(10 g) = 0.471 mW/g
Maximum value of SAR (interpolated) = 0.985 mW/g



0 dB = 0.985mW/g

4.26RightHandSide-Tilt-PCS1900-Middle

Date/Time: 2006-4-20 13:37:59

Test Laboratory: SGS-GSM

PCS1900-RightHandSide-Tilt-Mid

DUT: GSM60047B; Type: Head; Serial: 20060410

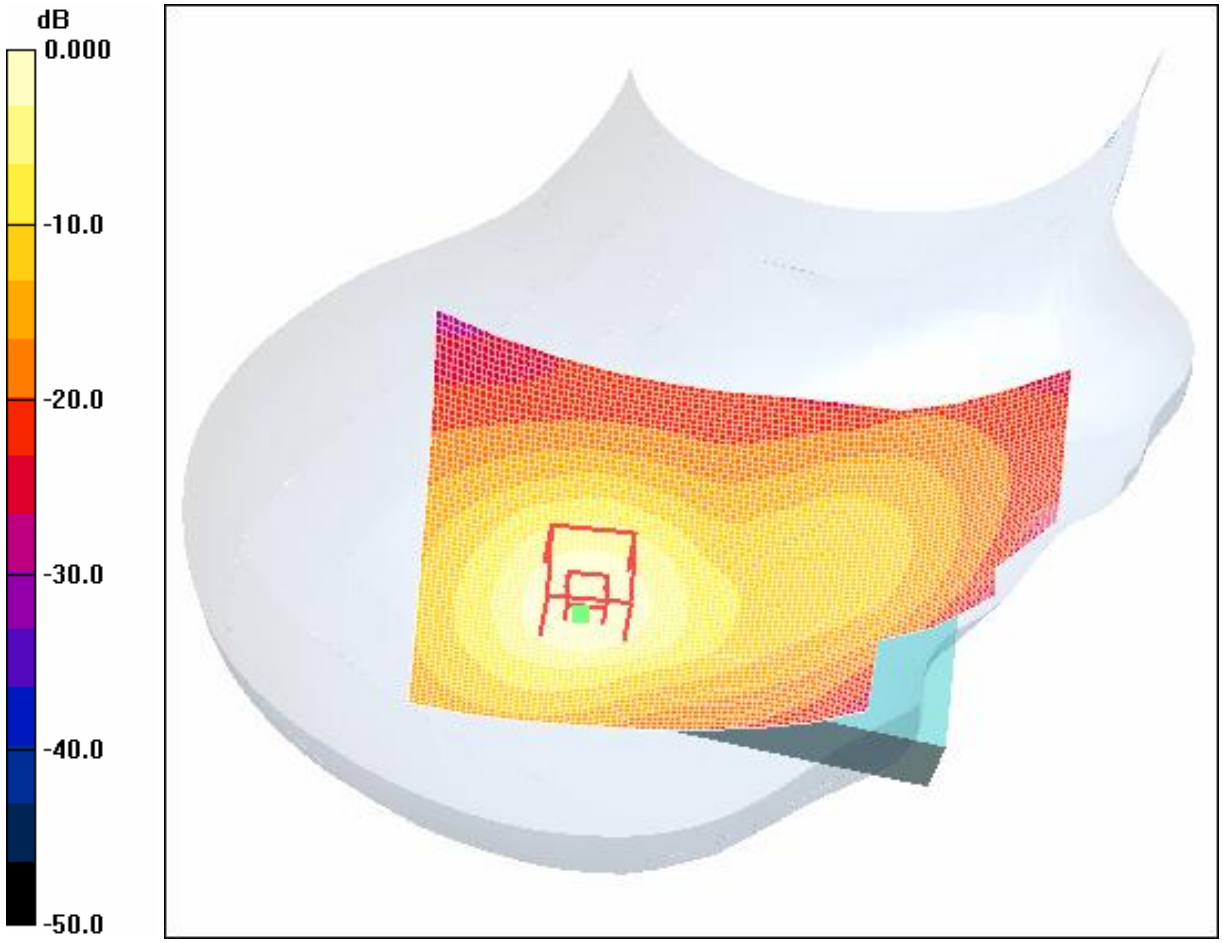
Communication System: PCS1900-GSM Mode; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: HSL1800-2000MHz[Head] Medium parameters used: f = 1880 MHz; σ = 1.44 mho/m; ε_r =

39.9; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Tilt position -Middle/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 24.2 V/m; Power Drift = -0.001 dB
Motorola Fast SAR: SAR(1 g) = 0.948 mW/g; SAR(10 g) = 0.522 mW/g
Maximum value of SAR (interpolated) = 1.10 mW/g



0 dB = 1.10mW/g

4.27RightHandSide-Tilt-PCS1900-High

Date/Time: 2006-4-20 13:54:05

Test Laboratory: SGS-GSM

PCS1900-RightHandSide-Tilt-High

DUT: GSM60047B; Type: Head; Serial: 20060410

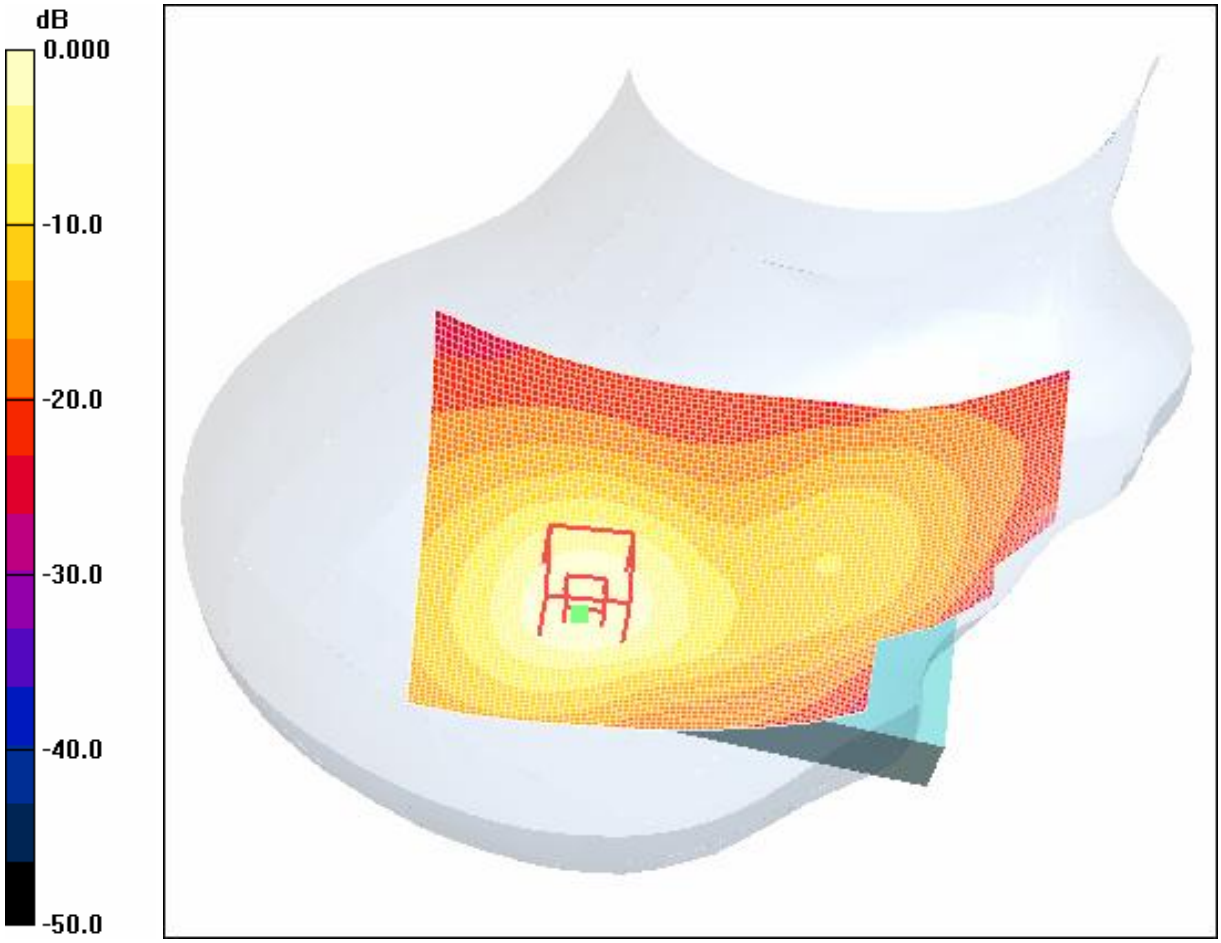
Communication System: PCS1900-GSM Mode; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: HSL1800-2000MHz[Head] Medium parameters used: f = 1909.8 MHz; σ = 1.46 mho/m; ε_r =

39.3; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Tilt position - High/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 22.7 V/m; Power Drift = 0.029 dB
Motorola Fast SAR: SAR(1 g) = 0.850 mW/g; SAR(10 g) = 0.467 mW/g
Maximum value of SAR (interpolated) = 0.984 mW/g



0 dB = 0.984mW/g

RightHandSide-Tilt-PCS1900-Middle (Maximum Value)

Date/Time: 2006-4-20 14:12:28

Test Laboratory: SGS-GSM

PCS1900-RightHandSide-Tilt-Mid(conventional)

DUT: GSM60047B; Type: Head; Serial: 20060410

Communication System: PCS1900-GSM Mode; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: HSL1800-2000MHz[Head] Medium parameters used: f = 1880 MHz; σ = 1.44 mho/m; ε_r =

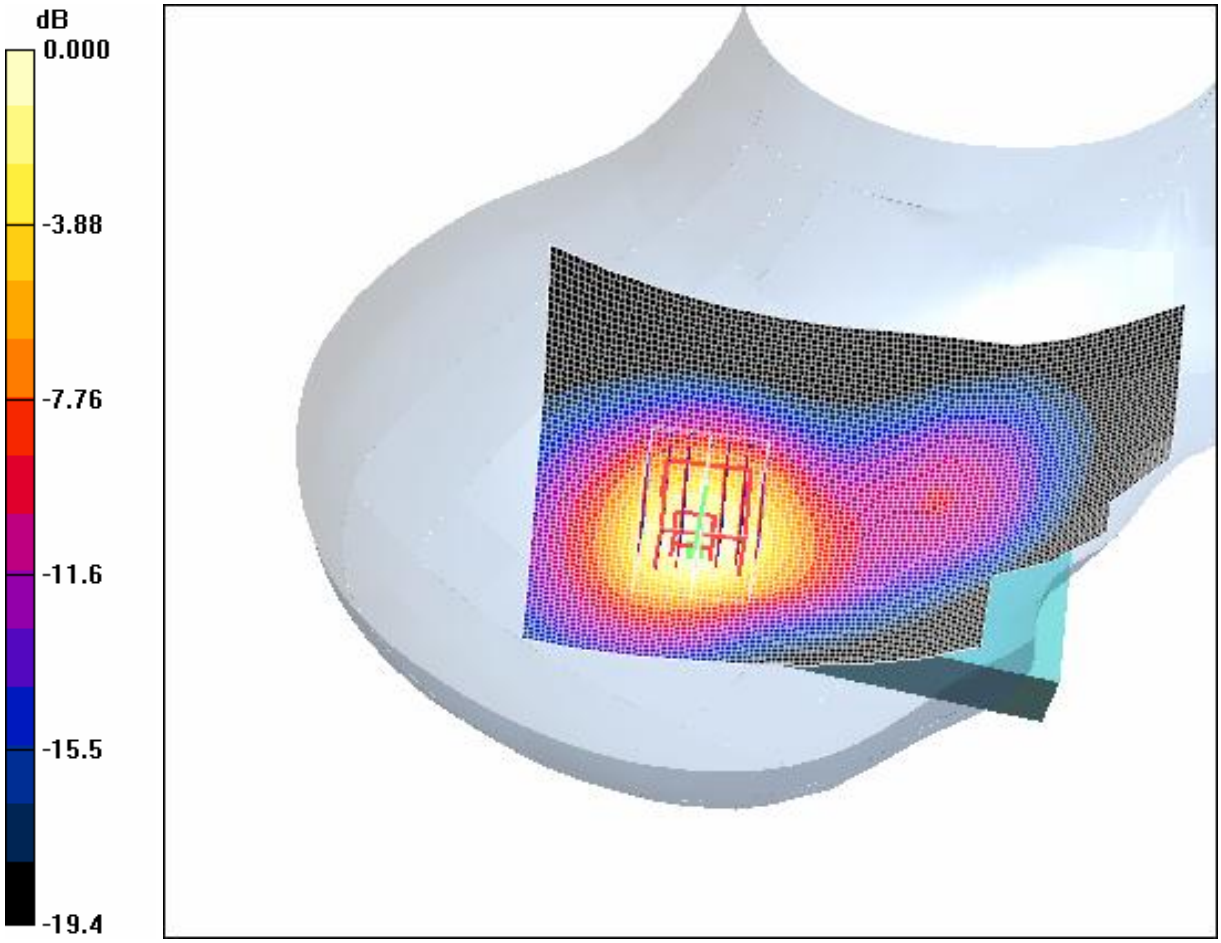
39.9; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Maximum Position - Traditional Method/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.08 mW/g

Maximum Position - Traditional Method/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 24.1 V/m; Power Drift = 0.082 dB
Peak SAR (extrapolated) = 1.76 W/kg
SAR(1 g) = 0.985 mW/g; SAR(10 g) = 0.530 mW/g
Maximum value of SAR (measured) = 1.10 mW/g



0 dB = 1.10mW/g

4.28Body-Worn-PCS1900-GPRS-Low

Date/Time: 2006-4-24 14:38:51

Test Laboratory: SGS-GSM

PCS1900-GPRS-Body-Worn-Low

DUT: GSM60047B; Type: Body; Serial: 20060410

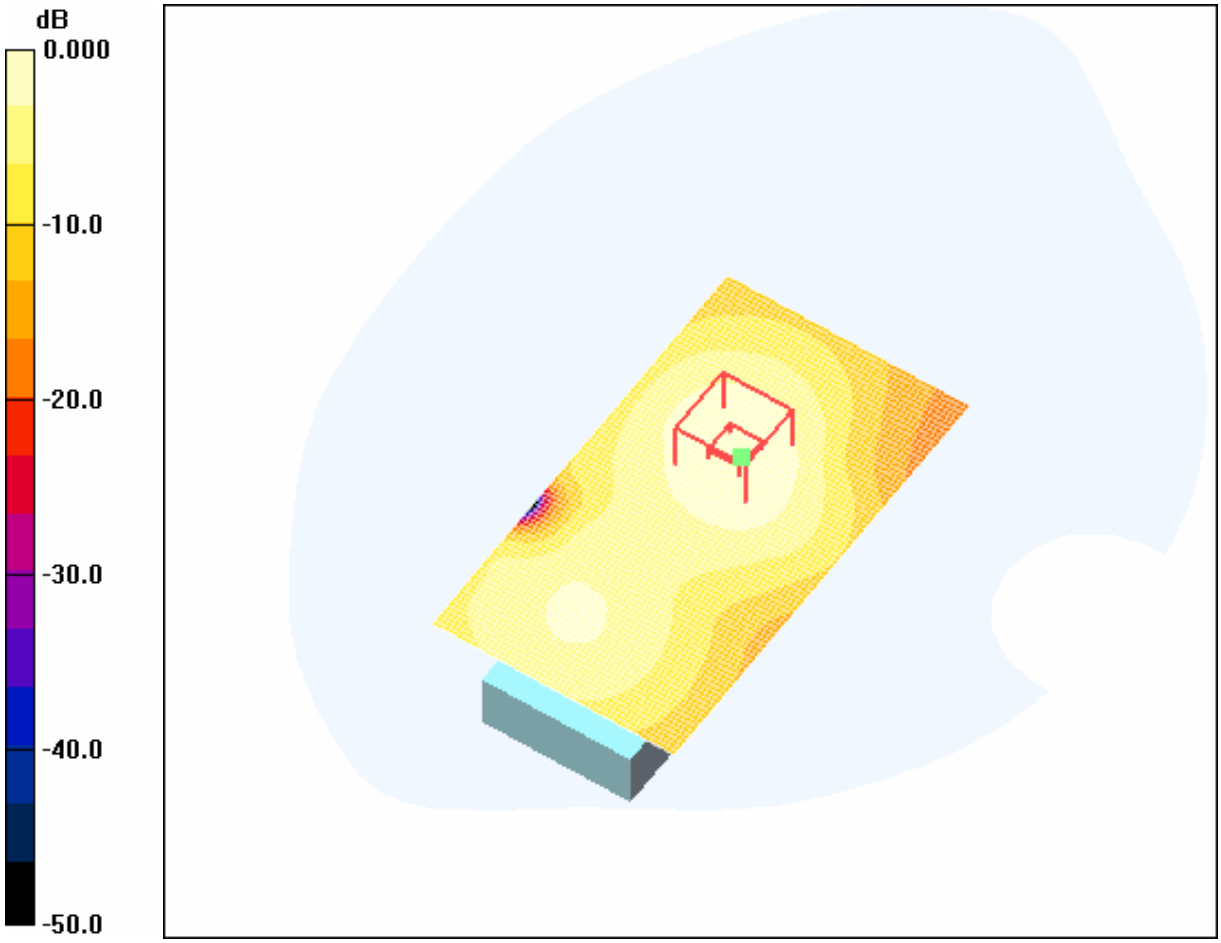
Communication System: PCS1900-GPRS Mode; Frequency: 1850.2 MHz;Duty Cycle: 1:4
Medium: HSL1900-Body Medium parameters used: f = 1850.2 MHz; σ = 1.49 mho/m; ε_r = 51.6; ρ =

1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.53, 4.53, 4.53); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Body Worn - Low/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 24.3 V/m; Power Drift = -0.024 dB
Motorola Fast SAR: SAR(1 g) = 1.01 mW/g; SAR(10 g) = 0.587 mW/g
Maximum value of SAR (interpolated) = 1.13 mW/g



0 dB = 1.13mW/g

4.29Body-Worn-PCS1900-GPRS-Middle

Date/Time: 2006-4-24 14:46:19

Test Laboratory: SGS-GSM

PCS1900-GPRS-Body-Worn-Mid

DUT: GSM60047B; Type: Body; Serial: 20060410

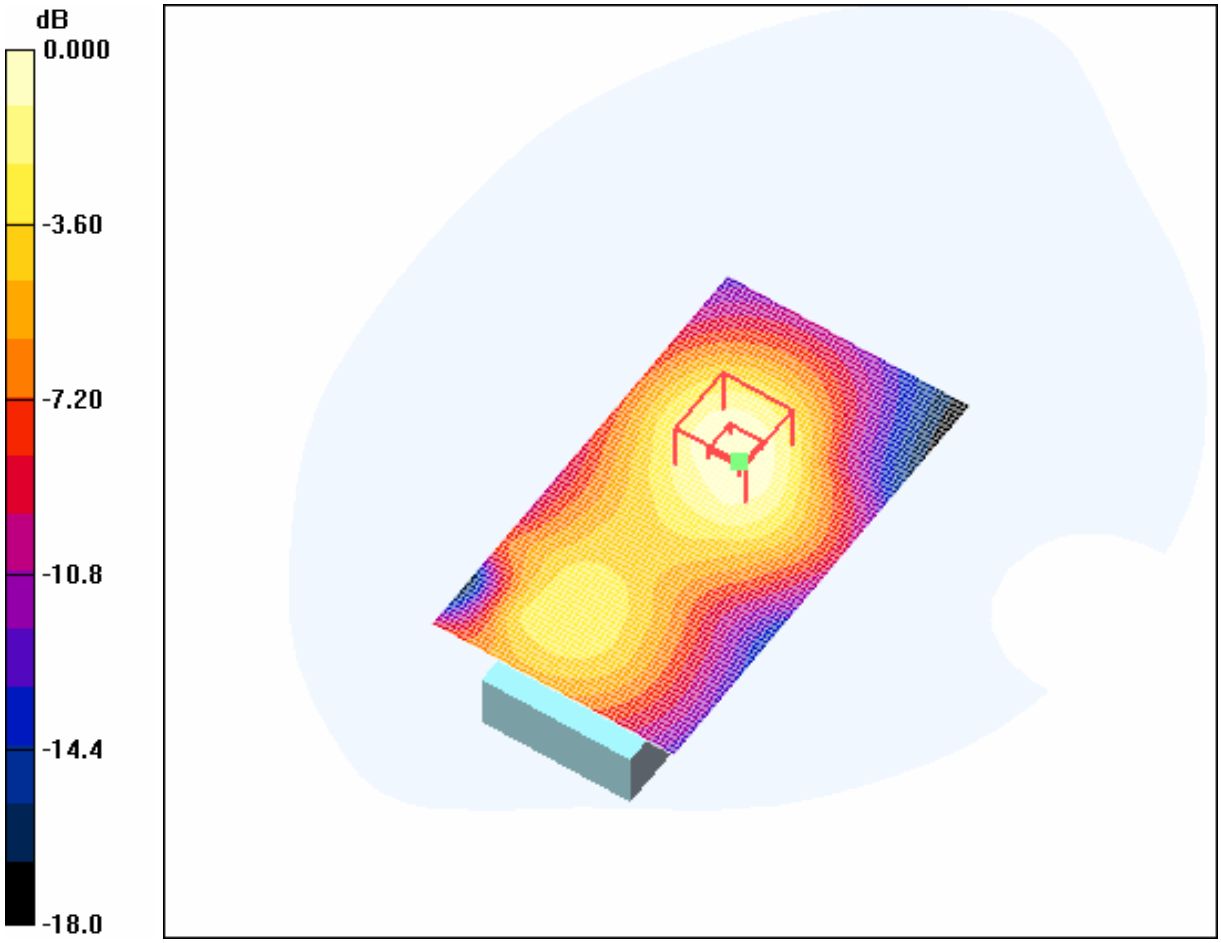
Communication System: PCS1900-GPRS Mode; Frequency: 1880 MHz;Duty Cycle: 1:4
Medium: HSL1900-Body Medium parameters used: f = 1880 MHz; σ = 1.52 mho/m; ε_r = 51.5; ρ =

1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.53, 4.53, 4.53); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Body Worn - Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 24.1 V/m; Power Drift = -0.031 dB
Motorola Fast SAR: SAR(1 g) = 1.01 mW/g; SAR(10 g) = 0.591 mW/g
Maximum value of SAR (interpolated) = 1.11 mW/g



0 dB = 1.11mW/g

4.30Body-Worn-PCS1900-GPRS-High

Date/Time: 2006-4-24 14:54:00

Test Laboratory: SGS-GSM

PCS1900-GPRS-Body-Worn-High

DUT: GSM60047B; Type: Body; Serial: 20060410

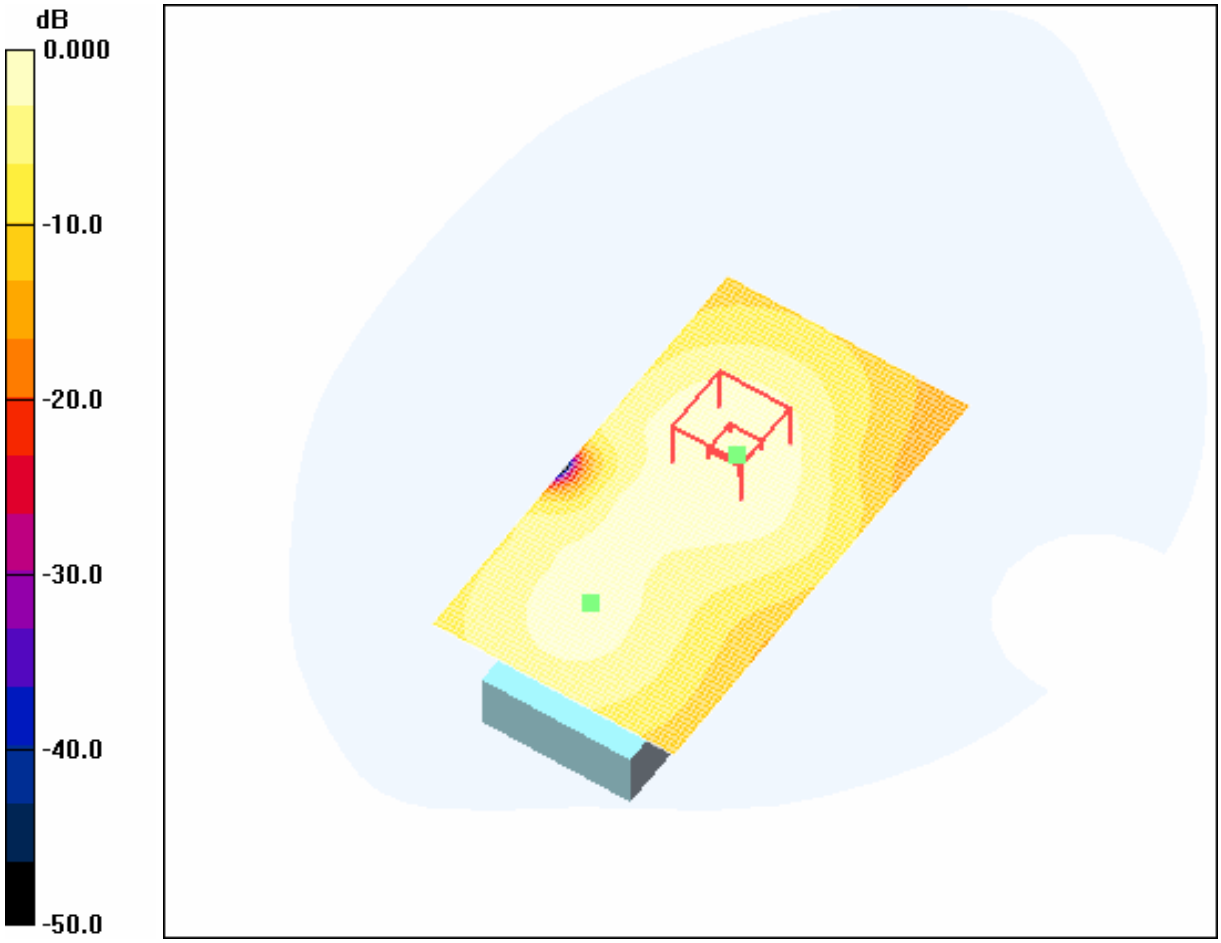
Communication System: PCS1900-GPRS Mode; Frequency: 1909.8 MHz;Duty Cycle: 1:4
Medium: HSL1900-Body Medium parameters used: f = 1909.8 MHz; σ = 1.55 mho/m; ε_r = 51.5; ρ =

1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.53, 4.53, 4.53); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Body Worn - High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 22.8 V/m; Power Drift = 0.025 dB
Motorola Fast SAR: SAR(1 g) = 0.905 mW/g; SAR(10 g) = 0.534 mW/g
Maximum value of SAR (interpolated) = 0.988 mW/g



0 dB = 0.988mW/g

Body-Worn-PCS1900-GPRS-Middle (Maximum Value)

Date/Time: 2006-4-24 15:06:13

Test Laboratory: SGS-GSM

PCS1900-GPRS-Body-Worn-Mid(conventional)

DUT: GSM60047B; Type: Body; Serial: 20060410

Communication System: PCS1900-GPRS Mode; Frequency: 1880 MHz;Duty Cycle: 1:4
Medium: HSL1900-Body Medium parameters used: f = 1880 MHz; σ = 1.52 mho/m; ε_r = 51.5; ρ =

1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

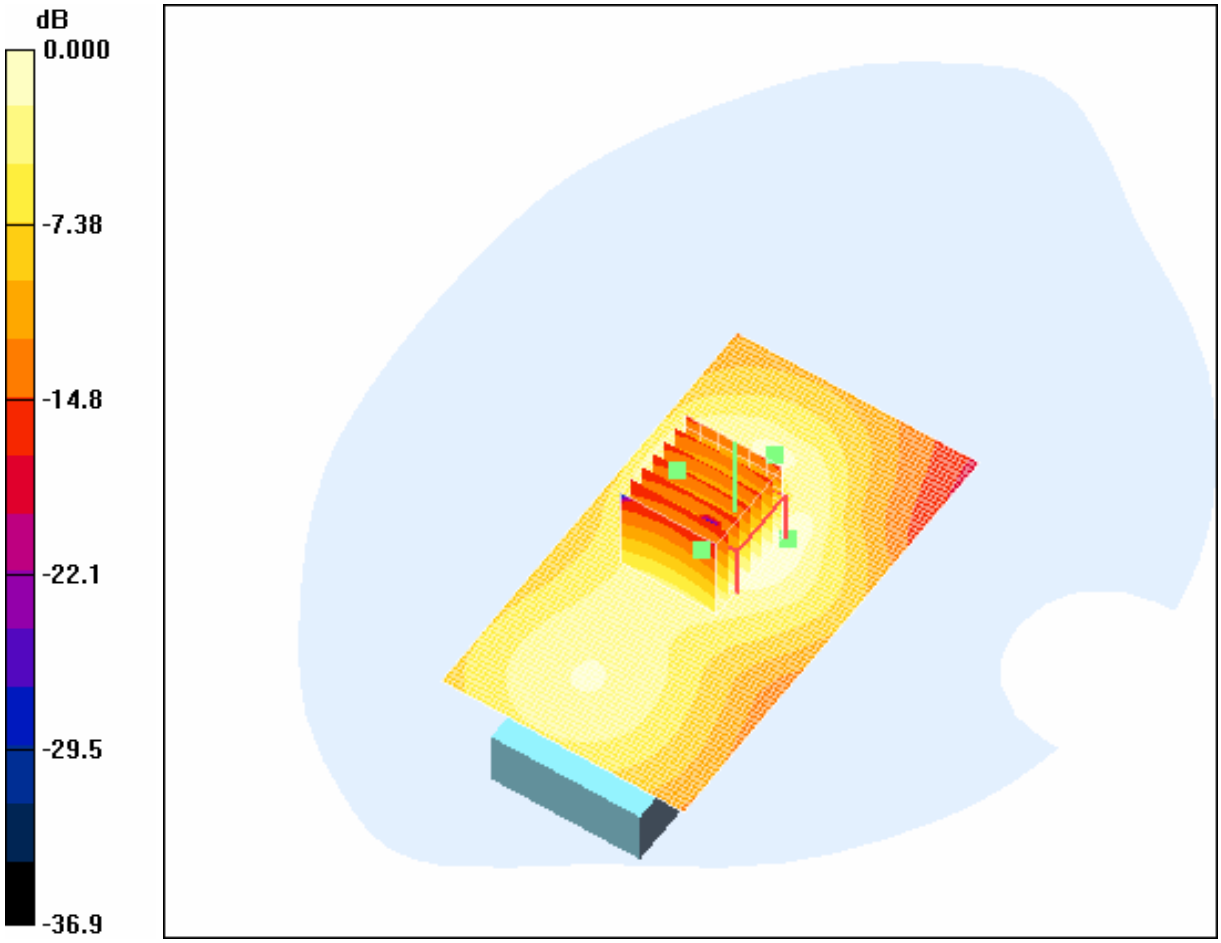
DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.53, 4.53, 4.53); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Maximum Position - Taditional Method/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.01 mW/g

Maximum Position - Taditional Method/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 23.9 V/m; Power Drift = -0.054 dB
Peak SAR (extrapolated) = 1.68 W/kg
SAR(1 g) = 0.918 mW/g; SAR(10 g) = 0.473 mW/g

Maximum value of SAR (measured) = 1.06 mW/g



0 dB = 1.06mW/g

4.31Body-Worn-802.11b-Low-Front

Date/Time: 2006-5-26 18:42:01

Test Laboratory: SGS-GSM

WiFi802.11b-Body-Worn-Low-Front

DUT: GSM60047B; Type: Body; Serial: 20060410

Communication System: 802.11b; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: WiFi802.11b Medium parameters used: f = 2412 MHz; σ = 1.88 mho/m; ε_r = 51.9; ρ = 1000

kg/m^3

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

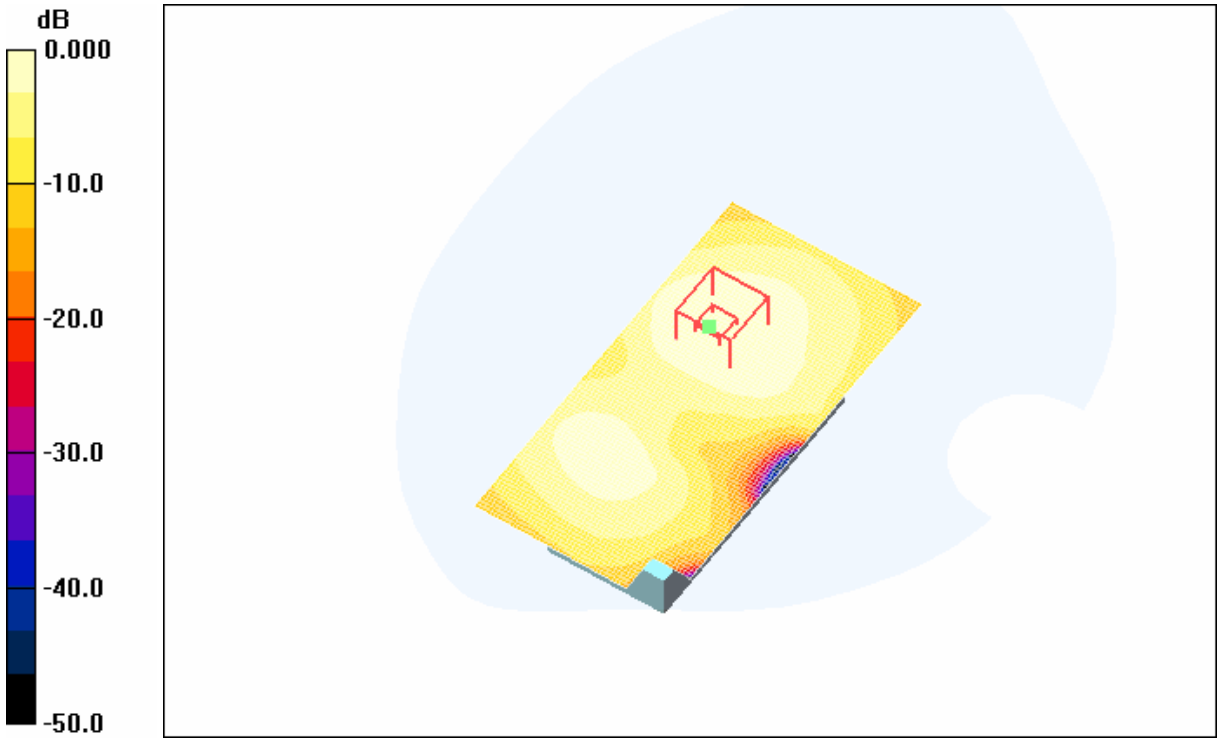
- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Body Worn - Low/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Reference Value = 2.57 V/m; Power Drift = -0.113 dB

Motorola Fast SAR: SAR(1 g) = 0.015 mW/g; SAR(10 g) = 0.00837 mW/g

Maximum value of SAR (interpolated) = 0.017 mW/g



0 dB = 0.017mW/g

4.32 Body-Worn-802.11b-Low-Rear

Date/Time: 2006-5-26 18:55:59

Test Laboratory: SGS-GSM

WiFi802.11b-Body-Worn-Low-Rear

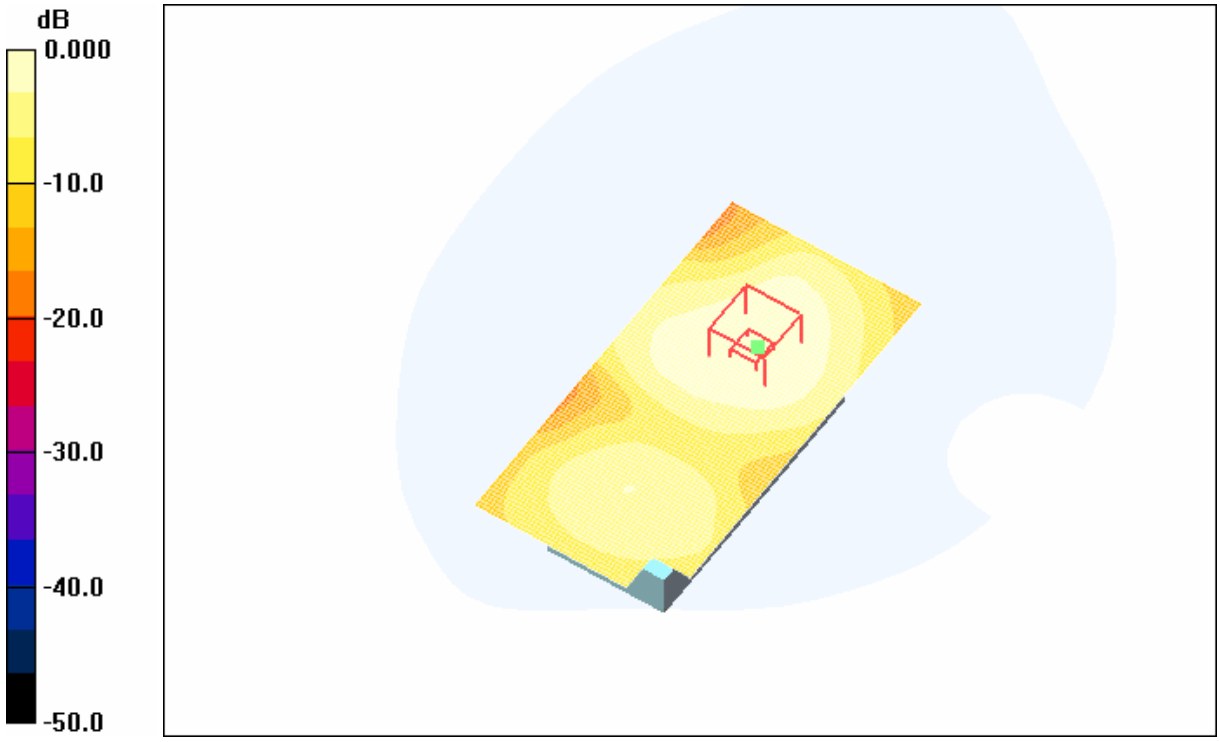
DUT: GSM60047B; Type: Body; Serial: 20060410

Communication System: 802.11b; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: WiFi802.11b Medium parameters used: f = 2412 MHz; σ = 1.88 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Body Worn - Low 2/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 3.15 V/m; Power Drift = -0.135 dB
Motorola Fast SAR: SAR(1 g) = 0.018 mW/g; SAR(10 g) = 0.010 mW/g
Maximum value of SAR (interpolated) = 0.020 mW/g



0 dB = 0.020mW/g

4.33 Body-Worn-802.11b-Mid-Rear

Date/Time: 2006-5-26 19:12:14

Test Laboratory: SGS-GSM

WiFi802.11b-Body-Worn-Mid-Rear

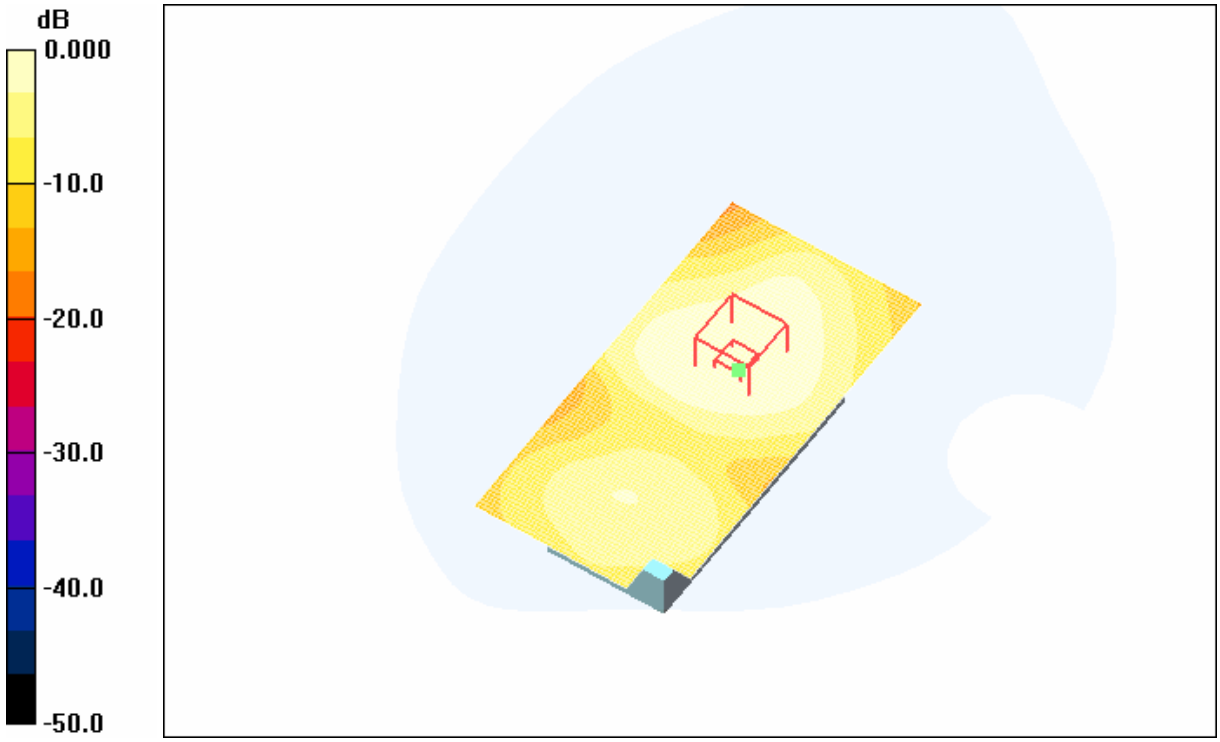
DUT: GSM60047B; Type: Body; Serial: 20060410

Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: WiFi802.11b Medium parameters used: f = 2437 MHz; σ = 1.93 mho/m; ε_r = 51.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Body Worn - Middle/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 3.38 V/m; Power Drift = -0.004 dB
Motorola Fast SAR: SAR(1 g) = 0.023 mW/g; SAR(10 g) = 0.013 mW/g
Maximum value of SAR (interpolated) = 0.025 mW/g



0 dB = 0.025mW/g

4.34 Body-Worn-802.11b-High-Rear

Date/Time: 2006-5-26 19:45:35

Test Laboratory: SGS-GSM

WiFi802.11b-Body-Worn-High-Rear

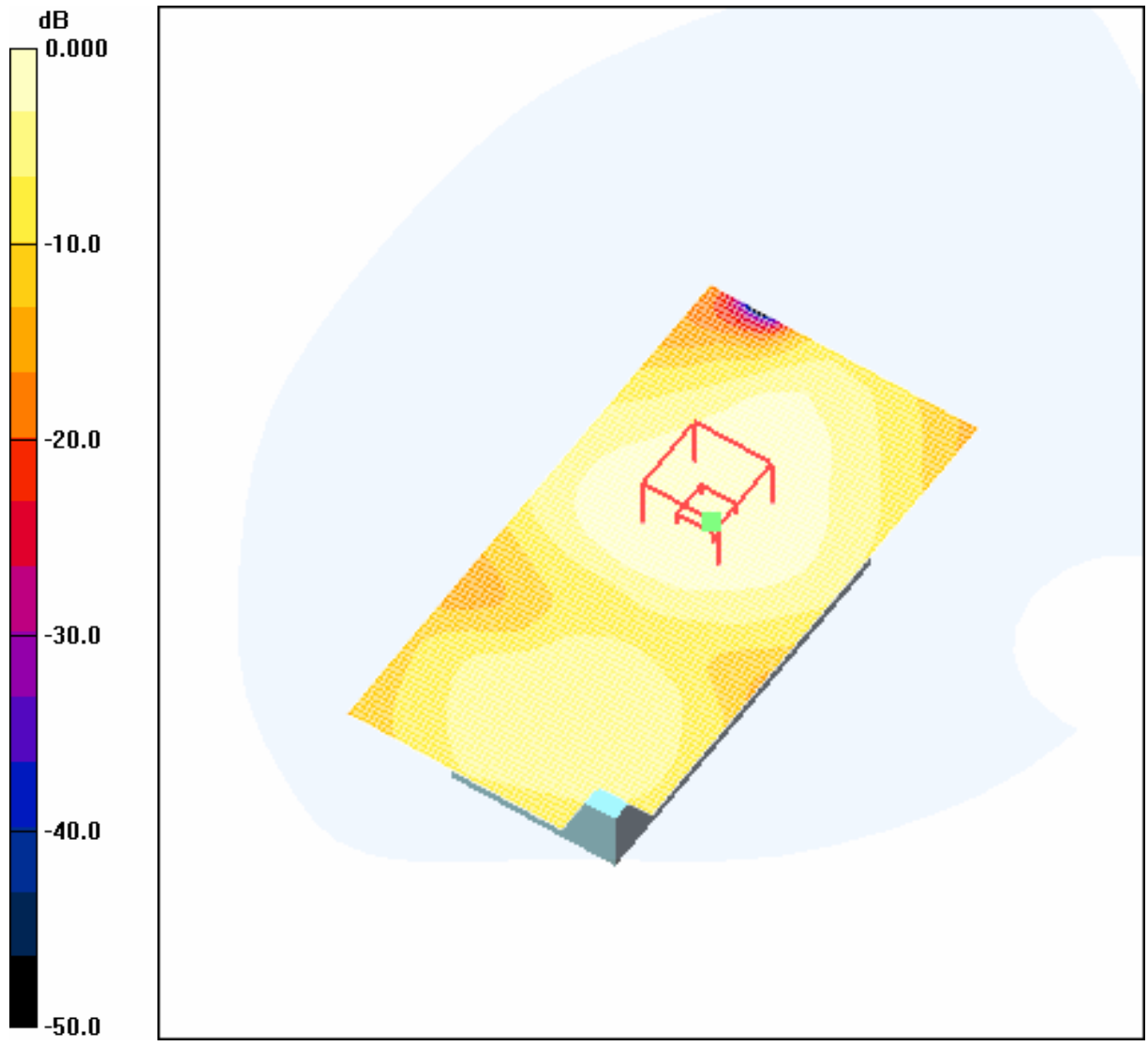
DUT: GSM60047B; Type: Body; Serial: 20060410

Communication System: 802.11b; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: WiFi802.11b Medium parameters used: f = 2462 MHz; σ = 1.96 mho/m; ε_r = 51.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Body Worn - High/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 3.40 V/m; Power Drift = 0.079 dB
Motorola Fast SAR: SAR(1 g) = 0.025 mW/g; SAR(10 g) = 0.014 mW/g
Maximum value of SAR (interpolated) = 0.027 mW/g



0 dB = 0.027mW/g

Body-Worn-802.11b-High-Rear (Maximum Value)

Date/Time: 2006-5-26 20:02:52

Test Laboratory: SGS-GSM

WiFi802.11b-Body-Worn-High-Rear(conventional)

DUT: GSM60047B; Type: Body; Serial: 20060410

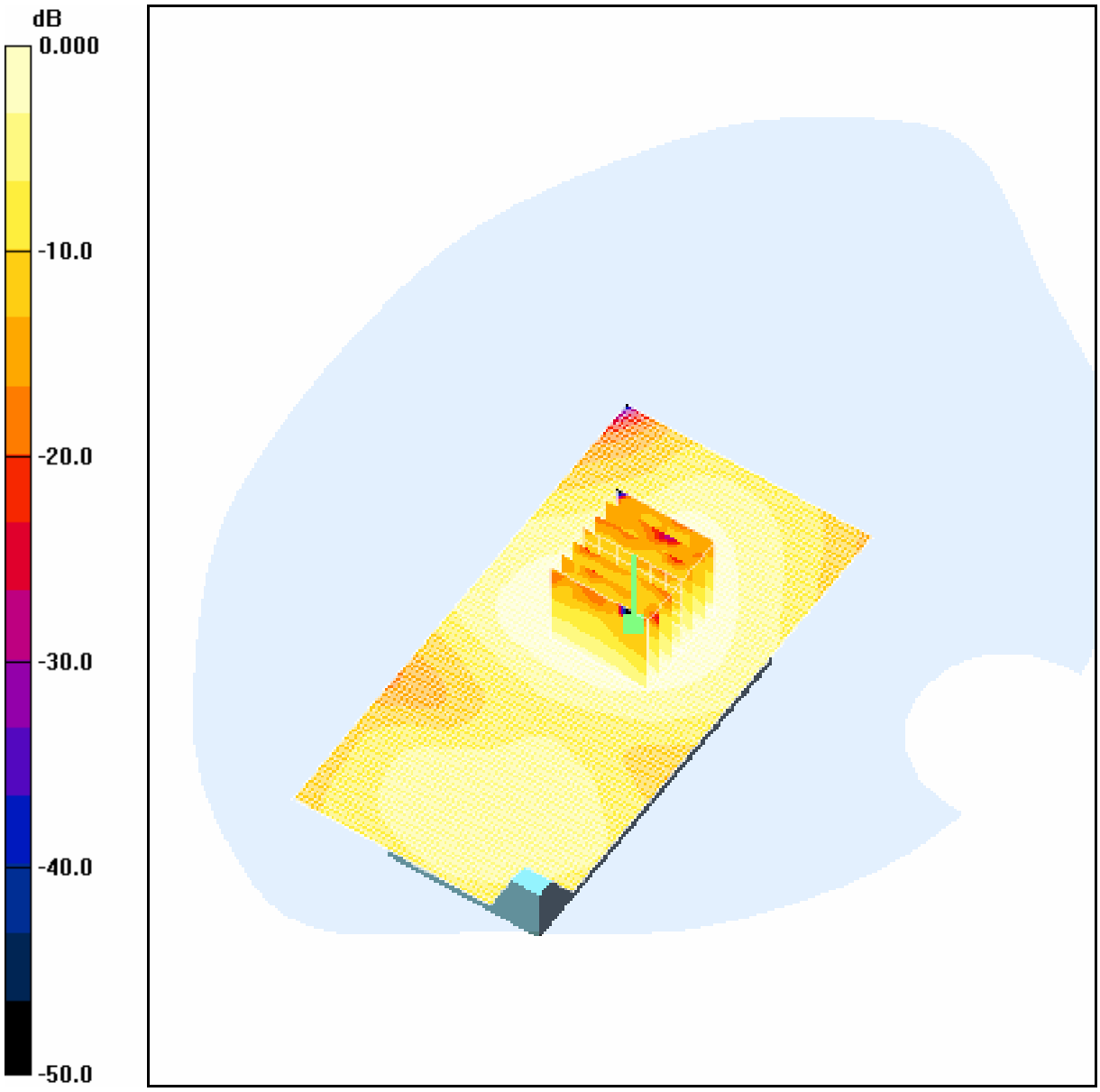
Communication System: 802.11b; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: WiFi802.11b Medium parameters used: f = 2462 MHz; σ = 1.96 mho/m; ε_r = 51.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2005-11-17
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Maximum Position - Taditional Method/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.027 mW/g

Maximum Position - Taditional Method/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.36 V/m; Power Drift = -0.036 dB
Peak SAR (extrapolated) = 0.053 W/kg
SAR(1 g) = 0.025 mW/g; SAR(10 g) = 0.014 mW/g
Maximum value of SAR (measured) = 0.027 mW/g



0 dB = 0.027mW/g

Appendix

1. Photographs of Test Setup

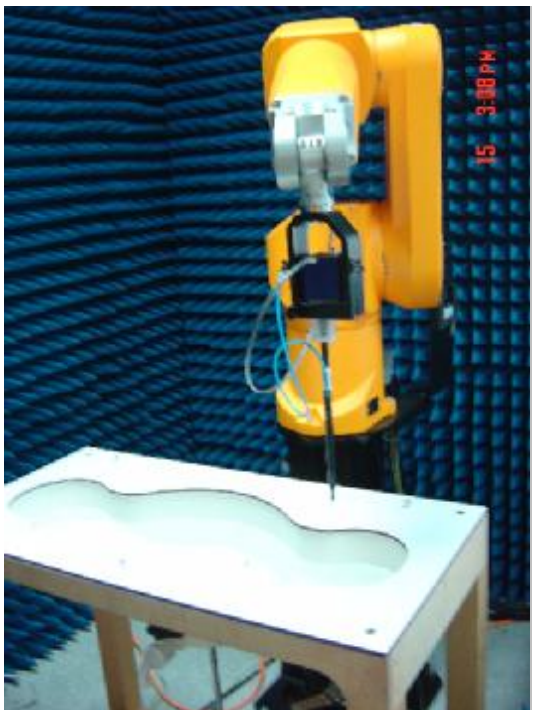


Fig.1 Photograph of the SAR measurement System

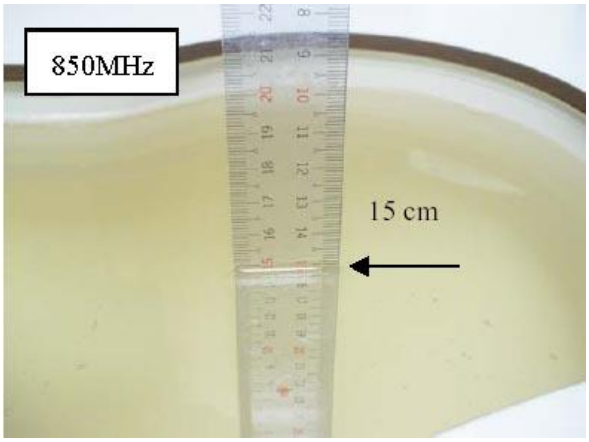


Fig.2 Photograph of the Tissue Simulant Fluid Fluid Liquid depth 15cm for Left-Head Side

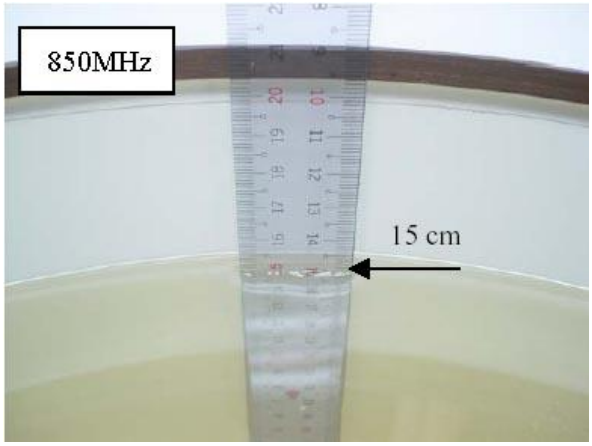


Fig.3 Photograph of the Tissue Simulant Liquid depth 15cm for Body-Worn

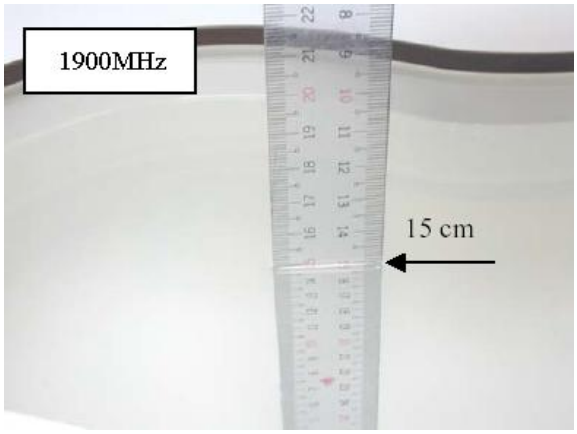


Fig.4 Photograph of the Tissue Simulant Fluid Fluid Liquid depth 15cm for Right-Head Side

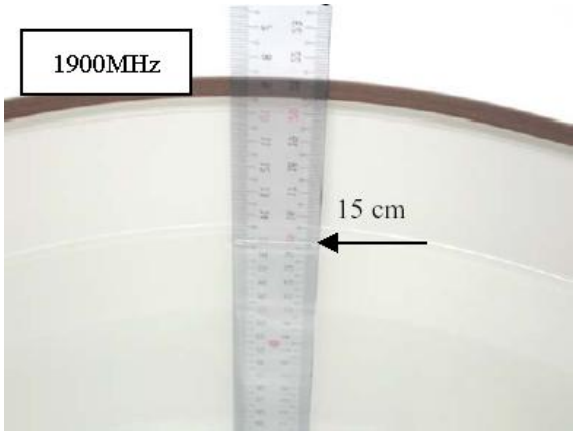
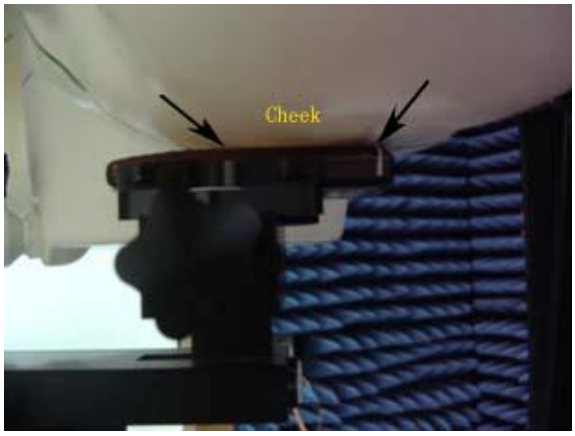


Fig.5 Photograph of the Tissue Simulant Liquid depth 15cm for Body-Worn



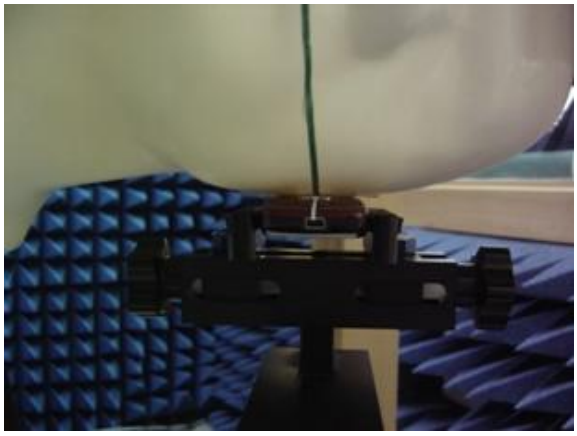


Fig.6 Photograph of the Left Hand Side Cheek status

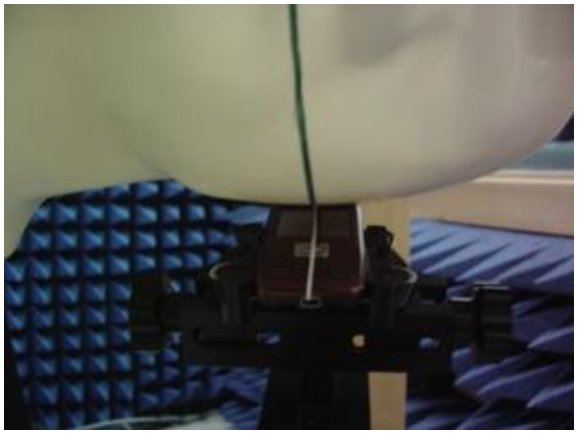


Fig.7 Photograph of the Left Hand Side Tilt status

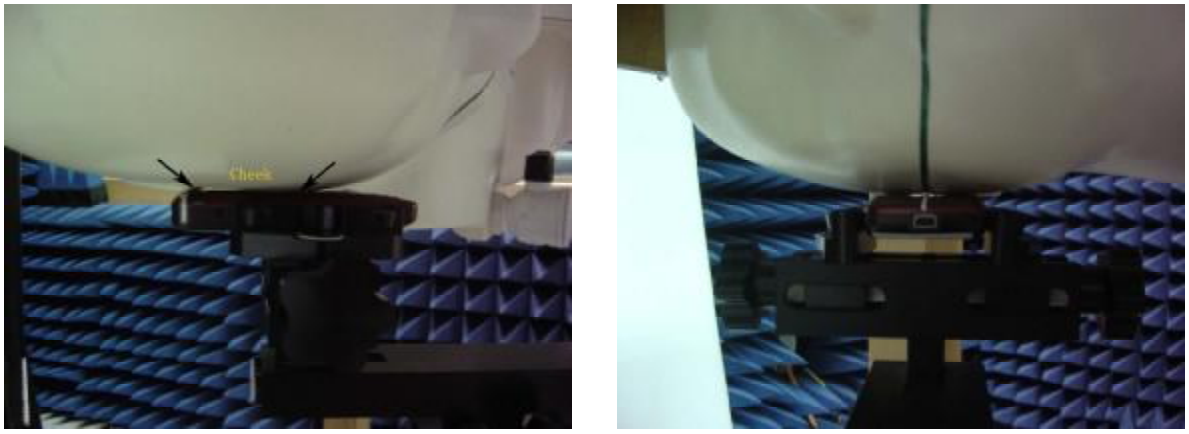


Fig.8 Photograph of the Right Hand Side Cheek status

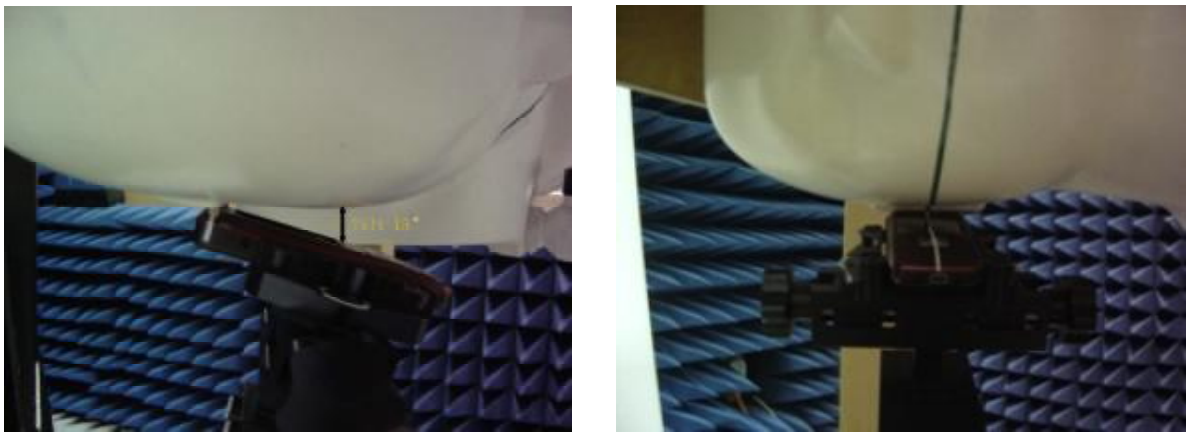


Fig.9 Photograph of the Right Hand Side Tilt status

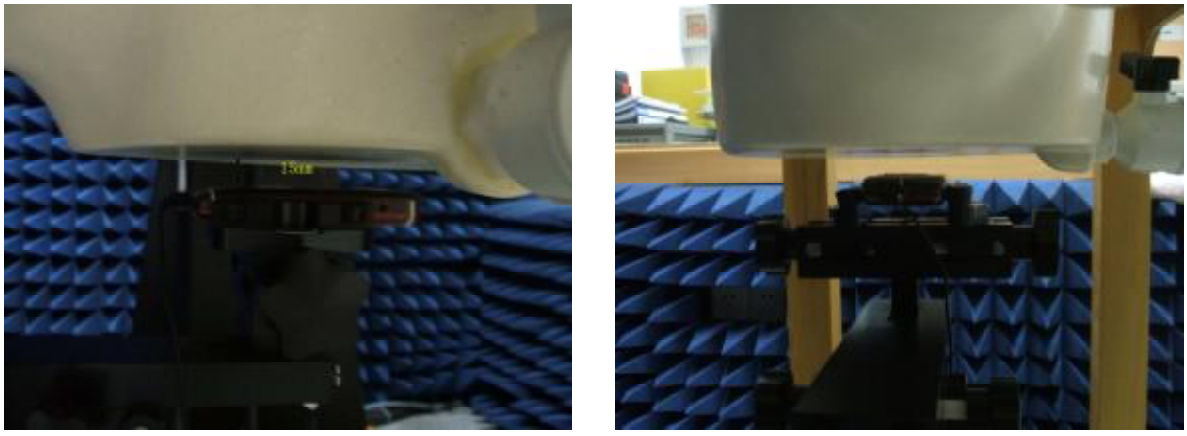


Fig.10-1 Photograph of the BodyWorn status (GPRS)

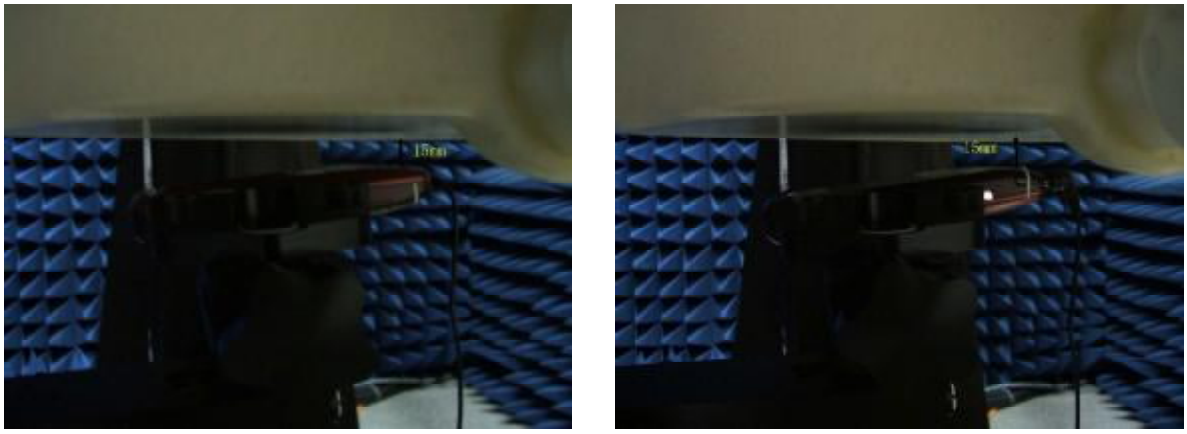


Fig.10-2 Photograph of the BodyWorn status (802.11b front&rear)

2. Photographs of the EUT

Fig.11 Front View

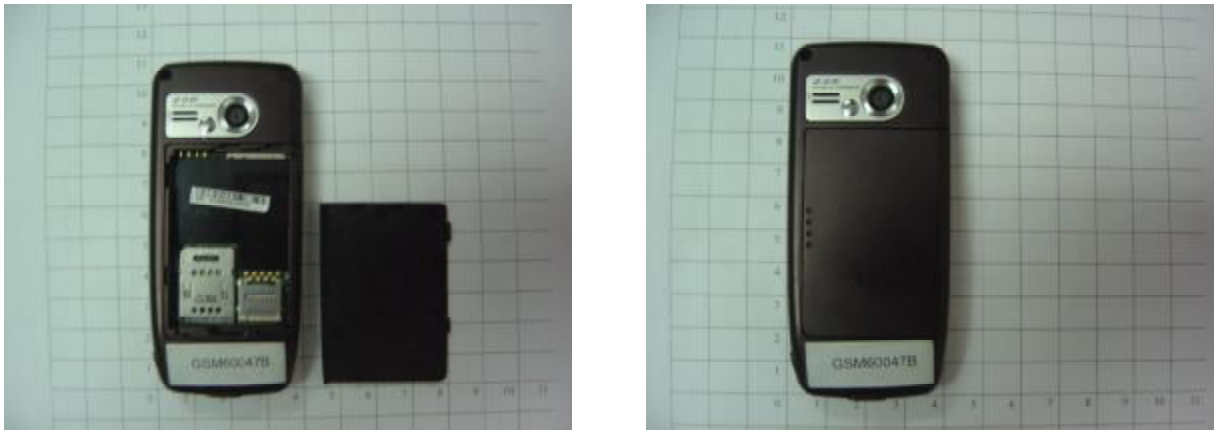


Fig.12 Back View

3. Photographs of the battery

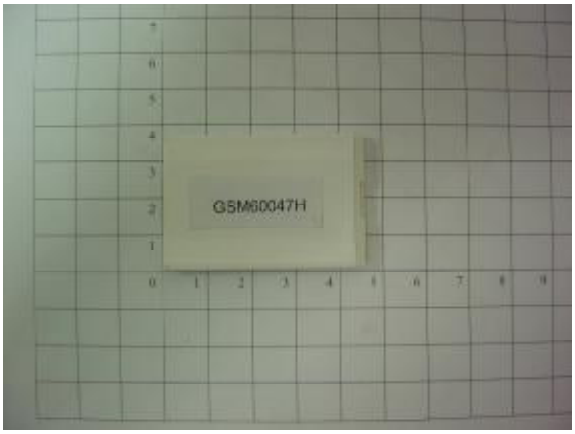


Fig.13 Front view of battery

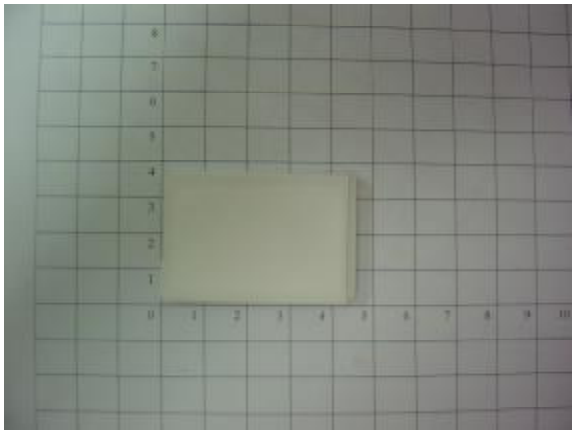


Fig.14 Back view of battery

4. Photograph of the charger

Fig.15 Charger

5. Probe Calibration certificate

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 Federal Office of Metrology and Accreditation
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 **SGS-CSTS (MTT)**

Certificate No: **ES3-3088_Sep05**

CALIBRATION CERTIFICATE

Object	ES3DV3 - SN:3088
Calibration procedure(s)	QA CAL-01.v5 Calibration procedure for dosimetric E-field probes
Calibration date:	September 13, 2005
Condition of the calibrated item	In Tolerance

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 (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	3-May-05 (METAS, No. 251-00466)	May-06
Power sensor E4412A	MY41495277	3-May-05 (METAS, No. 251-00466)	May-06
Power sensor E4412A	MY41498087	3-May-05 (METAS, No. 251-00466)	May-06
Reference 3 dB Attenuator	SN: S5054 (3c)	11-Aug-05 (METAS, No. 251-00499)	Aug-06
Reference 20 dB Attenuator	SN: S5086 (20b)	3-May-05 (METAS, No. 251-00467)	May-06
Reference 30 dB Attenuator	SN: S5129 (30b)	11-Aug-05 (METAS, No. 251-00500)	Aug-06
Reference Probe ES3DV2	SN: 3013	7-Jan-05 (SPEAG, No. ES3-3013_Jan05)	Jan-06
DAE4	SN: 654	29-Nov-04 (SPEAG, No. DAE4-654_Nov04)	Nov-05

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Dec-03)	In house check: Dec-05
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Nov-04)	In house check: Nov 06

	Name	Function	Signature
Calibrated by:	Nico Vetterli	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: September 15, 2005

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accreditation No.: SCS 108

Accredited by the Swiss Federal Office of Metrology and Accreditation
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
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) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001

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 effect 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 (no uncertainty required). DCP does not depend on frequency nor media.
- *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 ES3DV3

SN:3088

Manufactured: July 20, 2005
Calibrated: September 13, 2005

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: ES3DV3 SN:3088

Sensitivity in Free Space[A] Diode Compression[B]

NormX	**1.32** ± 10.1%	$\mu V/(V/m)^2$	DCP X	**95** mV
NormY	**1.24** ± 10.1%	$\mu V/(V/m)^2$	DCP Y	**95** mV
NormZ	**1.23** ± 10.1%	$\mu V/(V/m)^2$	DCP Z	**95** mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL **900 MHz** **Typical SAR gradient: 5 % per mm**

Sensor Center to Phantom Surface Distance		**3.0 mm**	**4.0 mm**
SAR_{be} [%]	Without Correction Algorithm	5.8	2.7
SAR_{be} [%]	With Correction Algorithm	0.0	0.1

TSL **1750 MHz** **Typical SAR gradient: 10 % per mm**

Sensor Center to Phantom Surface Distance		**3.0 mm**	**4.0 mm**
SAR_{be} [%]	Without Correction Algorithm	7.6	4.5
SAR_{be} [%]	With Correction Algorithm	0.1	0.2

Sensor Offset

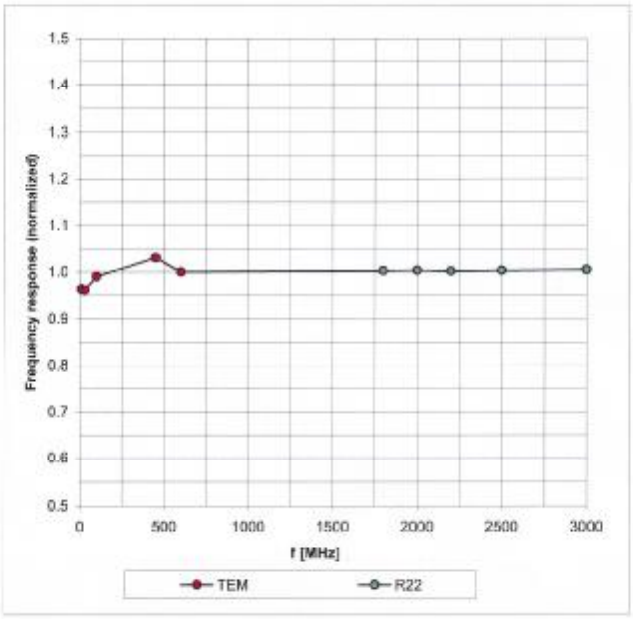
Probe Tip to Sensor Center	**2.0** mm

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 Page 8).
[B] Numerical linearization parameter: uncertainty not required.

Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide: R22)

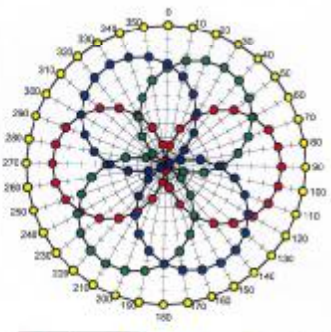


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

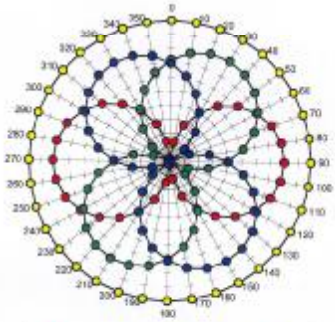
ES3DV3 SN:3088 September 13, 2005

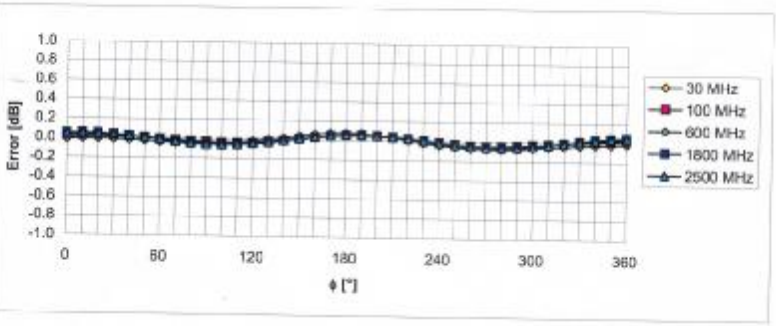
Receiving Pattern (ϕ), ϑ = 0°

f = 600 MHz, TEM ifi110EXX



f = 1800 MHz, WG R22



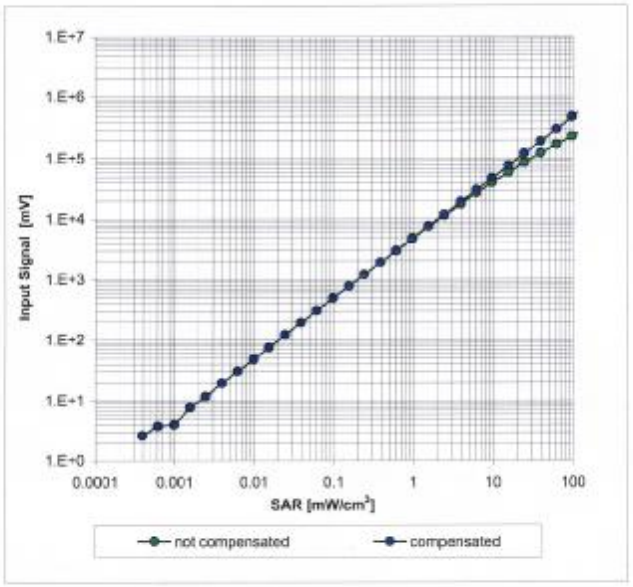


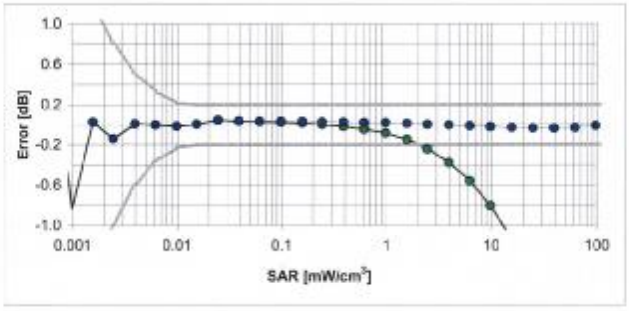
Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

ES3DV3 SN:3088 September 13, 2005

Dynamic Range f(SAR_{head})

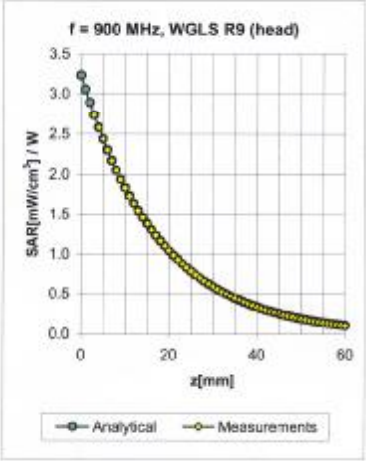
(Waveguide R22, f = 1800 MHz)

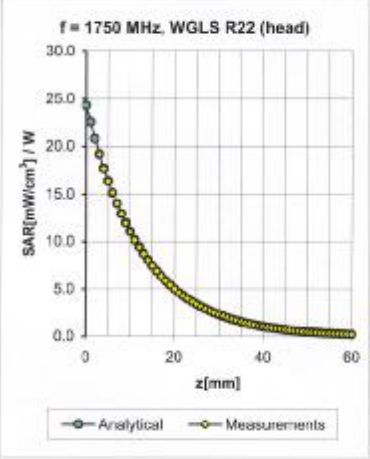




Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment



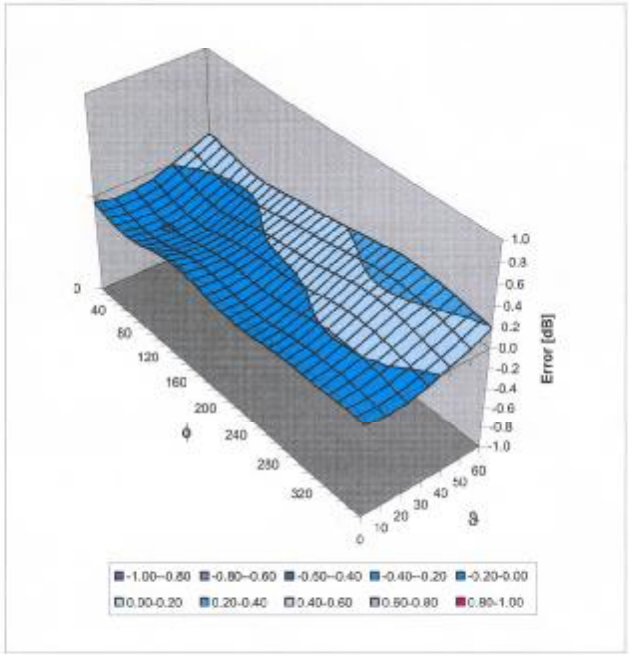


f [MHz]	Validity [MHz][C]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.47	1.40	5.91 ± 11.0% (k=2)
1750	± 50 / ± 100	Head	40.1 ± 5%	1.37 ± 5%	0.24	2.39	4.97 ± 11.0% (k=2)
1900	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.27	2.28	4.93 ± 11.0% (k=2)
2000	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.25	2.34	4.87 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.61	1.25	5.83 ± 11.0% (k=2)
1750	± 50 / ± 100	Body	53.4 ± 5%	1.49 ± 5%	0.28	2.53	4.61 ± 11.0% (k=2)
1900	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.28	2.57	4.53 ± 11.0% (k=2)
2000	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.32	2.11	4.47 ± 11.0% (k=2)

[C] The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



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

6. Uncertainty analysis

Error Description	Tol. (± %)	Prob. dist.	Div.	(c_i) (1g)	(c_i) (10g)	Std. unc. (± %) (1g)	(10g)	(v_i)
Measurement System								
Probe Calibration	4.8	N	1	1	1	4.8	4.8	∞
Axial Isotropy	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
Hemispherical Isotropy	0	R	$\sqrt{3}$	1	1	0	0	∞
Boundary Effects	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
Linearity	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
System Detection Limit	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
Readout Electronics	1.0	N	1	1	1	1.0	1.0	∞
Response Time	0	R	$\sqrt{3}$	1	1	0	0	∞
Integration Time	0	R	$\sqrt{3}$	1	1	0	0	∞
RF Ambient Conditions	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
Probe Positioner	0.4	R	$\sqrt{3}$	1	1	0.2	0.2	∞
Probe Positioning	2.9	R	$\sqrt{3}$	1	1	1.7	1.7	∞
Algorithms for Max. SAR Eval.	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
Dipole								
Dipole Axis to Liquid Distance	2.0	R	$\sqrt{3}$	1	1	1.2	1.2	∞
Input power and SAR drift meas.	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
Phantom and Tissue Param.								
Phantom Uncertainty	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
Liquid Conductivity (target)	5.0	R.	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
Liquid Conductivity (meas.)	2.5	N	1	0.64	0.43	1.6	1.1	∞
Liquid Permittivity (target)	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
Liquid Permittivity (meas.)	2.5	N	1	0.6	0.49	1.5	1.2	∞
Combined Stdandard Uncertainty						8.4	8.1	∞
Coverage Factor for 95%		kp=2						
Expanded Uncertainty						16.8	16.2	

Dasy4 Uncertainty Budget

7. Phantom description

Schmid & Partner Engineering AG

Zeughausstrasse 43, 8004 Zurich, Switzerland, Phone +41 1 245 97 00, Fax +41 1 245 97 79

Certificate of conformity / First Article Inspection

Item	SAM Twin Phantom V4.0
Type No	QD 000 P40 CA
Series No	TP-1150 and higher
Manufacturer / Origin	Untersee Composites Hauptstr. 69 CH-8559 Fruthwilen Switzerland

Tests

The series production process used allows the limitation to test of first articles. Complete tests were made on the pre-series Type No. QD 000 P40 AA, Serial No. TP-1001 and on the series first article Type No. QD 000 P40 BA, Serial No. TP-1006. Certain parameters have been retested using further series units (called samples).

Test	Requirement	Details	Units tested
Shape	Compliance with the geometry according to the CAD model.	IT'IS CAD File (*)	First article, Samples
Material thickness	Compliant with the requirements according to the standards	2mm +/- 0.2mm in specific areas	First article, Samples
Material parameters	Dielectric parameters for required frequencies	200 MHz – 3 GHz Relative permittivity < 5 Loss tangent < 0.05.	Material sample TP 104-5
Material resistivity	The material has been tested to be compatible with the liquids defined in the standards	Liquid type HSL 1800 and others according to the standard.	Pre-series, First article

Standards

[1] CENELEC EN 50361
[2] IEEE P1528-200x draft 6.5
[3] IEC PT 62209 draft 0.9
(*) The IT'IS CAD file is derived from [2] and is also within the tolerance requirements of the shapes of [1] and [3].

Conformity

Based on the sample tests above, we certify that this item is in compliance with the uncertainty requirements of SAR measurements specified in standard [1] and draft standards [2] and [3].

Date 28.02.2002

Schmid & Partner Engineering AG
Zeughausstrasse 43, CH-8004 Zurich
Tel. +41 1 245 97 00, Fax +41 1 245 97 79

Signature / Stamp

F. Bomholt

Doc No 881 – QD 000 P40 CA – B

Page 1 (1)

The end