SAR TEST REPORT

Eequipment Under Test :	GSM 850&GSM1900MHz MOBILE PHONE
FCC ID :	RAD025
Model No. :	VLE5
Market Name :	OT-E259a
Applicant :	TCL&Alcatel Mobile Phones
Address of Applicant :	30/F, Times Square, 500 Zhangyang RD. Shanghai 200122, P.R.China
Date of Receipt :	2005.11.01
Date of Test :	2005.11.15 – 2005.11.25
Date of Issue :	2005.12.06

Standards:

FCC OET Bulletin 65 supplement C,
ANSI/IEEE C95.1, C95.3, IEEE 1528-2002

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 :	Alpha Xie	Date :	2005.12.06
Approved by :	Zhiang Yuen	Date :	2005.12.06

Contents

1. General Information

1.1 Test Laboratory

GSM Lab
SGS-CSTC Standards Technical Services Co.Ltd Shanghai Branch
9F,the 3rd Building, No.899, Yishan Rd, Xuhui District, Shanghai, China
Zip code: 200233
Telephone: +86 (0) 21 6495 1616
Fax: +86 (0) 21 6495 3679
Internet: http://www.cn.sgs.com

1.2 Details of Applicant

Name: TCL&Alcatel Mobile Phones
Address: 30/F, Times Square, 500 Zhangyang RD. Shanghai 200122, P.R.China

1.3 Description of EUT(s)

Brand name	Alcatel	
Model No.	VLE5	
Market Name	OT-E259a	
Serial No.	IMEI:01069200000003-6	
Battery Type	Lithium-Ion, 4.2Volt	
Antenna Type	Internal Antenna	
Operation Mode	GSM850/GSM1900	
Modulation Mode	GMSK	
Frequency range	GSM850	Tx: 824~849 MHz
		Rx: 869~894 MHz
	GSM1900	Tx: 1850~1910 MHz
		Rx: 1930~1990 MHz
Maximum RF Conducted Power	GSM850: 33dBm, GSM1900: 30dBm	

1.4 Test Environment

Ambient temperature: 22.0° C

Tissue Simulating Liquid: 22° C

Relative Humidity: 38%

1.5 Operation Configuration

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

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

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

Configuration 4: GSM 1900, LeftHandSide Touch & 15° Tilt Position

Configuration 5: GSM 1900, RightHandSide Touch & 15° Tilt Position

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

1.6 The SAR Measurement System

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

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.

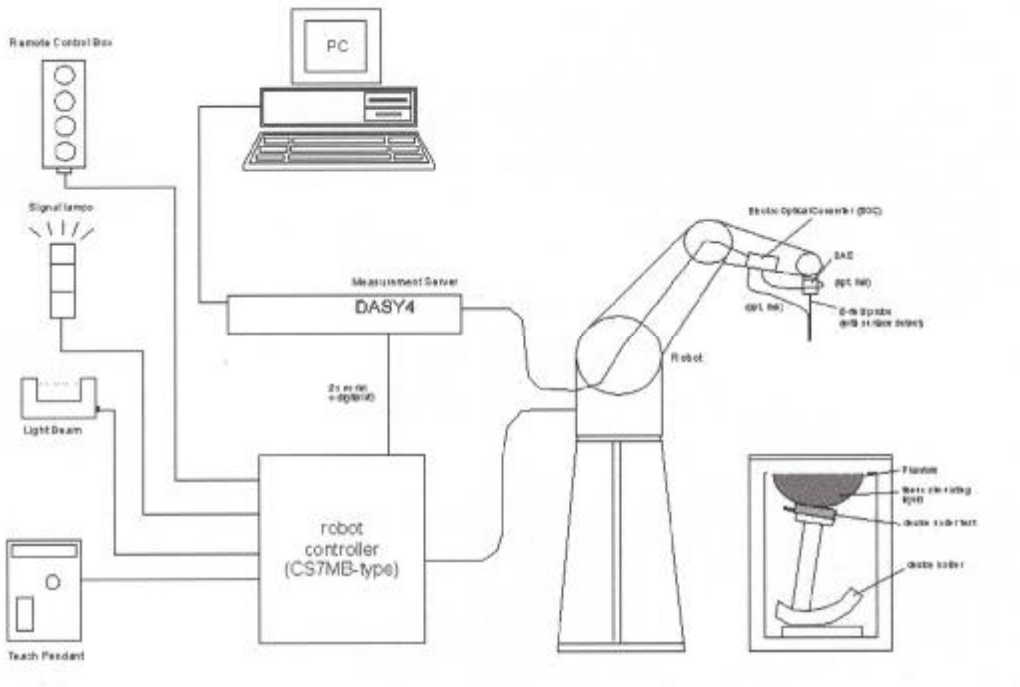


Fig. a SAR System Configuration

- 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.

1.7 SAR System Verification

The microwave circuit arrangement for system verification is sketched in Fig. b. 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 850MHz and 1900MHz. 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.

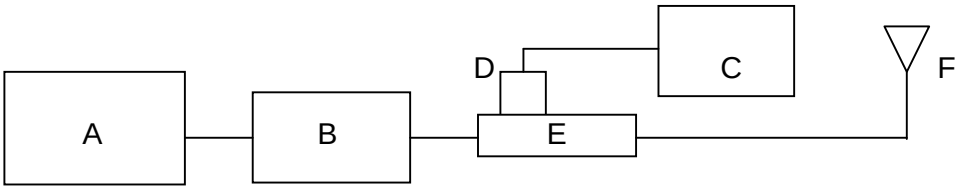


Fig. b the microwave circuit arrangement used for SAR system verification

A. Agilent Model E4438C Signal Generator
B. Agilent Model 8449B 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	2.72	1.76	2005-11-17
ES3DV3 SN3088	900 Body	2.69	1.74	2.81	1.81	2005-11-18
ES3DV3 SN3088	1900 Head	9.89	5.16	10.27	5.26	2005-11-15
ES3DV3 SN3088	1900 Head	9.89	5.16	10.29	5.27	2005-11-25
ES3DV3 SN3088	1900 Body	9.81	5.22	10.33	5.37	2005-11-18

Table 1. Result System Validation

1.8 Tissue Simulant Fluid for the Frequency Band 850MHz and 1900MHZ

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, 2005-11-17	41.63	0.892	22
		Recommended Limit	41.5±5%	0.90±5%	20-24
	Body	Measured, 2005-11-18	52.52	1.013	21.8
		Recommended Limit	55.2±5%	0.97±5%	20-24
1900	Head	Measured, 2005-11-15	39.99	1.46	22.5
		Recommended Limit	40.0±5%	1.40±5%	20-24
	Body	Measured, 2005-11-18	51.46	1.54	21.5
		Recommended Limit	53.3±5%	1.52±5%	20-24

Table 2. Dielectric parameters for the Frequency Band 850MHz&1900MHZ

1.9 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 W/Kg (averaged over a mass of 1g)

Table 3. 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

Frequency Band(MHz)	EUT position	Conducted Output Power (dBm)	1g Average (W/Kg)	Power Drift (dB)	Amb. Temp (℃)	Verdict
GSM 850	LeftHandSide Touch, Low Channel	33.9	0.521	-0.429	22	PASS
	LeftHandSide Touch, Mid Channel	33.9	0.541	-0.669	22	PASS
	LeftHandSide Touch, High Channel	33.7	1.41	-0.199	22	PASS
	LeftHandSide Tilt, Low Channel	33.9	0.151	-0.766	22	PASS
	LeftHandSide Tilt, Mid Channel	33.9	0.215	0.042	22	PASS
	LeftHandSide Tilt, High Channel	33.7	0.377	-0.074	22	PASS
	RightHandSide Touch, Low Channel	33.9	0.524	-0.217	22	PASS
	RightHandSide Touch, Mid Channel	33.9	0.773	-0.126	22	PASS
	RightHandSide Touch, High Channel	33.7	1.33	-0.087	22	PASS
	RightHandSide Tilt, Low Channel	33.9	0.152	-0.210	22	PASS
	RightHandSide Tilt, Mid Channel	33.9	0.216	-0.718	22	PASS
	RightHandSide Tilt, High Channel	33.7	0.366	-0.131	22	PASS
	BodyWorn, Low Channel	33.9	0.225	0.014	22	PASS
	BodyWorn, Mid Channel	33.9	0.353	0.010	22	PASS
	BodyWorn, High Channel	33.7	0.621	-0.002	22	PASS
GSM 1900	LeftHandSide Touch, Low Channel	31.3	0.496	-1.01	22	PASS
	LeftHandSide Touch, Mid Channel	31.0	0.479	-0.125	22	PASS
	LeftHandSide Touch, High Channel	30.6	0.349	-0.065	22	PASS
	LeftHandSide Tilt, Low Channel	31.3	0.121	-0.077	22	PASS
	LeftHandSide Tilt, Mid Channel	31.0	0.127	0.014	22	PASS
	LeftHandSide Tilt, High Channel	30.6	0.100	0.051	22	PASS
	RightHandSide Touch, Low Channel	31.3	0.539	-0.455	22	PASS

	RightHandSide Touch, Mid Channel	31.0	0.482	-0.046	22	PASS
	RightHandSide Touch, High Channel	30.6	0.344	0.089	22	PASS
	RightHandSide Tilt, Low Channel	31.3	0.119	0.433	22	PASS
	RightHandSide Tilt, Mid Channel	31.0	0.119	0.022	22	PASS
	RightHandSide Tilt, High Channel	30.6	0.096	0.977	22	PASS
	BodyWorn, Low Channel	31.3	0.369	-0.076	22	PASS
	BodyWorn, Mid Channel	31.0	0.321	0.035	22	PASS
	BodyWorn, High Channel	30.6	0.216	0.009	22	PASS

Maximum value

Frequency Band(MHz)	EUT position	Conducted Output Power (dBm)	1g Average (W/Kg)	Power Drift (dB)	Amb. Temp (℃)	Verdict
GSM 850	LeftHandSide Touch, High Channel	33.7	1.41	-0.199	22	PASS
GSM 850	BodyWorn, High Channel	33.7	0.621	-0.002	22	PASS
GSM 1900	RightHandSide Touch, Low Channel	31.3	0.539	-0.455	22	PASS
GSM 1900	BodyWorn, Low Channel	31.3	0.369	-0.076	22	PASS

Note:

1. In GSM850 band, the low, middle and high channels are CH128/824.2MHz, CH189/836.4MHz and CH251/848.8MHz separately.

2. In GSM1900 band, the low, middle and high channels are CH512/1805.2MHz, CH661/1880.0MHz and CH810/1909.8MHz separately.

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

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 4.5 build 19 V 4.6 build 23	N/A	GSM-SAR-001	N/A
Probe	ES3DV3	3088	GSM-SAR-031	2005.09.13
DAE	DAE4	611	GSM-SAR-123	2005.5.27
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
Dielectric probe kit	85070D	US01440168	GSM-SAR-016	2004.12.20
Agilent network analyzer	E5071B	MY42100549	GSM-SAR-007	2004.12.20
Agilent signal generator	E4438	14438CATO-19719	GSM-SAR-008	2004.12.20
Agilent preamplifier	8449B	3008A01921	GSM-SAR-009	2004.12.20
Agilent power meter	E4416A	GB41292095	GSM-SAR-010	2004.12.20
Agilent power sensor	8481h	MY41091234	GSM-SAR-011	2004.12.20
HT CP6100 20N Coupling	6100	SCP301480120	GSM-SAR-012	2004.12.20
R&S Universal radio communication tester	CMU200	103633	GSM-AUD-002	2004.12.20

4. Measurements

4.1 FCC-OET65-LeftHandSide-Touch-GSM850-Low

Date/Time: 2005-11-17 8:55:36

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Touch-GSM850-Low

DUT: GSM50100-Head; Type: Head; Serial: 20051115

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)

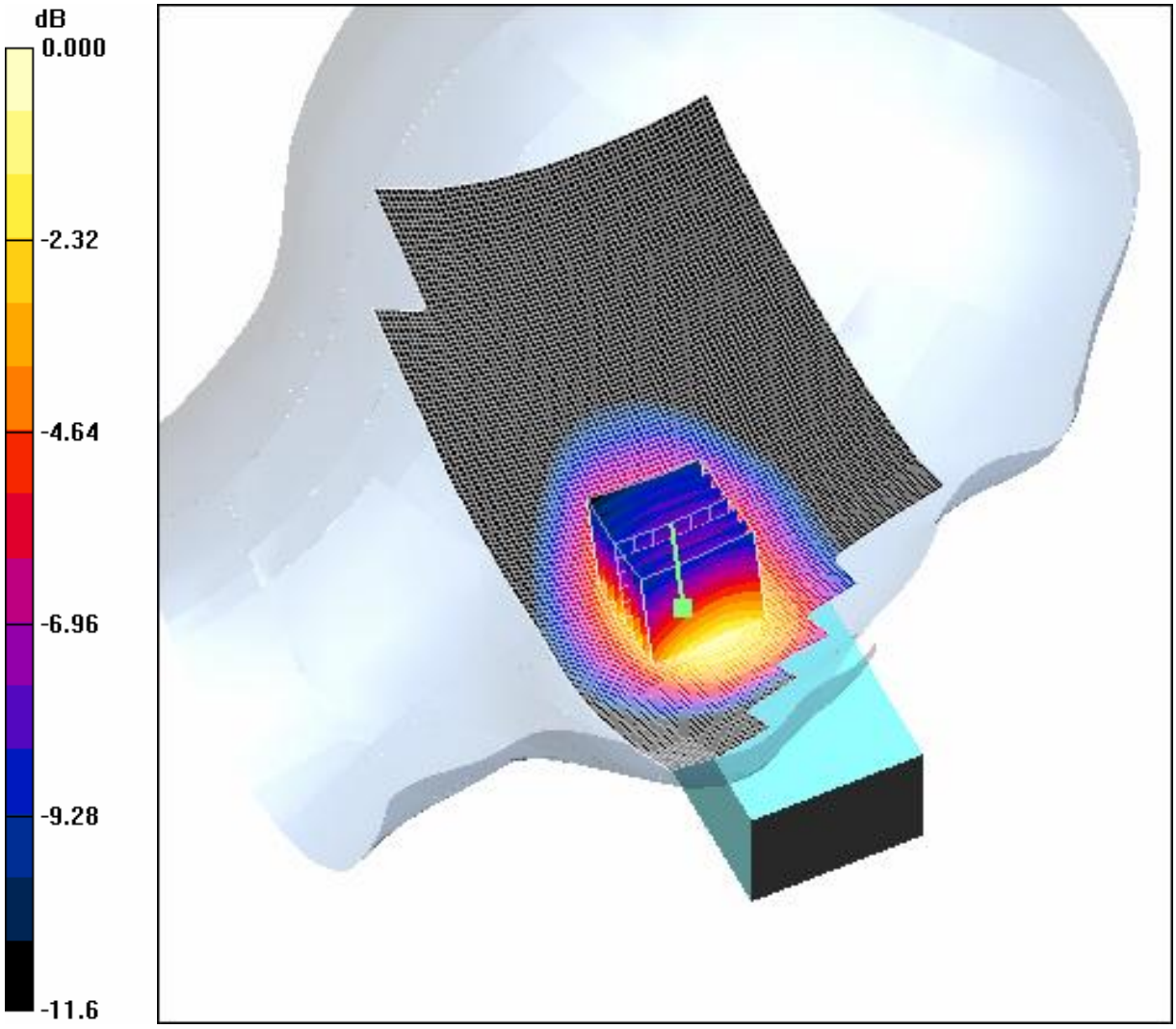
DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Touch position - Low/Area Scan (71x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.591 mW/g

Touch position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.21 V/m; Power Drift = -0.429 dB
Peak SAR (extrapolated) = 0.777 W/kg

SAR(1 g) = 0.521 mW/g; SAR(10 g) = 0.338 mW/g
Maximum value of SAR (measured) = 0.568 mW/g



0 dB = 0.568mW/g

4.2 FCC-OET65-LeftHandSide-Touch-GSM850-Mid

Date/Time: 2005-11-17 9:31:08

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Touch-GSM850-Mid

DUT: GSM50100-Head; Type: Head; Serial: 20051115

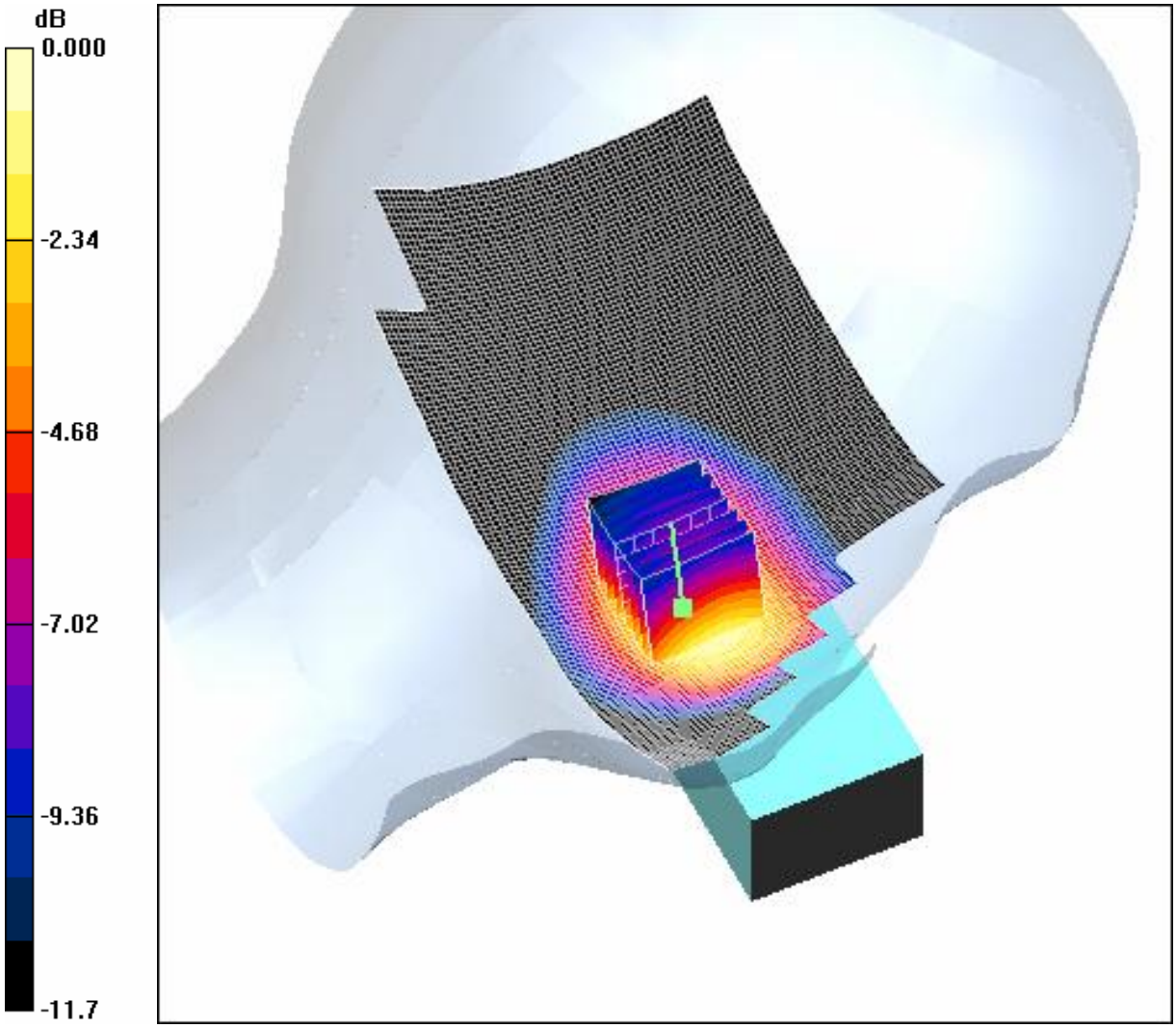
Communication System: GSM850-GSM Mode; Frequency: 836.4 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.878 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Touch position - Middle/Area Scan (71x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.603 mW/g

Touch position - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.80 V/m; Power Drift = -0.669 dB
Peak SAR (extrapolated) = 0.797 W/kg
SAR(1 g) = 0.541 mW/g; SAR(10 g) = 0.352 mW/g
Maximum value of SAR (measured) = 0.588 mW/g



0 dB = 0.588mW/g

4.3 FCC-OET65-LeftHandSide-Touch-GSM850-High

Date/Time: 2005-11-17 9:57:45

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Touch-GSM850-High

DUT: GSM50100-Head; Type: Head; Serial: 20051115

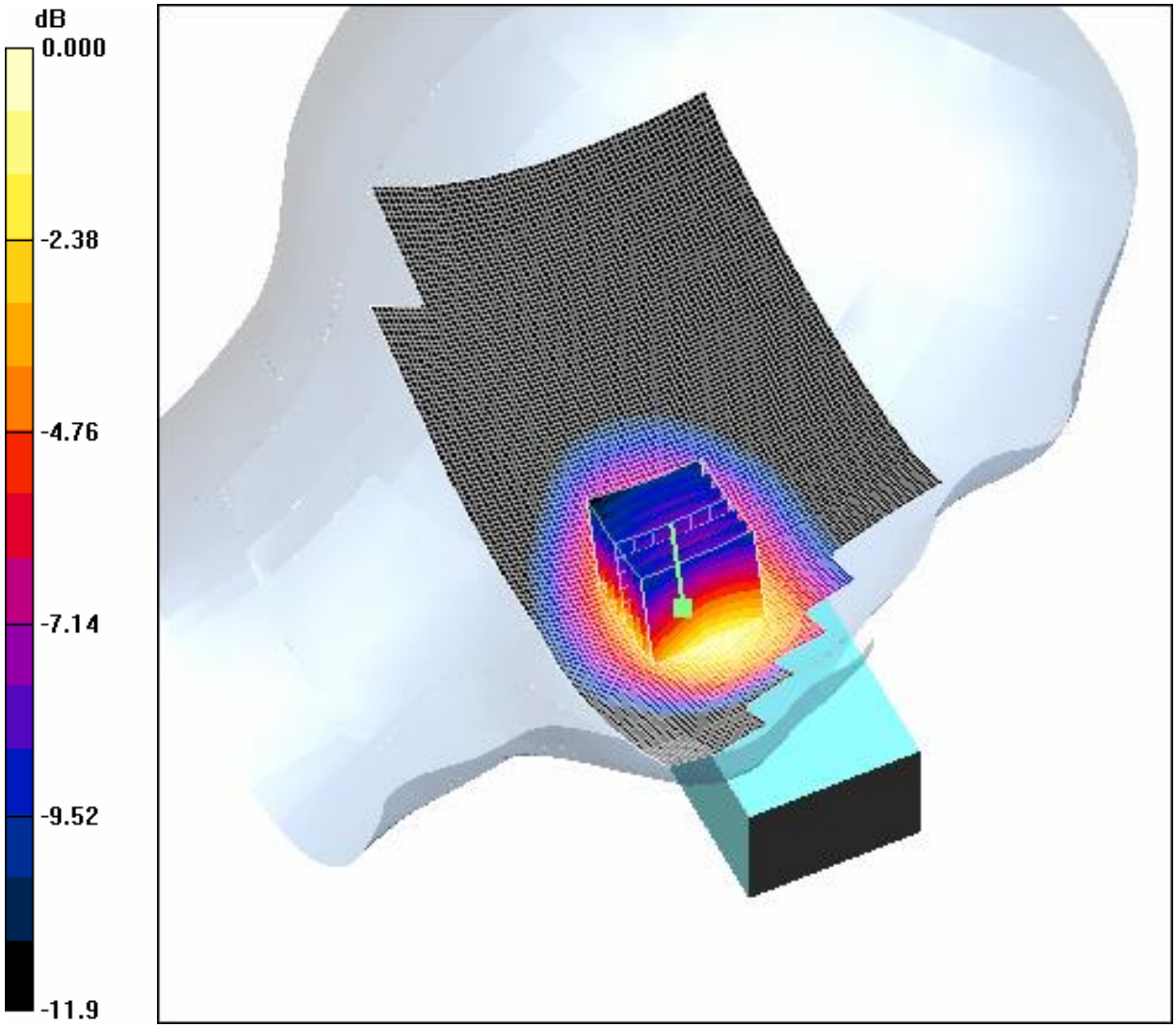
Communication System: GSM850-GSM Mode; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used: f = 849 MHz; σ = 0.89 mho/m; ε_r = 41.6; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Touch position - High/Area Scan (71x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.56 mW/g

Touch position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.27 V/m; Power Drift = -0.199 dB
Peak SAR (extrapolated) = 2.11 W/kg
SAR(1 g) = 1.41 mW/g; SAR(10 g) = 0.903 mW/g
Maximum value of SAR (measured) = 1.53 mW/g



0 dB = 1.53mW/g

4.4 FCC-OET65-LeftHandSide-Tilt-GSM850-Low

Date/Time: 2005-11-17 11:59:20

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Tilt-GSM850-Low

DUT: GSM50100-Head; Type: Head; Serial: 20051115

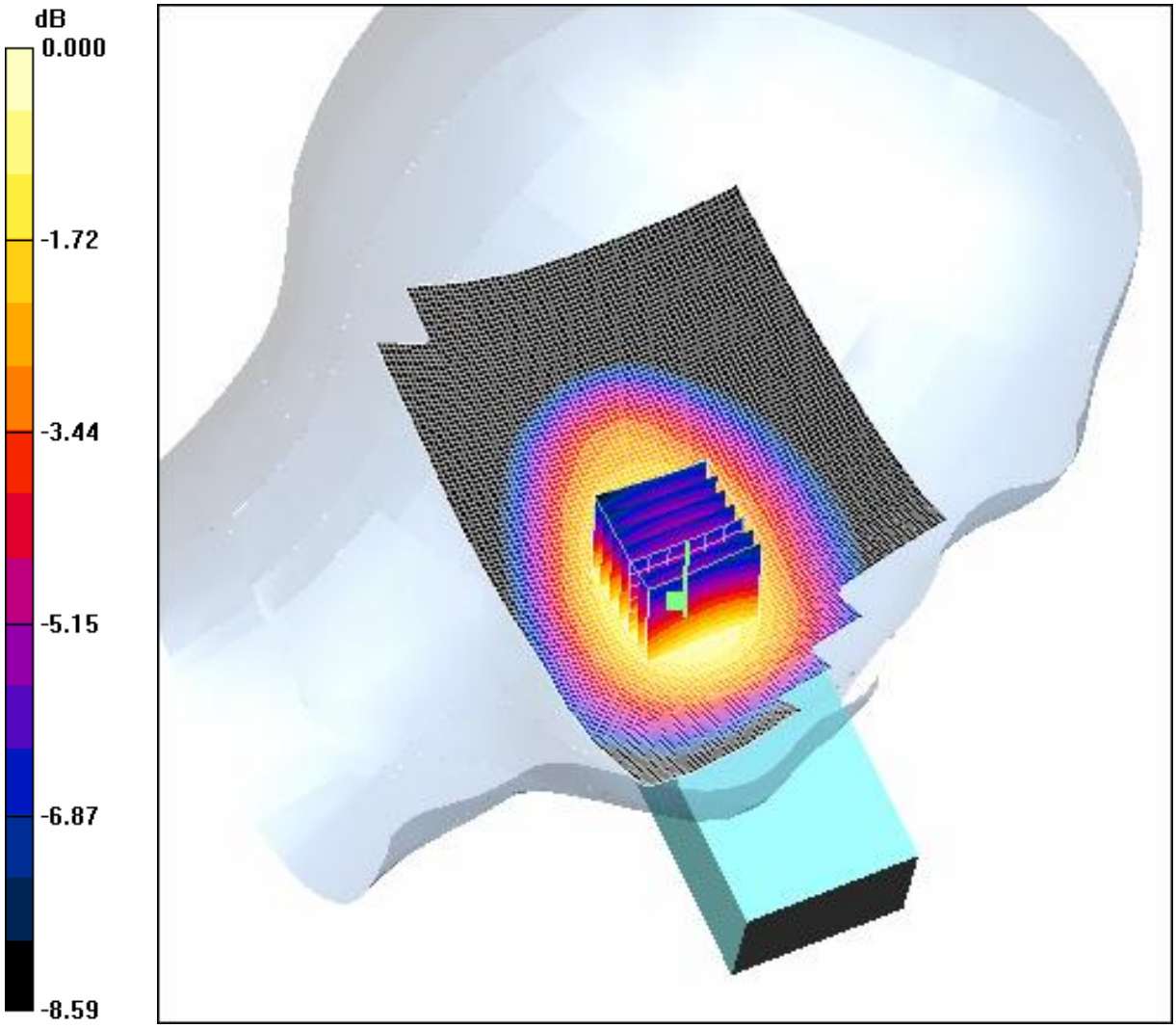
Communication System: GSM850-GSM Mode; Frequency: 824.2 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.866 mho/m; ε_r = 41.8; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- 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
Maximum value of SAR (interpolated) = 0.163 mW/g

Tilt position - Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.79 V/m; Power Drift = -0.766 dB
Peak SAR (extrapolated) = 0.191 W/kg
SAR(1 g) = 0.151 mW/g; SAR(10 g) = 0.112 mW/g
Maximum value of SAR (measured) = 0.158 mW/g



0 dB = 0.158mW/g

4.5 FCC-OET65-LeftHandSide-Tilt-GSM850-Mid

Date/Time: 2005-11-17 13:17:31

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Tilt-GSM850-Mid

DUT: GSM50100-Head; Type: Head; Serial: 20051115

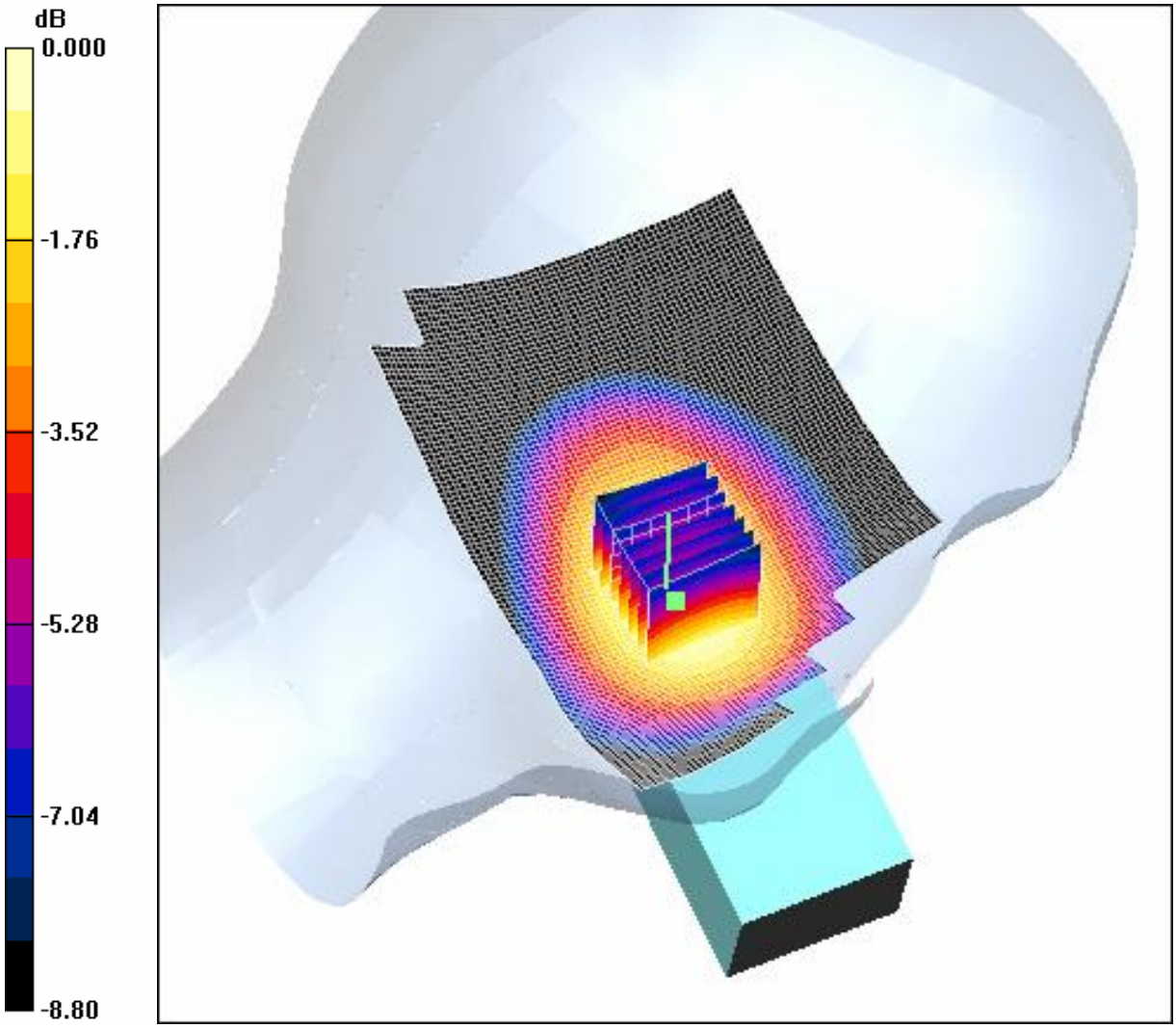
Communication System: GSM850-GSM Mode; Frequency: 836.4 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.878 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- 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
Maximum value of SAR (interpolated) = 0.231 mW/g

Tilt position - Middle/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.36 V/m; Power Drift = 0.042 dB
Peak SAR (extrapolated) = 0.273 W/kg
SAR(1 g) = 0.215 mW/g; SAR(10 g) = 0.159 mW/g
Maximum value of SAR (measured) = 0.227 mW/g



0 dB = 0.227mW/g

4.6 FCC-OET65-LeftHandSide-Tilt-GSM850-High

Date/Time: 2005-11-17 13:42:58

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Tilt-GSM850-High

DUT: GSM50100-Head; Type: Head; Serial: 20051115

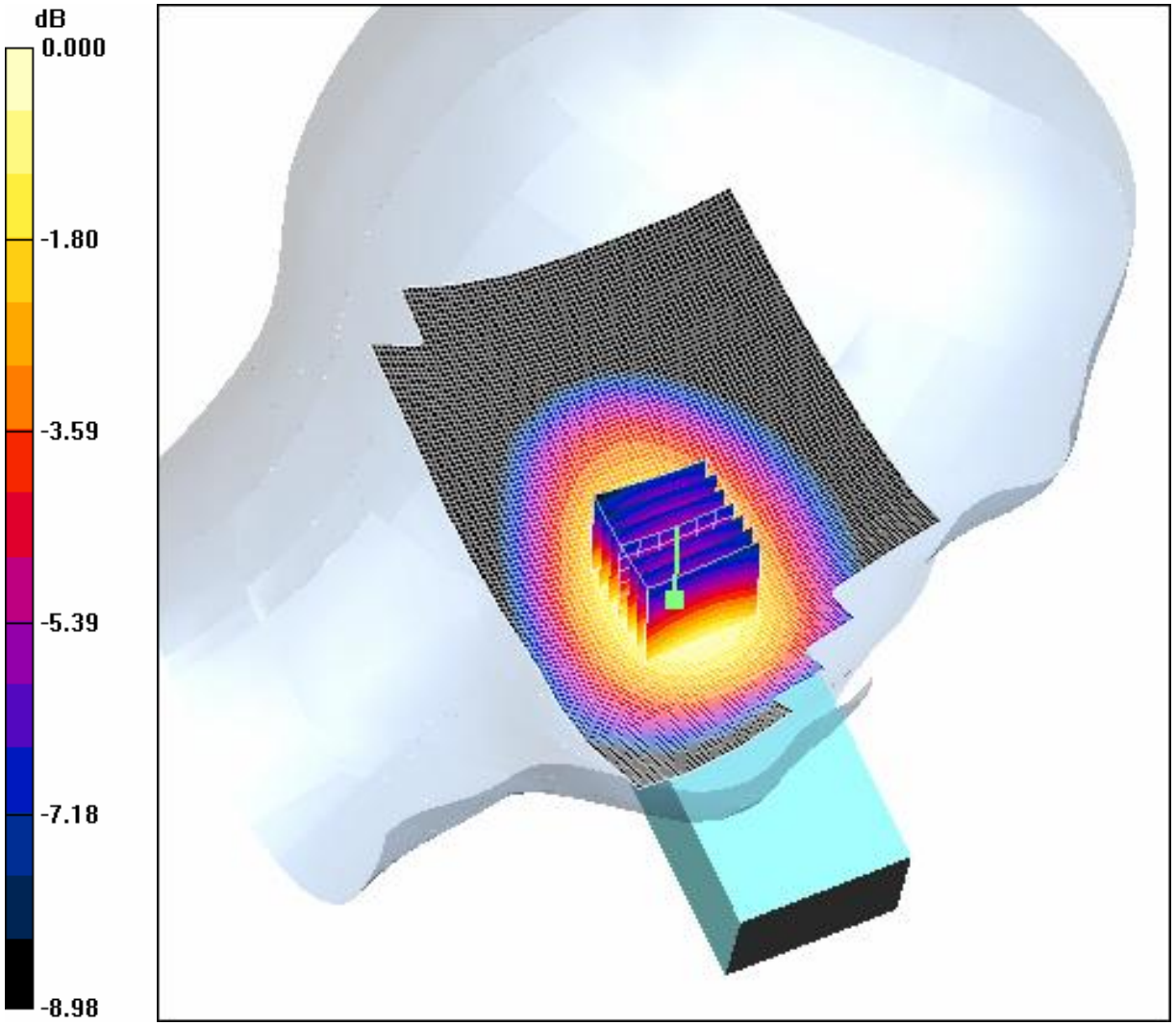
Communication System: GSM850-GSM Mode; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used: f = 849 MHz; σ = 0.89 mho/m; ε_r = 41.6; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- 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
Maximum value of SAR (interpolated) = 0.404 mW/g

Tilt position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.2 V/m; Power Drift = -0.074 dB
Peak SAR (extrapolated) = 0.481 W/kg
SAR(1 g) = 0.377 mW/g; SAR(10 g) = 0.276 mW/g
Maximum value of SAR (measured) = 0.398 mW/g



0 dB = 0.398mW/g

4.7 FCC-OET65-RightHandSide-Touch-GSM850-Low

Date/Time: 2005-11-17 14:30:55

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Touch-GSM850-Low

DUT: GSM50100-Head; Type: Head; Serial: 20051115

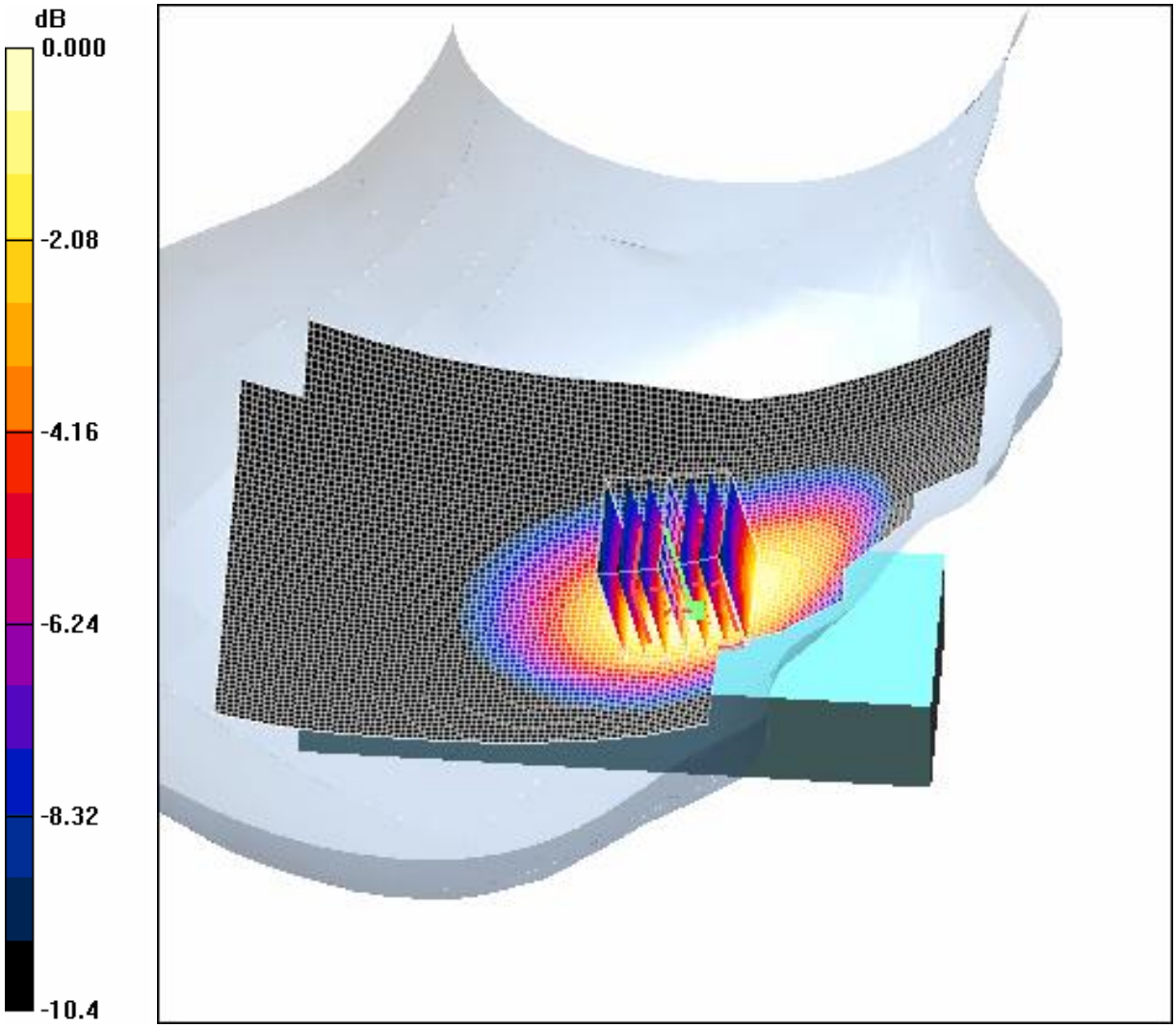
Communication System: GSM850-GSM Mode; Frequency: 824.2 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.866 mho/m; ε_r = 41.8; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Touch position - Low/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.566 mW/g

Touch position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.51 V/m; Power Drift = -0.217 dB
Peak SAR (extrapolated) = 0.757 W/kg
SAR(1 g) = 0.524 mW/g; SAR(10 g) = 0.348 mW/g
Maximum value of SAR (measured) = 0.567 mW/g



0 dB = 0.567mW/g

4.8 FCC-OET65-RightHandSide-Touch-GSM850-Mid

Date/Time: 2005-11-17 14:56:32

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Touch-GSM850-Mid

DUT: GSM50100-Head; Type: Head; Serial: 20051115

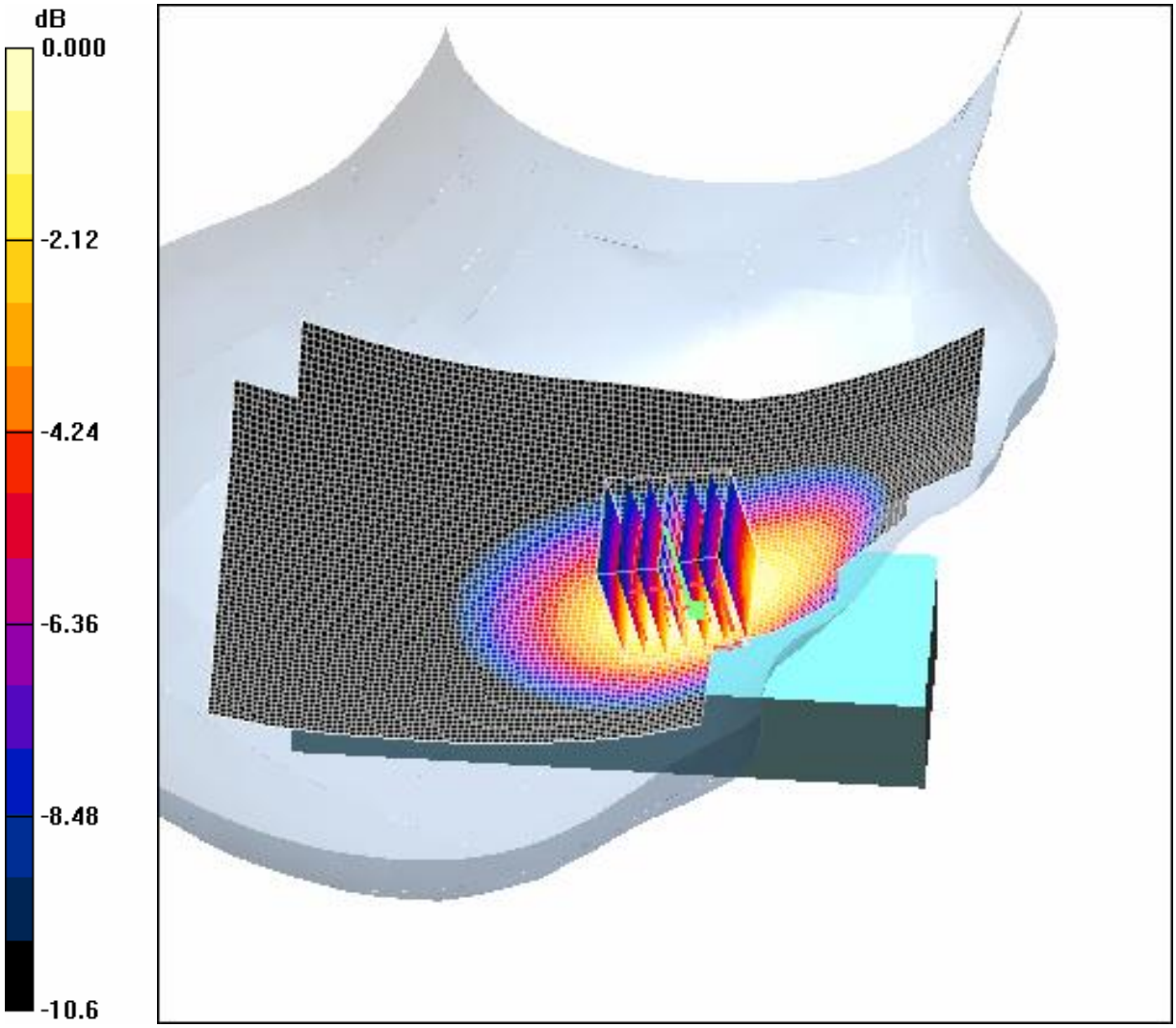
Communication System: GSM850-GSM Mode; Frequency: 836.4 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.878 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Touch position - Middle/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.826 mW/g

Touch position - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.62 V/m; Power Drift = -0.126 dB
Peak SAR (extrapolated) = 1.10 W/kg
SAR(1 g) = 0.773 mW/g; SAR(10 g) = 0.511 mW/g
Maximum value of SAR (measured) = 0.831 mW/g



0 dB = 0.831mW/g

4.9 FCC-OET65-RightHandSide-Touch-GSM850-High

Date/Time: 2005-11-17 15:58:10

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Touch-GSM850-High

DUT: GSM50100-Head; Type: Head; Serial: 20051115

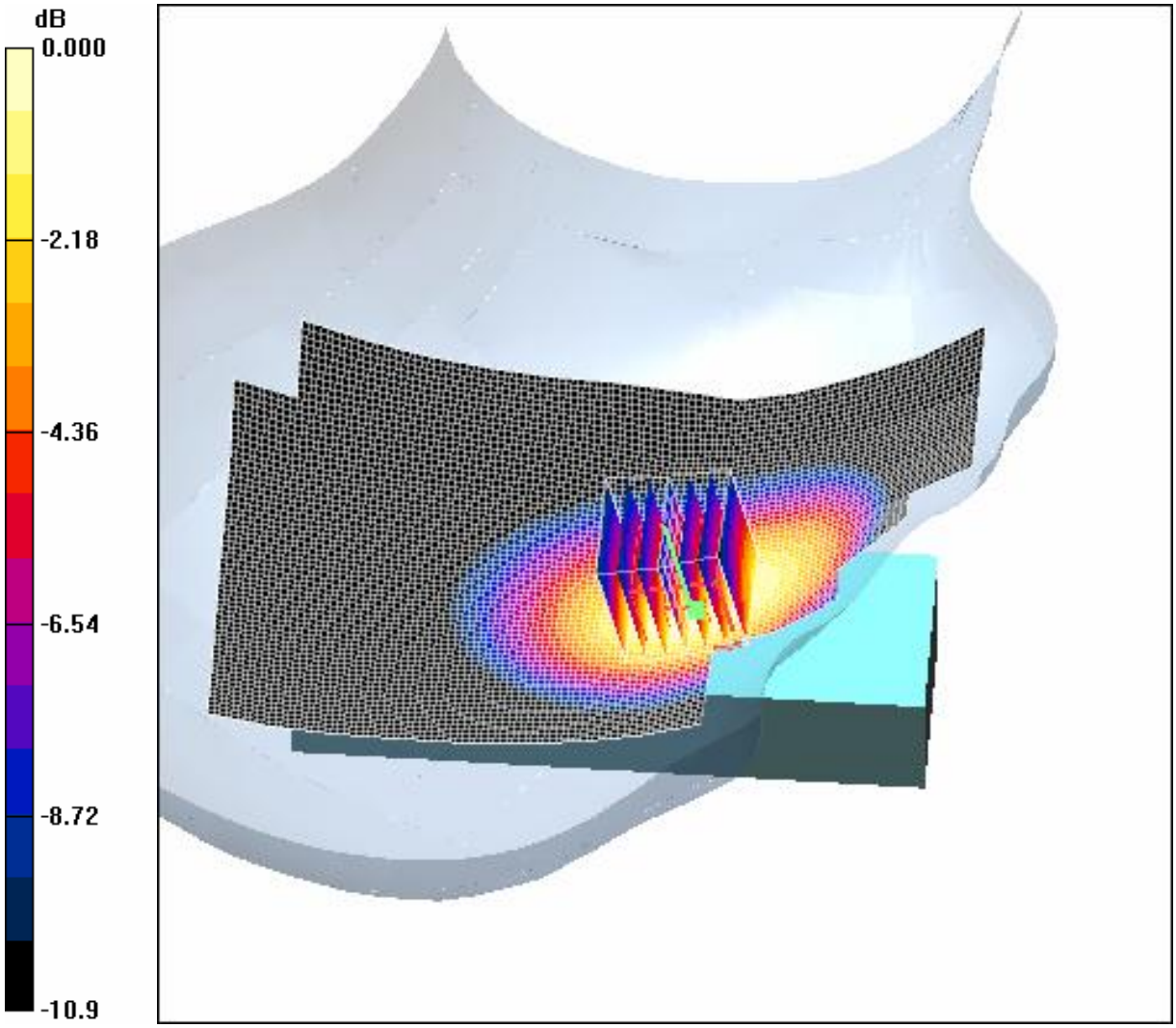
Communication System: GSM850-GSM Mode; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used: f = 849 MHz; σ = 0.89 mho/m; ε_r = 41.6; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Touch position - High/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.43 mW/g

Touch position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.72 V/m; Power Drift = -0.087 dB
Peak SAR (extrapolated) = 1.95 W/kg
SAR(1 g) = 1.33 mW/g; SAR(10 g) = 0.873 mW/g
Maximum value of SAR (measured) = 1.44 mW/g



0 dB = 1.44mW/g

4.10 FCC-OET65-RightHandSide-Tilt-GSM850-Low

Date/Time: 2005-11-17 17:34:43

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Tilt-GSM850-Low

DUT: GSM50100-Head; Type: Head; Serial: 20051115

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:

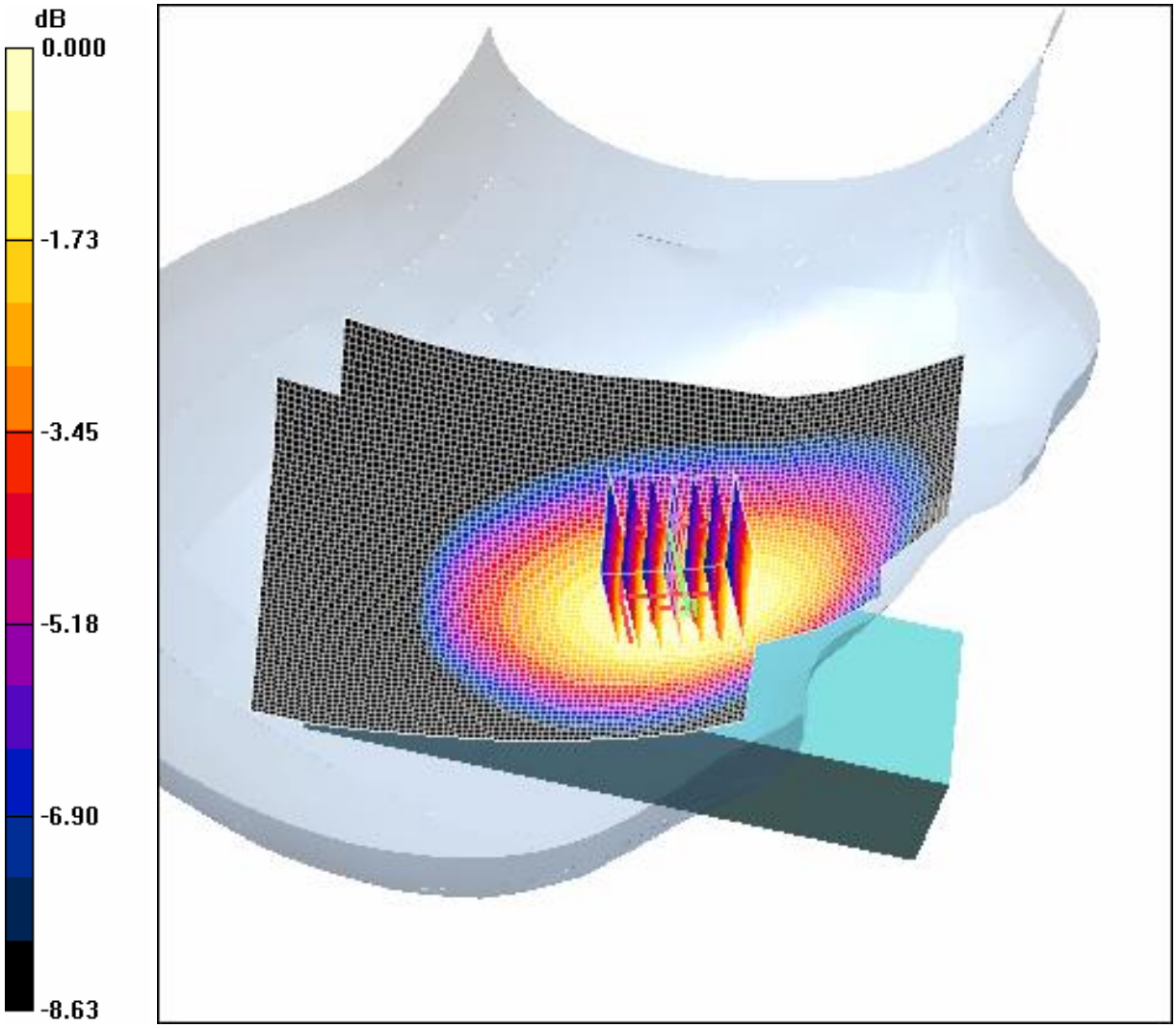
- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Tilt position - Low/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.162 mW/g

Tilt position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.69 V/m; Power Drift = -0.210 dB
Peak SAR (extrapolated) = 0.199 W/kg
SAR(1 g) = 0.152 mW/g; SAR(10 g) = 0.111 mW/g

Maximum value of SAR (measured) = 0.161 mW/g



0 dB = 0.161mW/g

4.11 FCC-OET65-RightHandSide-Tilt-GSM850-Mid

Date/Time: 2005-11-17 16:56:51

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Tilt-GSM850-Mid

DUT: GSM50100-Head; Type: Head; Serial: 20051115

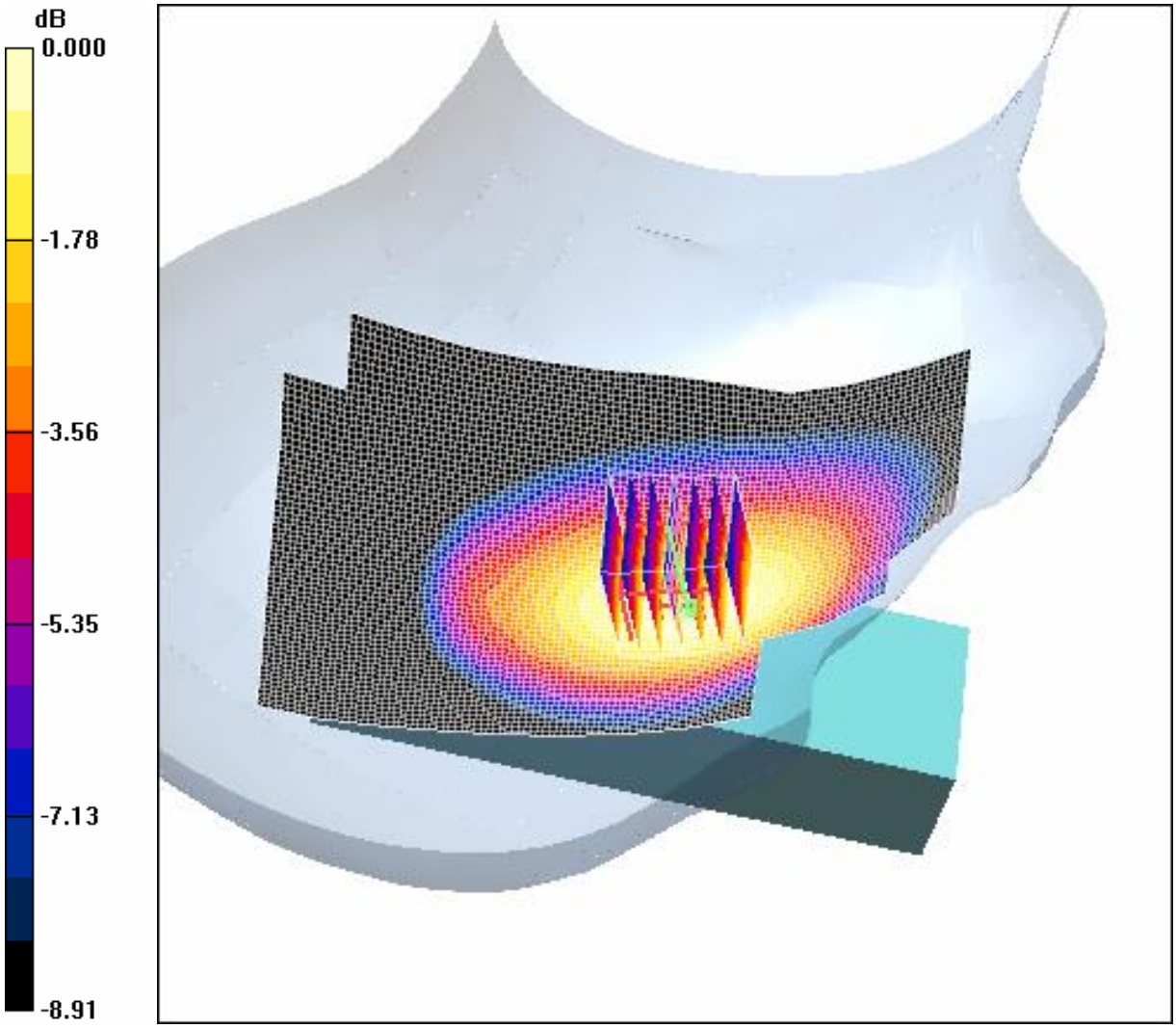
Communication System: GSM850-GSM Mode; Frequency: 836.4 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.878 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- 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
Maximum value of SAR (interpolated) = 0.234 mW/g

Tilt position - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.79 V/m; Power Drift = -0.718 dB
Peak SAR (extrapolated) = 0.288 W/kg
SAR(1 g) = 0.216 mW/g; SAR(10 g) = 0.156 mW/g
Maximum value of SAR (measured) = 0.231 mW/g



0 dB = 0.231mW/g

4.12 FCC-OET65-RightHandSide-Tilt-GSM850-High

Date/Time: 2005-11-17 18:02:05

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Tilt-GSM850-High

DUT: GSM50100-Head; Type: Head; Serial: 20051115

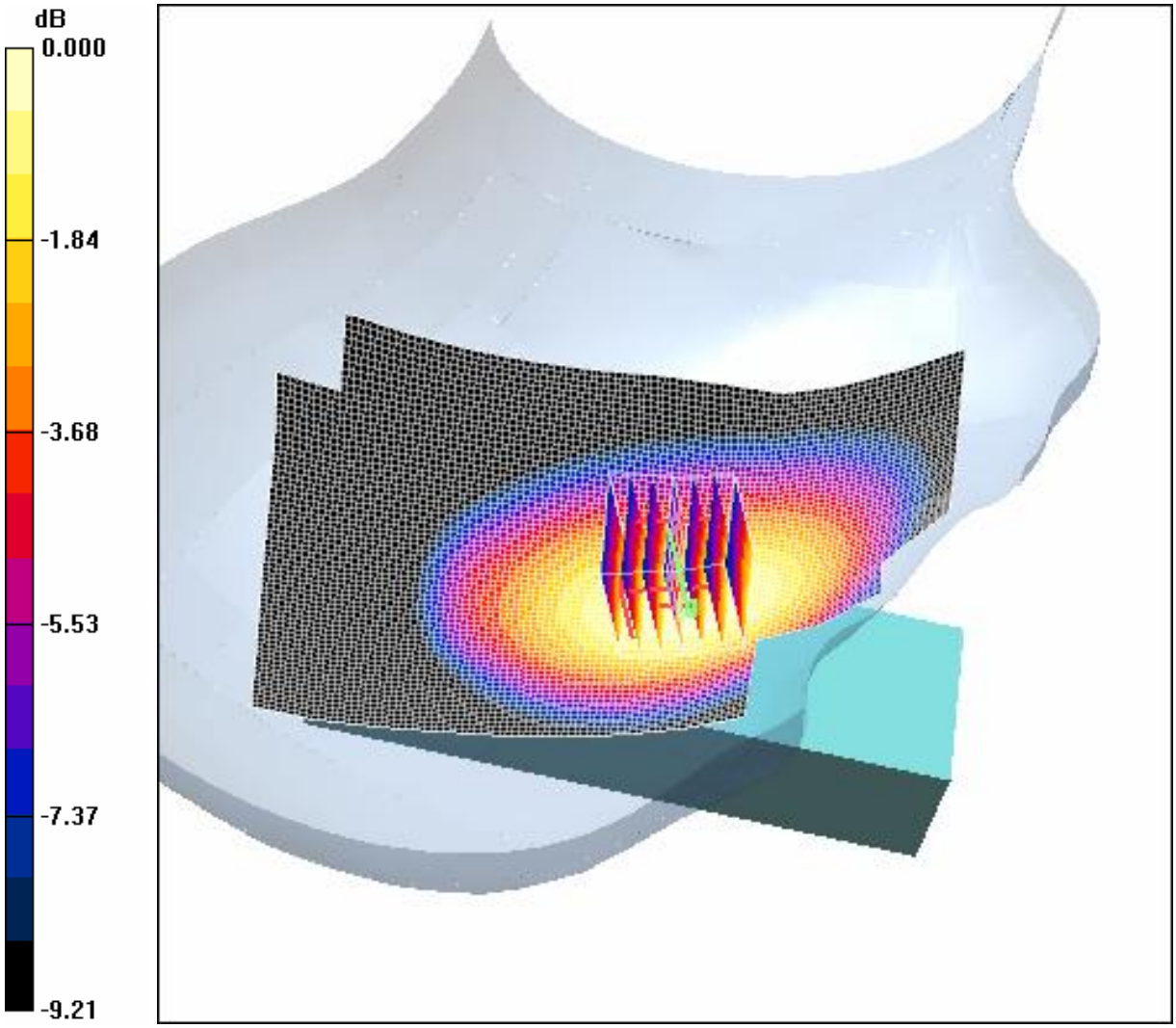
Communication System: GSM850-GSM Mode; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium: HSL850 Medium parameters used: f = 849 MHz; σ = 0.89 mho/m; ε_r = 41.6; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1774; ConvF(6.96, 6.96, 6.96); Calibrated: 2004-10-26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- 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
Maximum value of SAR (interpolated) = 0.395 mW/g

Tilt position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.4 V/m; Power Drift = -0.131 dB
Peak SAR (extrapolated) = 0.482 W/kg
SAR(1 g) = 0.366 mW/g; SAR(10 g) = 0.265 mW/g
Maximum value of SAR (measured) = 0.393 mW/g



0 dB = 0.393mW/g

4.13 FCC-OET65-Body-Worn-GSM850-Low

Date/Time: 2005-11-18 20:58:06

Test Laboratory: SGS-GSM

FCC-OET65-Body-Worn-GSM850-Low

DUT: GSM50100-body; Type: Body; Serial: 20051118

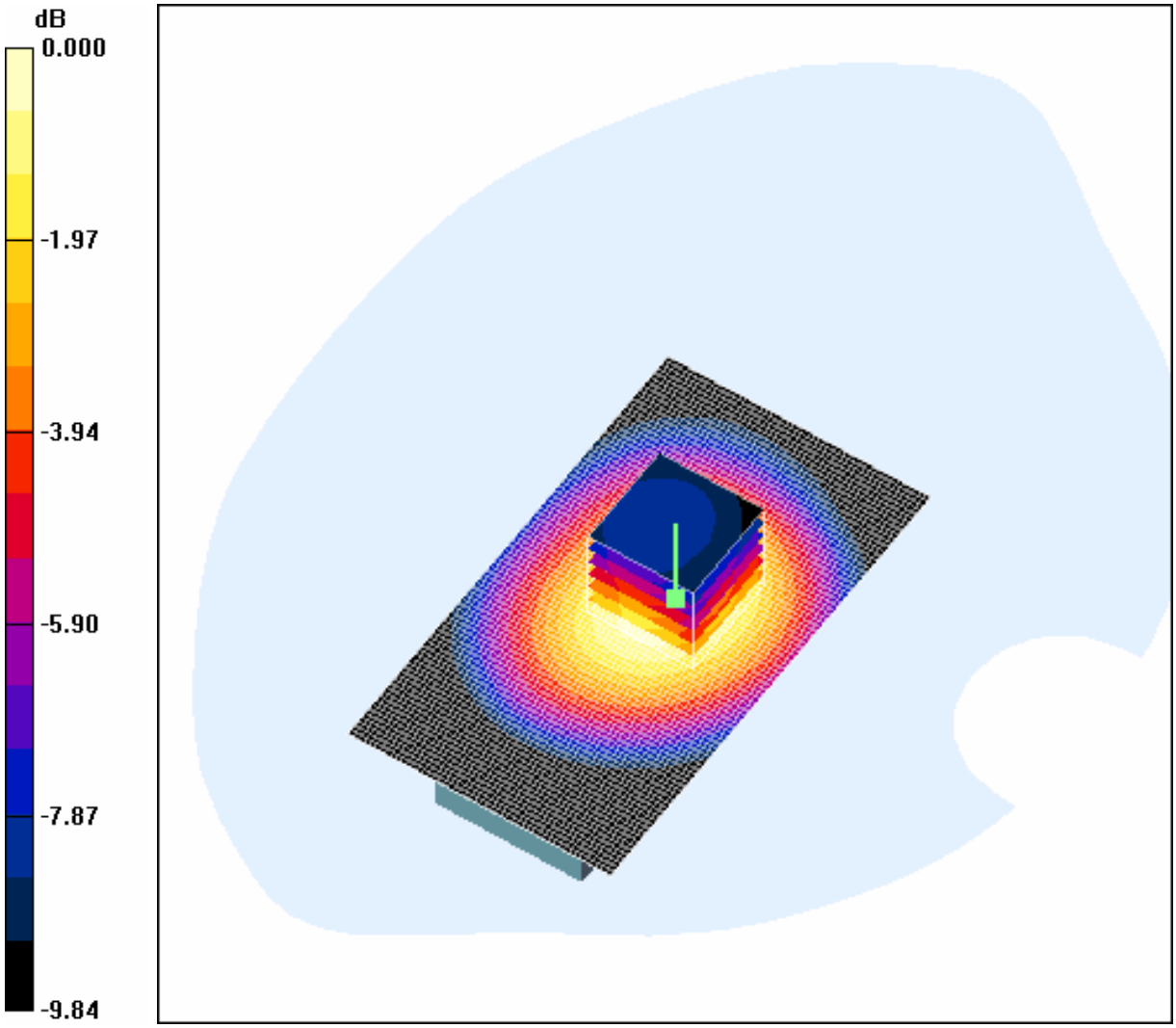
Communication System: GSM850-GSM Mode; Frequency: 824.2 MHz;Duty Cycle: 1:8.3
Medium: HSL850-Body Medium parameters used: f = 824.2 MHz; σ = 0.945 mho/m; ε_r = 55.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.83, 5.83, 5.83); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- 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
Maximum value of SAR (interpolated) = 0.243 mW/g

Body Worn - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.8 V/m; Power Drift = 0.014 dB
Peak SAR (extrapolated) = 0.310 W/kg
SAR(1 g) = 0.225 mW/g; SAR(10 g) = 0.158 mW/g
Maximum value of SAR (measured) = 0.240 mW/g



0 dB = 0.240mW/g

4.14 FCC-OET65-Body-Worn-GSM850-Mid

Date/Time: 2005-11-18 21:38:53

Test Laboratory: SGS-GSM

FCC-OET65-Body-Worn-GSM850-Mid

DUT: GSM50100-body; Type: Body; Serial: 20051118

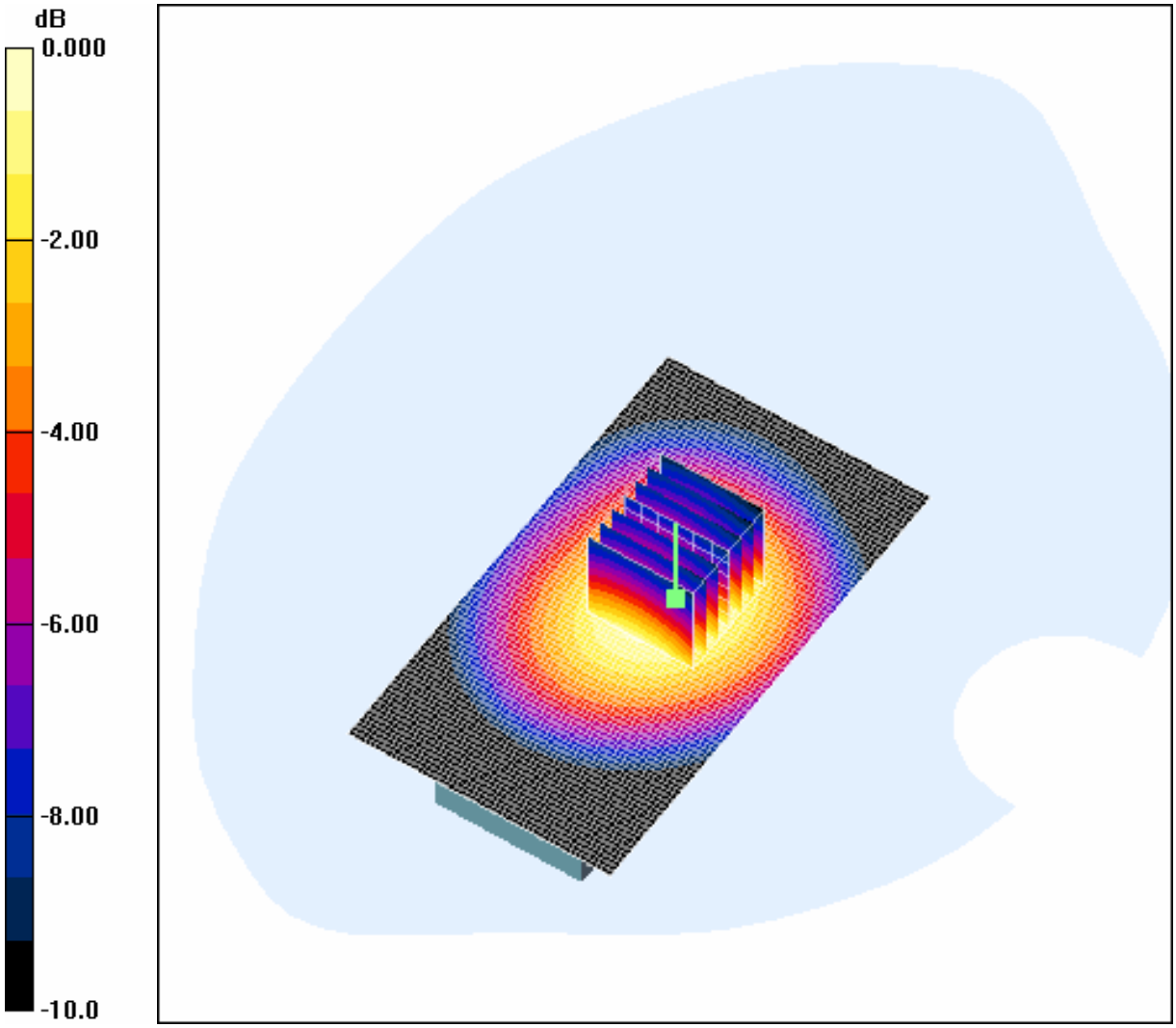
Communication System: GSM850-GSM Mode; Frequency: 836.4 MHz;Duty Cycle: 1:8.3
Medium: HSL850-Body Medium parameters used: f = 836.4 MHz; σ = 0.957 mho/m; ε_r = 55.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.83, 5.83, 5.83); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- 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
Maximum value of SAR (interpolated) = 0.379 mW/g

Body Worn - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.8 V/m; Power Drift = 0.010 dB
Peak SAR (extrapolated) = 0.489 W/kg
SAR(1 g) = 0.353 mW/g; SAR(10 g) = 0.246 mW/g
Maximum value of SAR (measured) = 0.375 mW/g



0 dB = 0.375mW/g

4.15 FCC-OET65-Body-Worn-GSM850-High

Date/Time: 2005-11-18 22:15:32

Test Laboratory: SGS-GSM

FCC-OET65-Body-Worn-GSM850-High

DUT: GSM50100-body; Type: Body; Serial: 20051118

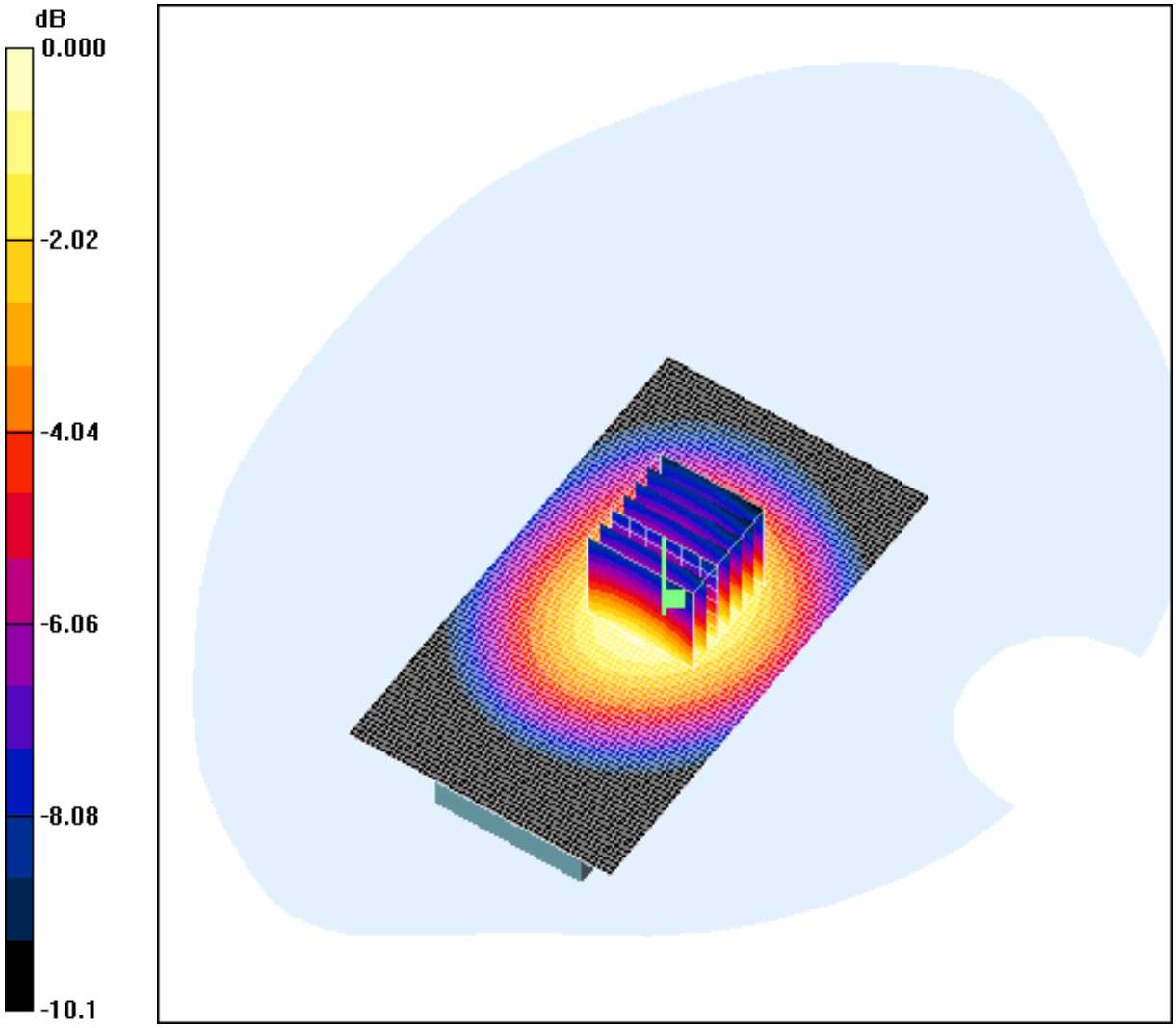
Communication System: GSM850-GSM Mode; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium: HSL850-Body Medium parameters used: f = 848.8 MHz; σ = 0.969 mho/m; ε_r = 55.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.83, 5.83, 5.83); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- 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
Maximum value of SAR (interpolated) = 0.670 mW/g

Body Worn - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.7 V/m; Power Drift = -0.002 dB
Peak SAR (extrapolated) = 0.866 W/kg
SAR(1 g) = 0.621 mW/g; SAR(10 g) = 0.432 mW/g
Maximum value of SAR (measured) = 0.660 mW/g



0 dB = 0.660mW/g

4.16 FCC-OET65-LeftHandSide-Touch-GSM1900-Low

Date/Time: 2005-11-25 10:50:32

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Touch-GSM1900-Low

DUT: GSM50100-Head; Type: Head; Serial: 20051125

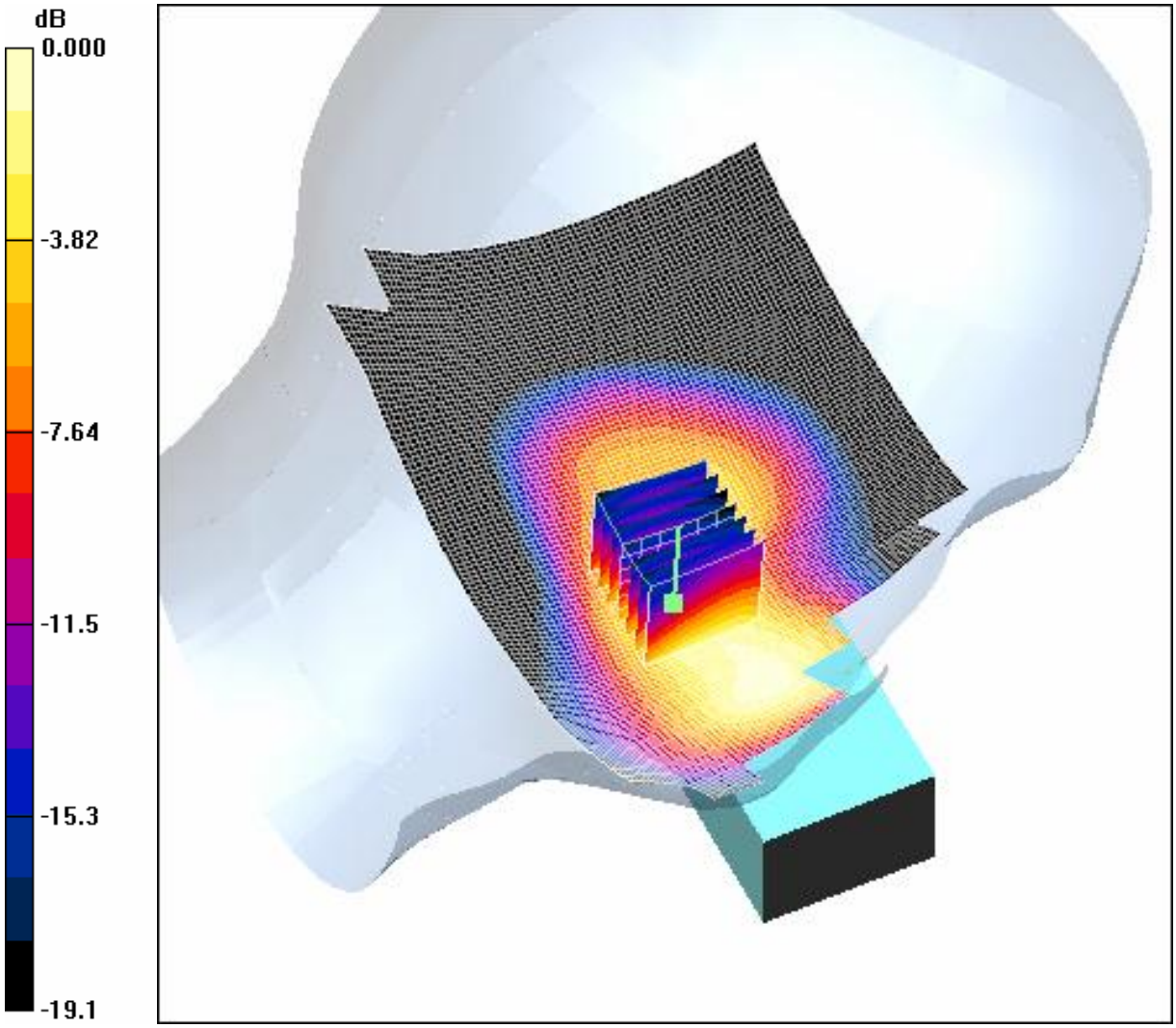
Communication System: GSM1900-GSM Mode; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 Medium parameters used: f = 1850.2 MHz; σ = 1.42 mho/m; ε_r = 40.5; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Touch position - Low/Area Scan (81x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.579 mW/g

Touch position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.03 V/m; Power Drift = -1.01 dB
Peak SAR (extrapolated) = 0.909 W/kg
SAR(1 g) = 0.496 mW/g; SAR(10 g) = 0.252 mW/g
Maximum value of SAR (measured) = 0.569 mW/g



0 dB = 0.569mW/g

4.17 FCC-OET65-LeftHandSide-Touch-GSM1900-Mid

Date/Time: 2005-11-25 11:31:47

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Touch-GSM1900-Mid

DUT: GSM50100-Head; Type: Head; Serial: 20051125

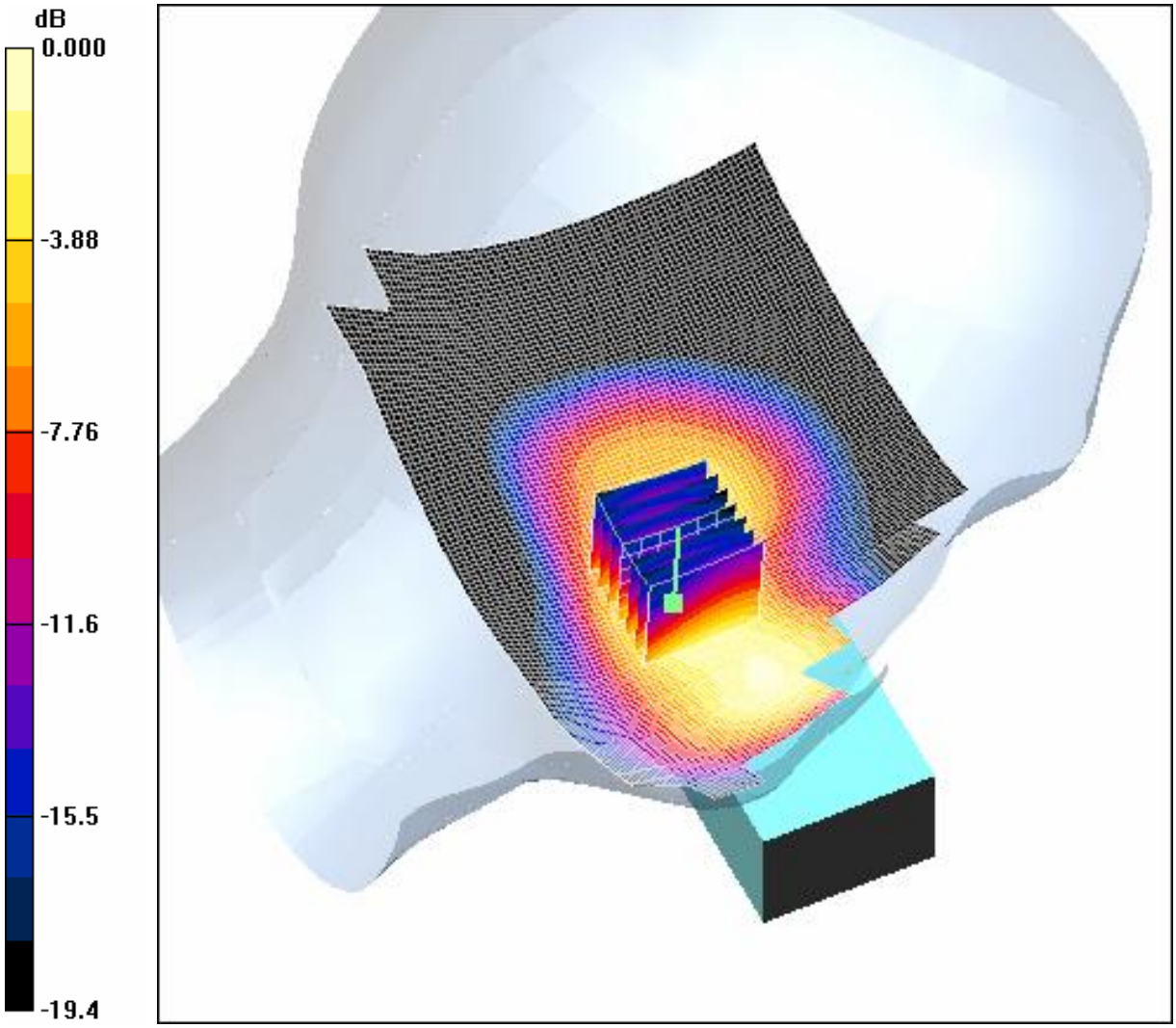
Communication System: GSM1900-GSM Mode; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 Medium parameters used: f = 1880 MHz; σ = 1.44 mho/m; ε_r = 40.3; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Touch position - Middle/Area Scan (81x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.555 mW/g

Touch position - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.35 V/m; Power Drift = -0.125 dB
Peak SAR (extrapolated) = 0.884 W/kg
SAR(1 g) = 0.479 mW/g; SAR(10 g) = 0.242 mW/g
Maximum value of SAR (measured) = 0.550 mW/g



0 dB = 0.550mW/g

4.18 FCC-OET65-LeftHandSide-Touch-GSM1900-High

Date/Time: 2005-11-25 12:15:40

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Touch-GSM1900-High

DUT: GSM50100-Head; Type: Head; Serial: 20051125

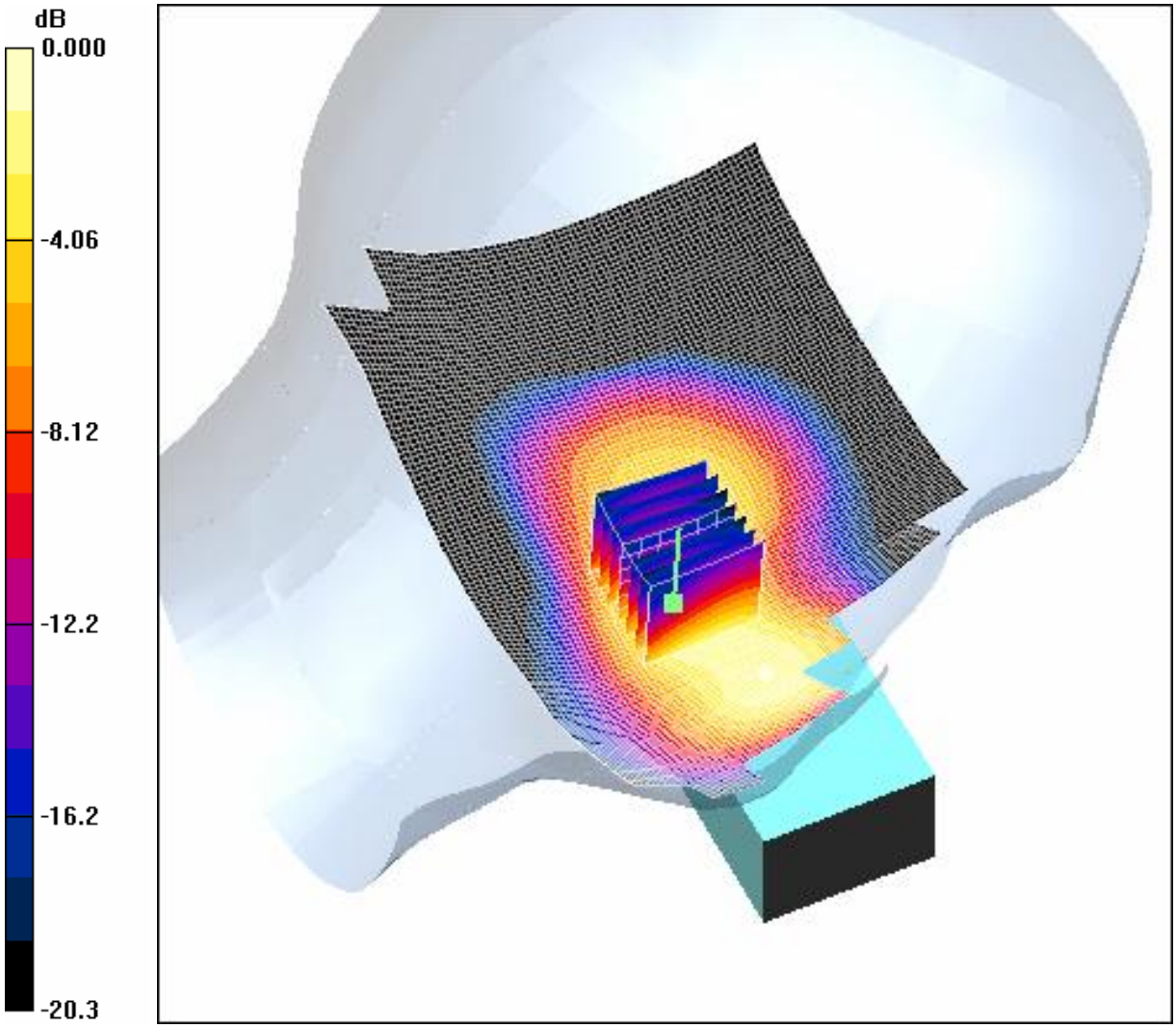
Communication System: GSM1900-GSM Mode; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 Medium parameters used: f = 1909.8 MHz; σ = 1.47 mho/m; ε_r = 40; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.93, 4.93, 4.93); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Touch position - High/Area Scan (81x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.397 mW/g

Touch position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.34 V/m; Power Drift = -0.065 dB
Peak SAR (extrapolated) = 0.657 W/kg
SAR(1 g) = 0.349 mW/g; SAR(10 g) = 0.173 mW/g
Maximum value of SAR (measured) = 0.401 mW/g



0 dB = 0.401mW/g

4.19 FCC-OET65-LeftHandSide-Tilt-GSM1900-Low

Date/Time: 2005-11-15 17:27:45

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Tilt-GSM1900-Low

DUT: GSM50100-Head; Type: Head; Serial: 20051115

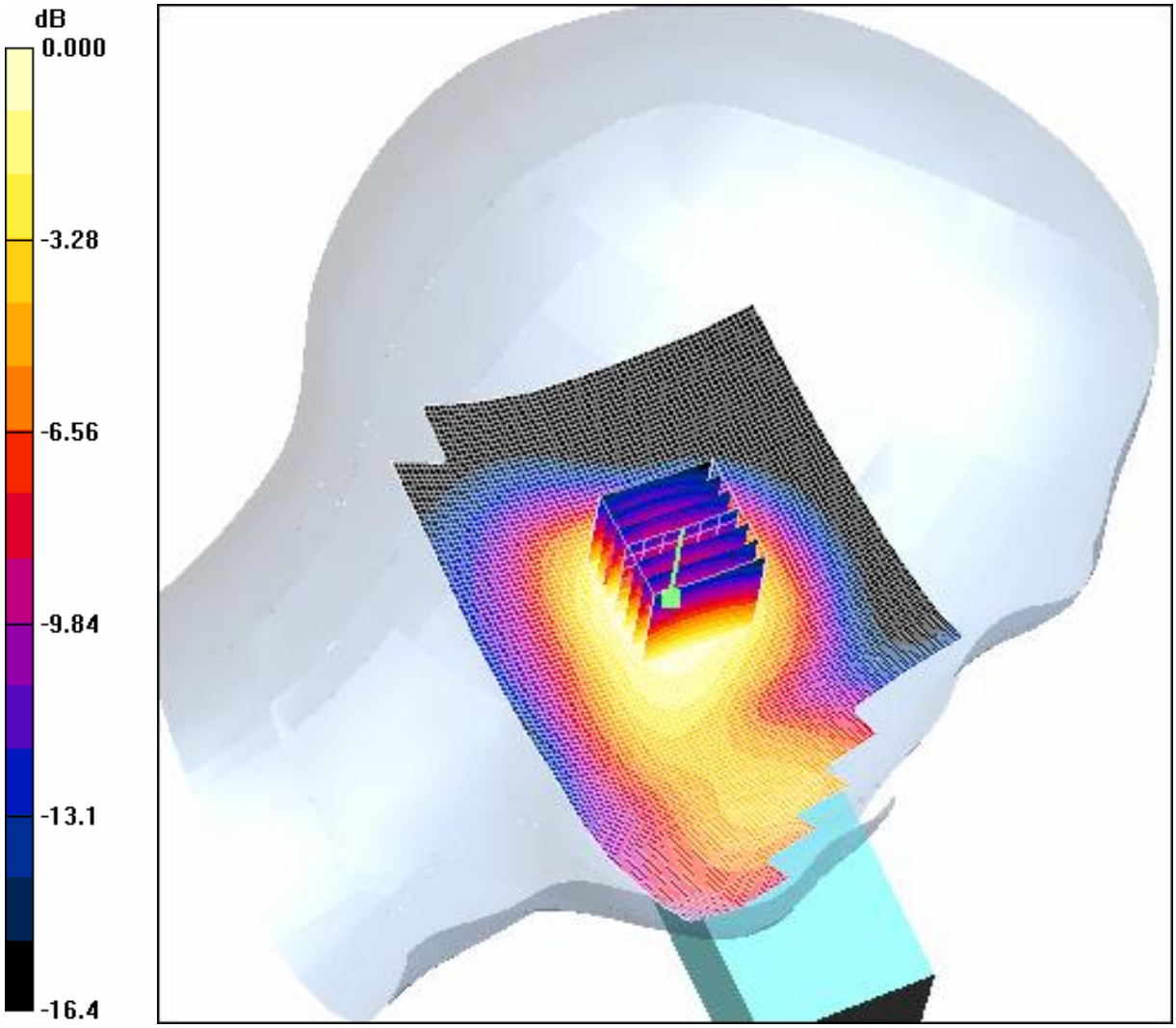
Communication System: GSM1900-GSM Mode; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 Medium parameters used: f = 1850.2 MHz; σ = 1.42 mho/m; ε_r = 40.5; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.83, 5.83, 5.83); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- 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 (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.139 mW/g

Tilt position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.46 V/m; Power Drift = -0.077 dB
Peak SAR (extrapolated) = 0.177 W/kg
SAR(1 g) = 0.121 mW/g; SAR(10 g) = 0.076 mW/g
Maximum value of SAR (measured) = 0.130 mW/g



0 dB = 0.130mW/g

4.20 FCC-OET65-LeftHandSide-Tilt-GSM1900-Mid

Date/Time: 2005-11-15 18:01:33

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Tilt-GSM1900-Mid

DUT: GSM50100-Head; Type: Head; Serial: 20051115

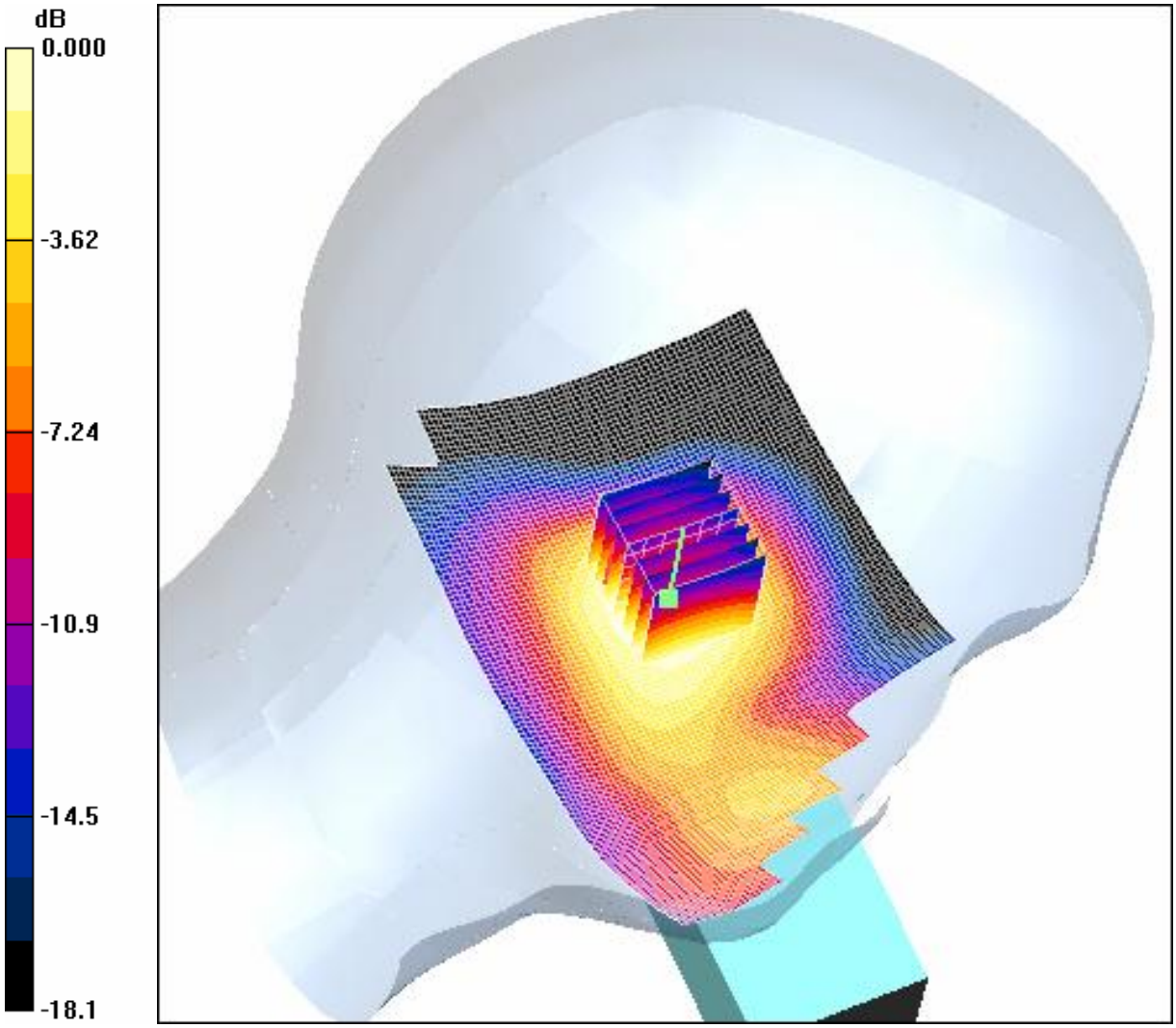
Communication System: GSM1900-GSM Mode; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 Medium parameters used: f = 1880 MHz; σ = 1.44 mho/m; ε_r = 40.3; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.83, 5.83, 5.83); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- 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 (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.145 mW/g

Tilt position - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.29 V/m; Power Drift = 0.014 dB
Peak SAR (extrapolated) = 0.191 W/kg
SAR(1 g) = 0.127 mW/g; SAR(10 g) = 0.078 mW/g
Maximum value of SAR (measured) = 0.138 mW/g



0 dB = 0.138mW/g

4.21 FCC-OET65-LeftHandSide-Tilt-GSM1900-High

Date/Time: 2005-11-15 18:33:55

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Tilt-GSM1900-High

DUT: GSM50100-Head; Type: Head; Serial: 20051115

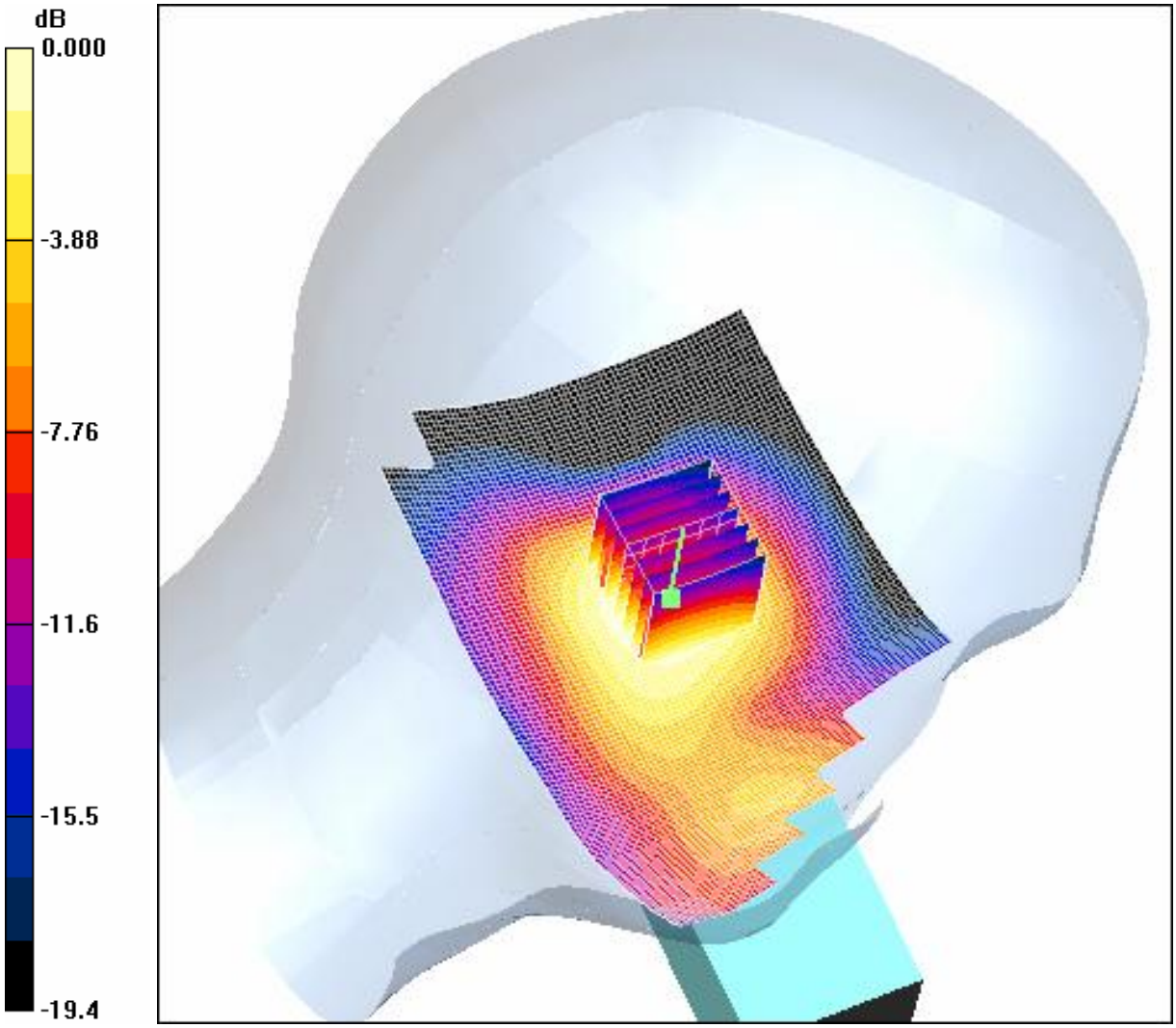
Communication System: GSM1900-GSM Mode; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 Medium parameters used: f = 1909.8 MHz; σ = 1.47 mho/m; ε_r = 40; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.83, 5.83, 5.83); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- 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 (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.116 mW/g

Tilt position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.33 V/m; Power Drift = 0.051 dB
Peak SAR (extrapolated) = 0.150 W/kg
SAR(1 g) = 0.100 mW/g; SAR(10 g) = 0.061 mW/g
Maximum value of SAR (measured) = 0.108 mW/g



0 dB = 0.108mW/g

4.22 FCC-OET65-RightHandSide-Touch-GSM1900-Low

Date/Time: 2005-11-15 19:27:32

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Touch-GSM1900-Low

DUT: GSM50100-Head; Type: Head; Serial: 20051115

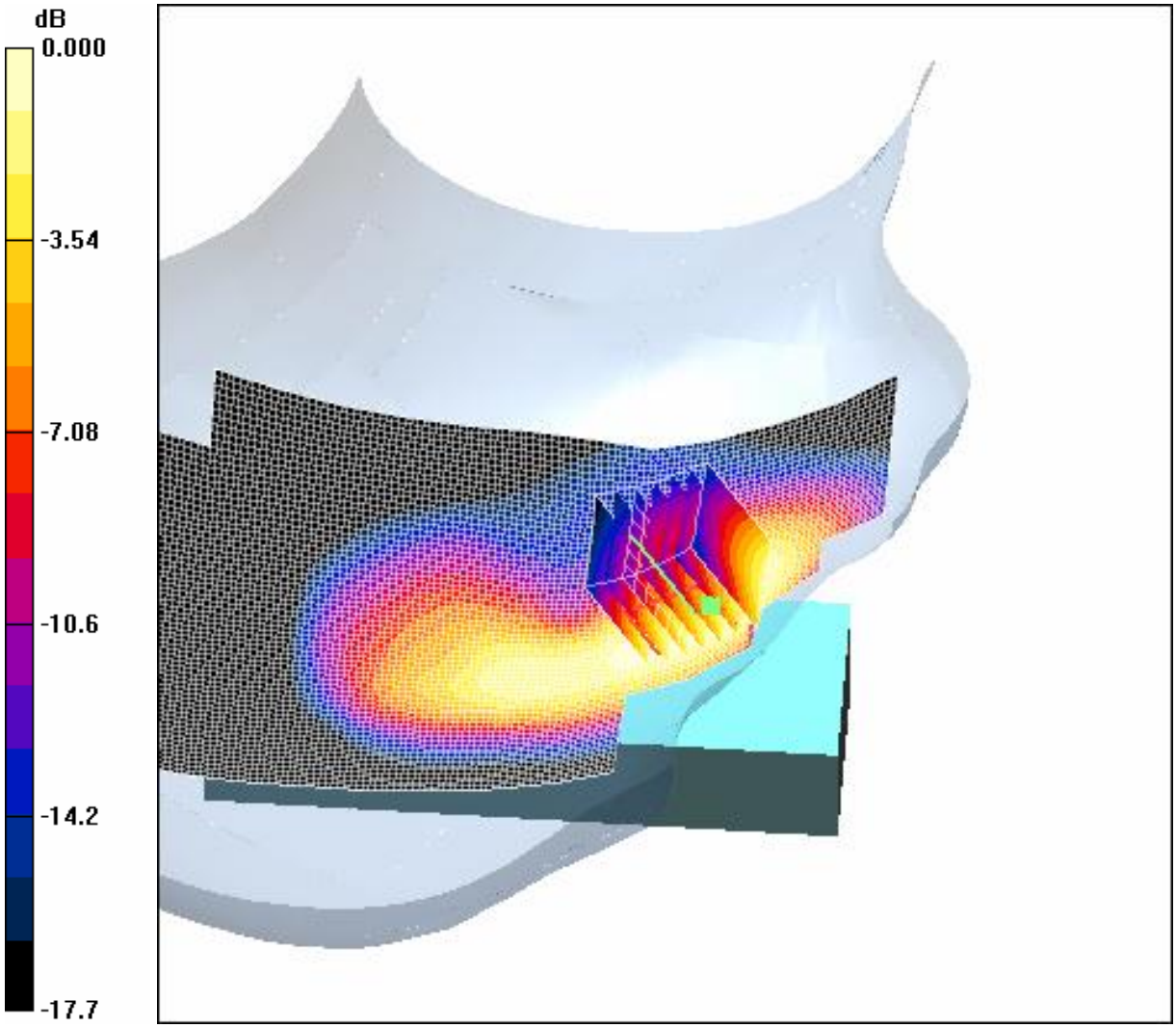
Communication System: GSM1900-GSM Mode; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 Medium parameters used: f = 1850.2 MHz; σ = 1.42 mho/m; ε_r = 40.5; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.83, 5.83, 5.83); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Touch position - Low/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.628 mW/g

Touch position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.73 V/m; Power Drift = -0.455 dB
Peak SAR (extrapolated) = 0.786 W/kg
SAR(1 g) = 0.539 mW/g; SAR(10 g) = 0.341 mW/g
Maximum value of SAR (measured) = 0.585 mW/g



0 dB = 0.585mW/g

4.23 FCC-OET65-RightHandSide-Touch-GSM1900-Mid

Date/Time: 2005-11-15 20:00:52

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Touch-GSM1900-Mid

DUT: GSM50100-Head; Type: Head; Serial: 20051115

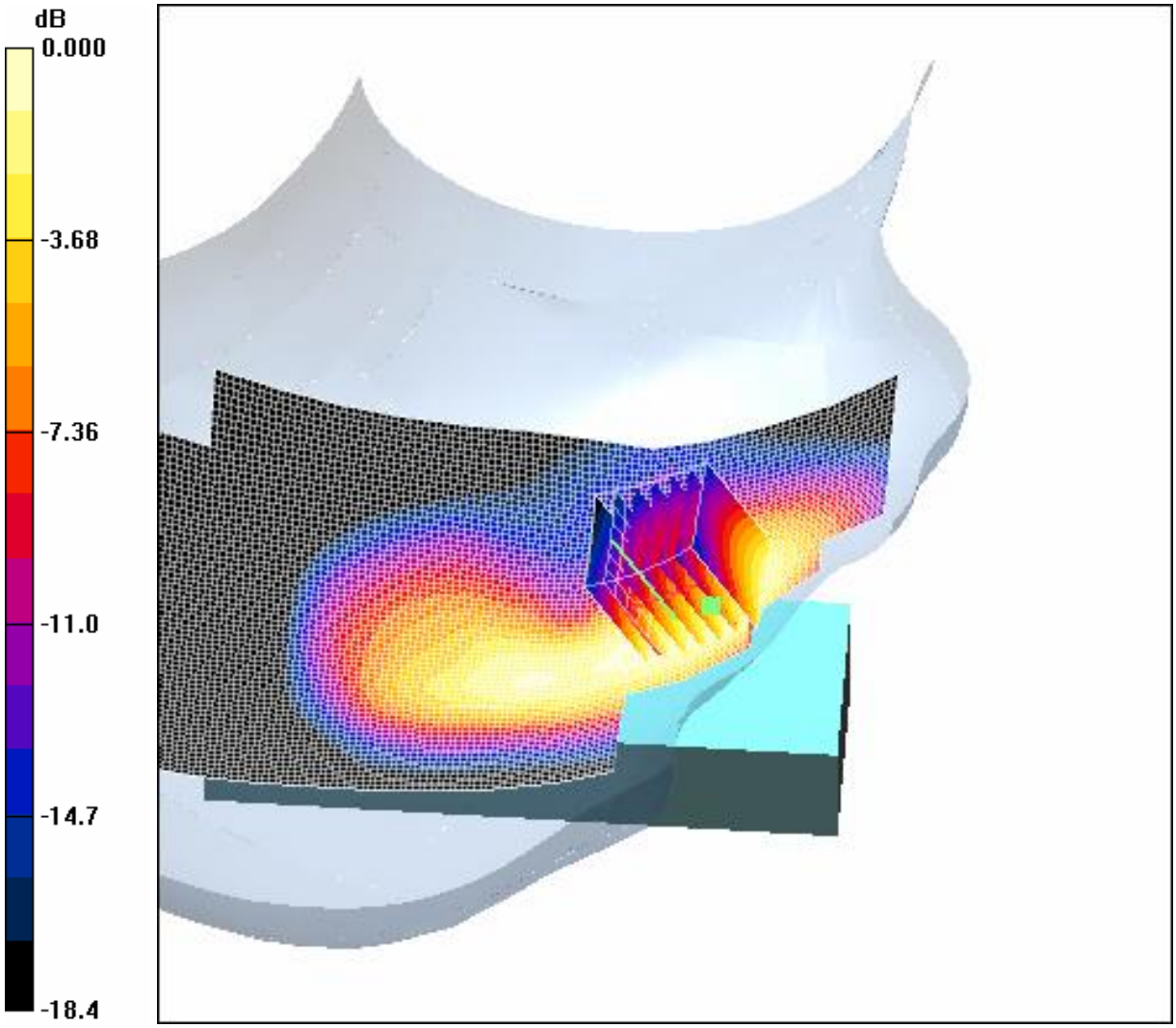
Communication System: GSM1900-GSM Mode; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 Medium parameters used: f = 1880 MHz; σ = 1.44 mho/m; ε_r = 40.3; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.83, 5.83, 5.83); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Touch position - Middle/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.548 mW/g

Touch position - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.75 V/m; Power Drift = -0.046 dB
Peak SAR (extrapolated) = 0.710 W/kg
SAR(1 g) = 0.482 mW/g; SAR(10 g) = 0.304 mW/g
Maximum value of SAR (measured) = 0.523 mW/g



0 dB = 0.523mW/g

4.24 FCC-OET65-RightHandSide-Touch-GSM1900-High

Date/Time: 2005-11-15 20:37:14

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Touch-GSM1900-High

DUT: GSM50100-Head; Type: Head; Serial: 20051115

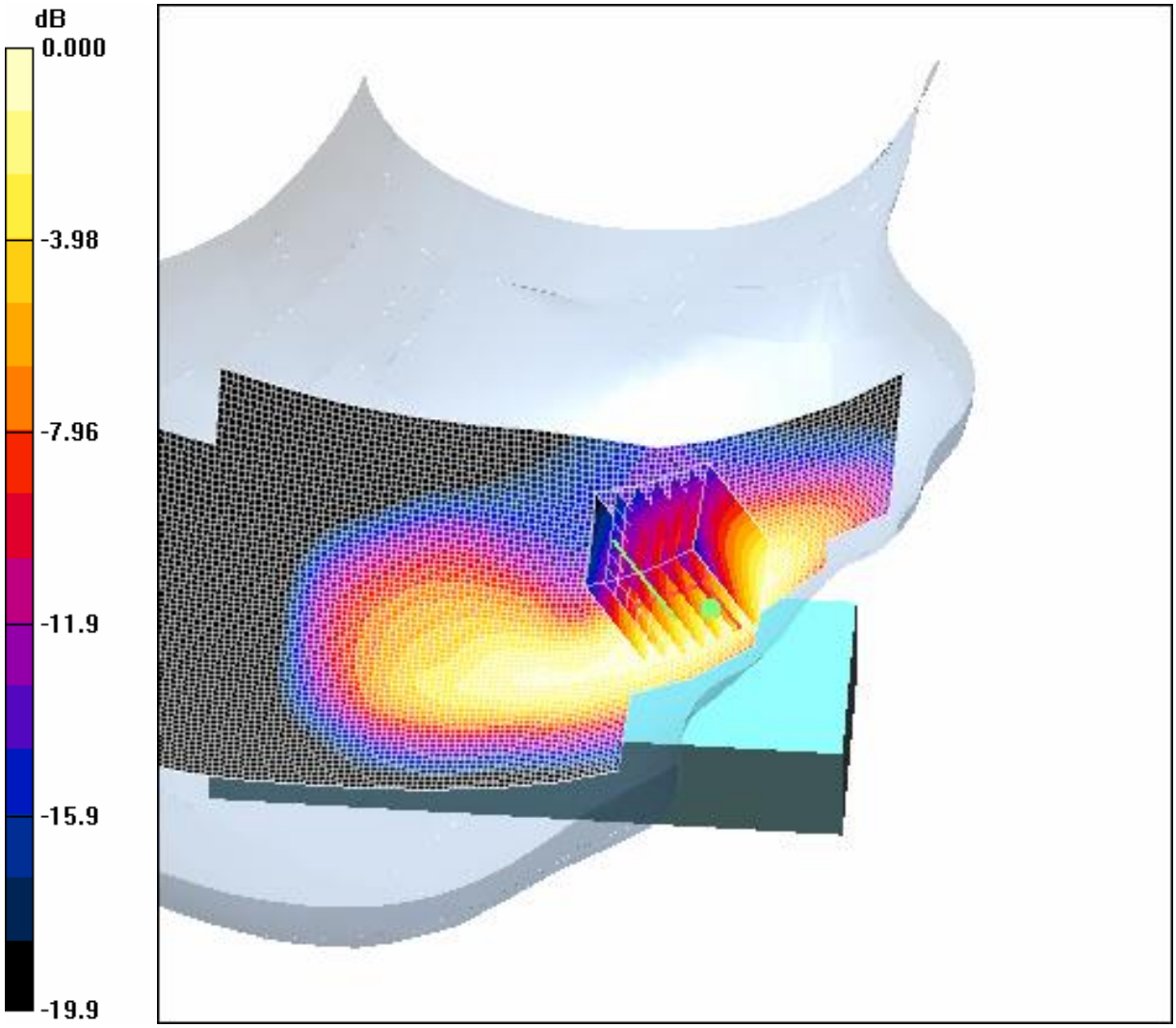
Communication System: GSM1900-GSM Mode; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 Medium parameters used: f = 1909.8 MHz; σ = 1.47 mho/m; ε_r = 40; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.83, 5.83, 5.83); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Touch position - High/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.391 mW/g

Touch position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.04 V/m; Power Drift = 0.089 dB
Peak SAR (extrapolated) = 0.515 W/kg
SAR(1 g) = 0.344 mW/g; SAR(10 g) = 0.214 mW/g
Maximum value of SAR (measured) = 0.377 mW/g



0 dB = 0.377mW/g

4.25 FCC-OET65-RightHandSide-Tilt-GSM1900-Low

Date/Time: 2005-11-15 21:34:27

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Tilt-GSM1900-Low

DUT: GSM50100-Head; Type: Head; Serial: 20051115

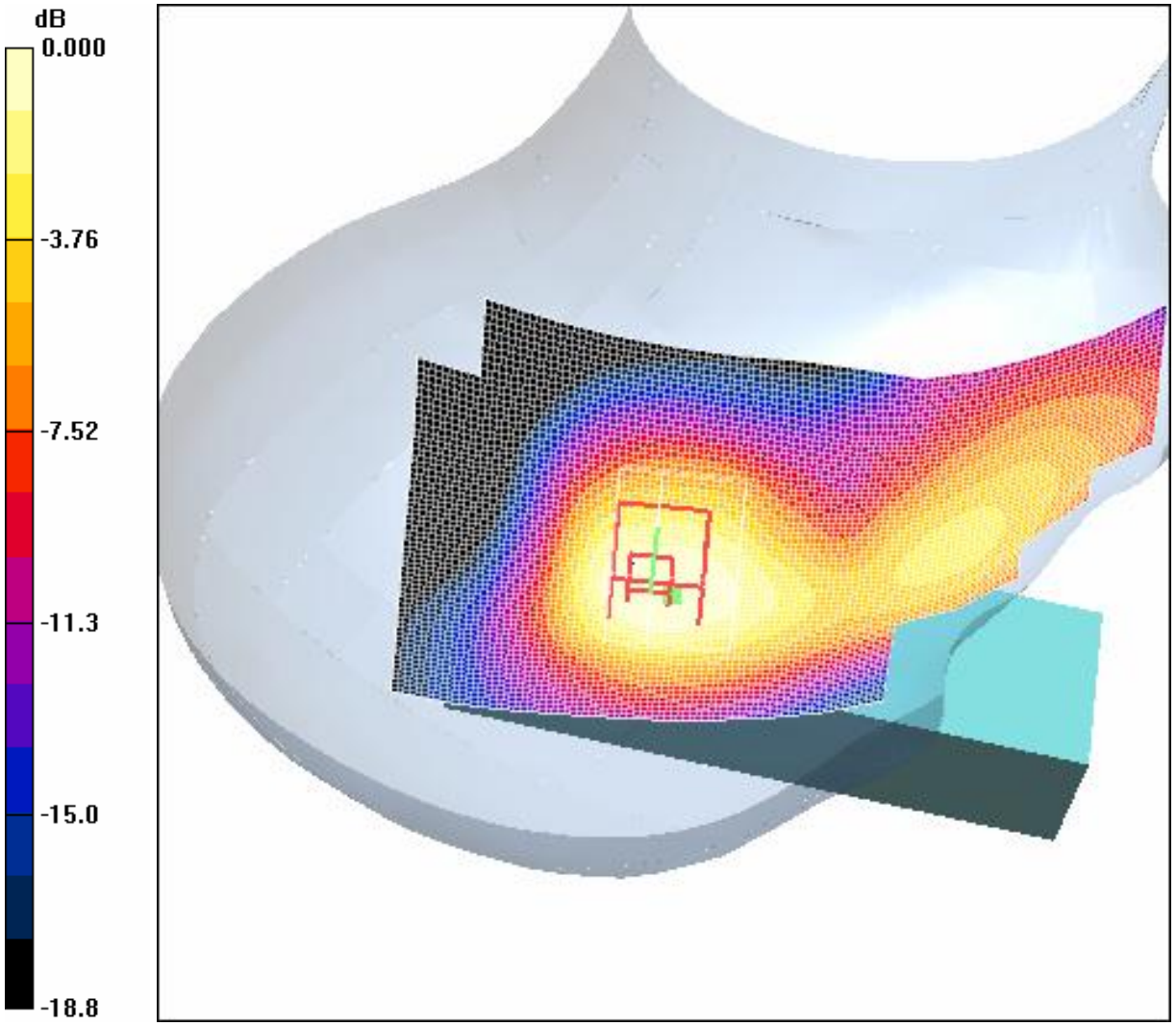
Communication System: GSM1900-GSM Mode; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 Medium parameters used: f = 1850.2 MHz; σ = 1.42 mho/m; ε_r = 40.5; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.83, 5.83, 5.83); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- 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 (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.130 mW/g

Tilt position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.87 V/m; Power Drift = 0.433 dB
Peak SAR (extrapolated) = 0.182 W/kg
SAR(1 g) = 0.119 mW/g; SAR(10 g) = 0.072 mW/g
Maximum value of SAR (measured) = 0.130 mW/g



0 dB = 0.130mW/g

4.26 FCC-OET65-RightHandSide-Tilt-GSM1900-Mid

Date/Time: 2005-11-15 22:07:37

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Tilt-GSM1900-Mid

DUT: GSM50100-Head; Type: Head; Serial: 20051115

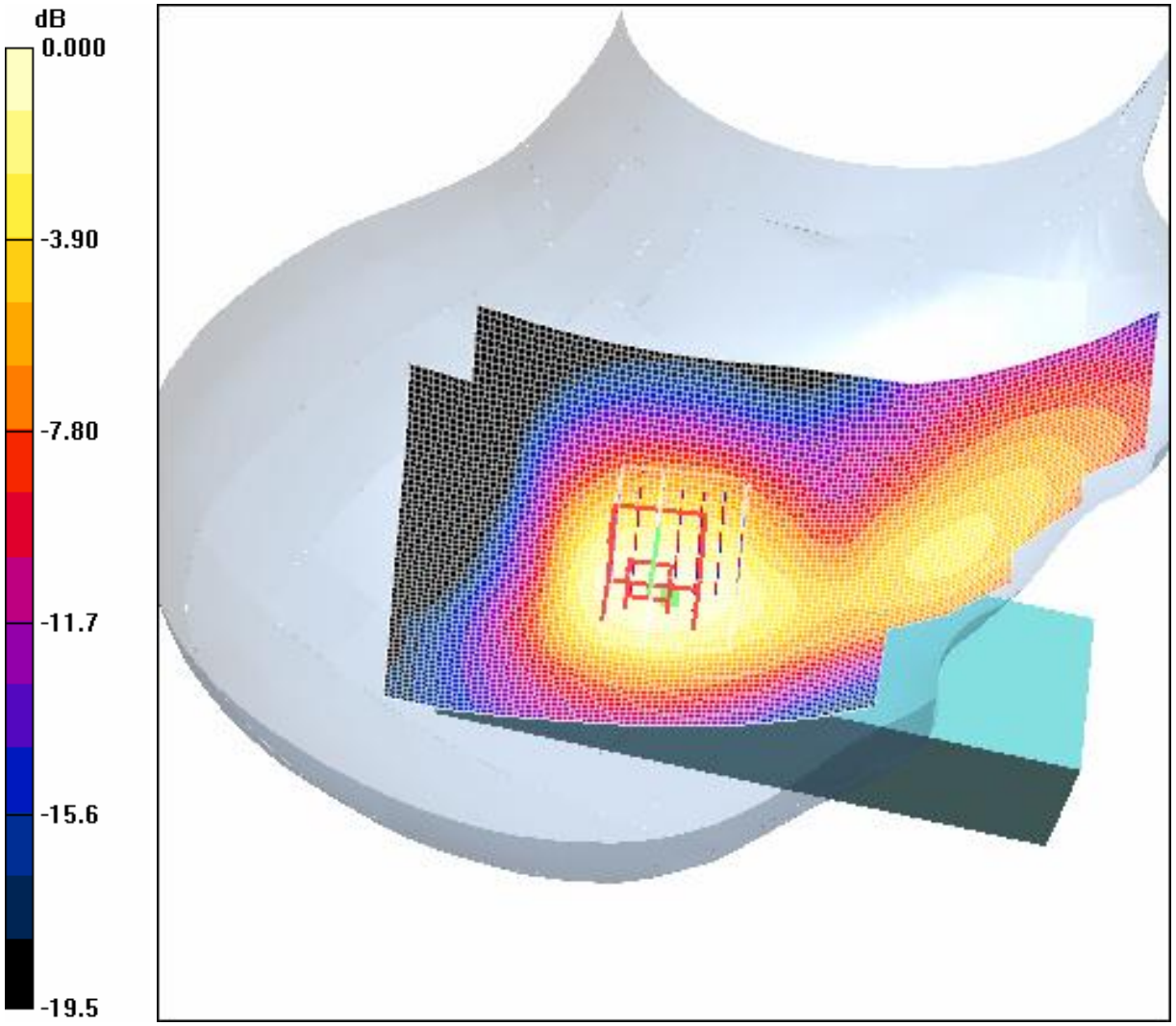
Communication System: GSM1900-GSM Mode; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 Medium parameters used: f = 1880 MHz; σ = 1.44 mho/m; ε_r = 40.3; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.83, 5.83, 5.83); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- 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 (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.128 mW/g

Tilt position - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.05 V/m; Power Drift = 0.022 dB
Peak SAR (extrapolated) = 0.185 W/kg
SAR(1 g) = 0.119 mW/g; SAR(10 g) = 0.072 mW/g
Maximum value of SAR (measured) = 0.129 mW/g



0 dB = 0.129mW/g

4.27 FCC-OET65-RightHandSide-Tilt-GSM1900-High

Date/Time: 2005-11-15 23:29:04

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Tilt-GSM1900-High

DUT: GSM50100-Head; Type: Head; Serial: 20051115

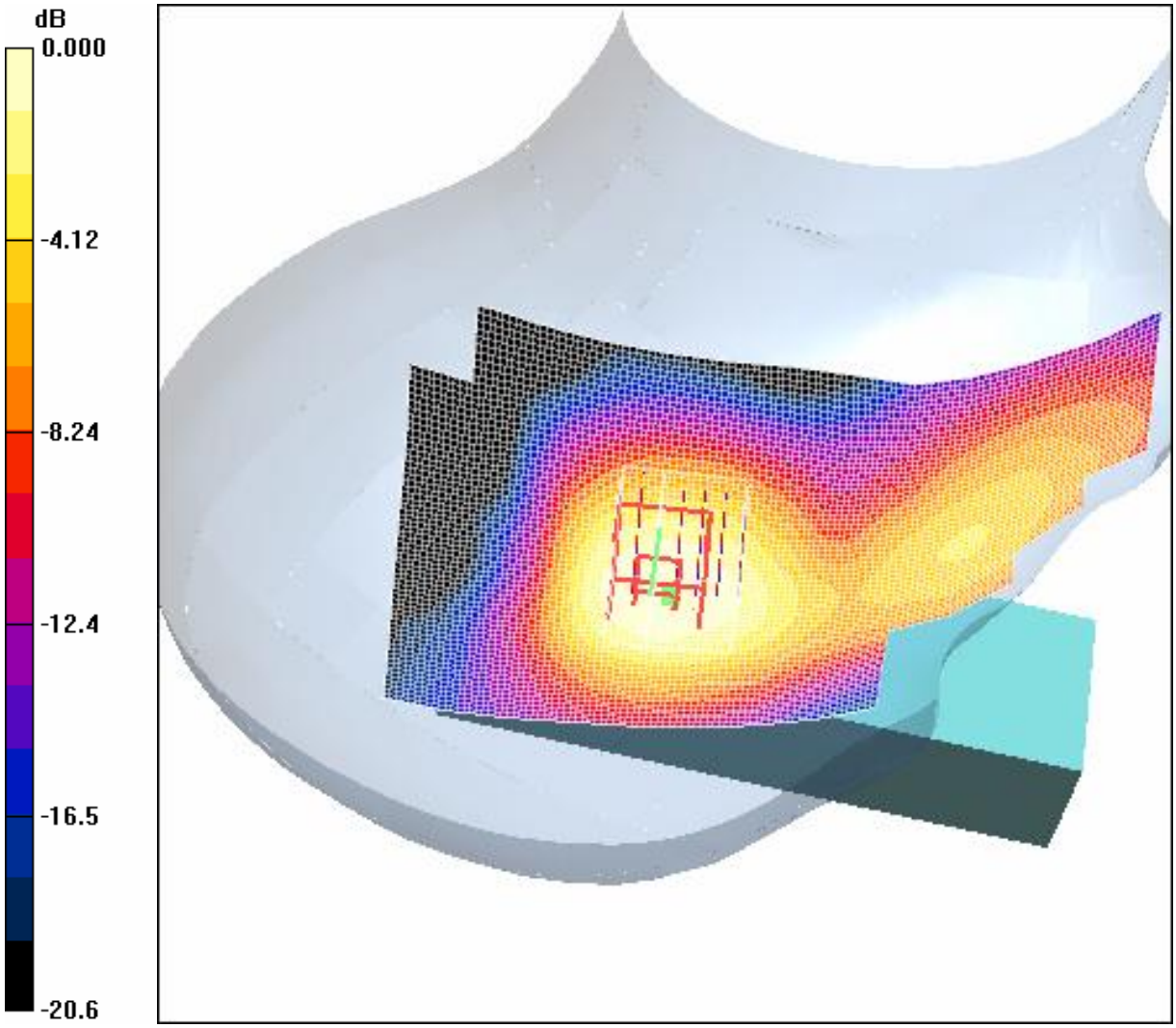
Communication System: GSM1900-GSM Mode; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 Medium parameters used: f = 1909.8 MHz; σ = 1.47 mho/m; ε_r = 40; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(5.83, 5.83, 5.83); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- 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 (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.108 mW/g

Tilt position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.29 V/m; Power Drift = 0.977 dB
Peak SAR (extrapolated) = 0.148 W/kg
SAR(1 g) = 0.096 mW/g; SAR(10 g) = 0.058 mW/g
Maximum value of SAR (measured) = 0.104 mW/g



0 dB = 0.104mW/g

4.28 FCC-OET65-Body-Worn-GSM1900-Low

Date/Time: 2005-11-18 15:12:12

Test Laboratory: SGS-GSM

FCC-OET65-Body-Worn-GSM1900-Low

DUT: GSM50100-body; Type: Body; Serial: 20051118

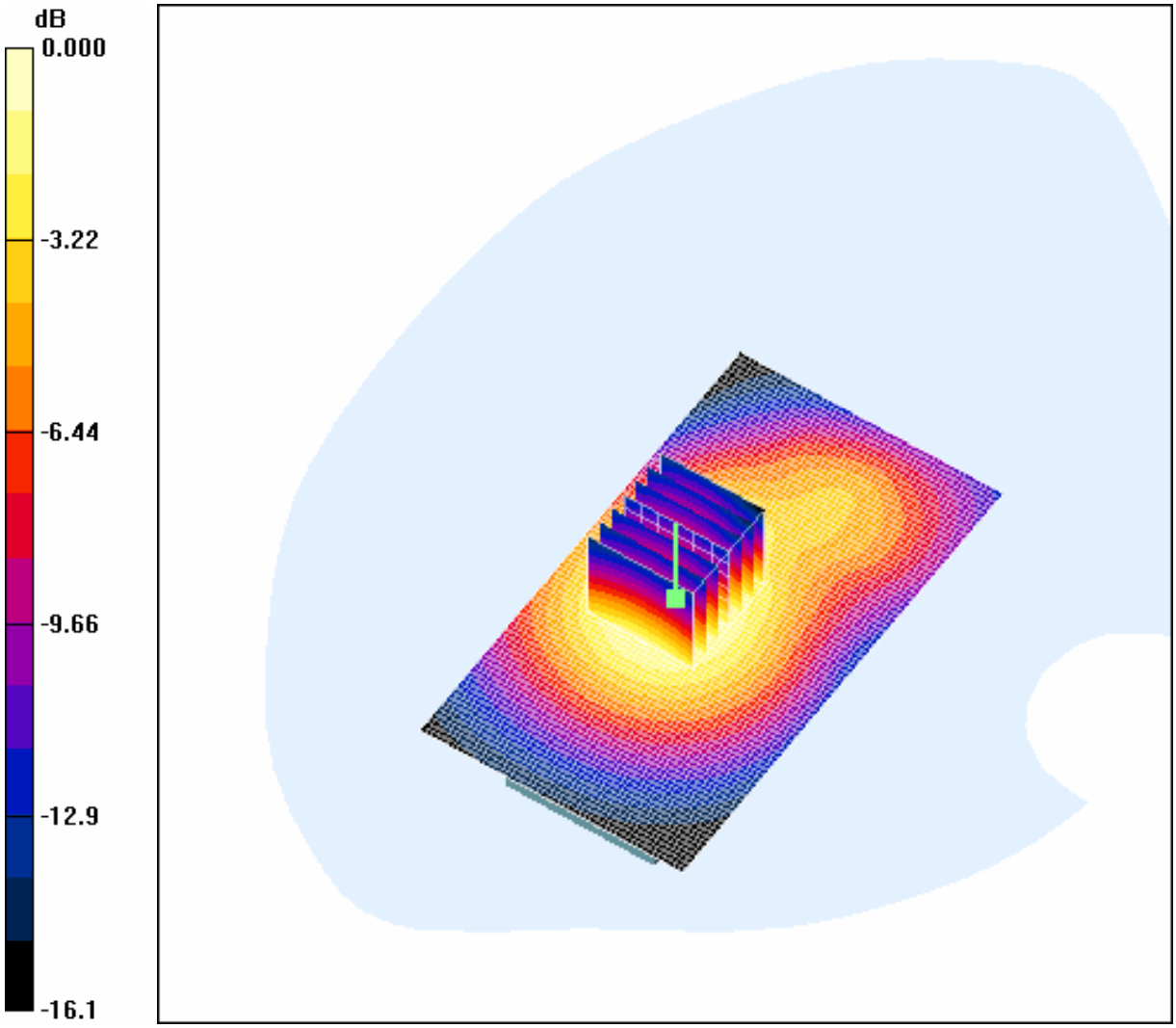
Communication System: DCS 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 Medium parameters used: f = 1850.2 MHz; σ = 1.49 mho/m; ε_r = 51.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.53, 4.53, 4.53); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- 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
Maximum value of SAR (interpolated) = 0.406 mW/g

Body Worn - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.4 V/m; Power Drift = -0.076 dB
Peak SAR (extrapolated) = 0.565 W/kg
SAR(1 g) = 0.369 mW/g; SAR(10 g) = 0.228 mW/g
Maximum value of SAR (measured) = 0.400 mW/g



0 dB = 0.400mW/g

4.29 FCC-OET65-Body-Worn-GSM1900-Mid

Date/Time: 2005-11-18 15:35:37

Test Laboratory: SGS-GSM

FCC-OET65-Body-Worn-GSM1900-Mid

DUT: GSM50100-body; Type: Body; Serial: 20051118

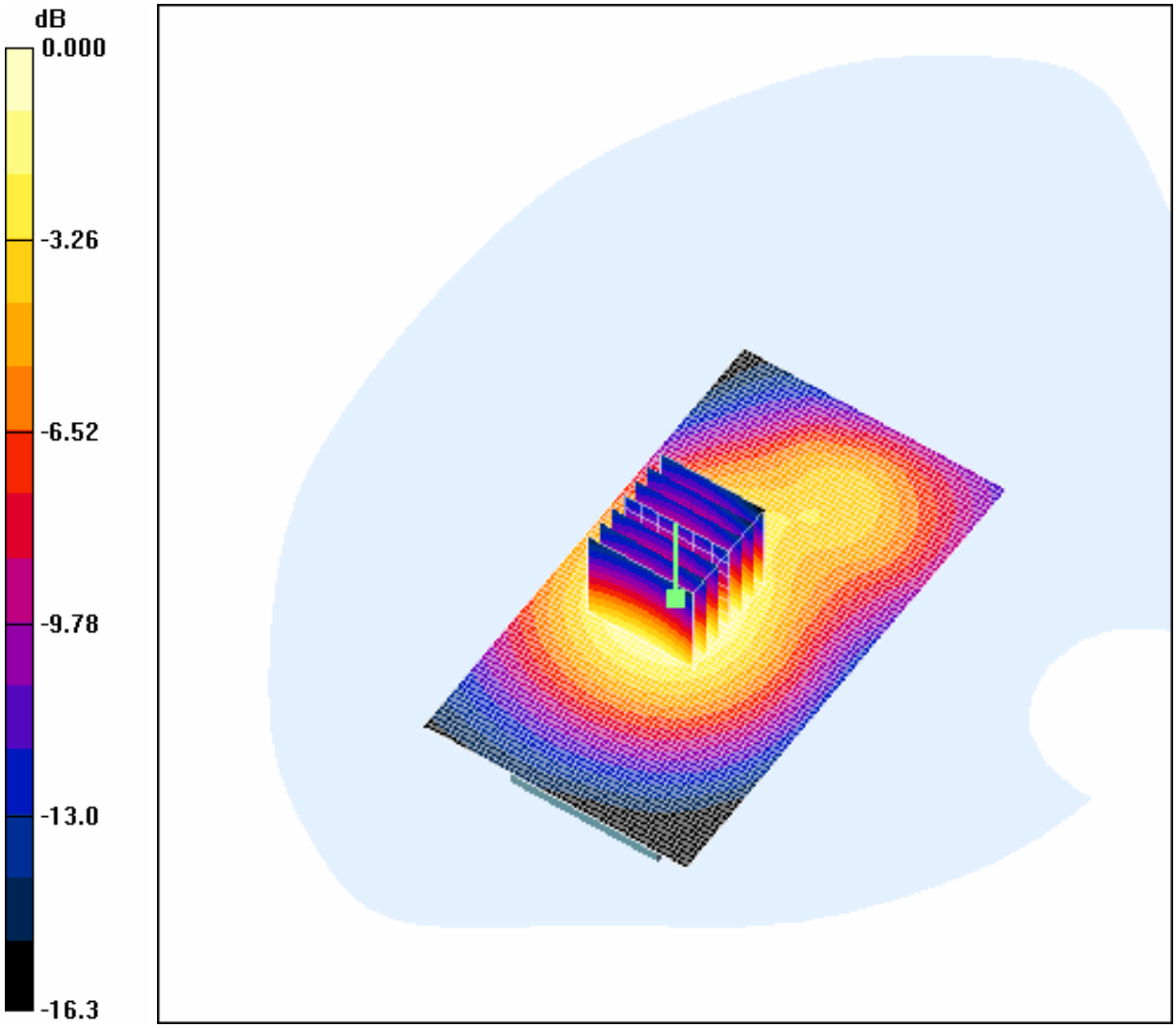
Communication System: DCS 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 Medium parameters used: f = 1880 MHz; σ = 1.52 mho/m; ε_r = 51.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.53, 4.53, 4.53); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- 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
Maximum value of SAR (interpolated) = 0.352 mW/g

Body Worn - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.79 V/m; Power Drift = 0.035 dB
Peak SAR (extrapolated) = 0.497 W/kg
SAR(1 g) = 0.321 mW/g; SAR(10 g) = 0.197 mW/g
Maximum value of SAR (measured) = 0.350 mW/g



0 dB = 0.350mW/g

4.30 FCC-OET65-Body-Worn-GSM1900-High

Date/Time: 2005-11-18 16:02:43

Test Laboratory: SGS-GSM

FCC-OET65-Body-Worn-GSM1900-High

DUT: GSM50100-body; Type: Body; Serial: 20051118

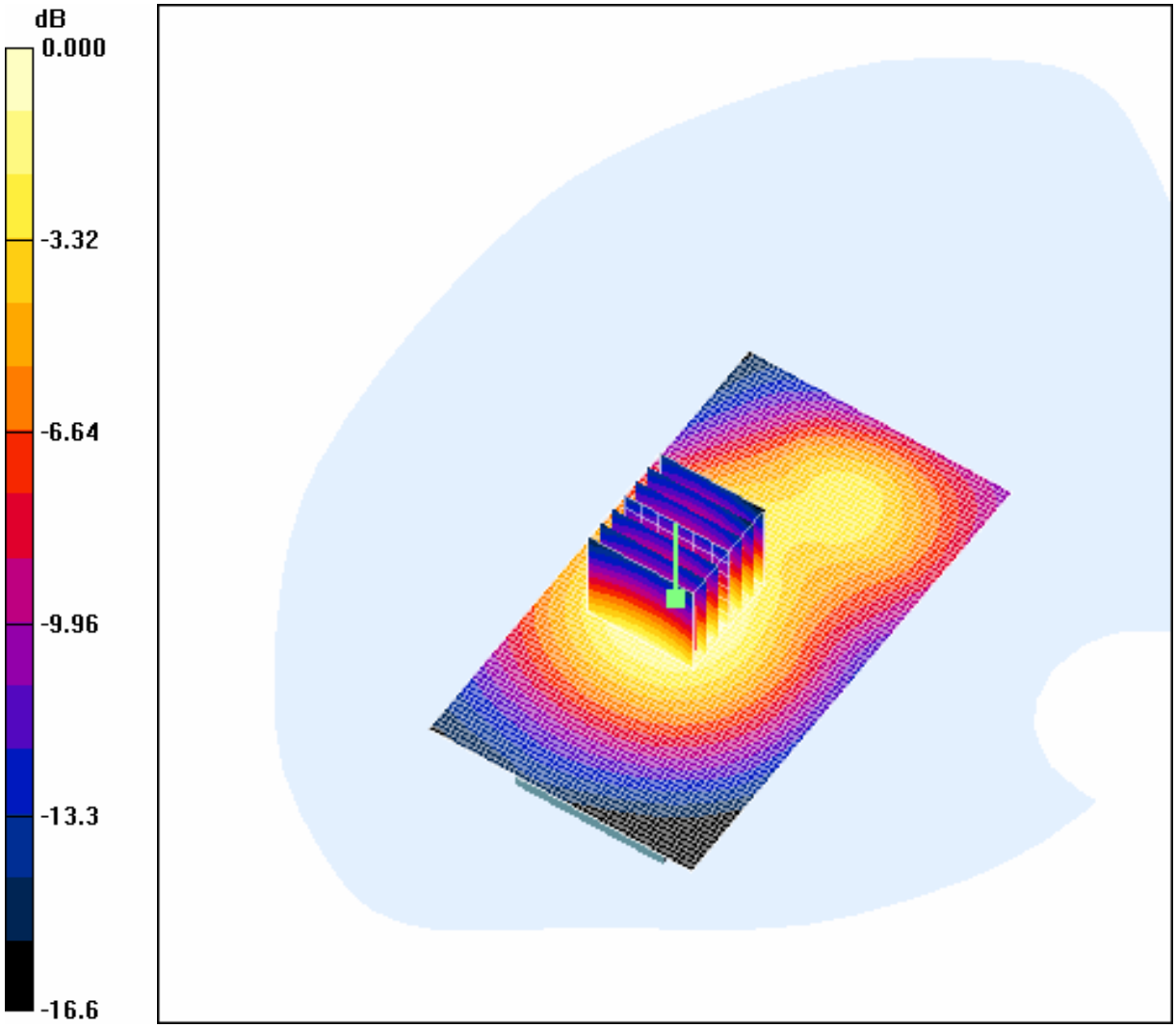
Communication System: DCS 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 Medium parameters used: f = 1909.8 MHz; σ = 1.55 mho/m; ε_r = 51.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV3 - SN3088; ConvF(4.53, 4.53, 4.53); Calibrated: 2005-9-13
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn611;
- 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
Maximum value of SAR (interpolated) = 0.237 mW/g

Body Worn - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.27 V/m; Power Drift = 0.009 dB
Peak SAR (extrapolated) = 0.334 W/kg
SAR(1 g) = 0.216 mW/g; SAR(10 g) = 0.132 mW/g
Maximum value of SAR (measured) = 0.234 mW/g



0 dB = 0.234mW/g

Appendix

1. Photographs of Test Setup

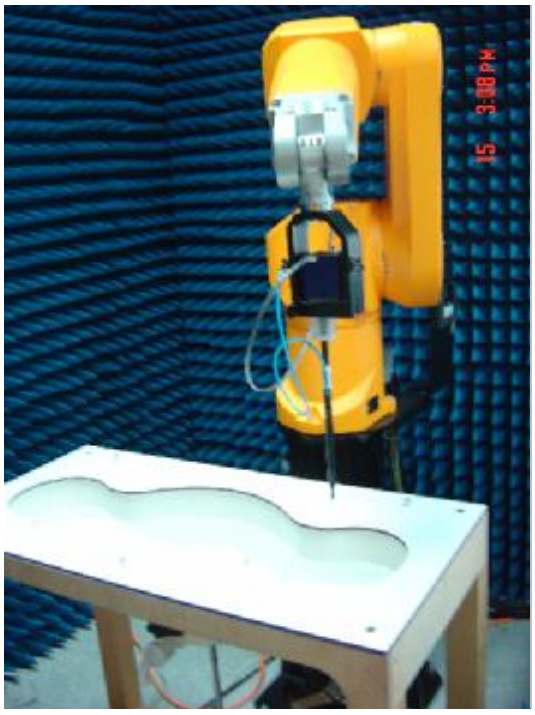


Fig.1 Photograph of the SAR measurement System

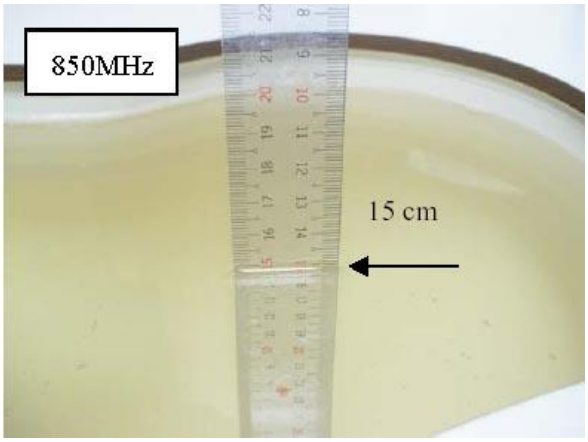


Fig.2 Photograph of the Tissue Simulant Fluid Fluid Liquid depth 15cm for Left-Head Side

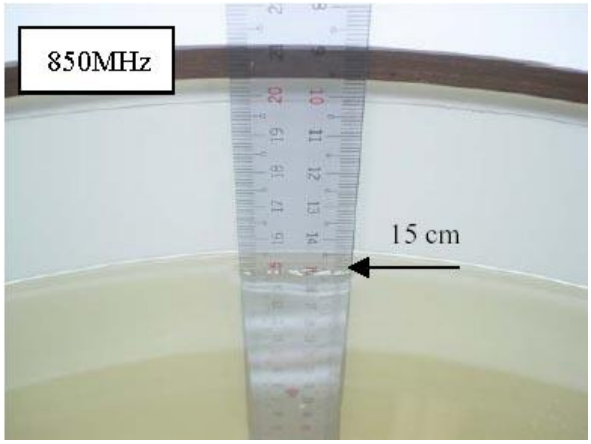


Fig.3 Photograph of the Tissue Simulant Liquid depth 15cm for Body-Worn

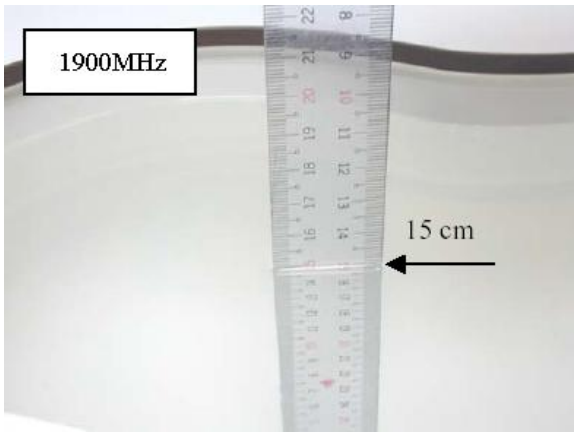


Fig.4 Photograph of the Tissue Simulant Fluid Fluid Liquid depth 15cm for Right-Head Side

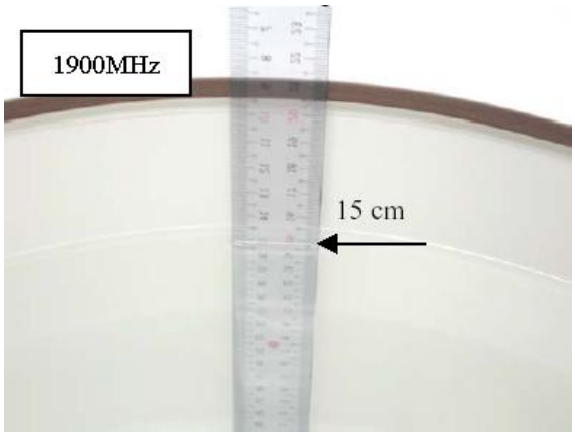


Fig.5 Photograph of the Tissue Simulant Liquid depth 15cm for Body-Worn

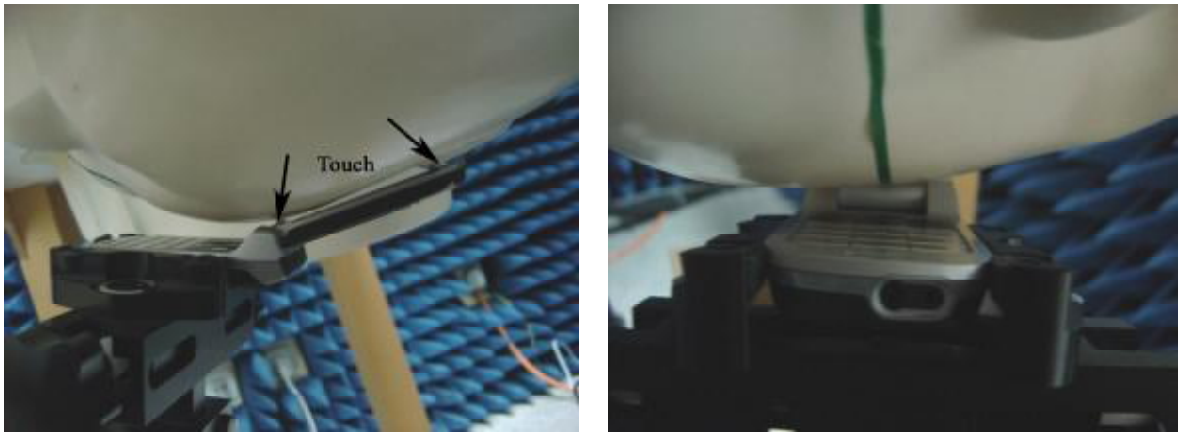


Fig.6 Photograph of the Left Hand Side Touch status

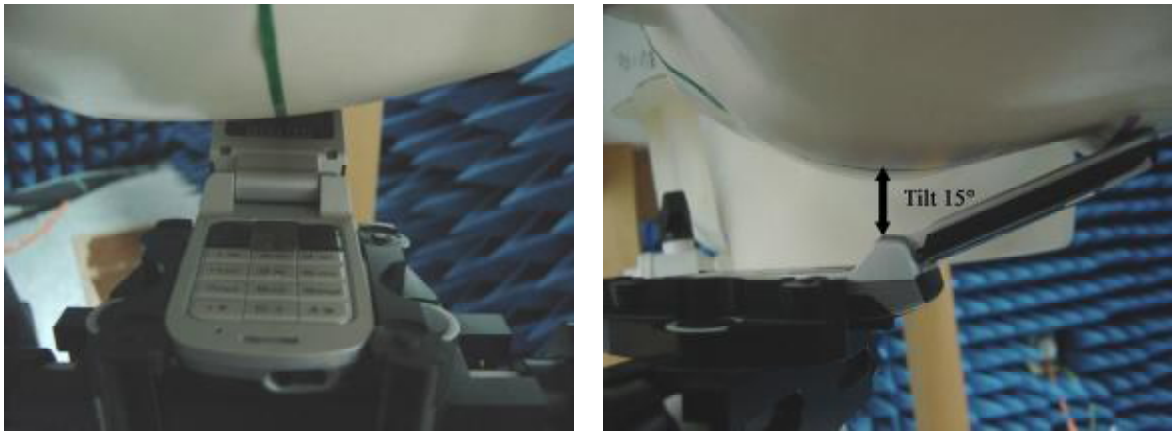
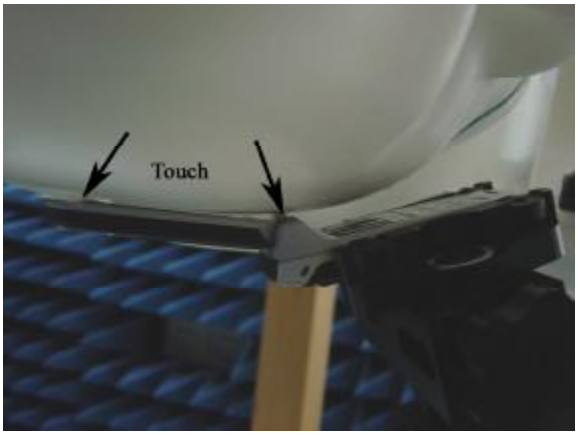


Fig.7 Photograph of the Left Hand Side Tilt status



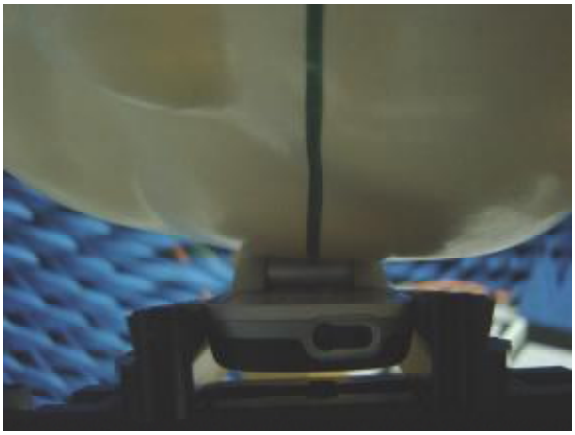
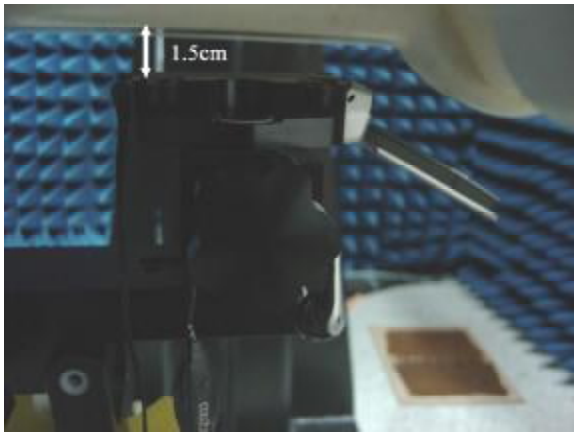


Fig.8 Photograph of the Right Hand Side Touch status

Fig.9 Photograph of the Right Hand Side Tilt status



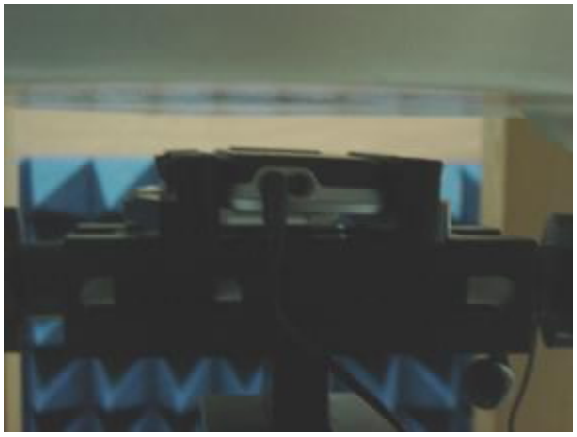


Fig.10 Photograph of the BodyWorn status

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 05

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

Issued: September 15, 2005

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.

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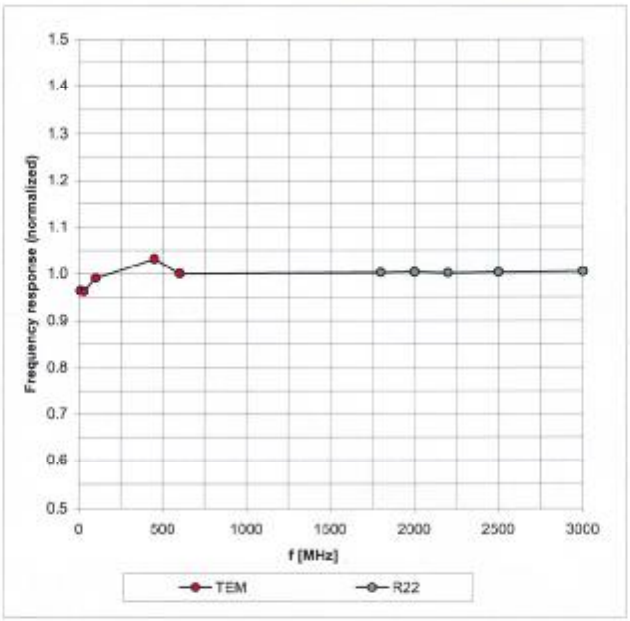
Frequency Response of E-Field

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



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

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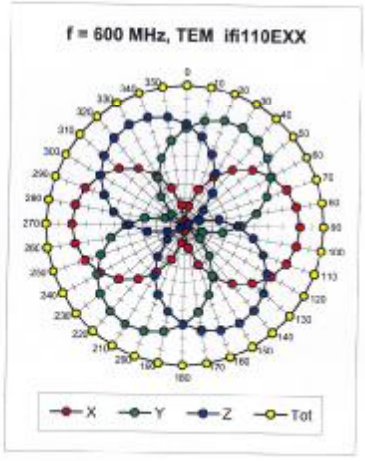
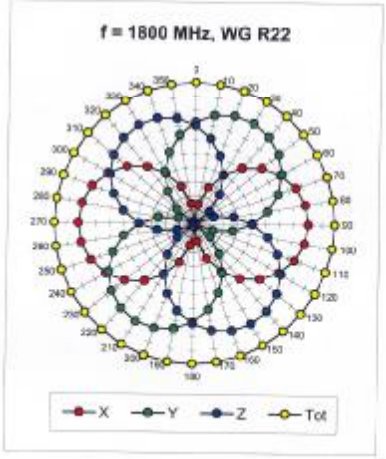
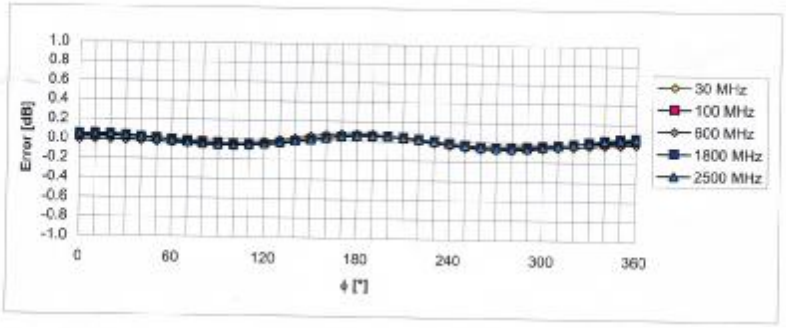
Receiving Pattern (ϕ), ϑ = 0°



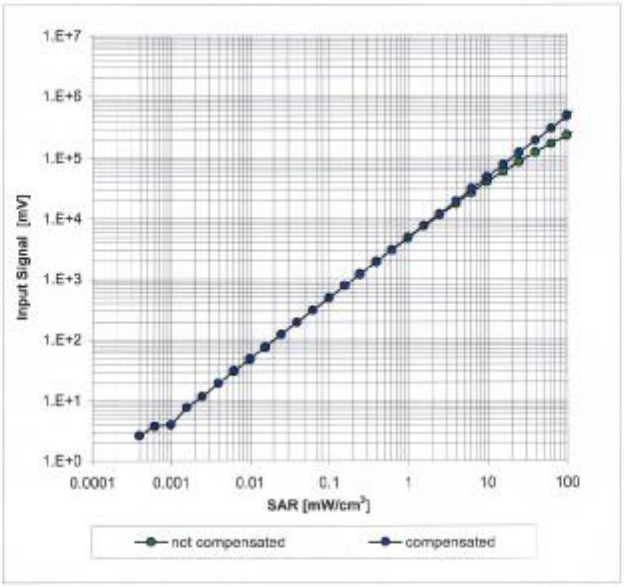


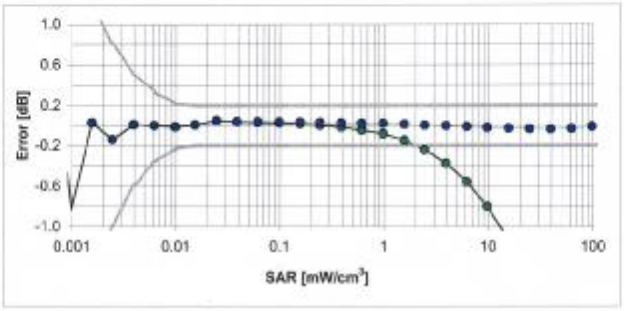


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})

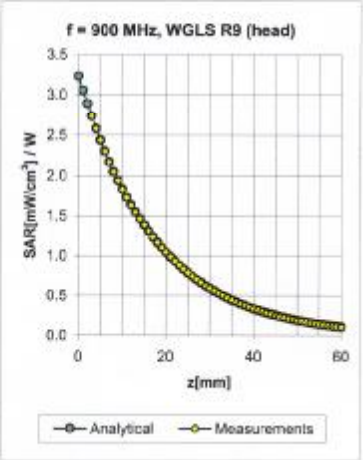
(Waveguide R22, f = 1800 MHz)

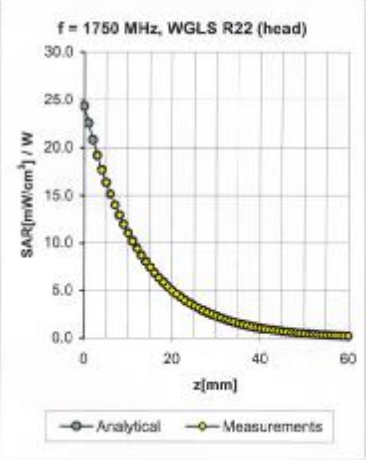




Uncertainty of Linearity Assessment: ± 0.6% (k=2)

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	5.63 ± 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.

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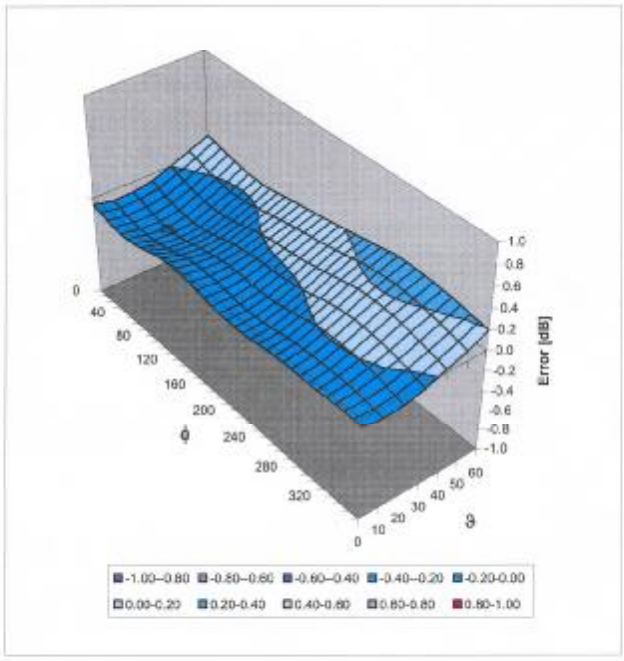
Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



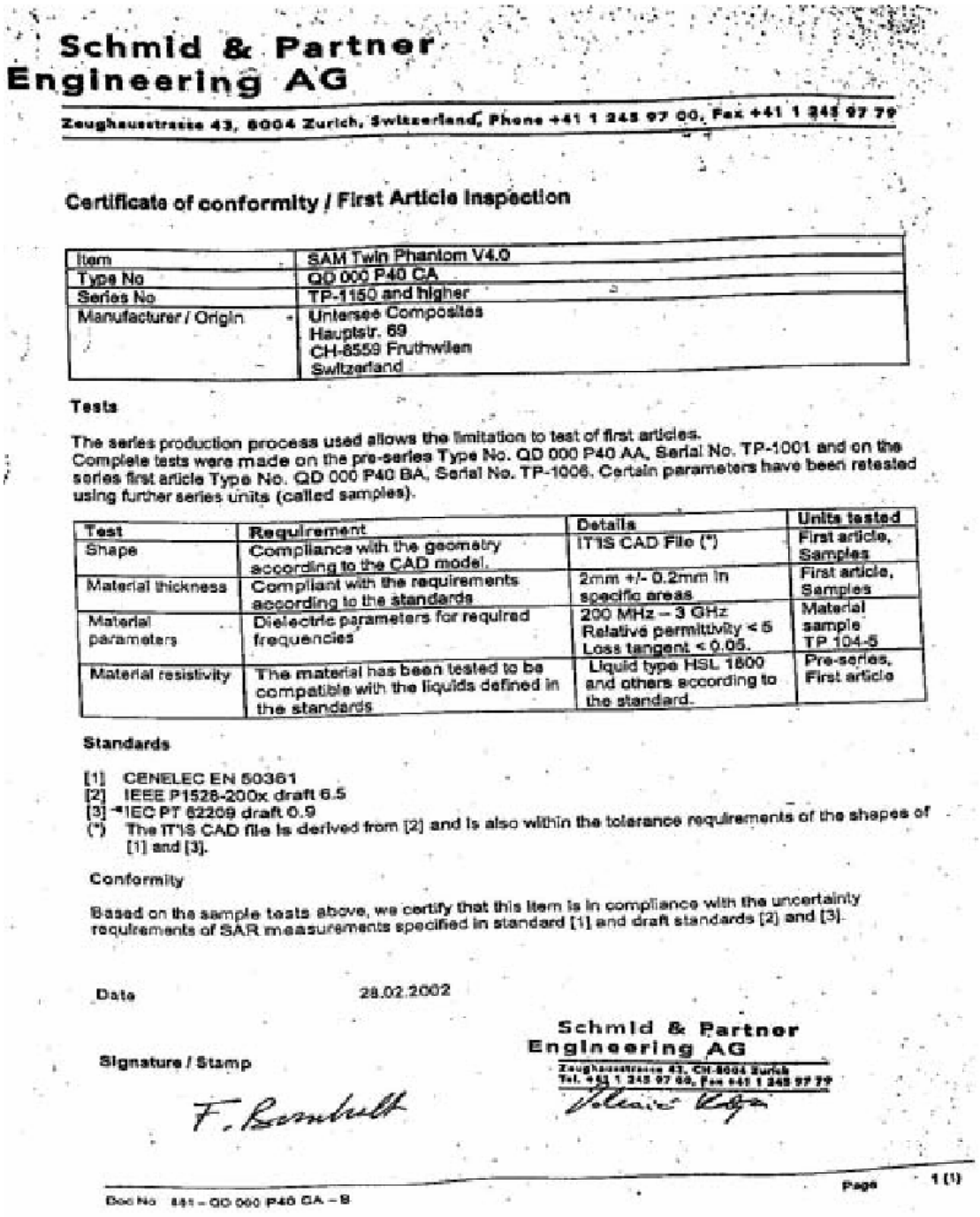
Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

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.	ITIS 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 ITIS 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