SAR TEST REPORT

Eequipment Under Test :	GSM 850&GSM1900MHz MOBILE PHONE
FCC ID :	RAD023
Model No. :	VLE5
Market Name :	OT-E161a
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 :	2005.11.16 – 2005.11.18
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 :	Will Ni	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-E161a	
Serial No.	IMEI:01069400000005-7	
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:

Ÿ 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).

Ÿ 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.

Ÿ 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.

Ÿ   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.
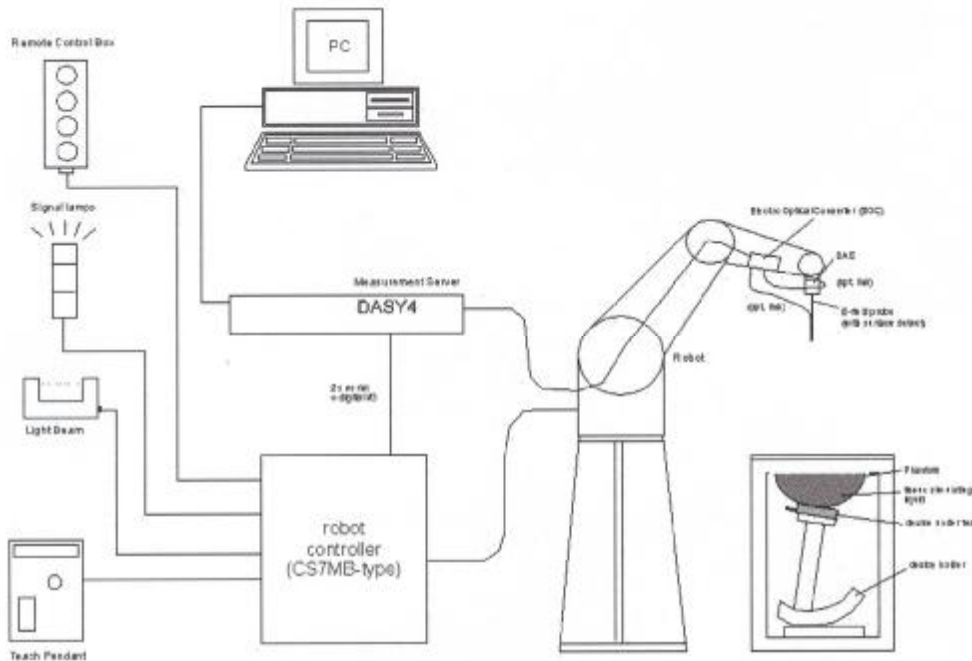
Fig. a SAR System Configuration

Ÿ   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.

Ÿ   A probe alignment unit which improves the (absolute) accuracy of the probe positioning.

Ÿ   A computer operating Windows 2000.

Ÿ   DASY4 software.

Ÿ   Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.

Ÿ   The SAM twin phantom enabling testing left-hand, right-hand and body-worn usage.

Ÿ   The device holder for handheld mobile phones.

Ÿ   Tissue simulating liquid mixed according to the given recipes.

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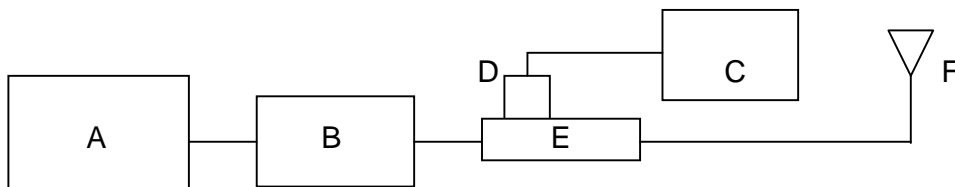
Fig. b the microwave circuit arrangement used for SAR system verification

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	2.62	1.75	2005-11-16
ES3DV3 SN3088	900 Body	2.69	1.74	2.83	1.80	2005-11-18
ES3DV3 SN3088	1900 Head	9.89	5.16	10.25	5.27	2005-11-16
ES3DV3 SN3088	1900 Body	9.81	5.22	10.31	5.36	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, 2005-11-16	41.63	0.892	22
		Recommended Limit	41.5±5%	0.90±5%	20-24
	Body	Measured, 2005-11-18	55.52	0.95	21.8
		Recommended Limit	55.2±5%	0.97±5%	20-24
1900	Head	Measured, 2005-11-16	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	33.6	0.438	-0.214	22	PASS
	LeftHandSide Touch, Mid Channel	33.6	0.605	-0.032	22	PASS
	LeftHandSide Touch, High Channel	33.4	1.03	-0.181	22	PASS
	LeftHandSide Tilt, Low Channel	33.6	0.113	-0.071	22	PASS
	LeftHandSide Tilt, Mid Channel	33.6	0.151	-0.075	22	PASS
	LeftHandSide Tilt, High Channel	33.4	0.257	-0.068	22	PASS
	RightHandSide Touch, Low Channel	33.6	0.472	-0.119	22	PASS
	RightHandSide Touch, Mid Channel	33.6	0.703	-0.116	22	PASS
	RightHandSide Touch, High Channel	33.4	1.22	-0.077	22	PASS
	RightHandSide Tilt, Low Channel	33.6	0.133	-0.049	22	PASS
	RightHandSide Tilt, Mid Channel	33.6	0.192	-0.038	22	PASS
	RightHandSide Tilt, High Channel	33.4	0.323	-0.088	22	PASS
	BodyWorn, Low Channel	33.6	0.201	0.108	22	PASS
	BodyWorn, Mid Channel	33.6	0.314	0.004	22	PASS
	BodyWorn, High Channel	33.4	0.551	-0.060	22	PASS
GSM 1900	LeftHandSide Touch, Low Channel	31.3	0.536	-1.70	22	PASS
	LeftHandSide Touch, Mid Channel	30.9	0.544	0.021	22	PASS
	LeftHandSide Touch, High Channel	30.5	0.383	-0.177	22	PASS
	LeftHandSide Tilt, Low Channel	31.3	0.147	-0.055	22	PASS
	LeftHandSide Tilt, Mid Channel	30.9	0.220	0.067	22	PASS
	LeftHandSide Tilt, High Channel	30.5	0.160	1.48	22	PASS
	RightHandSide Touch, Low Channel	31.3	0.570	-0.835	22	PASS

	RightHandSide Touch, Mid Channel	30.9	0.452	-0.400	22	PASS
	RightHandSide Touch, High Channel	30.5	0.322	-0.008	22	PASS
	RightHandSide Tilt, Low Channel	31.3	0.145	0.408	22	PASS
	RightHandSide Tilt, Mid Channel	30.9	0.153	0.016	22	PASS
	RightHandSide Tilt, High Channel	30.5	0.151	0.826	22	PASS
	BodyWorn, Low Channel	31.3	0.656	-0.144	22	PASS
	BodyWorn, Mid Channel	30.9	0.171	-0.010	22	PASS
	BodyWorn, High Channel	30.5	0.177	0.019	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	RightHandSide Touch, High Channel	33.4	1.22	-0.077	22	PASS
GSM 850	BodyWorn, High Channel	33.4	0.551	-0.060	22	PASS
GSM 1900	RightHandSide Touch, Low Channel	31.3	0.570	-0.835	22	PASS
GSM 1900	BodyWorn, Low Channel	31.3	0.656	-0.144	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	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: 2005-11-16 21:09:05

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Touch-GSM850-Low

DUT: GSM50101-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/m³
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 (71x131x1): Measurement grid: dx=15mm, dy=15mm
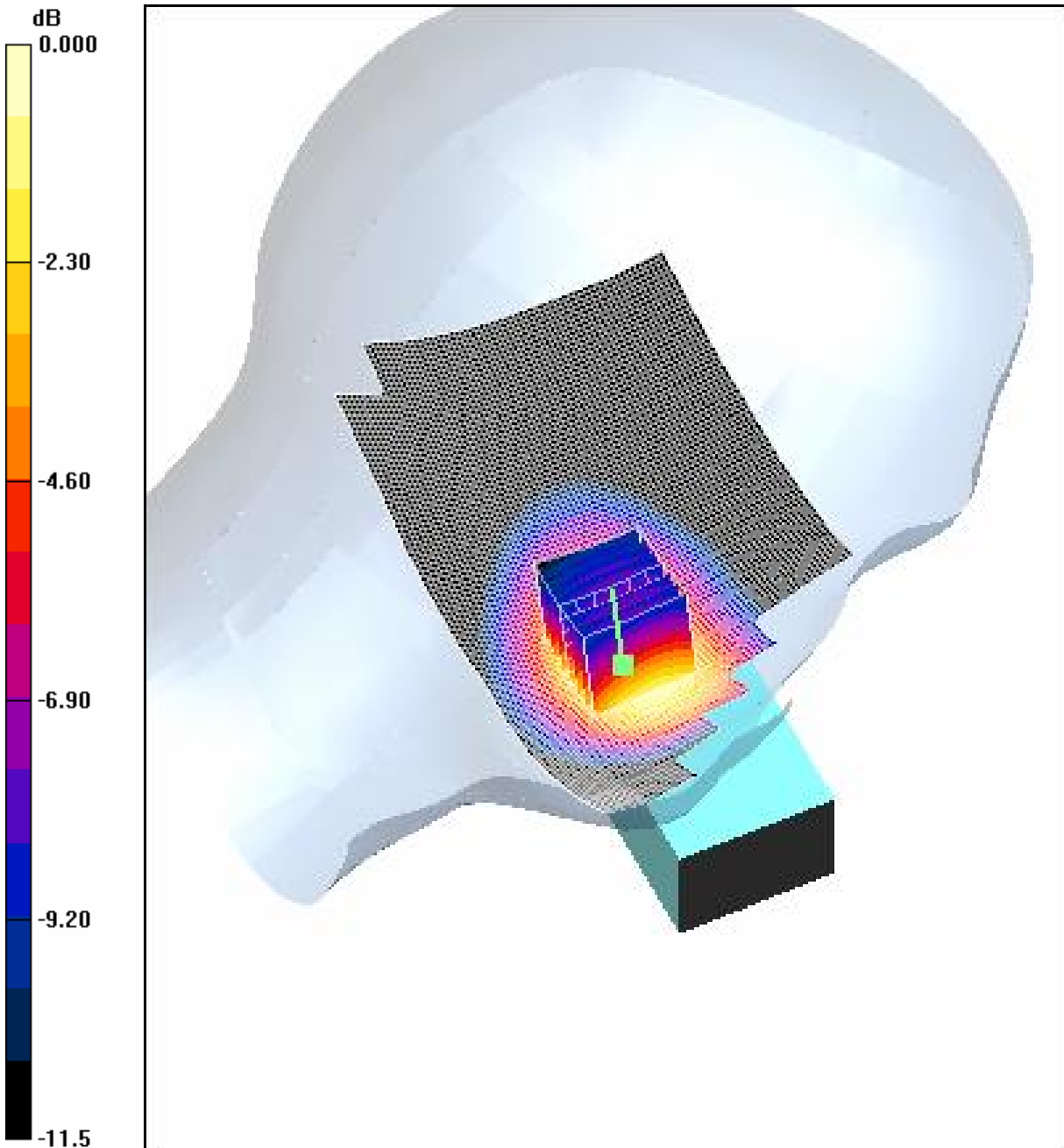Maximum value of SAR (interpolated) = 0.488 mW/g

Touch position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.47 V/m; Power Drift = -0.214 dB
Peak SAR (extrapolated) = 0.642 W/kg

SAR(1 g) = 0.438 mW/g; SAR(10 g) = 0.285 mW/g

Maximum value of SAR (measured) = 0.478 mW/g

0 dB = 0.478mW/g

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

Date/Time: 2005-11-16 21:48:57

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Touch-GSM850-Mid

DUT: GSM50101-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 (71x131x1): Measurement grid: dx=15mm, dy=15mm
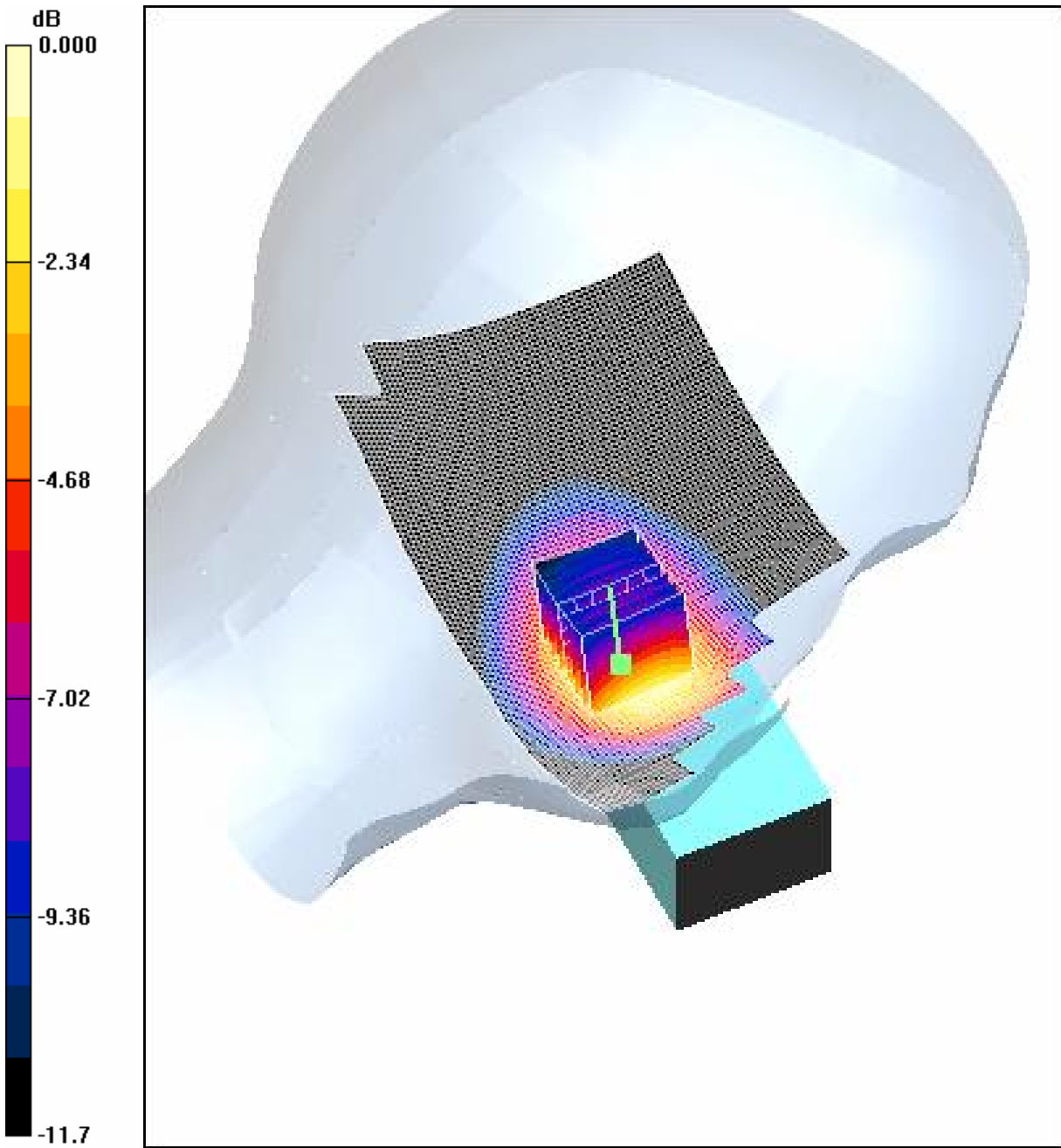Maximum value of SAR (interpolated) = 0.665 mW/g

Touch position - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.24 V/m; Power Drift = -0.032 dB

Peak SAR (extrapolated) = 0.903 W/kg

SAR(1 g) = 0.605 mW/g; SAR(10 g) = 0.389 mW/g

Maximum value of SAR (measured) = 0.658 mW/g

0 dB = 0.658mW/g

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

Date/Time: 2005-11-16 22:25:17

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Touch-GSM850-High

DUT: GSM50101-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 (71x131x1): Measurement grid: dx=15mm, dy=15mm
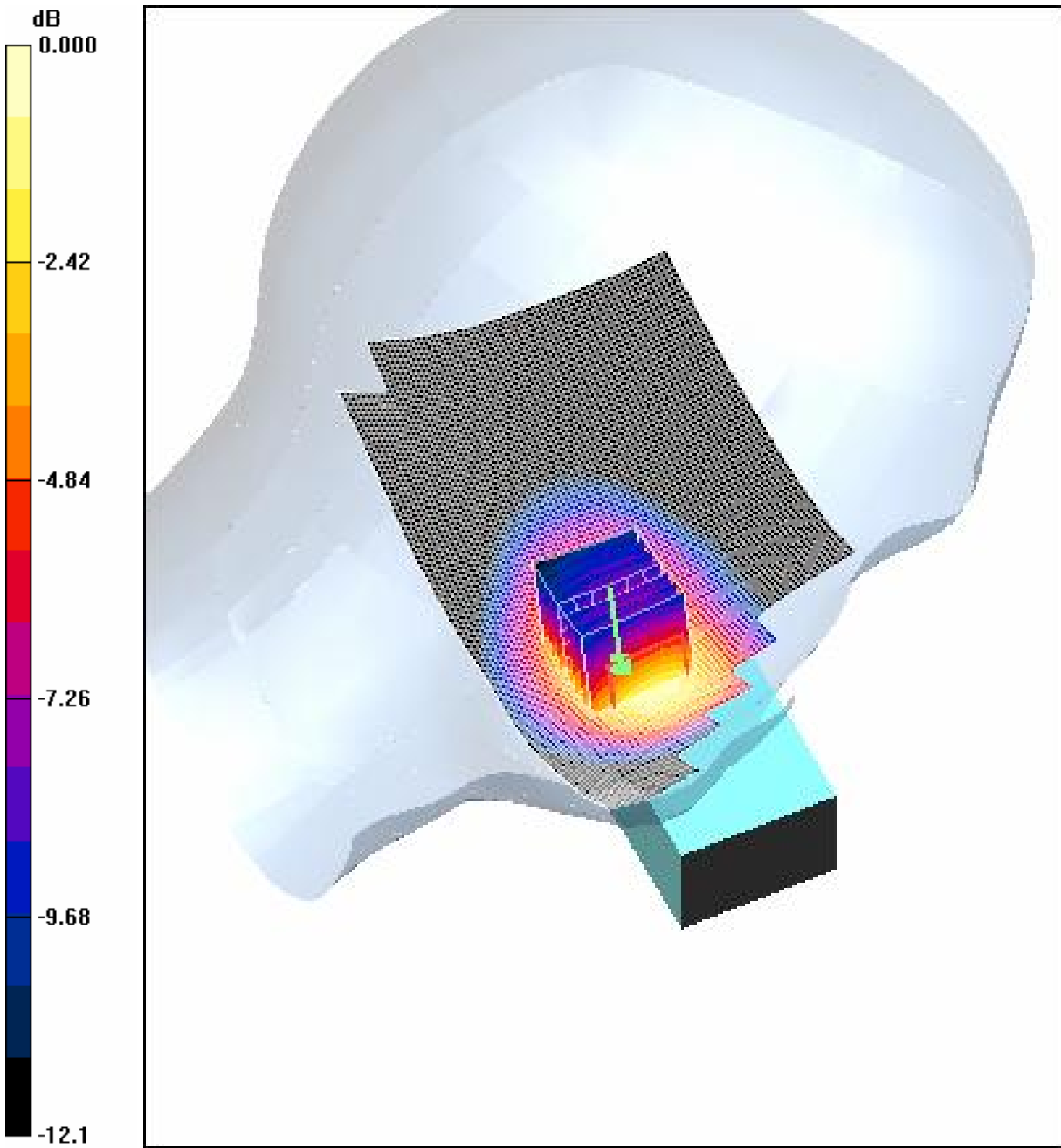Maximum value of SAR (interpolated) = 1.15 mW/g

Touch position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.99 V/m; Power Drift = -0.181 dB
Peak SAR (extrapolated) = 1.54 W/kg
SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.660 mW/g
Maximum value of SAR (measured) = 1.12 mW/g

0 dB = 1.12mW/g

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

Date/Time: 2005-11-16 23:06:46

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Tilt-GSM850-Low

DUT: GSM50101-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/m³

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 (71x131x1): Measurement grid: dx=15mm, dy=15mm
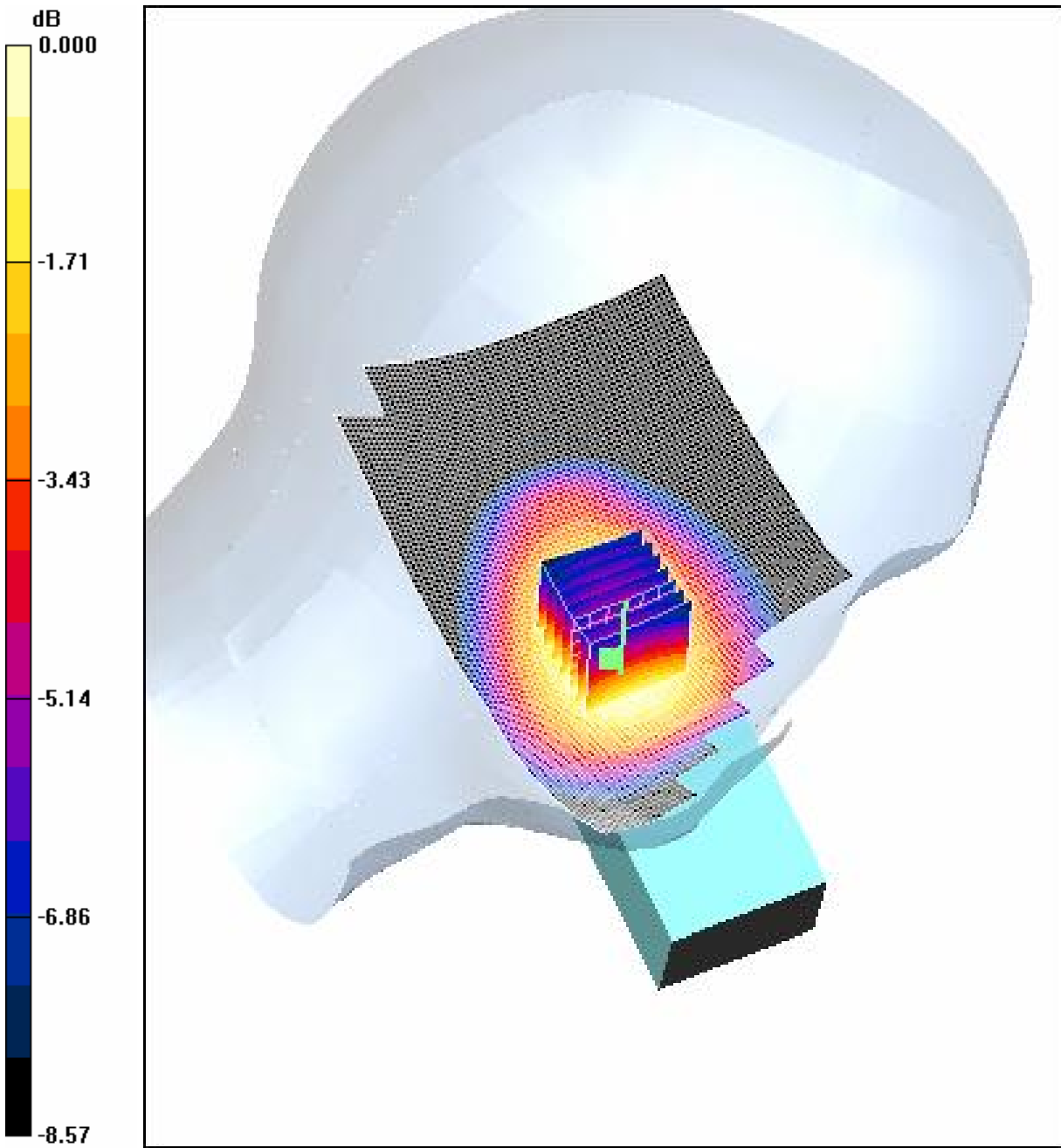Maximum value of SAR (interpolated) = 0.120 mW/g

Tilt position - Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.49 V/m; Power Drift = -0.071 dB
Peak SAR (extrapolated) = 0.143 W/kg
SAR(1 g) = 0.113 mW/g; SAR(10 g) = 0.083 mW/g
Maximum value of SAR (measured) = 0.119 mW/g

0 dB = 0.119mW/g

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

Date/Time: 2005-11-16 23:38:43

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Tilt-GSM850-Mid

DUT: GSM50101-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 (71x131x1): Measurement grid: dx=15mm, dy=15mm
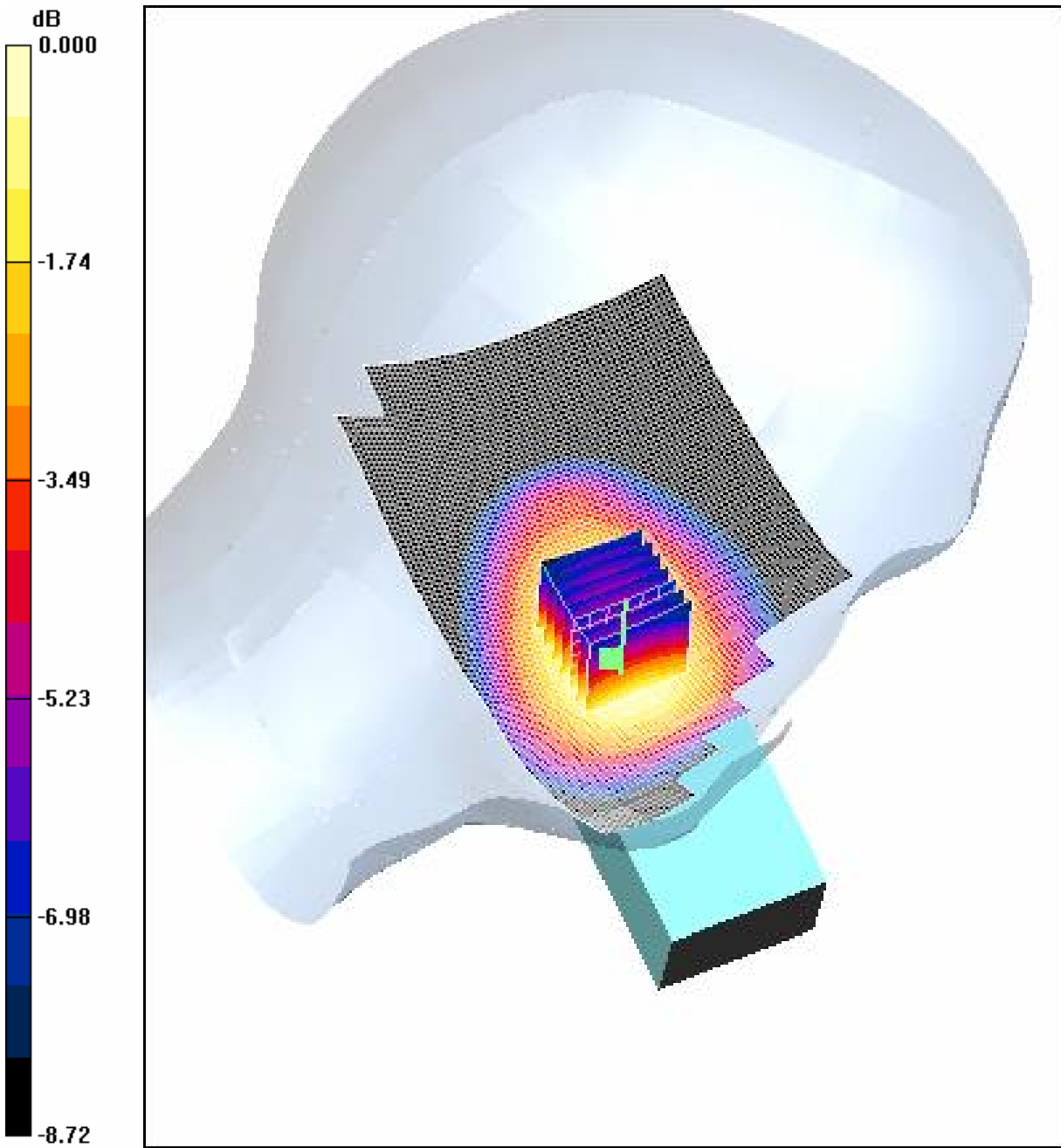Maximum value of SAR (interpolated) = 0.160 mW/g

Tilt position - Middle/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.44 V/m; Power Drift = -0.075 dB
Peak SAR (extrapolated) = 0.194 W/kg
SAR(1 g) = 0.151 mW/g; SAR(10 g) = 0.111 mW/g
Maximum value of SAR (measured) = 0.160 mW/g

0 dB = 0.160mW/g

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

Date/Time: 2005-11-17 0:08:07

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Tilt-GSM850-High

DUT: GSM50101-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 (71x131x1): Measurement grid: dx=15mm, dy=15mm
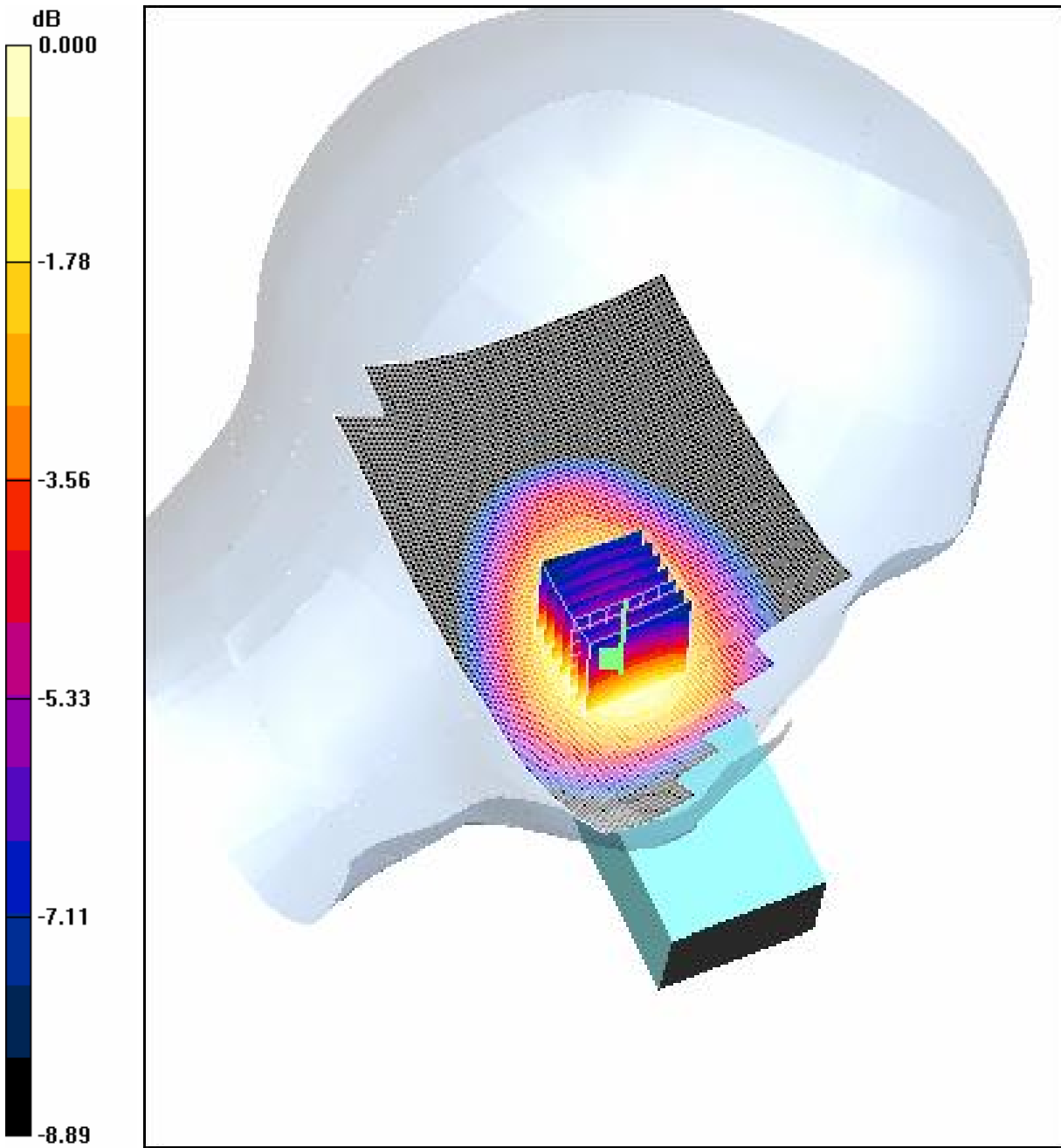Maximum value of SAR (interpolated) = 0.272 mW/g

Tilt position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.58 V/m; Power Drift = -0.068 dB
Peak SAR (extrapolated) = 0.333 W/kg
SAR(1 g) = 0.257 mW/g; SAR(10 g) = 0.188 mW/g
Maximum value of SAR (measured) = 0.272 mW/g

0 dB = 0.272mW/g

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

Date/Time: 2005-11-17 18:59:42

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Touch-GSM850-Low

DUT: GSM50101-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
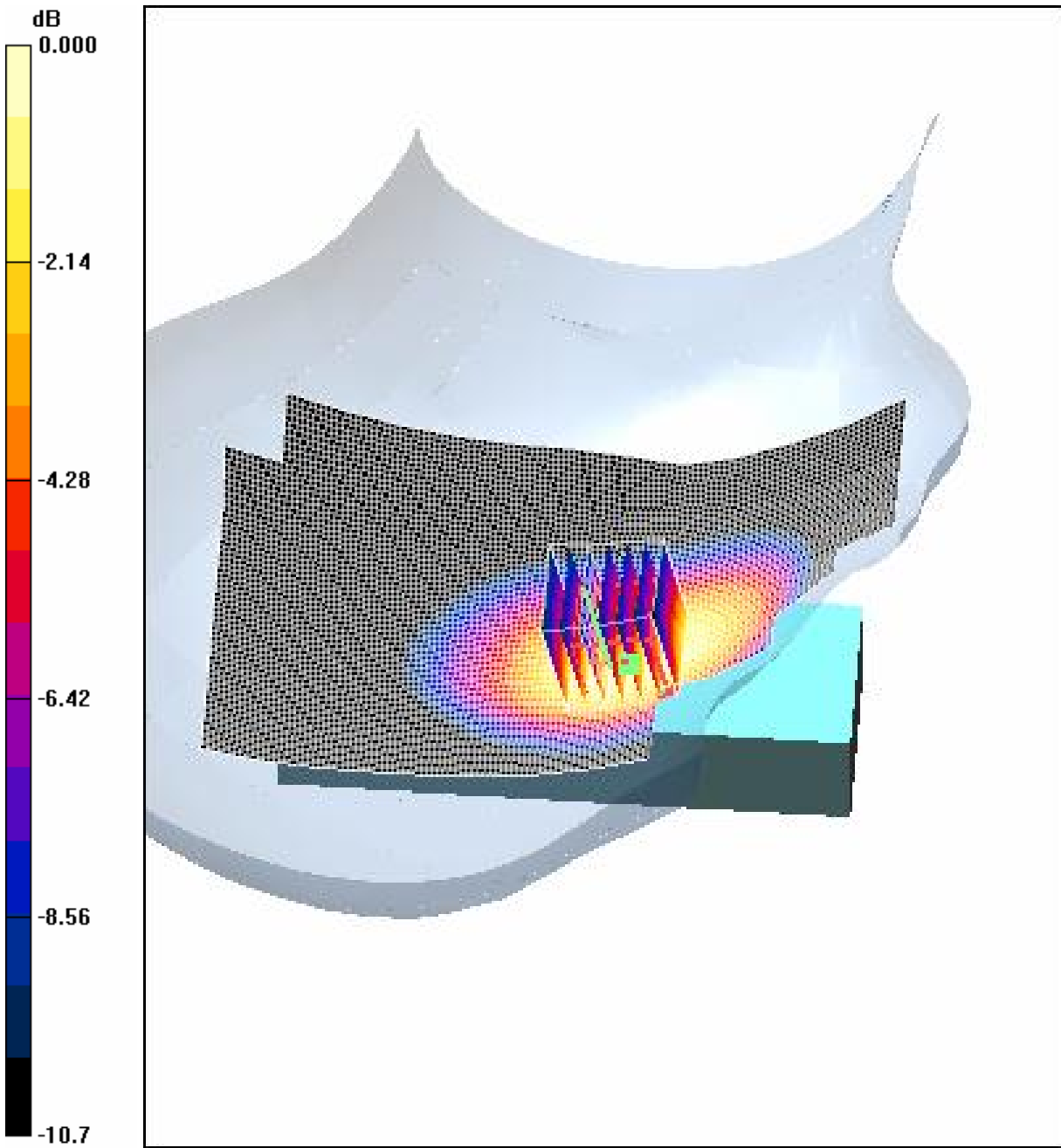Maximum value of SAR (interpolated) = 0.495 mW/g

Touch position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.46 V/m; Power Drift = -0.119 dB
Peak SAR (extrapolated) = 0.688 W/kg
SAR(1 g) = 0.472 mW/g; SAR(10 g) = 0.311 mW/g
Maximum value of SAR (measured) = 0.508 mW/g

0 dB = 0.508mW/g

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

Date/Time: 2005-11-17 19:26:27

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Touch-GSM850-Mid

DUT: GSM50101-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

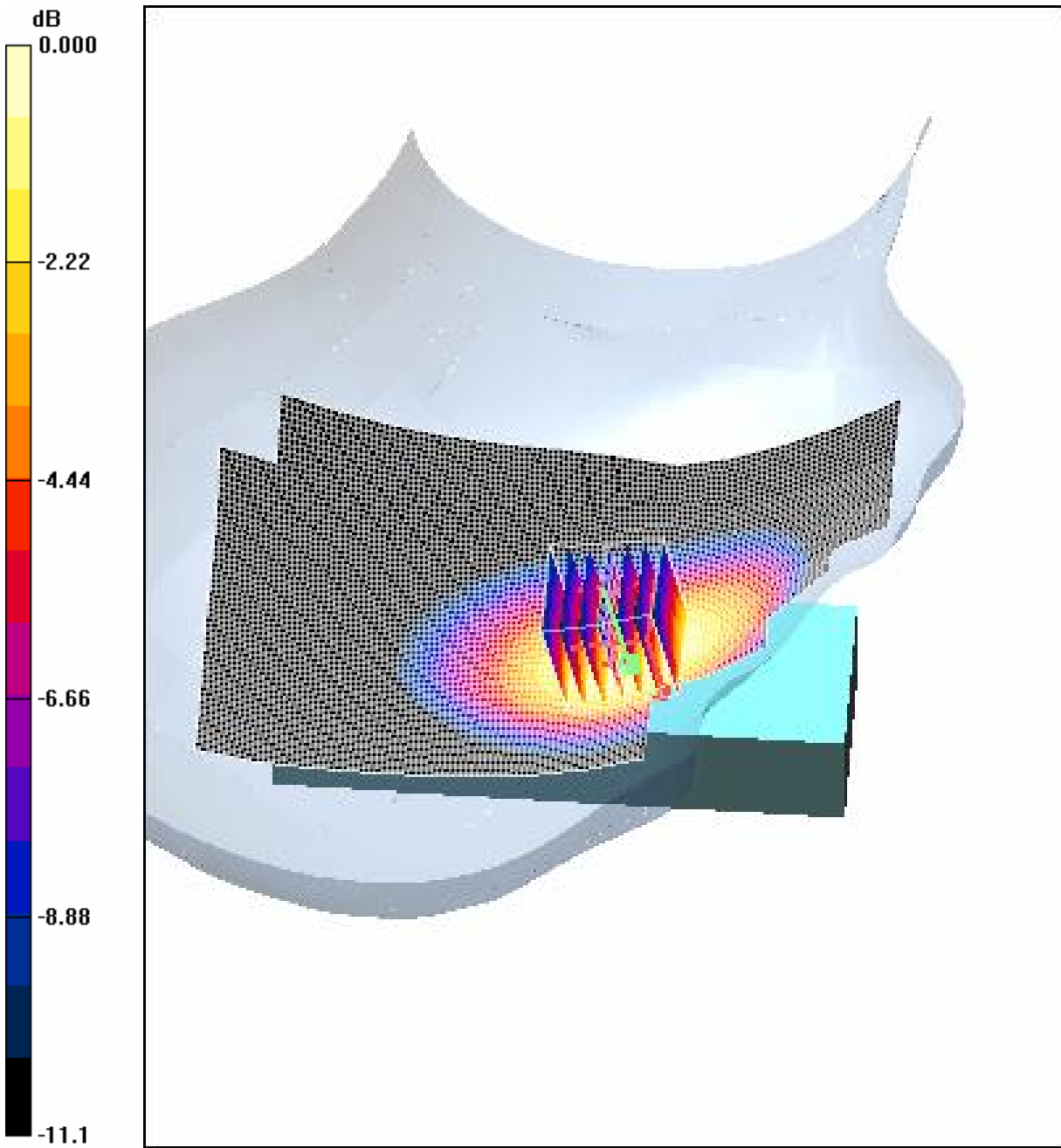Maximum value of SAR (interpolated) = 0.739 mW/g

Touch position - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.73 V/m; Power Drift = -0.116 dB

Peak SAR (extrapolated) = 1.06 W/kg

SAR(1 g) = 0.703 mW/g; SAR(10 g) = 0.460 mW/g

Maximum value of SAR (measured) = 0.763 mW/g

0 dB = 0.763mW/g

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

Date/Time: 2005-11-17 19:54:53

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Touch-GSM850-High

DUT: GSM50101-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

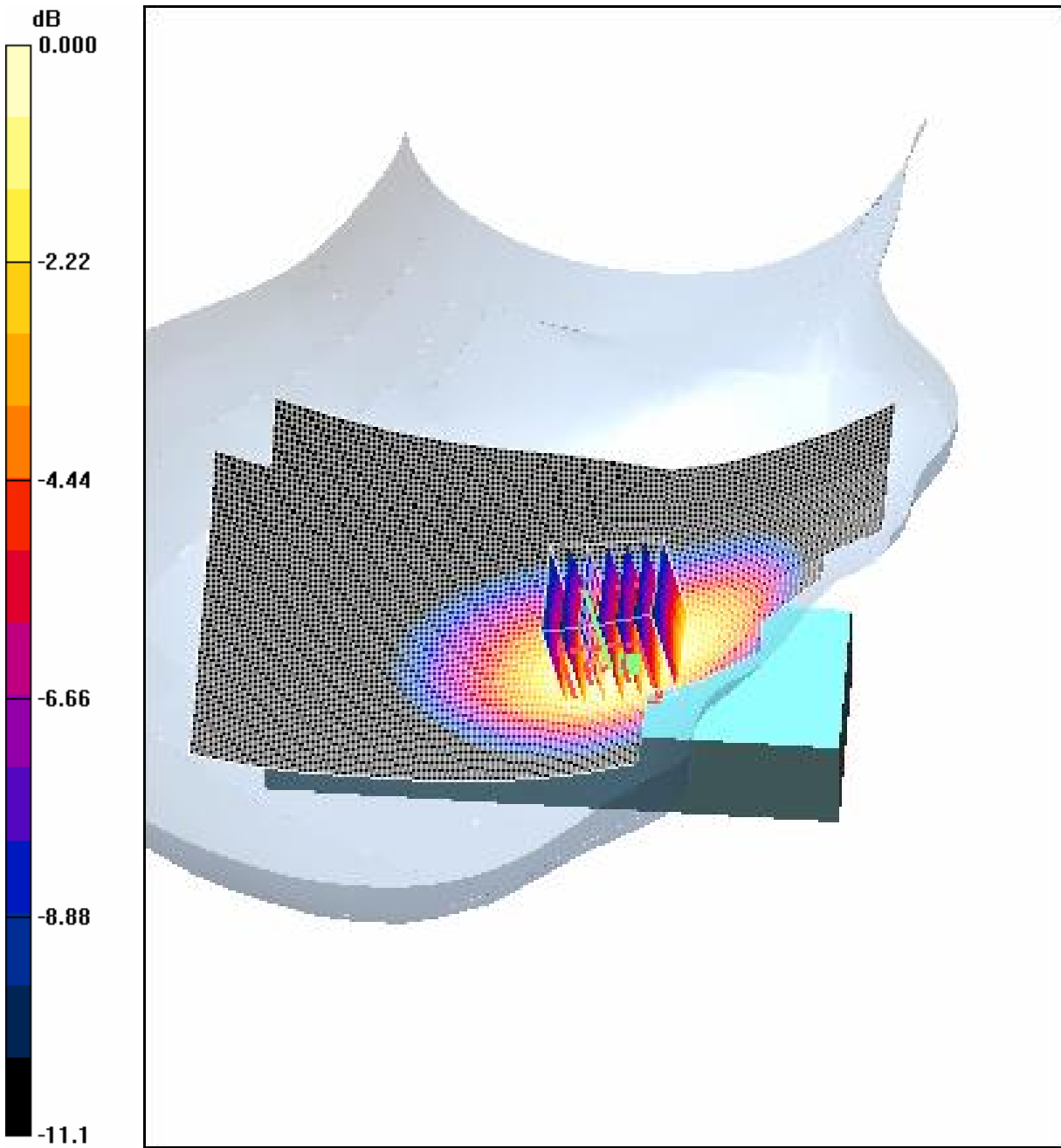Maximum value of SAR (interpolated) = 1.28 mW/g

Touch position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.89 V/m; Power Drift = -0.077 dB

Peak SAR (extrapolated) = 1.84 W/kg

SAR(1 g) = 1.22 mW/g; SAR(10 g) = 0.794 mW/g

Maximum value of SAR (measured) = 1.31 mW/g

0 dB = 1.31mW/g

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

Date/Time: 2005-11-17 20:37:50

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Tilt-GSM850-Low

DUT: GSM50101-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 (71x131x1): Measurement grid: dx=15mm, dy=15mm

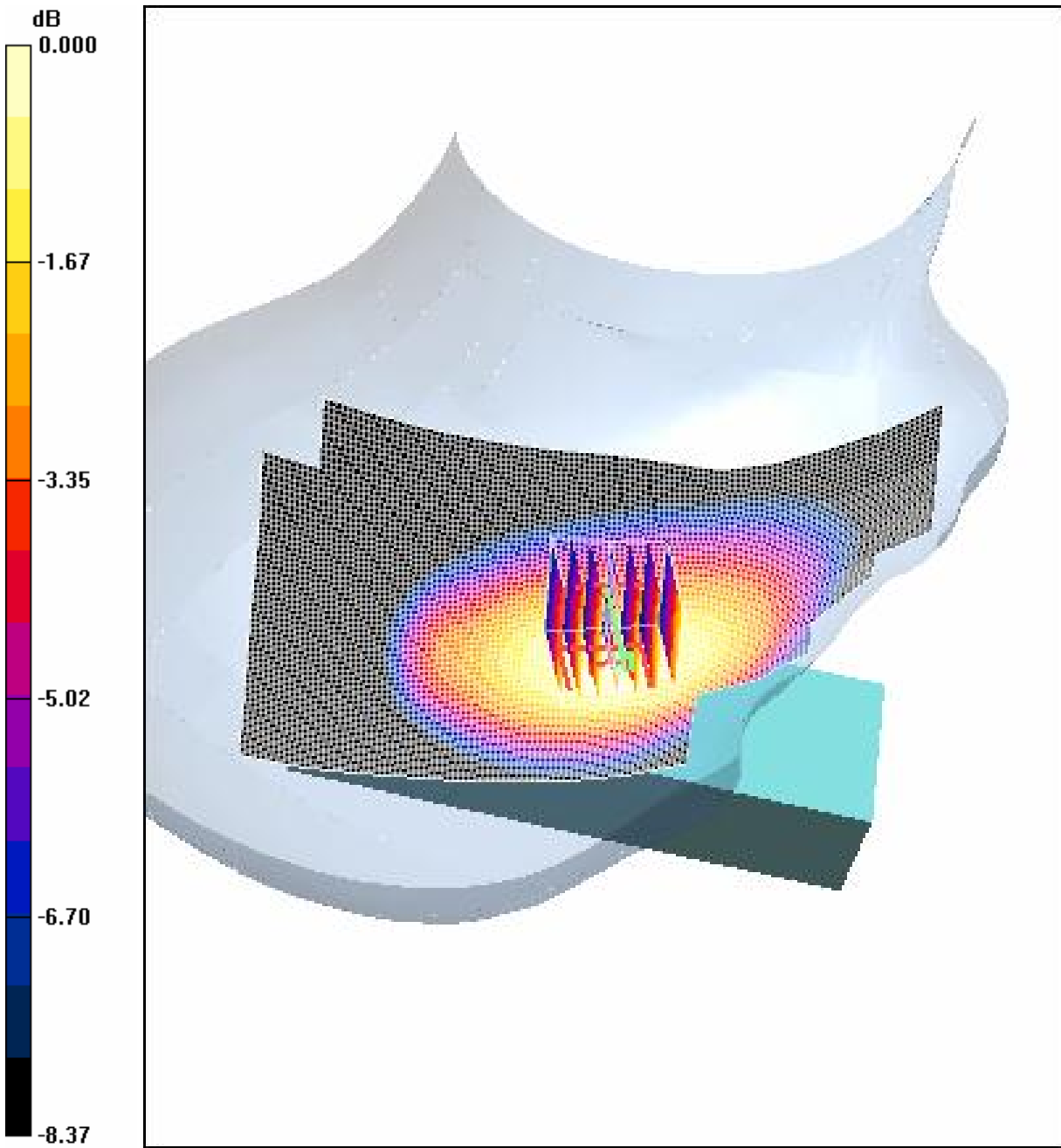Maximum value of SAR (interpolated) = 0.142 mW/g

Tilt position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.15 V/m; Power Drift = -0.049 dB

Peak SAR (extrapolated) = 0.170 W/kg

SAR(1 g) = 0.133 mW/g; SAR(10 g) = 0.098 mW/g

Maximum value of SAR (measured) = 0.141 mW/g

0 dB = 0.141mW/g

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

Date/Time: 2005-11-17 21:13:56

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Tilt-GSM850-Mid

DUT: GSM50101-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 (71x131x1): Measurement grid: dx=15mm, dy=15mm

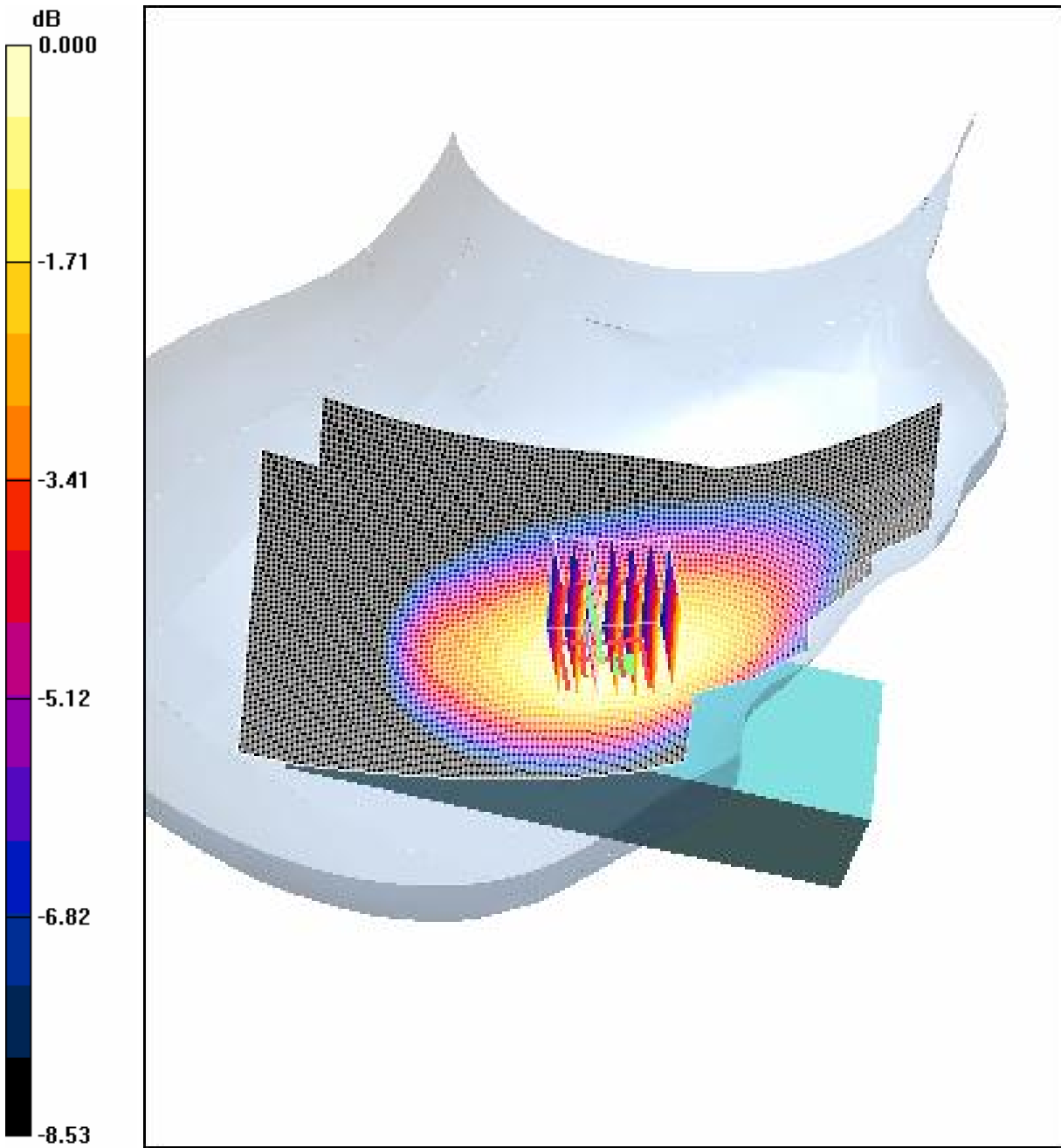Maximum value of SAR (interpolated) = 0.204 mW/g

Tilt position - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.64 V/m; Power Drift = -0.038 dB

Peak SAR (extrapolated) = 0.252 W/kg

SAR(1 g) = 0.192 mW/g; SAR(10 g) = 0.141 mW/g

Maximum value of SAR (measured) = 0.204 mW/g

0 dB = 0.204mW/g

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

Date/Time: 2005-11-17 21:47:22

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Tilt-GSM850-High

DUT: GSM50101-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

Tilt position - High/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm

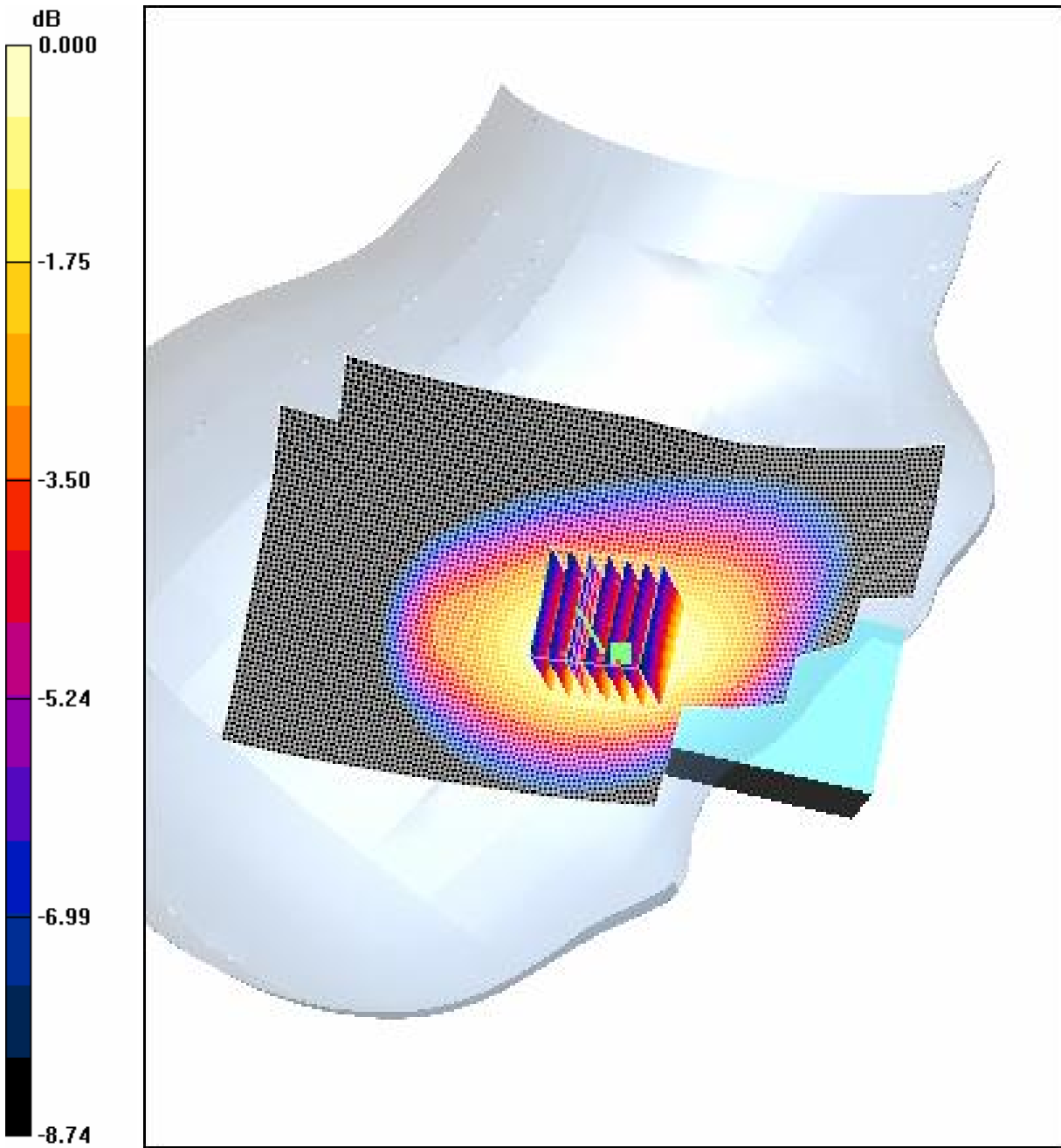Maximum value of SAR (interpolated) = 0.344 mW/g

Tilt position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 12.4 V/m; Power Drift = -0.088 dB

Peak SAR (extrapolated) = 0.419 W/kg

SAR(1 g) = 0.323 mW/g; SAR(10 g) = 0.236 mW/g

Maximum value of SAR (measured) = 0.345 mW/g

0 dB = 0.345mW/g

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

Date/Time: 2005-11-18 18:56:56

Test Laboratory: SGS-GSM

FCC-OET65-Body-Worn-GSM850-Low

DUT: GSM50101-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

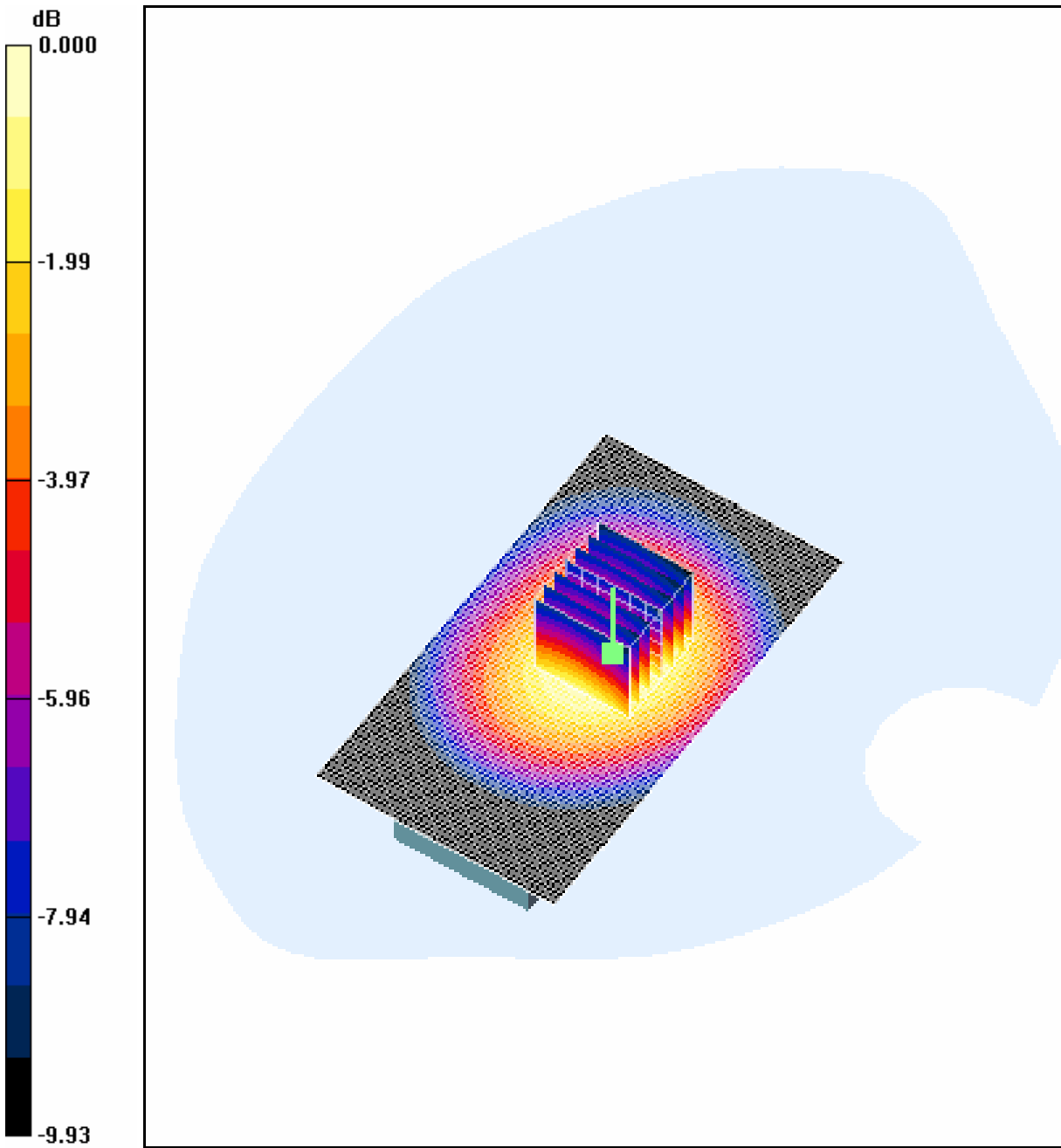Maximum value of SAR (interpolated) = 0.215 mW/g

Body Worn - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 12.1 V/m; Power Drift = 0.108 dB

Peak SAR (extrapolated) = 0.281 W/kg

SAR(1 g) = 0.201 mW/g; SAR(10 g) = 0.141 mW/g

Maximum value of SAR (measured) = 0.214 mW/g

0 dB = 0.214mW/g

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

Date/Time: 2005-11-18 19:33:49

Test Laboratory: SGS-GSM

FCC-OET65-Body-Worn-GSM850-Mid

DUT: GSM50101-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
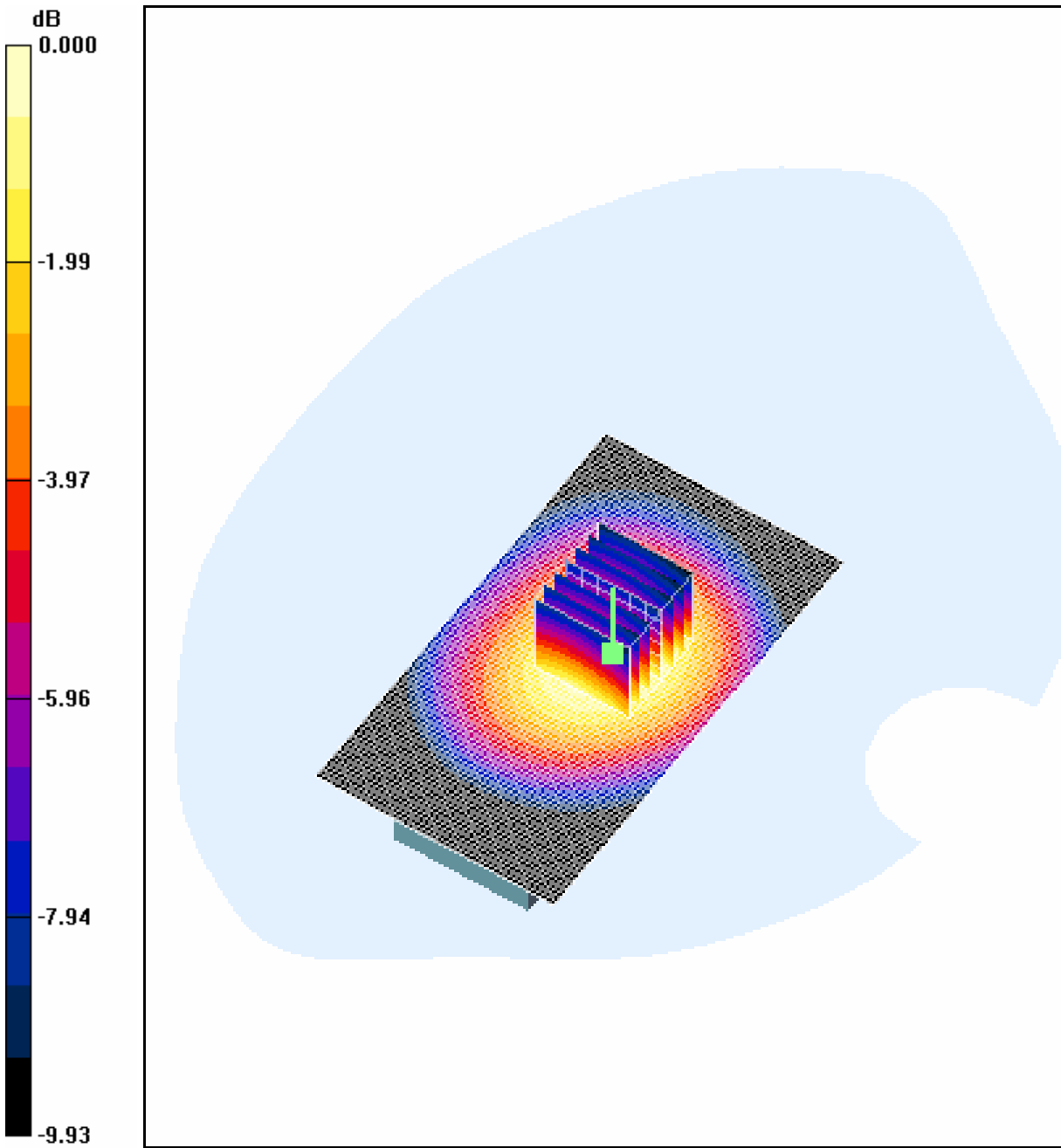
Maximum value of SAR (interpolated) = 0.339 mW/g

Body Worn - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 15.1 V/m; Power Drift = 0.004 dB

Peak SAR (extrapolated) = 0.433 W/kg

SAR(1 g) = 0.314 mW/g; SAR(10 g) = 0.219 mW/g

Maximum value of SAR (measured) = 0.333 mW/g

0 dB = 0.333mW/g

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

Date/Time: 2005-11-18 20:09:22

Test Laboratory: SGS-GSM

FCC-OET65-Body-Worn-GSM850-High

DUT: GSM50101-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

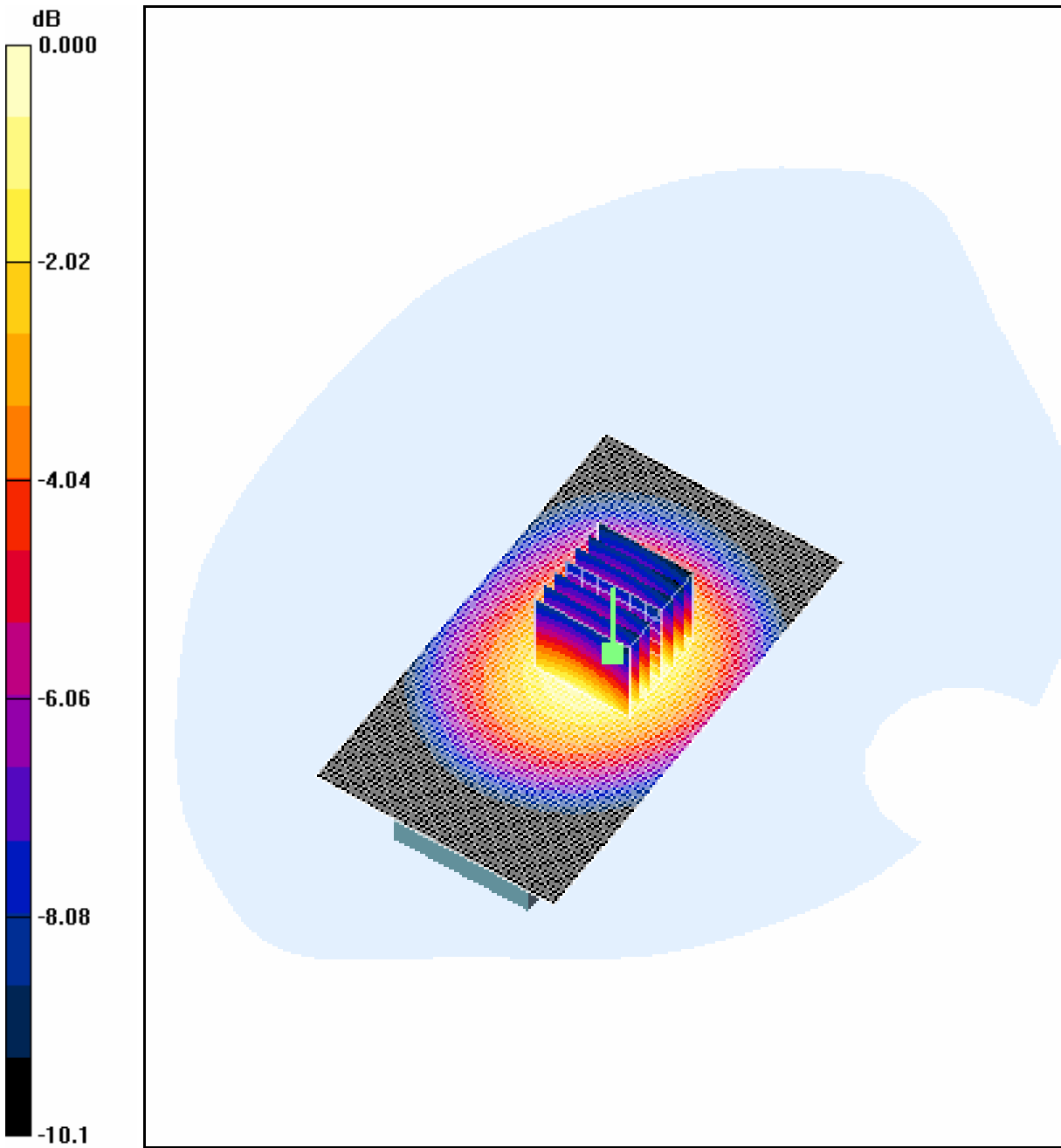Maximum value of SAR (interpolated) = 0.589 mW/g

Body Worn - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.7 V/m; Power Drift = -0.060 dB

Peak SAR (extrapolated) = 0.771 W/kg

SAR(1 g) = 0.551 mW/g; SAR(10 g) = 0.383 mW/g

Maximum value of SAR (measured) = 0.588 mW/g

0 dB = 0.588mW/g

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

Date/Time: 2005-11-16 15:17:25

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Touch-GSM1900-Low

DUT: GSM50101-Head; Type: Head; Serial: 20051115

Communication System: PCS1900-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(4.53, 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

Touch position - Low/Area Scan (81x141x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.594 mW/g

Touch position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.02 V/m; Power Drift = -1.70 dB

Peak SAR (extrapolated) = 0.960 W/kg

SAR(1 g) = 0.536 mW/g; SAR(10 g) = 0.265 mW/g

Maximum value of SAR (measured) = 0.605 mW/g
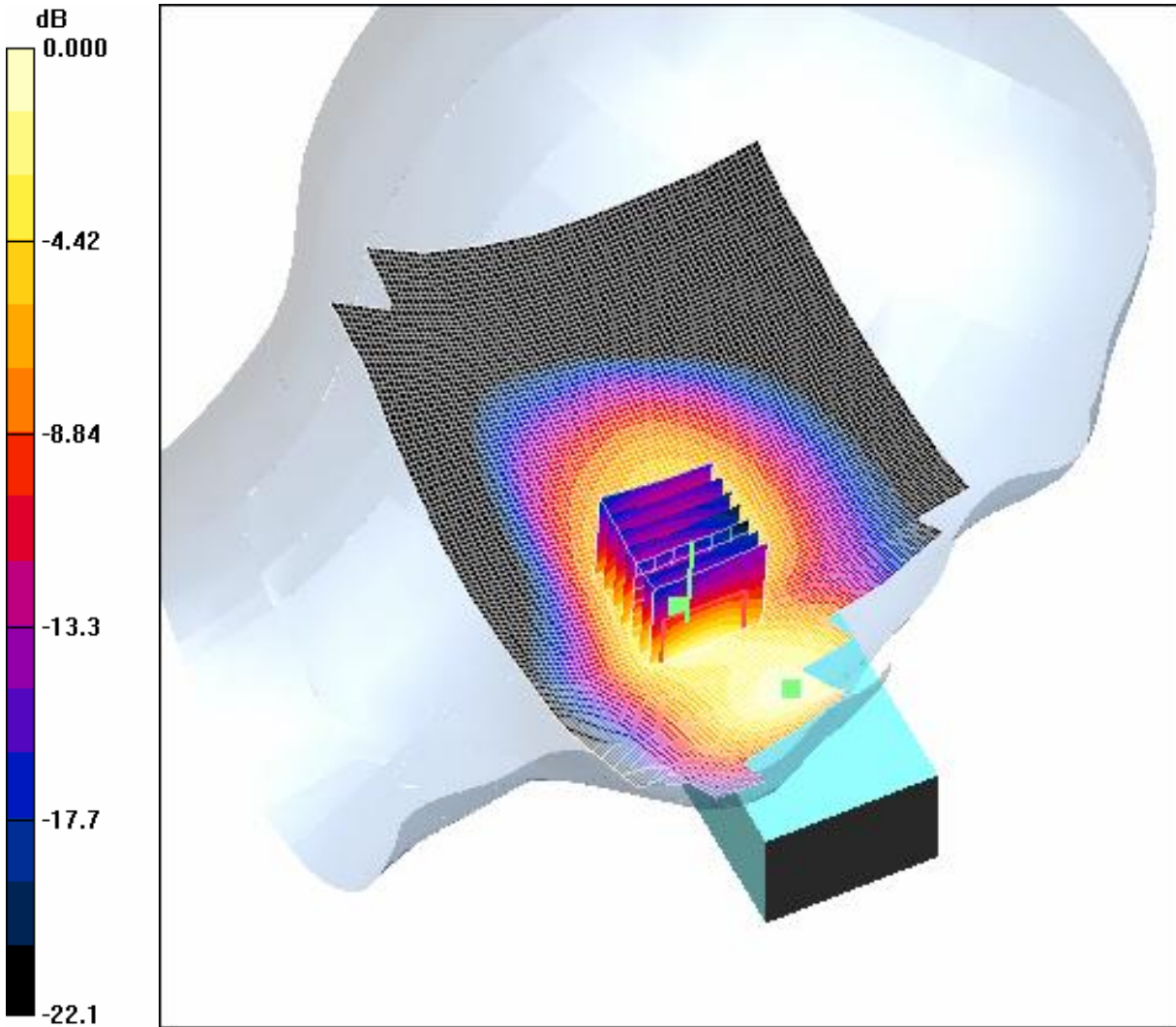
0 dB = 0.605mW/g

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

Date/Time: 2005-11-16 16:06:14

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Touch-GSM1900-Mid

DUT: GSM50101-Head; Type: Head; Serial: 20051115

Communication System: PCS1900-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(4.53, 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

Touch position - Middle/Area Scan (81x141x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.579 mW/g

Touch position - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.64 V/m; Power Drift = 0.021 dB

Peak SAR (extrapolated) = 0.979 W/kg

SAR(1 g) = 0.544 mW/g; SAR(10 g) = 0.271 mW/g

Maximum value of SAR (measured) = 0.615 mW/g
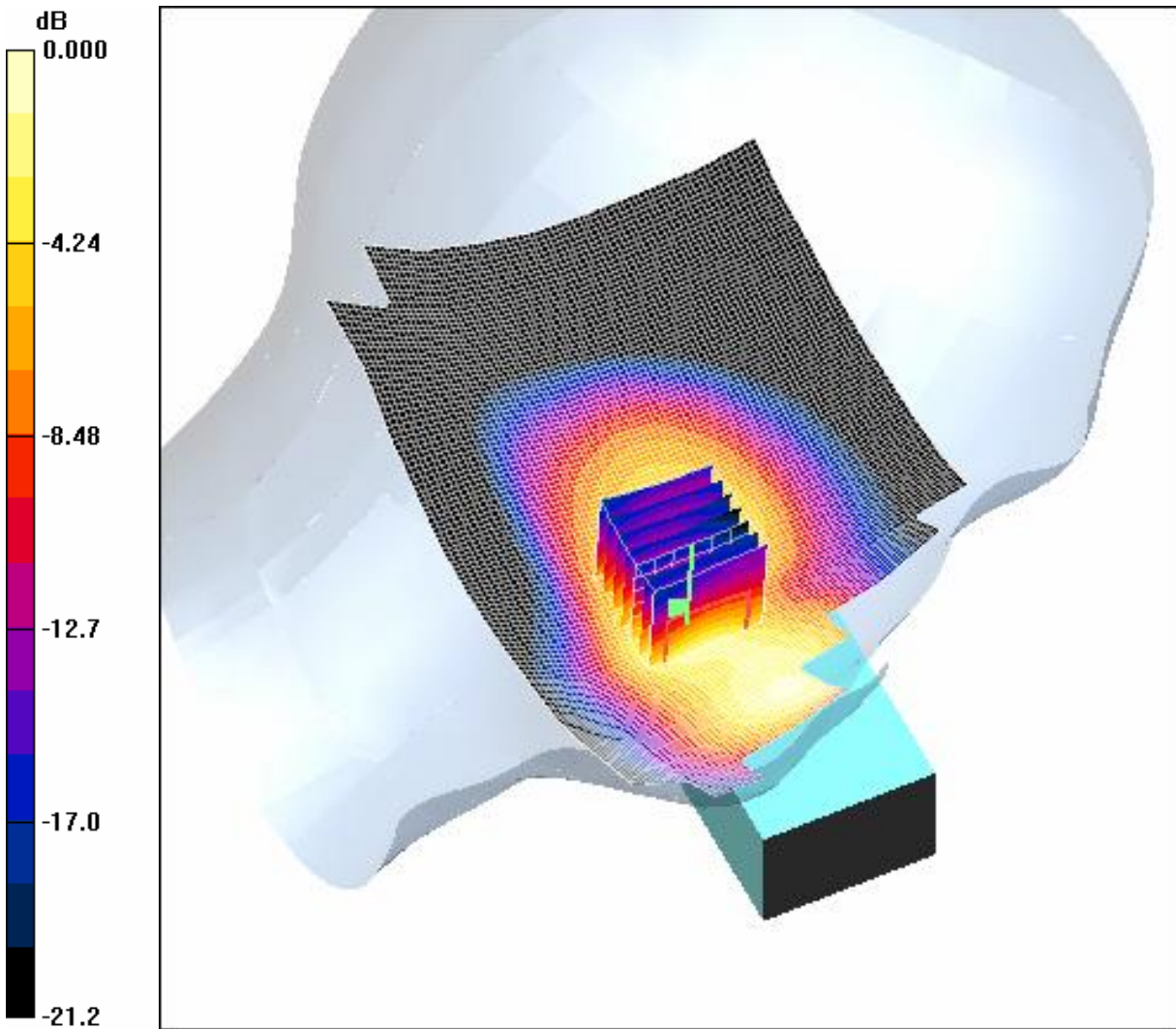
0 dB = 0.615mW/g

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

Date/Time: 2005-11-16 16:53:07

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Touch-GSM1900-High

DUT: GSM50101-Head; Type: Head; Serial: 20051115

Communication System: PCS1900-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(4.53, 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

Touch position - High/Area Scan (81x141x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.427 mW/g

Touch position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.21 V/m; Power Drift = -0.177 dB

Peak SAR (extrapolated) = 0.553 W/kg

SAR(1 g) = 0.383 mW/g; SAR(10 g) = 0.234 mW/g

Maximum value of SAR (measured) = 0.420 mW/g
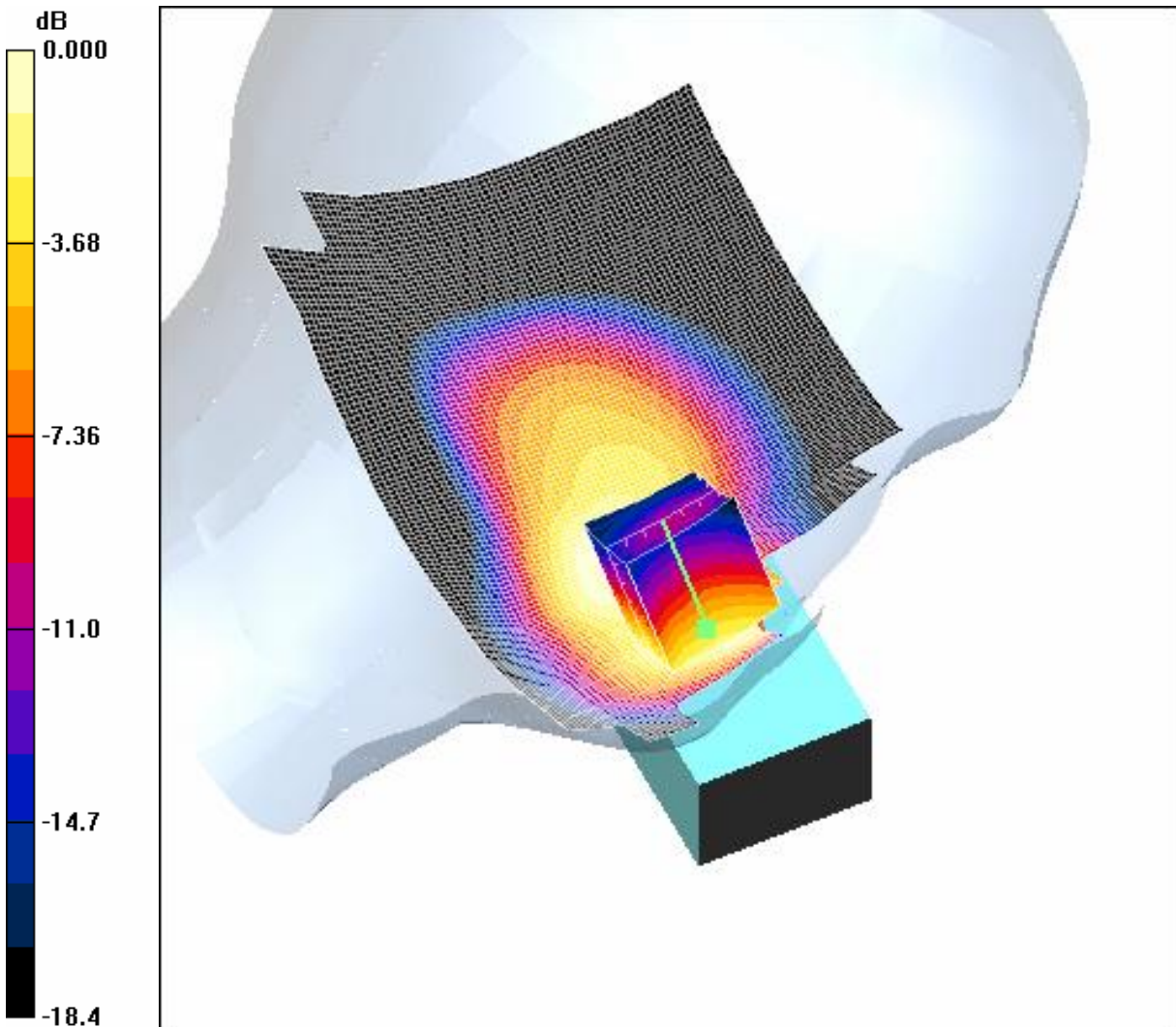
0 dB = 0.420mW/g

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

Date/Time: 2005-11-16 19:33:44

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Tilt-GSM1900-Low

DUT: GSM50101-Head; Type: Head; Serial: 20051115

Communication System: PCS1900-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(4.53, 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

Tilt position - Low/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm

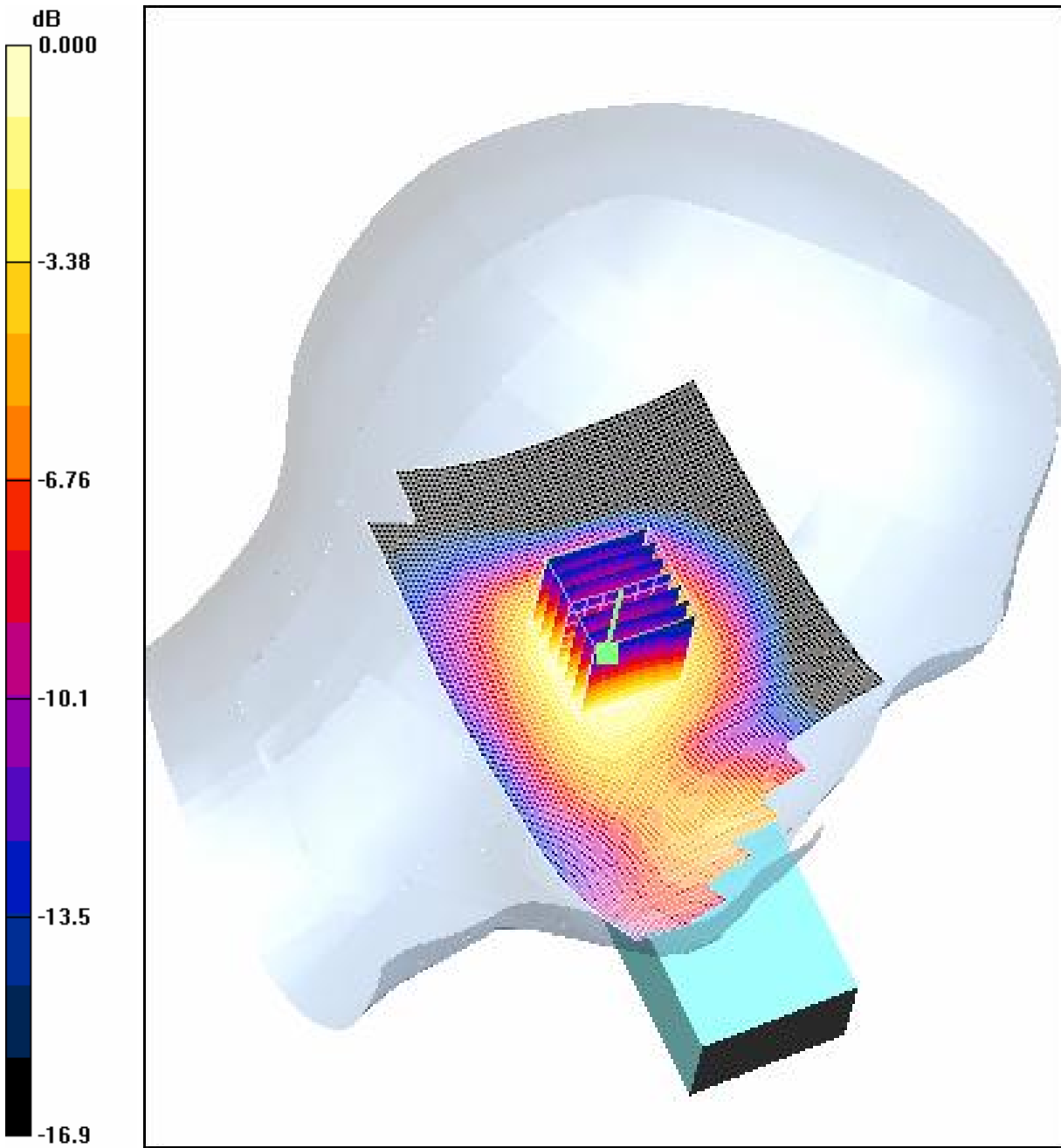Maximum value of SAR (interpolated) = 0.167 mW/g

Tilt position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.38 V/m; Power Drift = -0.055 dB

Peak SAR (extrapolated) = 0.220 W/kg

SAR(1 g) = 0.147 mW/g; SAR(10 g) = 0.092 mW/g

Maximum value of SAR (measured) = 0.159 mW/g

0 dB = 0.159mW/g

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

Date/Time: 2005-11-16 18:20:47

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Tilt-GSM1900-Mid

DUT: GSM50101-Head; Type: Head; Serial: 20051115

Communication System: PCS1900-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(4.53, 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

Tilt position - Middle/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm

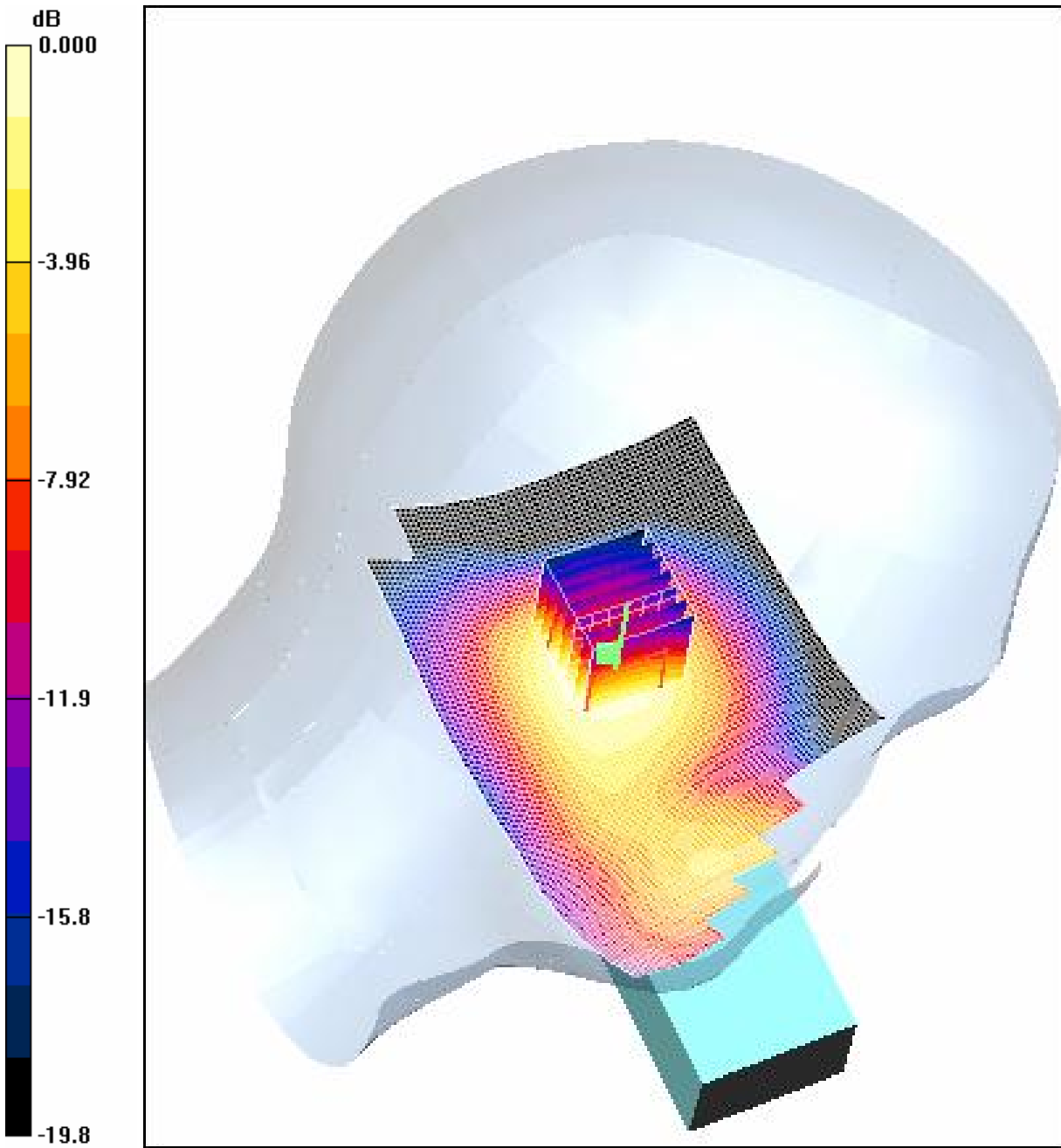Maximum value of SAR (interpolated) = 0.247 mW/g

Tilt position - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.1 V/m; Power Drift = 0.067 dB

Peak SAR (extrapolated) = 0.334 W/kg

SAR(1 g) = 0.220 mW/g; SAR(10 g) = 0.131 mW/g

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

0 dB = 0.242mW/g

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

Date/Time: 2005-11-16 17:41:06

Test Laboratory: SGS-GSM

FCC-OET65-LeftHandSide-Tilt-GSM1900-High

DUT: GSM50101-Head; Type: Head; Serial: 20051115

Communication System: PCS1900-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(4.53, 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

Tilt position - High/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm

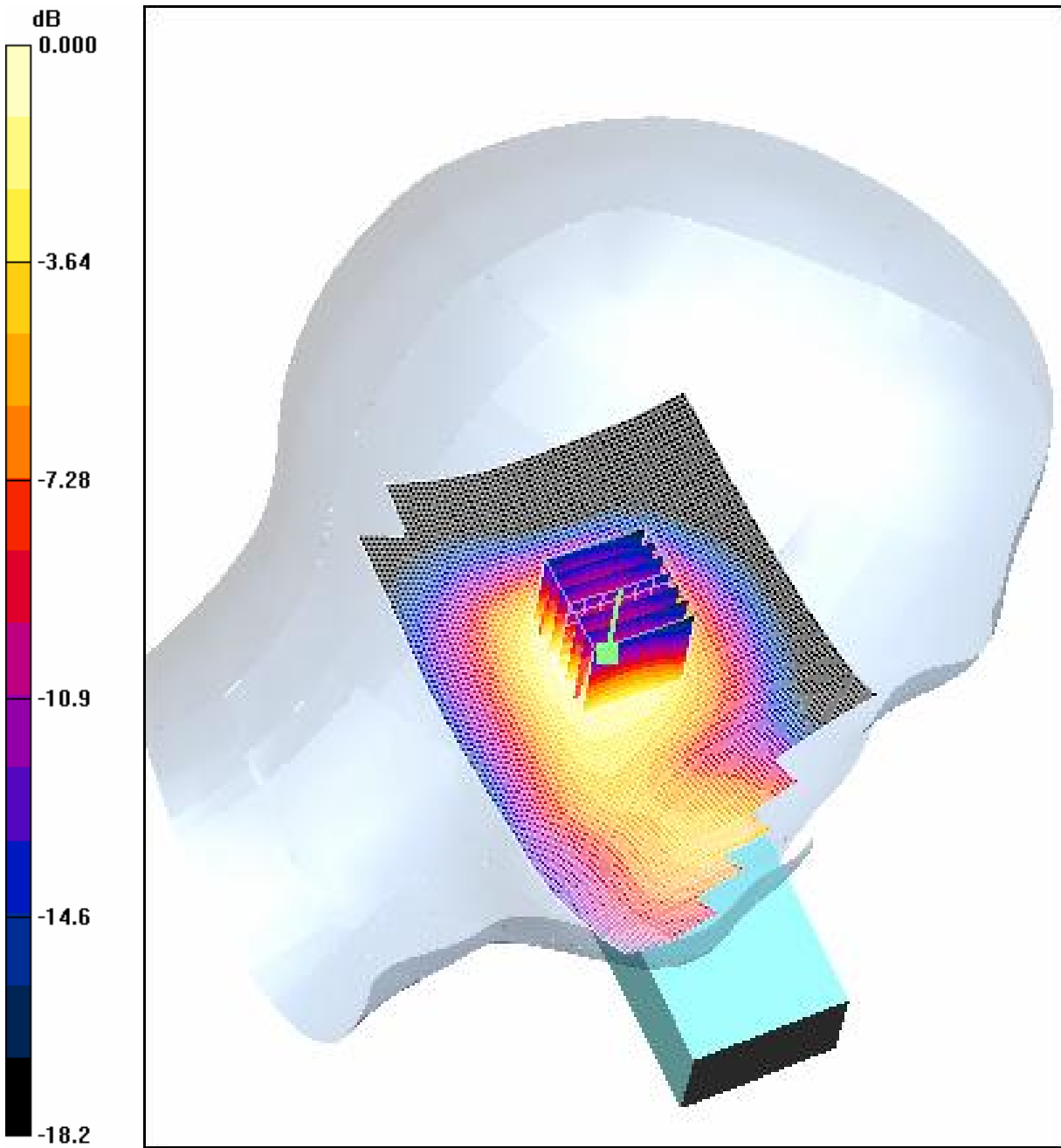Maximum value of SAR (interpolated) = 0.177 mW/g

Tilt position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.98 V/m; Power Drift = 1.48 dB

Peak SAR (extrapolated) = 0.244 W/kg

SAR(1 g) = 0.160 mW/g; SAR(10 g) = 0.096 mW/g

Maximum value of SAR (measured) = 0.173 mW/g

0 dB = 0.173mW/g

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

Date/Time: 2005-11-16 0:12:04

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Touch-GSM1900-Low

DUT: GSM50101-Head; Type: Head; Serial: 20051115

Communication System: PCS1900-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(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

Touch position - Low/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
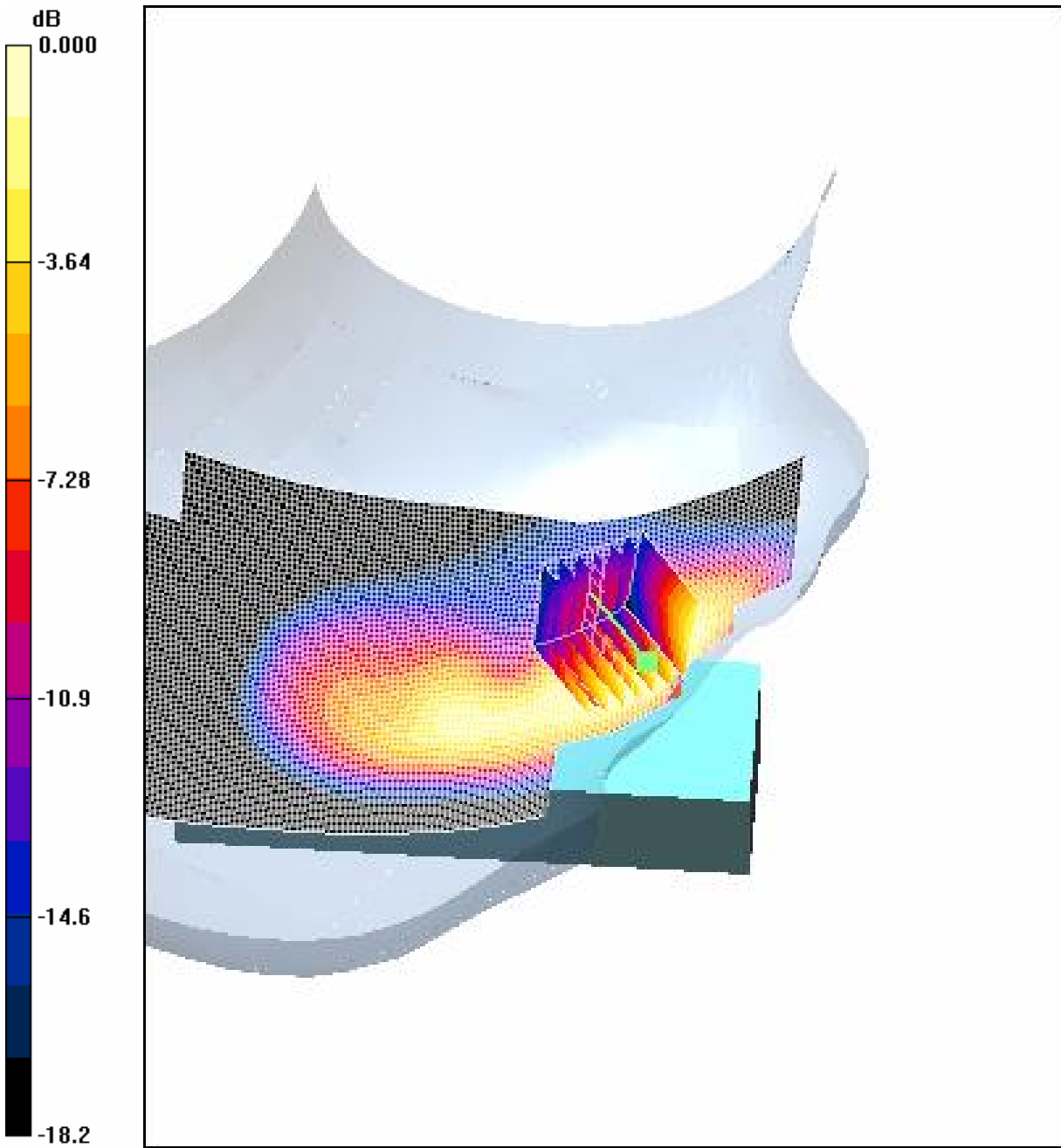Maximum value of SAR (interpolated) = 0.654 mW/g

Touch position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.07 V/m; Power Drift = -0.835 dB
Peak SAR (extrapolated) = 0.838 W/kg
SAR(1 g) = 0.570 mW/g; SAR(10 g) = 0.351 mW/g
Maximum value of SAR (measured) = 0.616 mW/g

0 dB = 0.616mW/g

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

Date/Time: 2005-11-16 9:43:27

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Touch-GSM1900-Mid

DUT: GSM50101-Head; Type: Head; Serial: 20051115

Communication System: PCS1900-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(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

Touch position - Middle/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm

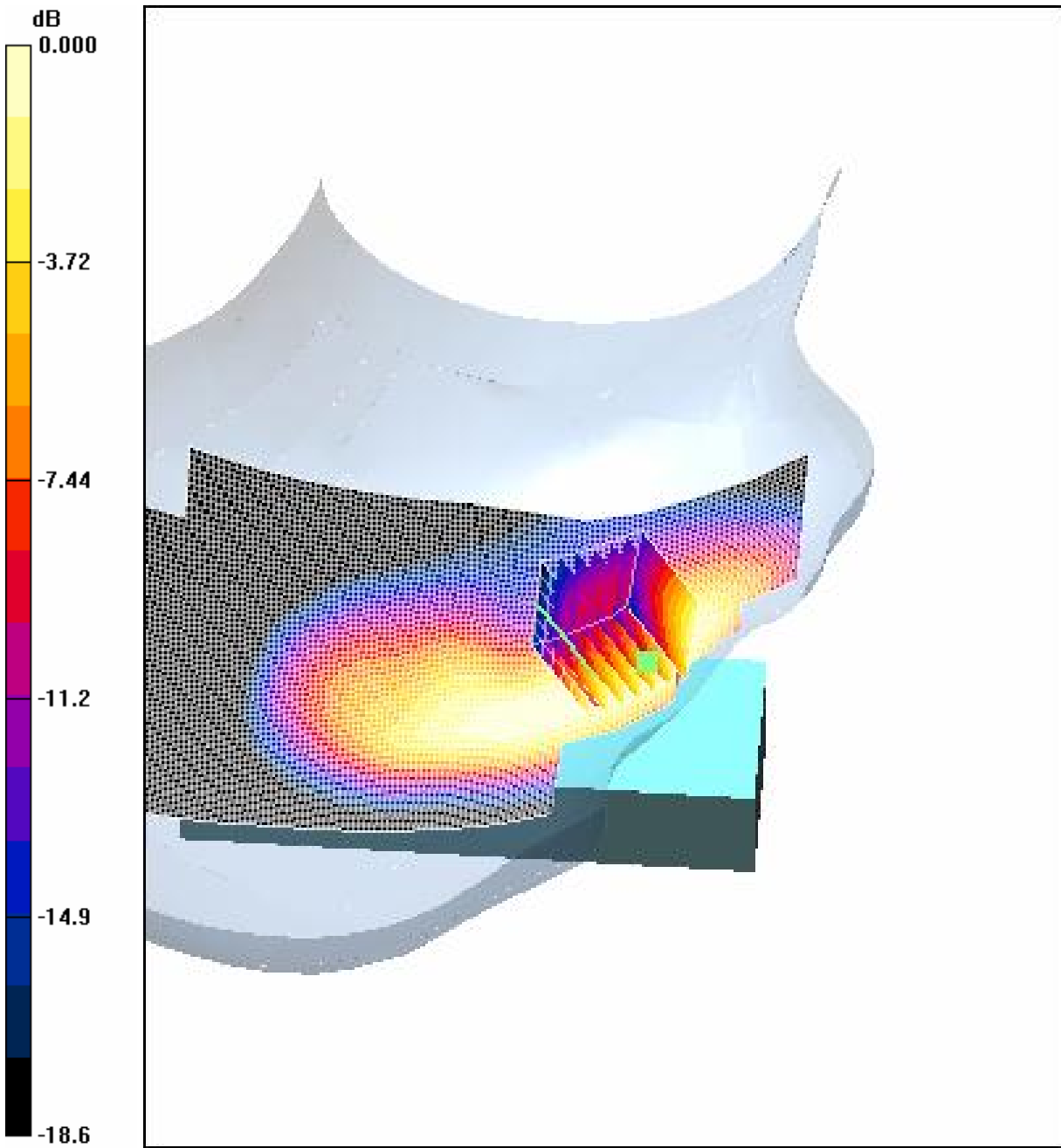Maximum value of SAR (interpolated) = 0.514 mW/g

Touch position - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.88 V/m; Power Drift = -0.400 dB

Peak SAR (extrapolated) = 0.702 W/kg

SAR(1 g) = 0.452 mW/g; SAR(10 g) = 0.282 mW/g

Maximum value of SAR (measured) = 0.500 mW/g

0 dB = 0.500mW/g

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

Date/Time: 2005-11-16 10:18:18

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Touch-GSM1900-High

DUT: GSM50101-Head; Type: Head; Serial: 20051115

Communication System: PCS1900-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(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

Touch position - High/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm

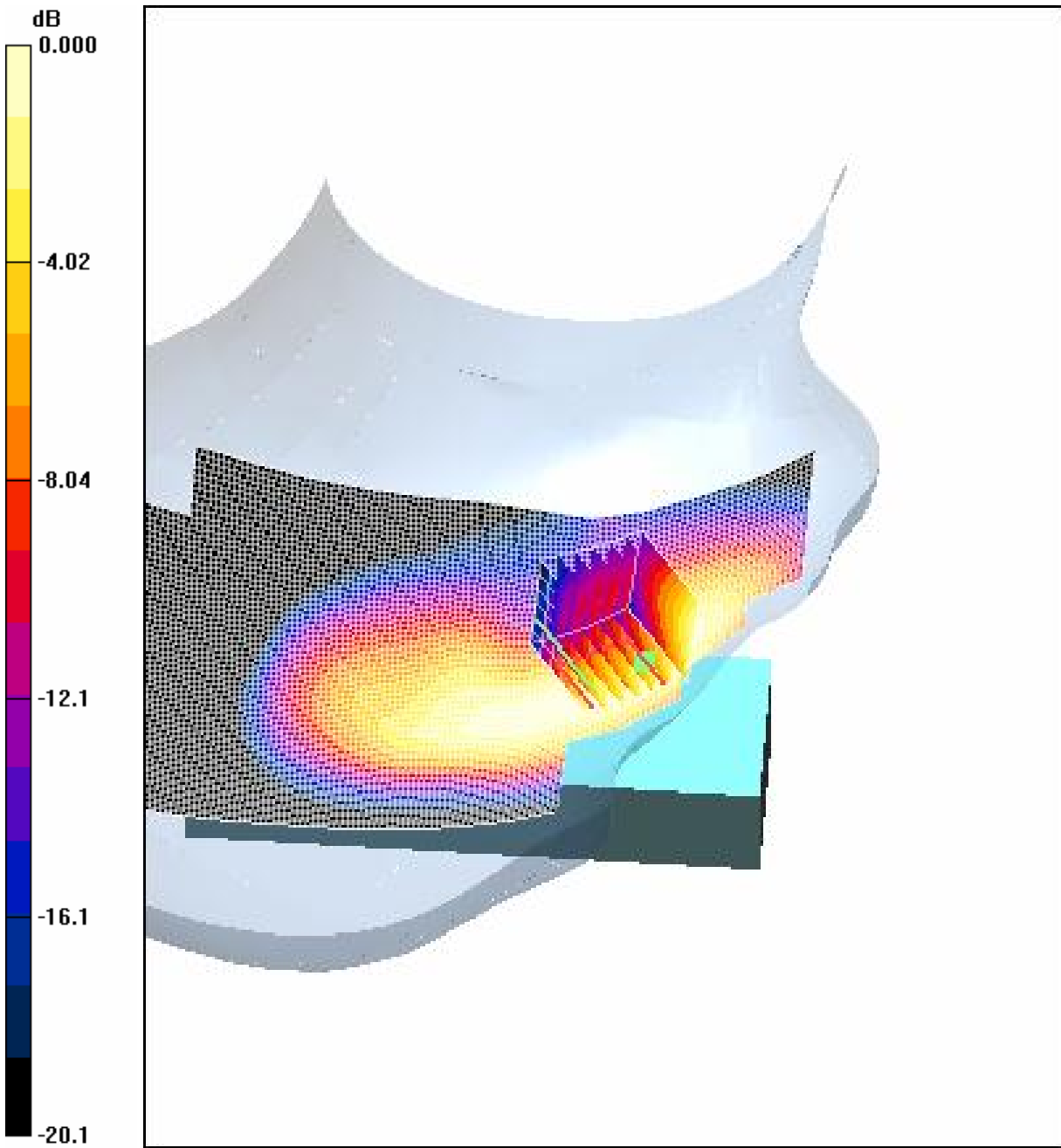Maximum value of SAR (interpolated) = 0.355 mW/g

Touch position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.98 V/m; Power Drift = -0.008 dB

Peak SAR (extrapolated) = 0.514 W/kg

SAR(1 g) = 0.322 mW/g; SAR(10 g) = 0.196 mW/g

Maximum value of SAR (measured) = 0.356 mW/g

0 dB = 0.356mW/g

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

Date/Time: 2005-11-16 10:59:14

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Tilt-GSM1900-Low

DUT: GSM50101-Head; Type: Head; Serial: 20051115

Communication System: PCS1900-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(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

Tilt position - Low/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm

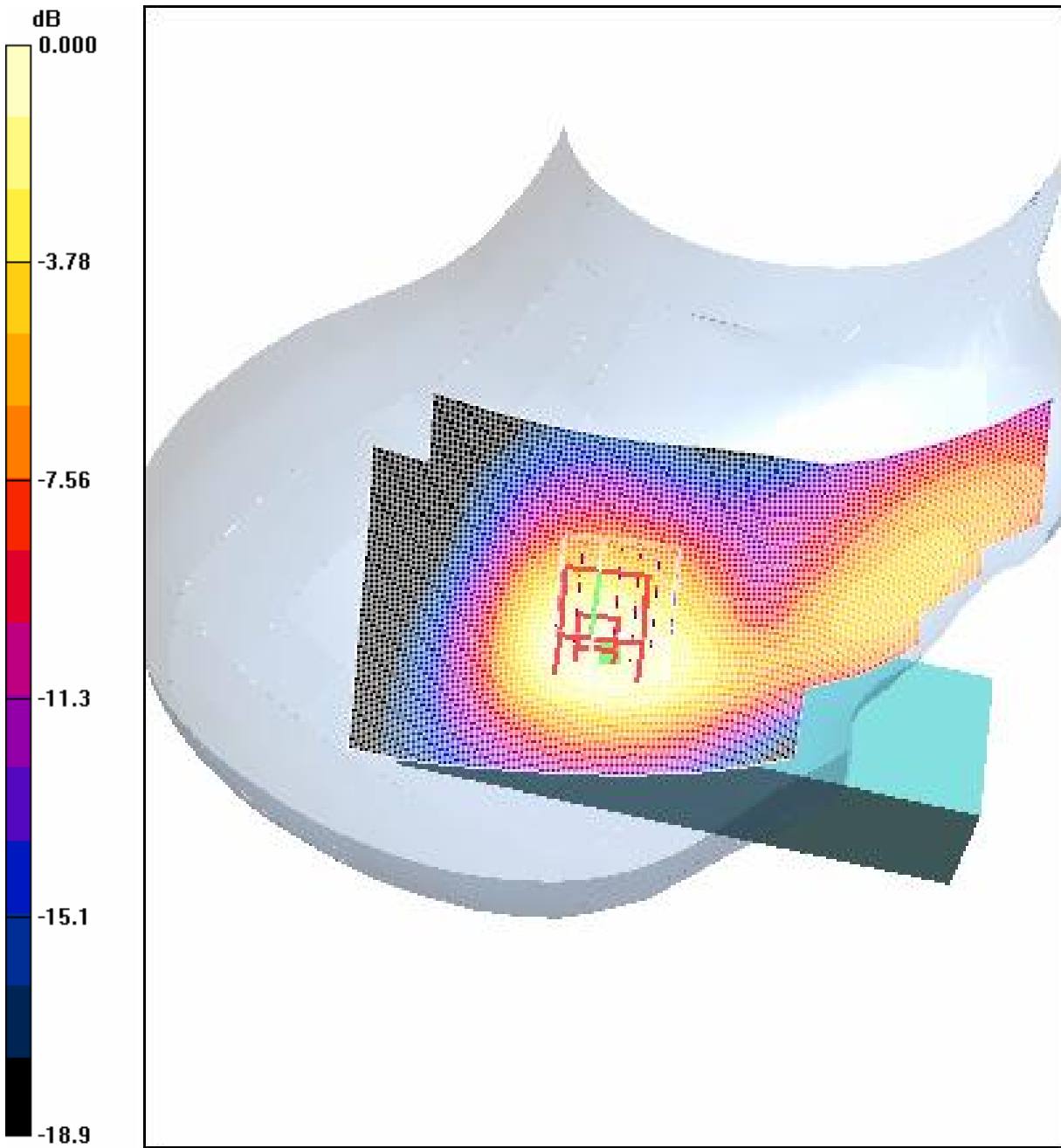Maximum value of SAR (interpolated) = 0.165 mW/g

Tilt position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.51 V/m; Power Drift = 0.408 dB

Peak SAR (extrapolated) = 0.216 W/kg

SAR(1 g) = 0.145 mW/g; SAR(10 g) = 0.088 mW/g

Maximum value of SAR (measured) = 0.156 mW/g

0 dB = 0.156mW/g

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

Date/Time: 2005-11-16 11:31:25

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Tilt-GSM1900-Mid

DUT: GSM50101-Head; Type: Head; Serial: 20051115

Communication System: PCS1900-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(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

Tilt position - Middle/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
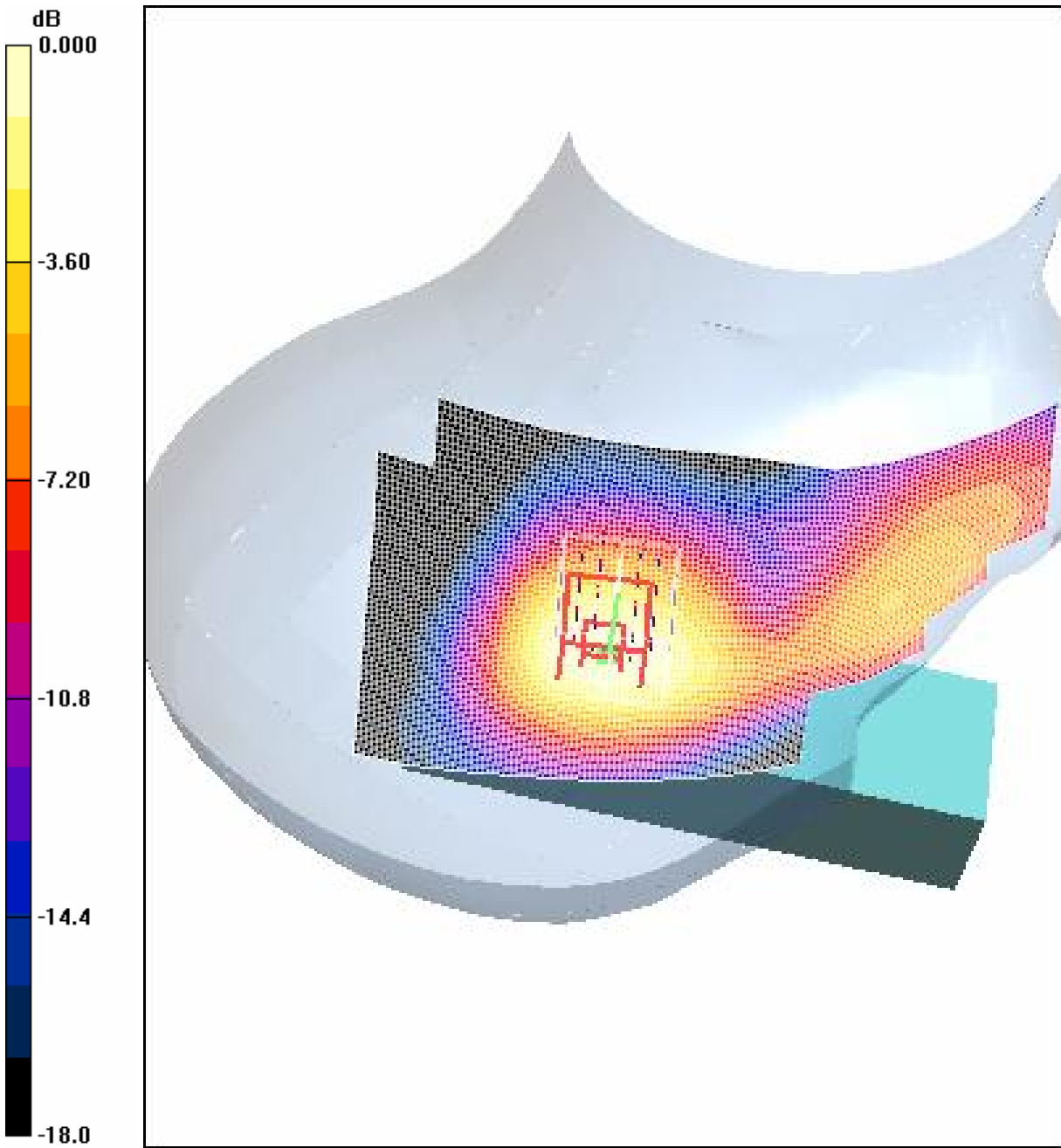Maximum value of SAR (interpolated) = 0.169 mW/g

Tilt position - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.98 V/m; Power Drift = 0.016 dB
Peak SAR (extrapolated) = 0.236 W/kg
SAR(1 g) = 0.153 mW/g; SAR(10 g) = 0.091 mW/g
Maximum value of SAR (measured) = 0.168 mW/g

0 dB = 0.168mW/g

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

Date/Time: 2005-11-16 14:33:00

Test Laboratory: SGS-GSM

FCC-OET65-RightHandSide-Tilt-GSM1900-High

DUT: GSM50101-Head; Type: Head; Serial: 20051115

Communication System: PCS1900-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(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

Tilt position - High/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm

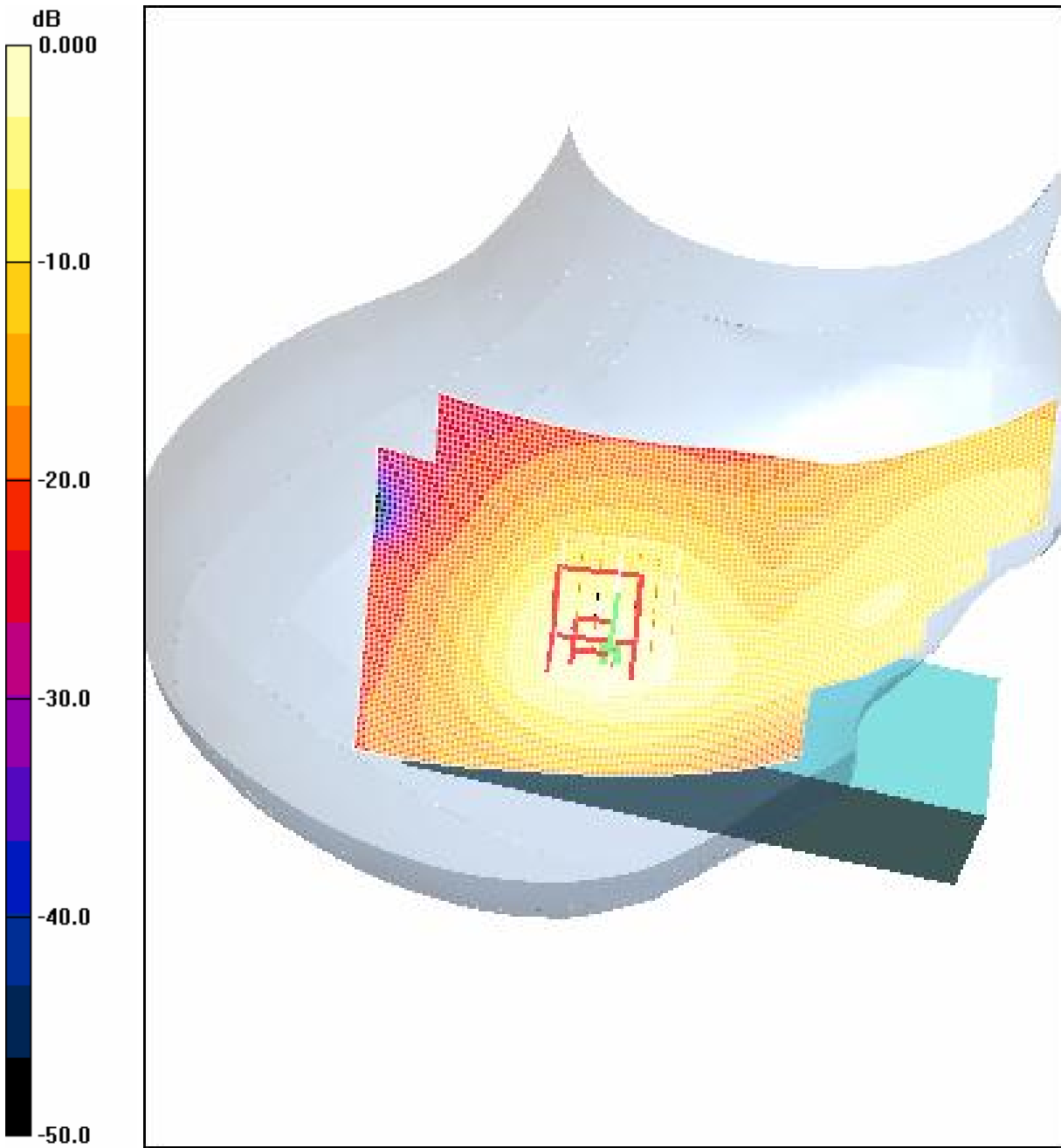Maximum value of SAR (interpolated) = 0.149 mW/g

Tilt position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.90 V/m; Power Drift = 0.826 dB

Peak SAR (extrapolated) = 0.430 W/kg

SAR(1 g) = 0.151 mW/g; SAR(10 g) = 0.071 mW/g

Maximum value of SAR (measured) = 0.210 mW/g

0 dB = 0.210mW/g

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

Date/Time: 2005-11-18 13:27:12

Test Laboratory: SGS-GSM

FCC-OET65-Body-Worn-GSM1900-Low

DUT: GSM50101-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 (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.728 mW/g

Body Worn - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 13.7 V/m; Power Drift = -0.144 dB

Peak SAR (extrapolated) = 1.12 W/kg

SAR(1 g) = 0.656 mW/g; SAR(10 g) = 0.396 mW/g

Maximum value of SAR (measured) = 0.703 mW/g
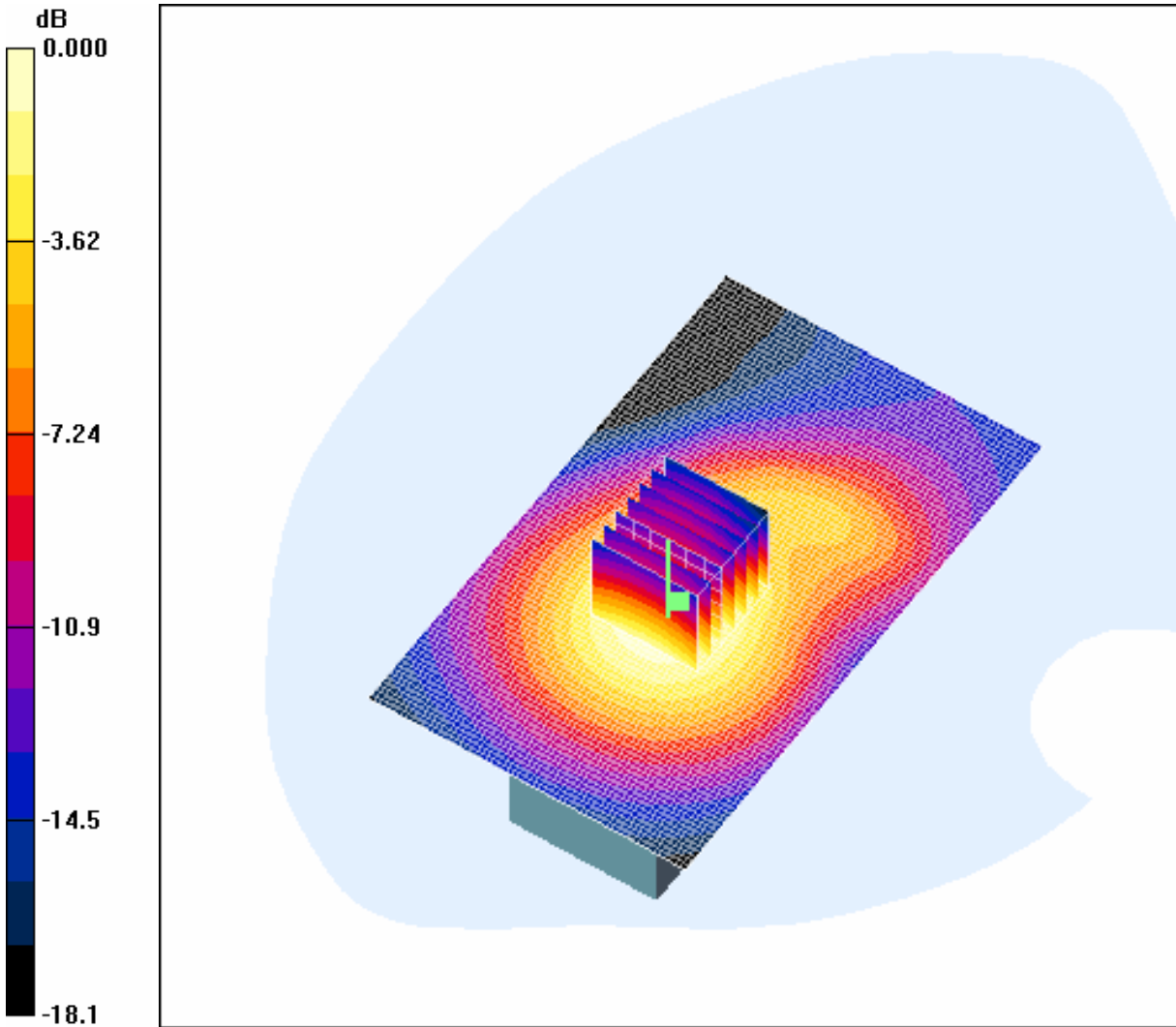
0 dB = 0.703mW/g

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

Date/Time: 2005-11-18 13:59:47

Test Laboratory: SGS-GSM

FCC-OET65-Body-Worn-GSM1900-Mid

DUT: GSM50101-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 (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.187 mW/g

Body Worn - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.67 V/m; Power Drift = -0.010 dB

Peak SAR (extrapolated) = 0.263 W/kg

SAR(1 g) = 0.171 mW/g; SAR(10 g) = 0.106 mW/g

Maximum value of SAR (measured) = 0.184 mW/g
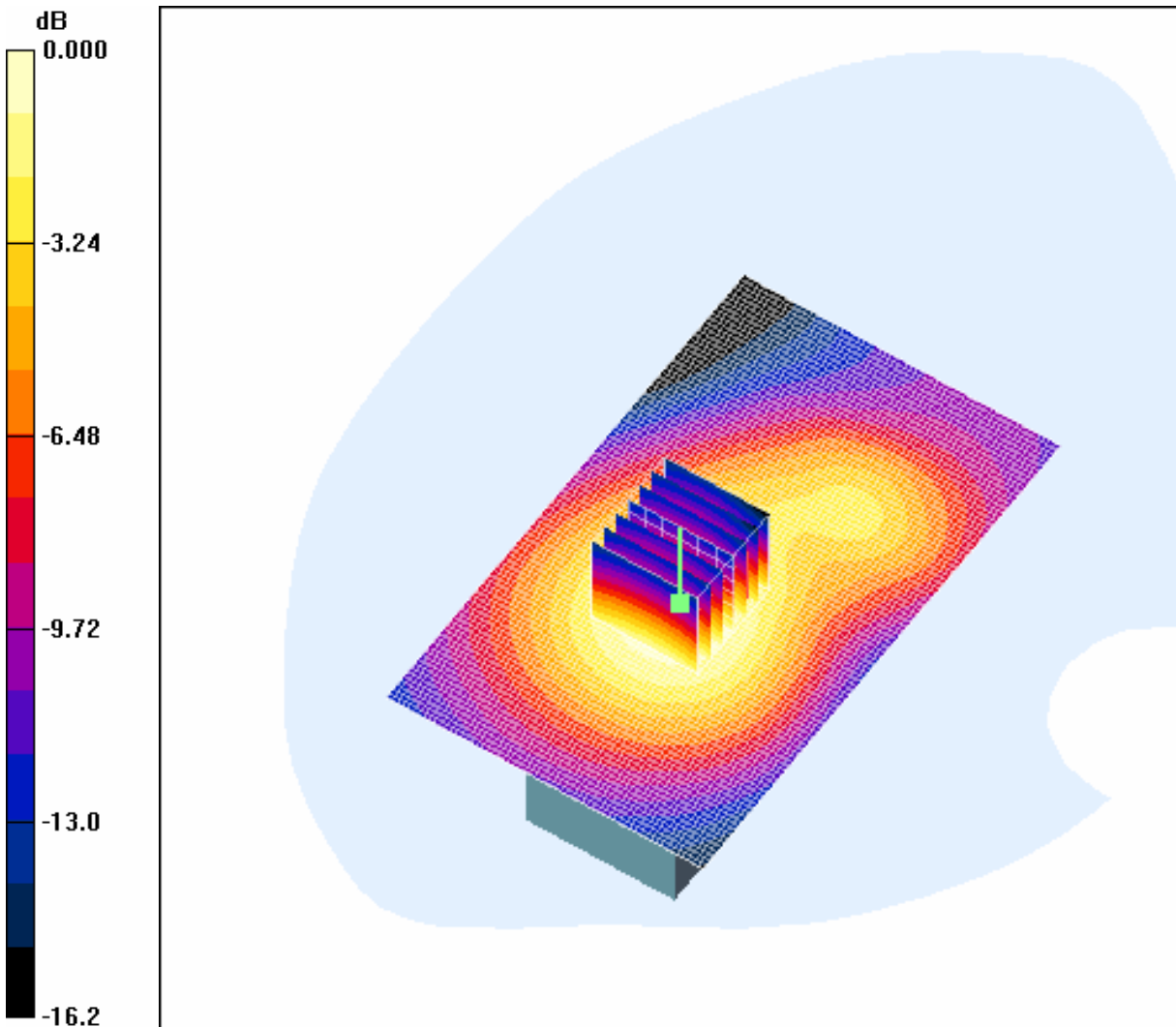
0 dB = 0.184mW/g

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

Date/Time: 2005-11-18 14:27:01

Test Laboratory: SGS-GSM

FCC-OET65-Body-Worn-GSM1900-High

DUT: GSM50101-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 (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.192 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 = 0.019 dB

Peak SAR (extrapolated) = 0.274 W/kg

SAR(1 g) = 0.177 mW/g; SAR(10 g) = 0.109 mW/g

Maximum value of SAR (measured) = 0.191 mW/g
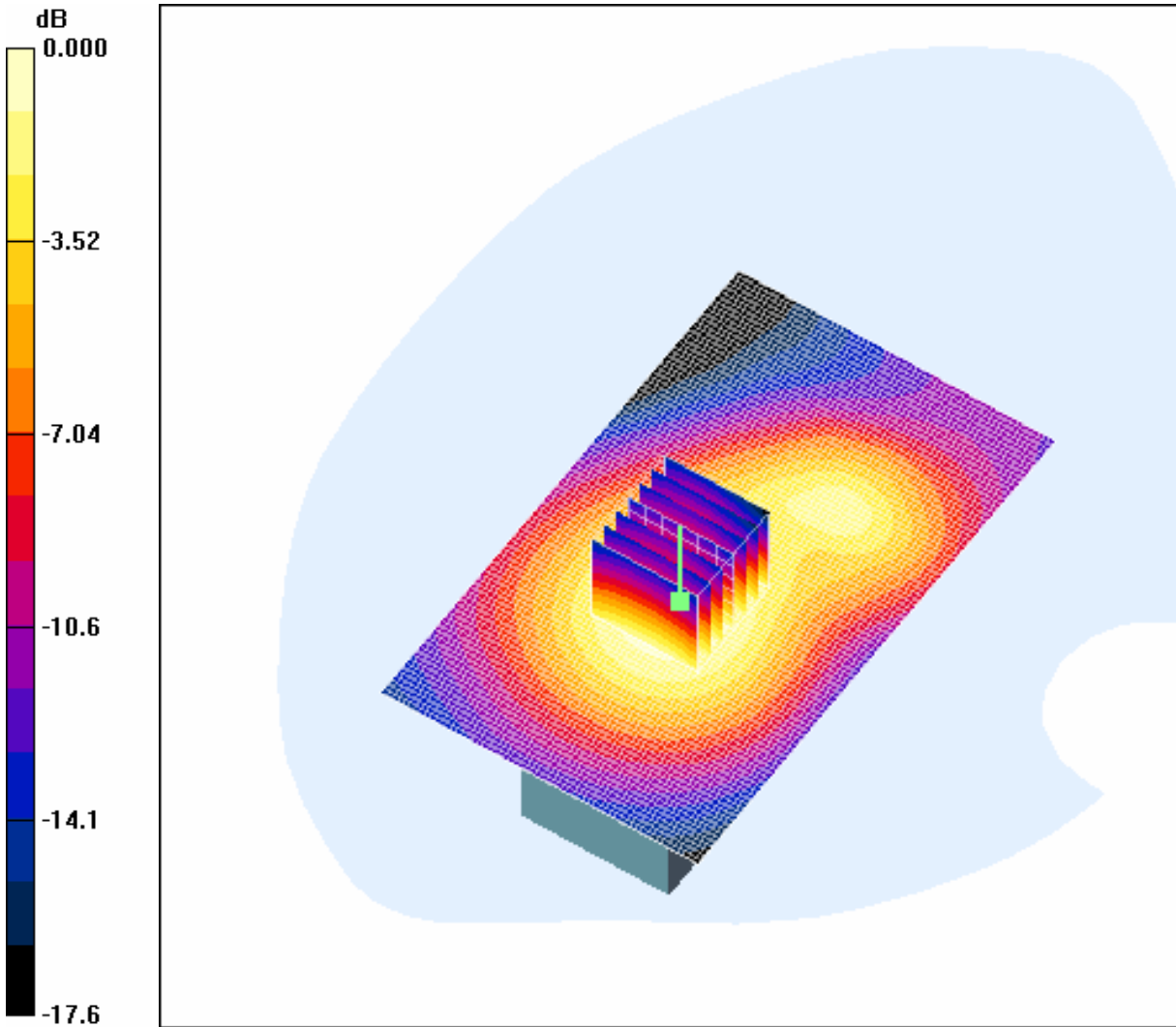
0 dB = 0.191mW/g

Appendix

1. Photographs of Test Setup
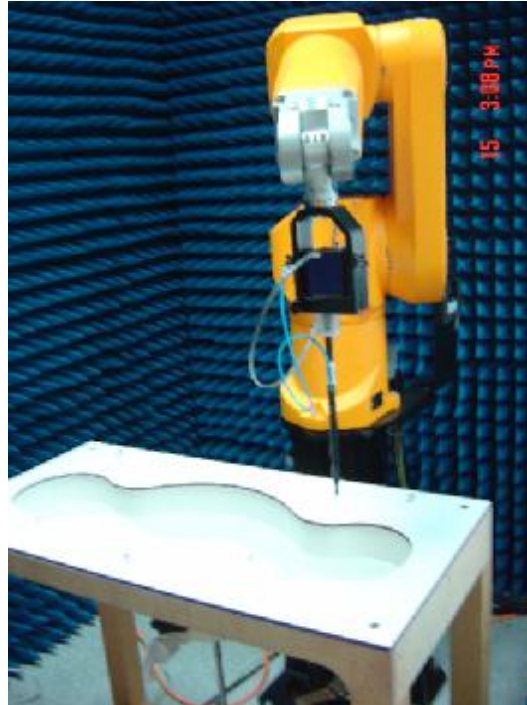
Fig.1 Photograph of the SAR measurement System
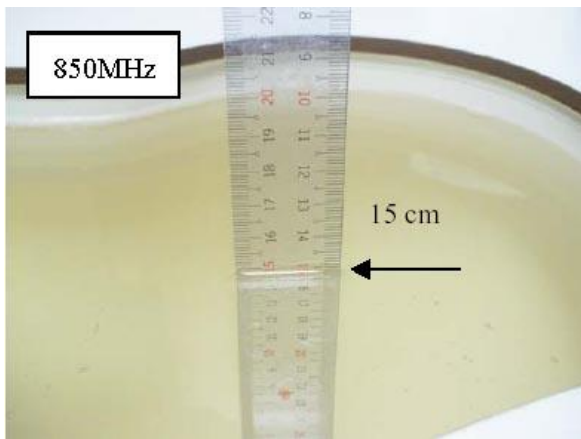
Fig.2 Photograph of the Tissue Simulant
Fluid Liquid depth 15cm
for Left-Head Side
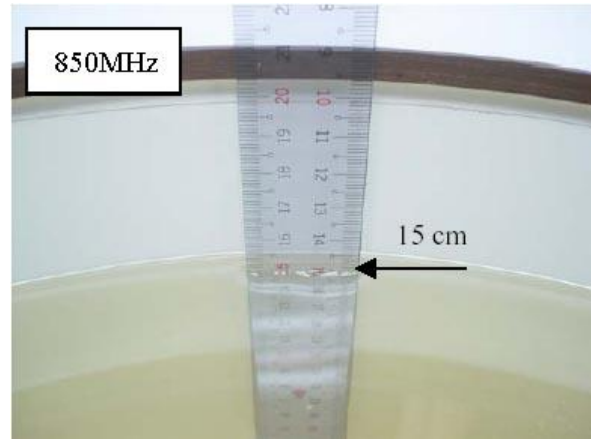
Fig.3 Photograph of the Tissue Simulant
Fluid Liquid depth 15cm for Body-Worn
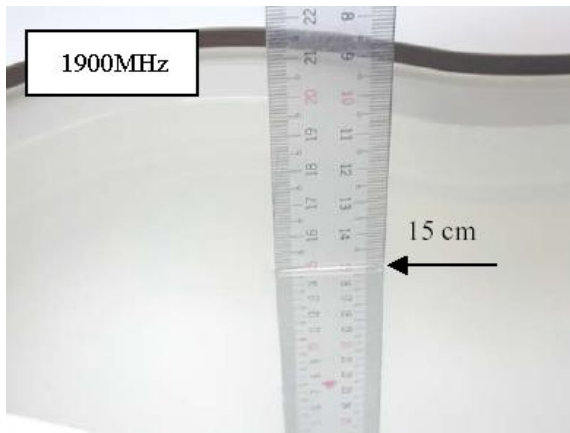
Fig.4 Photograph of the Tissue Simulant
Fluid Liquid depth 15cm
for Right-Head Side
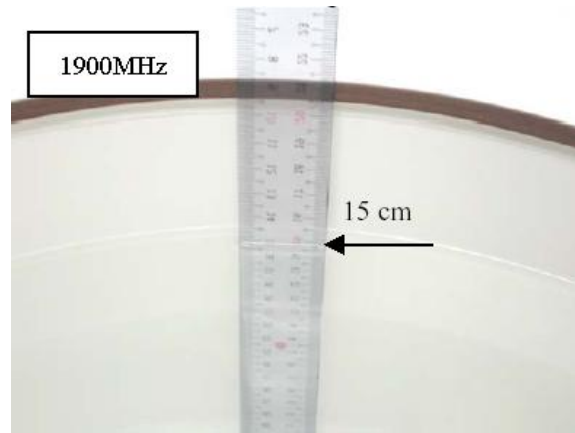
Fig.5 Photograph of the Tissue Simulant
Fluid Liquid depth 15cm for Body-Worn
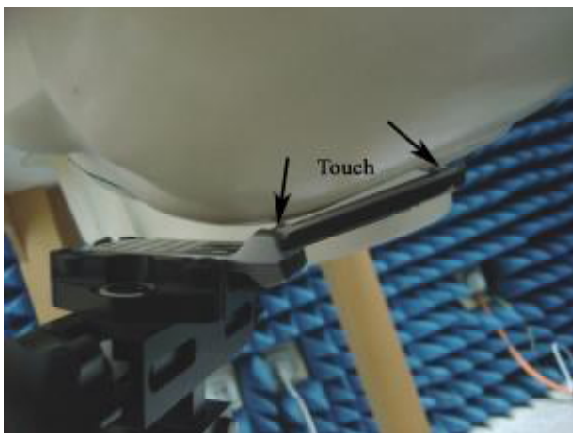
Fig.6 Photograph of the Left Hand Side Touch status
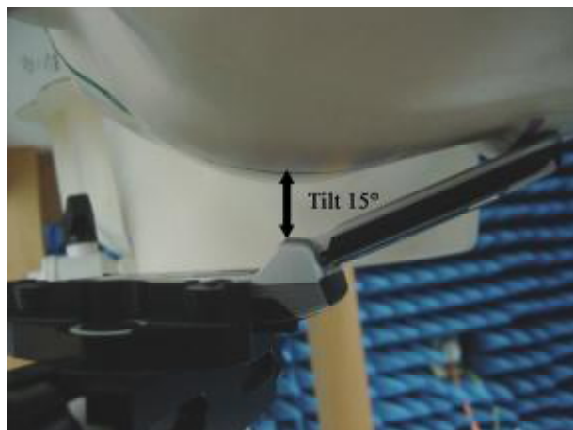
Fig.7 Photograph of the Left Hand Side Tilt status
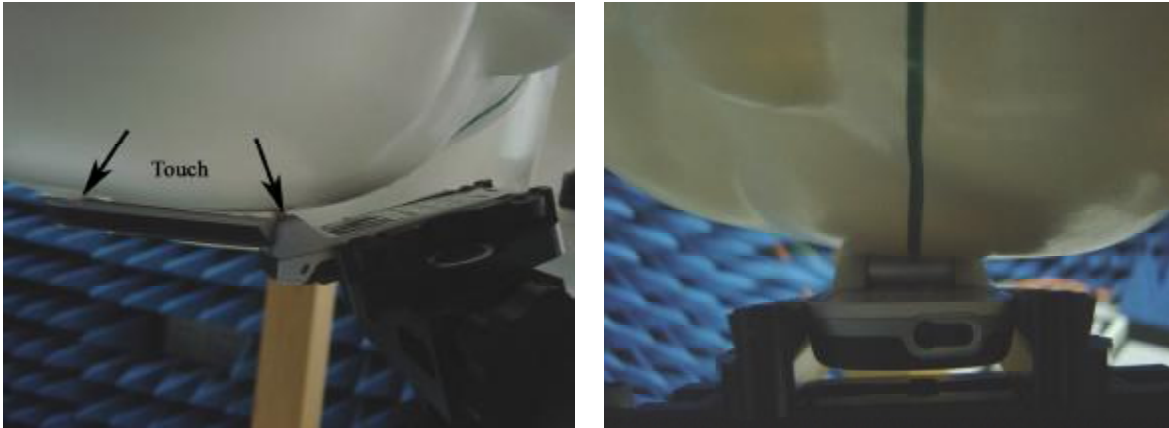
Fig.8 Photograph of the Right Hand Side Touch status

Fig.9 Photograph of the Right Hand Side Tilt status
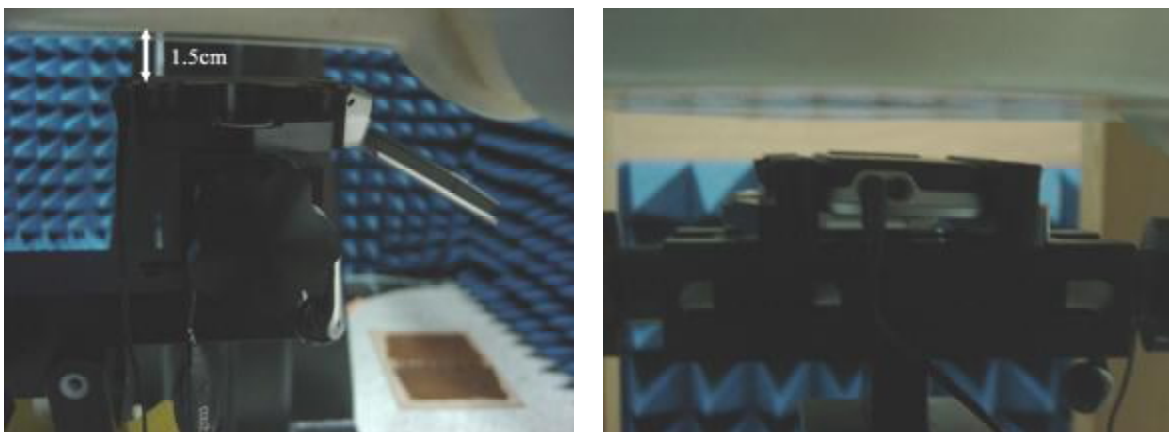
Fig.10 Photograph of the Body-Worn status

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
		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

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

Certificate No: ES3-3088_Sep05   Page 1 of 9

ES3DV3 SN:3088   September 13, 2005

Probe ES3DV3

SN:3088

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

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

ES3DV3 SN:3088   September 13, 2005

DASY - Parameters of Probe: ES3DV3 SN:3088

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

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

		3.0 mm	4.0 mm
Sensor Center to Phantom Surface Distance			
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

		3.0 mm	4.0 mm
Sensor Center to Phantom Surface Distance			
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 E²-field uncertainty inside TSL (see Page 8).
[B] Numerical linearization parameter: uncertainty not required.

Certificate No: ES3-3088_Sep05   Page 4 of 9

ES3DV3 SN:3088   September 13, 2005

Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide: R22)
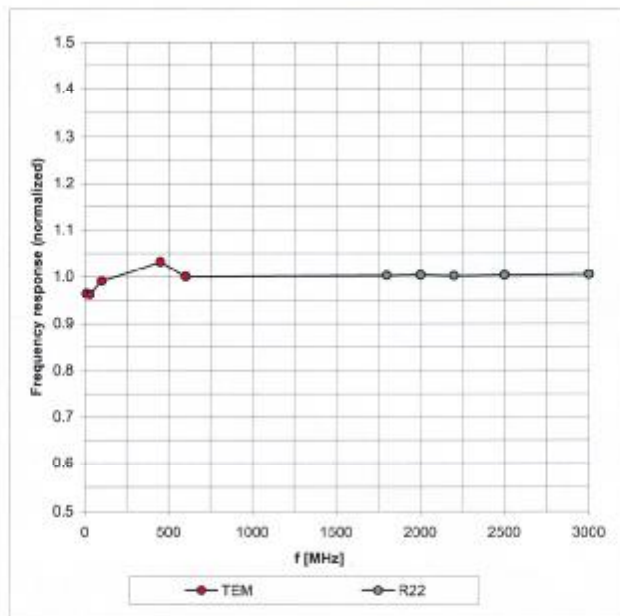
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

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Receiving Pattern (φ), ϑ = 0°

f = 600 MHz, TEM ifi110EXX

f = 1800 MHz, WG R22
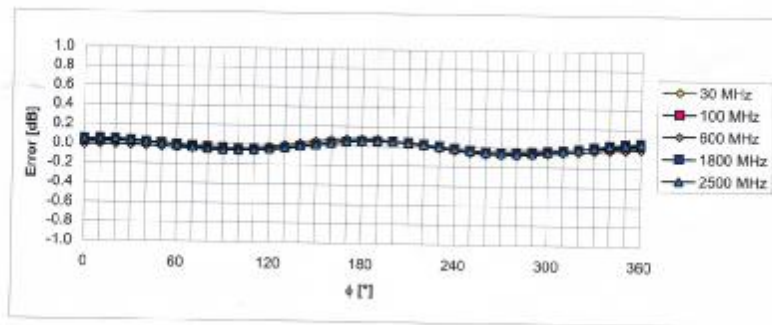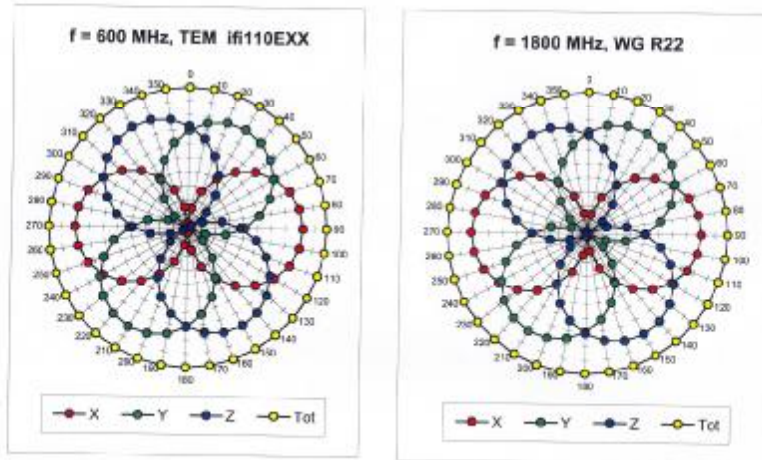
Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

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Dynamic Range f(SAR$_{head}$)
(Waveguide R22, f = 1800 MHz)

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

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Conversion Factor Assessment

f = 900 MHz, WGLS R9 (head)

f = 1750 MHz, WGLS R22 (head)

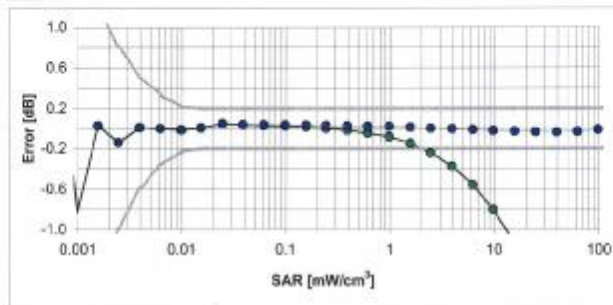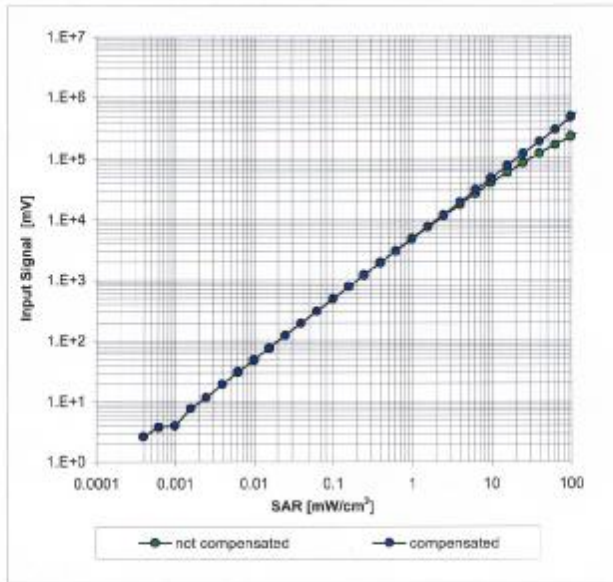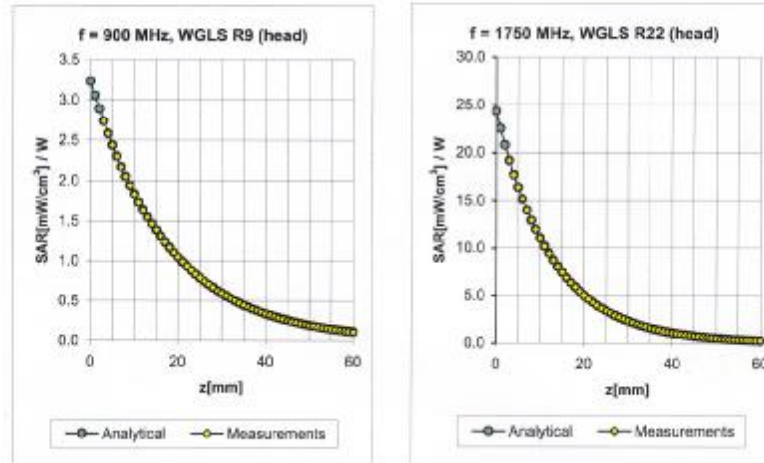| f [MHz]	Validity [MHz]^C	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF	Uncertainty
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.47	1.40	5.91	± 11.0% (k=2)
1750	± 50 / ± 100	Head	40.1 ± 5%	1.37 ± 5%	0.24	2.39	4.97	± 11.0% (k=2)
1900	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.27	2.28	4.93	± 11.0% (k=2)
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.

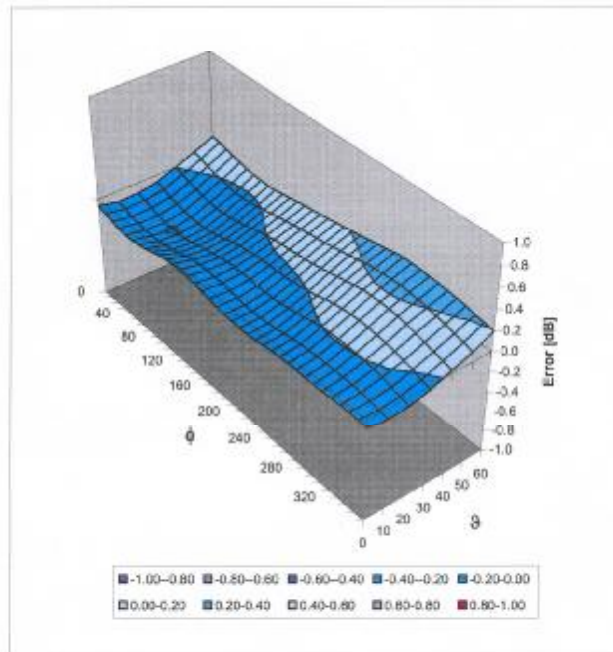ES3DV3 SN:3088   September 13, 2005

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)	Std. unc. (± %) (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

Signature / Stamp

F. Bombelt

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The end