SAR TEST REPORT

Eequipment Under Test	:	Tri-band GSM/DCS/PCS 900/1800/1900 cellular phone
FCC ID	:	S2VP1M100
Model No.	:	PANPAC F-1
Applicant	:	Yuhua TelTech (Shanghai) Co., Ltd.
Address of Applicant	:	Yuhua R&D Building, 27 Xin Jin Qiao Road, Pudong
		Shanghai 201206, P.R. China
Date of Receipt	:	2005.3.4
Date of Test	:	2005.3.8 – 2005.3.18
Date of Issue	:	2005.4.19

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** :	**2005.4.19**
Approved by	:	Zhiang Yuan	**Date** :	**2005.4.19**

Contents

1. General Information

1.1 Test Laboratory

GSM Lab (CNAL No. L1486)
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 5450 0149
Internet: http://www.cn.sgs.com

1.2 Details of Applicant

Name: Yuhua TelTech (Shanghai) Co., Ltd.
Address: Yuhua R&D Building, 27 Xin Jin Qiao Road, Pudong, Shanghai 201206, P.R. China

1.3 Description of EUT(s)

Product name	GSM 900/1800/1900 MOBILE PHONE
Model No.	P1
Marketing Name	PACPAC F-1
Sample No.	GSM50013D
Battery Type	Lithium-Ion, 3.8Volt
Frequency range	1900MHz (1850~1910MHZ)
Modulation Mode	GMSK
Maximum RF Conducted Power	30dBm
Antenna Type	Inner Antenna

1.4 Test Environment

Ambient temperature: 22.0° C

Tissue Simulating Liquid: 20° C- 24° C

Relative Humidity: 35%

1.5 Operation Configuration

Configuration 1: GSM1900, LeftHandSide

Configuration 2: GSM1900, RightHandSide

Configuration 3: GSM1900, BodyWorn

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 ET3DV6 1774 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.

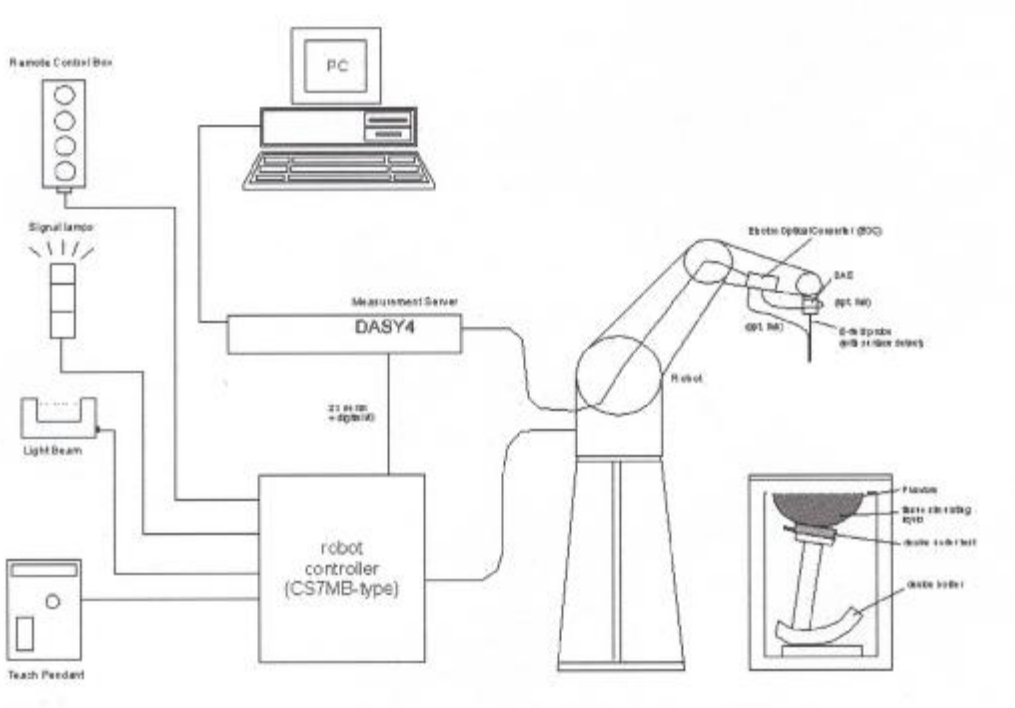


Fig. a SAR System Configuration

- 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 or Windows XP.
- 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.

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.

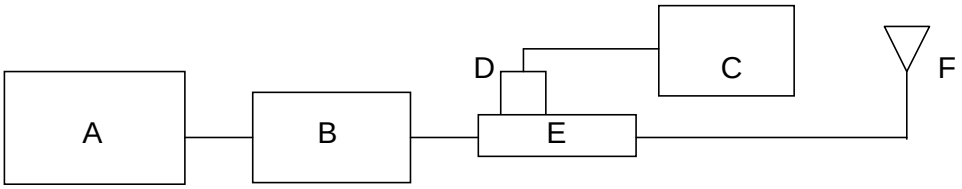


Fig. b The microwave circuit arrangement used for SAR system verification

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	Target SAR 1g (250mW)	Target SAR 1g (250mW)	Measured SAR 1g	Measured SAR 1g	Measured Date
ET3DV6 SN1774	1900M Head	10.4	5.35	10.26	5.27	2005-3-16
ET3DV6 SN1774	1900M Body	10.52	5.53	10.3	5.33	2004-3-11

Table 1. Result System Validation

1.8 Tissue Simulant Fluid for the Frequency Band 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 Measured dielectric parameters of the body-simulant fluid at 900 MHz are ρ =41.00± 5%, σ =1.00±10% S/m. The measured properties are close to the values of ρ =41.9 and σ =0.98 S/m. The Measured dielectric parameters of the body-simulant fluid at 1800 MHz are ρ =40.00± 5%, σ =1.38±10% S/m. The measured properties are close to the values of ρ =38.78 and σ =1.41 S/m. 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)
1900	Head	Measured 2005-3-	40.13	1.46	21.5
		Recommended Limit	40.0±5%	1.40±10%	20-24
	Body	Measured 2005-3-	51.49	1.54	22
		Recommended Limit	53.3±5%	1.52±10%	20-24

Table 2. Dielectric parameters for the Frequency Band 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**	**Controlled Environment Occupational**
Spatial Peak SAR (Brain)	1.60 mW/g	8.00 mW/g
Spatial Average SAR (Whole Body)	0.08 mW/g	0.40 mW/g
Spatial Peak SAR (Hands/Feet/Ankle/Wrist)	4.00 mW/g	20.00 mW/g

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. Controlled environments are defined as locations where there is potential exposure of individuals who have knowledge of their potential exposure and can exercise control over their exposure.

2.Summary of Results

Frequency Band	EUT position	Conducted Output Power (Average)	1g Average (mW/g)	10g Average (mW/g)	Amb. Temp (℃)	Verdict
1900 MHz	**LeftHandSide Touch, Low Channel**	31.1	0.366	0.197	22	**Pass**
	LeftHandSide Touch, Middle Channel	30.9	0.557	0.289	22	**Pass**
	LeftHandSide Touch, High Channel	30.9	0.666	0.338	22	**Pass**
	LeftHandSide Tilt, Low Channel	31.1	0.11	0.0676	22	**Pass**
	LeftHandSide Tilt, Middle Channel	30.9	0.151	0.0918	22	**Pass**
	LeftHandSide Tilt, High Channel	30.9	0.175	0.106	22	**Pass**
	RightHandSide Touch, Low Channel	31.1	0.43	0.225	22	**Pass**
	RightHandSide Touch, Middle Channel	30.9	0.572	0.296	22	**Pass**
	RightHandSide Touch, High Channel	30.9	0.607	0.317	22	**Pass**
	RightHandSide Tilt, Low Channel	31.1	0.0898	0.0542	22	**Pass**
	RightHandSide Tilt, Middle Channel	30.9	0.123	0.0727	22	**Pass**

	RightHandSide Tilt, High Channel	30.9	0.148	0.0873	22	**Pass**
	BodyWorn, Low Channel	31.1	0.151	0.0952	22	**Pass**
	BodyWorn, Middle Channel	30.9	0.257	0.162	22	**Pass**
	BodyWorn, High Channel	30.9	0.426	0.265	22	**Pass**
	BodyWorn, GPRS Low Channel	31.1	0.299	0.187	22	**Pass**
	BodyWorn, GPRS Middle Channel	30.9	0.491	0.302	22	**Pass**
	BodyWorn, GPRS High Channel	30.9	0.808	0.493	22	**Pass**

3.Instruments List

Instrument	Model	Serial number	NO.
Desktop PC	COMPAQ EVO	N/A	GSM-SAR-025
Dasy 4 professional system	V 4.1 build 47	N/A	GSM-SAR-001
Probe	ET3DV6	1774	GSM-SAR-021
DAE	DAE3	569	GSM-SAR-023
Phantom	SAM	N/A	GSM-SAR-005
Robot	RX90L	N/A	GSM-SAR-008
Agilent network analyzer	E5071B	MY42100549	GSM-SAR-007
1900MHz system validation dipole	D1900V2	5d028	GSM-SAR-018
Dielectric probe kit	85070D	US01440168	GSM-SAR-016
Agilent signal generator	E4438	14438CATO-19719	GSM-SAR-008
Agilent preamplifier	8449B	3008A01921	GSM-SAR-009
Agilent power meter	E4416A	GB41292095	GSM-SAR-010
Agilent power sensor	8481h	MY41091234	GSM-SAR-011
HT CP6100 20N Coupling	6100	SCP301480120	GSM-SAR-012
R&S Universal radio communication tester	CMU200	103633	GSM-AUD-002

4.Measurements

GSM Mode

4.1 GSM1900-LeftHandSide-Touch-Low

Date/Time: 04/15/05 16:44:17

Test Laboratory: SGS-GSM
File Name: FCC-OET65-LeftHandSide-Touch-GSM1900.da4

FCC-OET65-LeftHandSide-Touch-GSM1900-Low

DUT: GSM50013; Type: 900/1800MHz & 1900MHz; Serial: 20050308
Program: Compliance Testing: FCC OET65 Protocol (Left-Hand Side)

Communication System: DCS 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 (σ = 1.41808 mho/m, ε_r = 40.5312, ρ = 1000 kg/m^3)
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

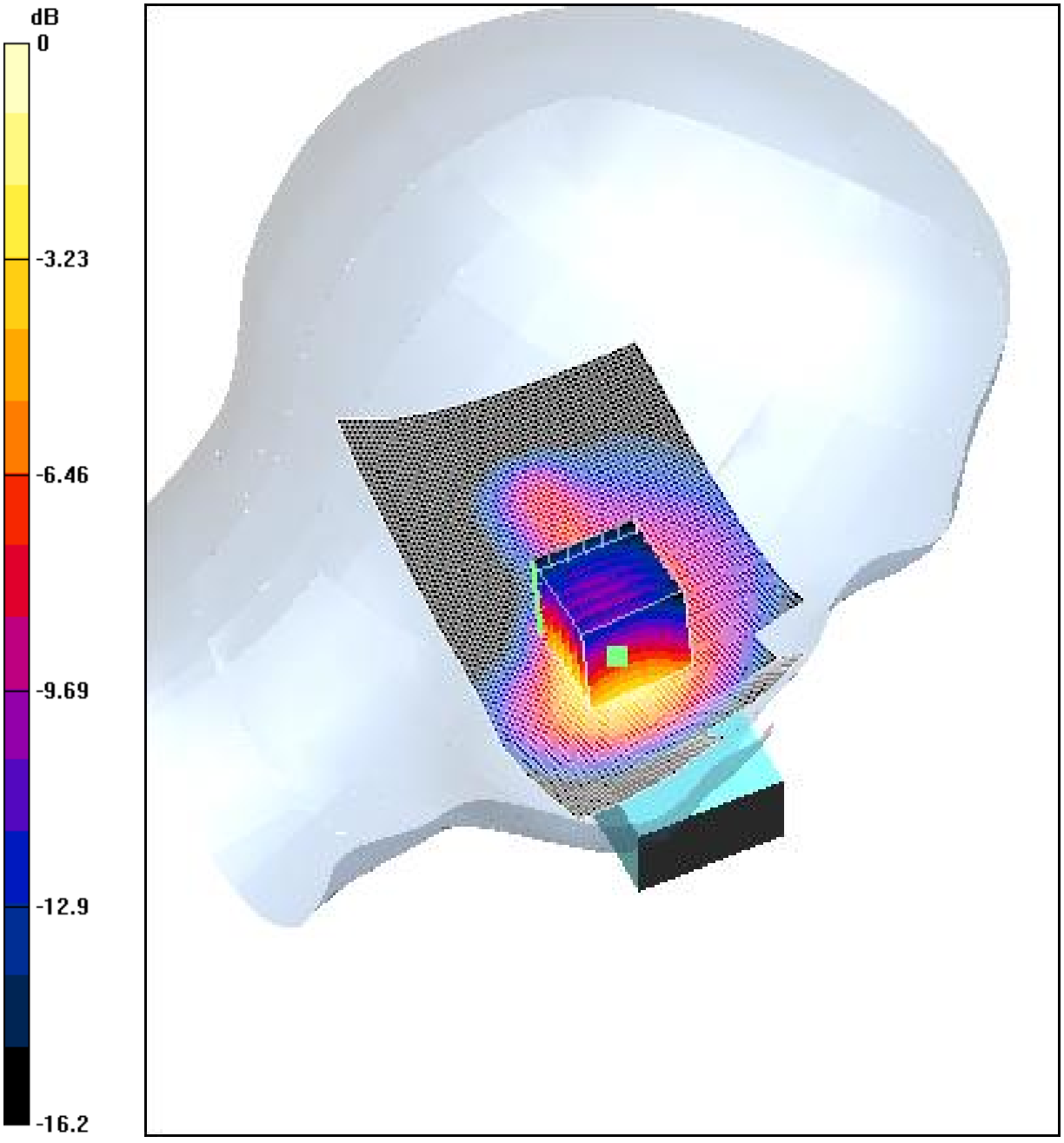
- Probe: ET3DV6 - SN1774; ConvF(5.25, 5.25, 5.25); Calibrated: 2004-10-26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2003-6-4
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Touch position - Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 6.49 V/m; Power Drift = -0.3 dB
Maximum value of SAR = 0.396 mW/g
Touch position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.605 W/kg
SAR(1 g) = 0.366 mW/g; SAR(10 g) = 0.197 mW/g

Reference Value = 6.49 V/m

Power Drift = -0.3 dB

Maximum value of SAR = 0.396 mW/g



0 dB = 0.396mW/g

4.2 GSM1900-LeftHandSide-Touch -Mid

Date/Time: 04/15/05 16:44:17

Test Laboratory: SGS-GSM
File Name: FCC-OET65-LeftHandSide-Touch-GSM1900.da4

FCC-OET65-LeftHandSide-Touch-GSM1900-Mid

DUT: GSM50013; Type: 900/1800MHz & 1900MHz; Serial: 20050308
Program: Compliance Testing: FCC OET65 Protocol (Left-Hand Side)

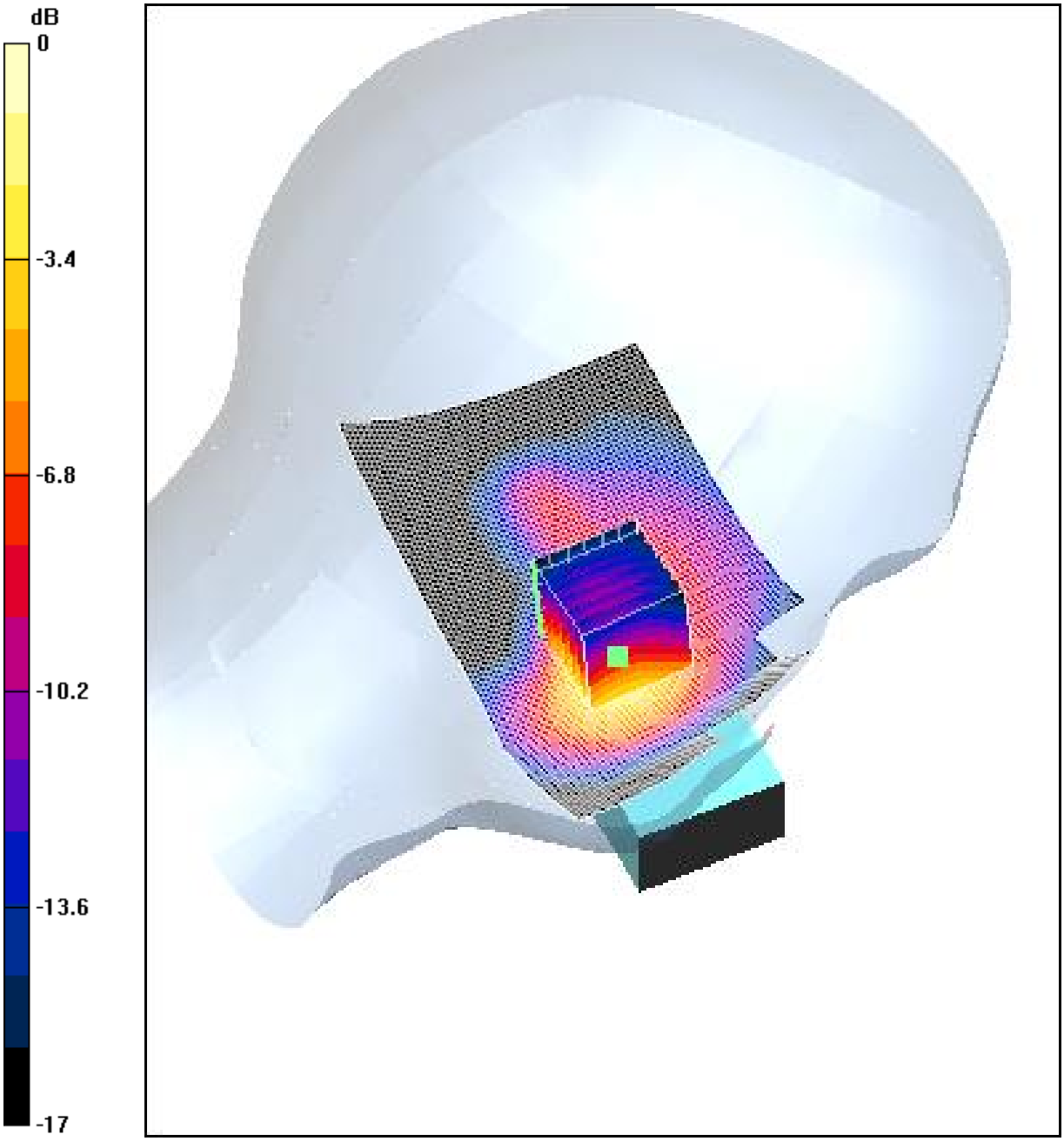
Communication System: DCS 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 (σ = 1.44443 mho/m, ε_r = 40.3239, ρ = 1000 kg/m^3)
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1774; ConvF(5.25, 5.25, 5.25); Calibrated: 2004-10-26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2003-6-4
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Touch position - Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 7.45 V/m
Power Drift = -0.1 dB
Maximum value of SAR = 0.59 mW/g

Touch position - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.944 W/kg
SAR(1 g) = 0.557 mW/g; SAR(10 g) = 0.289 mW/g
Reference Value = 7.45 V/m
Power Drift = -0.1 dB
Maximum value of SAR = 0.611 mW/g



0 dB = 0.611mW/g

4.3 GSM1900-LeftHandSide-Touch -High

Date/Time: 04/15/05 16:44:17

Test Laboratory: SGS-GSM
File Name: FCC-OET65-LeftHandSide-Touch-GSM1900.da4

FCC-OET65-LeftHandSide-Touch-GSM1900-High

DUT: GSM50013; Type: 900/1800MHz & 1900MHz; Serial: 20050308
Program: Compliance Testing: FCC OET65 Protocol (Left-Hand Side)

Communication System: DCS 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 (σ = 1.46824 mho/m, ε_r = 39.9929, ρ = 1000 kg/m^3)
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

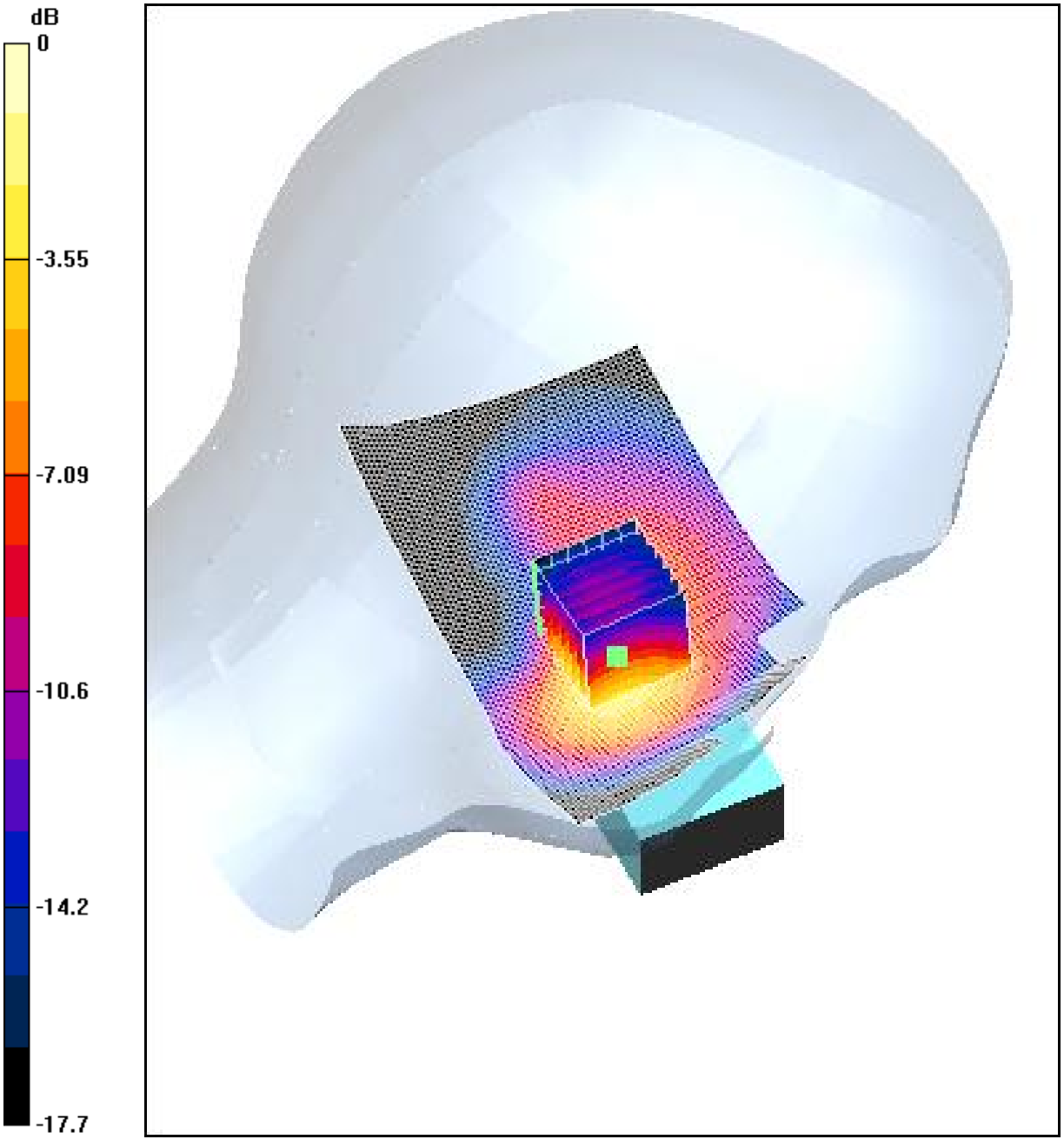
- Probe: ET3DV6 - SN1774; ConvF(5.25, 5.25, 5.25); Calibrated: 2004-10-26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2003-6-4
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Touch position - High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 7.69 V/m
Power Drift = -0.06 dB
Maximum value of SAR = 0.663 mW/g

Touch position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 1.24 W/kg
SAR(1 g) = 0.666 mW/g; SAR(10 g) = 0.338 mW/g
Reference Value = 7.69 V/m

Power Drift = -0.06 dB

Maximum value of SAR = 0.689 mW/g



0 dB = 0.689mW/g

4.4 GSM1900-LeftHandSide-Tilt-Low

Date/Time: 04/18/05 11:23:41

Test Laboratory: SGS-GSM
File Name: FCC-OET65-LeftHandSide-Tilt-GSM1900.da4

FCC-OET65-LeftHandSide-Tilt-GSM1900-Low

DUT: GSM50013; Type: 900/1800MHz & 1900MHz; Serial: 20050308
Program: Compliance Testing: FCC OET65 Protocol (Left-Hand Side)

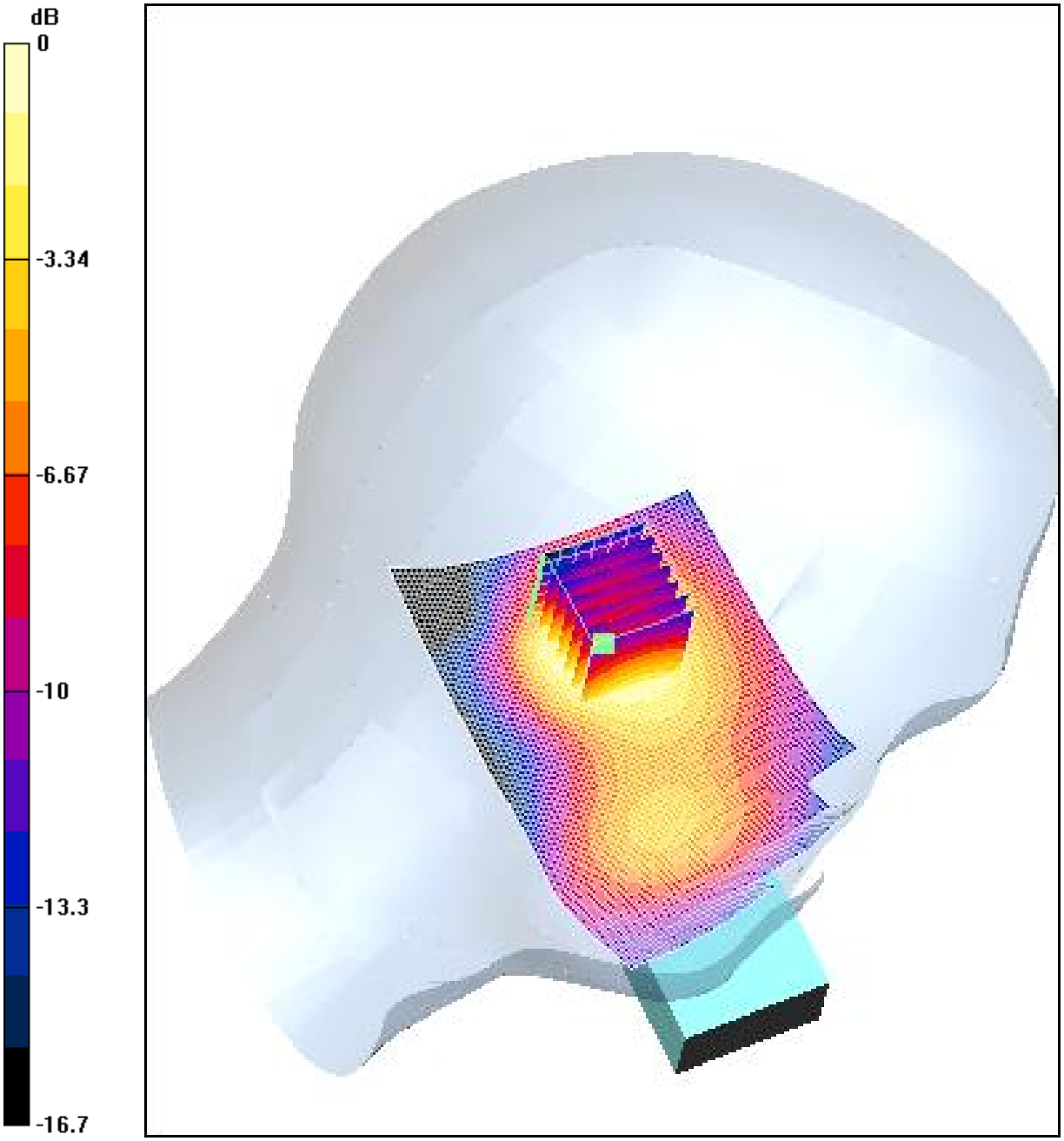
Communication System: DCS 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 (σ = 1.41808 mho/m, ε_r = 40.5312, ρ = 1000 kg/m^3)
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1774; ConvF(5.25, 5.25, 5.25); Calibrated: 2004-10-26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2003-6-4
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Tilt position - Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 9.34 V/m
Power Drift = -0.1 dB
Maximum value of SAR = 0.125 mW/g

Tilt position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.161 W/kg
SAR(1 g) = 0.11 mW/g; SAR(10 g) = 0.0676 mW/g
Reference Value = 9.34 V/m
Power Drift = -0.1 dB
Maximum value of SAR = 0.12 mW/g



0 dB = 0.12mW/g

4.5 GSM1900-LeftHandSide-Tilt -Mid

Date/Time: 04/18/05 11:23:41

Test Laboratory: SGS-GSM
File Name: FCC-OET65-LeftHandSide-Tilt-GSM1900.da4

FCC-OET65-LeftHandSide-Tilt-GSM1900-Mid

DUT: GSM50013; Type: 900/1800MHz & 1900MHz; Serial: 20050308
Program: Compliance Testing: FCC OET65 Protocol (Left-Hand Side)

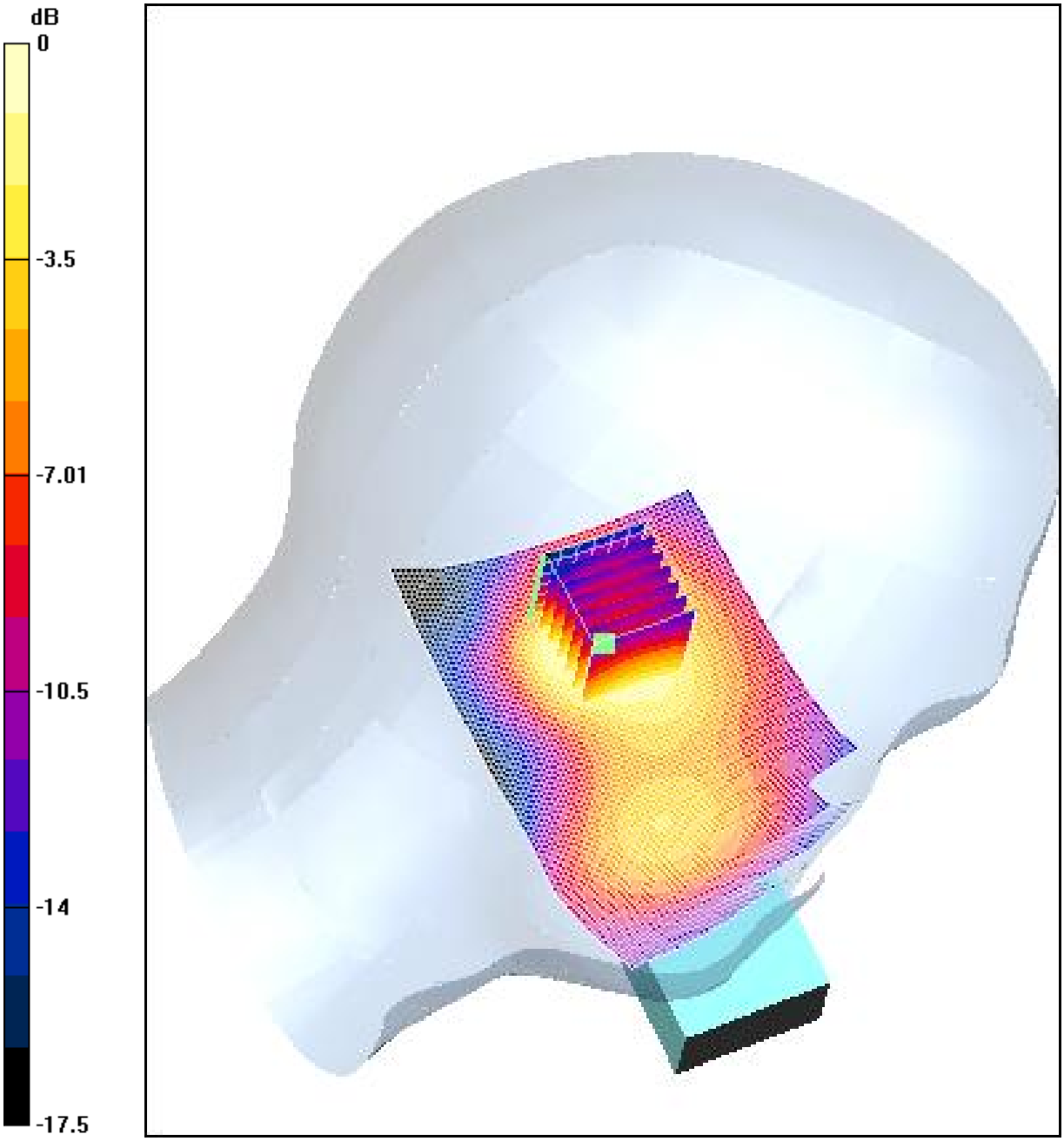
Communication System: DCS 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 (σ = 1.44443 mho/m, ε_r = 40.3239, ρ = 1000 kg/m^3)
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1774; ConvF(5.25, 5.25, 5.25); Calibrated: 2004-10-26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2003-6-4
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Tilt position - Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 10.8 V/m
Power Drift = -0.06 dB
Maximum value of SAR = 0.17 mW/g

Tilt position - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.226 W/kg
SAR(1 g) = 0.151 mW/g; SAR(10 g) = 0.0918 mW/g
Reference Value = 10.8 V/m
Power Drift = -0.06 dB
Maximum value of SAR = 0.164 mW/g



0 dB = 0.164mW/g

4.6 GSM1900-LeftHandSide-Tilt -High

Date/Time: 04/18/05 11:23:41

Test Laboratory: SGS-GSM
File Name: FCC-OET65-LeftHandSide-Tilt-GSM1900.da4

FCC-OET65-LeftHandSide-Tilt-GSM1900-High

DUT: GSM50013; Type: 900/1800MHz & 1900MHz; Serial: 20050308
Program: Compliance Testing: FCC OET65 Protocol (Left-Hand Side)

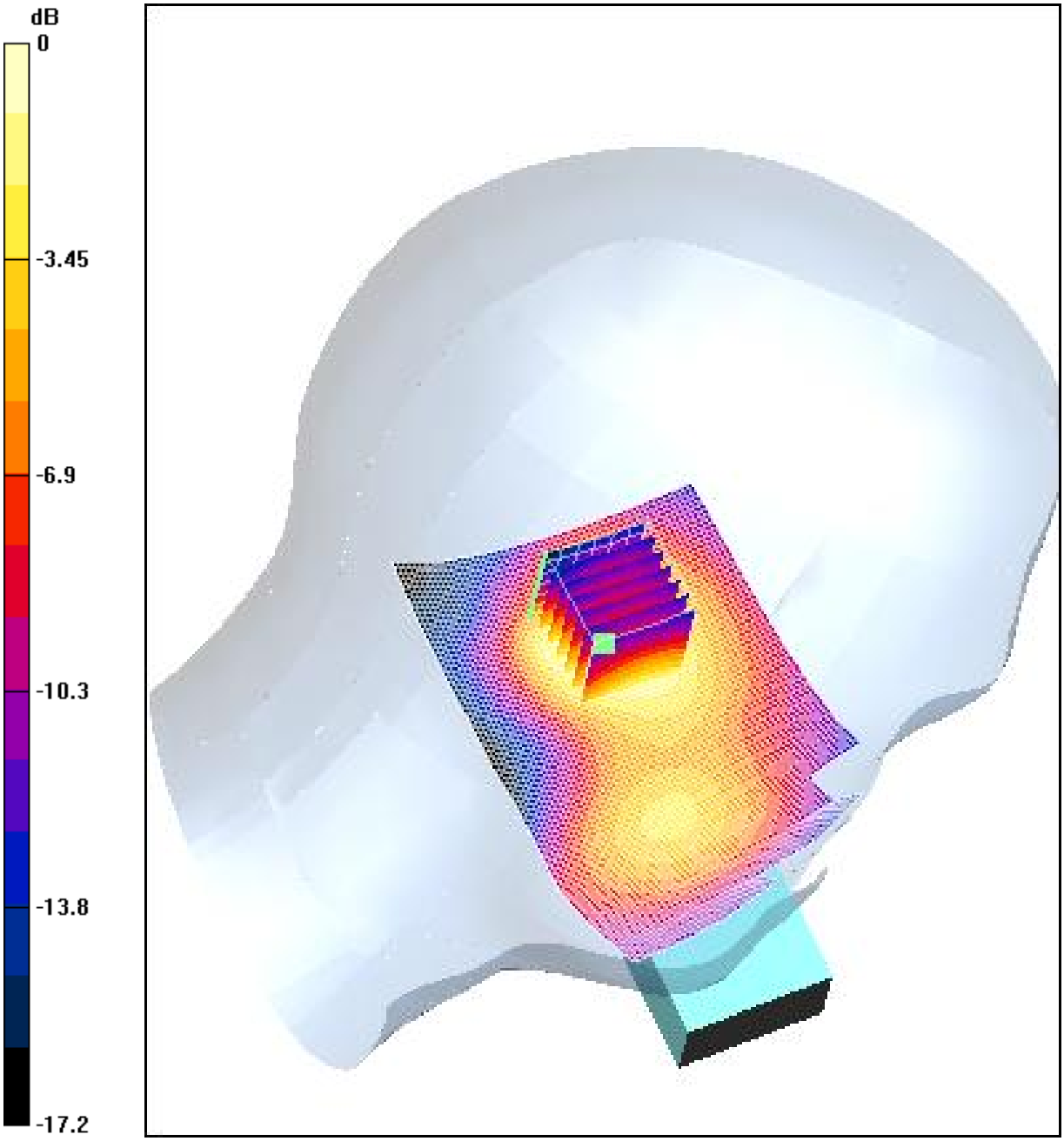
Communication System: DCS 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 (σ = 1.46824 mho/m, ε_r = 39.9929, ρ = 1000 kg/m^3)
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1774; ConvF(5.25, 5.25, 5.25); Calibrated: 2004-10-26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2003-6-4
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Tilt position - High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 11.5 V/m
Power Drift = -0.05 dB
Maximum value of SAR = 0.202 mW/g

Tilt position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.265 W/kg
SAR(1 g) = 0.175 mW/g; SAR(10 g) = 0.106 mW/g
Reference Value = 11.5 V/m
Power Drift = -0.05 dB
Maximum value of SAR = 0.191 mW/g



0 dB = 0.191mW/g

4.7 GSM1900-RightHandSide-Touch-Low

Date/Time: 04/18/05 13:37:58

Test Laboratory: SGS-GSM
File Name: FCC-OET65-RightHandSide-Touch-GSM1900.da4

FCC-OET65-RightHandSide-Touch-GSM1900-Low

DUT: GSM50013; Type: 900/1800MHz & 1900MHz; Serial: 20050308
Program: Compliance Testing: FCC OET65 Protocol (Right-Hand Side)

Communication System: DCS 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 (σ = 1.41808 mho/m, ε_r = 40.5312, ρ = 1000 kg/m^3)
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

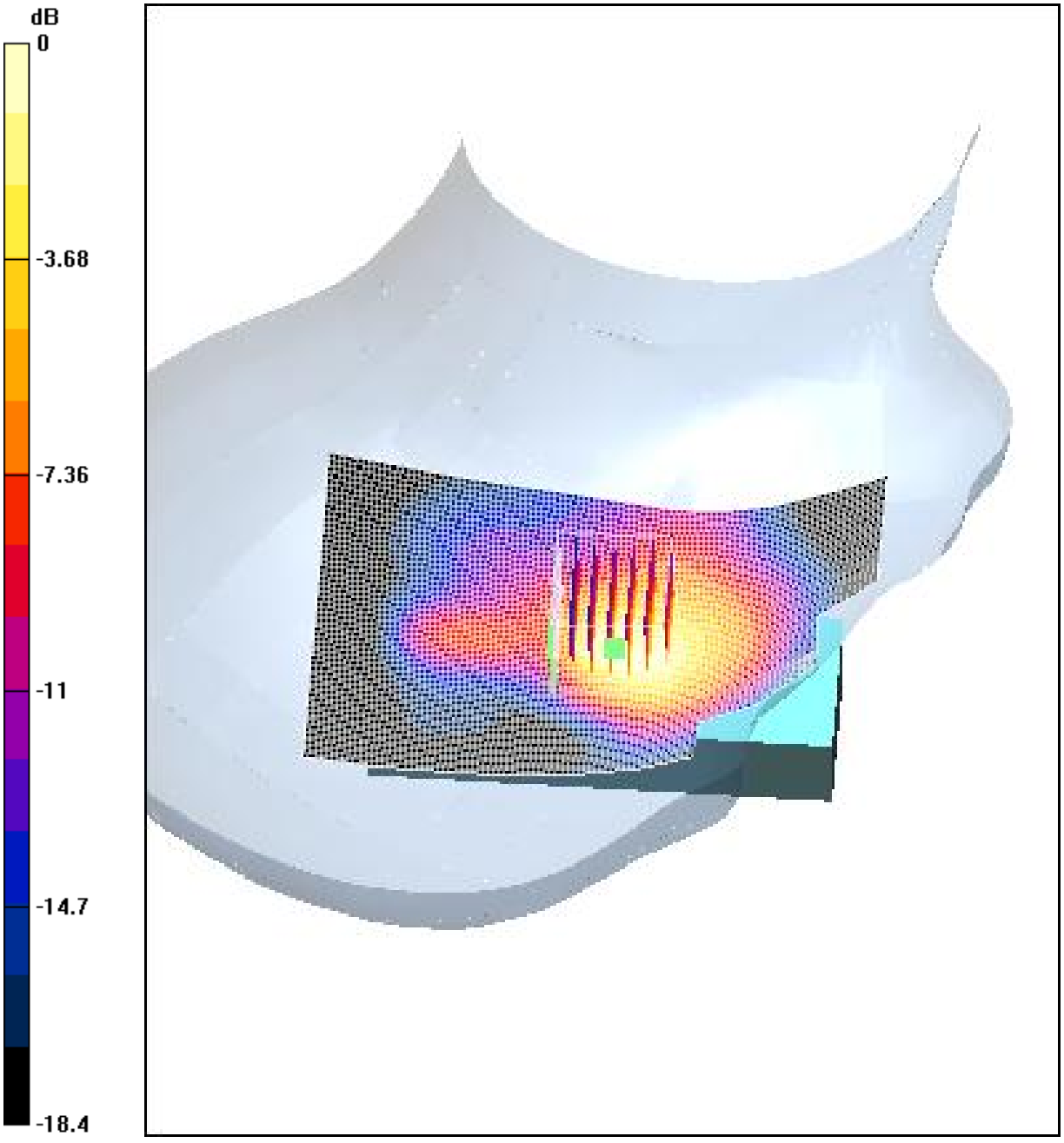
DASY4 Configuration:

- Probe: ET3DV6 - SN1774; ConvF(5.25, 5.25, 5.25); Calibrated: 2004-10-26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2003-6-4
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Touch position - Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 7.22 V/m
Power Drift = 0.009 dB
Maximum value of SAR = 0.484 mW/g

Touch position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.881 W/kg
SAR(1 g) = 0.43 mW/g; SAR(10 g) = 0.225 mW/g
Reference Value = 7.22 V/m
Power Drift = 0.009 dB

Maximum value of SAR = 0.453 mW/g



0 dB = 0.453mW/g

4.8 GSM1900-RightHandSide-Touch-Mid

Date/Time: 04/18/05 13:37:58

Test Laboratory: SGS-GSM
File Name: FCC-OET65-RightHandSide-Touch-GSM1900.da4

FCC-OET65-RightHandSide-Touch-GSM1900-Mid

DUT: GSM50013; Type: 900/1800MHz & 1900MHz; Serial: 20050308
Program: Compliance Testing: FCC OET65 Protocol (Right-Hand Side)

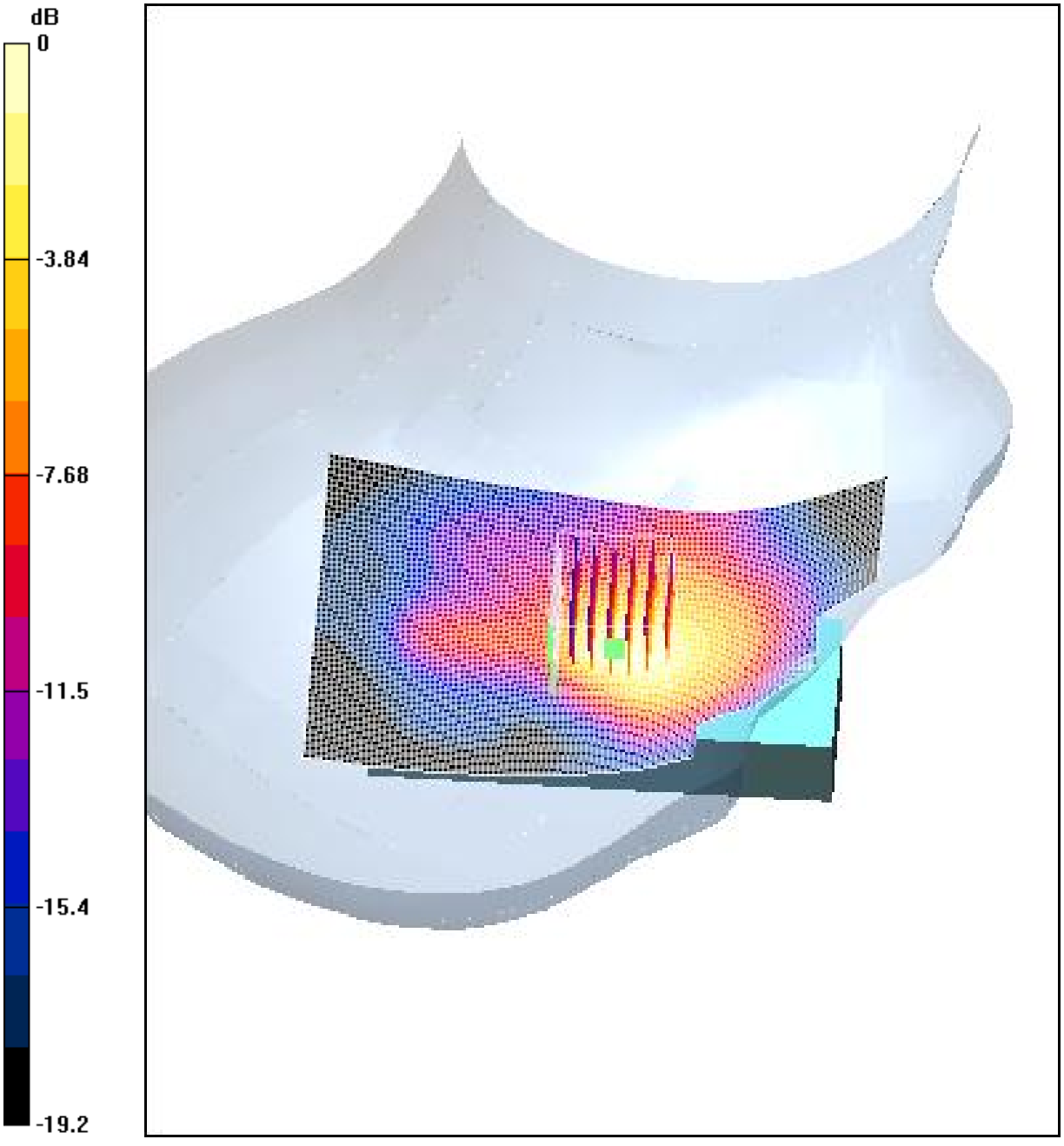
Communication System: DCS 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 (σ = 1.44443 mho/m, ε_r = 40.3239, ρ = 1000 kg/m^3)
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1774; ConvF(5.25, 5.25, 5.25); Calibrated: 2004-10-26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2003-6-4
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Touch position - Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 7.83 V/m
Power Drift = -0.1 dB
Maximum value of SAR = 0.646 mW/g

Touch position - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 1.15 W/kg
SAR(1 g) = 0.572 mW/g; SAR(10 g) = 0.296 mW/g
Reference Value = 7.83 V/m
Power Drift = -0.1 dB
Maximum value of SAR = 0.604 mW/g



0 dB = 0.604mW/g

4.9 GSM1900-RightHandSide-Touch-High

Date/Time: 04/18/05 13:37:58

Test Laboratory: SGS-GSM
File Name: FCC-OET65-RightHandSide-Touch-GSM1900.da4

FCC-OET65-RightHandSide-Touch-GSM1900-High

DUT: GSM50013; Type: 900/1800MHz & 1900MHz; Serial: 20050308
Program: Compliance Testing: FCC OET65 Protocol (Right-Hand Side)

Communication System: DCS 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 (σ = 1.46824 mho/m, ε_r = 39.9929, ρ = 1000 kg/m^3)
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

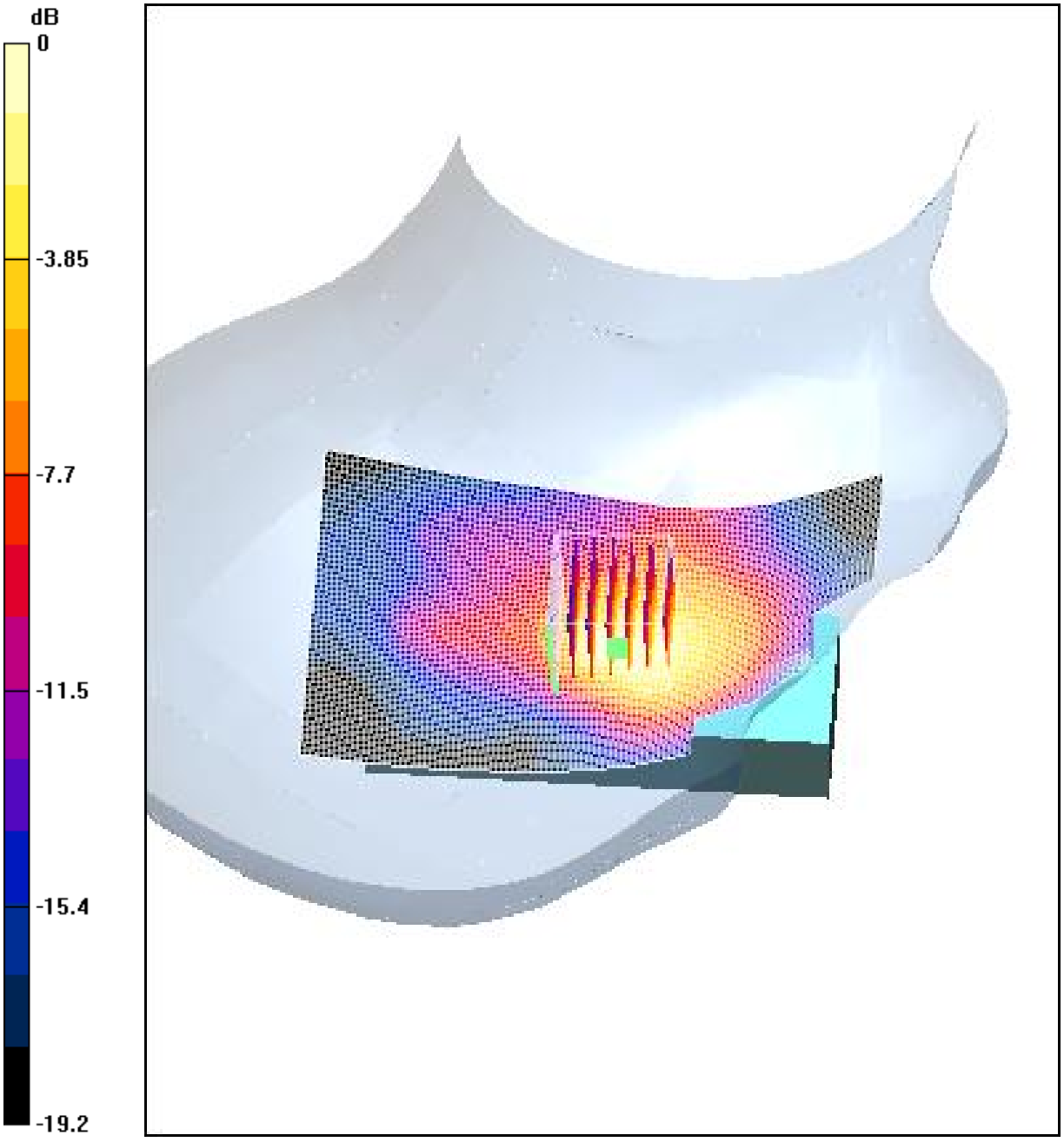
- Probe: ET3DV6 - SN1774; ConvF(5.25, 5.25, 5.25); Calibrated: 2004-10-26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2003-6-4
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Touch position - High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 6.69 V/m
Power Drift = 0.8 dB
Maximum value of SAR = 0.661 mW/g

Touch position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 1.16 W/kg
SAR(1 g) = 0.607 mW/g; SAR(10 g) = 0.317 mW/g
Reference Value = 6.69 V/m

Power Drift = 0.8 dB

Maximum value of SAR = 0.646 mW/g



0 dB = 0.646mW/g

4.10 GSM1900-RightHandSide-Tilt-Low

Date/Time: 04/18/05 15:42:22

Test Laboratory: SGS-GSM
File Name: FCC-OET65-RightHandSide-Tilt-GSM1900.da4

FCC-OET65-RightHandSide-Tilt-GSM1900-Low

DUT: GSM50013; Type: 900/1800MHz & 1900MHz; Serial: 20050308
Program: Compliance Testing: FCC OET65 Protocol (Right-Hand Side)

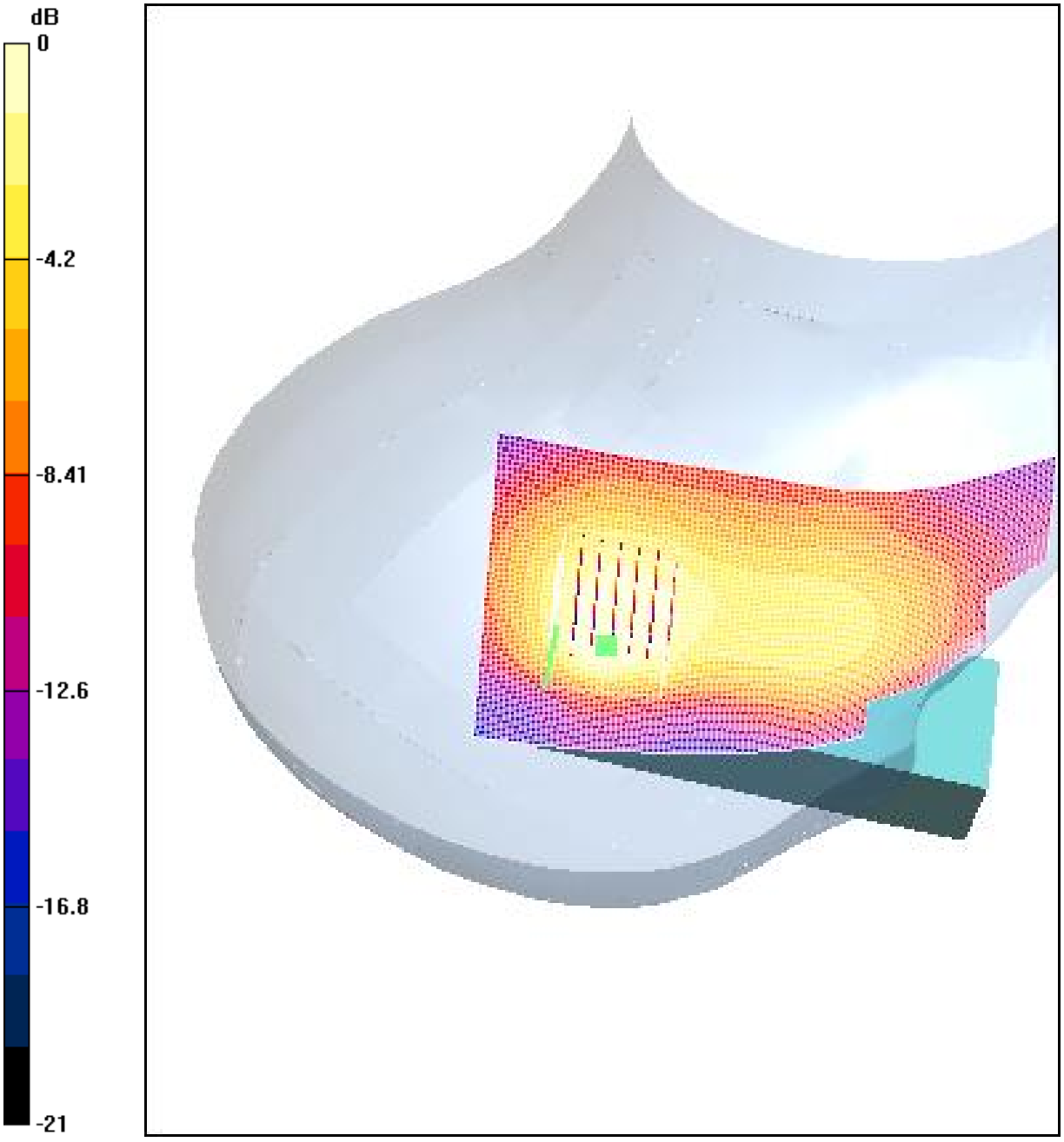
Communication System: DCS 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 (σ = 1.41808 mho/m, ε_r = 40.5312, ρ = 1000 kg/m^3)
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1774; ConvF(5.25, 5.25, 5.25); Calibrated: 2004-10-26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2003-6-4
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Tilt position - Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 8.76 V/m
Power Drift = -0.01 dB
Maximum value of SAR = 0.116 mW/g

Tilt position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.139 W/kg
SAR(1 g) = 0.0898 mW/g; SAR(10 g) = 0.0542 mW/g
Reference Value = 8.76 V/m
Power Drift = -0.01 dB
Maximum value of SAR = 0.0967 mW/g



0 dB = 0.0967mW/g

4.11 GSM1900-RightHandSide-Tilt -Mid

Date/Time: 04/18/05 15:42:22

Test Laboratory: SGS-GSM
File Name: FCC-OET65-RightHandSide-Tilt-GSM1900.da4

FCC-OET65-RightHandSide-Tilt-GSM1900-Mid

DUT: GSM50013; Type: 900/1800MHz & 1900MHz; Serial: 20050308
Program: Compliance Testing: FCC OET65 Protocol (Right-Hand Side)

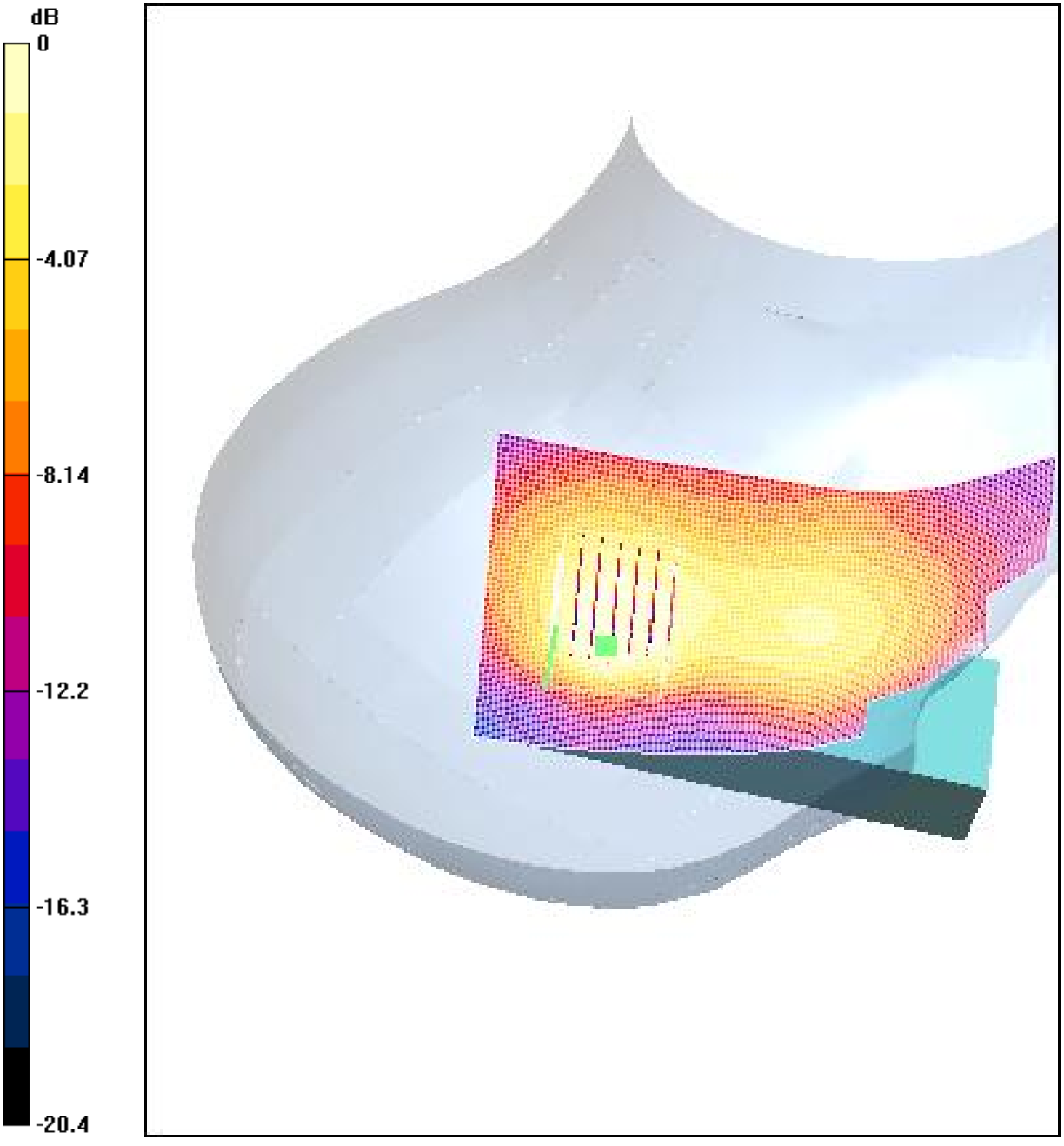
Communication System: DCS 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 (σ = 1.44443 mho/m, ε_r = 40.3239, ρ = 1000 kg/m^3)
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1774; ConvF(5.25, 5.25, 5.25); Calibrated: 2004-10-26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2003-6-4
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Tilt position - Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 10.1 V/m
Power Drift = -0.004 dB
Maximum value of SAR = 0.154 mW/g

Tilt position - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.192 W/kg
SAR(1 g) = 0.123 mW/g; SAR(10 g) = 0.0727 mW/g
Reference Value = 10.1 V/m
Power Drift = -0.004 dB
Maximum value of SAR = 0.132 mW/g



0 dB = 0.132mW/g

4.12 GSM1900-RightHandSide-Tilt -High

Date/Time: 04/18/05 15:42:22

Test Laboratory: SGS-GSM
File Name: FCC-OET65-RightHandSide-Tilt-GSM1900.da4

FCC-OET65-RightHandSide-Tilt-GSM1900-High

DUT: GSM50013; Type: 900/1800MHz & 1900MHz; Serial: 20050308
Program: Compliance Testing: FCC OET65 Protocol (Right-Hand Side)

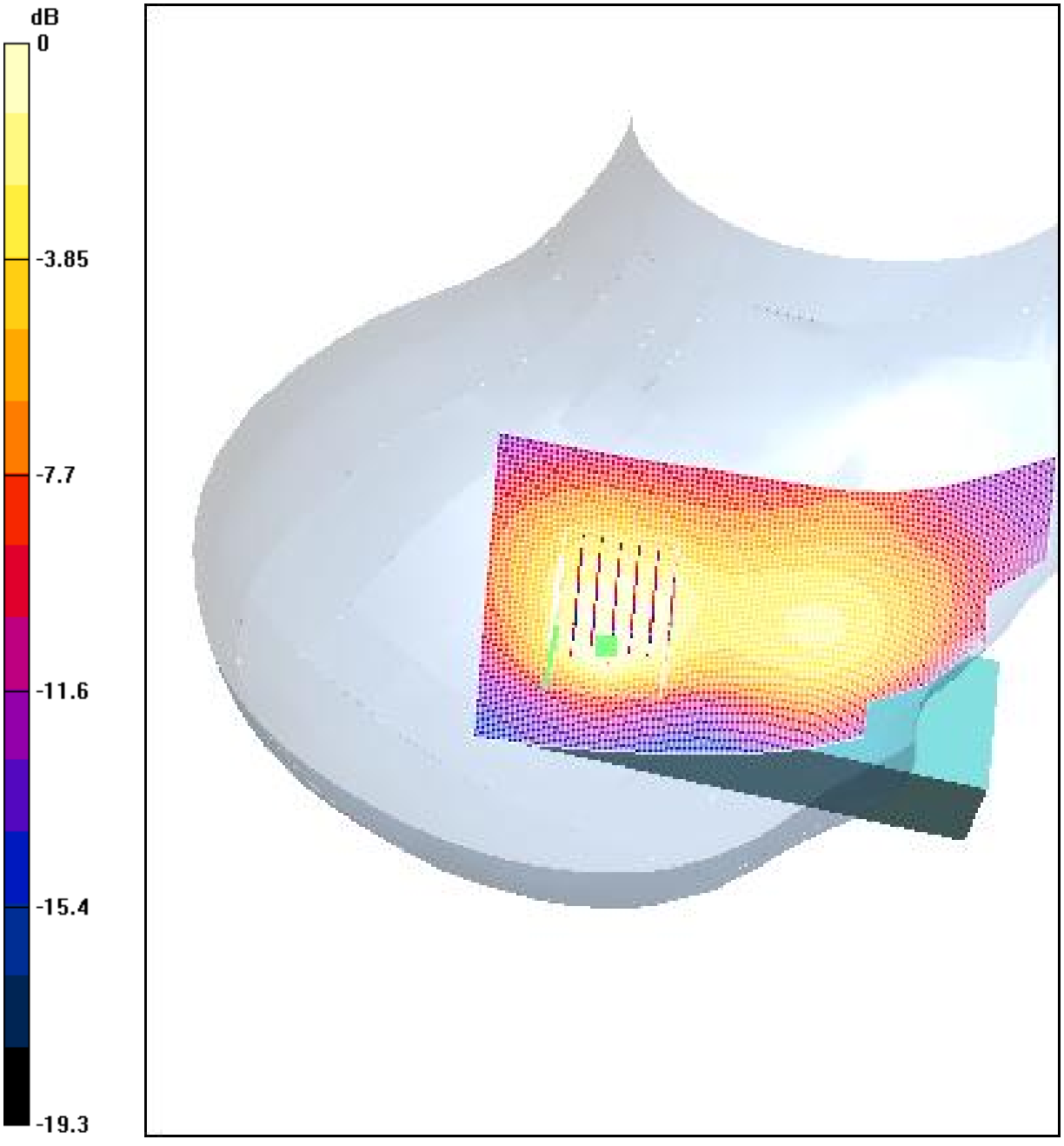
Communication System: DCS 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 (σ = 1.46824 mho/m, ε_r = 39.9929, ρ = 1000 kg/m^3)
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1774; ConvF(5.25, 5.25, 5.25); Calibrated: 2004-10-26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2003-6-4
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Tilt position - High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 11.1 V/m
Power Drift = -0.1 dB
Maximum value of SAR = 0.186 mW/g

Tilt position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.233 W/kg
SAR(1 g) = 0.148 mW/g; SAR(10 g) = 0.0873 mW/g
Reference Value = 11.1 V/m
Power Drift = -0.1 dB
Maximum value of SAR = 0.161 mW/g



0 dB = 0.161mW/g

4.13 GSM1900-BodyWorn-Low

Date/Time: 04/15/05 11:09:40

Test Laboratory: SGS-GSM
File Name: FCC-OET65-Body-Worn-GSM1900.da4

FCC-OET65-Body-Worn-GSM1900-Low

DUT: GSM50013; Type: 900/1800MHz & 1900MHz; Serial: 20050308
Program: Compliance Testing: FCC OET65 Protocol (Body Worn)

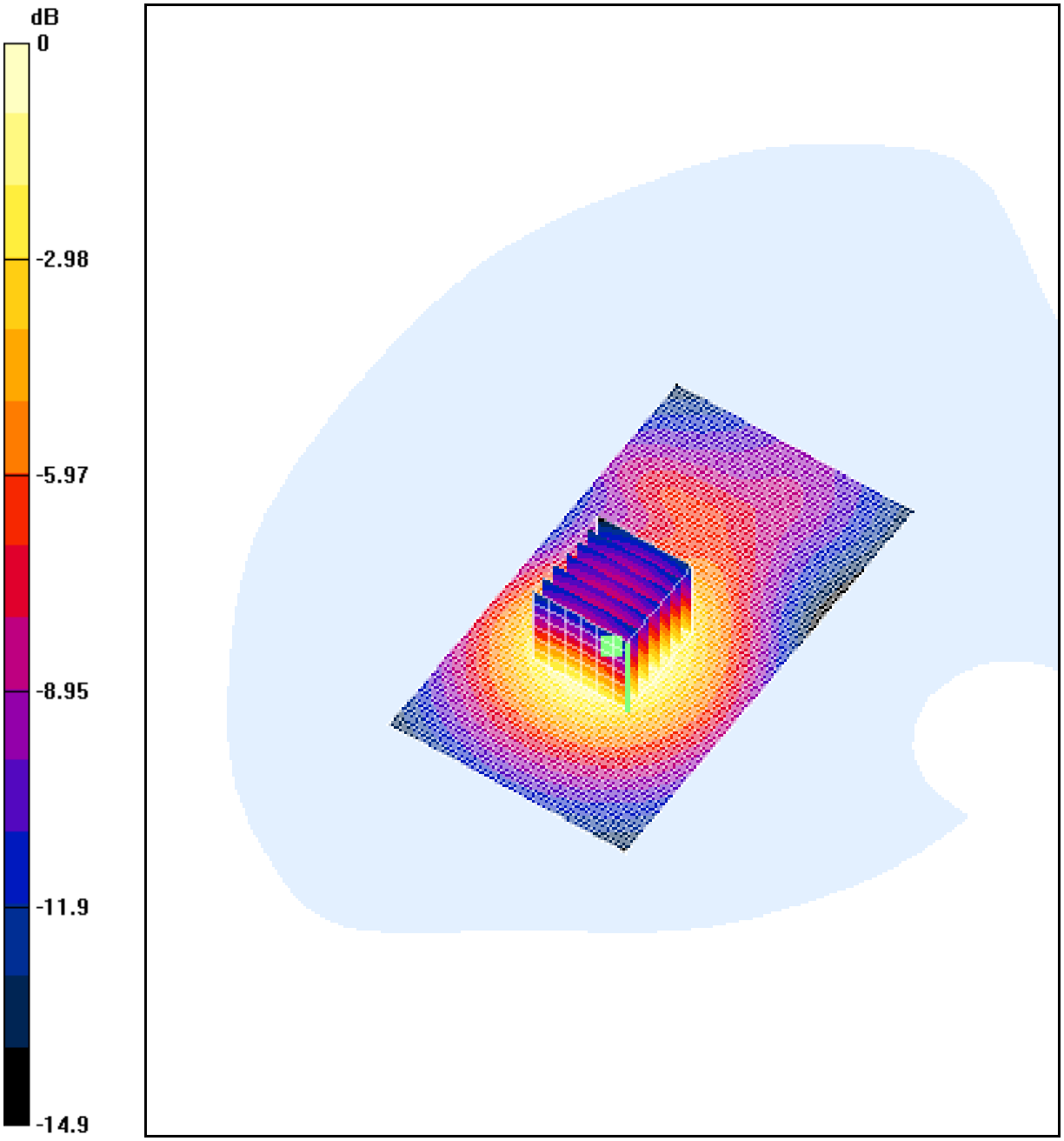
Communication System: DCS 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 (σ = 1.48803 mho/m, ε_r = 51.6495, ρ = 1000 kg/m^3)
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1774; ConvF(4.66, 4.66, 4.66); Calibrated: 2004-10-26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2003-6-4
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Body Worn - Low/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 6.55 V/m
Power Drift = -0.02 dB
Maximum value of SAR = 0.164 mW/g

Body Worn - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.219 W/kg
SAR(1 g) = 0.151 mW/g; SAR(10 g) = 0.0952 mW/g
Reference Value = 6.55 V/m
Power Drift = -0.02 dB
Maximum value of SAR = 0.161 mW/g



0 dB = 0.161mW/g

4.14 GSM1900-BodyWorn-Mid

Date/Time: 04/15/05 11:09:40

Test Laboratory: SGS-GSM
File Name: FCC-OET65-Body-Worn-GSM1900.da4

FCC-OET65-Body-Worn-GSM1900-Mid

DUT: GSM50013; Type: 900/1800MHz & 1900MHz; Serial: 20050308
Program: Compliance Testing: FCC OET65 Protocol (Body Worn)

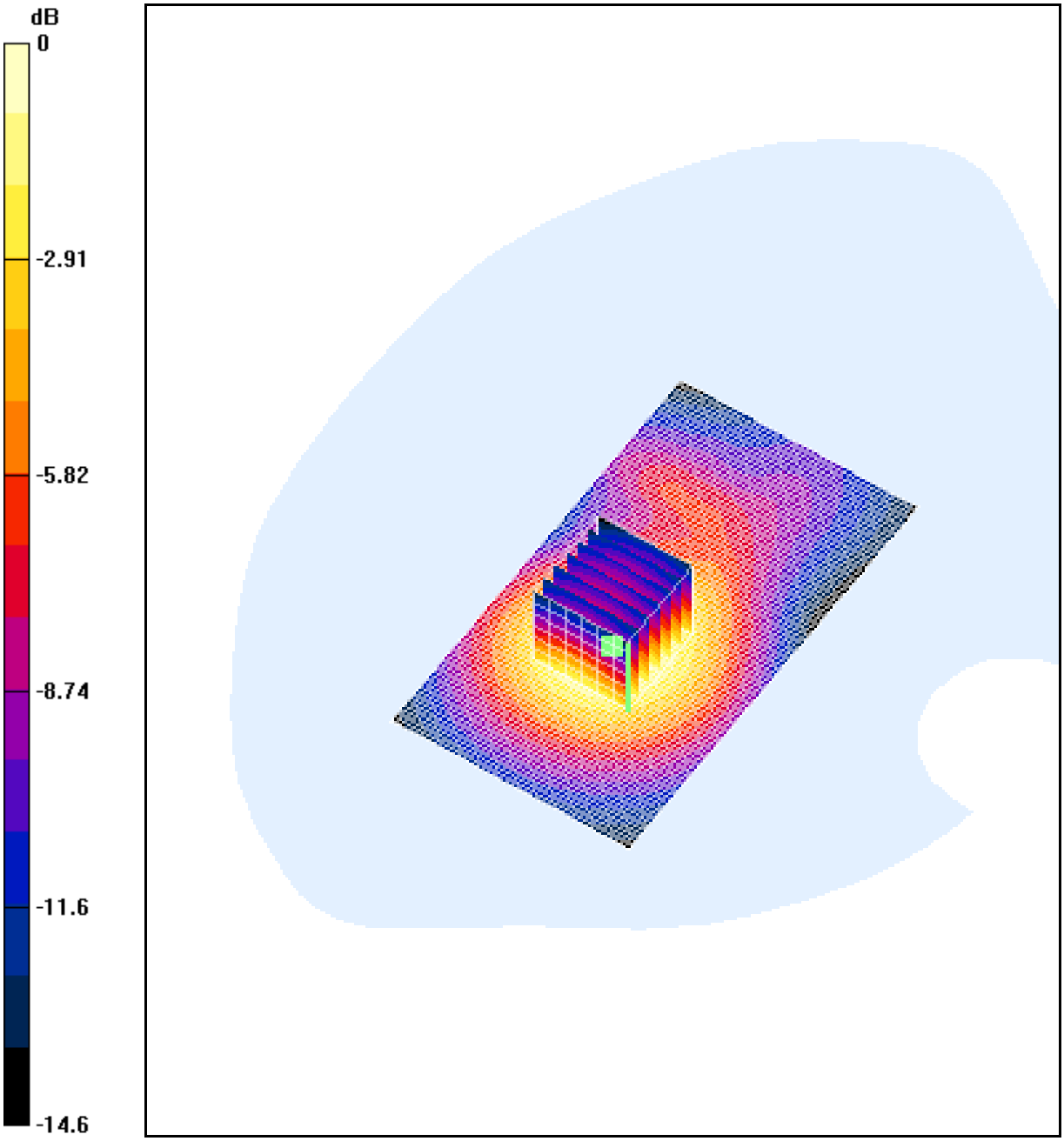
Communication System: DCS 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 (σ = 1.52127 mho/m, ε_r = 51.5237, ρ = 1000 kg/m^3)
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1774; ConvF(4.66, 4.66, 4.66); Calibrated: 2004-10-26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2003-6-4
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Body Worn - Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 7.72 V/m
Power Drift = -0.004 dB
Maximum value of SAR = 0.281 mW/g

Body Worn - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.378 W/kg
SAR(1 g) = 0.257 mW/g; SAR(10 g) = 0.162 mW/g
Reference Value = 7.72 V/m
Power Drift = -0.004 dB
Maximum value of SAR = 0.275 mW/g



0 dB = 0.275mW/g

4.15 GSM1900-BodyWorn-High

Date/Time: 04/15/05 11:09:40

Test Laboratory: SGS-GSM
File Name: FCC-OET65-Body-Worn-GSM1900.da4

FCC-OET65-Body-Worn-GSM1900-High

DUT: GSM50013; Type: 900/1800MHz & 1900MHz; Serial: 20050308
Program: Compliance Testing: FCC OET65 Protocol (Body Worn)

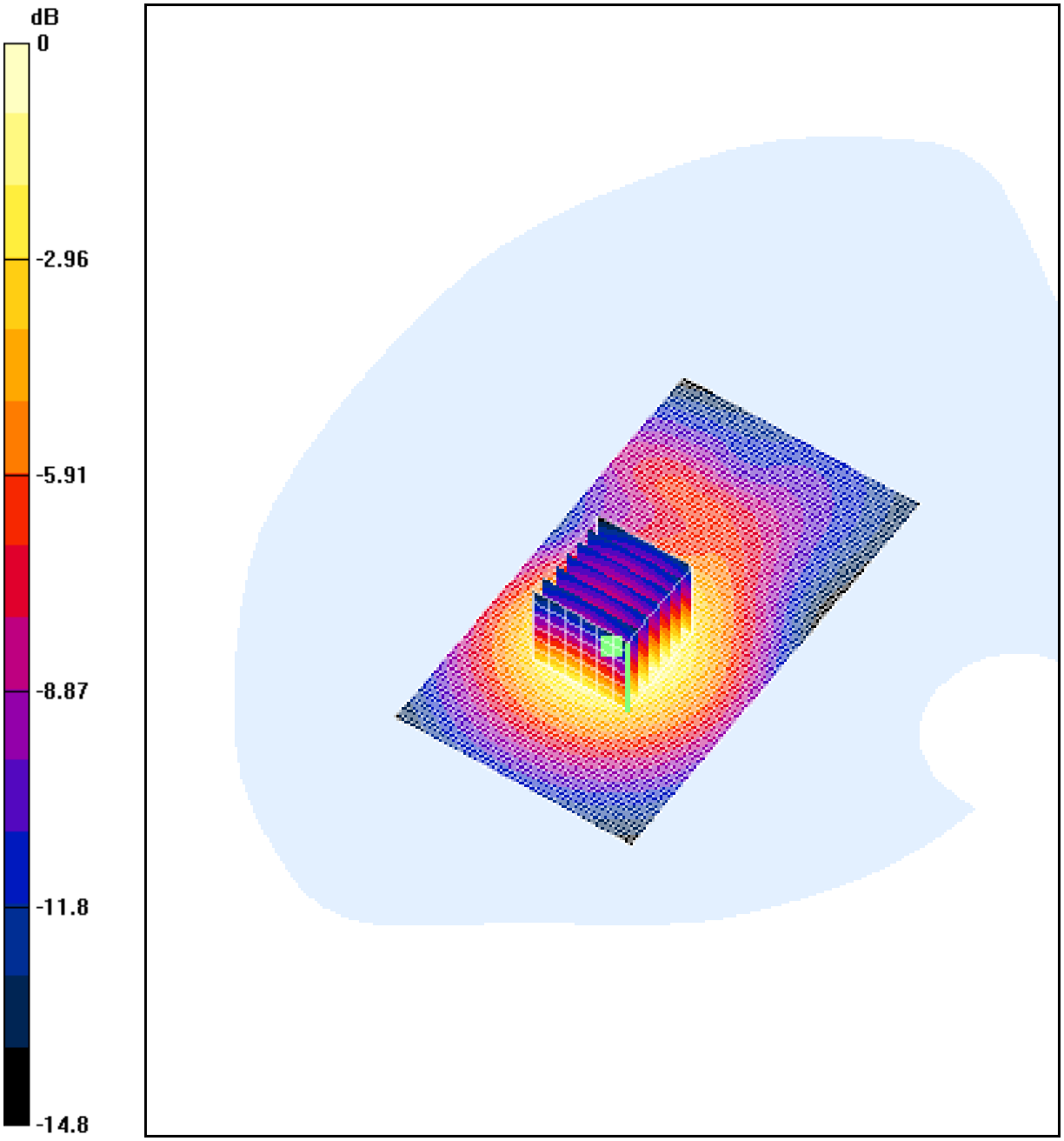
Communication System: DCS 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: HSL1900 (σ = 1.55344 mho/m, ε_r = 51.4693, ρ = 1000 kg/m^3)
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1774; ConvF(4.66, 4.66, 4.66); Calibrated: 2004-10-26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2003-6-4
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Body Worn - High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 8.87 V/m
Power Drift = -0.06 dB
Maximum value of SAR = 0.468 mW/g

Body Worn - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.639 W/kg
SAR(1 g) = 0.426 mW/g; SAR(10 g) = 0.265 mW/g
Reference Value = 8.87 V/m
Power Drift = -0.06 dB
Maximum value of SAR = 0.455 mW/g



0 dB = 0.455mW/g

GPRS Mode

4.16 GSM1900-BodyWorn-GPRS-Low

Date/Time: 04/19/05 16:21:28

Test Laboratory: SGS-GSM
File Name: FCC-OET65-Body-Worn-GSM1900-GPRS-2.da4

FCC-OET65-Body-Worn-GSM1900-GPRS-Low

DUT: GSM50013; Type: 900/1800MHz & 1900MHz; Serial: 20050308
Program: Compliance Testing: FCC OET65 Protocol (Body Worn)

Communication System: DCS 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:4
Medium: HSL1900 (σ = 1.48803 mho/m, ε_r = 51.6495, ρ = 1000 kg/m^3)
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

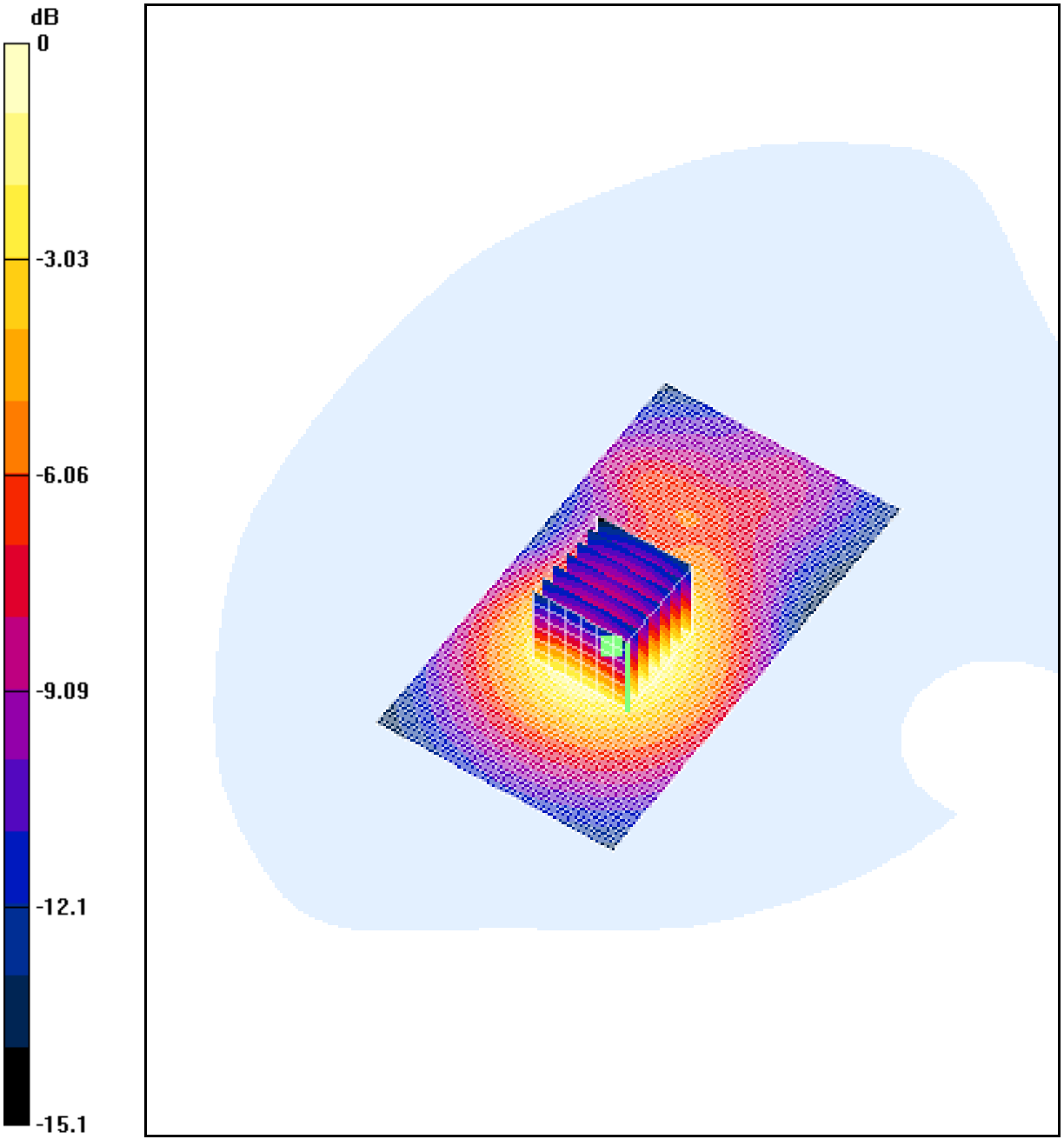
- Probe: ET3DV6 - SN1774; ConvF(4.66, 4.66, 4.66); Calibrated: 2004-10-26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2003-6-4
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Body Worn - Low/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 9.7 V/m
Power Drift = -0.06 dB
Maximum value of SAR = 0.326 mW/g

Body Worn - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.436 W/kg
SAR(1 g) = 0.299 mW/g; SAR(10 g) = 0.187 mW/g
Reference Value = 9.7 V/m

Power Drift = -0.06 dB

Maximum value of SAR = 0.321 mW/g



0 dB = 0.321mW/g

4.17 GSM1900-BodyWorn-GPRS-Mid

Date/Time: 04/19/05 14:15:05

Test Laboratory: SGS-GSM
File Name: FCC-OET65-Body-Worn-GSM1900-GPRS-2.da4

FCC-OET65-Body-Worn-GSM1900-GPRS-Mid

DUT: GSM50013; Type: 900/1800MHz & 1900MHz; Serial: 20050308
Program: Compliance Testing: FCC OET65 Protocol (Body Worn)

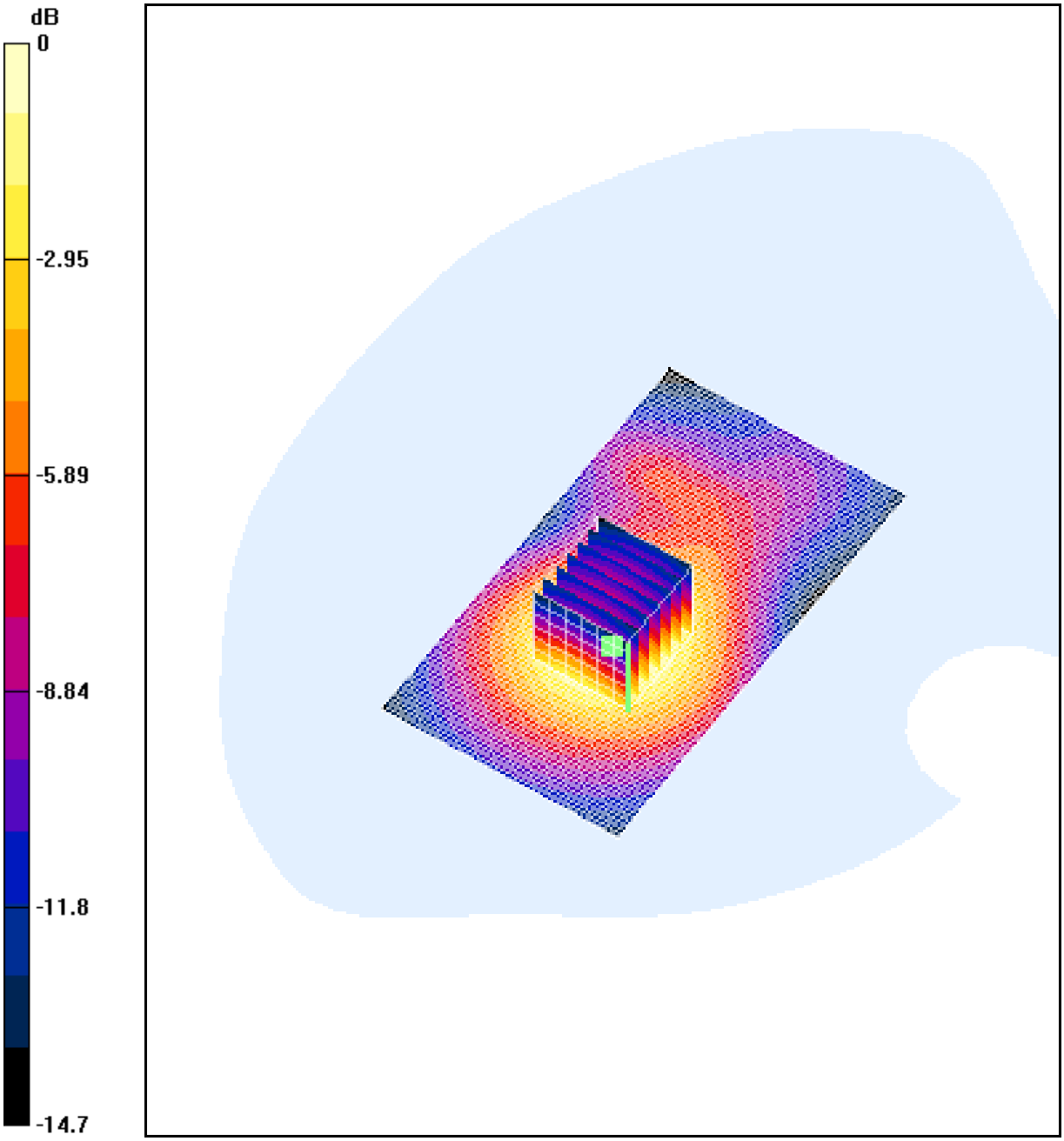
Communication System: DCS 1900; Frequency: 1880 MHz;Duty Cycle: 1:4
Medium: HSL1900 (σ = 1.52127 mho/m, ε_r = 51.5237, ρ = 1000 kg/m^3)
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1774; ConvF(4.66, 4.66, 4.66); Calibrated: 2004-10-26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2003-6-4
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Body Worn - Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 10.7 V/m
Power Drift = -0.04 dB
Maximum value of SAR = 0.531 mW/g

Body Worn - Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.757 W/kg
SAR(1 g) = 0.491 mW/g; SAR(10 g) = 0.302 mW/g
Reference Value = 10.7 V/m
Power Drift = -0.04 dB
Maximum value of SAR = 0.532 mW/g



0 dB = 0.532mW/g

4.18 GSM1900-BodyWorn-GPRS-High

Date/Time: 04/19/05 15:24:16

Test Laboratory: SGS-GSM
File Name: FCC-OET65-Body-Worn-GSM1900-GPRS-2.da4

FCC-OET65-Body-Worn-GSM1900-GPRS-High

DUT: GSM50013; Type: 900/1800MHz & 1900MHz; Serial: 20050308
Program: Compliance Testing: FCC OET65 Protocol (Body Worn)

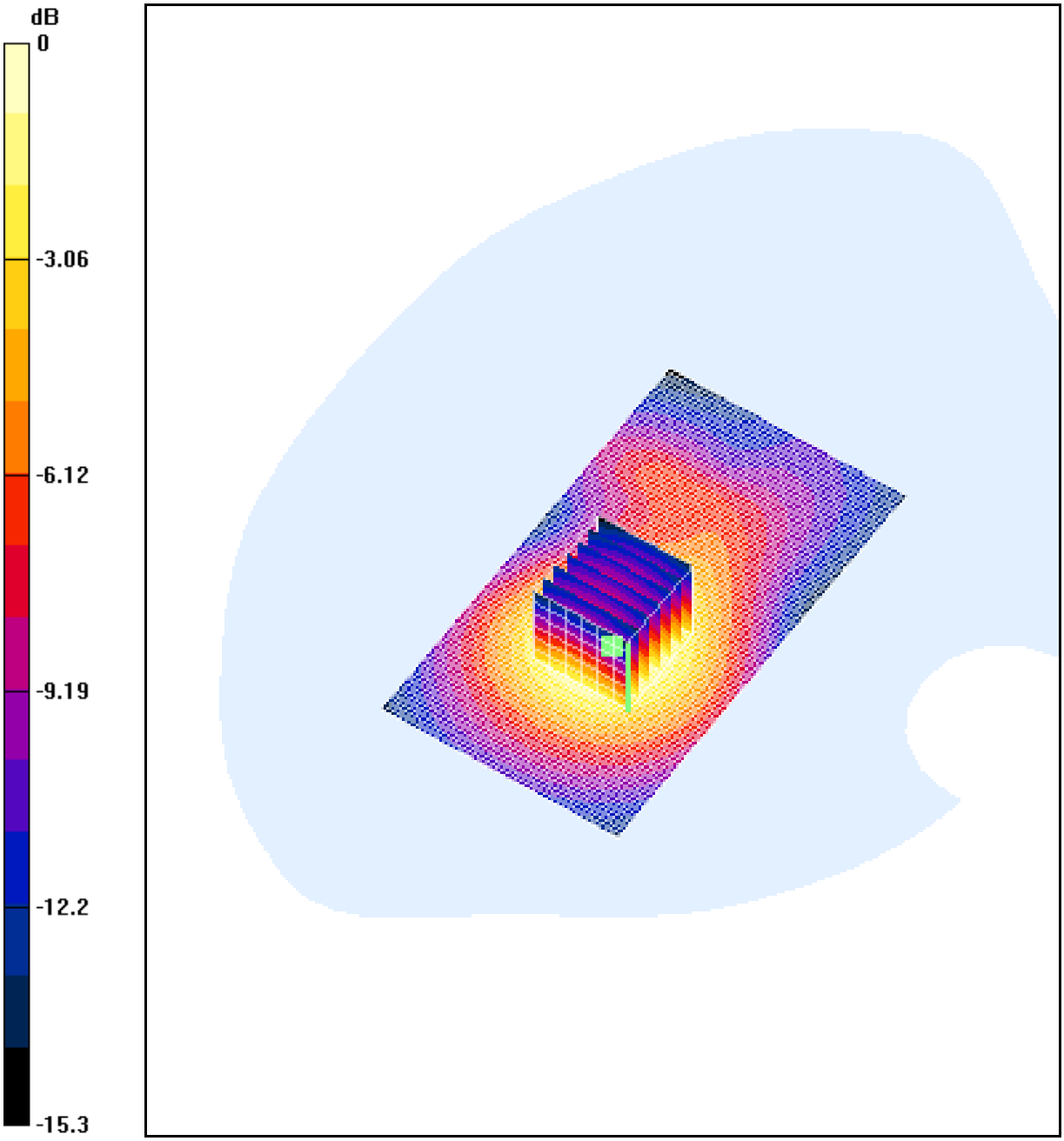
Communication System: DCS 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:4
Medium: HSL1900 (σ = 1.55344 mho/m, ε_r = 51.4693, ρ = 1000 kg/m^3)
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1774; ConvF(4.66, 4.66, 4.66); Calibrated: 2004-10-26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn569; Calibrated: 2003-6-4
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1283
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Body Worn - High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 12.5 V/m
Power Drift = -0.1 dB
Maximum value of SAR = 0.891 mW/g

Body Worn - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 1.27 W/kg
SAR(1 g) = 0.808 mW/g; SAR(10 g) = 0.493 mW/g
Reference Value = 12.5 V/m
Power Drift = -0.1 dB
Maximum value of SAR = 0.863 mW/g



0 dB = 0.863mW/g

Appendix

1.Photographs of Test Setup

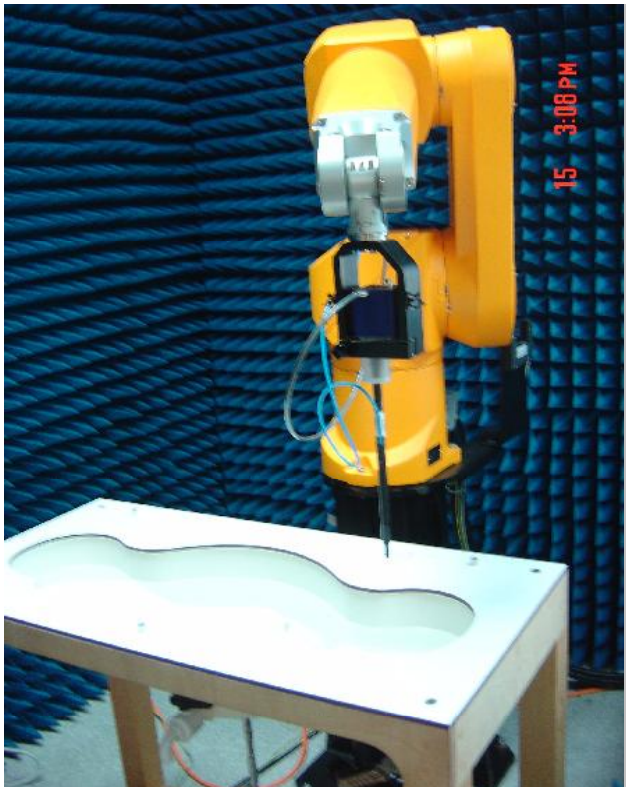


Fig.1 Photograph of the SAR measurement System

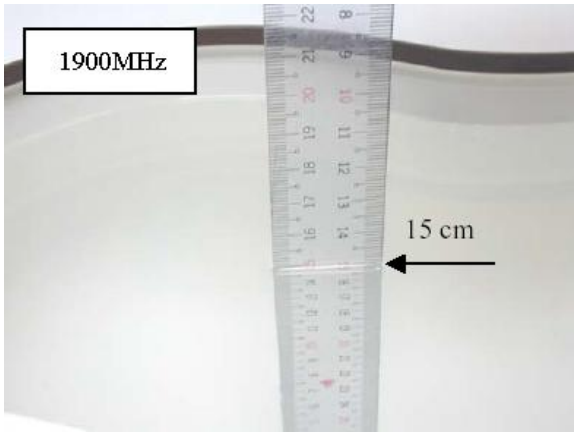


Fig.2 Photograph of the Tissue Simulant Fluid Fluid Liquid depth 15cm for Left-Head Side

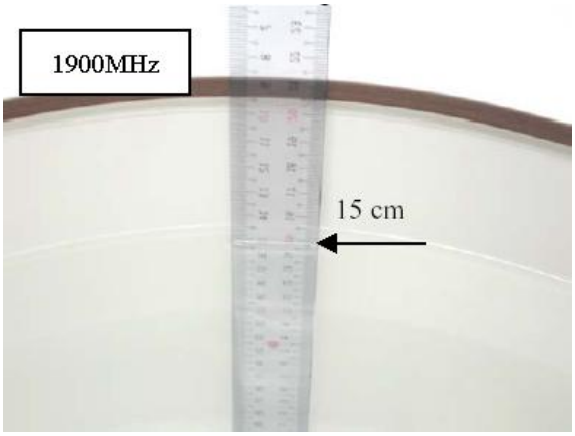


Fig.3 Photograph of the Tissue Simulant Liquid depth 15cm for Body-Worn

Fig.4 Photograph of the Left Hand Side Touch status

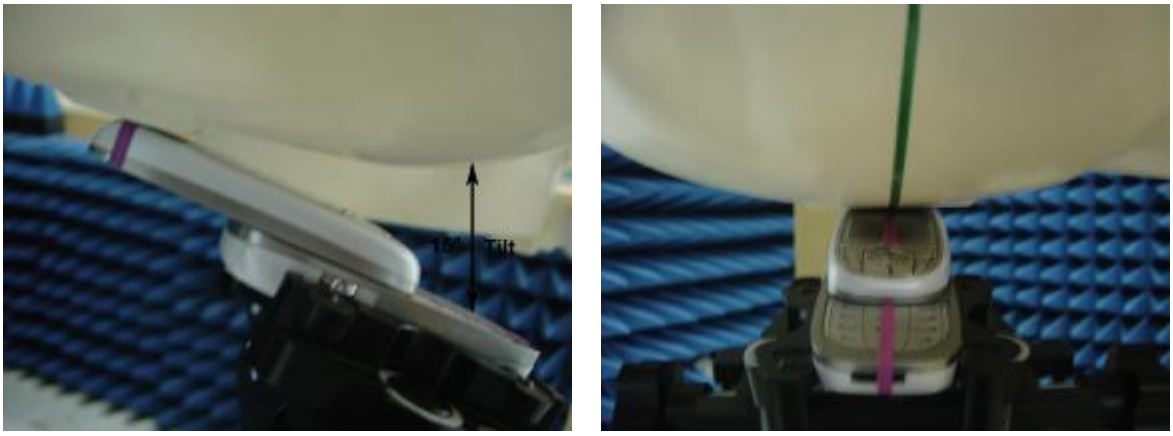


Fig.5 Photograph of the Left Hand Side Tilt status

Fig.6 Photograph of the Right Hand Side Touch status

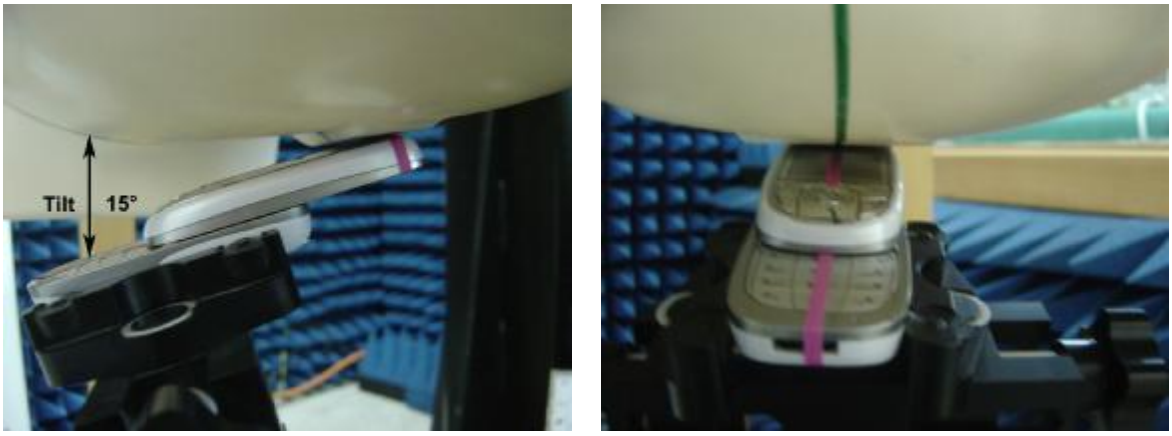


Fig.7 Photograph of the Right Hand Side Tilt status

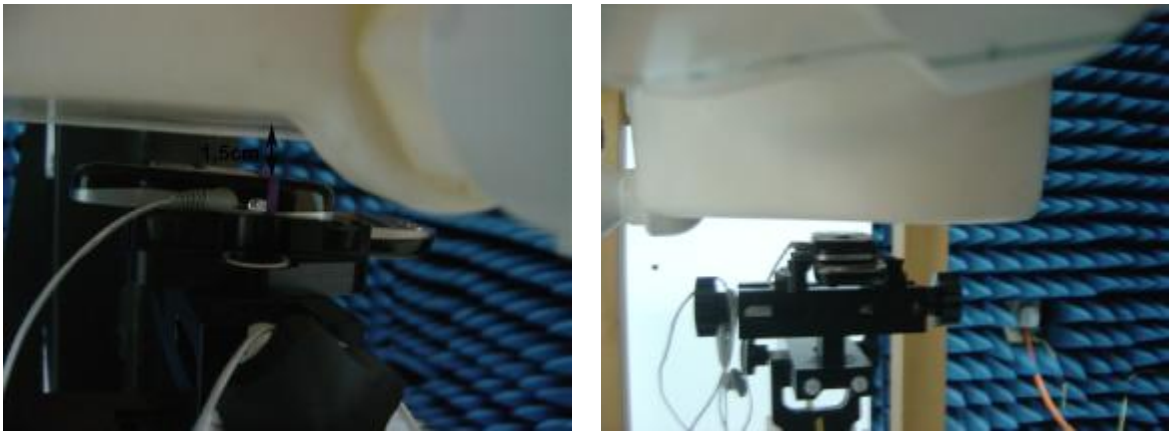


Fig.8 Photograph of the Body Worn status

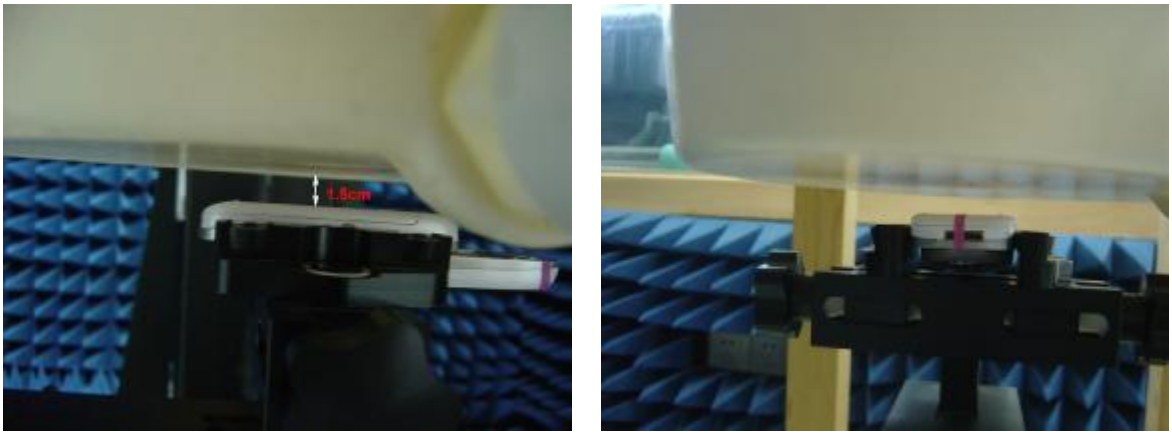


Fig.9 Photograph of the Body Worn status in GPRS Mode

2.Photographs of the EUT

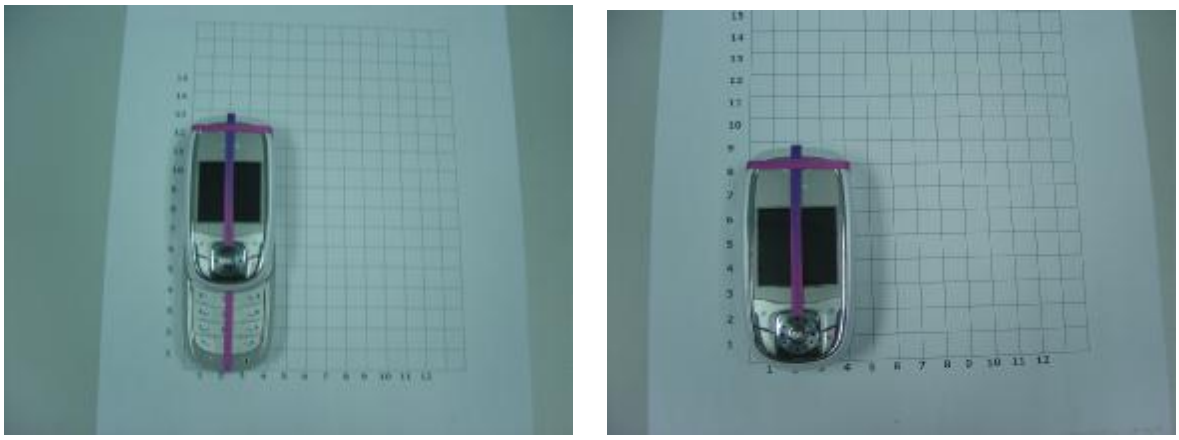


Fig.10 Front View

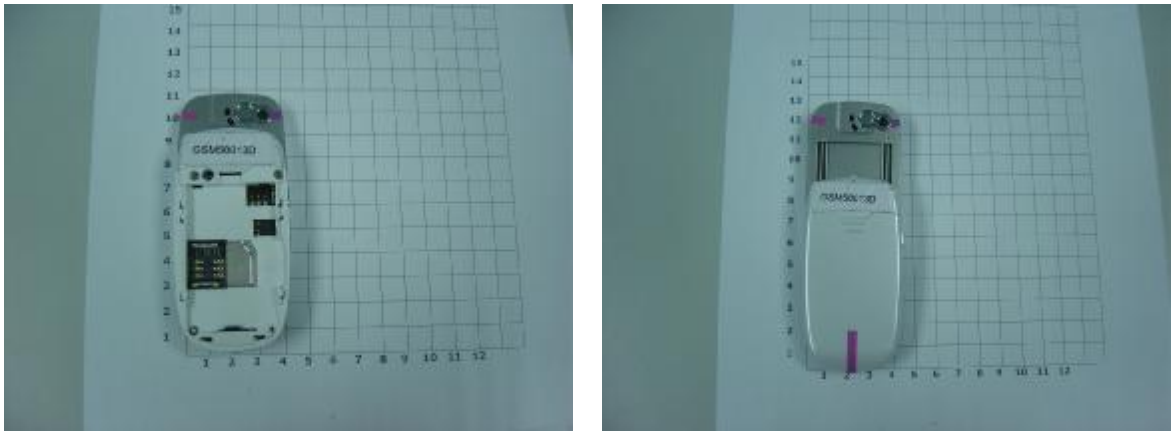


Fig. 11 Back View

3.Photographs of the battery

Fig.12 Front view of battery

Fig.13 Back view of battery

4.Photograph of the charger

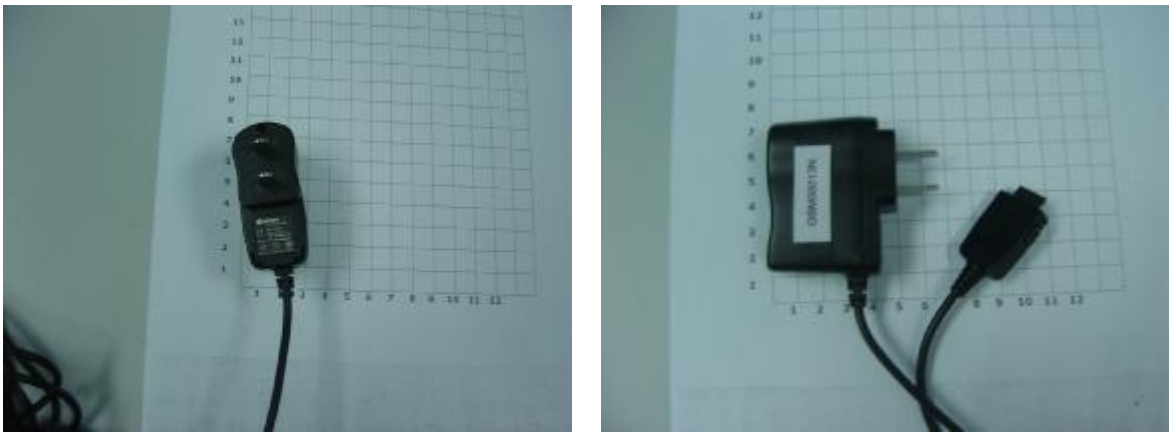


Fig.14 Charger

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 China (Auden)

Certificate No: ET3-1774_Oct04

CALIBRATION CERTIFICATE

Object	ET3DV6 - SN:1774
Calibration procedure(s)	QA CAL-01.v5 Calibration procedure for dosimetric E-field probes
Calibration date:	October 26, 2004
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	5-May-04 (METAS, No. 251-00388)	May-05
Power sensor E4412A	MY41495277	5-May-04 (METAS, No. 251-00388)	May-05
Reference 3 dB Attenuator	SN: S5054 (3c)	3-Apr-03 (METAS, No. 251-00403)	Aug-05
Reference 20 dB Attenuator	SN: S5086 (20b)	3-May-04 (METAS, No. 251-00389)	May-05
Reference 30 dB Attenuator	SN: S5129 (30b)	3-Apr-03 (METAS, No. 251-00404)	Aug-05
Reference Probe ES3DV2	SN:3013	8-Jan-04 (SPEAG, No. ES3-3013_Jan04)	Jan-05
DAE4	SN: 617	26-May-04 (SPEAG, No. DAE4-617_May04)	May-05

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092180	18-Sep-02 (SPEAG, in house check Oct-03)	In house check: Oct 05
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-03)	In house check: Nov 04

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

Issued: October 28, 2004

Probe ET3DV6

SN:1774

Manufactured:	April 15, 2003
Last calibrated:	May 23, 2003
Repaired:	October 18, 2004
Recalibrated:	October 26, 2004

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: ET3DV6 SN:1774

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

NormX	**1.92** ± 9.9%	$\mu V/(V/m)^2$	DCP X	**93** mV
NormY	**1.80** ± 9.9%	$\mu V/(V/m)^2$	DCP Y	**93** mV
NormZ	**1.72** ± 9.9%	$\mu V/(V/m)^2$	DCP Z	**93** 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		**3.7 mm**	**4.7 mm**
SAR_{be} [%]	Without Correction Algorithm	8.8	4.6
SAR_{be} [%]	With Correction Algorithm	0.7	0.1

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

Sensor Center to Phantom Surface Distance		**3.7 mm**	**4.7 mm**
SAR_{be} [%]	Without Correction Algorithm	12.5	8.3
SAR_{be} [%]	With Correction Algorithm	0.7	0.1

Sensor Offset

Probe Tip to Sensor Center	**2.7** 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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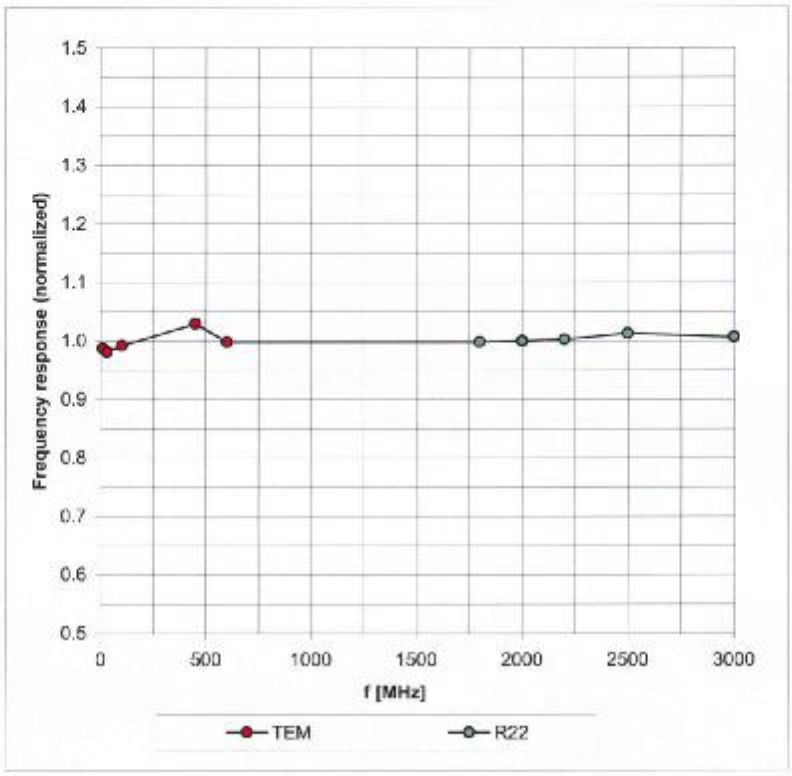
Frequency Response of E-Field

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

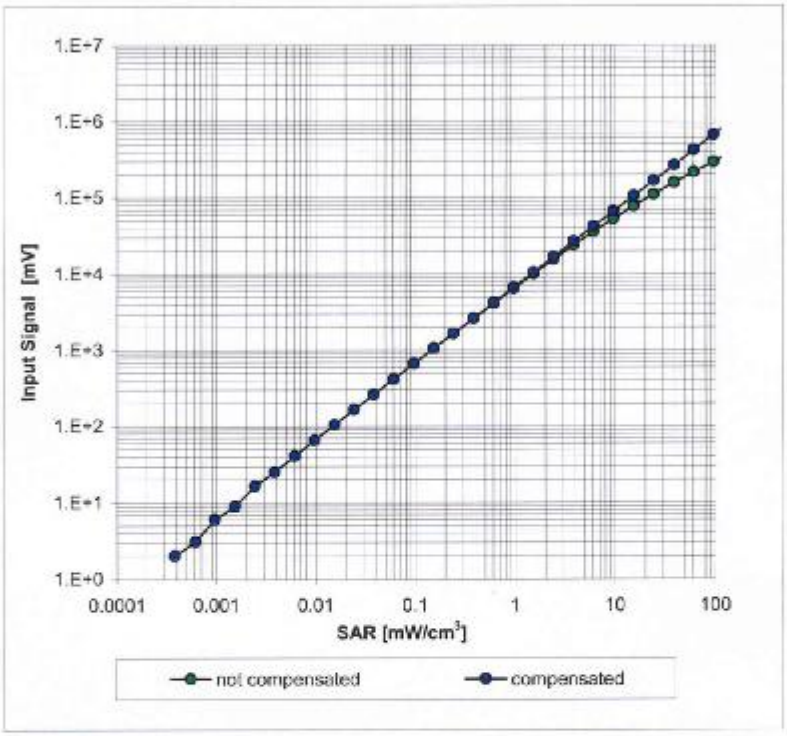


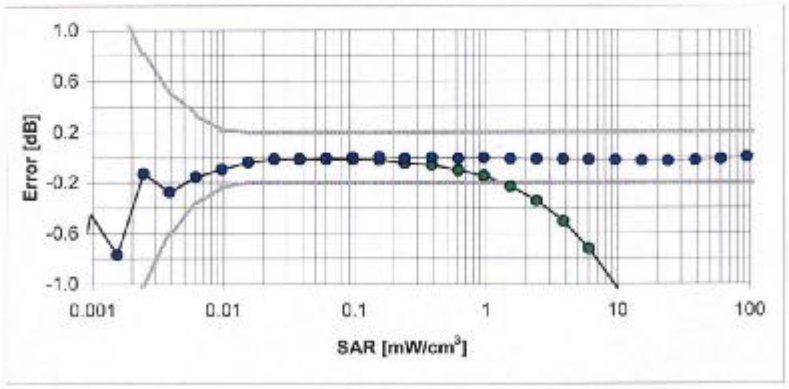
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

ET3DV6 SN:1774 **October 26, 2004**

Dynamic Range f(SAR_{head})

(Waveguide R22, f = 1800 MHz)





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

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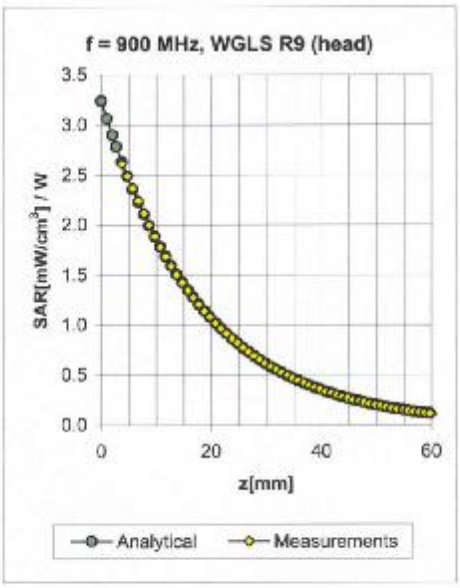
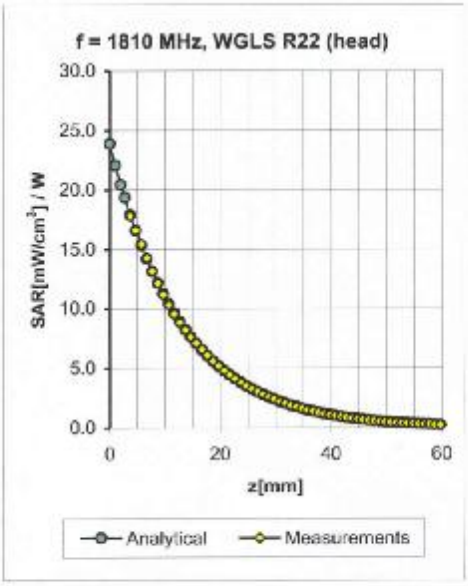
Conversion Factor Assessment



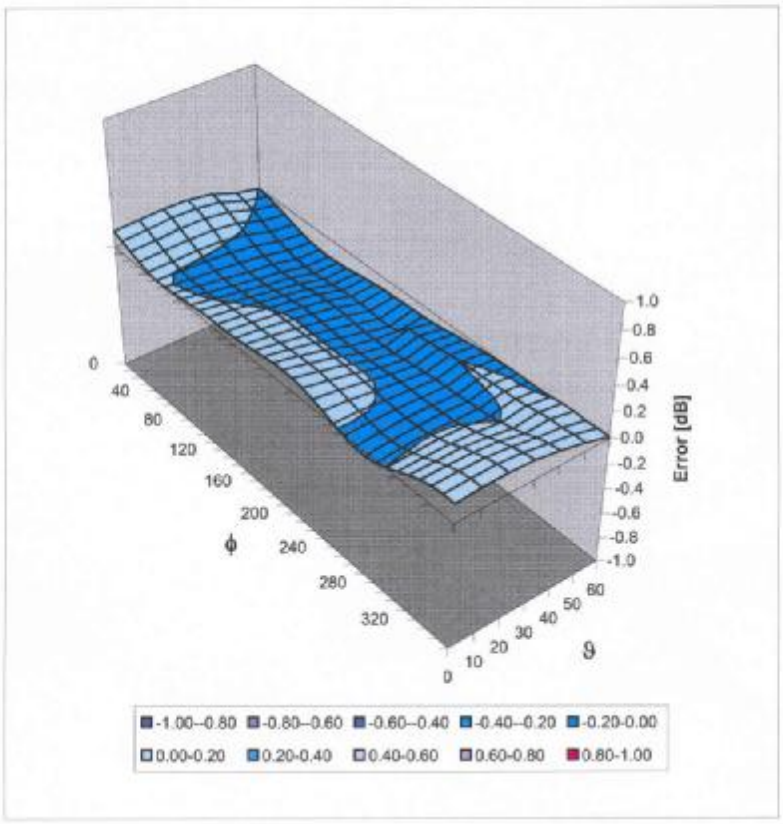


f [MHz]	Validity [MHz][C]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
835	± 50 / ± 100	Head	41.5 ± 5%	0.90 ± 5%	1.13	1.42	6.96 ± 11.0% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	1.09	1.46	6.61 ± 11.0% (k=2)
1750	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.58	2.31	5.48 ± 11.0% (k=2)
1900	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.54	2.52	5.25 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.63	2.30	4.70 ± 11.8% (k=2)
835	± 50 / ± 100	Body	55.2 ± 5%	0.97 ± 5%	0.96	1.58	6.65 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	1.00	1.57	6.36 ± 11.0% (k=2)
1750	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.52	2.81	4.79 ± 11.0% (k=2)
1900	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.52	2.98	4.66 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.62	2.18	4.35 ± 11.8% (k=2)

[C] The validity of ± 100 MHz only applies for DASY 4.3 B17 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



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

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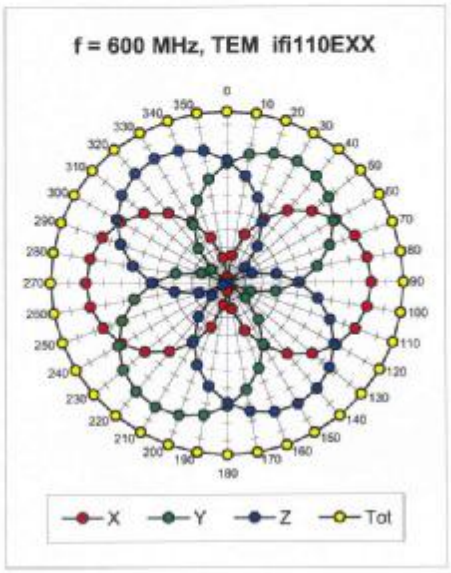
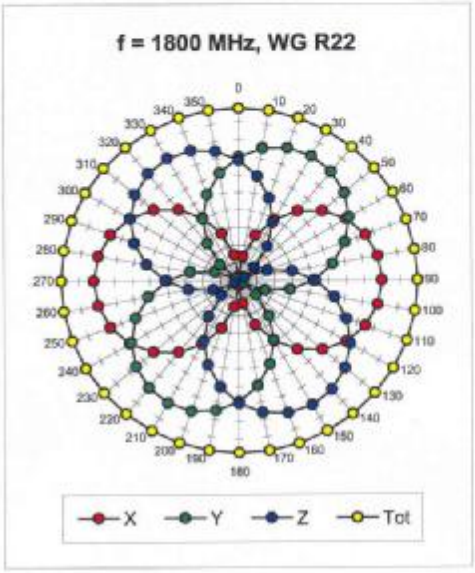
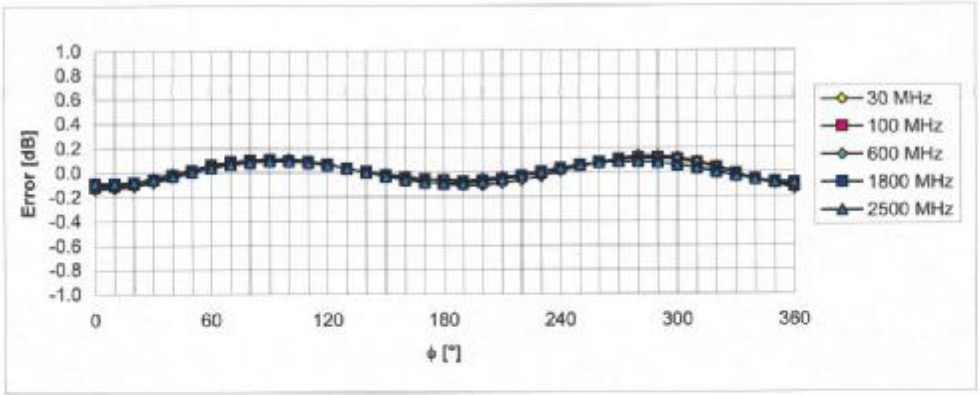
Receiving Pattern (ϕ), ϑ = 0°







Uncertainty of Axial Isotropy Assessment: ± 0.5% (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

Signature / Stamp

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

F. Bomholt

The end