Appendix 3. SAR Distribution Scans

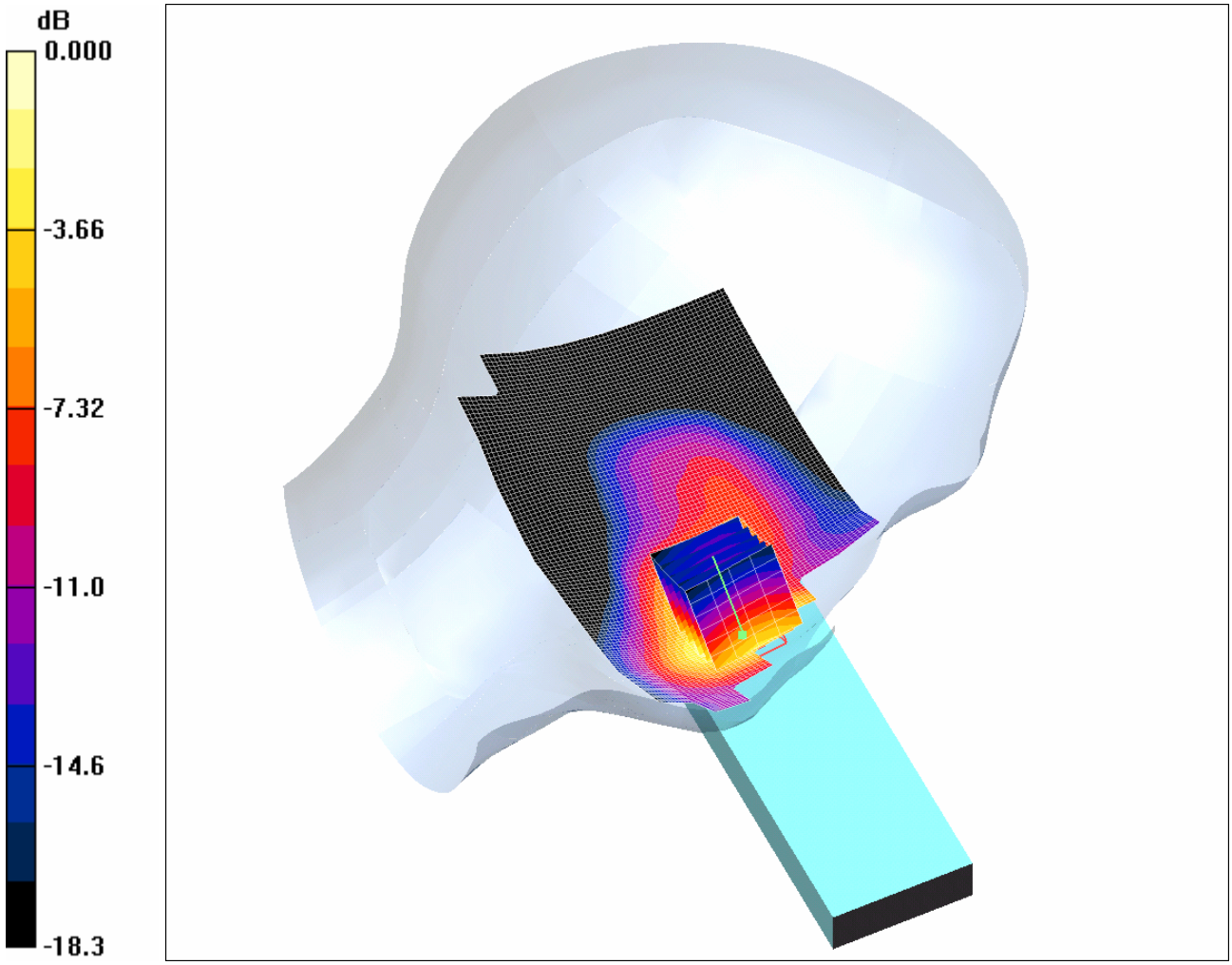
This appendix contains SAR distribution scans which are not included in the total number of pages for this report.

Scan Reference Number	Title
SCN/73067JD08/001	Touch Left PCS CH660
SCN/73067JD08/002	Tilt Left PCS CH660
SCN/73067JD08/003	Touch Right PCS CH660
SCN/73067JD08/004	Tilt Right PCS CH660
SCN/73067JD08/005	Front Of EUT Facing Phantom PCS CH660
SCN/73067JD08/006	Front Of EUT Facing Phantom GPRS CH660
SCN/73067JD08/007	Rear Of EUT Facing Phantom GPRS CH660
SCN/73067JD08/008	Rear Of EUT Facing Phantom GPRS With PHF CH660
SCN/73067JD08/009	System Performance Check 1900MHz Body 15 02 08
SCN/73067JD08/010	System Performance Check 1900MHz Head 15 02 08

Test of: Panasonic Mobile Comms Dev of Europe Ltd
P906i

To: OET Bulletin 65 Supplement C: (2001-01)

SCN/73067JD08/001: Touch Left PCS CH660
Date: 15/02/2008
DUT: Panasonic P906i; Type: P906i (Sample C9); Serial: 357015010018932



0 dB = 0.412mW/g

Communication System: PCS 1900; Frequency: 1879.8 MHz;Duty Cycle: 1:8.3
Medium: 1900 MHz HSL Medium parameters used (interpolated): f = 1879.8 MHz; σ = 1.46 mho/m; ε_r = 41.6; ρ = 1000 kg/m^3
Phantom section: Left Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1528; ConvF(4.98, 4.98, 4.98); Calibrated: 06/07/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 24/05/2007
- Phantom: SAM 12b; Type: SAM 4.0; Serial: TP:1197
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Touch Left - Middle/Area Scan (71x161x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.418 mW/g

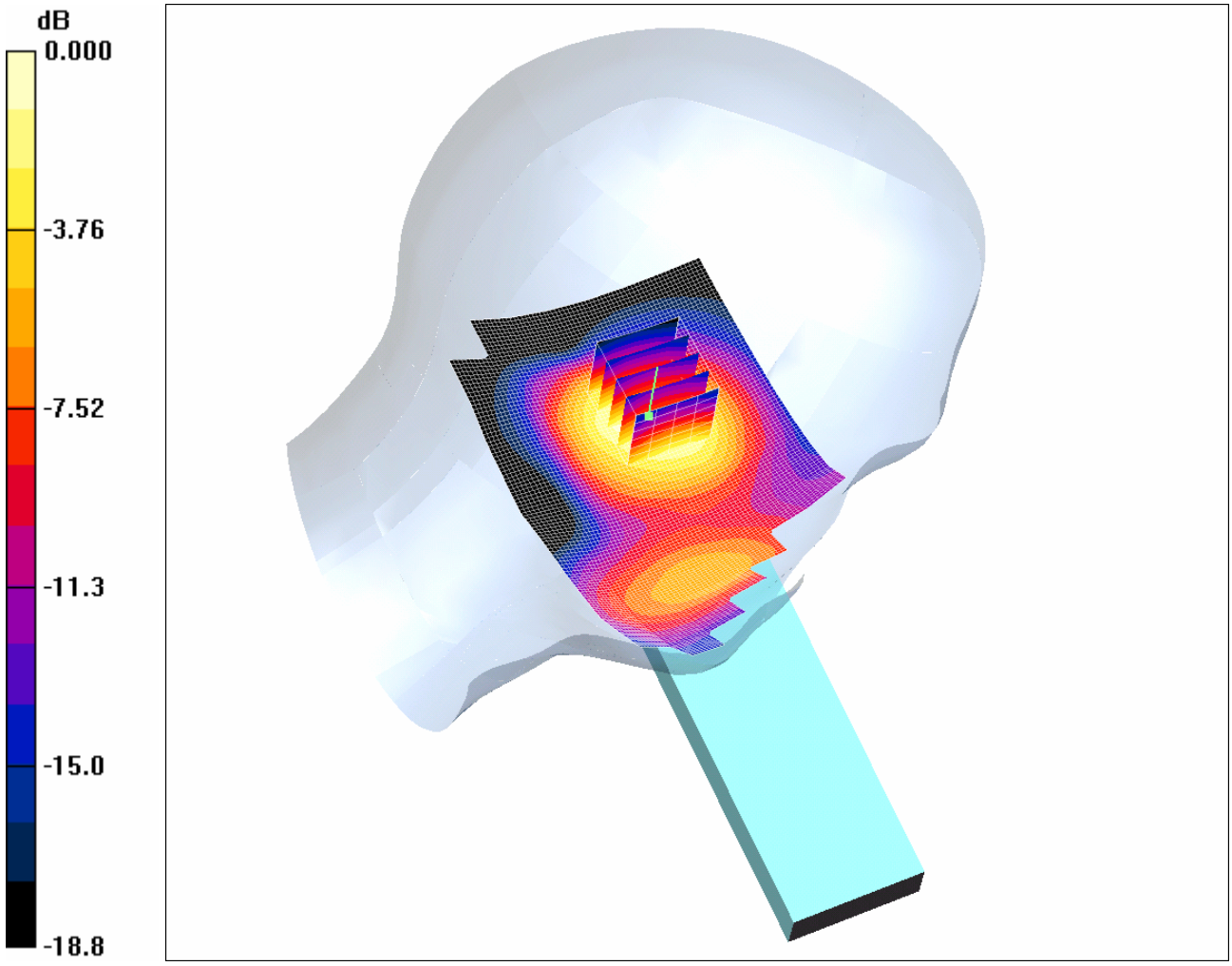
Touch Left - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.75 V/m; Power Drift = -0.528 dB
Peak SAR (extrapolated) = 0.633 W/kg
SAR(1 g) = 0.370 mW/g; SAR(10 g) = 0.201 mW/g

Maximum value of SAR (measured) = 0.412 mW/g

Test of: Panasonic Mobile Comms Dev of Europe Ltd
P906i

To: OET Bulletin 65 Supplement C: (2001-01)

SCN/73067JD08/002: Tilt Left PCS CH660
Date: 15/02/2008
DUT: Panasonic P906i; Type: P906i (Sample C9); Serial: 357015010018932



0 dB = 0.177mW/g

Communication System: PCS 1900; Frequency: 1879.8 MHz;Duty Cycle: 1:8.3
Medium: 1900 MHz HSL Medium parameters used (interpolated): f = 1879.8 MHz; σ = 1.46 mho/m; ε_r = 41.6; ρ = 1000 kg/m^3
Phantom section: Left Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1528; ConvF(4.98, 4.98, 4.98); Calibrated: 06/07/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 24/05/2007
- Phantom: SAM 12b; Type: SAM 4.0; Serial: TP:1197
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176
Tilt Left - Middle/Area Scan (71x161x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.188 mW/g

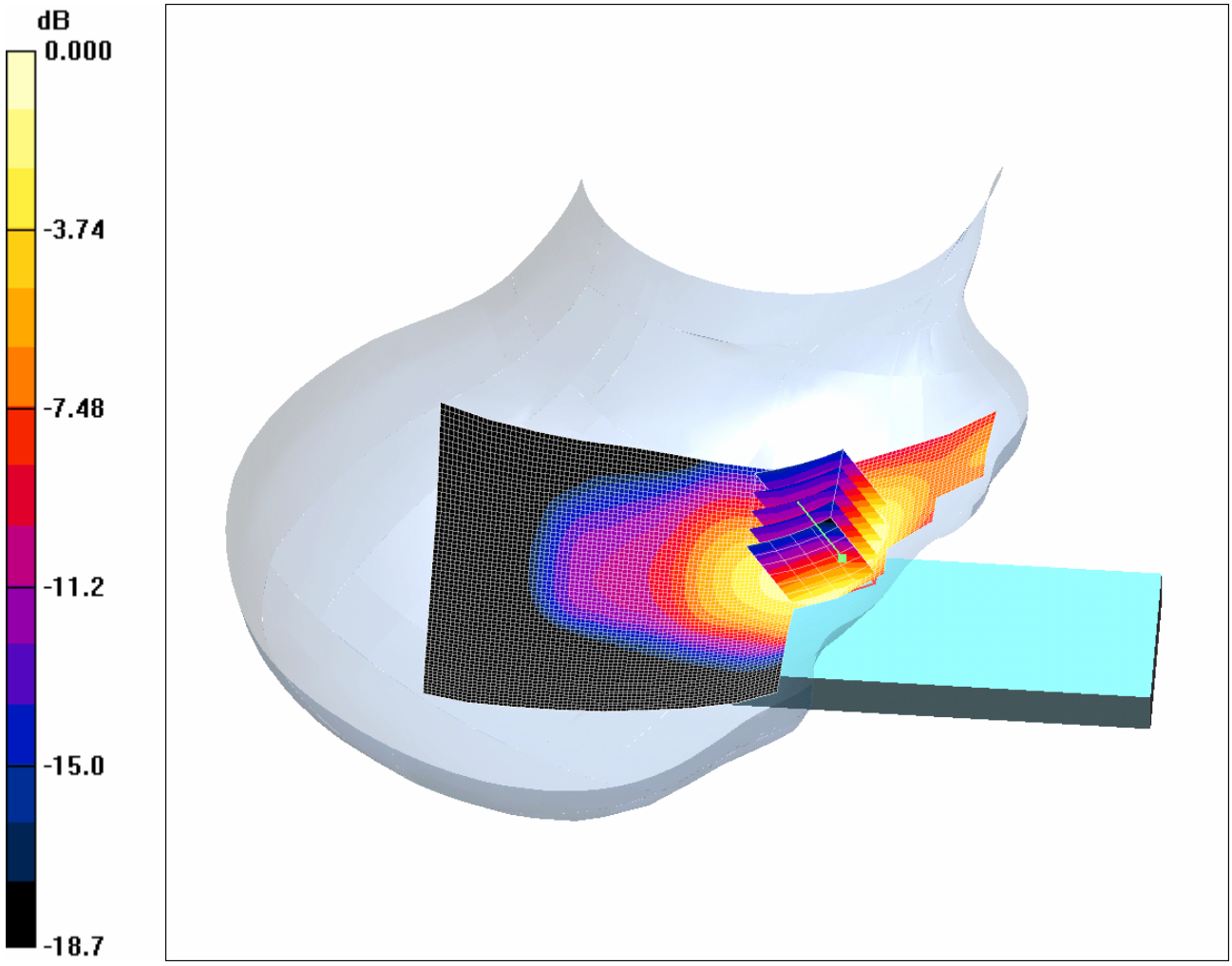
Tilt Left - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.1 V/m; Power Drift = 0.035 dB
Peak SAR (extrapolated) = 0.249 W/kg
SAR(1 g) = 0.161 mW/g; SAR(10 g) = 0.095 mW/g

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

Test of: Panasonic Mobile Comms Dev of Europe Ltd
P906i

To: OET Bulletin 65 Supplement C: (2001-01)

SCN/73067JD08/003: Touch Right PCS CH660
Date: 15/02/2008
DUT: Panasonic P906i; Type: P906i (Sample C9); Serial: 357015010018932



0 dB = 0.423mW/g

Communication System: PCS 1900; Frequency: 1879.8 MHz;Duty Cycle: 1:8.3
Medium: 1900 MHz HSL Medium parameters used (interpolated): f = 1879.8 MHz; σ = 1.46 mho/m; ε_r = 41.6; ρ = 1000 kg/m^3
Phantom section: Right Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1528; ConvF(4.98, 4.98, 4.98); Calibrated: 06/07/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 24/05/2007
- Phantom: SAM 12b; Type: SAM 4.0; Serial: TP:1197
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176
Tilt Left - Middle/Area Scan (71x161x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.430 mW/g

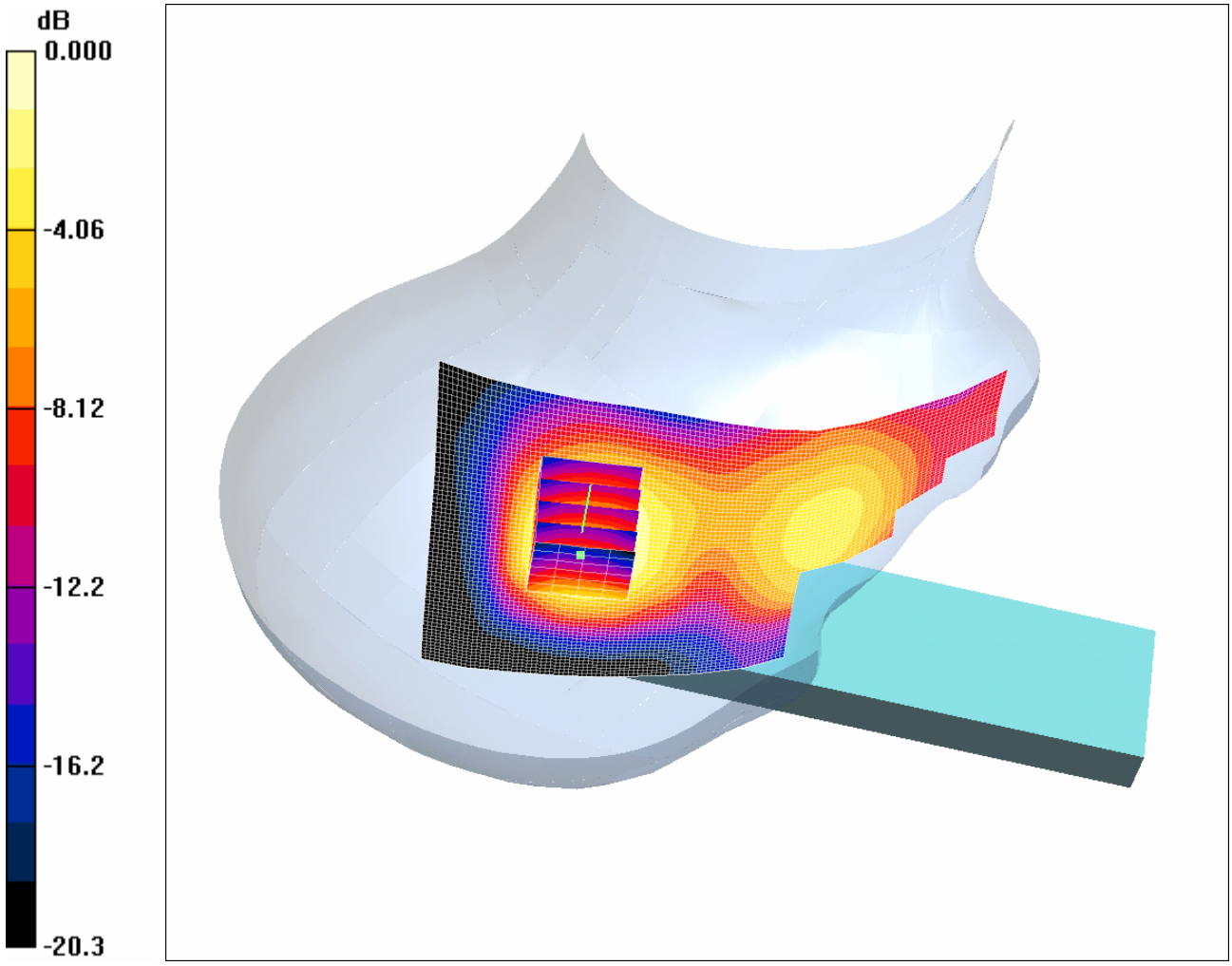
Tilt Left - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.96 V/m; Power Drift = -0.402 dB
Peak SAR (extrapolated) = 0.650 W/kg
SAR(1 g) = 0.388 mW/g; SAR(10 g) = 0.226 mW/g

Maximum value of SAR (measured) = 0.423 mW/g

Test of: Panasonic Mobile Comms Dev of Europe Ltd
P906i

To: OET Bulletin 65 Supplement C: (2001-01)

SCN/73067JD08/004: Tilt Right PCS CH660
Date: 15/02/2008
DUT: Panasonic P906i; Type: P906i (Sample C9); Serial: 357015010018932



0 dB = 0.169mW/g

Communication System: PCS 1900; Frequency: 1879.8 MHz;Duty Cycle: 1:8.3
Medium: 1900 MHz HSL Medium parameters used (interpolated): f = 1879.8 MHz; σ = 1.46 mho/m; ε_r = 41.6; ρ = 1000 kg/m^3
Phantom section: Right Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1528; ConvF(4.98, 4.98, 4.98); Calibrated: 06/07/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 24/05/2007
- Phantom: SAM 12b; Type: SAM 4.0; Serial: TP:1197
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176
Tilt Left - Middle/Area Scan (71x161x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.190 mW/g

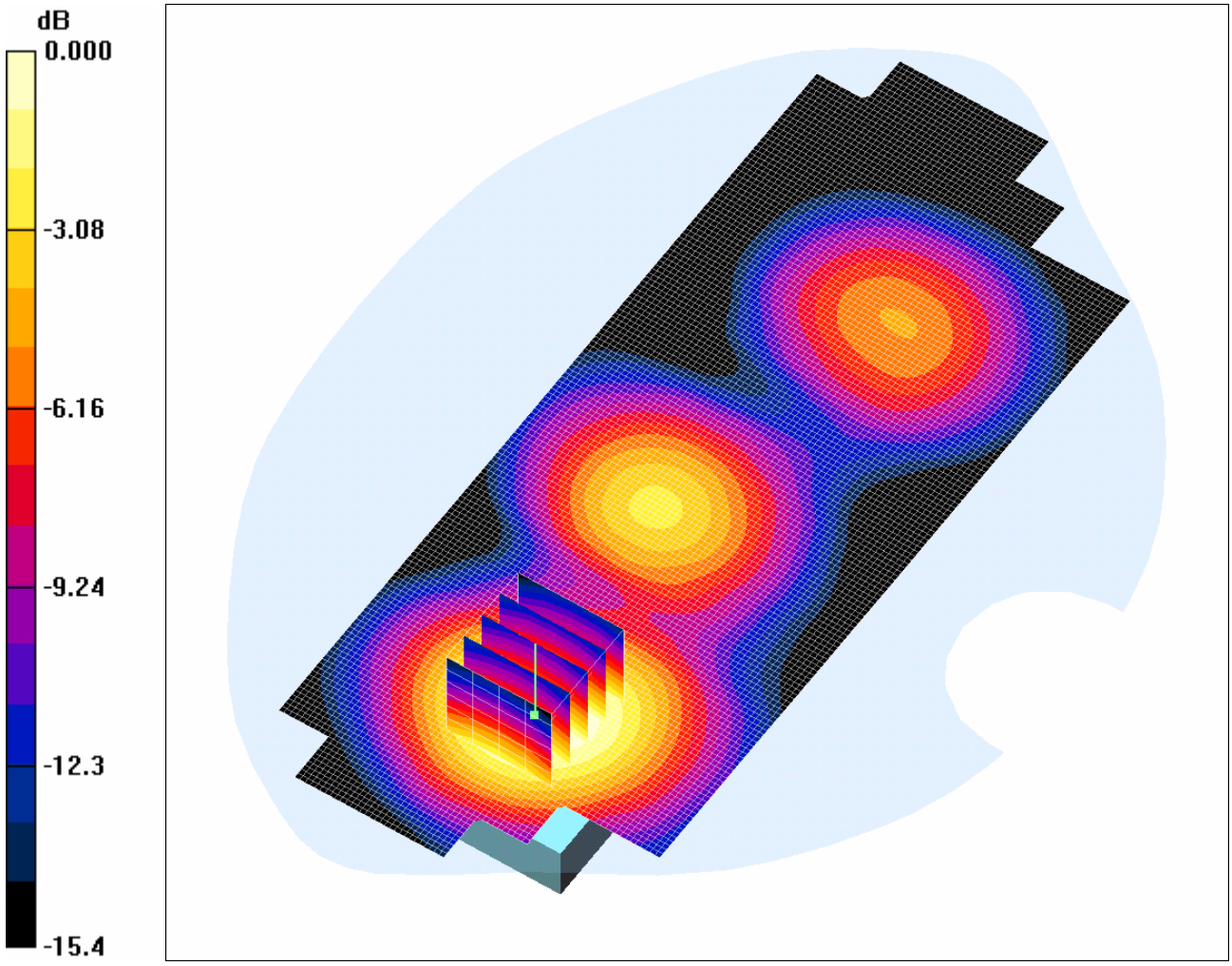
Tilt Left - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.9 V/m; Power Drift = 0.048 dB
Peak SAR (extrapolated) = 0.235 W/kg
SAR(1 g) = 0.159 mW/g; SAR(10 g) = 0.096 mW/g

Maximum value of SAR (measured) = 0.169 mW/g

Test of: Panasonic Mobile Comms Dev of Europe Ltd
P906i

To: OET Bulletin 65 Supplement C: (2001-01)

SCN/73067JD08/005: Front Of EUT Facing Phantom PCS CH660
Date: 15/02/2008
DUT: Panasonic P906i; Type: P906i (Sample C9); Serial: 357015010018932



0 dB = 0.261mW/g

Communication System: PCS 1900; Frequency: 1879.8 MHz;Duty Cycle: 1:8.3
Medium: 1900 MHz MSL Medium parameters used (interpolated): f = 1879.8 MHz; σ = 1.45 mho/m; ε_r = 50.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1528; ConvF(4.57, 4.57, 4.57); Calibrated: 06/07/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 24/05/2007
- Phantom: SAM 12a; Type: SAM 4.0; Serial: TP:1193
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Front Of EUT Facing Phantom - Middle/Area Scan (71x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.270 mW/g

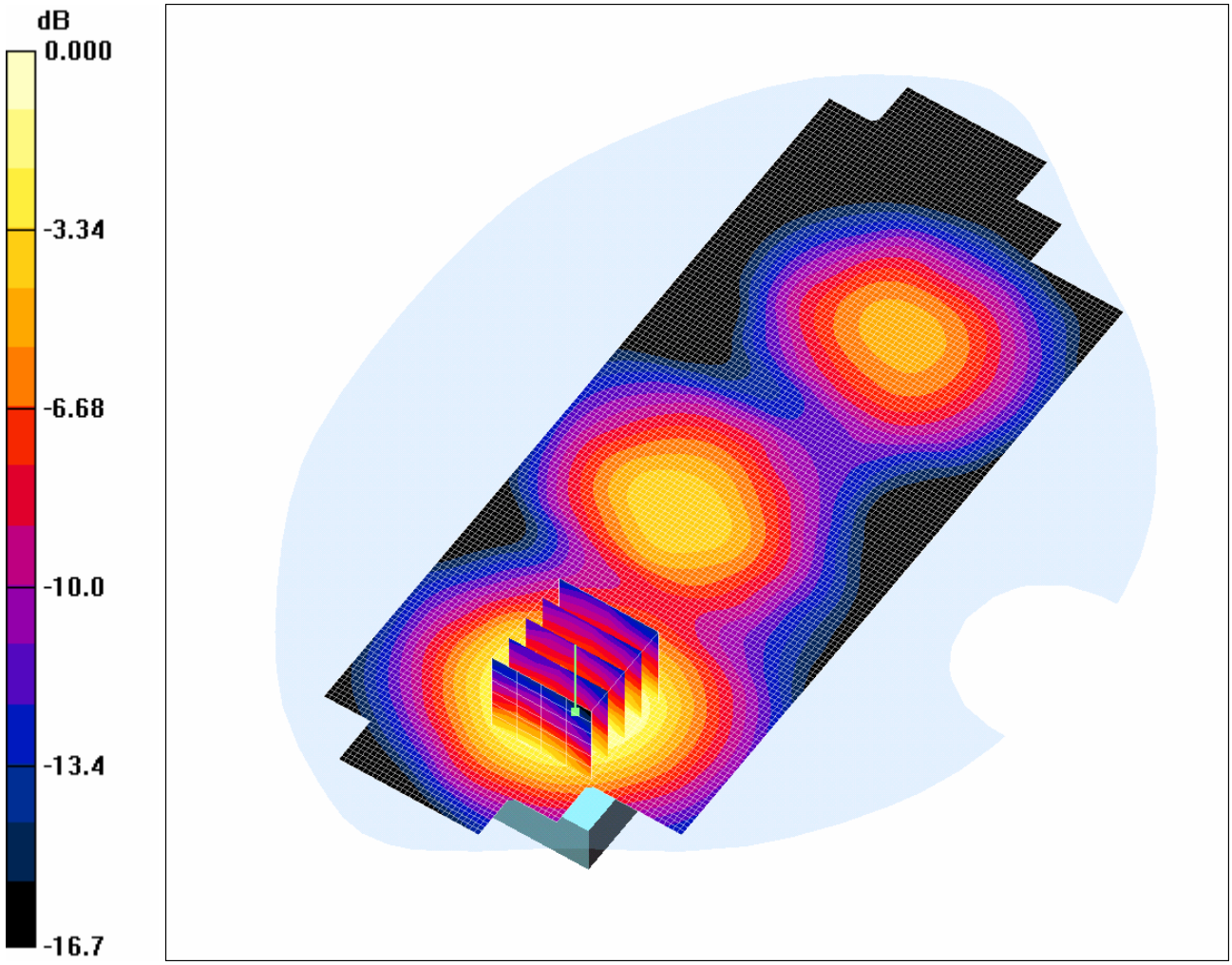
Front Of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.22 V/m; Power Drift = 0.062 dB
Peak SAR (extrapolated) = 0.378 W/kg
SAR(1 g) = 0.243 mW/g; SAR(10 g) = 0.151 mW/g

Maximum value of SAR (measured) = 0.261 mW/g

Test of: Panasonic Mobile Comms Dev of Europe Ltd
P906i

To: OET Bulletin 65 Supplement C: (2001-01)

SCN/73067JD08/006: Front Of EUT Facing Phantom GPRS CH660
Date: 15/02/2008
DUT: Panasonic P906i; Type: P906i (Sample C9); Serial: 357015010018932



0 dB = 0.396mW/g

Communication System: GPRS 1900; Frequency: 1879.8 MHz;Duty Cycle: 1:4
Medium: 1900 MHz MSL Medium parameters used (interpolated): f = 1879.8 MHz; σ = 1.45 mho/m; ε_r = 50.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1528; ConvF(4.57, 4.57, 4.57); Calibrated: 06/07/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 24/05/2007
- Phantom: SAM 12a; Type: SAM 4.0; Serial: TP:1193
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Front Of EUT Facing Phantom - Middle/Area Scan (71x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.386 mW/g

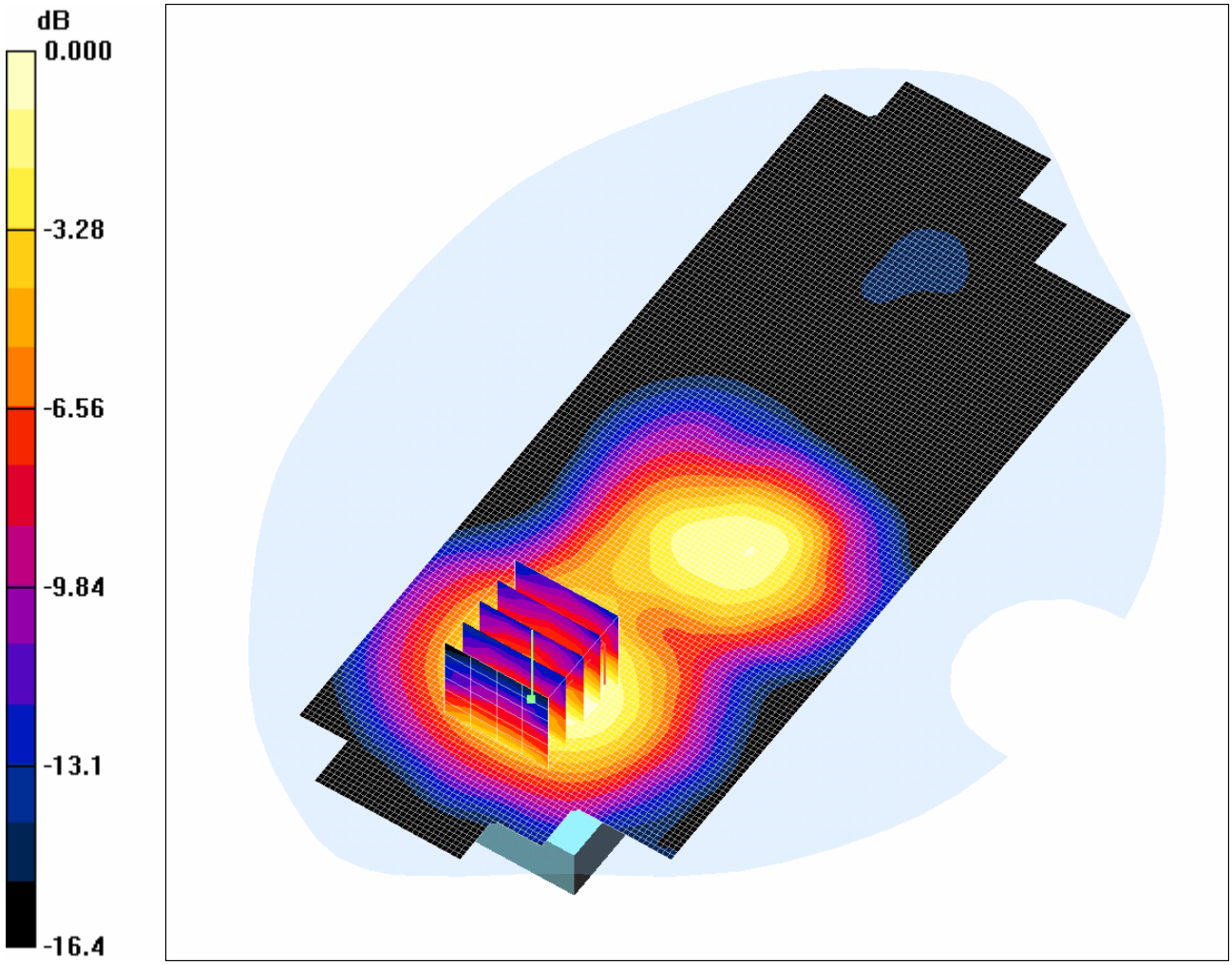
Front Of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.3 V/m; Power Drift = -0.023 dB
Peak SAR (extrapolated) = 0.504 W/kg
SAR(1 g) = 0.347 mW/g; SAR(10 g) = 0.217 mW/g

Maximum value of SAR (measured) = 0.396 mW/g

Test of: Panasonic Mobile Comms Dev of Europe Ltd
P906i

To: OET Bulletin 65 Supplement C: (2001-01)

SCN/73067JD08/007: Rear Of EUT Facing Phantom GPRS CH660
Date: 15/02/2008
DUT: Panasonic P906i; Type: P906i (Sample C9); Serial: 357015010018932



0 dB = 0.504mW/g

Communication System: GPRS 1900; Frequency: 1879.8 MHz;Duty Cycle: 1:4
Medium: 1900 MHz MSL Medium parameters used (interpolated): f = 1879.8 MHz; σ = 1.45 mho/m; ε_r = 50.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1528; ConvF(4.57, 4.57, 4.57); Calibrated: 06/07/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 24/05/2007
- Phantom: SAM 12a; Type: SAM 4.0; Serial: TP:1193
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Rear Of EUT Facing Phantom - Middle/Area Scan (71x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.531 mW/g

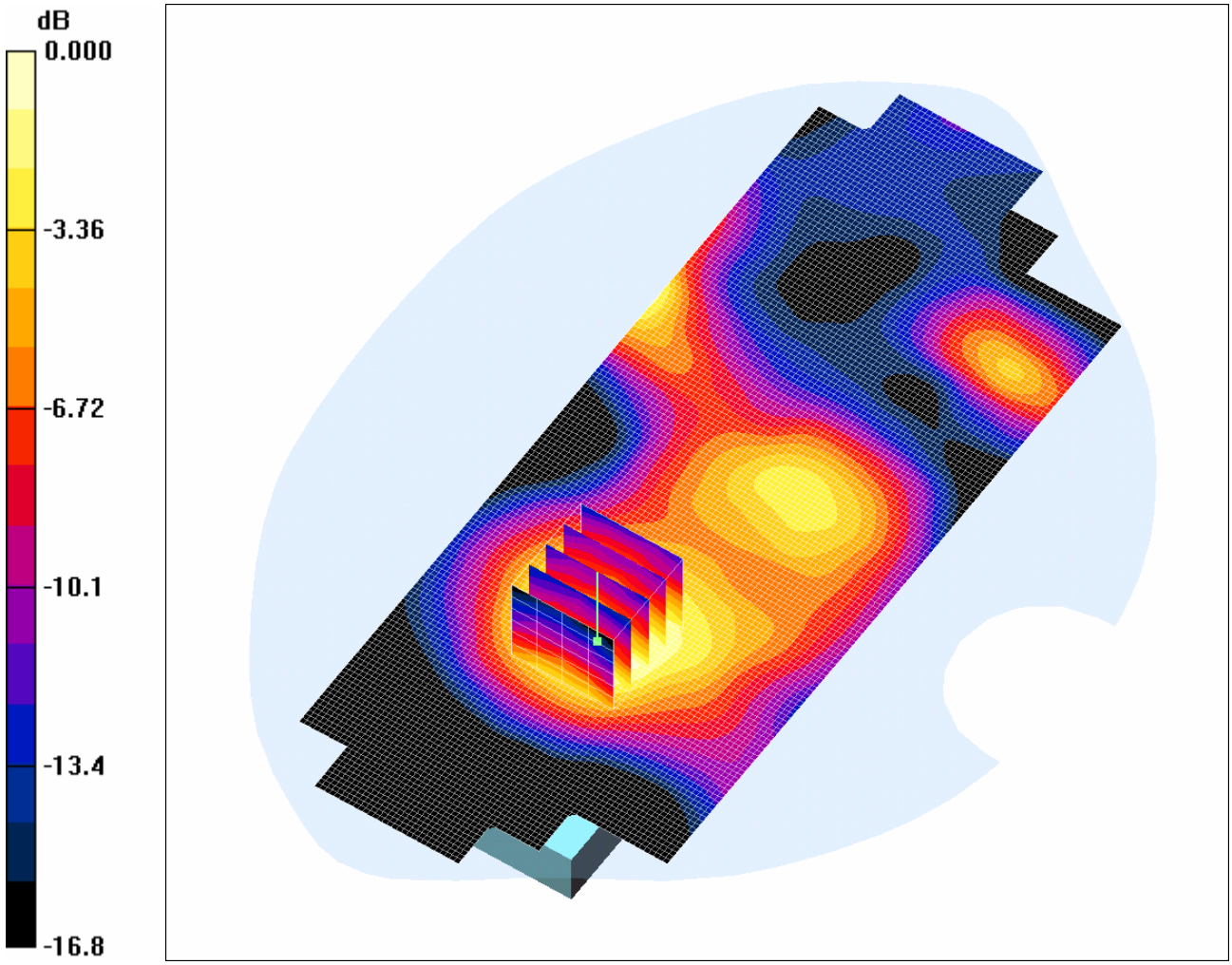
Rear Of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.0 V/m; Power Drift = -0.089 dB
Peak SAR (extrapolated) = 0.847 W/kg
SAR(1 g) = 0.453 mW/g; SAR(10 g) = 0.282 mW/g

Maximum value of SAR (measured) = 0.504 mW/g

Test of: Panasonic Mobile Comms Dev of Europe Ltd
P906i

To: OET Bulletin 65 Supplement C: (2001-01)

SCN/73067JD08/008: Rear Of EUT Facing Phantom GPRS With PHF CH660
Date: 15/02/2008
DUT: Panasonic P906i; Type: P906i (Sample C9); Serial: 357015010018932



0 dB = 0.456mW/g

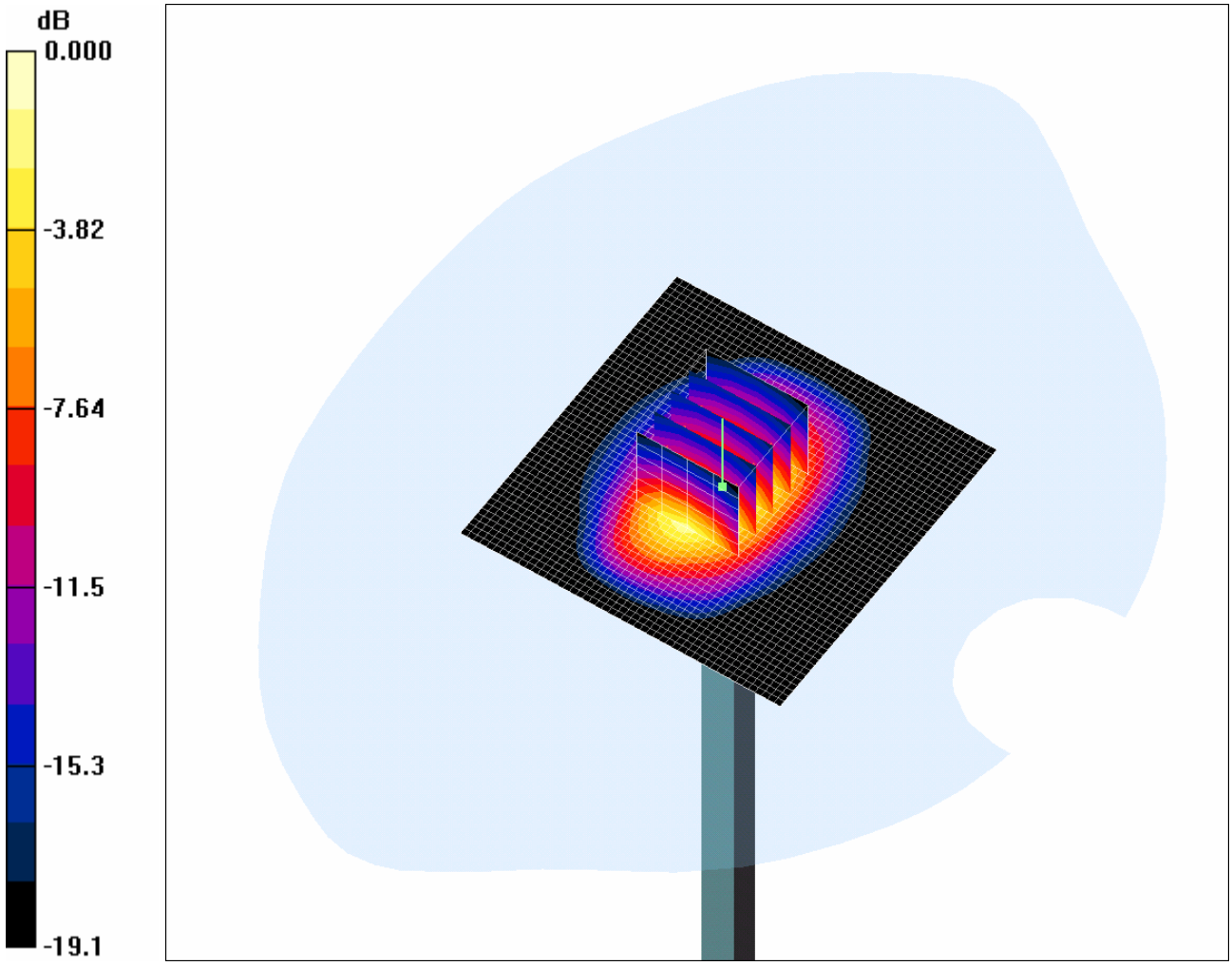
Communication System: GPRS 1900; Frequency: 1879.8 MHz;Duty Cycle: 1:4
Medium: 1900 MHz MSL Medium parameters used (interpolated): f = 1879.8 MHz; σ = 1.45 mho/m; ε_r = 50.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1528; ConvF(4.57, 4.57, 4.57); Calibrated: 06/07/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 24/05/2007
- Phantom: SAM 12a; Type: SAM 4.0; Serial: TP:1193
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Rear Of EUT Facing Phantom - Middle/Area Scan (71x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.464 mW/g

Rear Of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.9 V/m; Power Drift = -0.027 dB
Peak SAR (extrapolated) = 0.872 W/kg
SAR(1 g) = 0.440 mW/g; SAR(10 g) = 0.272 mW/g

Maximum value of SAR (measured) = 0.456 mW/g

SCN/73067JD08/009: System Performance Check 1900MHz Body 15 02 08
Date: 15/02/2008
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: SN540



0 dB = 11.2mW/g

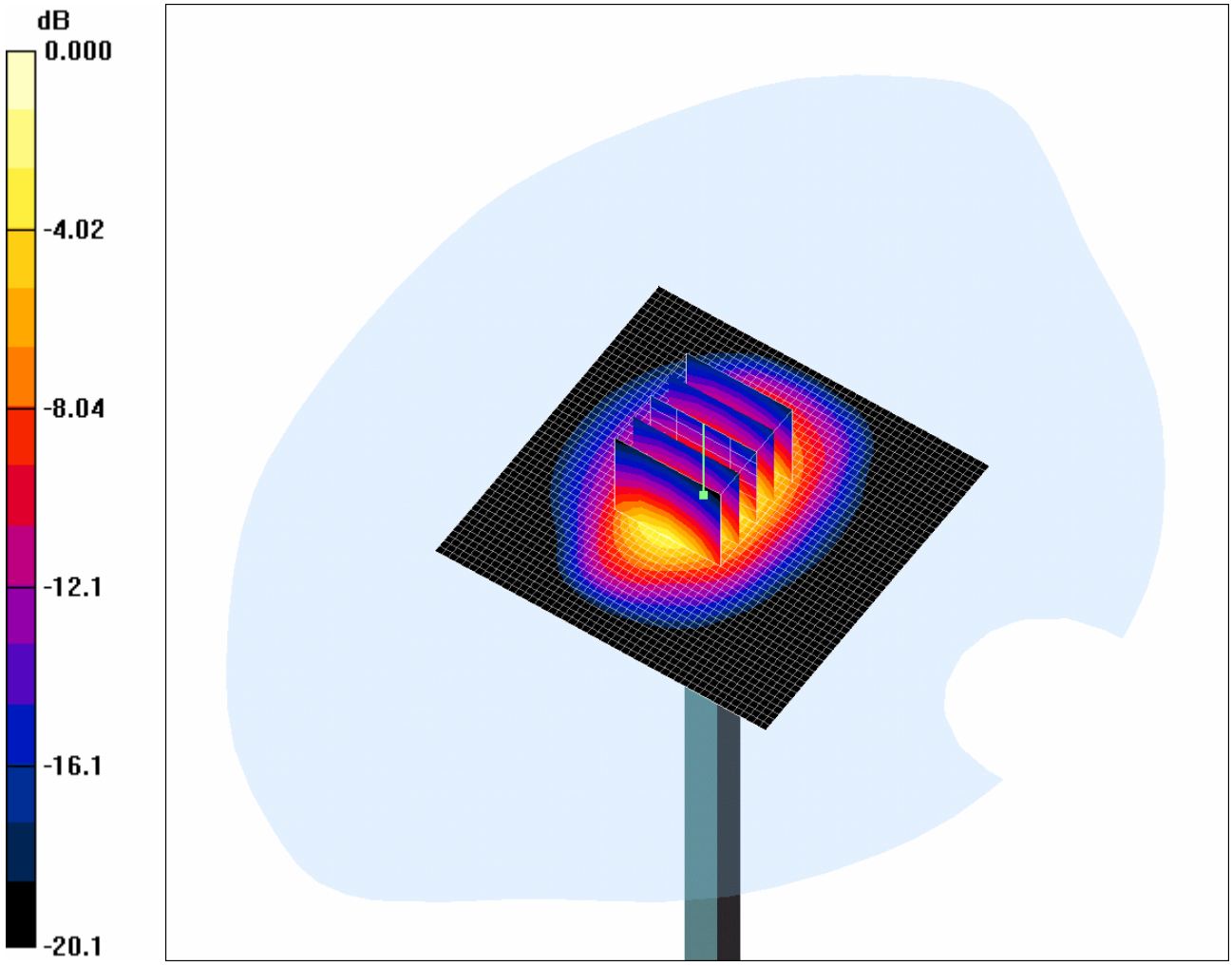
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: 1900 MHz MSL Medium parameters used: f = 1900 MHz; σ = 1.46 mho/m; ε_r = 50.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1528; ConvF(4.57, 4.57, 4.57); Calibrated: 06/07/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 24/05/2007
- Phantom: SAM 12a; Type: SAM 4.0; Serial: TP:1193
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176
d=15mm, Pin=250mW/Area Scan (51x51x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 13.8 mW/g

d=15mm, Pin=250mW/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 91.3 V/m; Power Drift = 0.014 dB
Peak SAR (extrapolated) = 18.4 W/kg
SAR(1 g) = 9.94 mW/g; SAR(10 g) = 5.01 mW/g
Maximum value of SAR (measured) = 11.2 mW/g

Test of: Panasonic Mobile Comms Dev of Europe Ltd
P906i

To: OET Bulletin 65 Supplement C: (2001-01)

SCN/73067JD08/010: System Performance Check 1900MHz Head 15 02 08
Date: 15/02/2008
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: SN540



0 dB = 10.5mW/g

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: 1900 MHz HSL Medium parameters used: f = 1900 MHz; σ = 1.47 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1528; ConvF(4.98, 4.98, 4.98); Calibrated: 06/07/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 24/05/2007
- Phantom: SAM 12b; Type: SAM 4.0; Serial: TP:1197
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176
d=15mm, Pin=250mW/Area Scan (51x51x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 12.8 mW/g

d=15mm, Pin=250mW/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 82.5 V/m; Power Drift = 0.016 dB
Peak SAR (extrapolated) = 17.1 W/kg
SAR(1 g) = 9.33 mW/g; SAR(10 g) = 4.71 mW/g
Maximum value of SAR (measured) = 10.5 mW/g

Appendix 5. Validation of System

Prior to the assessment, the system was verified in the flat region of the phantom.
A 1900 MHz dipole was used. A forward power of 250 mW was applied to the dipole and the system was verified to a tolerance of ±5% for the 1900 MHz dipole. The applicable verification (normalised to 1 Watt).

Date: 15/02/2008

Validation Dipole and Serial Number:D1900V2:SN:540

Simulant	Frequency (MHz)	Room Temperature	Liquid Temperature	Parameters	Target Value	Measured Value	Deviation (%)	Limit (%)
Head	1900	24.0 ºC	24.0 ºC	ε_r	40.00	41.68	0.04	5.00
				σ	1.40	1.46	0.05	5.00
				1g SAR	36.10	37.32	3.38	5.00
				10g SAR	19.30	18.84	-2.38	5.00

Date: 15/02/2008

Validation Dipole and Serial Number:D1900V2:SN:540

Simulant	Frequency (MHz)	Room Temperature	Liquid Temperature	Parameters	Target Value	Measured Value	Deviation (%)	Limit (%)
Body	1900	24.0 ºC	24.0 ºC	ε_r	53.30	50.88	-0.05	5.00
				σ	1.52	1.45	-0.04	5.00
				1g SAR	38.00	39.76	4.63	5.00
				10g SAR	20.70	20.04	-3.19	5.00

Appendix 6. Simulated Tissues

The body mixture consists of water and glycol. Visual inspection is made to ensure air bubbles are not trapped during the mixing process. The mixture is calibrated to obtain proper dielectric constant (permittivity) and conductivity of the tissue.

Ingredient	Frequency
	1800/1900 MHz Body
De-Ionised Water	69.79%
Diglycol Butyl Ether (DGBE)	30.00%
Salt	0.20%

Ingredient	Frequency
	1800/1900 MHz Head
De-Ionised Water	55.41%
Diglycol Butyl Ether (DGBE)	44.51%
Salt	0.08%

Appendix 7. DASY4 System Details

A.7.1. DASY4 SAR Measurement System

RFI Global Services Ltd, SAR measurement facility utilises the Dosimetric Assessment System (DASY™) manufactured by Schmid & Partner Engineering AG (SPEAG™) of Zurich, Switzerland. The DASY4 system is comprised of the robot controller, computer, near-field probe, probe alignment sensor, and the SAM phantom containing brain or muscle equivalent material. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF). A cell controller system contains the power supply, robot controller; teach pendant (Joystick), and remote control. This is used to drive the robot motors. The Staubli robot is connected to the cell controller to allow software manipulation of the robot. The data acquisition electronics (DAE) performs signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection etc. The DAE is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC plug-in card. The DAE3 utilises a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching mulitplexer, a fast 16-bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe-mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer.

A.7.2. DASY4 SAR System Specifications

Robot System

Positioner:	Stäubli Unimation Corp. Robot Model: RX90L
Repeatability:	0.025 mm
No. of Axis:	6
Serial Number:	F00/SD89A1/A/01
Reach:	1185 mm
Payload:	3.5 kg
Control Unit:	CS7
Programming Language:	V+

Data Acquisition Electronic (DAE) System

Serial Number:	DAE3 SN:394

Cell Controller

PC:	Dell Precision 340
Operating System:	Windows 2000
Data Card:	DASY4 Measurement Server
Serial Number:	1080

Data Converter

Features:	Signal Amplifier, multiplexer, A/D converted and control logic.
Software:	DASY4 Software
Connecting Lines:	Optical downlink for data and status info. Optical uplink for commands and clock.

PC Interface Card

Function:	24 bit (64 MHz) DSP for real time processing Link to DAE3 16 nit A/D converter for surface detection system serial link to robot direct emergency stop output for robot.

DASY4 SAR System Specifications (Continued)

E-Field Probe

Model:	ET3DV6
Serial No:	1528
Construction:	Triangular core fibre optic detection system
Frequency:	10 MHz to 3 GHz
Linearity:	±0.2 dB (30 MHz to 3 GHz)
Probe Length (mm):	337
Probe Diameter (mm):	12
Tip Length (mm):	10
Tip Diameter (mm):	6.8
Sensor X Offset (mm):	2.7
Sensor Y Offset (mm):	2.7
Sensor Z Offset (mm):	2.7

Phantom

Phantom:	SAM Phantom
Shell Material:	Fibreglass
Thickness:	2.0 ±0.1 mm