SAR Compliance Test Report

Test report no.:	Not numbered	**Date of report:**	2003-04-22
Number of pages:	55	**Contact person:**	Pentti Pärnänen
		Responsible test engineer:	Pentti Pärnänen

Testing laboratory:	Nokia Corporation Elektroniikkatie 10 P.O. Box 50 FIN-90571 OULU Finland Tel. +358-7180-08000 Fax. +358-7180-47222	**Client:**	Nokia Inc. Nokia Tower, Pacific Century Place 2-A Gong Ti Bei Lu Chaoyang District 100027 BEIJING, PRC China Tel. +8610-65392828 Fax. +86-10-65393838

Tested devices:	QTL-RH4
Supplement reports:	-
Testing has been carried out in accordance with:	47CFR §2.1093 Radiofrequency Radiation Exposure Evaluation: Portable Devices IEEE P1528-200X Draft 6.4 Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques FCC OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01) Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields
Documentation:	The documentation of the testing performed on the tested devices is archived for 15 years at TCC Oulu
Test results:	**The tested device complies with the requirements in respect of all parameters subject to the test.** The test results and statements relate only to the items tested. The test report shall not be reproduced except in full, without written approval of the laboratory.

Date and signatures: 2003-04-22

For the contents:

Pentti Pärnänen	**Anne Kiviniemi**
Manager, TCC Oulu	**Test Engineer**

CONTENTS

1. SUMMARY FOR SAR TEST REPORT

Date of test	2003-04-10, 2003-04-14 – 2003-04-15
Contact person	Pentti Pärnänen
Test plan referred to	-
FCC ID	QTL-RH4
SN, HW and SW numbers of tested device	SN: 004400/18/172203/2, HW: 0310, SW: vp01.70
Accessories used in testing	Battery BL-5C, headset HS-5, headset HS-1C
Notes	-
Document code	DTX 07046-EN
Responsible test engineer	Pentti Pärnänen
Measurement performed by	Anne Kiviniemi

1.1 Maximum Results Found during SAR Evaluation

The equipment is deemed to fulfil the requirements if the measured values are less than or equal to the limit. Maximum found results are reported per operating band.

1.1.1 Head Configuration

Ch / *f* (MHz)	Power	Position	Limit	Measured	Result
810/1909.80	31.8 dBm	cheek	1.6 W/kg	0.55 W/kg	PASSED

1.1.2 Body Worn Configuration

Ch / *f* (MHz)	Power	Accessory	Limit	Measured	Result
661/1880.00	31.5 dBm	HS-1C	1.6 W/kg	0.80 W/kg	PASSED

1.1.3 Measurement Uncertainty

Combined Standard Uncertainty	**± 10.3%**
Expanded Standard Uncertainty (k=2)	**± 20.6%**

2. DESCRIPTION OF TESTED DEVICE

Device category	Portable device	
Exposure environment	Uncontrolled exposure	
Unit type	Prototype unit	
Case type	Clam-shell case	
Modes of Operation	GSM1900	GPRS
Modulation Mode	Gaussian Minimum Shift Keying	Gaussian Minimum Shift Keying
Duty Cycle	1/8	2/8
Transmitter Frequency Range (MHz)	1850.2 - 1909.8	1850.2 - 1909.8

Outside of USA, transmitter of tested device may capable of operating also in GSM 900 and GSM 1800 modes, which are not part of this filing.

2.1 Picture of Phone

QTL-RH4

Stylus

2.2 Description of the Antenna

Type	Internal integrated antenna	
Dimensions (mm)	Maximum width	29.9 mm
	Maximum length	39.8 mm
Location	Inside the back cover, near the top of the device	

2.3 Battery Options

There is only one battery option , Li-ion BL-5C, available for tested device.

3. TEST CONDITIONS

3.1 Ambient Conditions

Ambient temperature (°C)	22±2
Tissue simulating liquid temperature (°C)	22±1
Humidity	40

3.2 RF characteristics of the test site

Tests were performed in a enclosed RF shielded environment.

3.3 Test Signal, Frequencies, and Output Power

The device was controlled by using a special test mode.

In operating band the measurements were performed on middle channel. The configuration giving highest result was measured also on lowest and highest channels.

The phone was set to maximum power level during the all tests and at the beginning of the each test the battery was fully charged. Power output was measured by accredited test laboratory, TCC Tampere, on the same unit used in SAR testing.

DASY4 system measures power drift during SAR testing by comparing e-field in the same location at the beginning and at the end of measurement. These records were used to monitor stability of power output.

4. DESCRIPTION OF THE TEST EQUIPMENT

The measurements were performed with an automated near-field scanning system, DASY4, manufactured by Schmid & Partner Engineering AG (SPEAG) in Switzerland.

Test Equipment	Serial Number	Due Date
DAE V1	371	10/03
E-field Probe ET3DV6	1381	10/03
Dipole Validation Kit, D1900V2	511	02/05

E-field probe calibration records are presented in Appendix C.

Additional equipment needed in validation

Test Equipment	Model	Serial Number	Due Date
Signal Generator	Agilent E4433B	GB40050947	09/04
Amplifier	Amplifier Research 5S1G4	27573	-
Power Meter	R&S NRT	835065/049	04/23/03
Power Sensor	R&S NRT-Z44	835374/021	04/23/03
Thermometer	DO9416	1505985462	-
Vector Network Analyzer	Hewlett Packard 8753E	US38432701	05/03
Dielectric Probe Kit	Agilent 85070C	-	-

4.1 System Accuracy Verification

The probes are calibrated annually by the manufacturer. Dielectric parameters of the simulating liquids are measured by using a dielectric probe kit and a vector network analyzer.

The SAR measurement of the DUT were done within 24 hours of system accuracy verification, which was done using the dipole validation kit.

The dipole antenna, which is manufactured by Schmid & Partner Engineering AG, is matched to be used near flat phantom filled with tissue simulating solution. Dipole length for 1900 MHz is 68 mm with overall height of 300mm. A specific distance holder is used in the positioning of antenna to ensure correct spacing between the phantom and the dipole. Manufacturer's reference dipole data is presented in Appendix C.

Power level of 250 mW was supplied to a dipole antenna placed under the flat section of SAM phantom. The validation results are in the table below and printout of the validation test is presented in Appendix A. All the measured parameters were within the specification.

Tissue	*f* (MHz)	Description	SAR (W/kg), 1g	Dielectric Parameters		Temp (°C)
				ε_r	σ (S/m)	
Head	1900	Measured 04/14/03	10.2	38.6	1.47	22
		Measured 04/15/03	9.8	38.3	1.42	22
		Reference Result	10.3	38.6	1.46	N/A
Muscle	1900	Measured 04/10/03	9.6	51.5	1.56	22
		Reference Result	10.6	51.2	1.59	N/A

4.2 Tissue Simulants

All dielectric parameters of tissue simulants were measured within 24 hours of SAR measurements. The depth of the tissue simulant in the ear reference point of

the phantom was 15cm ± 5mm during all the tests. Volume for each tissue simulant was 26 liters.

4.2.1 Head Tissue Simulant

The composition of the brain tissue simulating liquid for 1900MHz

44.91% 2-(2-butoxyethoxy) Ethanol
54.88% De-Ionized Water
0.21% Salt

f (MHz)	Description	Dielectric Parameters		Temp (°C)
		ε_r	σ (S/m)	
1880	Measured 04/14/03	38.7	1.45	22
	Measured 04/15/03	38.4	1.41	22
	Recommended Values	40.0	1.40	20-26

Recommended values are adopted from OET Bulletin 65 (97-01) Supplement C (01-01).

4.2.2 Muscle Tissue Simulant

The composition of the muscle tissue simulating liquid for 1900MHz

69.02% De-Ionized Water
30.76% Diethylene Glycol Monobutyl Ether
0.22% Salt

f (MHz)	Description	Dielectric Parameters		Temp (°C)
		ε_r	σ (S/m)	
1880	Measured 04/10/03	51.6	1.56	22
	Recommended Values	53.3	1.52	20-26

Recommended values are adopted from OET Bulletin 65 (97-01) Supplement C (01-01).

4.3 Phantoms

"SAM v4.0" phantom", manufactured by SPEAG, was used during the measurement. It has fiberglass shell integrated in a wooden table. The shape of the shell corresponds to the phantom defined by SCC34-SC2. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot.

The thickness of phantom shell is 2 mm except for the ear, where an integrated ear spacer provides a 6 mm spacing from the tissue boundary. Manufacturer reports tolerance in shell thickness to be ±0.1mm.

4.4 Isotropic E-Field Probe ET3DV6

Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection system Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., glycolether)
Calibration	Calibration ceritifcate in Appendix C
Frequency	10 MHz to 3 GHz (dosimetry); Linearity: ± 0.2 dB (30 MHz to 3 GHz)
Optical Surface Detection	± 0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.4 dB in HSL (rotation normal to probe axis)
Dynamic Range	5 µW/g to > 100 mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 330 mm Tip length: 16 mm Body diameter: 12 mm Tip diameter: 6.8 mm Distance from probe tip to dipole centers: 2.7 mm
Application	General dosimetry up to 3 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms

5. DESCRIPTION OF THE TEST PROCEDURE

5.1 Test Positions

The device was placed in holder using a special positioning tool, which aligns the bottom of the device with holder and ensures that holder contacts only to the sides of the device. After positioning is done, tool is removed. This method provides standard positioning and separation, and also ensures free space for antenna.

Device holder was provided by SPEAG together with DASY4.

5.1.1 Against Phantom Head

Measurements were made on both the "left hand" and "right hand" side of the phantom.

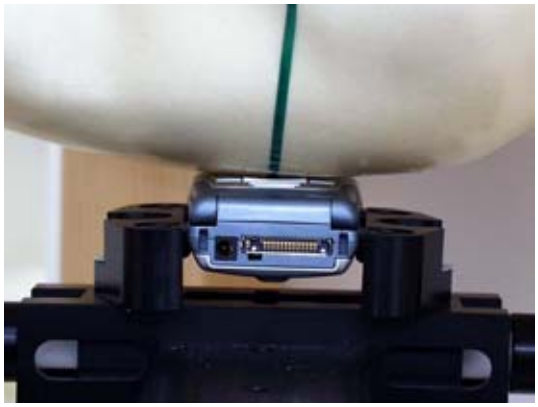
The device was positioned against phantom according to OET Bulletin 65 (97-01) Supplement C (01-01) . Definitions of terms used in aligning the device to a head phantom are available in IEEE Draft Standard P1528-2001 “Recommended Practice for Determining the Spatial-Peak Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques”

5.1.1.1 Initial Ear Position

The device was initially positioned with the earpiece region pressed against the ear spacer of a head phantom parallel to the “Neck-Front” line defined along the base of the ear spacer that contains the “ear reference point”. The “test device reference point” is aligned to the “ear reference point” on the head phantom and the “vertical centerline” is aligned to the “phantom reference plane”.

5.1.1.2 Cheek Position

“Initial ear position” alignments are maintained and the device is brought toward the mouth of the head phantom by pivoting along the “Neck-Front” line until any point on the display, keypad or mouthpiece portions of the handset is in contact with the phantom or when any portion of a foldout, sliding or similar keypad cover opened to its intended self-adjusting normal use position is in contact with the cheek or mouth of the phantom.



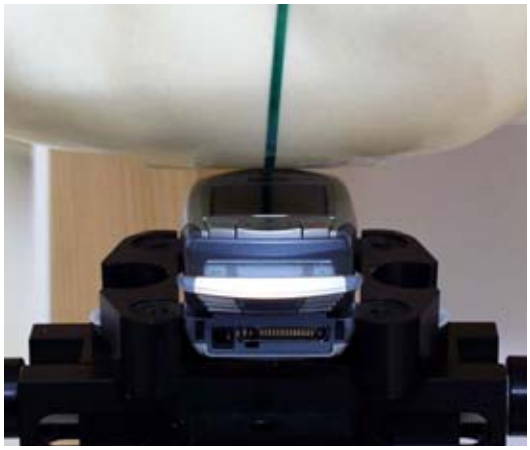
QTL-RH4, flip closed

QTL-RH4, flip open

5.1.1.3 Tilt Position

In the “Cheek Position”, if the earpiece of the device is not in full contact with the phantom’s ear spacer and the peak SAR location for the “cheek position” is located at the ear spacer region or corresponds to the earpiece region of the handset, the device is returned to the “initial ear position” by rotating it away from the mouth until the earpiece is in full contact with the ear spacer. Otherwise, the device is moved away from the cheek perpendicular to the line passes through both “ear reference points” for approximate 2-3 cm. While it is in this position, the device is tilted away from the mouth with respect to the “test device reference point” by 15°. After the tilt, it is then moved back toward the head perpendicular to the line passes through both “ear reference points” until the device touches the phantom or the ear spacer. If the antenna touches the head first, the positioning process is repeated with a tilt angle less than 15° so that the device and its antenna would touch the phantom simultaneously.

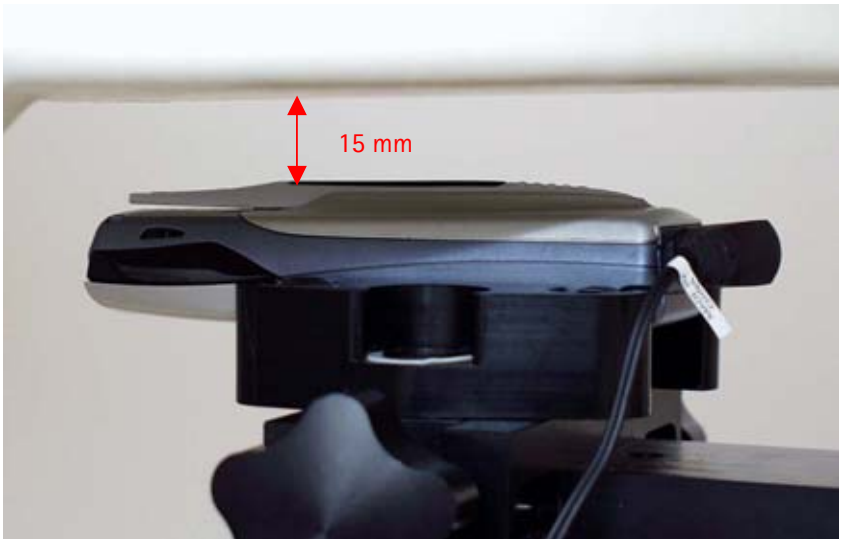
QTL-RH4, flip closed



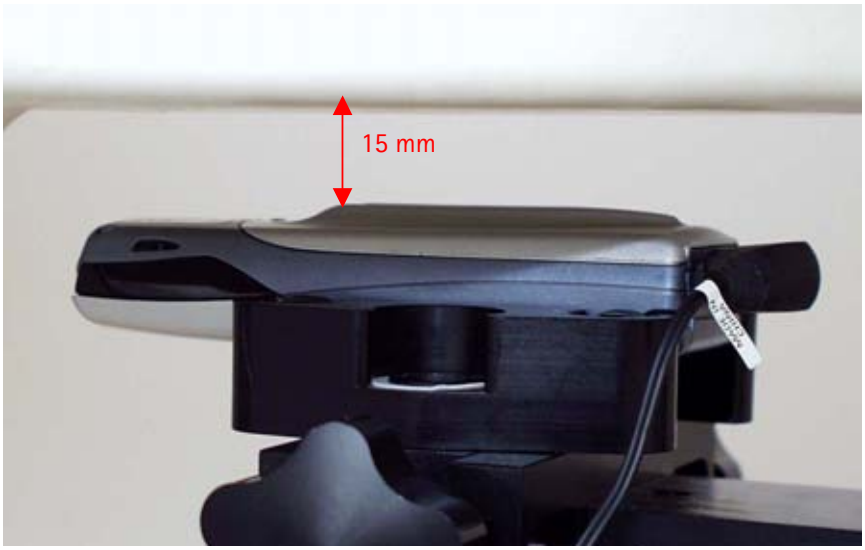
QTL-RH4, flip open

5.1.2 Body Worn Configuration

Body SAR measurements were performed with antenna facing towards the flat part of the phantom with a separation distance of 15 mm. Measurements were performed in two configurations with stylus attached on the back of the phone and without stylus. Headset HS-5 was connected during measurements and the measurement giving the highest SAR was repeted with headset HS-1C. Body worn measurements were performed in GPRS mode.



QTL-RH4 with stylus



QTL-RH4 without stylus

5.2 Scan Procedures

First coarse scans are used for quick determination of the field distribution. Next a cube scan, 5x5x7 points; spacing between each point 8x8x5 mm, is performed around the highest E-field value to determine the averaged SAR-distribution over 1g.

5.3 SAR Averaging Methods

The maximum SAR value is averaged over its volume using interpolation and extrapolation.

The interpolation of the points is done with a 3d-Spline. The 3d-Spline is composed of three one-dimensional splines with the "Not a knot" -condition [W. Gander, Computermathematik, p. 141-150] (x, y and z -directions) [Numerical Recipes in C, Second Edition, p 123].

The extrapolation is based on least square algorithm [W. Gander, Computermathematik, p.168-180]. Through the points in the first 30 mm in all z-axis, polynomials of order four are calculated. This polynomial is then used to evaluate the points between the surface and the probe tip. The points, calculated from the surface, have a distance of 1mm from one another.

6. MEASUREMENT UNCERTAINTY

6.1 Description of Individual Measurement Uncertainty

6.1.1 Assessment Uncertainty

Uncertainty description	Unc. value %	Probability distribution	Div	c_i 1g	Stand. uncert (1g) %	v_i or v_{eff}
Measurement System						
Probe Calibration	±4.8	normal	1	1	±4.8	∞
Axial Isotropy	±4.7	rectangular	√3	$(1-c_p)^{1/2}$	±1.9	∞
Hemispherical Isotropy	±9.6	rectangular	√3	$(c_p)1^{/2}$	±3.9	∞
Boundary Effects	±1.0	rectangular	√3	1	±0.6	∞
Linearity	±4.7	rectangular	√3	1	±2.7	∞
System Detection Limit	±1.0	rectangular	√3	1	±0.6	∞
Readout Electronics	±1.0	normal	1	1	±1.0	∞
Response Time	±0.8	rectangular	√3	1	±0.5	∞
Integration Time	±2.6	rectangular	√3	1	±1.5	∞
RF Ambient Conditions	±3.0	rectangular	√3	1	±1.7	∞
Probe Positioner Mechanical Tolerance	±0.4	rectangular	√3	1	±0.2	∞
Probe Positioning with respect to Phantom Shell	±2.9	rectangular	√3	1	±1.7	∞
Extrapolation, Interpolation and Integration Algorithms for Max. SAR Evaluation	±1.0	rectangular	√3	1	±0.6	∞
Test Sample Related						
Test Sample Positioning	±2.9	normal	1	1	±2.9	145
Device holder uncertainty	±3.6	normal	1	1	±3.6	5
Output Power Variation – SAR drift measurement	±5.0	rectangular	√3	1	±2.9	∞
Phantom and Tissue Parameters						
Phantom uncertainty (shape and thickness tolerances)	±4.0	rectangular	√3	1	±2.3	∞
Liquid conductivity Target - tolerance	±5.0	rectangular	√3	0.64	±1.8	∞
Liquid conductivity – measurement uncertainty	±2.5	normal	1	0.64	±1.6	∞
Liquid permittivity Target - tolerance	±5.0	rectangular	√3	0.6	±1.7	∞
Liquid permittivity – measurement uncertainty	±2.5	normal	1	0.6	±1.5	∞
Combined Standard Uncertainty					±10.3	
Coverage Factor for 95%		**k=2**				
Expanded Standard Uncertainty					±20.6	

7. RESULTS

Corresponding SAR distribution printouts of maximum results in every operating mode and position are shown in Appendix B. It also includes Z-plots of maximum measurement results in head and body worn configurations. The SAR distributions are substantially similar or equivalent to the plots submitted regardless of used channel in each mode and position. The coarse scans used in the head configuration measurements cover the whole head region.

7.1 Head Configuration

QTL-RH4, flip closed, with stylus						
Mode	Channel/ *f* (MHz)	Power (dBm)	SAR, averaged over 1g (W/kg)			
			Left-hand		Right-hand	
			Cheek	Tilted	Cheek	Tilted
GSM 1900	661/1880.00	31.5	0.34	0.37	0.50	0.50

QTL-RH4, flip closed, without stylus						
Mode	Channel/ *f* (MHz)	Power (dBm)	SAR, averaged over 1g (W/kg)			
			Left-hand		Right-hand	
			Cheek	Tilted	Cheek	Tilted
GSM 1900	512/1850.20	30.8			0.44	0.46
	661/1880.00	31.5	0.35	0.39	0.50	0.51
	810/1909.80	31.8			**0.55**	0.51

QTL-RH4, flip open, with stylus						
Mode	Channel/ *f* (MHz)	Power (dBm)	SAR, averaged over 1g (W/kg)			
			Left-hand		Right-hand	
			Cheek	Tilted	Cheek	Tilted
GSM 1900	661/1880.00	31.5	0.30	0.32	0.46	0.45

QTL-RH4, flip open, without stylus						
Mode	Channel/ *f* (MHz)	Power (dBm)	SAR, averaged over 1g (W/kg)			
			Left-hand		Right-hand	
			Cheek	Tilted	Cheek	Tilted
GSM 1900	661/1880.00	31.5	0.31	0.33	0.49	0.49

7.2 Body Worn Configuration

QTL-RH4, headset HS-5, with stylus			
Mode	**Channel/ *f* (MHz)**	**Power EIRP (dBm)**	**SAR, averaged over 1g (W/kg)**
GPRS 1900	512/1850.20	30.8	0.63
	661/1880.00	31.5	0.67
	810/1909.80	31.8	0.69

QTL-RH4, headset HS-5, without stylus			
Mode	**Channel/ *f* (MHz)**	**Power (dBm)**	**SAR, averaged over 1g (W/kg)**
GPRS 1900	512/1850.20	30.8	0.77
	661/1880.00	31.5	**0.79**
	810/1909.80	31.8	0.77

There are several headsets and a loopset available for QTL-RH4. HDS-3, HDB-4, HS-5 and LPS-4 have same amount of pins to connect to the phone. Camera headset HS-1C, which uses more pins, was checked for compliance separately.

QTL-RH4, headset HS-1C, without stylus			
Mode	**Channel/ *f* (MHz)**	**Power EIRP (dBm)**	**SAR, averaged over 1g (mW/g)**
GPRS 1900	661/1880.00	31.5	**0.80**

APPENDIX A.

Validation Test Printouts

Date/Time: 04/14/03 11:12:00

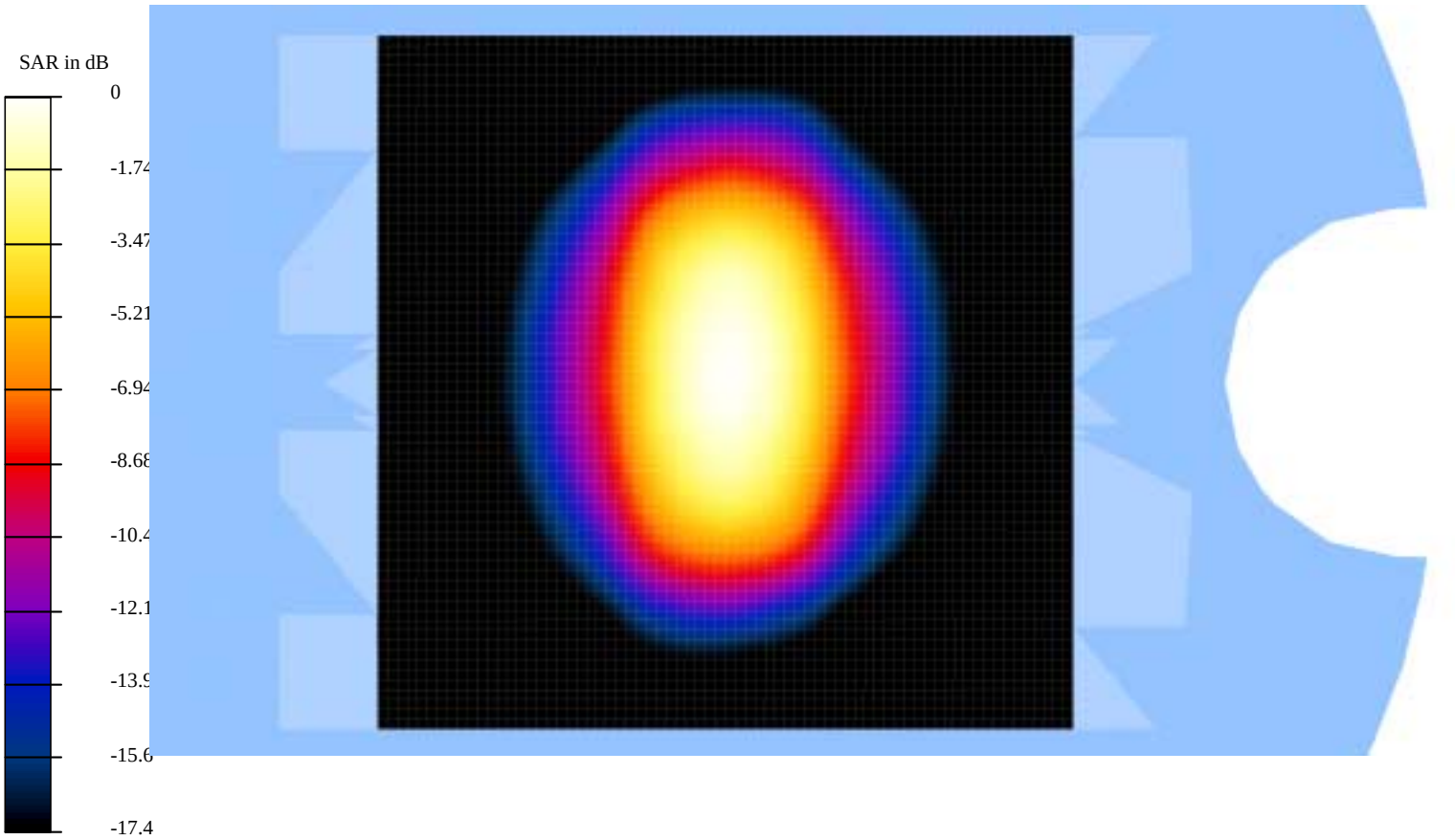
Test Laboratory: NOKIA Oulu; DTX07046-EN
File Name: 1900headvali140403.da4

DUT: Dipole 1900 MHz Type & Serial Number:
Program: Dipole validation; HSL 1900; T = 21.6 °C

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: Head 1900 MHz (σ = 1.46904 mho/m, ε = 38.6431, ρ = 1000 kg/m3)
Phantom section: FlatSection

DASY4 Configuration:
- Probe: ET3DV6 - SN1381; ConvF(5.1, 5.1, 5.1); Calibrated: 21.10.2002
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 18.10.2002
- Phantom: SAM - TP:TP-1003
- Software: DASY4, V4.0 Build 51

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
Reference Value = 93.2 V/m
Peak SAR = 18.4 mW/g
SAR(1 g) = 10.2 mW/g; SAR(10 g) = 5.18 mW/g
Power Drift = 0.03 dB
Area Scan (71x71x1): Measurement grid: dx=15mm, dy=15mm



Date/Time: 04/15/03 09:46:02

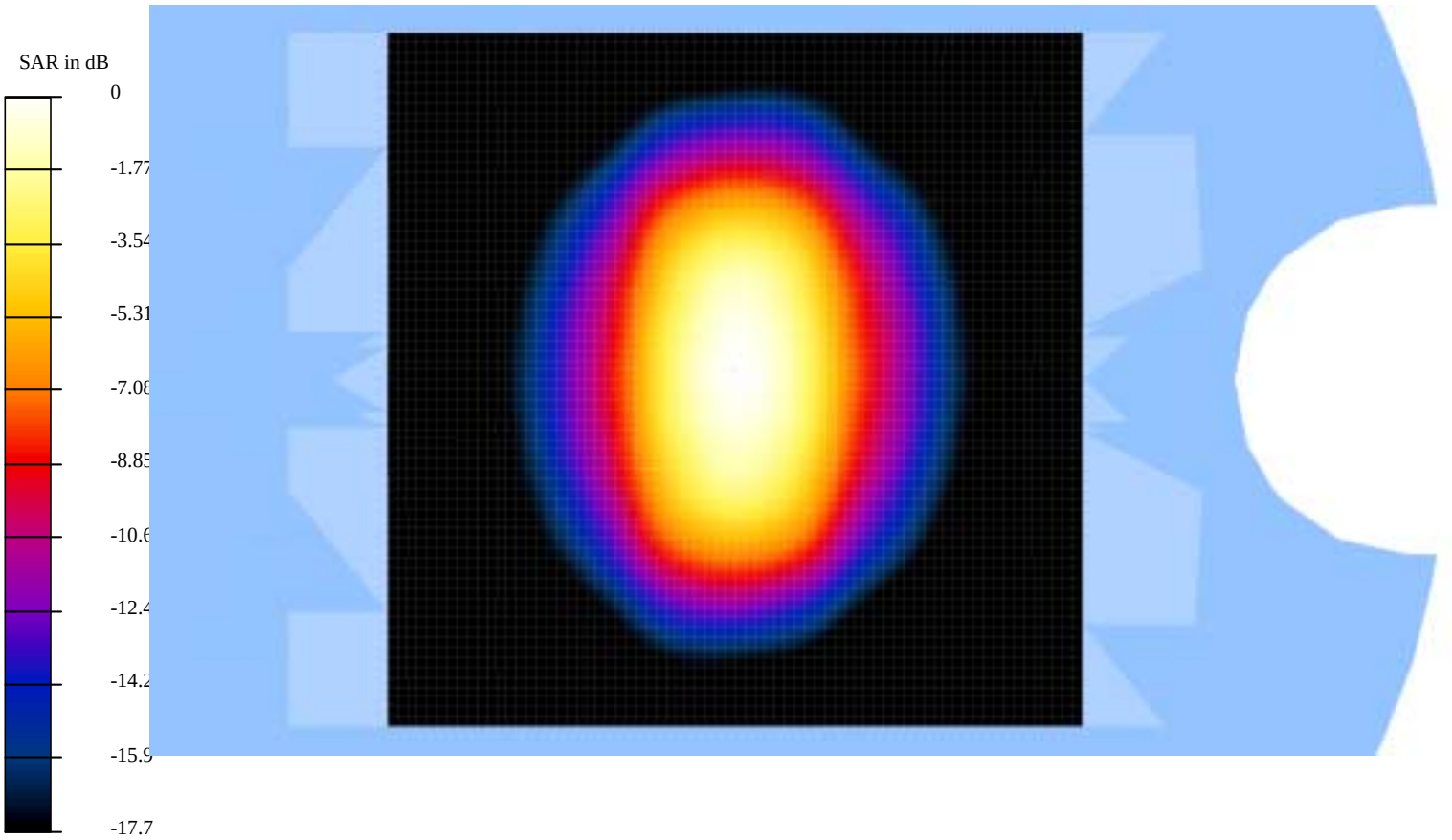
Test Laboratory: NOKIA Oulu; DTX07046-EN
File Name: 1900headvali150403.da4

DUT: Dipole 1900 MHz Type & Serial Number:
Program: Dipole validation; HSL 1900; T = 21.0 °C

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: Head 1900 MHz (σ = 1.42264 mho/m, ε = 38.3425, ρ = 1000 kg/m3)
Phantom section: FlatSection

DASY4 Configuration:
- Probe: ET3DV6 - SN1381; ConvF(5.1, 5.1, 5.1); Calibrated: 21.10.2002
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 18.10.2002
- Phantom: SAM - TP:TP-1003
- Software: DASY4, V4.0 Build 51

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
Reference Value = 92.9 V/m
Peak SAR = 18 mW/g
SAR(1 g) = 9.84 mW/g; SAR(10 g) = 4.93 mW/g
Power Drift = 0.06 dB
Area Scan (71x71x1): Measurement grid: dx=15mm, dy=15mm



Date/Time: 04/10/03 08:31:23

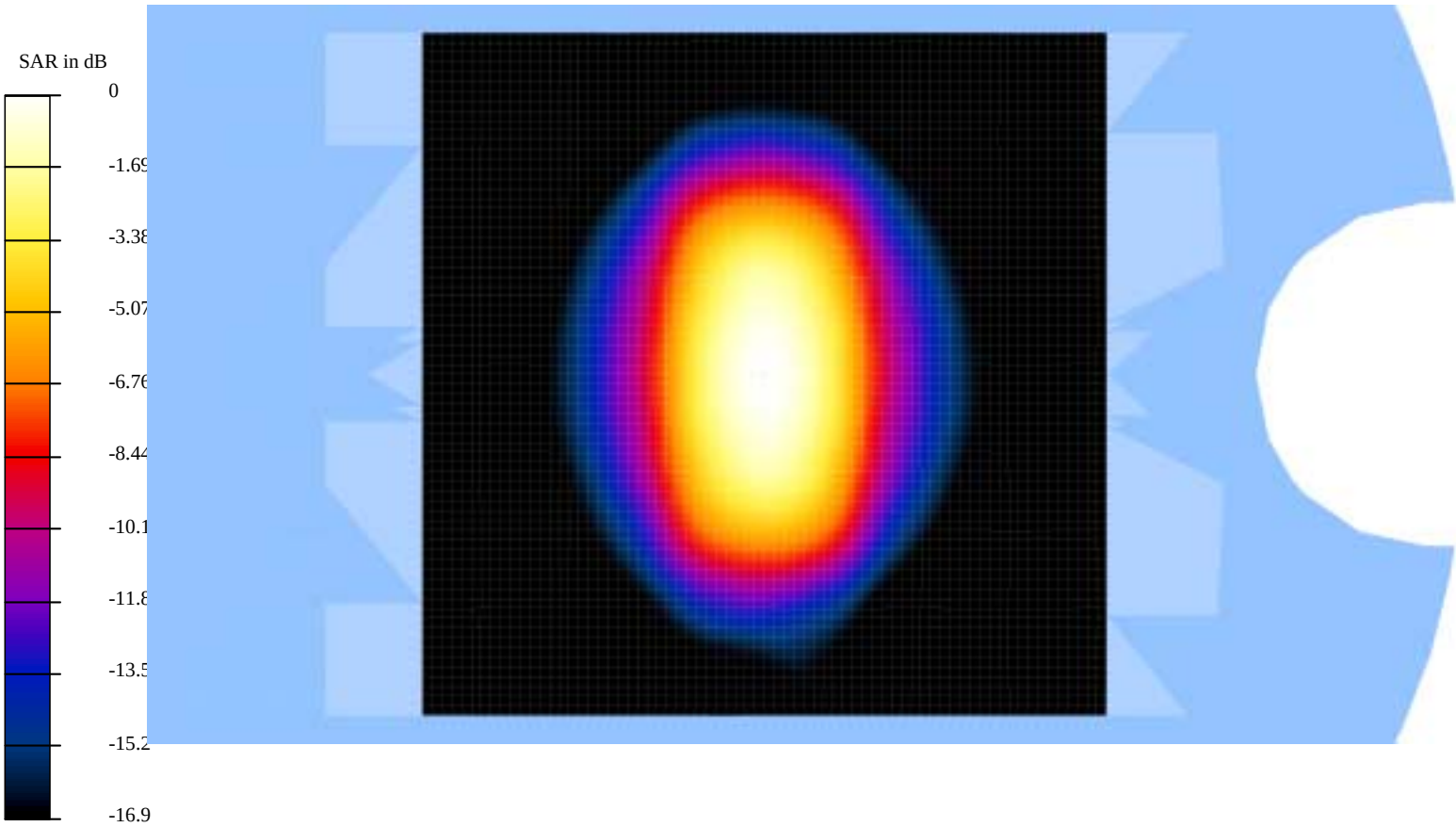
Test Laboratory: NOKIA Oulu; DTX07046-EN
File Name: 1900musclevali1004.da4

DUT: Dipole 1900 MHz Type & Serial Number:
Program: Dipole validation; muscle 1900; T = 21.0 °C

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: muscle 1900 MHz (σ = 1.56099 mho/m, ε = 51.543, ρ = 1000 kg/m3)
Phantom section: FlatSection

DASY4 Configuration:
- Probe: ET3DV6 - SN1381; ConvF(4.9, 4.9, 4.9); Calibrated: 21.10.2002
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 18.10.2002
- Phantom: SAM - TP:TP-1128
- Software: DASY4, V4.0 Build 51

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
Reference Value = 89.3 V/m
Peak SAR = 17 mW/g
SAR(1 g) = 9.61 mW/g; SAR(10 g) = 4.94 mW/g
Power Drift = 0.02 dB
Area Scan (71x71x1): Measurement grid: dx=15mm, dy=15mm



APPENDIX B.

SAR Distribution Printouts

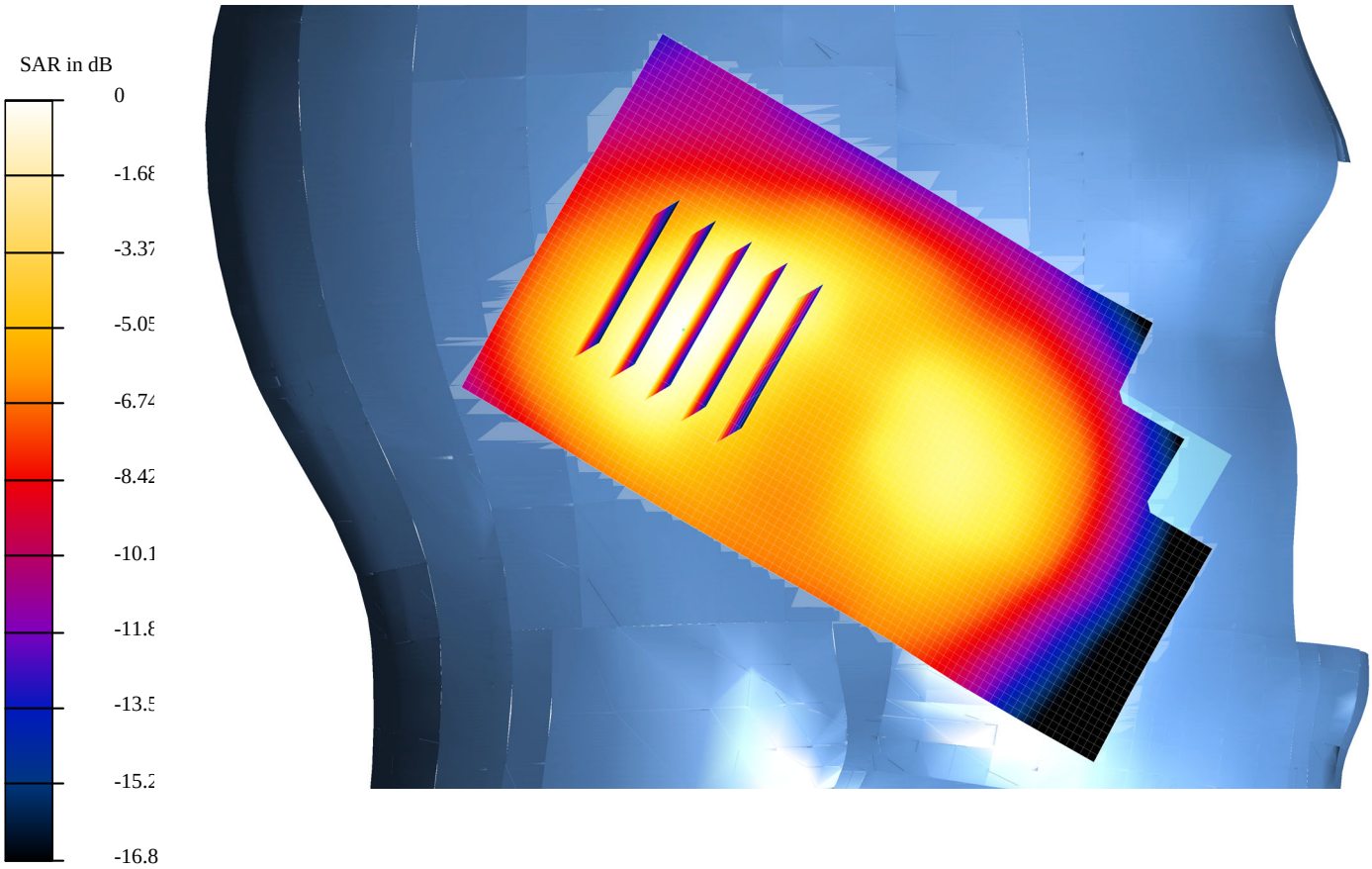
Test Laboratory: NOKIA Oulu; DTX07046-EN
File Name: h9A.da4

DUT: QTL-RH4 Type & Serial Number: 004400/18/172203/2
Program: Left hand; Cheek; T = 22.1 °C; worst case extrapolation

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: Head 1900 MHz (σ = 1.45277 mho/m, ε = 38.7092, ρ = 1000 kg/m3)
Phantom section: LeftSection

DASY4 Configuration:
- Probe: ET3DV6 - SN1381; ConvF(5.1, 5.1, 5.1); Calibrated: 21.10.2002
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 18.10.2002
- Phantom: SAM - TP:TP-1003
- Software: DASY4, V4.0 Build 51

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm
Reference Value = 15 V/m
Peak SAR = 0.784 mW/g
SAR(1 g) = 0.354 mW/g; SAR(10 g) = 0.182 mW/g
Power Drift = 0.007 dB
Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm



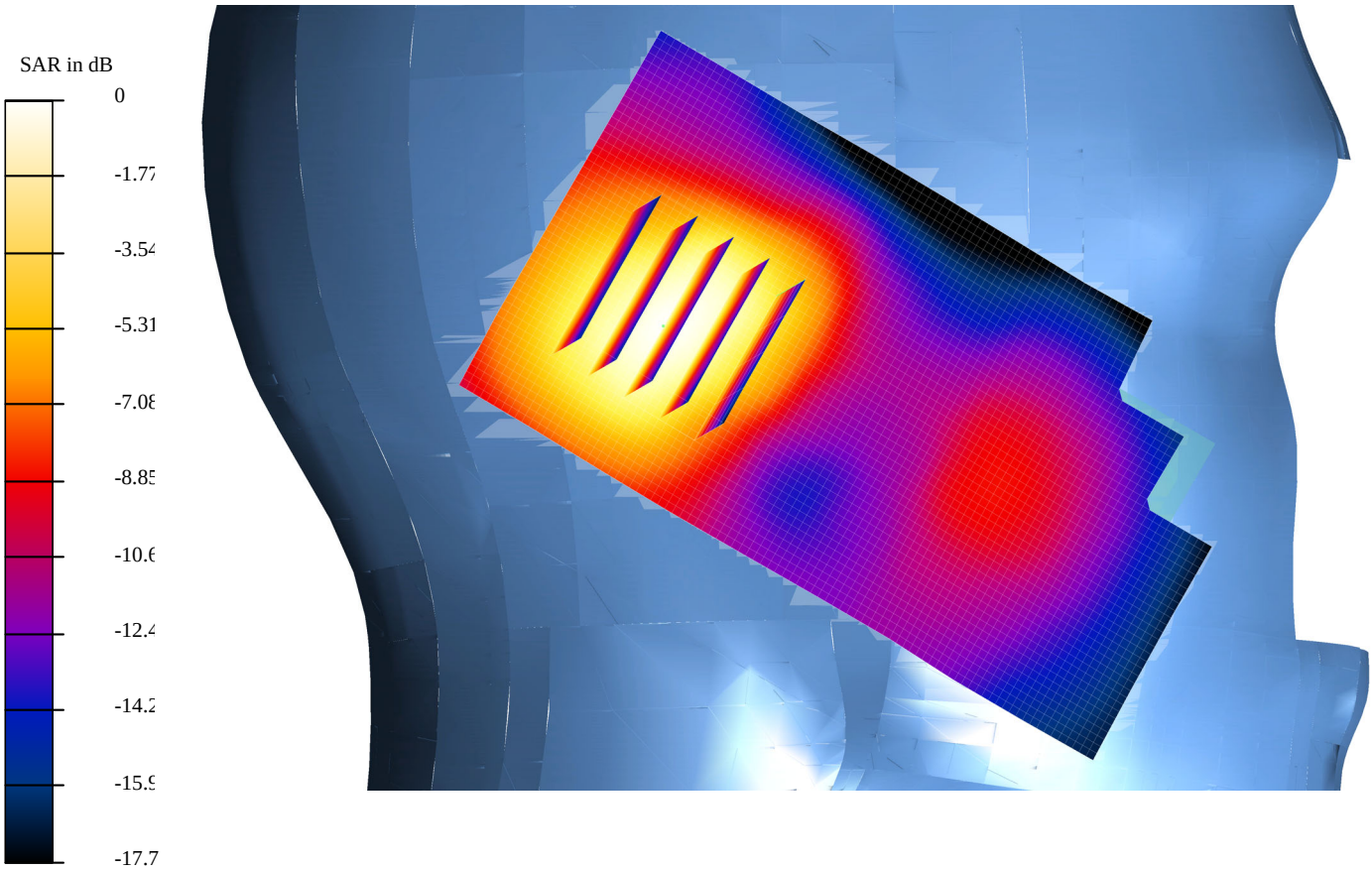
Test Laboratory: NOKIA Oulu; DTX07046-EN
File Name: h10A.da4

DUT: QTL-RH4 Type & Serial Number: 004400/18/172203/2
Program: Left hand; Tilted; T = 22.1 °C; worst case extrapolation

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: Head 1900 MHz (σ = 1.45277 mho/m, ε = 38.7092, ρ = 1000 kg/m3)
Phantom section: LeftSection

DASY4 Configuration:
- Probe: ET3DV6 - SN1381; ConvF(5.1, 5.1, 5.1); Calibrated: 21.10.2002
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 18.10.2002
- Phantom: SAM - TP:TP-1003
- Software: DASY4, V4.0 Build 51

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm
Reference Value = 15.6 V/m
Peak SAR = 0.838 mW/g
SAR(1 g) = 0.387 mW/g; SAR(10 g) = 0.196 mW/g
Power Drift = -0.02 dB
Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm



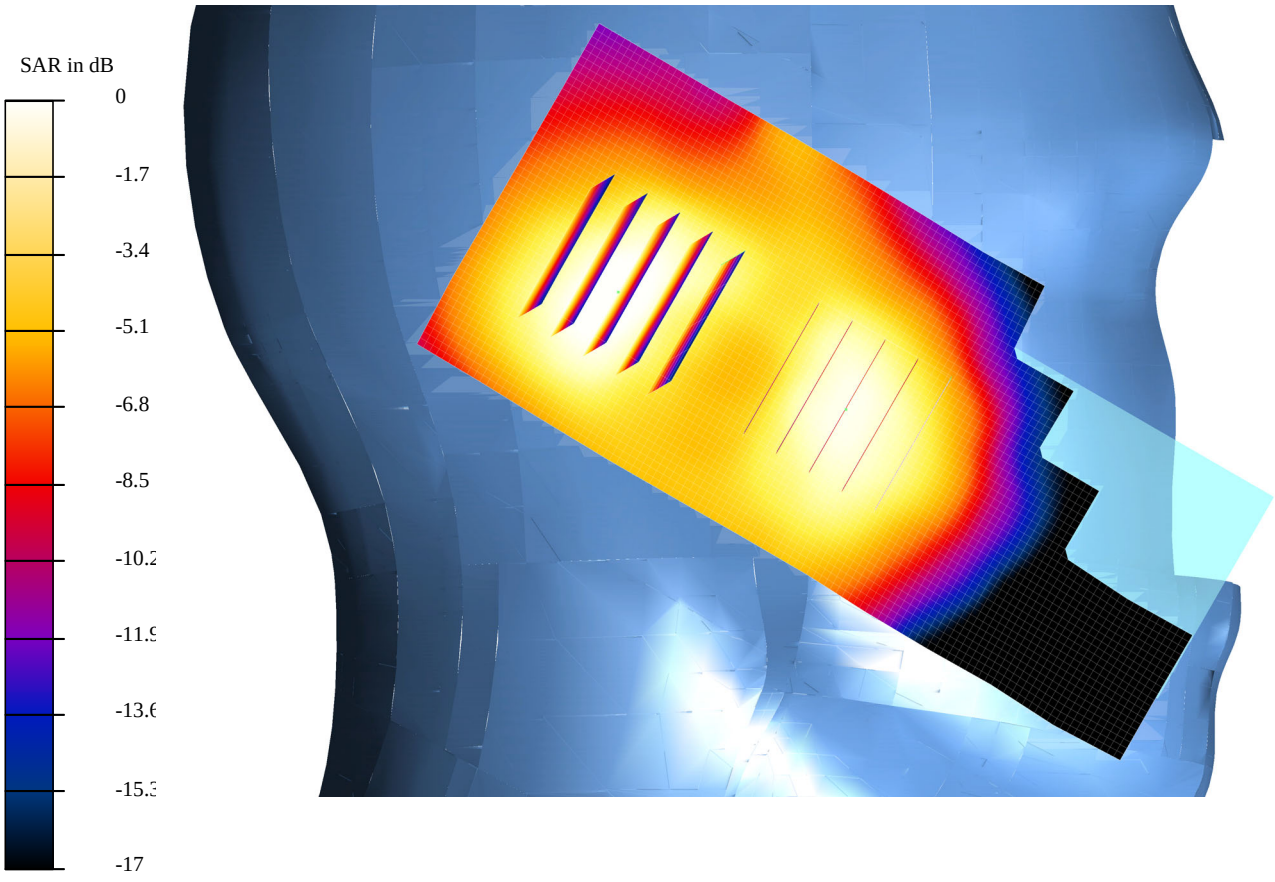
Test Laboratory: NOKIA Oulu; DTX07046-EN
File Name: h15A.da4

DUT: QTL-RH4 Type & Serial Number: 004400/18/172203/2
Program: Left hand; Cheek; T = 21.1 °C; worst case extrapolation

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: Head 1900 MHz (σ = 1.40593 mho/m, ε = 38.4203, ρ = 1000 kg/m3)
Phantom section: LeftSection

DASY4 Configuration:
- Probe: ET3DV6 - SN1381; ConvF(5.1, 5.1, 5.1); Calibrated: 21.10.2002
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 18.10.2002
- Phantom: SAM - TP:TP-1003
- Software: DASY4, V4.0 Build 51

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm
Reference Value = 13.6 V/m
Peak SAR = 0.69 mW/g
SAR(1 g) = 0.306 mW/g; SAR(10 g) = 0.153 mW/g
Power Drift = -0.01 dB
Area Scan (51x111x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=7.5mm, dy=7.5mm
Reference Value = 13.6 V/m
Peak SAR = 0.474 mW/g
SAR(1 g) = 0.24 mW/g; SAR(10 g) = 0.132 mW/g
Power Drift = -0.01 dB



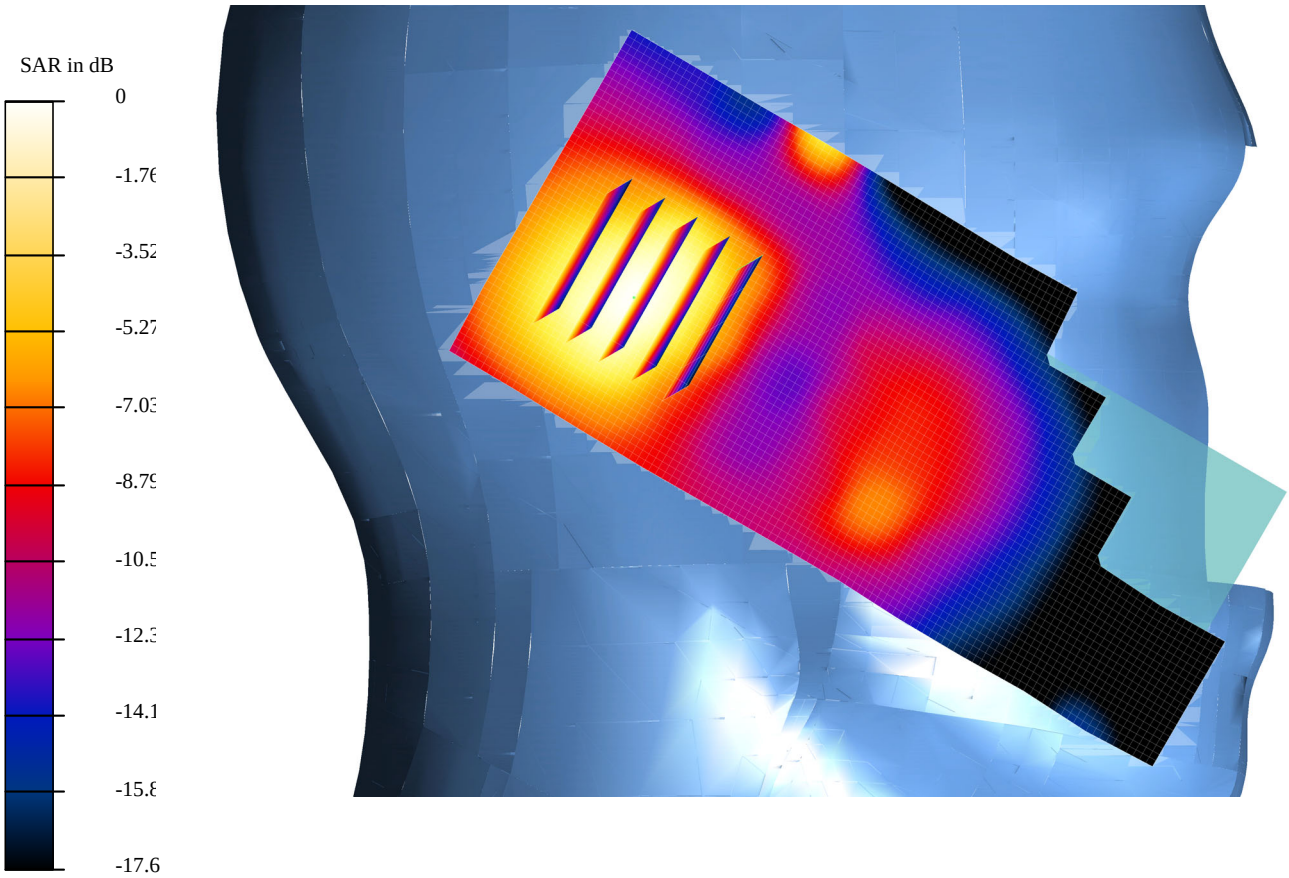
Test Laboratory: NOKIA Oulu; DTX07046-EN
File Name: h16A.da4

DUT: QTL-RH4 Type & Serial Number: 004400/18/172203/2
Program: Left hand; Tilted; T = 21.2 °C; worst case extrapolation

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: Head 1900 MHz (σ = 1.40593 mho/m, ε = 38.4203, ρ = 1000 kg/m3)
Phantom section: LeftSection

DASY4 Configuration:
- Probe: ET3DV6 - SN1381; ConvF(5.1, 5.1, 5.1); Calibrated: 21.10.2002
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 18.10.2002
- Phantom: SAM - TP:TP-1003
- Software: DASY4, V4.0 Build 51

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm
Reference Value = 14.1 V/m
Peak SAR = 0.737 mW/g
SAR(1 g) = 0.333 mW/g; SAR(10 g) = 0.165 mW/g
Power Drift = 0.04 dB
Area Scan (51x111x1): Measurement grid: dx=15mm, dy=15mm



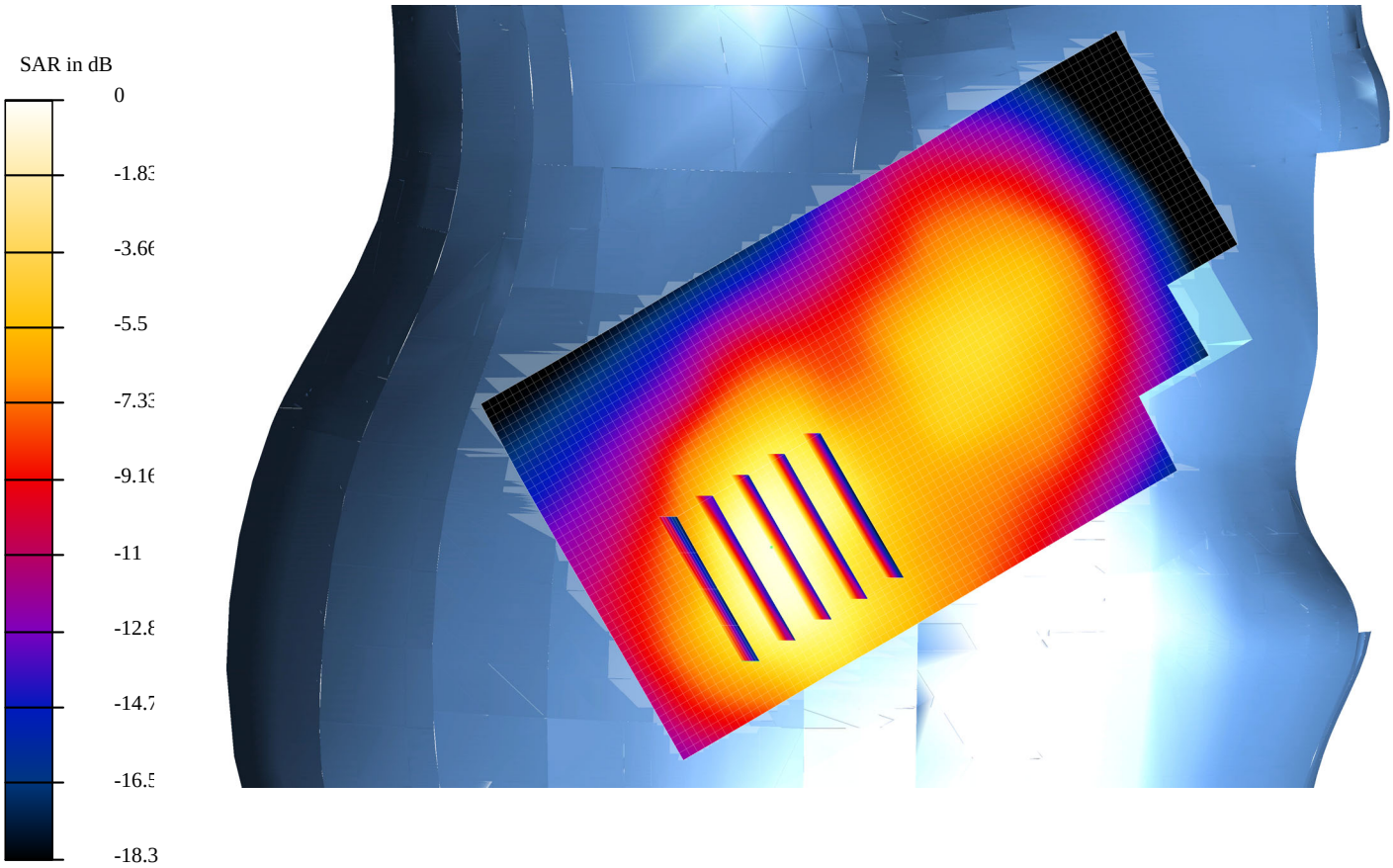
Test Laboratory: NOKIA Oulu; DTX07046-EN
File Name: h19A.da4

DUT: QTL-RH4 Type & Serial Number: 004400/18/172203/2
Program: Right hand; Cheek; T = 21.5 °C; worst case extrapolation

Communication System: GSM 1900; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3
Medium: Head 1900 MHz (σ = 1.43333 mho/m, ε = 38.283, ρ = 1000 kg/m3)
Phantom section: RightSection

DASY4 Configuration:
- Probe: ET3DV6 - SN1381; ConvF(5.1, 5.1, 5.1); Calibrated: 21.10.2002
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 18.10.2002
- Phantom: SAM - TP:TP-1003
- Software: DASY4, V4.0 Build 51

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm
Reference Value = 14 V/m
Peak SAR = 1.36 mW/g
SAR(1 g) = 0.548 mW/g; SAR(10 g) = 0.258 mW/g
Power Drift = 0.06 dB
Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm



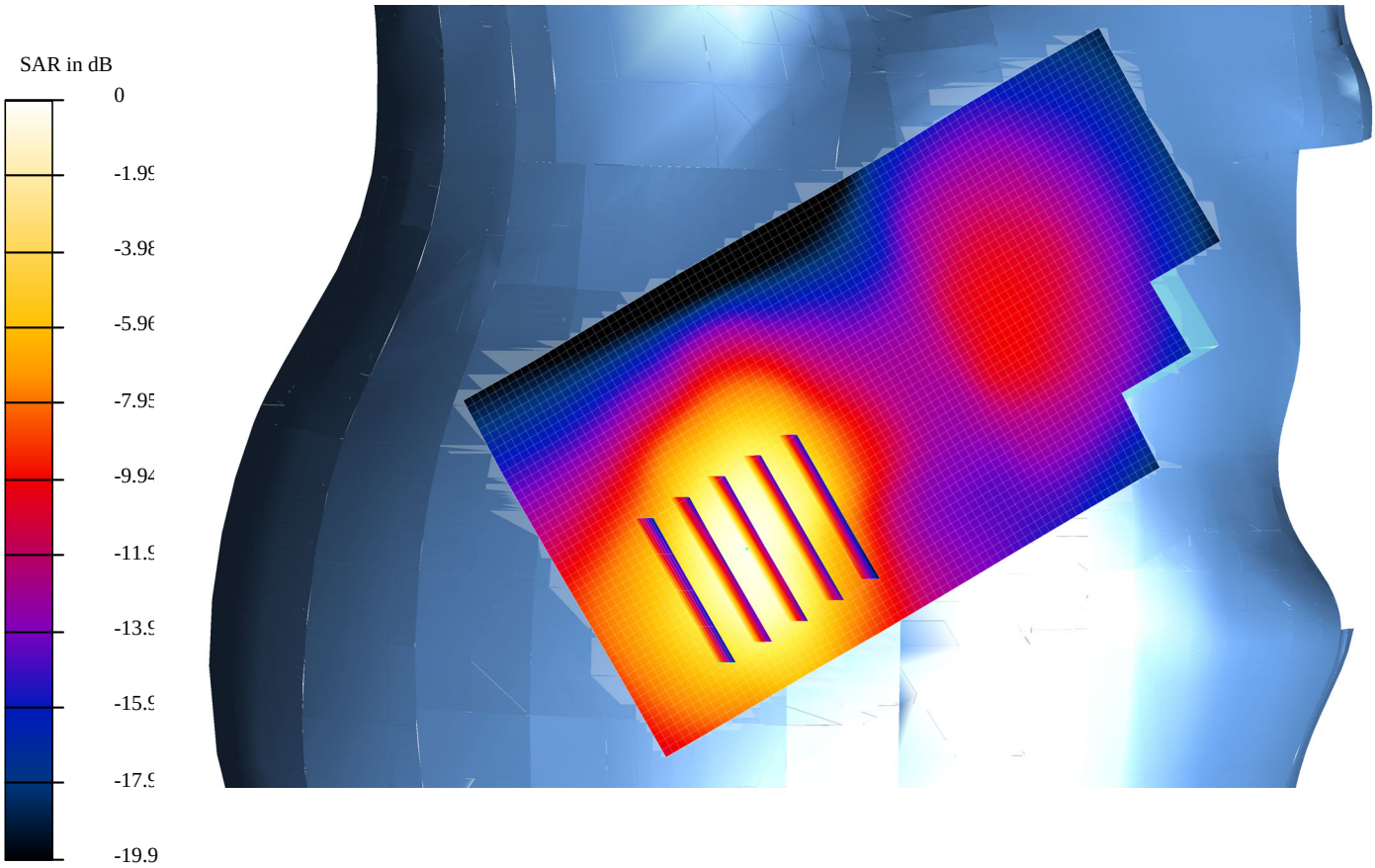
Test Laboratory: NOKIA Oulu; DTX07046-EN
File Name: h20A.da4

DUT: QTL-RH4 Type & Serial Number: 004400/18/172203/2
Program: Right hand; Tilted; T = 21.5 °C; worst case extrapolation

Communication System: GSM 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3
Medium: Head 1900 MHz (σ = 1.37656 mho/m, ε = 38.6148, ρ = 1000 kg/m3)
Phantom section: RightSection

DASY4 Configuration:
- Probe: ET3DV6 - SN1381; ConvF(5.1, 5.1, 5.1); Calibrated: 21.10.2002
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 18.10.2002
- Phantom: SAM - TP:TP-1003
- Software: DASY4, V4.0 Build 51

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm
Reference Value = 14.9 V/m
Peak SAR = 1.21 mW/g
SAR(1 g) = 0.512 mW/g; SAR(10 g) = 0.24 mW/g
Power Drift = 0.03 dB
Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm



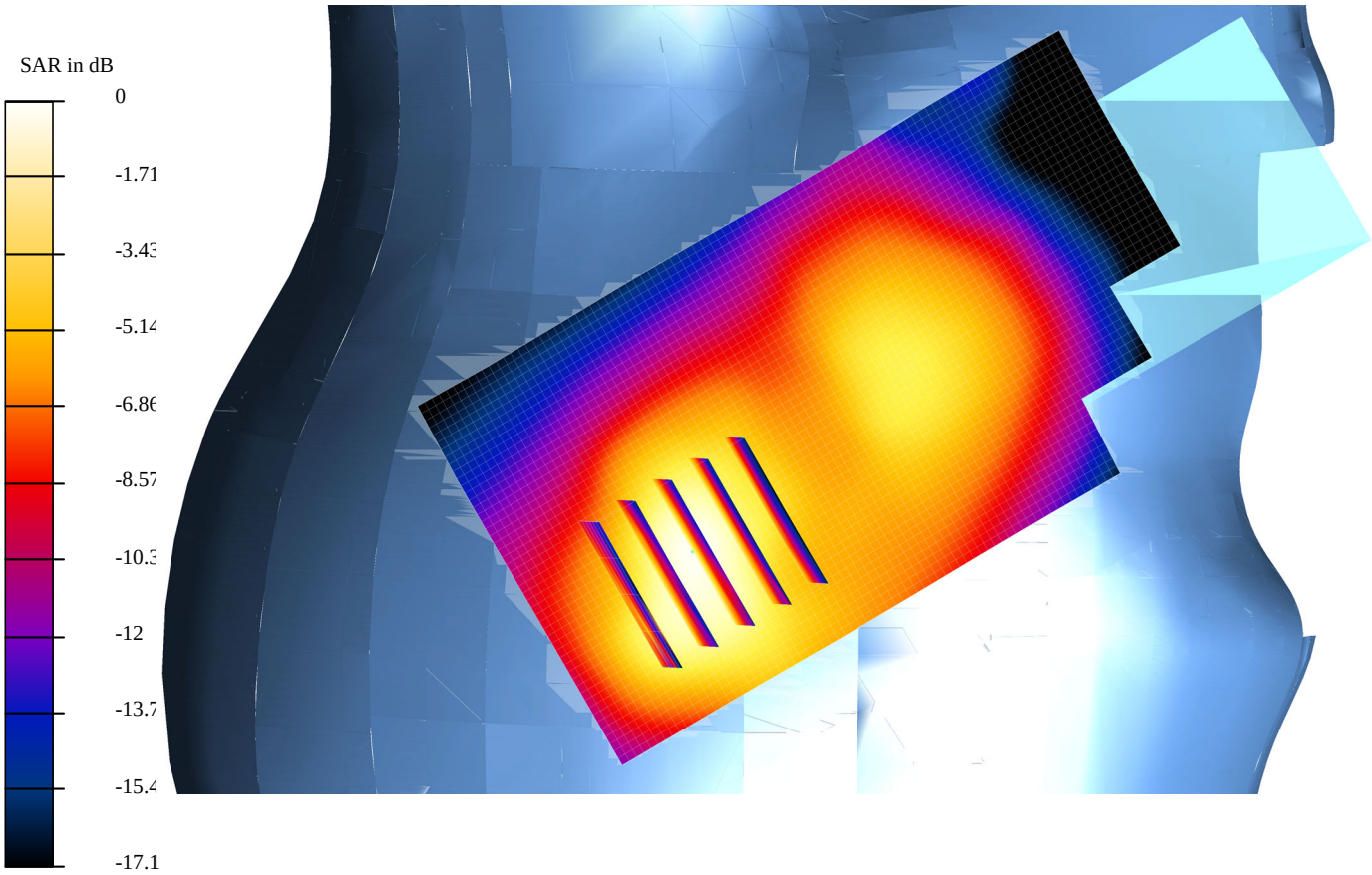
Test Laboratory: NOKIA Oulu; DTX07046-EN
File Name: h7A.da4

DUT: QTL-RH4 Type & Serial Number: 004400/18/172203/2
Program: Right hand; Cheek; T = 22.0 °C; worst case extrapolation

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: Head 1900 MHz (σ = 1.45277 mho/m, ε = 38.7092, ρ = 1000 kg/m3)
Phantom section: RightSection

DASY4 Configuration:
- Probe: ET3DV6 - SN1381; ConvF(5.1, 5.1, 5.1); Calibrated: 21.10.2002
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 18.10.2002
- Phantom: SAM - TP:TP-1003
- Software: DASY4, V4.0 Build 51

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm
Reference Value = 15.1 V/m
Peak SAR = 1.24 mW/g
SAR(1 g) = 0.494 mW/g; SAR(10 g) = 0.233 mW/g
Power Drift = 0.02 dB
Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm



Test Laboratory: NOKIA Oulu; DTX07046-EN
File Name: h8A.da4

DUT: QTL-RH4 Type & Serial Number: 004400/18/172203/2
Program: Right hand; Tilted; T = 22.1 °C: worst case extrapolation

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: Head 1900 MHz (σ = 1.45277 mho/m, ε = 38.7092, ρ = 1000 kg/m3)
Phantom section: RightSection

DASY4 Configuration:
- Probe: ET3DV6 - SN1381; ConvF(5.1, 5.1, 5.1); Calibrated: 21.10.2002
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 18.10.2002
- Phantom: SAM - TP:TP-1003
- Software: DASY4, V4.0 Build 51

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm
Reference Value = 15.3 V/m
Peak SAR = 1.17 mW/g
SAR(1 g) = 0.49 mW/g; SAR(10 g) = 0.232 mW/g
Power Drift = 0.1 dB
Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm