TCC
San Diego

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Certificate Number: 1819-02

SAR Compliance Test Report

Test report no.:	SD_SAR_0704_01	**Date of report:**	2007-04-17
Template version:	5.0	**Number of pages:**	51
Testing laboratory:	TCC San Diego 12278 Scripps Summit Drive SAN DIEGO CA. 92131 USA Tel. +1 858 831 5000 Fax. +1 858 831 6500	**Client:**	Nokia Corporation Nokia Tower Pacific Century Place 2A Gong Ti Bei Lu Chaoyang District 100027 BEIJING, PRC Tel. +86 10 65392828 Fax. +86 10 65393838
Responsible test engineer:	Jose Gomez	**Product contact person:**	Hu Helen
Measurements made by:	Jose Gomez		
Tested device:	RM-293		
FCC ID:	QTLRM-293	**IC:**	661AB-RM293
Supplement reports:	-		

Testing has been carried out in accordance with:

47CFR §2.1093
Radiofrequency Radiation Exposure Evaluation: Portable Devices

FCC OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01)
Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields

RSS-102
Evaluation Procedure for Mobile and Portable Radio Transmitters with Respect to Health Canada's Safety Code 6 for Exposure of Humans to Radio Frequency Fields

IEEE 1528 - 2003
IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Technique

Documentation: The documentation of the testing performed on the tested devices is archived for 15 years at TCC San Diego.

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:)07-04-17

For the contents:

Jose Gomez
Certification Test Engineer

CONTENTS

1. SUMMARY OF SAR TEST REPORT

1.1 Test Details

Period of test	2007-04-04 to 2007-04-17
SN, HW and SW numbers of tested device	SN: E9C33409F5, HW: 0302, SW: ti06w47-07w12, DUT: 50570
Batteries used in testing	BL-4B, DUT: 50571, 30521, 30522, 30523
Headsets used in testing	HS-47, DUT: 50572
Other accessories used in testing	-
State of sample	Prototype unit
Notes	-

1.2 Maximum Results

The maximum measured SAR values for Head configuration and Body Worn configuration are given in section 1.2.1 and 1.2.2 respectively. The device conforms to the requirements of the standard(s) when the maximum measured SAR value is less than or equal to the limit.

1.2.1 Head Configuration

Mode	Ch / *f* (MHz)	Radiated power	Position	Measured SAR value (1g avg)	Scaled* SAR value (1g avg)	SAR limit (1g avg)	Result
GSM 850	251 / 848.8	31.9 dBm ERP	Right, Cheek	0.878W/kg	**0.98W/kg**	1.6 W/kg	**PASSED**
GSM 1900	661 / 1880.0	31.6 dBm ERP	Left, Cheek	0.449W/kg	**0.50W/kg**	1.6 W/kg	**PASSED**

1.2.2 Body Worn Configuration

Mode	Ch / *f* (MHz)	Radiated power	Separation distance	Measured SAR value (1g avg)	Scaled* SAR value (1g avg)	SAR limit (1g avg)	Result
2-slot GPRS 850	190 / 836.6	27.7 dBm ERP	2.2 cm	0.901W/kg	**1.01 W/kg**	1.6 W/kg	**PASSED**
2-slot GPRS 1900	810 / 1909.8	30.7 dBm ERP	2.2 cm	0.207W/kg	**0.23 W/kg**	1.6 W/kg	**PASSED**

*SAR values are scaled up by 12% to cover measurement drift.

1.2.3 Maximum Drift

Maximum drift covered by 12% scaling up of the SAR values	Maximum drift during measurements
0.5dB	0.19dB

1.2.4 Measurement Uncertainty

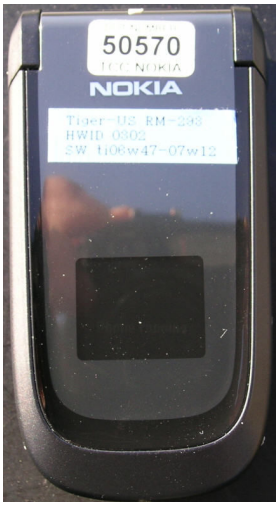
Expanded Uncertainty (k=2) 95%	± 25.8%

2. DESCRIPTION OF THE DEVICE UNDER TEST

Device category	Portable
Exposure environment	General population / uncontrolled

Modes and Bands of Operation	GSM 850 / 1900	GPRS 850 / 1900	BT
Modulation Mode	GMSK	GMSK	GFSK
Duty Cycle	1/8	1/8 to 2/8	
Transmitter Frequency Range (MHz)	824 - 849 1850 - 1910	824 - 849 1850 - 1910	2402-2480

2.1 Picture of the Device



2.2 Description of the Antenna

The device has an internal antenna.

3. TEST CONDITIONS

3.1 Temperature and Humidity

Ambient temperature (°C):	20.2 to 21.7
Ambient humidity (RH %):	35 to 44

3.2 Test Signal, Frequencies and Output Power

The device was put into operation by using a call tester. Communication between the device and the call tester was established by air link.

The device output power was set to maximum power level for all tests; a fully charged battery was used for every test sequence.

In all operating bands the measurements were performed on lowest, middle and highest channels.

The radiated output power of the device was measured by a separate test laboratory on the same unit(s) as used for SAR testing.

4. DESCRIPTION OF THE TEST EQUIPMENT

4.1 Measurement System and Components

The measurements were performed using an automated near-field scanning system, DASY4, manufactured by Schmid & Partner Engineering AG (SPEAG) in Switzerland. The SAR extrapolation algorithm used in all measurements was the 'advanced extrapolation' algorithm.

The following table lists calibration dates of SPEAG components:

Test Equipment	Serial Number	Calibration interval	Calibration expiry
DAE 3	604	12 months	2007-11
E-field Probe ET3DV6	1805	12 months	2007-05
Dipole Validation Kit, D835V2	478	24 months	2008-11
Dipole Validation Kit, D1900V2	534	24 months	2008-09
DASY Software	Version 4.7	-	-

Additional test equipment used in testing:

Test Equipment	Model	Serial Number	Calibration interval	Calibration expiry
Signal Generator	Agilent E4432B	US 40052231	24 months	2008-05
Amplifier	Milmega AS0825-20L	1009777	-	-
Power Meter	Agilent E4417A	GB41290918	12 months	2007-11
Power Sensor	Agilent E9327A	US 40411295	12 months	2008-04
Call Tester	R&S CMU200	106232	24 months	2008-03
Blue Tooth Tester	R&S CMU200	837727/008	24 months	2007-11
Vector Network Analyzer	Agilent 8753ES	MY40002861	12 months	2007-06
Dielectric Probe Kit	Agilent 85070D	US 01440165	-	-

4.1.1 Isotropic E-field Probe Type 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., butyl diglycol)
Calibration	Calibration certificate 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

4.2 Phantoms

The phantom used for all tests i.e. for both system checks and device testing, was the twin-headed "SAM Phantom", manufactured by SPEAG. The phantom conforms to the requirements of IEEE 1528 - 2003.

System checking was performed using the flat section, whilst Head SAR tests used the left and right head profile sections. Body SAR testing also used the flat section between the head profiles.

The SPEAG device holder (see Section 5.1) was used to position the device in all tests whilst a tripod was used to position the validation dipoles against the flat section of phantom.

4.3 Tissue Simulants

Recommended values for the dielectric parameters of the tissue simulants are given in IEEE 1528 - 2003 and FCC Supplement C to OET Bulletin 65. All tests were carried out using simulants whose dielectric parameters were within ± 5% of the recommended values. All tests were carried out within 24 hours of measuring the dielectric parameters.

The depth of the tissue simulant was 15.0 ± 0.5 cm measured from the ear reference point during system checking and device measurements.

4.3.1 Tissue Simulant Recipes

The following recipe(s) were used for Head and Body tissue stimulant(s):

800MHz band

Ingredient	Head (% by weight)	Body (% by weight)
Deionised Water	39.74	55.97
HEC	0.25	1.21
Sugar	58.31	41.76
Preservative	0.15	0.27
Salt	1.55	0.79

1900MHz band

Ingredient	Head (% by weight)	Body (% by weight)
Deionised Water	54.88	69.02
Butyl Diglycol	44.91	30.76
Salt	0.21	0.22

4.3.2 System Checking

The manufacturer calibrates the probes annually. Dielectric parameters of the tissue simulants were measured every day using the dielectric probe kit and the network analyser. A system check measurement was made following the determination of the dielectric parameters of the simulant, using the dipole validation kit. A power level of 250 mW was supplied to the dipole antenna, which was placed under the flat section of the twin SAM phantom. The system checking results (dielectric parameters and SAR values) are given in the table below.

System checking, head tissue simulant

f [MHz]	Description	SAR [W/kg], 1g	Dielectric Parameters		Temp [°C]
			ε_r	σ [S/m]	
835	Reference result	2.28	42.3	0.89	
	± 10% window	2.05 - 2.51			
	2007-04-16	2.42	42.4	0.92	21.4
1900	Reference result	9.38	38.6	1.41	
	± 10% window	8.44 – 10.32			
	2007-04-12	9.99	38.1	1.44	20.2
	2007-04-17	10.1	38.3	1.46	21.2

System checking, body tissue simulant

f [MHz]	Description	SAR [W/kg], 1g	Dielectric Parameters		Temp [°C]
			ε_r	σ [S/m]	
835	Reference result	2.43	53.8	0.98	
	± 10% window	2.19 – 2.67			
	2007-04-11	2.47	52.6	0.96	20.3
1900	Reference result	10.1	52.6	1.56	
	± 10% window	9.1 – 11.1			
	2007-04-12	10.2	52.5	1.59	21.0

Plots of the system checking scans are given in Appendix A.

4.3.3 Tissue Simulants used in the Measurements

Head tissue simulant measurements

f [MHz]	Description	Dielectric Parameters		Temp [°C]
		ε_r	σ [S/m]	
836	Recommended value	41.5	0.90	
	± 5% window	39.4 – 43.6	0.86 – 0.95	
	2007-04-16	42.4	0.93	21.4
1880	Recommended value	40.0	1.40	
	± 5% window	38.0 – 42.0	1.33 – 1.47	
	2007-04-12	38.2	1.43	20.2
	2007-04-17	38.4	1.44	21.2

Body tissue simulant measurements

f [MHz]	Description	Dielectric Parameters		Temp [°C]
		ε_r	σ [S/m]	
836	Recommended value	55.2	0.97	
	± 5% window	52.4 – 58.0	0.92 – 1.02	
	2007-04-11	52.6	0.96	20.3
1880	Recommended value	53.3	1.52	
	± 5% window	50.6 – 56.0	1.44 – 1.60	
	2007-04-12	52.4	1.56	21.0

5. DESCRIPTION OF THE TEST PROCEDURE

5.1 Device Holder

The device was placed in the device holder (illustrated below) that is supplied by SPEAG as an integral part of the Dasy system.

Device holder supplied by SPEAG

A Nokia designed spacer (illustrated below) was used to position the device within the SPEAG holder. The spacer positions the device so that the holder has minimal effect on the test results but still holds the device securely. The spacer was removed before the tests.

Nokia spacer

5.2 Test Positions

5.2.1 Against Phantom Head

Measurements were made in “cheek” and “tilt” positions on both the left hand and right hand sides of the phantom.

The positions used in the measurements were according to IEEE 1528 - 2003 "IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques".

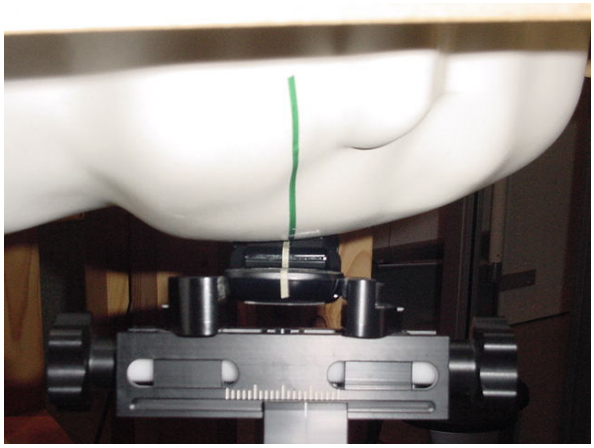


Photo of the device in “cheek” position

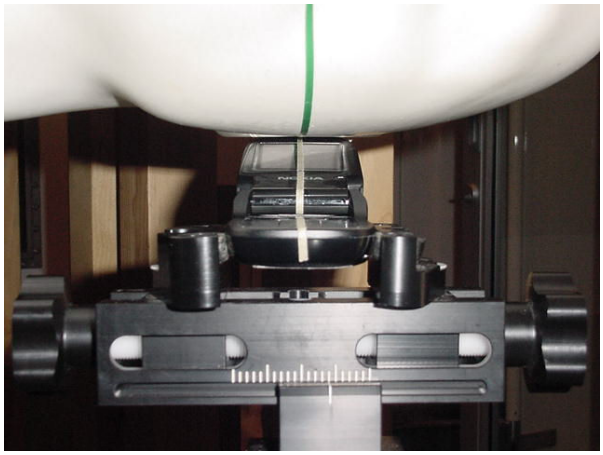


Photo of the device in “tilt” position

5.2.2 Body Worn Configuration

The device was placed in the SPEAG holder using the Nokia spacer and placed below the flat section of the phantom. The distance between the device and the phantom was kept at the separation distance indicated in the photo below using a separate flat spacer that was removed before the start of the measurements. The device was oriented with its antenna facing the phantom since this orientation gives higher results.

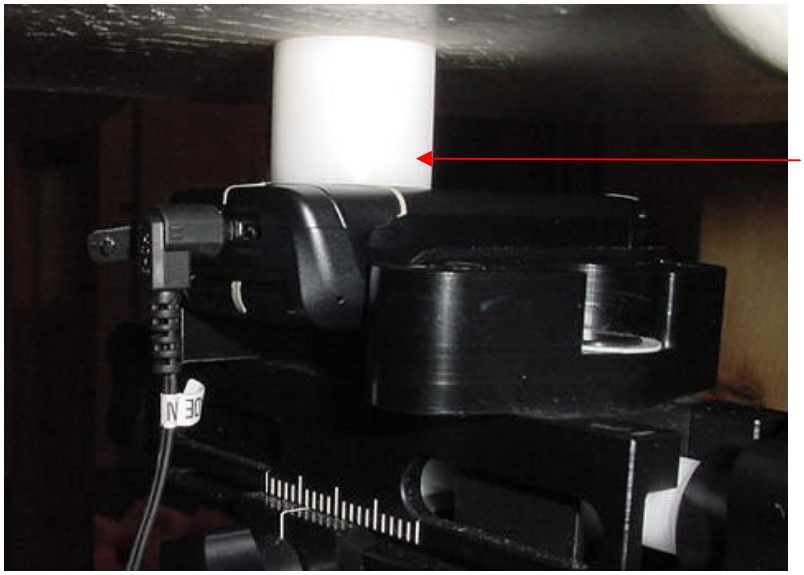


Photo of the device positioned for Body SAR measurement.
The spacer was removed for the tests.

5.3 Scan Procedures

First, area scans were used for determination of the field distribution. Next, a zoom scan, a minimum of 5x5x7 points covering a volume of at least 30x30x30mm, was performed around the highest E-field value to determine the averaged SAR value. Drift was determined by measuring the same point at the start of the area scan and again at the end of the zoom scan.

5.4 SAR Averaging Methods

The maximum SAR value was averaged over a cube of tissue using interpolation and extrapolation.

The interpolation, extrapolation and maximum search routines within Dasy4 are all based on the modified Quadratic Shepard's method (Robert J. Renka, "Multivariate Interpolation Of Large Sets Of Scattered Data", University of North Texas ACM Transactions on Mathematical Software, vol. 14, no. 2, June 1988, pp. 139-148).

The interpolation scheme combines a least-square fitted function method with a weighted average method. A trivariate 3-D / bivariate 2-D quadratic function is computed for each measurement point and fitted to neighbouring points by a least-square method. For the zoom scan, inverse distance weighting is incorporated to fit distant points more accurately. The interpolating function is finally calculated as a weighted average of the quadratics.

In the zoom scan, the interpolation function is used to extrapolate the Peak SAR from the deepest measurement points to the inner surface of the phantom.

6. MEASUREMENT UNCERTAINTY

Table 6.1 – Measurement uncertainty evaluation

Uncertainty Component	Section in IEEE 1528	Tol. (%)	Prob Dist	Div	c_i	$c_i . u_i$ (%)	v_i
Measurement System							
Probe Calibration	E2.1	±5.9	N	1	1	±5.9	∞
Axial Isotropy	E2.2	±4.7	R	√3	$(1-c_p)^{1/2}$	±1.9	∞
Hemispherical Isotropy	E2.2	±9.6	R	√3	$(c_p)^{1/2}$	±3.9	∞
Boundary Effect	E2.3	±1.0	R	√3	1	±0.6	∞
Linearity	E2.4	±4.7	R	√3	1	±2.7	∞
System Detection Limits	E2.5	±1.0	R	√3	1	±0.6	∞
Readout Electronics	E2.6	±1.0	N	1	1	±1.0	∞
Response Time	E2.7	±0.8	R	√3	1	±0.5	∞
Integration Time	E2.8	±2.6	R	√3	1	±1.5	∞
RF Ambient Conditions - Noise	E6.1	±3.0	R	√3	1	±1.7	∞
RF Ambient Conditions - Reflections	E6.1	±3.0	R	√3	1	±1.7	∞
Probe Positioner Mechanical Tolerance	E6.2	±0.4	R	√3	1	±0.2	∞
Probe Positioning with respect to Phantom Shell	E6.3	±2.9	R	√3	1	±1.7	∞
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	E5	±3.9	R	√3	1	±2.3	∞
Test sample Related							
Test Sample Positioning	E4.2	±6.0	N	1	1	±6.0	11
Device Holder Uncertainty	E4.1	±5.0	N	1	1	±5.0	7
Output Power Variation - SAR drift measurement	6.6.3	±0.0	R	√3	1	±0.0	∞
Phantom and Tissue Parameters							
Phantom Uncertainty (shape and thickness tolerances)	E3.1	±4.0	R	√3	1	±2.3	∞
Conductivity Target - tolerance	E3.2	±5.0	R	√3	0.64	±1.8	∞
Conductivity - measurement uncertainty	E3.3	±5.5	N	1	0.64	±3.5	5
Permittivity Target - tolerance	E3.2	±5.0	R	√3	0.6	±1.7	∞
Permittivity - measurement uncertainty	E3.3	±2.9	N	1	0.6	±1.7	5
Combined Standard Uncertainty			RSS			**±12.9**	116
Coverage Factor for 95%			**k=2**				
Expanded Uncertainty						**±25.8**	

7. RESULTS

The measured Head SAR values for the test device are tabulated below:

850 MHz Head SAR results

Option used	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch128 824.2MHz	Ch190 836.6 MHz	Ch251 848.8 MHz
GSM	Power		31.2 dBm	31.9 dBm	31.9 dBm
Flip open	Left	Cheek		0.716	
		Tilt		0.306	
	Right	Cheek	0.667	0.876	**0.878**
		Tilt		0.356	
	Right Cheek, BT active				0.840

1900 MHz Head SAR results

Option used	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch512 1850.2MHz	Ch661 1880.0MHz	Ch810 1909.8MHz
GSM	Power		31.9 dBm	31.6 dBm	32.7 dBm
Flip open	Left	Cheek	0.334	**0.449**	0.444
		Tilt	-	0.140	-
	Right	Cheek	-	0.410	-
		Tilt	-	0.109	-
Flip open	Left Cheek, BT active		-	0.406	-

The measured Body SAR values for the test device are tabulated below:

850 MHz Body SAR results

Option used	Test configuration	SAR, averaged over 1g (W/kg)		
		Ch128 824.2MHz	Ch190 836.6 MHz	Ch251 848.8 MHz
2 - slot GPRS	**Power**	**27.1 dBm**	**27.7 dBm**	**26.9 dBm**
Flip closed	Without headset	0.736	**0.841**	0.833
	Headset HS-47	-	0.735	-
Flip closed	Without headset, BT active	**-**	**0.901**	**-**

1900 MHz Body SAR results

Option used	Test configuration	SAR, averaged over 1g (W/kg)		
		Ch512 1850.2MHz	Ch661 1880.0MHz	Ch810 1909.8MHz
2 - slot GPRS	**Power**	**29.8 dBm**	**30.3 dBm**	**30.7 dBm**
Flip closed	Without headset	0.152	0.180	**0.196**
	Headset HS-47	-	0.169	**-**
Flip closed	Without headset, BT active	**-**	**-**	**0.207**

Plots of the Measurement scans are given in Appendix B.

APPENDIX A: SYSTEM CHECKING SCANS

See the following pages

Date/Time: 2007-04-16 11:29:32

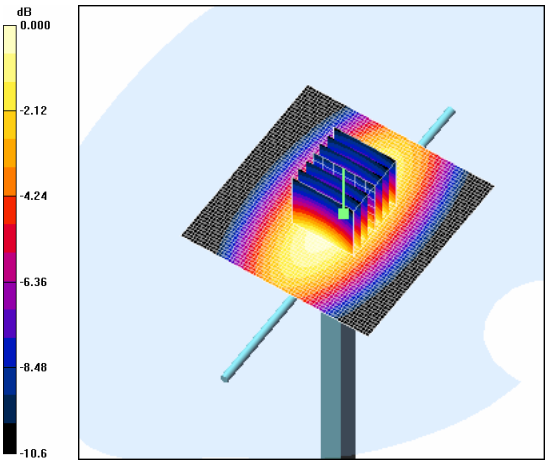
Test Laboratory: TCC San Diego
Type: D835V2; Serial:534

Communication System: CW835
Frequency: 835 MHz; Duty Cycle: 1:1
Medium: Cellular Head; Medium Notes: Liquid Temperature: 21.4
Medium parameters used: f = 835 MHz; σ = 0.924 mho/m; ε_r = 42.4; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1805; Probe Notes:
- ConvF(6.57, 6.57, 6.57); Calibrated: 2006-05-03
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 172

835MHz head /Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.66 mW/g

835MHz head /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.4 V/m
Peak SAR (extrapolated) = 3.66 W/kg
SAR(1 g) = 2.42 mW/g
SAR(10 g) = 1.57 mW/g
Power Drift = 0.012 dB
Maximum value of SAR (measured) = 2.61 mW/g



Date/Time: 2007-04-12 4:59:27

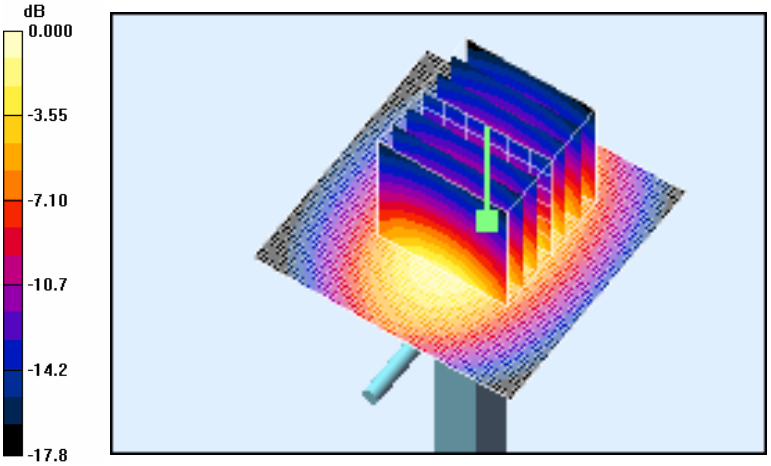
Test Laboratory: TCC San Diego
Type: D1900V2; Serial:534

Communication System: CW1900
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: GSM 1900 Head; Medium Notes: Liquid Temperature: 20.2
Medium parameters used: f = 1900 MHz; σ = 1.44 mho/m; ε_r = 38.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1805; Probe Notes:
- ConvF(5.08, 5.08, 5.08); Calibrated: 2006-05-03
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM1; Type: SAM; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 172

1900MHz head /Area Scan (61x61x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 11.5 mW/g

1900MHz head /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 92.7 V/m
Peak SAR (extrapolated) = 17.5 W/kg
SAR(1 g) = 9.99 mW/g
SAR(10 g) = 5.23 mW/g
Power Drift = 0.033 dB
Maximum value of SAR (measured) = 11.3 mW/g



Date/Time: 2007-04-17 6:53:20

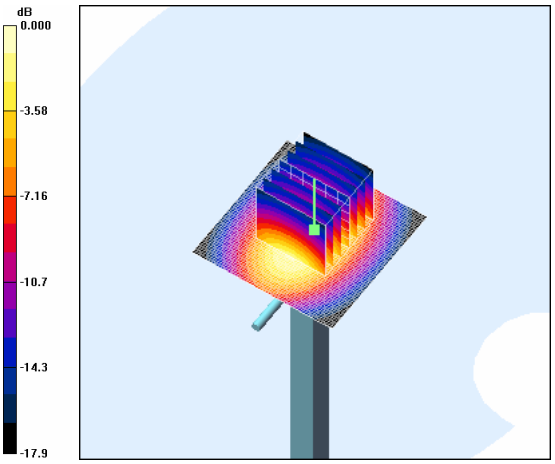
Test Laboratory: TCC San Diego
Type: D1900V2; Serial:534

Communication System: CW1900
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: GSM 1900 Head; Medium Notes: Liquid Temperature: 21.2
Medium parameters used: f = 1900 MHz; σ = 1.46 mho/m; ε_r = 38.3; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1805; Probe Notes:
- ConvF(5.08, 5.08, 5.08); Calibrated: 2006-05-03
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 172

1900MHz head /Area Scan (61x61x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 11.6 mW/g

1900MHz head /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.2 V/m
Peak SAR (extrapolated) = 17.6 W/kg
SAR(1 g) = 10.1 mW/g
SAR(10 g) = 5.29 mW/g
Power Drift = 0.035 dB
Maximum value of SAR (measured) = 11.5 mW/g



Date/Time: 2007-04-11 14:29:38

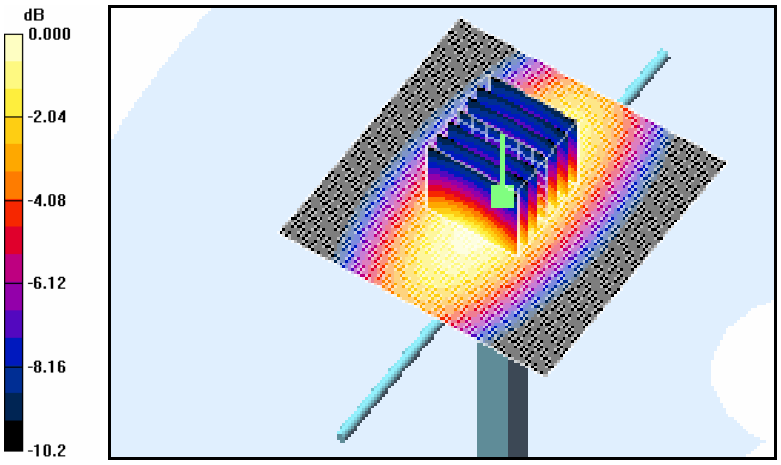
Test Laboratory: TCC San Diego
Type: D835V2; Serial:534

Communication System: CW835
Frequency: 835 MHz; Duty Cycle: 1:1
Medium: Cellular Head; Medium Notes: Liquid Temperature: 20.3
Medium parameters used: f = 835 MHz; σ = 0.961 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1805; Probe Notes:
- ConvF(6.33, 6.33, 6.33); Calibrated: 2006-05-03
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 172

835MHz body /Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.64 mW/g

835MHz body /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.6 V/m
Peak SAR (extrapolated) = 3.65 W/kg
SAR(1 g) = 2.47 mW/g
SAR(10 g) = 1.62 mW/g
Power Drift = 0.017 dB
Maximum value of SAR (measured) = 2.68 mW/g



Date/Time: 2007-04-12 18:45:34

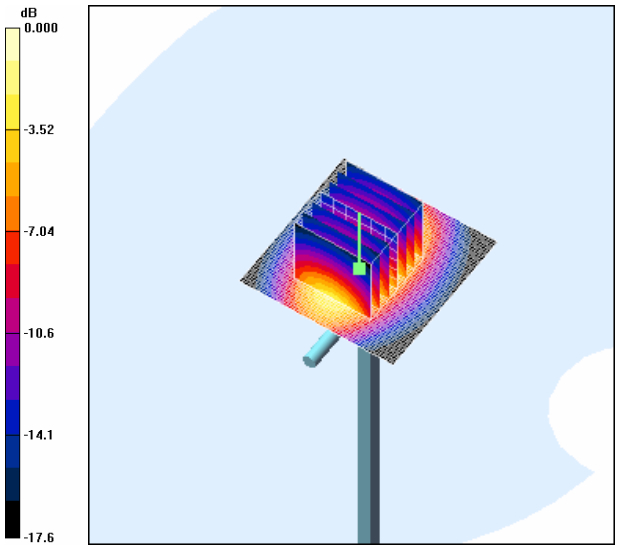
Test Laboratory: TCC San Diego
Type: D1900V2; Serial:534

Communication System: CW1900
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900MHz Body; Medium Notes: Liquid Temperature: 21.0
Medium parameters used: f = 1900 MHz; σ = 1.59 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1805; Probe Notes:
- ConvF(4.51, 4.51, 4.51); Calibrated: 2006-05-03
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM 1; Type: Twin Phantom; Serial: NMP03310
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

1900MHz body /Area Scan (61x61x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 11.9 mW/g

1900MHz body /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 90.0 V/m
Peak SAR (extrapolated) = 17.9 W/kg
SAR(1 g) = 10.2 mW/g
SAR(10 g) = 5.35 mW/g
Power Drift = -0.007 dB
Maximum value of SAR (measured) = 11.6 mW/g



APPENDIX B: MEASUREMENT SCANS

See the following pages

Date/Time: 2007-04-16 14:04:16

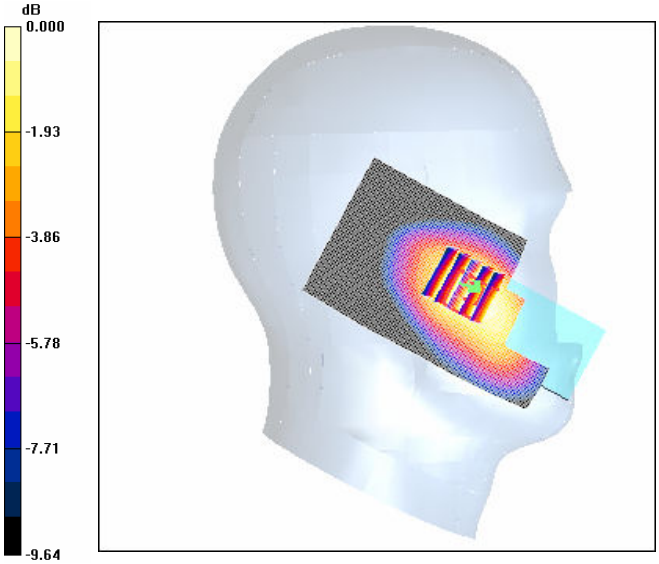
Test Laboratory: TCC San Diego
Type: RM-293; Serial: E9C33409F5

Communication System: GSM 850
Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: Cellular Head; Medium Notes: Liquid Temperature: 21.4
Medium parameters used: f = 837 MHz; σ = 0.926 mho/m; ε_r = 42.4; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1805; Probe Notes:
- ConvF(6.57, 6.57, 6.57); Calibrated: 2006-05-03
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 172

Left Cheek – Middle – Flip Open/Area Scan (61x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.767 mW/g

Left Cheek – Middle – Flip Open/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.40 V/m
Peak SAR (extrapolated) = 0.968 W/kg
SAR(1 g) = 0.716 mW/g
SAR(10 g) = 0.507 mW/g
Power Drift = -0.081 dB
Maximum value of SAR (measured) = 0.751 mW/g



Date/Time: 2007-04-16 14:24:36

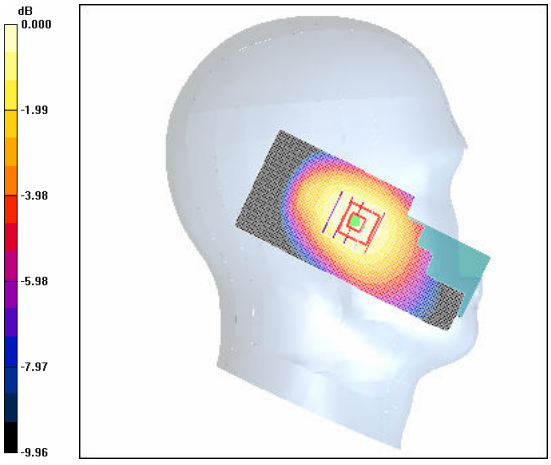
Test Laboratory: TCC San Diego
Type: RM-293; Serial: E9C33409F5

Communication System: GSM 850
Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: Cellular Head; Medium Notes: Liquid Temperature: 21.4
Medium parameters used: f = 837 MHz; σ = 0.926 mho/m; ε_r = 42.4; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1805; Probe Notes:
- ConvF(6.57, 6.57, 6.57); Calibrated: 2006-05-03
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 172

Left Tilt – Middle – Flip Open/Area Scan (51x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.324 mW/g

Left Tilt – Middle – Flip Open/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.7 V/m
Peak SAR (extrapolated) = 0.384 W/kg
SAR(1 g) = 0.306 mW/g
SAR(10 g) = 0.228 mW/g
Power Drift = -0.003 dB
Maximum value of SAR (measured) = 0.320 mW/g



Date/Time: 2007-04-16 14:58:24

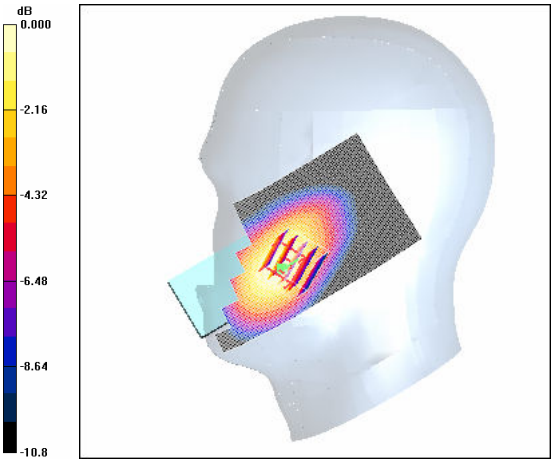
Test Laboratory: TCC San Diego
Type: RM-293; Serial: E9C33409F5

Communication System: GSM 850
Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: Cellular Head; Medium Notes: Liquid Temperature: 21.5
Medium parameters used: f = 837 MHz; σ = 0.926 mho/m; ε_r = 42.4; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1805; Probe Notes:
- ConvF(6.57, 6.57, 6.57); Calibrated: 2006-05-03
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 172

Right Cheek – Middle – Flip Open/Area Scan (61x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.971 mW/g

Right Cheek – Middle – Flip Open/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.54 V/m
Peak SAR (extrapolated) = 1.27 W/kg
SAR(1 g) = 0.876 mW/g
SAR(10 g) = 0.608 mW/g
Power Drift = 0.063 dB
Maximum value of SAR (measured) = 0.938 mW/g



Date/Time: 2007-04-16 16:19:44

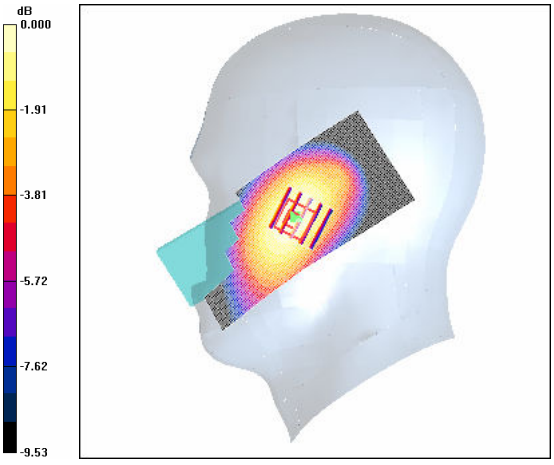
Test Laboratory: TCC San Diego
Type: RM-293; Serial: E9C33409F5

Communication System: GSM 850
Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: Cellular Head; Medium Notes: Liquid Temperature: 21.5
Medium parameters used: f = 837 MHz; σ = 0.926 mho/m; ε_r = 42.4; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1805; Probe Notes:
- ConvF(6.57, 6.57, 6.57); Calibrated: 2006-05-03
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 172

Right Tilt - Middle – Flip Open/Area Scan (51x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.381 mW/g

Right Tilt - Middle – Flip Open/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.5 V/m
Peak SAR (extrapolated) = 0.453 W/kg
SAR(1 g) = 0.356 mW/g
SAR(10 g) = 0.264 mW/g
Power Drift = -0.049 dB
Maximum value of SAR (measured) = 0.372 mW/g



Date/Time: 2007-04-16 17:25:05

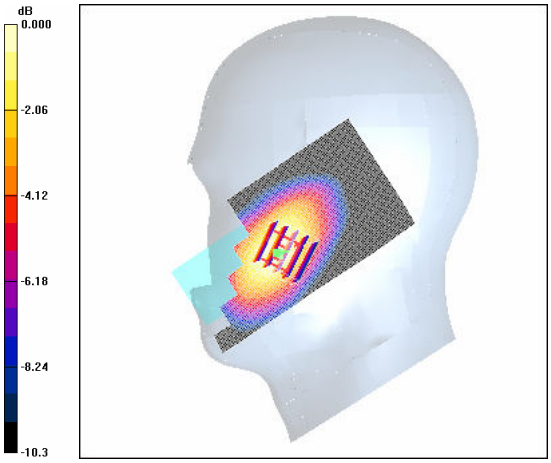
Test Laboratory: TCC San Diego
Type: RM-293; Serial: E9C33409F5

Communication System: GSM 850
Frequency: 848.8 MHz; Duty Cycle: 1:8.3
Medium: Cellular Head; Medium Notes: Liquid Temperature: 21.5
Medium parameters used: f = 849 MHz; σ = 0.938 mho/m; ε_r = 42.3; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1805; Probe Notes:
- ConvF(6.57, 6.57, 6.57); Calibrated: 2006-05-03
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 172

Right Cheek - High - Flip Open - BT active/Area Scan (61x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.915 mW/g

Right Cheek - High - Flip Open - BT active/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.53 V/m
Peak SAR (extrapolated) = 1.20 W/kg
SAR(1 g) = 0.840 mW/g
SAR(10 g) = 0.581 mW/g
Power Drift = 0.004 dB
Maximum value of SAR (measured) = 0.900 mW/g



Date/Time: 2007-04-12 6:38:43

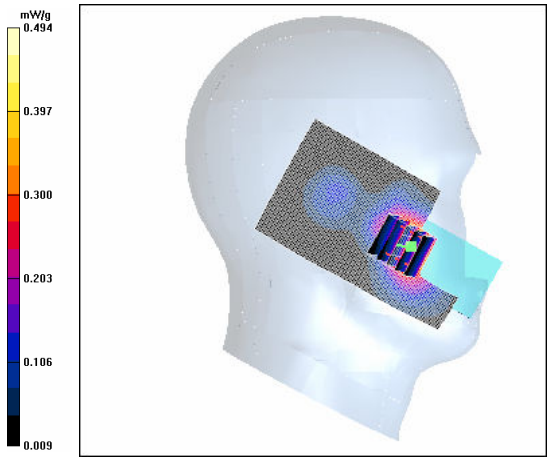
Test Laboratory: TCC San Diego
Type: RM-293; Serial: E9C33409F5

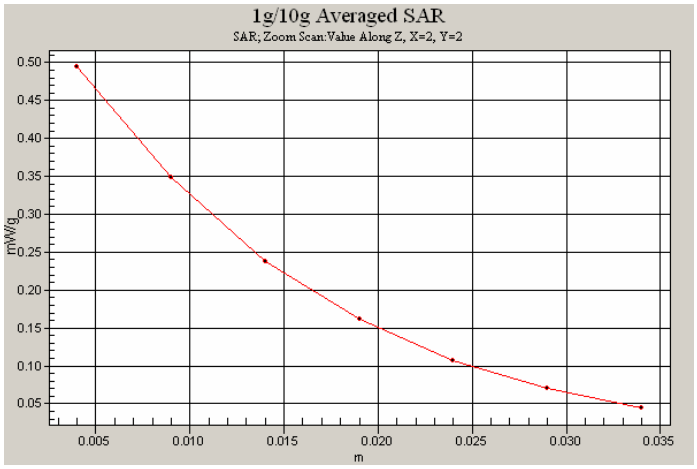
Communication System: GSM 1900
Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: Cellular Head; Medium Notes: Liquid Temperature 20.2
Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; ε_r = 38.2; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1805; Probe Notes:
- ConvF(5.08, 5.08, 5.08); Calibrated: 2006-05-03
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 172

Left Cheek – Middle – Flip Open/Area Scan (61x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.491 mW/g

Left Cheek – Middle – Flip Open/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.84 V/m
Peak SAR (extrapolated) = 0.637 W/kg
SAR(1 g) = 0.449 mW/g
SAR(10 g) = 0.280 mW/g
Power Drift = -0.072 dB
Maximum value of SAR (measured) = 0.494 mW/g





Date/Time: 2007-04-12 7:23:34

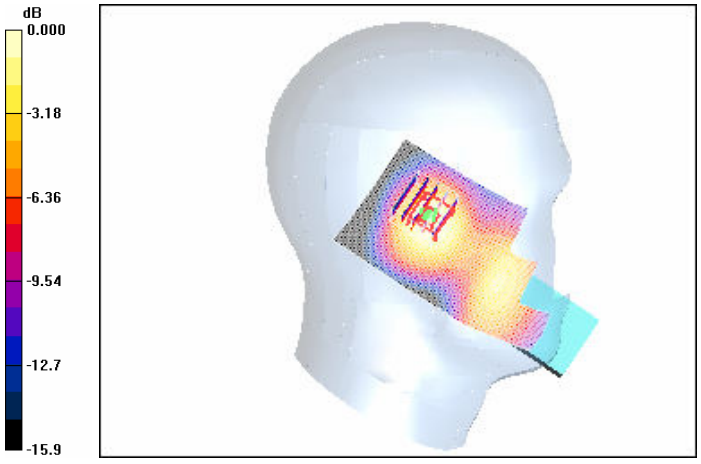
Test Laboratory: TCC San Diego
Type: RM-293; Serial: E9C33409F5

Communication System: GSM 1900
Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: Cellular Head; Medium Notes: Liquid Temperature 20.2
Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; ε_r = 38.2; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1805; Probe Notes:
- ConvF(5.08, 5.08, 5.08); Calibrated: 2006-05-03
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 172

Left Tilt – Middle – Flip Open/Area Scan (61x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.164 mW/g

Left Tilt – Middle – Flip Open/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.84 V/m
Peak SAR (extrapolated) = 0.197 W/kg
SAR(1 g) = 0.140 mW/g
SAR(10 g) = 0.088 mW/g
Power Drift = -0.048 dB
Warning: Maximum averaged SAR over 10 g is located on the boundary of the measurement cube. This cube might not incorporate the absolute averaged SAR. Please consider a refinement of the Area Scan measurement.
Maximum value of SAR (measured) = 0.150 mW/g



Date/Time: 2007-04-12 5:54:44

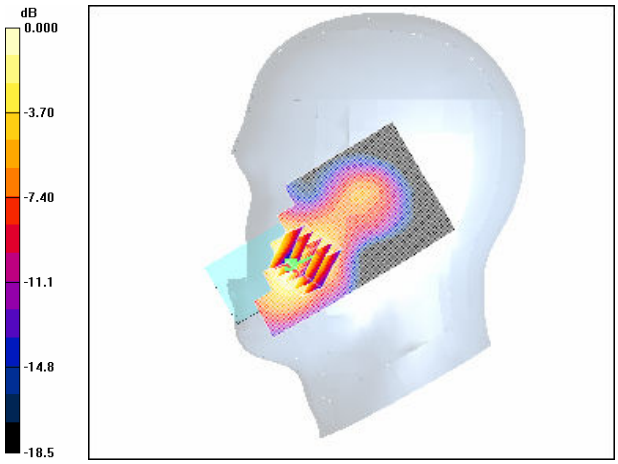
Test Laboratory: TCC San Diego
Type: RM-293; Serial: E9C33409F5

Communication System: GSM 1900
Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: Cellular Head; Medium Notes: Liquid Temperature: 20.3
Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; ε_r = 38.2; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1805; Probe Notes:
- ConvF(5.08, 5.08, 5.08); Calibrated: 2006-05-03
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 172

Right Cheek – Middle – Flip Open/Area Scan (61x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.431 mW/g

Right Cheek – Middle – Flip Open/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.61 V/m
Peak SAR (extrapolated) = 0.579 W/kg
SAR(1 g) = 0.410 mW/g
SAR(10 g) = 0.257 mW/g
Power Drift = 0.071 dB
Maximum value of SAR (measured) = 0.453 mW/g



Date/Time: 2007-04-12 6:13:34

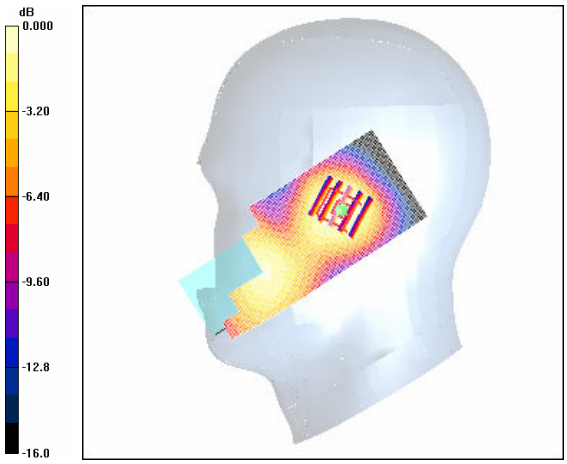
Test Laboratory: TCC San Diego
Type: RM-293; Serial: E9C33409F5

Communication System: GSM 1900
Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: Cellular Head; Medium Notes: Liquid Temperature: 20.3
Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; ε_r = 38.2; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1805; Probe Notes:
- ConvF(5.08, 5.08, 5.08); Calibrated: 2006-05-03
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 172

Right Tilt – Middle – Flip Open/Area Scan (51x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.129 mW/g

Right Tilt – Middle – Flip Open/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.24 V/m
Peak SAR (extrapolated) = 0.152 W/kg
SAR(1 g) = 0.109 mW/g
SAR(10 g) = 0.071 mW/g
Power Drift = -0.065 dB
Maximum value of SAR (measured) = 0.117 mW/g



Date/Time: 2007-04-17 8:08:03

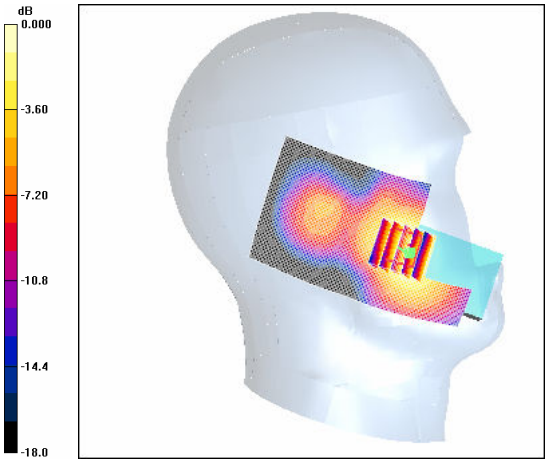
Test Laboratory: TCC San Diego
Type: RM-293; Serial: E9C33409F5

Communication System: GSM 1900
Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: Cellular Head; Medium Notes: Liquid Temperature: 20.5
Medium parameters used: f = 1880 MHz; σ = 1.44 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1805; Probe Notes:
- ConvF(6.33, 6.33, 6.33); Calibrated: 2006-05-03
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM2; Type:Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 172

Left Cheek – Middle – Flip Open - BT active/Area Scan (61x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.439 mW/g

Left Cheek – Middle – Flip Open - BT active/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.82 V/m
Peak SAR (extrapolated) = 0.573 W/kg
SAR(1 g) = 0.406 mW/g
SAR(10 g) = 0.255 mW/g
Power Drift = -0.186 dB
Maximum value of SAR (measured) = 0.443 mW/g



Date/Time: 2007-04-12 3:35:11

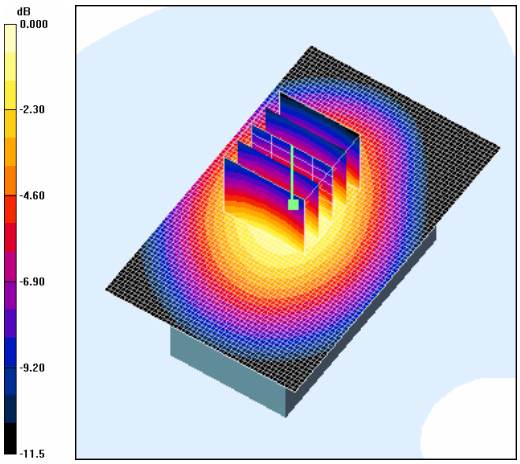
Test Laboratory: TCC San Diego
Type: RM-293; Serial: E9C33409F5

Communication System: 2-Slot GPRS850
Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: Cellular Body; Medium Notes: Liquid temperature at 20.3
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.963 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1805; Probe Notes:
- ConvF(6.33, 6.33, 6.33); Calibrated: 2006-05-03
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM2; Type:Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 172

Body – Middle – Flip Closed/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.908 mW/g

Body – Middle – Flip Closed/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.2 V/m
Peak SAR (extrapolated) = 1.23 W/kg
SAR(1 g) = 0.841 mW/g
SAR(10 g) = 0.558 mW/g
Power Drift = -0.072 dB
Maximum value of SAR (measured) = 0.902 mW/g



Date/Time: 2007-04-11 16:14:55

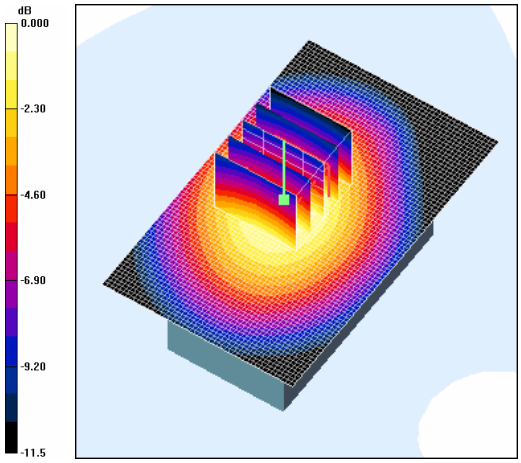
Test Laboratory: TCC San Diego
Type: RM-293; Serial: E9C33409F5

Communication System: 2-Slot GPRS850
Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: Cellular Body; Medium Notes: Liquid temperature: 21.5
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.963 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1805; Probe Notes:
- ConvF(6.33, 6.33, 6.33); Calibrated: 2006-05-03
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM2; Type:Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 172

Body – Middle – Flip Closed – HS-47/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.796 mW/g

Body – Middle – Flip Closed – HS-47/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.9 V/m
Peak SAR (extrapolated) = 1.08 W/kg
SAR(1 g) = 0.735 mW/g
SAR(10 g) = 0.488 mW/g
Power Drift = -0.051 dB
Maximum value of SAR (measured) = 0.781 mW/g



Date/Time: 2007-04-12 2:27:41

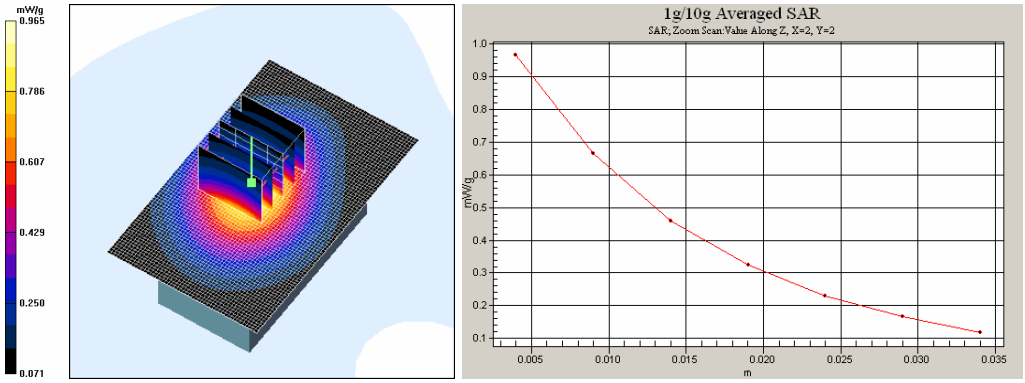
Test Laboratory: TCC San Diego
Type: RM-293; Serial: E9C33409F5

Communication System: 2-Slot GPRS850
Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: Cellular Body; Medium Notes: Liquid temperature: 20.2
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.963 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1805; Probe Notes:
- ConvF(6.33, 6.33, 6.33); Calibrated: 5/3/2006
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 11/13/2006
- Phantom: SAM2; Type: SAM; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 172

Body – Middle – Flip Closed – BT active/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.987 mW/g

Body – Middle – Flip Closed – BT active/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.9 V/m
Peak SAR (extrapolated) = 1.31 W/kg
SAR(1 g) = 0.901 mW/g
SAR(10 g) = 0.597 mW/g
Power Drift = -0.110 dB
Maximum value of SAR (measured) = 0.965 mW/g



Date/Time: 2007-04-12 20:35:25

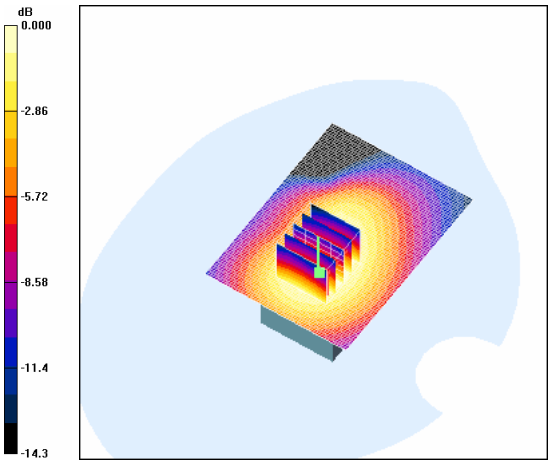
Test Laboratory: TCC San Diego
Type: RM-293; Serial: E9C33409F5

Communication System: 2-Slot GPRS1900
Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: 1900MHz Body; Medium Notes: Liquid Temperature: 21.0
Medium parameters used: f = 1880 MHz; σ = 1.56 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1805; Probe Notes:
- ConvF(4.51, 4.51, 4.51); Calibrated: 2006-05-03
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM 1; Type: Twin Phantom; Serial: NMP 03310
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Body – Middle – Flip Closed/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.197 mW/g

Body – Middle – Flip Closed/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.4 V/m
Peak SAR (extrapolated) = 0.280 W/kg
SAR(1 g) = 0.180 mW/g
SAR(10 g) = 0.117 mW/g
Power Drift = -0.095 dB
Maximum value of SAR (measured) = 0.191 mW/g



Date/Time: 2007-04-12 21:06:57

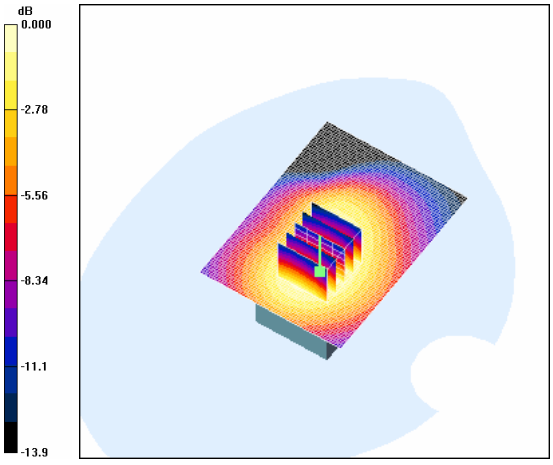
Test Laboratory: TCC San Diego
Type: RM-293; Serial: E9C33409F5

Communication System: 2-Slot GPRS1900
Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: 1900MHz Body; Medium Notes: Liquid Temperature: 21.0
Medium parameters used: f = 1880 MHz; σ = 1.56 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1805; Probe Notes:
- ConvF(4.51, 4.51, 4.51); Calibrated: 2006-05-03
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM 1; Type: Twin Phantom; Serial: NMP 03310
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Body – Middle– Flip Closed – HS-47/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.183 mW/g

Body – Middle– Flip Closed – HS-47/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.9 V/m
Peak SAR (extrapolated) = 0.263 W/kg
SAR(1 g) = 0.169 mW/g
SAR(10 g) = 0.109 mW/g
Power Drift = -0.113 dB
Maximum value of SAR (measured) = 0.180 mW/g



Date/Time: 2007-4-12 22:46:06

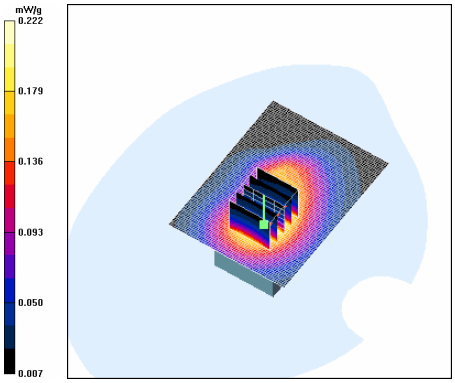
Test Laboratory: TCC San Diego
Type: RM-293; Serial: E9C33409F5

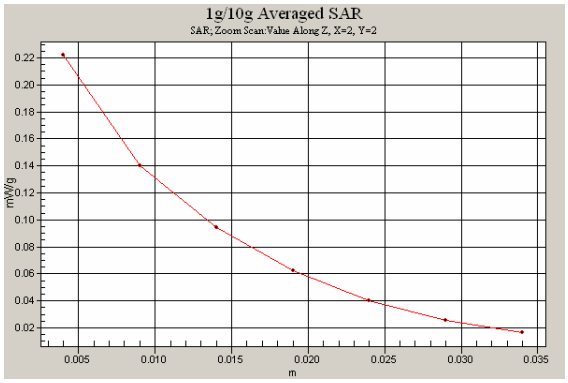
Communication System: 2-Slot GPRS1900
Frequency: 1909.8 MHz; Duty Cycle: 1:8.3
Medium: 1900MHz Body; Medium Notes: Liquid Temperature: 21.0
Medium parameters used: f = 1910 MHz; σ = 1.6 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1805; Probe Notes:
- ConvF(4.51, 4.51, 4.51); Calibrated: 2006-05-03
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM 1; Type: Twin Phantom; Serial: NMP 03310
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Body – High– Flip Closed – BT active/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.224 mW/g

Body – High– Flip Closed – BT active/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.9 V/m
Peak SAR (extrapolated) = 0.336 W/kg
SAR(1 g) = 0.207 mW/g
SAR(10 g) = 0.132 mW/g
Power Drift = -0.080 dB
Maximum value of SAR (measured) = 0.222 mW/g





APPENDIX C: RELEVANT PAGES FROM PROBE CALIBRATION REPORT(S)

See the following pages

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 Nokia SD TCC

Certificate No: ET3-1805_May06

CALIBRATION CERTIFICATE

Object	ET3DV6 - SN: 1805
Calibration procedure(s)	QA CAL-01.v5 Calibration procedure for dosimetric E-field probes
Calibration date:	May 3, 2006
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-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41495277	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41498087	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Reference 3 dB Attenuator	SN: S5054 (3c)	11-Aug-05 (METAS, No. 251-00499)	Aug-06
Reference 20 dB Attenuator	SN: S5086 (20b)	4-Apr-06 (METAS, No. 251-00558)	Apr-07
Reference 30 dB Attenuator	SN: S5129 (30b)	11-Aug-05 (METAS, No. 251-00500)	Aug-06
Reference Probe ES3DV2	SN: 3013	2-Jan-06 (SPEAG, No. ES3-3013_Jan06)	Jan-07
DAE4	SN: 654	2-Feb-06 (SPEAG, No. DAE4-654_Feb06)	Feb-07

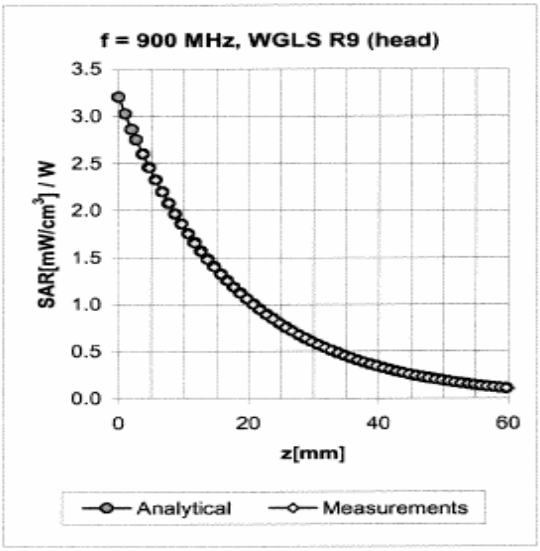
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Nov-05)	In house check: Nov 06

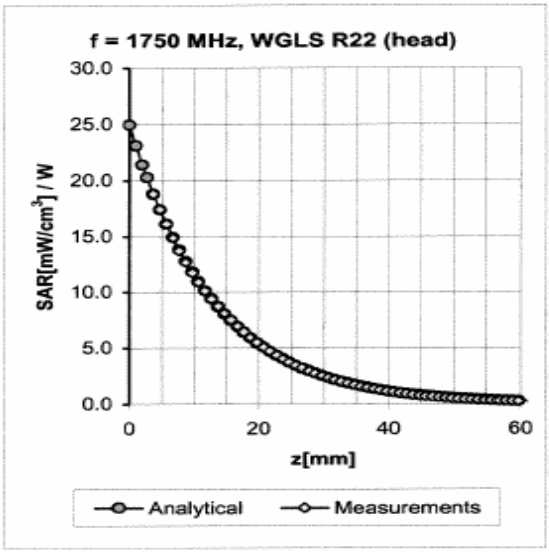
	Name	Function	Signature
Calibrated by:	Katja Pokovic	Technical Manager	
Approved by:	Niels Kuster	Quality Manager	

Issued: May 3, 2006

ET3DV6 SN:1805 **May 3, 2006**

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%	0.61	1.72	6.57 ± 11.0% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.59	1.78	6.37 ± 11.0% (k=2)
1750	± 50 / ± 100	Head	40.1 ± 5%	1.37 ± 5%	0.48	2.76	5.31 ± 11.0% (k=2)
1900	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.57	2.44	5.08 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.71	1.78	4.48 ± 11.8% (k=2)
835	± 50 / ± 100	Body	55.2 ± 5%	0.97 ± 5%	0.49	1.98	6.33 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.51	1.98	6.07 ± 11.0% (k=2)
1750	± 50 / ± 100	Body	53.4 ± 5%	1.49 ± 5%	0.57	2.58	4.72 ± 11.0% (k=2)
1900	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.67	2.34	4.51 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.70	1.85	4.21 ± 11.8% (k=2)

[C] The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

APPENDIX D: RELEVANT PAGES FROM DIPOLE VALIDATION KIT REPORT(S)

See the following pages

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 **Nokia SD TCC**

Certificate No: **D835V2-478_Sep06**

CALIBRATION CERTIFICATE

Object	D835V2 - SN: 478
Calibration procedure(s)	QA CAL-05.v6 Calibration procedure for dipole validation kits
Calibration date:	September 19, 2006
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 EPM-442A	GB37480704	04-Oct-05 (METAS, No. 251-00516)	Oct-06
Power sensor HP 8481A	US37292783	04-Oct-05 (METAS, No. 251-00516)	Oct-06
Reference 20 dB Attenuator	SN: 5086 (20g)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference 10 dB Attenuator	SN: 5047.2 (10r)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference Probe ET3DV6	SN 1507	28-Oct-05 (SPEAG, No. ET3-1507_Oct05)	Oct-06
DAE4	SN 601	15-Dec-05 (SPEAG, No. DAE4-601_Dec05)	Dec-06

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-05)	In house check: Oct-07
RF generator Agilent E4421B	MY41000675	11-May-05 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Nov-05)	In house check: Nov-06

	Name	Function	Signature
Calibrated by:	Mike Meili	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: September 19, 2006

DASY4 Validation Report for Head TSL

Date/Time: 12.09.2006 18:51:54

Test Laboratory: SPEAG, Zurich, Switzerland

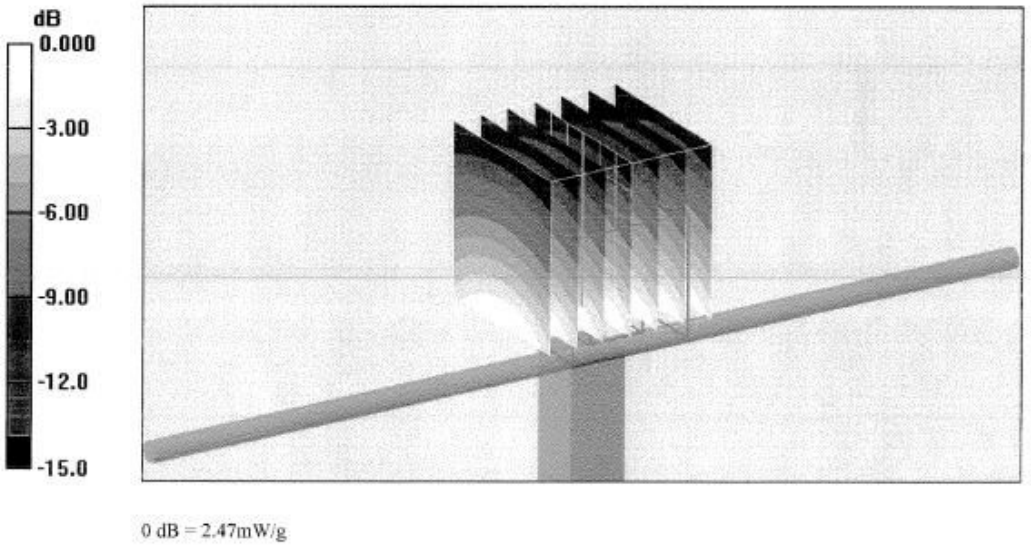
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 478

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: HSL 900 MHz;
Medium parameters used: f = 835 MHz; σ = 0.893 mho/m; ε_r = 42.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (HF); ConvF(6.09, 6.09, 6.09); Calibrated: 28.10.2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Pin = 250 mW; d = 15 mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.3 V/m; Power Drift = -0.029 dB
Peak SAR (extrapolated) = 3.40 W/kg
SAR(1 g) = 2.28 mW/g; SAR(10 g) = 1.49 mW/g
Maximum value of SAR (measured) = 2.47 mW/g



0 dB = 2.47mW/g

DASY4 Validation Report for Body TSL

Date/Time: 19.09.2006 14:25:(

Test Laboratory: SPEAG, Zurich, Switzerland

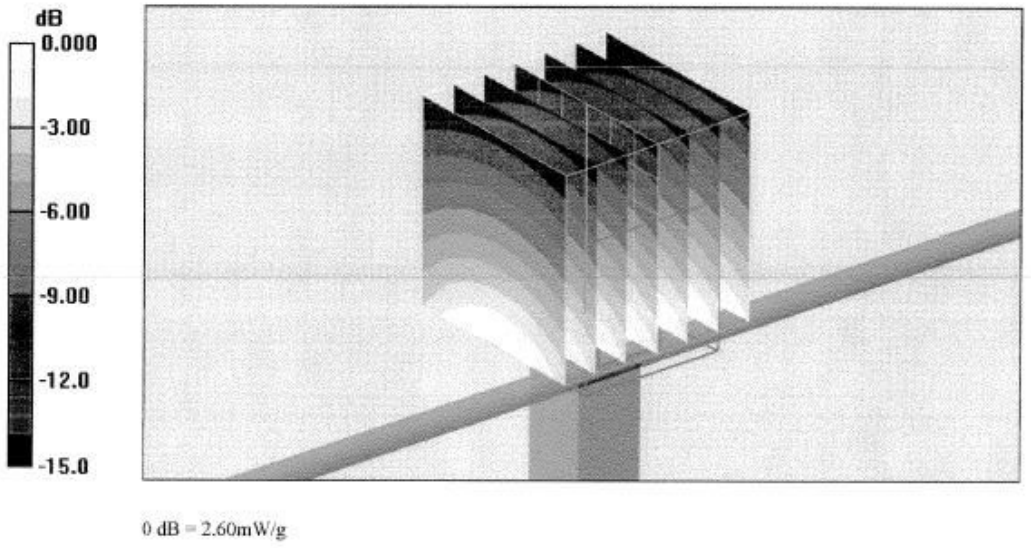
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:478

Communication System: CW-835; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: MSL 900;
Medium parameters used: f = 835 MHz; σ = 0.98 mho/m; ε_r = 53.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (HF); ConvF(5.84, 5.84, 5.84); Calibrated: 28.10.2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Pin = 250 mW; d = 15 mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.5 V/m; Power Drift = -0.004 dB
Peak SAR (extrapolated) = 3.51 W/kg
SAR(1 g) = 2.43 mW/g; SAR(10 g) = 1.6 mW/g
Maximum value of SAR (measured) = 2.60 mW/g



0 dB = 2.60mW/g

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 **Nokia SD TCC** Certificate No: **D1900V2-534_Sep06**

CALIBRATION CERTIFICATE

Object	D1900V2 - SN: 534
Calibration procedure(s)	QA CAL-05.v6 Calibration procedure for dipole validation kits
Calibration date:	September 20, 2006
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 EPM-442A	GB37480704	04-Oct-05 (METAS, No. 251-00516)	Oct-06
Power sensor HP 8481A	US37292783	04-Oct-05 (METAS, No. 251-00516)	Oct-06
Reference 20 dB Attenuator	SN: 5086 (20g)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference 10 dB Attenuator	SN: 5047.2 (10r)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference Probe ET3DV6	SN: 1507	28-Oct-05 (SPEAG, No. ET3-1507_Oct05)	Oct-06
Reference Probe ES3DV3	SN: 3025	28-Oct-05 (SPEAG, No. ES3-3025_Oct05)	Oct-06
DAE4	SN: 601	15-Dec-05 (SPEAG, No. DAE4-601_Dec05)	Dec-06

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-05)	In house check: Oct-07
RF generator Agilent E4421B	MY41000675	11-May-05 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Nov-05)	In house check: Nov-06

	Name	Function	Signature
Calibrated by:	Marcel Fehr	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: September 20, 2006

DASY4 Validation Report for Head TSL

Date/Time: 13.09.2006 15:19:52

Test Laboratory: SPEAG, Zurich, Switzerland

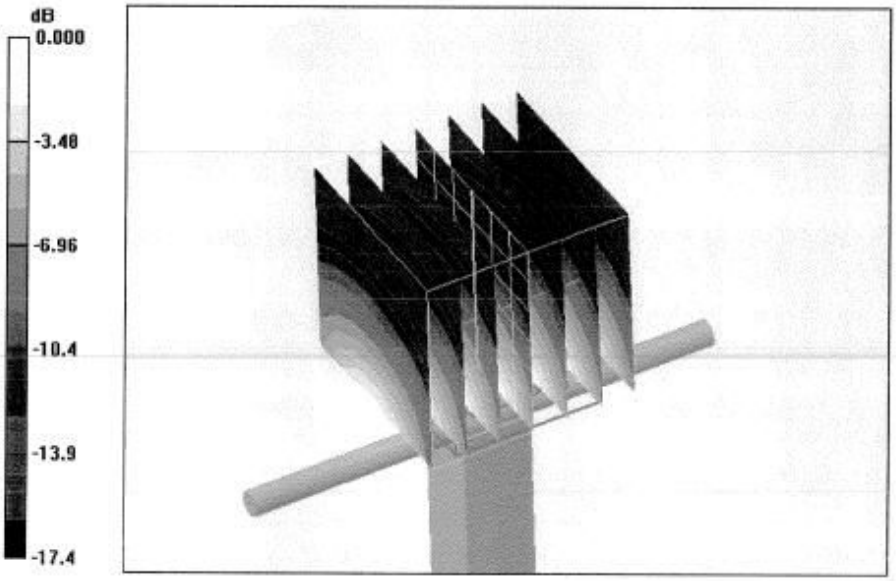
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:534

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL U10 BB;
Medium parameters used: f = 1900 MHz; σ = 1.41 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (HF); ConvF(4.74, 4.74, 4.74); Calibrated: 28.10.2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; ;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 92.2 V/m; Power Drift = 0.051 dB
Peak SAR (extrapolated) = 15.9 W/kg
SAR(1 g) = 9.38 mW/g; SAR(10 g) = 4.97 mW/g
Maximum value of SAR (measured) = 10.5 mW/g



0 dB = 10.5mW/g

DASY4 Validation Report for Body TSL

Date/Time: 20.09.2006 10:57:32

Test Laboratory: SPEAG, Zurich, Switzerland

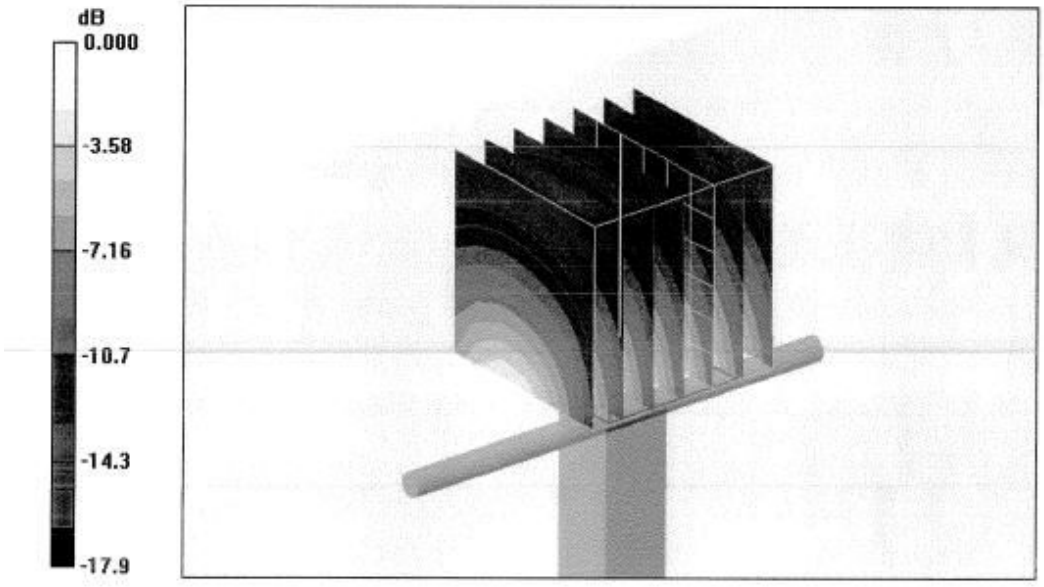
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:534

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL U10;
Medium parameters used: f = 1900 MHz; σ = 1.56 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV2 - SN3025 (HF); ConvF(4.38, 4.38, 4.38); Calibrated: 28.10.2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; ;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 85.6 V/m; Power Drift = 0.060 dB
Peak SAR (extrapolated) = 16.5 W/kg
SAR(1 g) = 10.1 mW/g; SAR(10 g) = 5.37 mW/g
Maximum value of SAR (measured) = 11.2 mW/g



0 dB = 11.2mW/g