

SAR Compliance Test Report

Test report no.:	SD_SAR_0805_01	Date of report:	2008-02-04
Template version:	8.0	Number of pages:	66
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Measurements made by:	Jose Gomez		
Tested device:	RM-324		
FCC ID:	QMNRM-324H	IC:	661X-RM324
Supplement reports:	SD_SAR_0805_02		
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:



For the contents:

Jose Gomez
Certification Test Engineer

2008-02-04

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1. SUMMARY OF SAR TEST REPORT

1.1 Test Details

Period of test	2008-01-28 to 2008-01-31
SN, HW and SW numbers of tested device	SN: 004401/01/379342/3, HW: 3100, SW: qs_02.14, DUT: 3072
Batteries used in testing	BP-4L, DUT: 3062, 3063, 3064
Headsets used in testing	HS-9, 3071
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)	Conducted power	Position	Measured SAR value (1g avg)	Scaled* SAR value (1g avg)	SAR limit (1g avg)	Result
GSM850	251 / 848.8	31.8dBm	Right, Cheek	0.762W/kg	0.85W/kg	1.6 W/kg	PASSED
WCDMA850	4175 / 835.0	26.1dBm	Right, Cheek	0.817W/kg	0.92W/kg	1.6 W/kg	PASSED
2-slot GPRS1900	661 / 1880.0	26.4dBm	Right, Cheek	0.424W/kg	0.47W/kg	1.6 W/kg	PASSED
WCDMA1900	9262 / 1852.4	25.1dBm	Right, Cheek	0.735W/kg	0.82W/kg	1.6 W/kg	PASSED

1.2.2 Body Worn Configuration

Mode	Ch / f (MHz)	Conducted power	Separation distance	Measured SAR value (1g avg)	Scaled* SAR value (1g avg)	SAR limit (1g avg)	Result
GSM850	190 / 836.6	31.9dBm	2.2cm	0.586W/kg	0.67W/kg	1.6 W/kg	PASSED
WCDMA850	4132 / 826.4	26.0dBm	2.2cm	0.604W/kg	0.68W/kg	1.6 W/kg	PASSED
2-slot GPRS1900	661 / 1880.0	26.4dBm	2.2cm	0.226W/kg	0.25W/kg	1.6 W/kg	PASSED
WCDMA1900	9262 / 1852.4	25.1dBm	2.2cm	0.521W/kg	0.58W/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	0.40dB

1.2.4 Measurement Uncertainty

Expanded Uncertainty (k=2) 95%	± 25.8%
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2. DESCRIPTION OF THE DEVICE UNDER TEST

Device category	Portable
Exposure environment	General population / uncontrolled

Modes of Operation	Bands	Modulation Mode	Duty Cycle	Transmitter Frequency Range (MHz)
GSM	850 1900	GMSK	1/8	824 – 849 1850 – 1910
GPRS	850 1900	GMSK	1/8 to 2/8	824 – 849 1850 – 1910
EGPRS	850 1900	GMSK / 8PSK	1/8 to 2/8	824 – 849 1850 – 1910
WCDMA	850 (Band V) 1900 (Band II)	QPSK	1	826 – 847 1852 – 1908
BT	2450	GFSK	1	2402 – 2480

Outside of USA and Canada, the transmitter of the device is capable of operating also in GSM/GPRS/EGPRS900 and GSM/GPRS/EGPRS1800 bands which are not part of this filing.

2.1 Description of the Antenna

The device has an internal antenna.

3. TEST CONDITIONS

3.1 Temperature and Humidity

Ambient temperature (°C):	19.3 to 20.9
Ambient humidity (RH %):	34 to 55

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.

The transmission mode of the device in all WCDMA tests was configured to 12.2kbps RMC with all TPC bits set as "1".

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

This device has been evaluated for Head SAR in multi-slot mode for the GSM/GPRS bands, even though there is no normal usage of data mode against the head. As a result, the Head SAR values in the GSM/GPRS bands are conservative i.e. marginally over-estimated.

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	389	12 months	2008-02
DAE 3	308	12 months	2008-02
E-field Probe ET3DV6	1504	12 months	2008-08
E-field Probe ET3DV6	1505	12 months	2008-08
Dipole Validation Kit, D835V2	487	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	HP E4432B	US 40052231	24 months	2008-05
Signal Generator	HP E4432B	US 39260114	24 months	2008-06
Amplifier	Milmega AS0825-20L	1009777	-	-
Amplifier	Comtech PST AR8829-5	N2S7A00-1011	-	-
Power Meter	Agilent E4416A	GB41291842	12 months	2008-04
Power Meter	Agilent E4419B	GB40202155	12 months	2008-03
Power Sensor	Agilent E9327A	US40411295	12 months	2008-04
Power Sensor	Agilent E9301A	MY41495224	12 months	2008-04
Call Tester	CMU 200	837727/071	-	-
Call Tester	CMU 200	837727/008	-	-
Vector Network Analyzer	Agilent 8753ES	US39174327	12 months	2008-05
Dielectric Probe Kit	Agilent 85070D	US01440165	-	-

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 μ W/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 $\pm 5\%$ 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 simulant(s):

800MHz band

Ingredient	Head (% by weight)	Body (% by weight)
Deionised Water	51.50	69.25
Tween 20	47.35	30.00
Salt	1.15	0.75

1900MHz band

Ingredient	Head (% by weight)	Body (% by weight)
Deionised Water	54.50	70.25
Tween 20	45.23	29.41
Salt	0.27	0.34

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	2.29	42.3	0.90	
	$\pm 10\%$ window	2.06 - 2.52			
	2008-01-28	2.28	40.4	0.90	20.9
1900	Reference result	9.38	38.6	1.41	
	$\pm 10\%$ window	8.44 - 10.32			
	2008-01-30	10.0	38.5	1.46	19.3
	2008-01-31	9.66	40.1	1.45	19.9

System checking, body tissue simulant

f [MHz]	Description	SAR [W/kg], 1g	Dielectric Parameters		Temp [°C]
			ϵ_r	σ [S/m]	
835	Reference result	2.44	53.7	0.99	
	$\pm 10\%$ window	2.20 - 2.68			
	2008-01-29	2.34	54.7	0.98	20.9

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	
	$\pm 5\%$ window	39.4 – 43.6	0.86 – 0.95	
	2008-01-28	40.4	0.90	20.9
1880	Recommended value	40.0	1.40	
	$\pm 5\%$ window	38.0 – 42.0	1.33 – 1.47	
	2008-01-30	38.6	1.44	19.3
	2008-01-31	40.2	1.44	19.9

Body tissue simulant measurements

f [MHz]	Description	Dielectric Parameters		Temp [°C]
		ϵ_r	σ [S/m]	
836	Recommended value	55.2	0.97	
	$\pm 5\%$ window	52.4 – 58.0	0.92 – 1.02	
	2008-01-29	54.8	0.98	20.9
1880	Recommended value	53.3	1.52	
	$\pm 5\%$ window	50.6 – 56.0	1.44 – 1.60	
	2008-01-30	52.5	1.53	19.9
	2008-01-31	52.6	1.53	19.9

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".

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 Section 1.2.2 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.

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	G	$G \cdot u_i$ (%)	ν_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:

850MHz Head SAR results

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
GSM	Power		31.8dBm	31.9dBm	31.8dBm
Flip open	Left	Cheek	-	0.572	-
		Tilt	-	0.344	-
	Right	Cheek	0.617	0.688	0.762
		Tilt	-	0.351	-
2-slot GPRS	Power		29.5dBm	29.5dBm	29.4dBm
Flip open	Left	Cheek	-	-	-
		Tilt	-	-	-
	Right	Cheek	-	0.680	-
		Tilt	-	-	-
2-slot 8PSK EGPRS	Power		25.0dBm	25.0dBm	24.9dBm
Flip open	Left	Cheek	-	-	-
		Tilt	-	-	-
	Right	Cheek	-	0.375	-
		Tilt	-	-	-
Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz
WCDMA	Power		26.0dBm	26.1dBm	25.6dBm
Flip open	Left	Cheek	-	0.654	-
		Tilt	-	0.467	-
	Right	Cheek	0.776	0.817	0.807
		Tilt	-	0.439	-
WCDMA Flip open	Right Cheek, BT active		-	0.800	-

1900MHz Head SAR results

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz
GSM	Power		29.1dBm	28.9dBm	28.6dBm
Flip open	Left	Cheek	-	0.263	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
2-slot GPRS	Power		26.7dBm	26.4dBm	26.0dBm
Flip open	Left	Cheek	-	0.268	-
		Tilt	-	0.166	-
	Right	Cheek	0.360	0.424	0.417
		Tilt	-	0.097	-
2-slot 8PSK EGPRS	Power		26.4dBm	26.1dBm	25.6dBm
Flip open	Left	Cheek	-	-	-
		Tilt	-	-	-
	Right	Cheek	-	0.259	-
		Tilt	-	-	-
Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz
WCDMA	Power		25.1dBm	25.2dBm	24.7dBm
Flip open	Left	Cheek	-	0.606	-
		Tilt	-	0.154	-
	Right	Cheek	0.735	0.698	0.697
		Tilt	-	0.181	-
WCDMA Flip open	Right Cheek, BT active		0.729	-	-

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

850MHz Body SAR results

Mode	Test configuration	SAR, averaged over 1g (W/kg)		
		Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
GSM	Power	31.8dBm	31.9dBm	31.8dBm
Flip Closed	Without headset	0.512	0.586	0.544
	Headset HS-9	0.469	0.529	0.496
Mode	Test configuration	SAR, averaged over 1g (W/kg)		
		Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz
WCDMA	Power	26.0dBm	26.1dBm	25.6dBm
Flip Closed	Without headset	0.604	0.526	0.528
	Headset HS-9	0.544	0.500	0.504
WCDMA Flip Closed	Without headset, BT active	0.580	-	-

1900MHz Body SAR results

Mode	Test configuration	SAR, averaged over 1g (W/kg)		
		Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz
2-slot GPRS	Power	26.7dBm	26.4dBm	26.0dBm
Flip Closed	Without headset	0.203	0.226	0.219
	Headset HS-9	0.137	0.162	0.172
Mode	Test configuration	SAR, averaged over 1g (W/kg)		
		Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz
WCDMA	Power	25.1dBm	25.2dBm	24.7dBm
Flip Closed	Without headset	0.521	0.504	0.408
	Headset HS-9	0.379	0.376	0.330
WCDMA Flip Closed	Without headset, BT active	0.474	-	-

Plots of the Measurement scans are given in Appendix B.

APPENDIX A: SYSTEM CHECKING SCANS

Date/Time: 2008-01-28 8:07:44

Test Laboratory: TCC Nokia

Type: D835V2; Serial: 487

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: T=20.9 C

Medium parameters used: $f = 835$ MHz; $\sigma = 0.901$ mho/m; $\epsilon_r = 40.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.86, 6.86, 6.86); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn389; Calibrated: 2007-02-16
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

d=15mm, Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 2.46 mW/g

d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 53.5 V/m

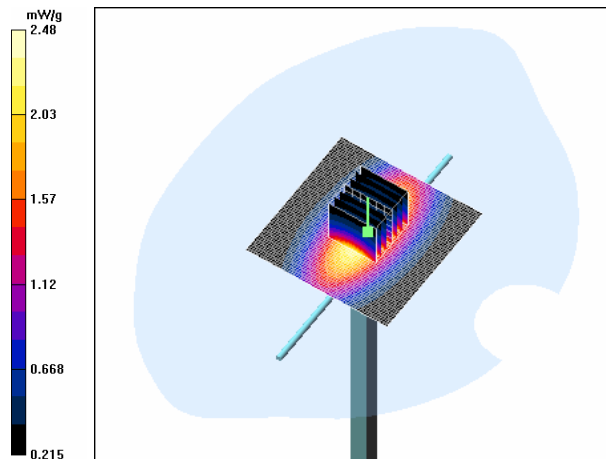
Peak SAR (extrapolated) = 3.42 W/kg

SAR(1 g) = 2.28 mW/g

SAR(10 g) = 1.49 mW/g

Power Drift = 0.039 dB

Maximum value of SAR (measured) = 2.48 mW/g



Date/Time: 2008-01-30 11:14:07

Test Laboratory: TCC Nokia

Type: D1900V2; Serial: 534

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900MHz Head; Medium Notes: T=19.3C

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.46$ mho/m; $\epsilon_r = 38.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(5.09, 5.09, 5.09); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn308; Calibrated: 2007-02-16
- Phantom: SAM 2 ; Type: Twin Phantom; Serial: NMP03309
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

d=15mm, Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 11.5 mW/g

d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 91.9 V/m

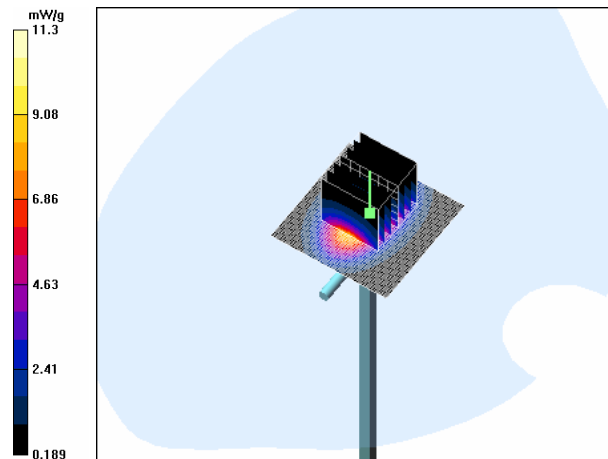
Peak SAR (extrapolated) = 17.4 W/kg

SAR(1 g) = 10 mW/g

SAR(10 g) = 5.29 mW/g

Power Drift = 0.004 dB

Maximum value of SAR (measured) = 11.3 mW/g



SAR Report

SD_SAR_0805_01

Applicant: Nokia Corporation

Type: RM-324

Copyright © 2008 TCC Nokia

Date/Time: 2008-01-31 10:12:06

Test Laboratory: TCC Nokia

Type: D1900V2; Serial: 534

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900MHz Head; Medium Notes: T=19.9C

Medium parameters used: $f = 1900 \text{ MHz}$; $\sigma = 1.45 \text{ mho/m}$; $\epsilon_r = 40.1$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(5.09, 5.09, 5.09); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn308; Calibrated: 2007-02-16
- Phantom: SAM 2 ; Type: Twin Phantom; Serial: NMP03309
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

d=15mm, Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 11.0 mW/g

d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 92.6 V/m

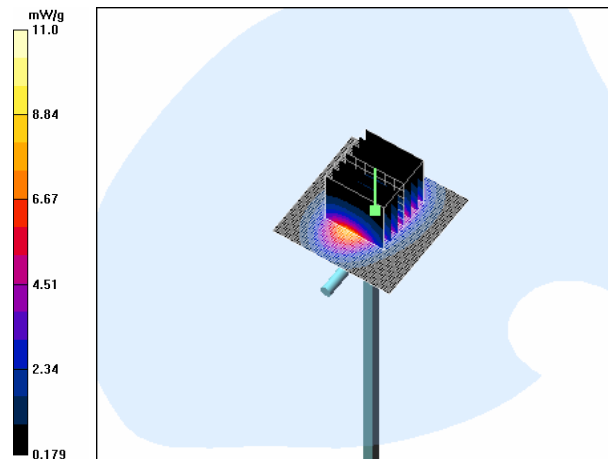
Peak SAR (extrapolated) = 16.5 W/kg

SAR(1 g) = 9.66 mW/g

SAR(10 g) = 5.1 mW/g

Power Drift = 0.005 dB

Maximum value of SAR (measured) = 11.0 mW/g



Date/Time: 2008-01-29 10:07:19

Test Laboratory: TCC Nokia

Type: D835V2; Serial: 487

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: T=20.9 C

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.981 \text{ mho/m}$; $\epsilon_r = 54.7$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.49, 6.49, 6.49); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn389; Calibrated: 2007-02-16
- Phantom: SAM2; Type: SAM; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

d=15mm, Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 2.54 mW/g

d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 52.1 V/m

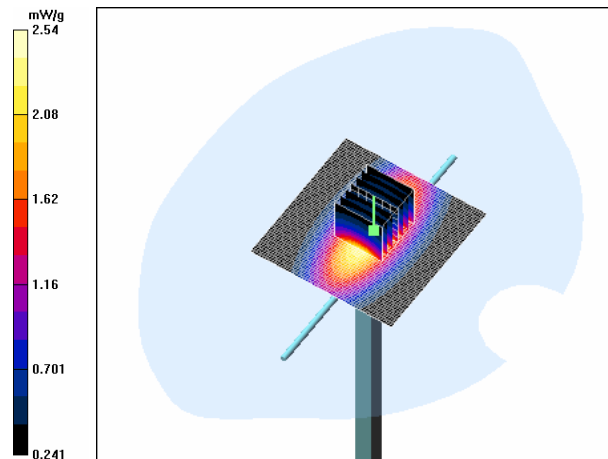
Peak SAR (extrapolated) = 3.43 W/kg

SAR(1 g) = 2.34 mW/g

SAR(10 g) = 1.53 mW/g

Power Drift = 0.008 dB

Maximum value of SAR (measured) = 2.54 mW/g



APPENDIX B: MEASUREMENT SCANS

Date/Time: 2008-01-28 13:47:39

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: HSL850; Medium Notes: T=21.9 C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.903$ mho/m; $\epsilon_r = 40.4$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.86, 6.86, 6.86); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn389; Calibrated: 2007-02-16
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Cheek, Flip Open, Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.679 mW/g

Cheek, Flip Open, Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.8 V/m

Peak SAR (extrapolated) = 0.898 W/kg

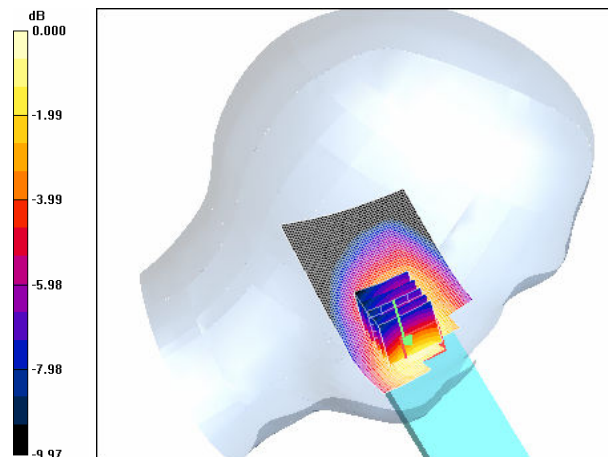
SAR(1 g) = 0.572 mW/g

SAR(10 g) = 0.390 mW/g

Power Drift = -0.149 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) = 0.624 mW/g



Date/Time: 2008-01-28 14:02:50

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: HSL850; Medium Notes: T=21.9 C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.903$ mho/m; $\epsilon_r = 40.4$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.86, 6.86, 6.86); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn389; Calibrated: 2007-02-16
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Tilt, Flip Open, Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.367 mW/g

Tilt, Flip Open, Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.9 V/m

Peak SAR (extrapolated) = 0.427 W/kg

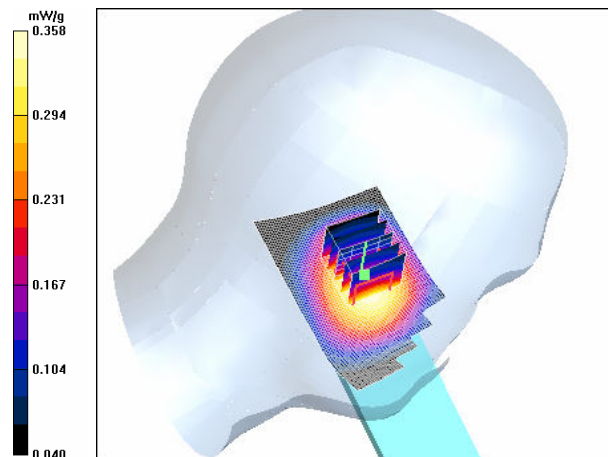
SAR(1 g) = 0.344 mW/g

SAR(10 g) = 0.259 mW/g

Power Drift = 0.078 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) = 0.358 mW/g



SAR Report

SD_SAR_0805_01

Applicant: Nokia Corporation

Type: RM-324

Copyright © 2008 TCC Nokia

Date/Time: 2008-01-28 15:36:39

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: GSM850

Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: HSL850; Medium Notes: T=21.9 C

Medium parameters used: $f = 849$ MHz; $\sigma = 0.912$ mho/m; $\epsilon_r = 40.3$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.86, 6.86, 6.86); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn389; Calibrated: 2007-02-16
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Cheek, Flip Open, High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.732 mW/g

Cheek, Flip Open, High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.1 V/m

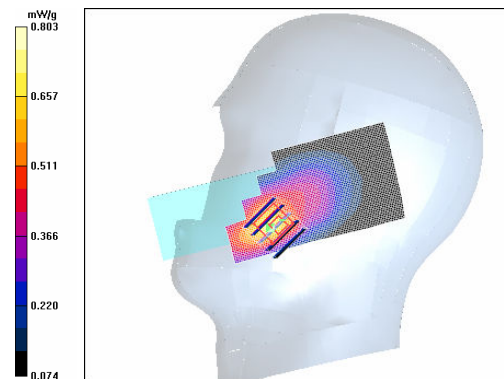
Peak SAR (extrapolated) = 1.48 W/kg

SAR(1 g) = 0.762 mW/g

SAR(10 g) = 0.481 mW/g

Power Drift = 0.000 dB

Maximum value of SAR (measured) = 0.803 mW/g



Date/Time: 2008-01-28 13:12:23

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: HSL850; Medium Notes: T=21.9 C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.903$ mho/m; $\epsilon_r = 40.4$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.86, 6.86, 6.86); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn389; Calibrated: 2007-02-16
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Tilt, Flip Open, Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.367 mW/g

Tilt, Flip Open, Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 16.5 V/m

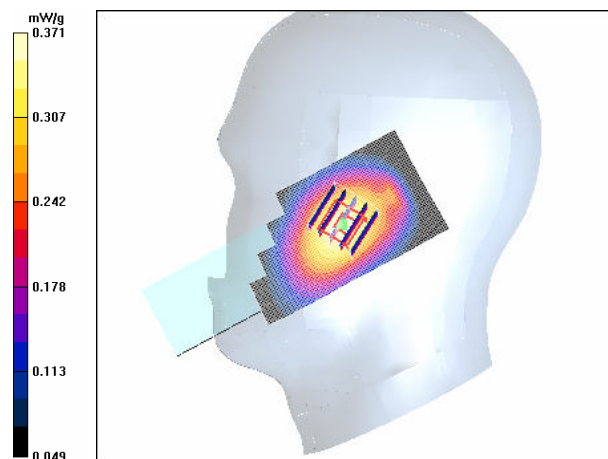
Peak SAR (extrapolated) = 0.432 W/kg

SAR(1 g) = 0.351 mW/g

SAR(10 g) = 0.265 mW/g

Power Drift = -0.013 dB

Maximum value of SAR (measured) = 0.371 mW/g



Date/Time: 2008-01-28 14:33:56

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: 2-slot GPRS850

Frequency: 836.6 MHz; Duty Cycle: 1:4.2

Medium: HSL850; Medium Notes: T=21.9 C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.903$ mho/m; $\epsilon_r = 40.4$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.86, 6.86, 6.86); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn389; Calibrated: 2007-02-16
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Cheek, Flip Open, Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.661 mW/g

Cheek, Flip Open, Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.8 V/m

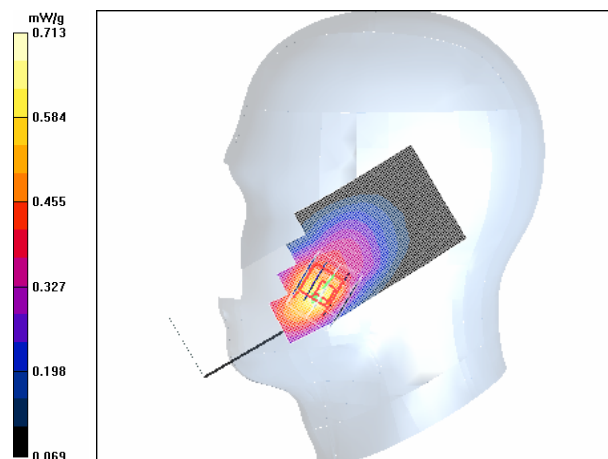
Peak SAR (extrapolated) = 1.29 W/kg

SAR(1 g) = 0.680 mW/g

SAR(10 g) = 0.435 mW/g

Power Drift = -0.058 dB

Maximum value of SAR (measured) = 0.713 mW/g



SAR Report

SD_SAR_0805_01

Applicant: Nokia Corporation

Type: RM-324

Copyright © 2008 TCC Nokia

Date/Time: 2008-01-28 15:21:48

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: 2-slot 8PSK EGPRS850

Frequency: 836.6 MHz; Duty Cycle: 1:4.2

Medium: HSL850; Medium Notes: T=21.9 C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.903$ mho/m; $\epsilon_r = 40.4$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.86, 6.86, 6.86); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn389; Calibrated: 2007-02-16
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Cheek, Flip Open, Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.653 mW/g

Cheek, Flip Open, Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.2 V/m

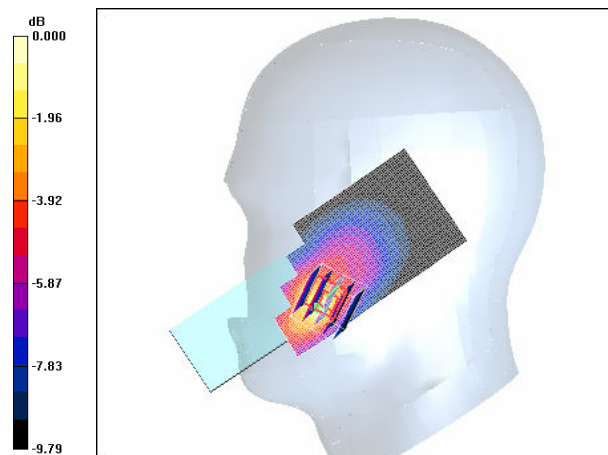
Peak SAR (extrapolated) = 0.699 W/kg

SAR(1 g) = 0.375 mW/g

SAR(10 g) = 0.246 mW/g

Power Drift = -0.172 dB

Maximum value of SAR (measured) = 0.697 mW/g



Date/Time: 2008-01-28 17:17:11

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: T=21.9 C

Medium parameters used: $f = 835$ MHz; $\sigma = 0.901$ mho/m; $\epsilon_r = 40.4$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.86, 6.86, 6.86); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn389; Calibrated: 2007-02-16
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Cheek, Flip Open, Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.817 mW/g

Cheek, Flip Open, Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.1 V/m

Peak SAR (extrapolated) = 1.03 W/kg

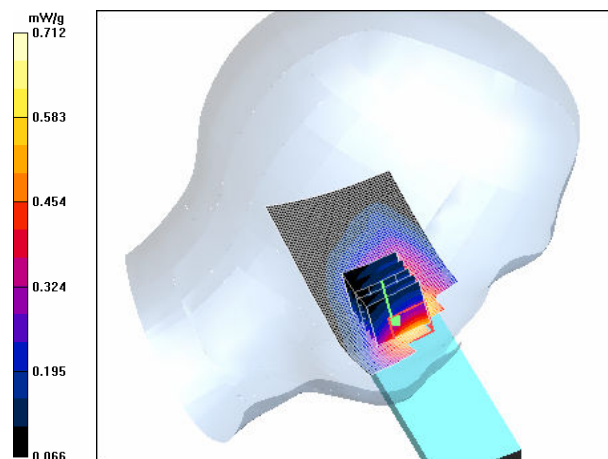
SAR(1 g) = 0.654 mW/g

SAR(10 g) = 0.445 mW/g

Power Drift = 0.072 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) = 0.712 mW/g



Date/Time: 2008-01-28 17:57:51

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: T=21.9 C

Medium parameters used: $f = 835$ MHz; $\sigma = 0.901$ mho/m; $\epsilon_r = 40.4$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.86, 6.86, 6.86); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn389; Calibrated: 2007-02-16
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Tilt, Flip Open, Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.496 mW/g

Tilt, Flip Open, Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 19.7 V/m

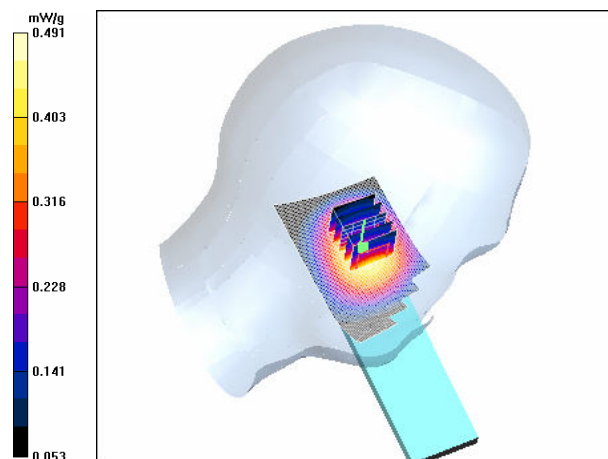
Peak SAR (extrapolated) = 0.588 W/kg

SAR(1 g) = 0.467 mW/g

SAR(10 g) = 0.348 mW/g

Power Drift = -0.138 dB

Maximum value of SAR (measured) = 0.491 mW/g



SAR Report

SD_SAR_0805_01

Applicant: Nokia Corporation

Type: RM-324

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Date/Time: 2008-01-28 16:30:03

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: T=21.9 C

Medium parameters used: $f = 835$ MHz; $\sigma = 0.901$ mho/m; $\epsilon_r = 40.4$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.86, 6.86, 6.86); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn389; Calibrated: 2007-02-16
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Cheek, Flip Open, Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.805 mW/g

Cheek, Flip Open, Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.6 V/m

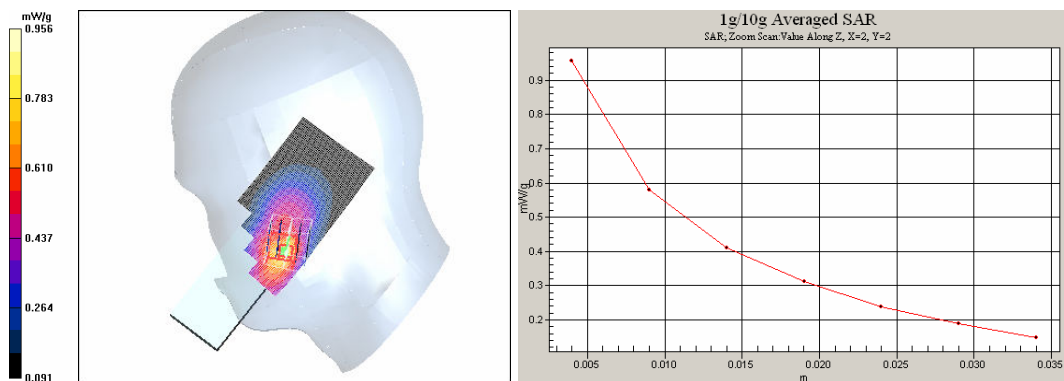
Peak SAR (extrapolated) = 1.46 W/kg

SAR(1 g) = 0.817 mW/g

SAR(10 g) = 0.522 mW/g

Power Drift = -0.079 dB

Maximum value of SAR (measured) = 0.956 mW/g



SAR Report

SD_SAR_0805_01

Applicant: Nokia Corporation

Type: RM-324

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Date/Time: 2008-01-28 16:42:03

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: T=21.9 C

Medium parameters used: $f = 835$ MHz; $\sigma = 0.901$ mho/m; $\epsilon_r = 40.4$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.86, 6.86, 6.86); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn389; Calibrated: 2007-02-16
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Tilt, Flip Open, Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.471 mW/g

Tilt, Flip Open, Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.2 V/m

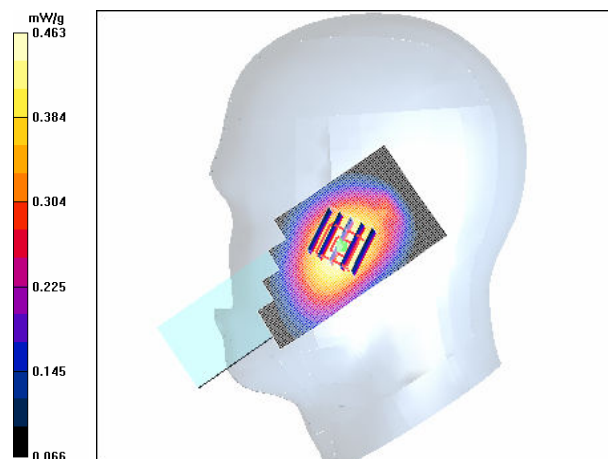
Peak SAR (extrapolated) = 0.537 W/kg

SAR(1 g) = 0.439 mW/g

SAR(10 g) = 0.335 mW/g

Power Drift = -0.187 dB

Maximum value of SAR (measured) = 0.463 mW/g



Date/Time: 2008-01-28 18:41:51

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: T=21.9 C

Medium parameters used: $f = 835$ MHz; $\sigma = 0.901$ mho/m; $\epsilon_r = 40.4$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.86, 6.86, 6.86); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn389; Calibrated: 2007-02-16
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Cheek, Middle, Flip open, BT active/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.958 mW/g

Cheek, Middle, Flip open, BT active/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.3 V/m

Peak SAR (extrapolated) = 1.39 W/kg

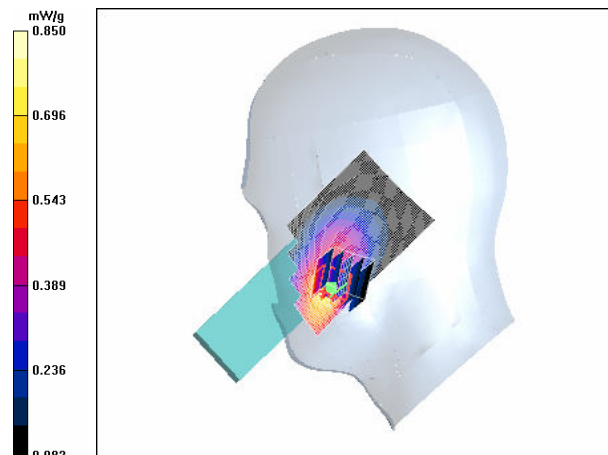
SAR(1 g) = 0.800 mW/g

SAR(10 g) = 0.513 mW/g

Power Drift = 0.396 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) = 0.850 mW/g



SAR Report

SD_SAR_0805_01

Applicant: Nokia Corporation

Type: RM-324

Copyright © 2008 TCC Nokia

Date/Time: 2008-01-30 11:45:03

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: GSM1900

Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium: 1900MHz Head; Medium Notes: Temperature: 20.5C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.44$ mho/m; $\epsilon_r = 38.6$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(5.09, 5.09, 5.09); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn308; Calibrated: 2007-02-16
- Phantom: SAM 2 ; Type: Twin Phantom; Serial: NMP03309
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Cheek, Middle, Flip Open/Area Scan (51x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.316 mW/g

Cheek, Middle, Flip Open/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 5.16 V/m

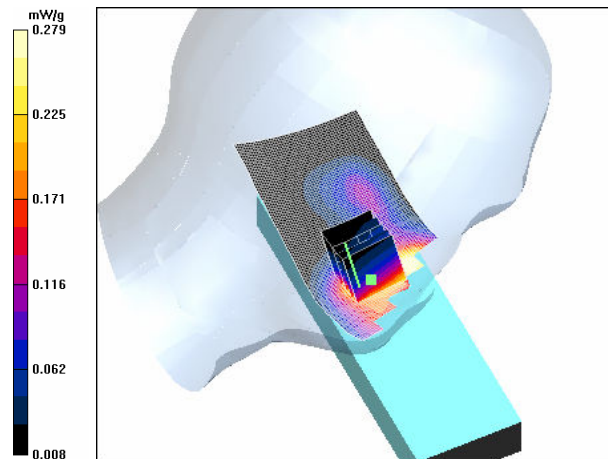
Peak SAR (extrapolated) = 0.405 W/kg

SAR(1 g) = 0.263 mW/g

SAR(10 g) = 0.175 mW/g

Power Drift = -0.007 dB

Maximum value of SAR (measured) = 0.279 mW/g



SAR Report

SD_SAR_0805_01

Applicant: Nokia Corporation

Type: RM-324

Copyright © 2008 TCC Nokia

Date/Time: 2008-01-30 14:19:51

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: 1900MHz Head; Medium Notes: Temperature: 20.5C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.44$ mho/m; $\epsilon_r = 38.6$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(5.09, 5.09, 5.09); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn308; Calibrated: 2007-02-16
- Phantom: SAM 2 ; Type: Twin Phantom; Serial: NMP03309
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Cheek, Middle, Flip Open/Area Scan (51x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.324 mW/g

Cheek, Middle, Flip Open/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 5.28 V/m

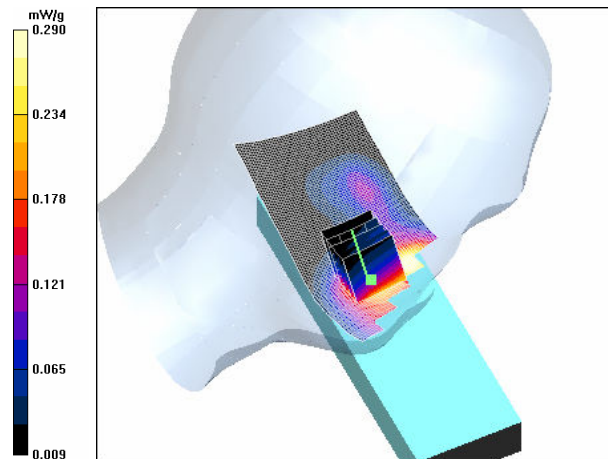
Peak SAR (extrapolated) = 0.401 W/kg

SAR(1 g) = 0.268 mW/g

SAR(10 g) = 0.178 mW/g

Power Drift = -0.083 dB

Maximum value of SAR (measured) = 0.290 mW/g



Date/Time: 2008-01-30 14:36:31

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: 1900MHz Head; Medium Notes: Temperature: 20.5C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.44$ mho/m; $\epsilon_r = 38.6$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(5.09, 5.09, 5.09); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn308; Calibrated: 2007-02-16
- Phantom: SAM 2 ; Type: Twin Phantom; Serial: NMP03309
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Tilt, Middle, Flip Open/Area Scan (51x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.202 mW/g

Tilt, Middle, Flip Open/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 8.50 V/m

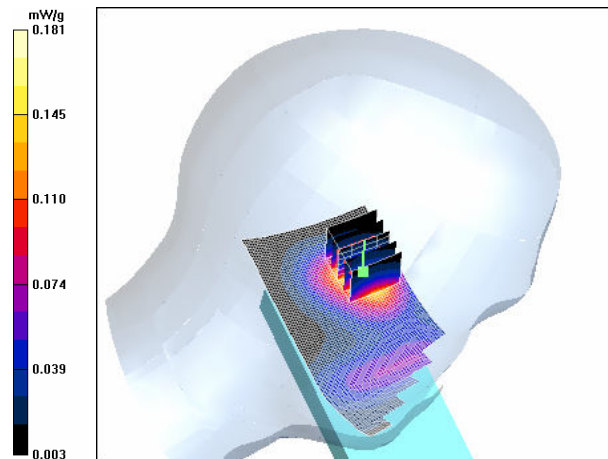
Peak SAR (extrapolated) = 0.242 W/kg

SAR(1 g) = 0.166 mW/g

SAR(10 g) = 0.101 mW/g

Power Drift = -0.012 dB

Maximum value of SAR (measured) = 0.181 mW/g



SAR Report

SD_SAR_0805_01

Applicant: Nokia Corporation

Type: RM-324

Copyright © 2008 TCC Nokia

Date/Time: 2008-01-30 13:24:21

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: 1900MHz Head; Medium Notes: Temperature: 20.5C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.44$ mho/m; $\epsilon_r = 38.6$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(5.09, 5.09, 5.09); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn308; Calibrated: 2007-02-16
- Phantom: SAM 2 ; Type: Twin Phantom; Serial: NMP03309
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Cheek, Middle, Flip Open/Area Scan (51x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.487 mW/g

Cheek, Middle, Flip Open/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 5.16 V/m

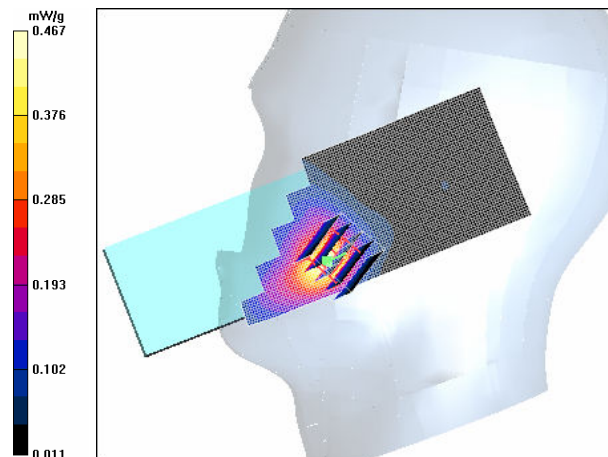
Peak SAR (extrapolated) = 0.696 W/kg

SAR(1 g) = 0.424 mW/g

SAR(10 g) = 0.255 mW/g

Power Drift = 0.064 dB

Maximum value of SAR (measured) = 0.467 mW/g



Date/Time: 2008-01-30 14:01:47

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: 2-slots GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: 1900MHz Head; Medium Notes: Temperature: 20.5C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.44$ mho/m; $\epsilon_r = 38.6$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(5.09, 5.09, 5.09); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn308; Calibrated: 2007-02-16
- Phantom: SAM 2 ; Type: Twin Phantom; Serial: NMP03309
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Tilt, Middle, Flip Open/Area Scan (51x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.115 mW/g

Tilt, Middle, Flip Open/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 8.54 V/m

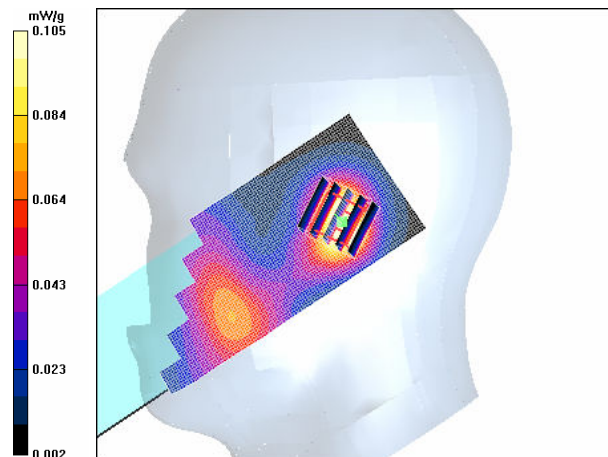
Peak SAR (extrapolated) = 0.132 W/kg

SAR(1 g) = 0.097 mW/g

SAR(10 g) = 0.061 mW/g

Power Drift = -0.095 dB

Maximum value of SAR (measured) = 0.105 mW/g



SAR Report

SD_SAR_0805_01

Applicant: Nokia Corporation

Type: RM-324

Copyright © 2008 TCC Nokia

Date/Time: 2008-01-30 13:41:53

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: 2-slot 8PSK EGPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: 1900MHz Head; Medium Notes: Temperature: 20.5C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.44$ mho/m; $\epsilon_r = 38.6$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(5.09, 5.09, 5.09); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn308; Calibrated: 2007-02-16
- Phantom: SAM 2 ; Type: Twin Phantom; Serial: NMP03309
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Cheek, Middle, Flip Open,/Area Scan (51x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.292 mW/g

Cheek, Middle, Flip Open,/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 4.05 V/m

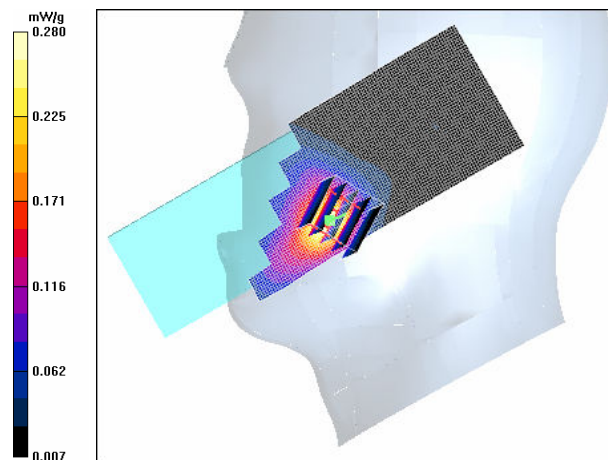
Peak SAR (extrapolated) = 0.420 W/kg

SAR(1 g) = 0.259 mW/g

SAR(10 g) = 0.156 mW/g

Power Drift = -0.071 dB

Maximum value of SAR (measured) = 0.280 mW/g



SAR Report

SD_SAR_0805_01

Applicant: Nokia Corporation

Type: RM-324

Copyright © 2008 TCC Nokia

Date/Time: 2008-01-31 11:23:21

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: WCDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900MHz Head; Medium Notes: Temperature: 19.9C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.44$ mho/m; $\epsilon_r = 40.2$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(5.09, 5.09, 5.09); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn308; Calibrated: 2007-02-16
- Phantom: SAM 2 ; Type: Twin Phantom; Serial: NMP03309
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Cheek, Middle, Flip Open/Area Scan (51x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.688 mW/g

Cheek, Middle, Flip Open/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 7.98 V/m

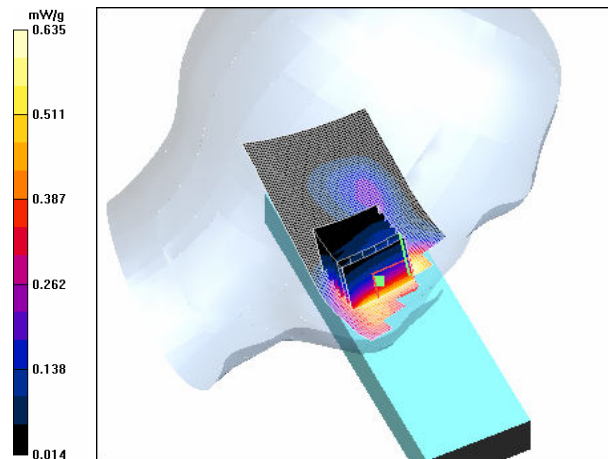
Peak SAR (extrapolated) = 0.791 W/kg

SAR(1 g) = 0.606 mW/g

SAR(10 g) = 0.428 mW/g

Power Drift = -0.220 dB

Maximum value of SAR (measured) = 0.635 mW/g



Date/Time: 2008-01-31 11:23:21

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: WCDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900MHz Head; Medium Notes: Temperature: 19.9C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.44$ mho/m; $\epsilon_r = 40.2$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(5.09, 5.09, 5.09); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn308; Calibrated: 2007-02-16
- Phantom: SAM 2 ; Type: Twin Phantom; Serial: NMP03309
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Tilt, Middle, Flip Open/Area Scan (51x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.688 mW/g

Tilt, Middle, Flip Open/Zoom Scan 2 (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 7.98 V/m

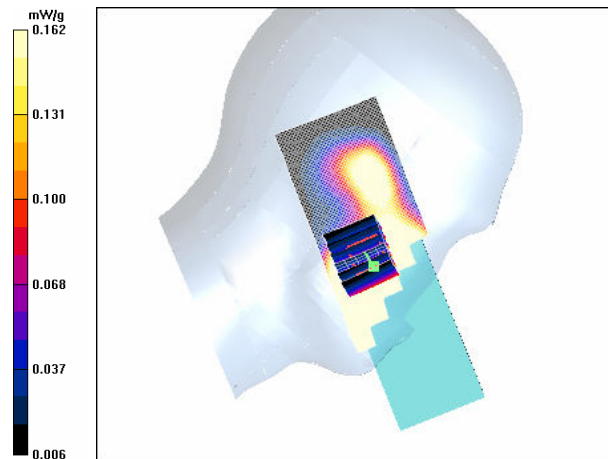
Peak SAR (extrapolated) = 0.209 W/kg

SAR(1 g) = 0.154 mW/g

SAR(10 g) = 0.105 mW/g

Power Drift = -0.020 dB

Maximum value of SAR (measured) = 0.162 mW/g



SAR Report

SD_SAR_0805_01

Applicant: Nokia Corporation

Type: RM-324

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Date/Time: 2008-01-31 12:12:10

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: WCDMA1900

Frequency: 1852.4 MHz; Duty Cycle: 1:1

Medium: 1900MHz Head; Medium Notes: Temperature: 19.9C

Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.41$ mho/m; $\epsilon_r = 40.3$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(5.09, 5.09, 5.09); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn308; Calibrated: 2007-02-16
- Phantom: SAM 2 ; Type: Twin Phantom; Serial: NMP03309
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Cheek, Low, Flip Open/Area Scan (51x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.793 mW/g

Cheek, Low, Flip Open/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 7.56 V/m

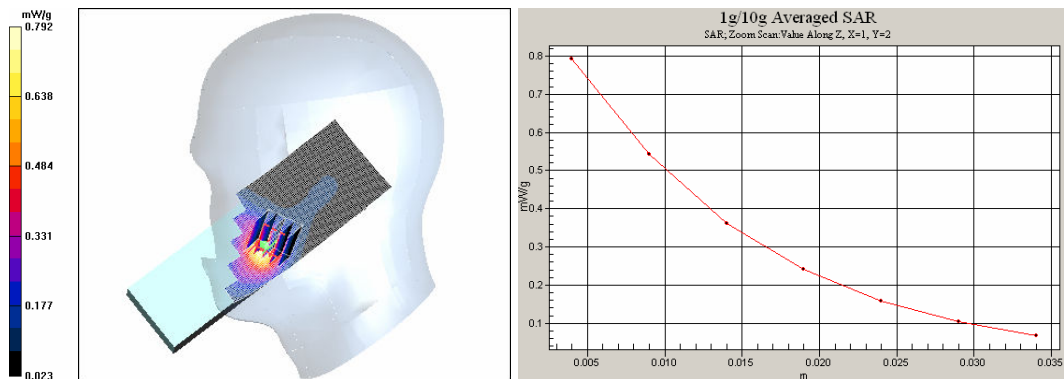
Peak SAR (extrapolated) = 1.36 W/kg

SAR(1 g) = 0.735 mW/g

SAR(10 g) = 0.451 mW/g

Power Drift = -0.013 dB

Maximum value of SAR (measured) = 0.792 mW/g



SAR Report

SD_SAR_0805_01

Applicant: Nokia Corporation

Type: RM-324

Copyright © 2008 TCC Nokia

Date/Time: 2008-01-31 11:06:06

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: WCDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900MHz Head; Medium Notes: Temperature: 19.9C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.44$ mho/m; $\epsilon_r = 40.2$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(5.09, 5.09, 5.09); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn308; Calibrated: 2007-02-16
- Phantom: SAM 2 ; Type: Twin Phantom; Serial: NMP03309
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Tilt, Middle, Flip Open/Area Scan (51x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.209 mW/g

Tilt, Middle, Flip Open/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 12.1 V/m

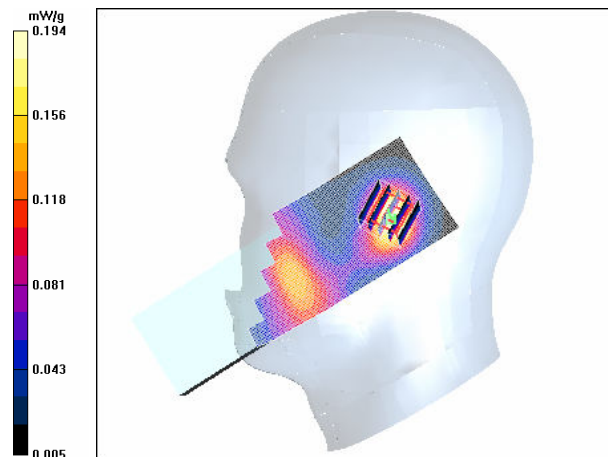
Peak SAR (extrapolated) = 0.248 W/kg

SAR(1 g) = 0.181 mW/g

SAR(10 g) = 0.114 mW/g

Power Drift = -0.026 dB

Maximum value of SAR (measured) = 0.194 mW/g



Date/Time: 2008-01-31 12:54:01

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: WCDMA1900

Frequency: 1852.4 MHz; Duty Cycle: 1:1

Medium: 1900MHz Head; Medium Notes: Temperature: 19.9C

Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.41$ mho/m; $\epsilon_r = 40.3$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(5.09, 5.09, 5.09); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn308; Calibrated: 2007-02-16
- Phantom: SAM 2 ; Type: Twin Phantom; Serial: NMP03309
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Cheek, Low, Flip Open, BT active/Area Scan (51x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.796 mW/g

Cheek, Low, Flip Open, BT active/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 6.96 V/m

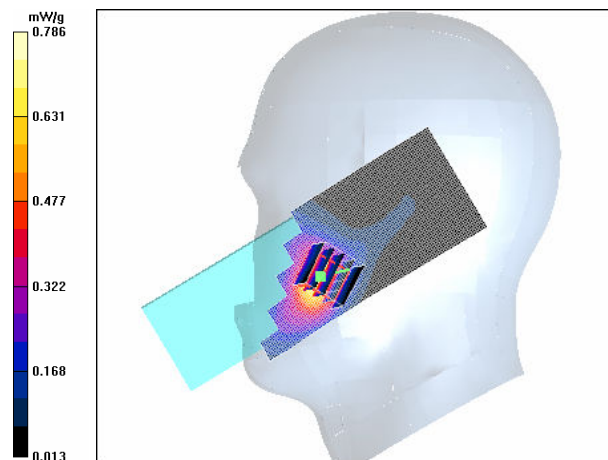
Peak SAR (extrapolated) = 1.33 W/kg

SAR(1 g) = 0.729 mW/g

SAR(10 g) = 0.443 mW/g

Power Drift = -0.133 dB

Maximum value of SAR (measured) = 0.786 mW/g



SAR Report

SD_SAR_0805_01

Applicant: Nokia Corporation

Type: RM-324

Copyright © 2008 TCC Nokia

Date/Time: 2008-01-29 13:05:32

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: BSL850; Medium Notes: T=20.9 C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.983$ mho/m; $\epsilon_r = 54.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.49, 6.49, 6.49); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn389; Calibrated: 2007-02-16
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Body, Middle, Flip Closed, No accessory/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.623 mW/g

Body, Middle, Flip Closed, No accessory/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 22.7 V/m

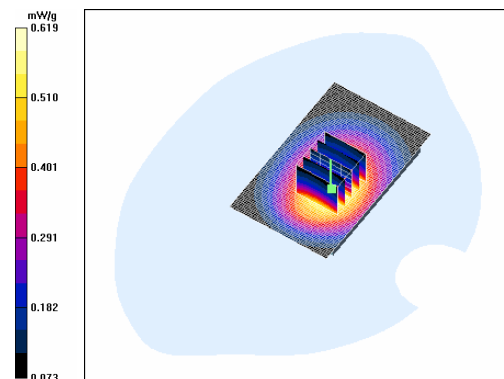
Peak SAR (extrapolated) = 0.757 W/kg

SAR(1 g) = 0.586 mW/g

SAR(10 g) = 0.425 mW/g

Power Drift = 0.073 dB

Maximum value of SAR (measured) = 0.619 mW/g



Date/Time: 2008-01-29 13:50:10

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: BSL850; Medium Notes: T=20.9 C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.983$ mho/m; $\epsilon_r = 54.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.49, 6.49, 6.49); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn389; Calibrated: 2007-02-16
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Body, Middle, HS-9, Flip closed/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.559 mW/g

Body, Middle, HS-9, Flip closed/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 21.5 V/m

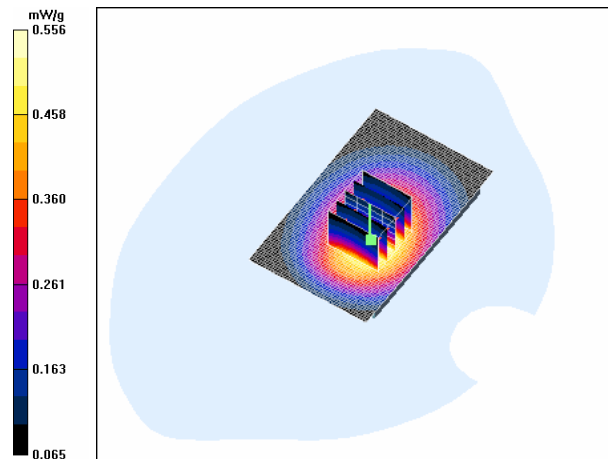
Peak SAR (extrapolated) = 0.680 W/kg

SAR(1 g) = 0.529 mW/g

SAR(10 g) = 0.382 mW/g

Power Drift = 0.029 dB

Maximum value of SAR (measured) = 0.556 mW/g



Date/Time: 2008-01-29 10:36:58

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: WCDMA850

Frequency: 826.4 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: T=20.9 C

Medium parameters used (interpolated): $f = 826.4$ MHz; $\sigma = 0.976$ mho/m; $\epsilon_r = 54.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.49, 6.49, 6.49); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn389; Calibrated: 2007-02-16
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Body, Low, Flip Closed, No accessory/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.643 mW/g

Body, Low, Flip Closed, No accessory/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 24.0 V/m

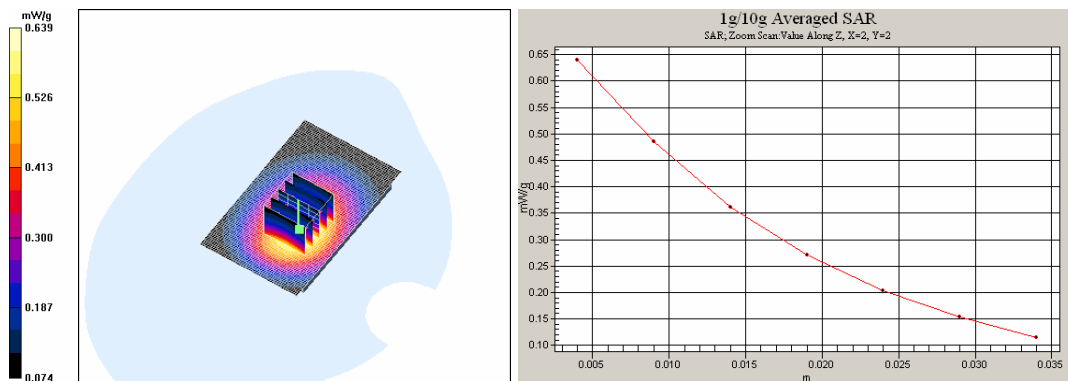
Peak SAR (extrapolated) = 0.778 W/kg

SAR(1 g) = 0.604 mW/g

SAR(10 g) = 0.437 mW/g

Power Drift = -0.164 dB

Maximum value of SAR (measured) = 0.639 mW/g



SAR Report

SD_SAR_0805_01

Applicant: Nokia Corporation

Type: RM-324

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Date/Time: 2008-01-29 11:49:05

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: WCDMA850

Frequency: 826.4 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: T=20.9 C

Medium parameters used (interpolated): $f = 826.4$ MHz; $\sigma = 0.976$ mho/m; $\epsilon_r = 54.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.49, 6.49, 6.49); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn389; Calibrated: 2007-02-16
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Body, Low, Flip Closed, HS-9,/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.575 mW/g

Body, Low, Flip Closed, HS-9/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 22.3 V/m

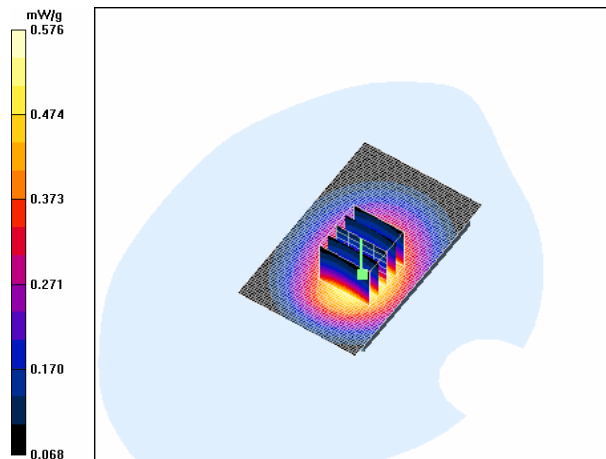
Peak SAR (extrapolated) = 0.702 W/kg

SAR(1 g) = 0.544 mW/g

SAR(10 g) = 0.394 mW/g

Power Drift = 0.010 dB

Maximum value of SAR (measured) = 0.576 mW/g



SAR Report

SD_SAR_0805_01

Applicant: Nokia Corporation

Type: RM-324

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Date/Time: 2008-01-29 12:16:57

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: WCDMA850

Frequency: 826.4 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: T=20.9 C

Medium parameters used (interpolated): $f = 826.4$ MHz; $\sigma = 0.976$ mho/m; $\epsilon_r = 54.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.49, 6.49, 6.49); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn389; Calibrated: 2007-02-16
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Body, Low, BT active, Flip Closed, No accessory/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.623 mW/g

Body, Low, BT active, Flip Closed, No accessory/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 24.1 V/m

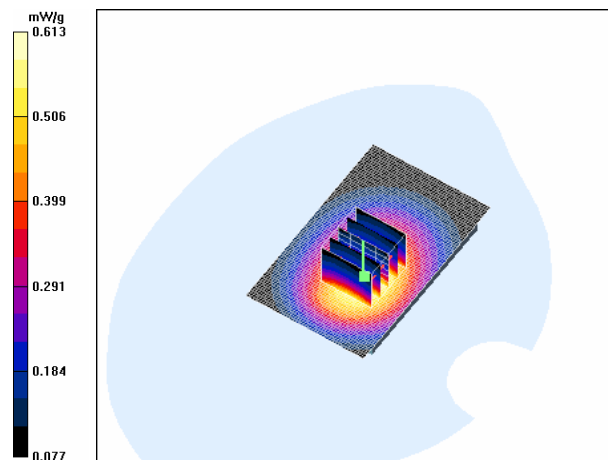
Peak SAR (extrapolated) = 0.743 W/kg

SAR(1 g) = 0.580 mW/g

SAR(10 g) = 0.420 mW/g

Power Drift = -0.076 dB

Maximum value of SAR (measured) = 0.613 mW/g



SAR Report

SD_SAR_0805_01

Applicant: Nokia Corporation

Type: RM-324

Copyright © 2008 TCC Nokia

Date/Time: 2008-01-30 16:28:27

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: 1900MHz Body; Medium Notes: Liquid temperature: 19.9C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 52.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(4.6, 4.6, 4.6); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn308; Calibrated: 2007-02-16
- Phantom: SAM 3; Type: Twin Phantom; Serial: NMP03311
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Body, Middle, Flip closed, No accessory/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.244 mW/g

Body, Middle, Flip closed, No accessory/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 13.6 V/m

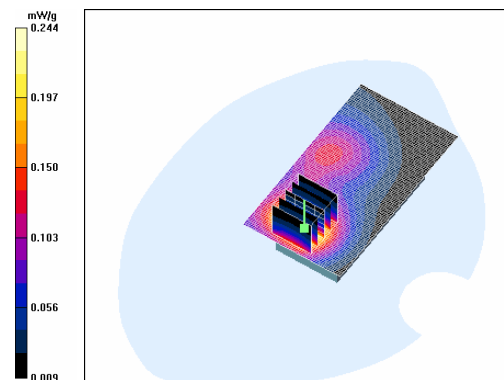
Peak SAR (extrapolated) = 0.337 W/kg

SAR(1 g) = 0.226 mW/g

SAR(10 g) = 0.143 mW/g

Power Drift = -0.083 dB

Maximum value of SAR (measured) = 0.244 mW/g



SAR Report

SD_SAR_0805_01

Applicant: Nokia Corporation

Type: RM-324

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Date/Time: 2008-01-30 16:57:07

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: 2-slot GPRS1900

Frequency: 1909.8 MHz; Duty Cycle: 1:4.2

Medium: 1900MHz Body; Medium Notes: Liquid temperature: 19.9C

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.56$ mho/m; $\epsilon_r = 52.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(4.6, 4.6, 4.6); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn308; Calibrated: 2007-02-16
- Phantom: SAM 3; Type: Twin Phantom; Serial: NMP03311
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Body, High, HS-9, Flip closed/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.182 mW/g

Body, High, HS-9, Flip closed/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 11.7 V/m

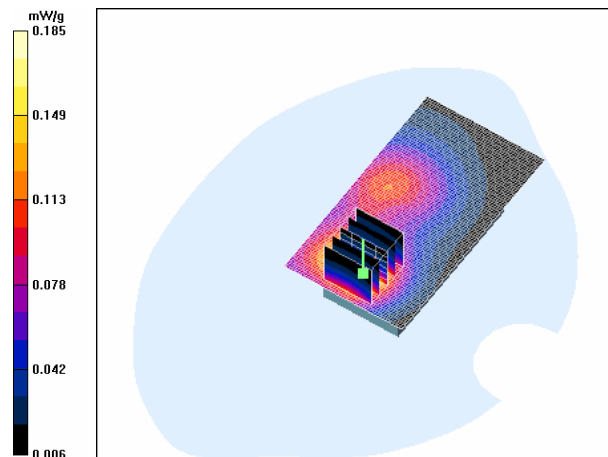
Peak SAR (extrapolated) = 0.266 W/kg

SAR(1 g) = 0.172 mW/g

SAR(10 g) = 0.106 mW/g

Power Drift = 0.047 dB

Maximum value of SAR (measured) = 0.185 mW/g



Date/Time: 2008-01-31 13:17:13

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: WCDMA1900

Frequency: 1852.4 MHz; Duty Cycle: 1:1

Medium: 1900MHz Body; Medium Notes: Liquid temperature: 19.9C

Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(4.6, 4.6, 4.6); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn308; Calibrated: 2007-02-16
- Phantom: SAM 3; Type: Twin Phantom; Serial: NMP03311
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Body, Low, Flip Closed, No Accessory/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.562 mW/g

Body, Low, Flip Closed, No Accessory/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 20.5 V/m

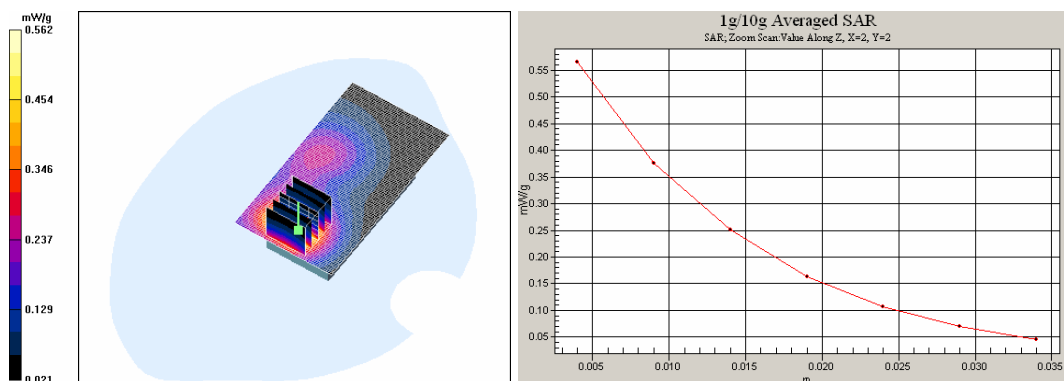
Peak SAR (extrapolated) = 0.778 W/kg

SAR(1 g) = 0.521 mW/g

SAR(10 g) = 0.328 mW/g

Power Drift = 0.145 dB

Maximum value of SAR (measured) = 0.562 mW/g



SAR Report

SD_SAR_0805_01

Applicant: Nokia Corporation

Type: RM-324

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Date/Time: 2008-01-31 14:22:46

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: WCDMA1900

Frequency: 1852.4 MHz; Duty Cycle: 1:1

Medium: 1900MHz Body; Medium Notes: Liquid temperature: 19.9C

Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(4.6, 4.6, 4.6); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn308; Calibrated: 2007-02-16
- Phantom: SAM 3; Type: Twin Phantom; Serial: NMP03311
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Body, Low, Flip Closed, HS-9/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.409 mW/g

Body, Low, Flip Closed, HS-9/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 17.7 V/m

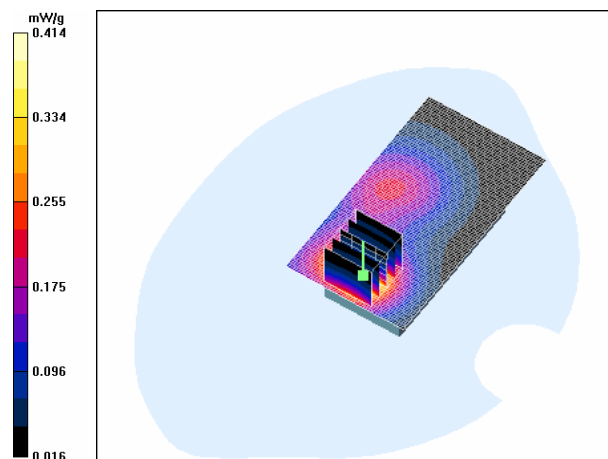
Peak SAR (extrapolated) = 0.579 W/kg

SAR(1 g) = 0.379 mW/g

SAR(10 g) = 0.234 mW/g

Power Drift = -0.002 dB

Maximum value of SAR (measured) = 0.414 mW/g



Date/Time: 2008-01-31 14:36:45

Test Laboratory: TCC Nokia

Type: RM-324; Serial: 004401/01/379342/3

Communication System: WCDMA1900

Frequency: 1852.4 MHz; Duty Cycle: 1:1

Medium: 1900MHz Body; Medium Notes: Liquid temperature: 19.9C

Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(4.6, 4.6, 4.6); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn308; Calibrated: 2007-02-16
- Phantom: SAM 3; Type: Twin Phantom; Serial: NMP03311
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Body, Low, Flip Closed, BT active, No accessory/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.510 mW/g

Body, Low, Flip Closed, BT active, No accessory/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 19.3 V/m

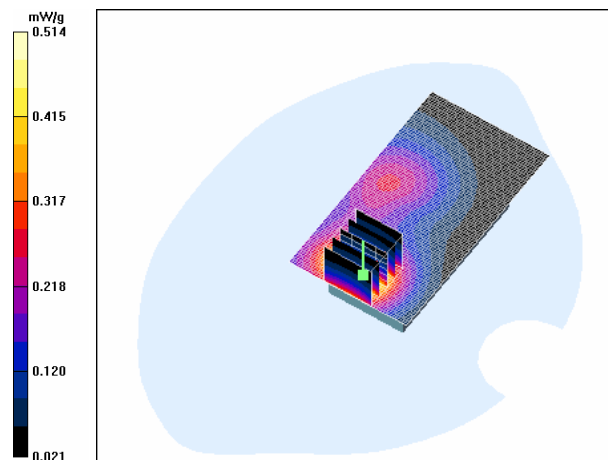
Peak SAR (extrapolated) = 0.708 W/kg

SAR(1 g) = 0.474 mW/g

SAR(10 g) = 0.299 mW/g

Power Drift = 0.066 dB

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



SAR Report

SD_SAR_0805_01

Applicant: Nokia Corporation

Type: RM-324

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

**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: **ET3-1504_Aug07**

CALIBRATION CERTIFICATE

Object **ET3DV6 - SN:1504**

Calibration procedure(s) **QA CAL-01.v6
Calibration procedure for dosimetric E-field probes**

Calibration date: **August 29, 2007**

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 $(22 \pm 3)^{\circ}\text{C}$ 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	29-Mar-07 (METAS, No. 217-00670)	Mar-08
Power sensor E4412A	MY41495277	29-Mar-07 (METAS, No. 217-00670)	Mar-08
Power sensor E4412A	MY41498087	29-Mar-07 (METAS, No. 217-00670)	Mar-08
Reference 3 dB Attenuator	SN: S5054 (3c)	8-Aug-07 (METAS, No. 217-00719)	Aug-08
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-07 (METAS, No. 217-00671)	Mar-08
Reference 30 dB Attenuator	SN: S5129 (30b)	8-Aug-07 (METAS, No. 217-00720)	Aug-08
Reference Probe ES3DV2	SN: 3013	4-Jan-07 (SPEAG, No. ES3-3013_Jan07)	Jan-08
DAE4	SN: 654	20-Apr-07 (SPEAG, No. DAE4-654_Apr07)	Apr-08

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 Oct-06)	in house check: Oct-07

Calibrated by: **Name** **Function** **Signature**
Katja Pokovic **Technical Manager**

Approved by: **Niels Kuster** **Quality Manager**

Issued: August 29, 2007

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

Certificate No: ET3-1504_Aug07

Page 1 of 9

Type: RM-324

SAR Report

SD_SAR_0805_01

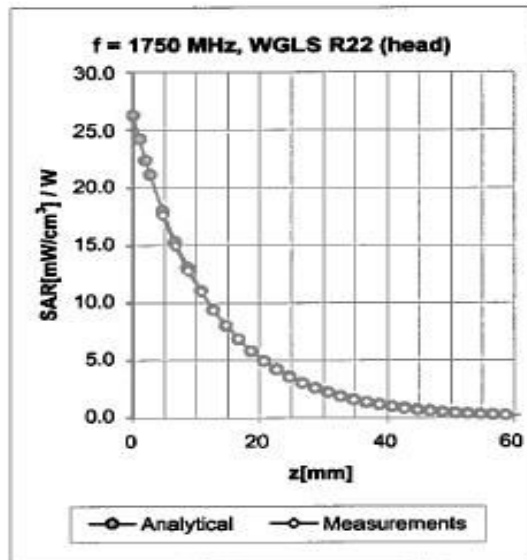
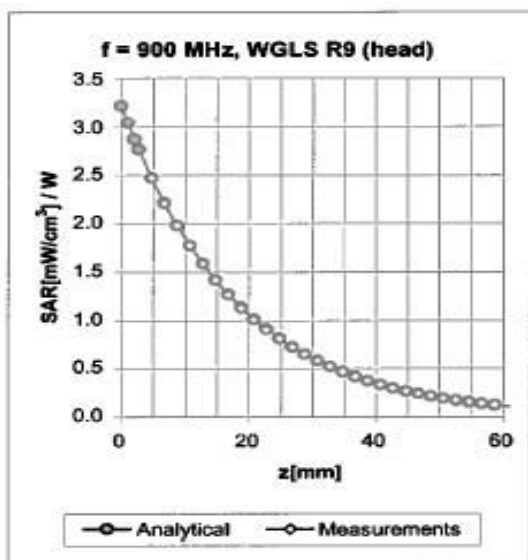
Applicant: Nokia Corporation

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ET3DV6 SN:1504

August 29, 2007

Conversion Factor Assessment



f [MHz]	Validity [MHz] ^c	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
835	± 50 / ± 99	Head	41.5 ± 5%	0.90 ± 5%	0.38	2.40	6.52 ± 11.0% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.31	2.63	6.40 ± 11.0% (k=2)
1750	± 50 / ± 100	Head	40.1 ± 5%	1.37 ± 5%	0.53	2.60	5.25 ± 11.0% (k=2)
1900	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.59	2.50	5.09 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.80	1.73	4.63 ± 11.8% (k=2)
835	± 50 / ± 100	Body	55.2 ± 5%	0.97 ± 5%	0.36	2.46	6.27 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.32	2.84	6.00 ± 11.0% (k=2)
1750	± 50 / ± 100	Body	53.4 ± 5%	1.49 ± 5%	0.61	2.63	4.78 ± 11.0% (k=2)
1900	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.74	2.36	4.60 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.71	2.12	4.02 ± 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.

Certificate No: ET3-1504_Aug07

Page 8 of 9

SAR Report

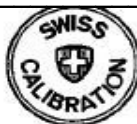
SD_SAR_0805_01

Applicant: Nokia Corporation

Type: RM-324

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**Calibration Laboratory of
Schmid & Partner
Engineering AG**
Zeughausstrasse 43, 8004 Zurich, Switzerland



S Schweizerischer Kalibrierdienst
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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: **ET3-1505_Aug07**

CALIBRATION CERTIFICATE

Object **ET3DV6 - SN:1505**

Calibration procedure(s) **QA CAL-01.v6
Calibration procedure for dosimetric E-field probes**

Calibration date: **August 29, 2007**

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 $(22 \pm 3)^\circ\text{C}$ 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	29-Mar-07 (METAS, No. 217-00670)	Mar-08
Power sensor E4412A	MY41495277	29-Mar-07 (METAS, No. 217-00670)	Mar-08
Power sensor E4412A	MY41498087	29-Mar-07 (METAS, No. 217-00670)	Mar-08
Reference 3 dB Attenuator	SN: S5054 (3c)	8-Aug-07 (METAS, No. 217-00719)	Aug-08
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-07 (METAS, No. 217-00671)	Mar-08
Reference 30 dB Attenuator	SN: S5129 (30b)	8-Aug-07 (METAS, No. 217-00720)	Aug-08
Reference Probe ES3DV2	SN: 3013	4-Jan-07 (SPEAG, No. ES3-3013_Jan07)	Jan-08
DAE4	SN: 654	20-Apr-07 (SPEAG, No. DAE4-654_Apr07)	Apr-08
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	US37390595	18-Oct-01 (SPEAG, in house check Oct-06)	In house check: Oct-07

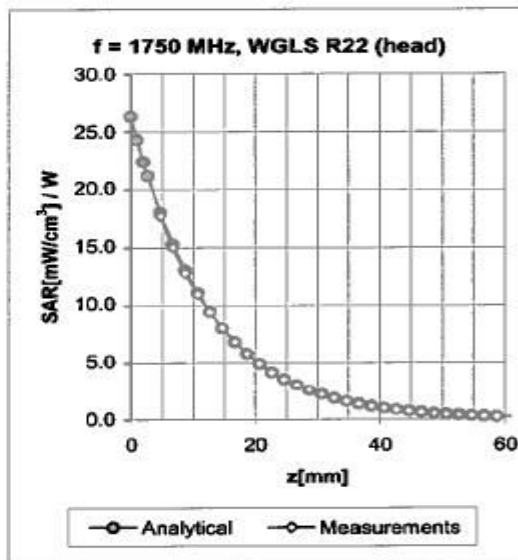
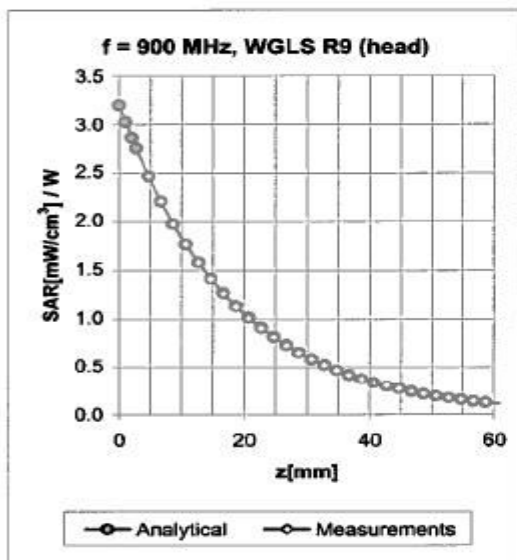
Calibrated by: **Name** **Function** **Signature**
Katja Pokovic **Technical Manager**

Approved by: **Niels Kuster** **Quality Manager**

Issued: August 29, 2007

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

Conversion Factor Assessment



f [MHz]	Validity [MHz] ^c	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
835	± 50 / ± 99	Head	41.5 ± 5%	0.90 ± 5%	0.31	2.54	6.86 ± 11.0% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.34	2.42	6.75 ± 11.0% (k=2)
1750	± 50 / ± 100	Head	40.1 ± 5%	1.37 ± 5%	0.46	2.74	5.35 ± 11.0% (k=2)
1900	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.51	2.63	5.17 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.52	2.11	4.61 ± 11.8% (k=2)
835	± 50 / ± 100	Body	55.2 ± 5%	0.97 ± 5%	0.29	2.72	6.49 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.31	2.73	6.21 ± 11.0% (k=2)
1750	± 50 / ± 100	Body	53.4 ± 5%	1.49 ± 5%	0.53	2.78	4.81 ± 11.0% (k=2)
1900	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.65	2.41	4.65 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.51	2.50	3.95 ± 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)

**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: **D835V2-487_Nov06**

CALIBRATION CERTIFICATE

Object **D835V2 - SN: 487**

Calibration procedure(s) **QA CAL-05.v6**
Calibration procedure for dipole validation kits

Calibration date: **November 21, 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	03-Oct-06 (METAS, No. 217-00608)	Oct-07
Power sensor HP 8481A	US37292783	03-Oct-06 (METAS, No. 217-00608)	Oct-07
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 (HF)	SN 1507	19-Oct-06 (SPEAG, No. ET3-1507_Oct06)	Oct-07
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 Oct-06)	In house check: Oct-07

Calibrated by: **Name** **Mike Meili** **Function** **Laboratory Technician**

Signature
Mike Meili

Approved by: **Katja Pokovic** **Technical Manager**

Katja Pokovic

Issued: November 23, 2006

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

DASY4 Validation Report for Head TSL

Date/Time: 21.11.2006 12:57:12

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 487

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL 900 MHz;

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.901 \text{ mho/m}$; $\epsilon_r = 42.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (HF); ConvF(6.09, 6.09, 6.09); Calibrated: 19.10.2006
- 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:

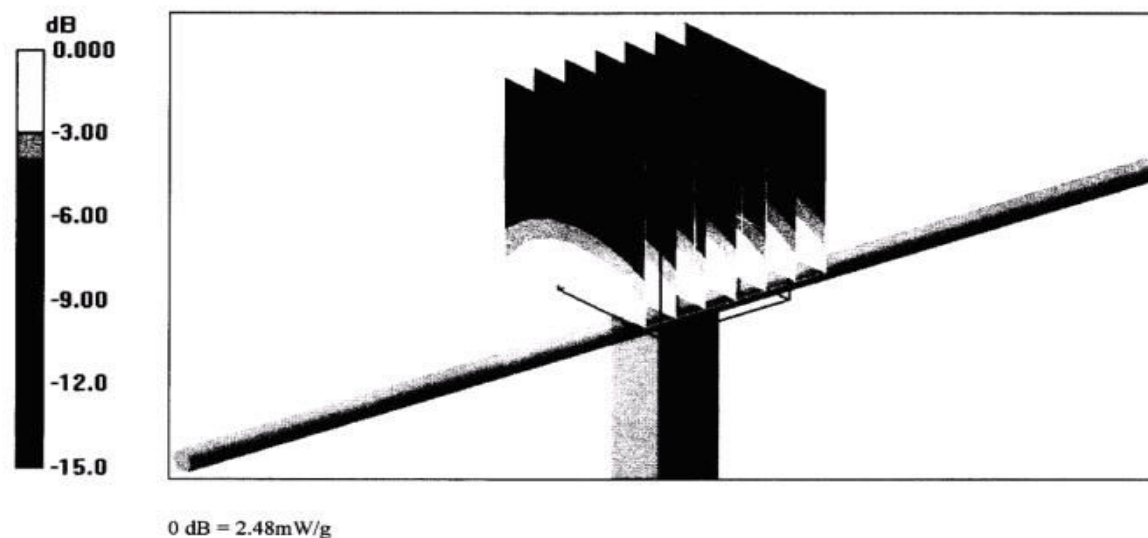
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 54.8 V/m; Power Drift = -0.040 dB

Peak SAR (extrapolated) = 3.32 W/kg

SAR(1 g) = 2.29 mW/g; SAR(10 g) = 1.51 mW/g

Maximum value of SAR (measured) = 2.48 mW/g



DASY4 Validation Report for Body TSL

Date/Time: 14.11.2006 13:02:09

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:487

Communication System: CW-835; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: MSL900;

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.99 \text{ mho/m}$; $\epsilon_r = 53.7$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (HF); ConvF(5.75, 5.75, 5.75); Calibrated: 19.10.2006
- 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:

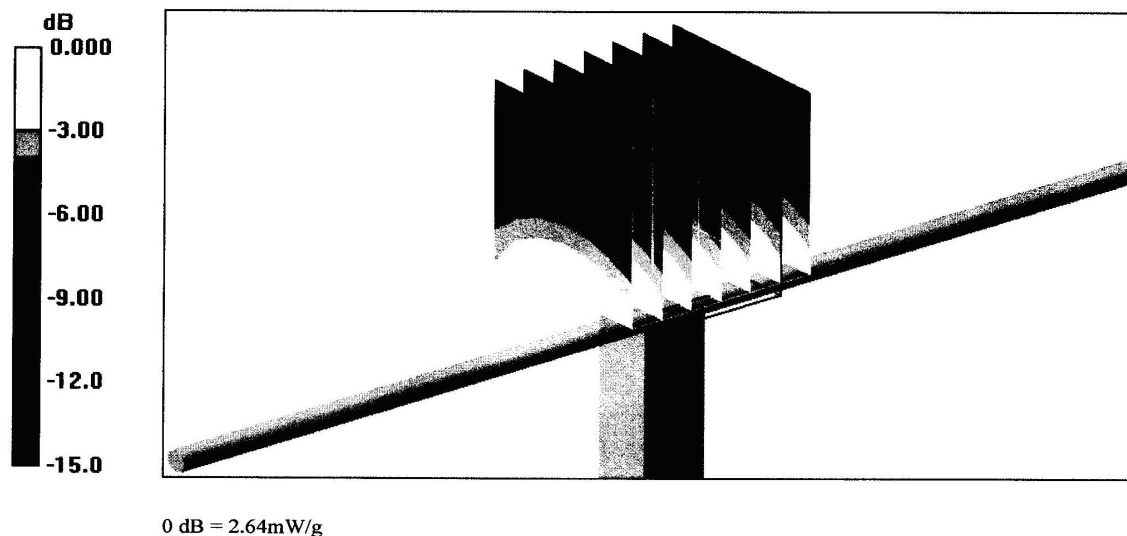
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 54.1 V/m; Power Drift = 0.004 dB

Peak SAR (extrapolated) = 3.41 W/kg

SAR(1 g) = 2.44 mW/g; SAR(10 g) = 1.62 mW/g

Maximum value of SAR (measured) = 2.64 mW/g



**Calibration Laboratory of
Schmid & Partner
Engineering AG**
Zeughausstrasse 43, 8004 Zurich, Switzerland



S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
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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

Calibrated by: **Name** **Function** **Signature**
Marcel Fehr **Laboratory Technician**

Approved by: **Katja Pokovic** **Technical Manager**

Issued: September 20, 2006

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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: $f = 1900 \text{ MHz}$; $\sigma = 1.41 \text{ mho/m}$; $\epsilon_r = 38.6$; $\rho = 1000 \text{ kg/m}^3$

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:

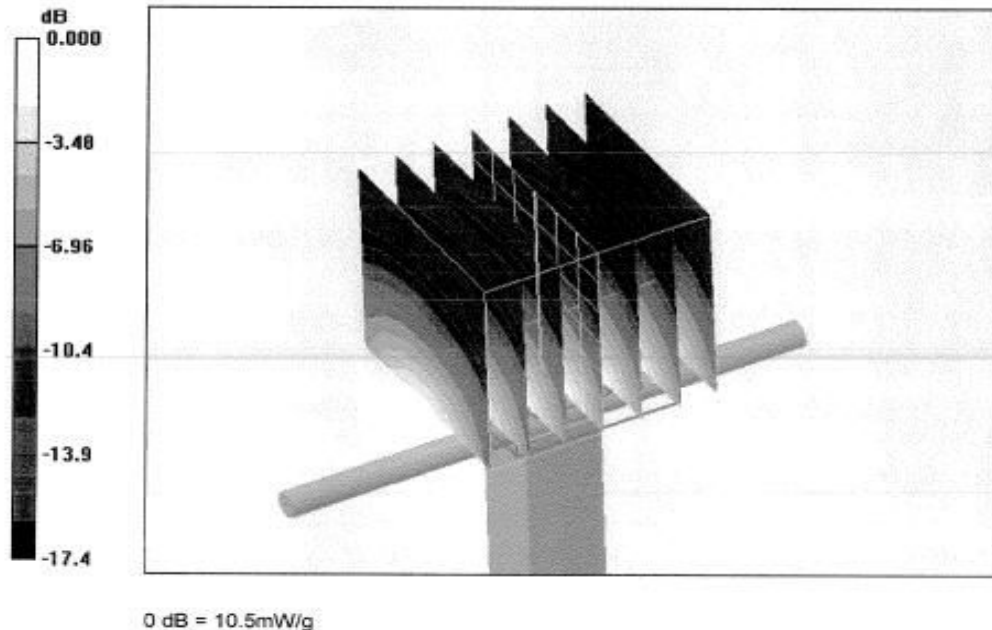
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

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



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: $f = 1900 \text{ MHz}$; $\sigma = 1.56 \text{ mho/m}$; $\epsilon_r = 52.6$; $\rho = 1000 \text{ kg/m}^3$

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

$P_{in} = 250 \text{ mW}$; $d = 10 \text{ mm}$ /Zoom Scan (7x7x7)/Cube 0:

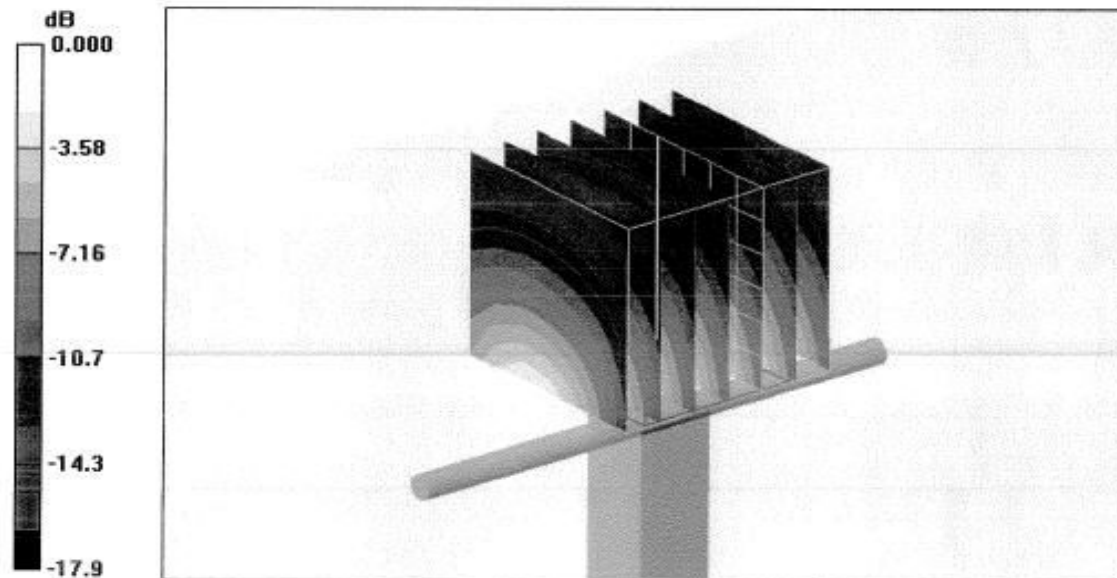
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

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 = 11.2 mW/g