

SAR Compliance Test Report

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Tested device:	RM-426		
FCC ID:	PYARM-244	IC:	661V-RM244
Supplement reports:	Salo_SAR_0732_06 for RM-244		
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

2007-12-19

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1. SUMMARY OF SAR TEST REPORT

1.1 Test Details

Period of test	2007-12-07 to 2007-12-19
SN, HW and SW numbers of tested device	SN: 004401012862302, HW: 0850, SW: 151.34.02, DUT: 3052
Batteries used in testing	BP-6MT, DUT: 3054, 3055
Headsets used in testing	HS-47, DUT: 3056
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
2-Slot GPRS850	251 / 848.8	24.4 dBm ERP	Left, Cheek	0.883 W/kg	0.99 W/kg	1.6 W/kg	PASSED
WCDMA 850	4175 / 835.0	16.9 dBm ERP	Left, Cheek	0.973 W/kg	1.09 W/kg	1.6 W/kg	PASSED
3-slot GPRS 1900	512 / 1850.2	30.8 dBm EIRP	Right, Cheek	0.749 W/kg	0.84 W/kg	1.6 W/kg	PASSED
WLAN 2450	11 / 2462.0	22.1 dBm EIRP	Left, Tilt	0.259 W/kg	0.29 W/kg	1.6 W/kg	PASSED
WCDMA 850 + WLAN 2450	-	-	Left, Cheek	1.232 W/kg	1.38 W/kg	1.6 W/kg	PASSED
3-slot GPRS 1900 + WLAN 2450	-	-	Right, Cheek	1.008 W/kg	1.13 W/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 GPRS850	251 / 848.8	24.4 dBm ERP	2.2cm	0.555 W/kg	0.62 W/kg	1.6 W/kg	PASSED
WCDMA 850	4175 / 835.0	16.9 dBm ERP	2.2cm	0.467 W/kg	0.52 W/kg	1.6 W/kg	PASSED
3-slot GPRS 1900	661 / 1880.0	28.9 dBm EIRP	2.2cm	0.618 W/kg	0.69 W/kg	1.6 W/kg	PASSED
WLAN 2450	7 / 2442.0	22.3 dBm EIRP	2.2cm	0.055 W/kg	0.06 W/kg	1.6 W/kg	PASSED
2-slot GPRS850 + WLAN 2450	-	-	2.2cm	0.610 W/kg	0.68 W/kg	1.6 W/kg	PASSED
3-slot GPRS 1900 + WLAN 2450	-	-	2.2cm	0.673 W/kg	0.75 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	0.48 dB

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 3/8	824 – 849 1850 – 1910
EGPRS	850 1900	GMSK / 8PSK	1/8 to 3/8	824 – 849 1850 – 1910
WCDMA	850 (Band V)	QPSK	1	826 – 847
BT	2450	GFSK	1	2402 – 2480
WLAN	2450	11Mbps QPSK	1	2412 – 2462

Outside of USA and Canada, the transmitter of the device is capable of operating also in GSM/GPRS/EGPRS900, GSM/GPRS/EGPRS1800 and WCDMA2100 bands which are not part of this filing.

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):	19.9 to 21.6
Ambient humidity (RH %):	33 to 50

3.2 Test Signal, Frequencies and Output Power

The device was put into operation by using a call tester except for testing WLAN2450 where control software was used. 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.

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

The number of test cases reported in this document has been minimised based on the earlier testing in Salo_SAR_0732_06 for RM-244. The only difference between RM-426 and RM-244 is that RM-426 has had the camera and its associated circuitry removed.

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
Dipole Validation Kit, D2450V2	757	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
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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

2450MHz band

Ingredient	Head (% by weight)	Body (% by weight)
Deionised Water	56.0	70.20
Tween 20	44.0	29.62
Salt	-	0.18

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

<i>f</i> [MHz]	Description	SAR [W/kg], 1g	Dielectric Parameters		Temp [°C]
			ϵ_r	σ [S/m]	
835	Reference result	2.29	42.3	0.90	
	± 10% window	2.06 - 2.52			
	2007-12-11	2.46	41.1	0.92	21.1
1900	Reference result	9.38	38.6	1.41	
	± 10% window	8.44 - 10.32			
	2007-12-10	9.77	38.9	1.43	20.2
	2007-12-19	9.73	38.6	1.43	19.9
2450	Reference result	13.5	37.7	1.78	
	± 10% window	12.1 - 14.9			
	2007-12-18	14.3	41.0	1.89	20.6

System checking, body tissue simulant

<i>f</i> [MHz]	Description	SAR [W/kg], 1g	Dielectric Parameters		Temp [°C]
			ϵ_r	σ [S/m]	
835	Reference result	2.44	53.7	0.99	
	± 10% window	2.20 - 2.68			
	2007-12-12	2.54	55.4	0.98	21.2
1900	Reference result	10.1	52.6	1.56	
	± 10% window	9.1 - 11.1			
	2007-12-07	9.94	53.4	1.57	20.6
2450	Reference result	13.7	52.0	1.96	
	± 10% window	12.3 - 15.1			
	2007-12-12	14.1	53.5	1.97	20.7

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	
	2007-12-11	41.1	0.92	21.1
1880	Recommended value	40.0	1.40	
	$\pm 5\%$ window	38.0 – 42.0	1.33 – 1.47	
	2007-12-10	39.1	1.42	20.2
	2007-12-19	38.7	1.41	19.9
2442	Recommended value	39.2	1.79	
	$\pm 5\%$ window	37.3 – 41.2	1.70 – 1.88	
	2007-12-18	41.0	1.88	20.6

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	
	2007-12-12	55.4	0.99	21.2
1880	Recommended value	53.3	1.52	
	$\pm 5\%$ window	50.6 – 56.0	1.44 – 1.60	
	2007-12-07	53.3	1.55	20.6
2442	Recommended value	52.7	1.94	
	$\pm 5\%$ window	50.1 – 55.3	1.85 – 2.04	
	2007-12-12	53.5	1.95	20.6

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.

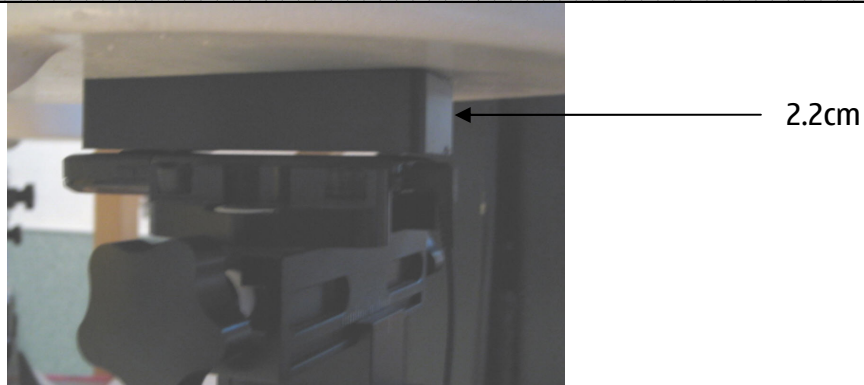


Photo of the device positioned for Body SAR measurement.
The spacer was removed for the tests.

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	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
2-slot GPRS	Power		20.0 dBm	22.6 dBm	24.4 dBm
	Left	Cheek	0.672	0.733	0.883
		Tilt	-	-	-
	Right	Cheek	-	-	-
		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		11.9 dBm	16.9 dBm	17.7 dBm
	Left	Cheek	0.744	0.973	0.947
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
WCDMA	Left Cheek, BT active		-	0.943	-

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
3-slot GPRS	Power		30.8 dBm	28.9 dBm	21.7 dBm
	Left	Cheek	0.683	0.594	0.569
		Tilt	-	-	-
	Right	Cheek	0.746	0.691	0.619
		Tilt	-	-	-
3-slot GPRS	Right Cheek, BT active		0.749	-	-

2450MHz Head SAR results

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 1 2412.0 MHz	Ch 7 2442.0 MHz	Ch 11 2462.0 MHz
WLAN	Power		21.7 dBm	22.3 dBm	22.1 dBm
	Left	Cheek	-	-	-
		Tilt	0.252	0.258	0.259
	Right	Cheek	-	-	-
		Tilt	-	-	-

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
2-slot GPRS	Power	20.0 dBm	22.6 dBm	24.4 dBm
	Without headset	0.415	0.499	0.555
	Headset HS-47	0.221	0.252	0.288
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	11.9 dBm	16.9 dBm	17.7 dBm
	Without headset	0.387	0.467	0.349
	Headset HS-47	0.229	0.309	0.316
2-slot GPRS	Without headset, BT active	-	-	0.550

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
3-slot GPRS	Power	30.8 dBm	28.9 dBm	21.7 dBm
	Without headset	0.479	0.618	0.452
	Headset HS-47	0.519	0.528	0.352
3-slot GPRS	Without headset BT active	-	0.561	-

2450MHz Body SAR results

Mode	Test configuration	SAR, averaged over 1g (W/kg)		
		Ch 1 2412.0 MHz	Ch 7 2442.0 MHz	Ch 11 2462.0 MHz
WLAN	Power	21.7 dBm	22.3 dBm	22.1 dBm
	Without headset	0.047	0.055	0.017
	Headset HS-47	0.011	0.011	0.017

Simultaneous transmissions: Combined SAR results

Test configuration	Max. 1g SAR results			Combined 1g SAR values	
	WLAN	850MHz band	1900MHz band	WLAN + 850MHz band	WLAN + 1900MHz band
Head: Left, Cheek	-	0.973	0.683	1.232	0.942
Head: Left, Tilt	0.259	-	-	-	-
Head: Right, Cheek	-	-	0.749	-	1.008
Head: Right, Tilt	-	-	-	-	-
Body: Without Headset	0.055	0.555	0.618	0.610	0.673
Body: With HS-47	0.017	0.316	0.528	0.333	0.545

Combining the maximum SAR values of WLAN2450 and the cellular bands tends to overestimate the SAR value since their maxima do not necessarily occur in the same location.

Plots of the Measurement scans are given in Appendix B.

APPENDIX A: SYSTEM CHECKING SCANS

Date/Time: 2007-12-11 11:49:46

Test Laboratory: TCC Nokia

Type: D835V2; Serial: 487

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: T=21.1C

Medium parameters used: $f = 835$ MHz; $\sigma = 0.922$ mho/m; $\epsilon_r = 41.1$; $\rho = 1000$ 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 55; Postprocessing SW: SEMCAD, V1.8 Build 172

System Check/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 2.66 mW/g

System Check/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 55.5 V/m

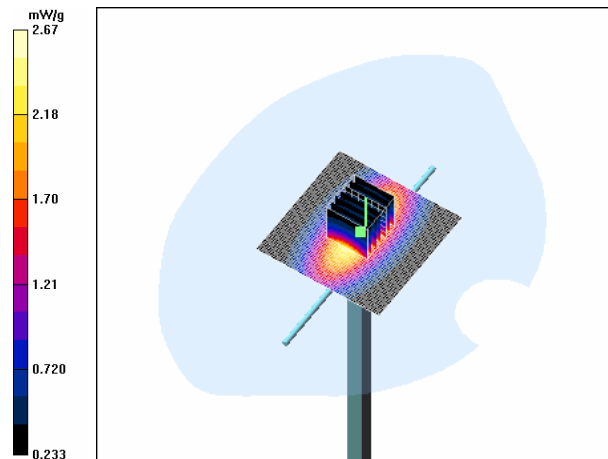
Peak SAR (extrapolated) = 3.67 W/kg

SAR(1 g) = 2.46 mW/g

SAR(10 g) = 1.6 mW/g

Power Drift = 0.002 dB

Maximum value of SAR (measured) = 2.67 mW/g



Date/Time: 2007-12-10 8:24:24

Test Laboratory: TCC Nokia

Type: D1900V2; Serial: 534

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900MHz Head; Medium Notes: T=20.2C

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.43$ mho/m; $\epsilon_r = 38.9$; $\rho = 1000$ 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

System Check/Area Scan (61x61x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 11.1 mW/g

System Check/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 90.9 V/m

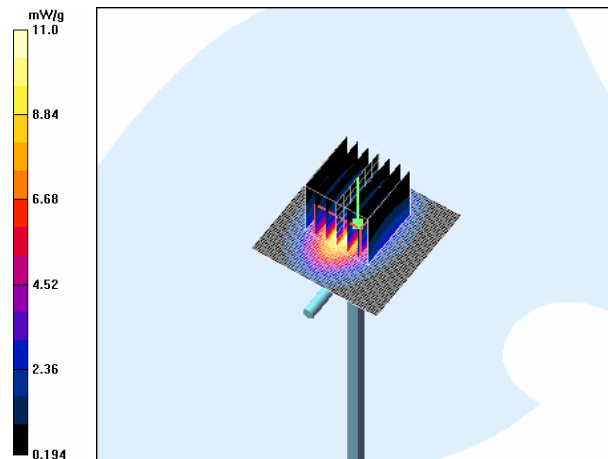
Peak SAR (extrapolated) = 16.7 W/kg

SAR(1 g) = 9.77 mW/g

SAR(10 g) = 5.16 mW/g

Power Drift = 0.017 dB

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



Date/Time: 2007-12-19 14:25:24

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: $f = 1900$ MHz; $\sigma = 1.43$ mho/m; $\epsilon_r = 38.6$; $\rho = 1000$ 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

System check/Area Scan (61x61x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 11.1 mW/g

System check/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 90.9 V/m

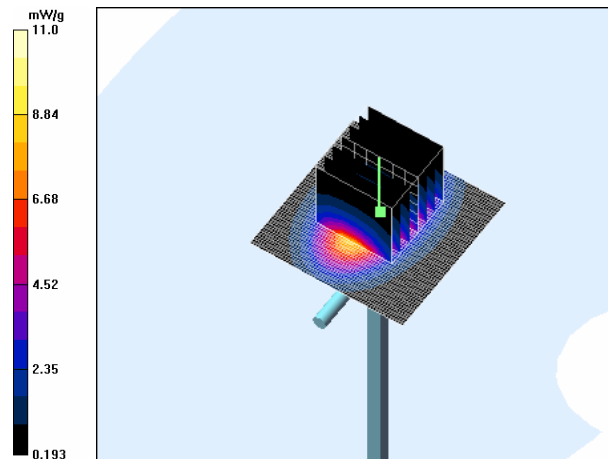
Peak SAR (extrapolated) = 16.7 W/kg

SAR(1 g) = 9.73 mW/g

SAR(10 g) = 5.15 mW/g

Power Drift = 0.021 dB

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



Date/Time: 2007-12-18 14:11:29

Test Laboratory: TCC Nokia

Type: D2450V2; Serial: 757

Communication System: CW2450

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450MHz Head; Medium Notes: T=22.5C

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.89$ mho/m; $\epsilon_r = 41$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(4.63, 4.63, 4.63); 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

System check/Area Scan (61x61x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 16.9 mW/g

System check/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 90.9 V/m

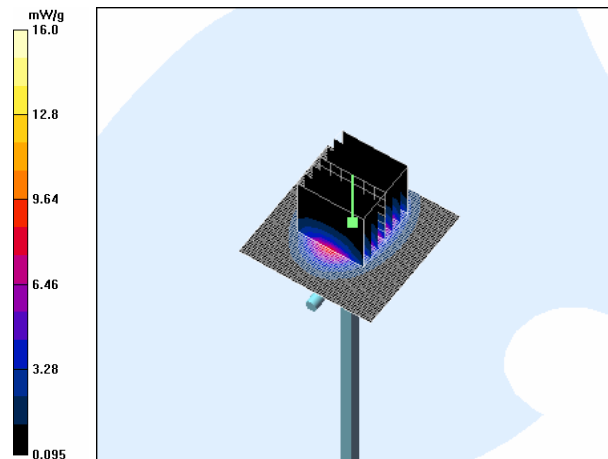
Peak SAR (extrapolated) = 32.6 W/kg

SAR(1 g) = 14.3 mW/g

SAR(10 g) = 6.53 mW/g

Power Drift = 0.032 dB

Maximum value of SAR (measured) = 16.0 mW/g



Date/Time: 2007-12-12 16:44:05

Test Laboratory: TCC Nokia

Type: D835V2; Serial: 487

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Body 850; Medium Notes: T=21.2 C

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.985 \text{ mho/m}$; $\epsilon_r = 55.4$; $\rho = 1000 \text{ kg/m}^3$

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: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

System Check/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 2.84 mW/g

System Check/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 54.8 V/m

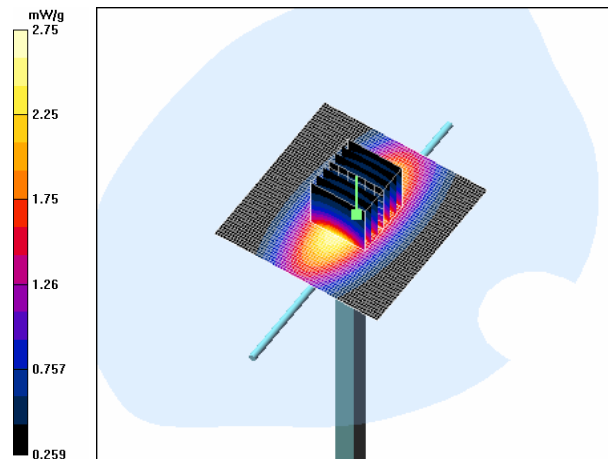
Peak SAR (extrapolated) = 3.72 W/kg

SAR(1 g) = 2.54 mW/g

SAR(10 g) = 1.66 mW/g

Power Drift = -0.142 dB

Maximum value of SAR (measured) = 2.75 mW/g



Date/Time: 2007-12-07 7:18:25

Test Laboratory: TCC Nokia

Type: D1900V2; Serial: 534

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900MHz Body; Medium Notes: T= 20.6C

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.57$ mho/m; $\epsilon_r = 53.4$; $\rho = 1000$ 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)
- 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

System check/Area Scan (61x61x1): Measurement grid: dx=10mm, dy=10mm

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

System check/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 80.3 V/m

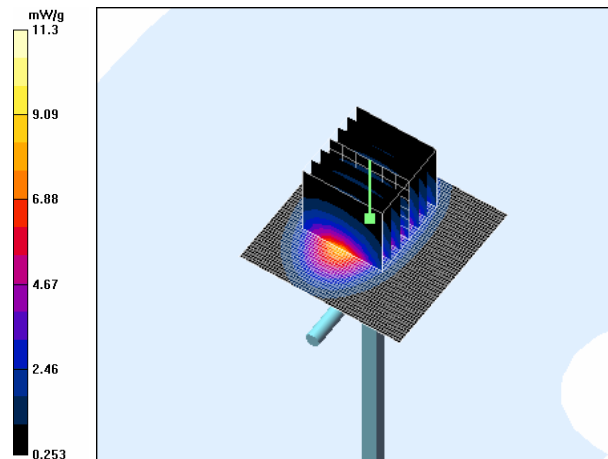
Peak SAR (extrapolated) = 16.5 W/kg

SAR(1 g) = 9.94 mW/g

SAR(10 g) = 5.35 mW/g

Power Drift = 0.018 dB

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



SAR Report

SAR_SD_0750_01

Applicant: Nokia Corporation

Type: RM-426

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Date/Time: 2007-12-12 10:03:58

Test Laboratory: TCC Nokia

Type: D2450V2; Serial: 757

Communication System: CW2450

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450MHz Body; Medium Notes: T=20.7C

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.97$ mho/m; $\epsilon_r = 53.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(4.02, 4.02, 4.02); 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

System check/Area Scan (61x61x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 16.7 mW/g

System check/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 84.4 V/m

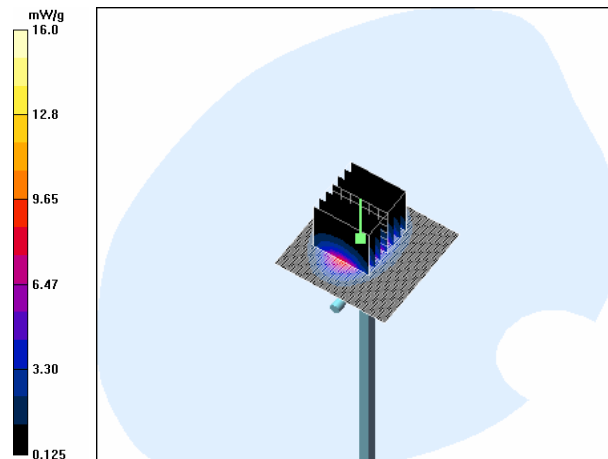
Peak SAR (extrapolated) = 30.1 W/kg

SAR(1 g) = 14.1 mW/g

SAR(10 g) = 6.56 mW/g

Power Drift = -0.067 dB

Maximum value of SAR (measured) = 16.0 mW/g



SAR Report

SAR_SD_0750_01

Applicant: Nokia Corporation

Type: RM-426

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APPENDIX B: MEASUREMENT SCANS

Date/Time: 2007-12-11 14:19:42

Test Laboratory: TCC Nokia

Type: RM-426; Serial: 004401012862302

Communication System: 2-slot GPRS850

Frequency: 848.8 MHz; Duty Cycle: 1:4.2

Medium: HSL850; Medium Notes: T=21.1C

Medium parameters used: $f = 849 \text{ MHz}$; $\sigma = 0.932 \text{ mho/m}$; $\epsilon_r = 41$; $\rho = 1000 \text{ kg/m}^3$

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: SAM; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Left Cheek - High/Area Scan (51x91x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 1.04 mW/g

Left Cheek - High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 25.3 V/m

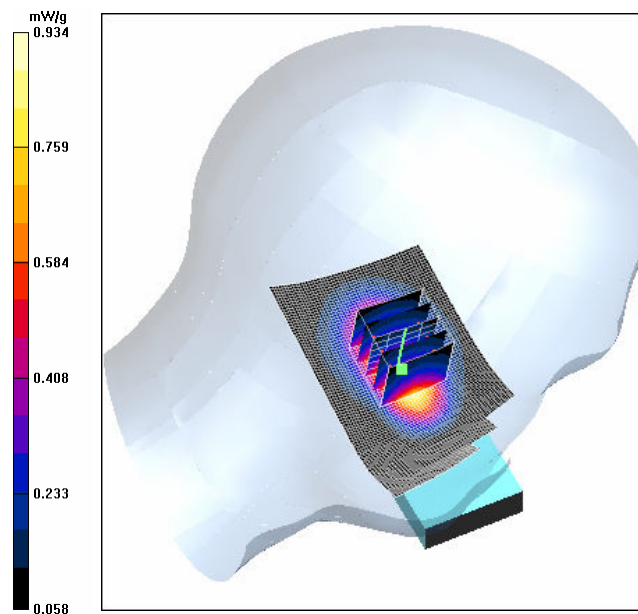
Peak SAR (extrapolated) = 1.20 W/kg

SAR(1 g) = 0.883 mW/g

SAR(10 g) = 0.594 mW/g

Power Drift = -0.072 dB

Maximum value of SAR (measured) = 0.934 mW/g



SAR Report

SAR_SD_0750_01

Applicant: Nokia Corporation

Type: RM-426

Copyright © 2008 TCC Nokia

Date/Time: 2007-12-11 15:52:58

Test Laboratory: TCC Nokia

Type: RM-426; Serial: 004401012862302

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: T=21.1C

Medium parameters used: $f = 835$ MHz; $\sigma = 0.922$ mho/m; $\epsilon_r = 41.1$; $\rho = 1000$ 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: SAM; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

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

Maximum value of SAR (interpolated) = 1.19 mW/g

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

Reference Value = 26.3 V/m

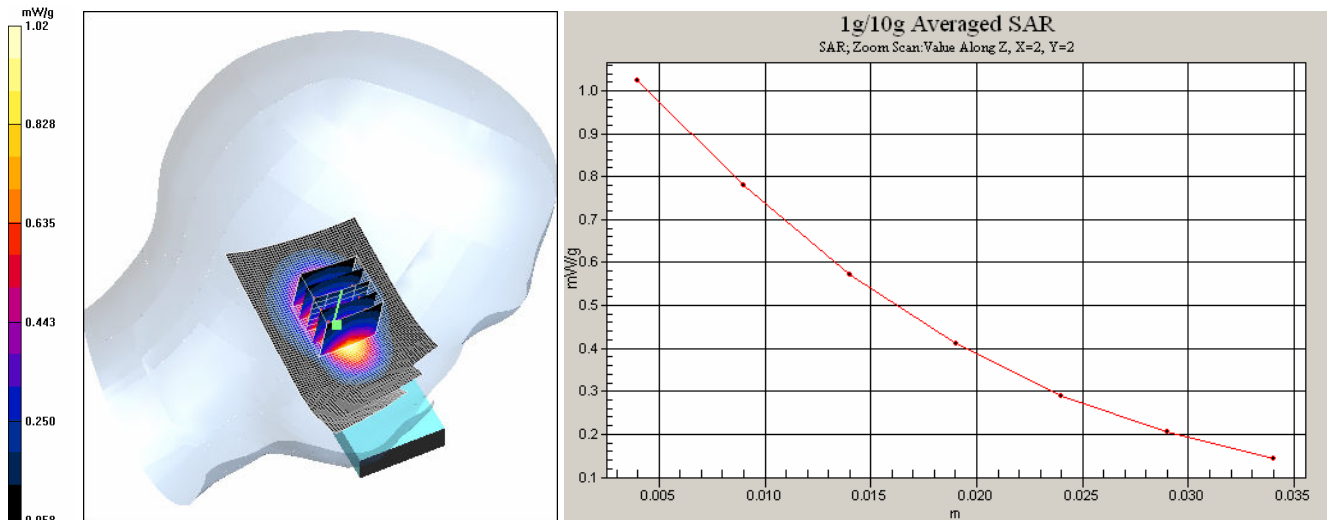
Peak SAR (extrapolated) = 1.36 W/kg

SAR(1 g) = 0.973 mW/g

SAR(10 g) = 0.642 mW/g

Power Drift = -0.011 dB

Maximum value of SAR (measured) = 1.02 mW/g



SAR Report

SAR_SD_0750_01

Applicant: Nokia Corporation

Type: RM-426

Copyright © 2008 TCC Nokia

Date/Time: 2007-12-11 16:46:37

Test Laboratory: TCC Nokia

Type: RM-426; Serial: 004401012862302

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: T=21.5 C

Medium parameters used: $f = 835$ MHz; $\sigma = 0.922$ mho/m; $\epsilon_r = 41.1$; $\rho = 1000$ 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

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

Maximum value of SAR (interpolated) = 1.14 mW/g

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

Reference Value = 25.9 V/m

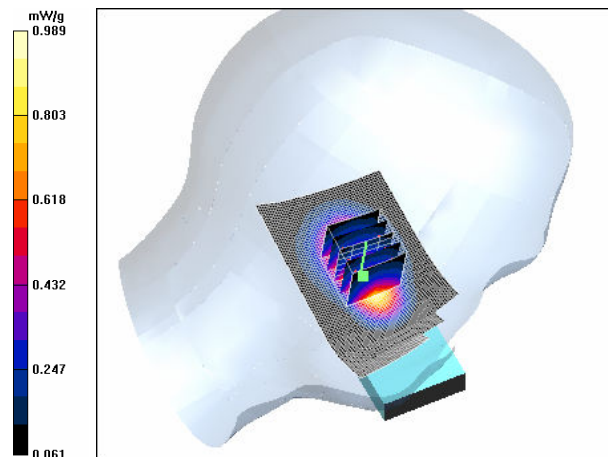
Peak SAR (extrapolated) = 1.27 W/kg

SAR(1 g) = 0.943 mW/g

SAR(10 g) = 0.626 mW/g

Power Drift = -0.049 dB

Maximum value of SAR (measured) = 0.989 mW/g



Date/Time: 2007-12-10 9:02:07

Test Laboratory: TCC Nokia

Type: RM-426; Serial: 004401012862302

Communication System: 3-slot GPRS1900

Frequency: 1850.2 MHz; Duty Cycle: 1:2.8

Medium: 1900MHz Head; Medium Notes: T=20.2C

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.39$ mho/m; $\epsilon_r = 39.2$; $\rho = 1000$ 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

Left Cheek - Low/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.944 mW/g

Left Cheek - Low/Zoom Scan 3 (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 19.6 V/m

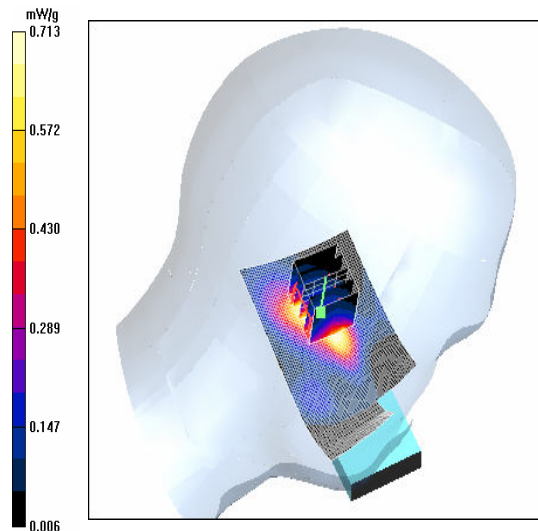
Peak SAR (extrapolated) = 1.05 W/kg

SAR(1 g) = 0.683 mW/g

SAR(10 g) = 0.410 mW/g

Power Drift = -0.0452

Maximum value of SAR (measured) = 0.727 mW/g



SAR Report

SAR_SD_0750_01

Applicant: Nokia Corporation

Type: RM-426

Copyright © 2008 TCC Nokia

Date/Time: 2007-12-19 14:49:00

Test Laboratory: TCC Nokia

Type: RM-426; Serial: 004401012862302

Communication System: 3-slot GPRS1900

Frequency: 1850.2 MHz; Duty Cycle: 1:2.8

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

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.39$ mho/m; $\epsilon_r = 38.8$; $\rho = 1000$ 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)
- 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

Right Cheek - Low/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.815 mW/g

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

Reference Value = 14.8 V/m

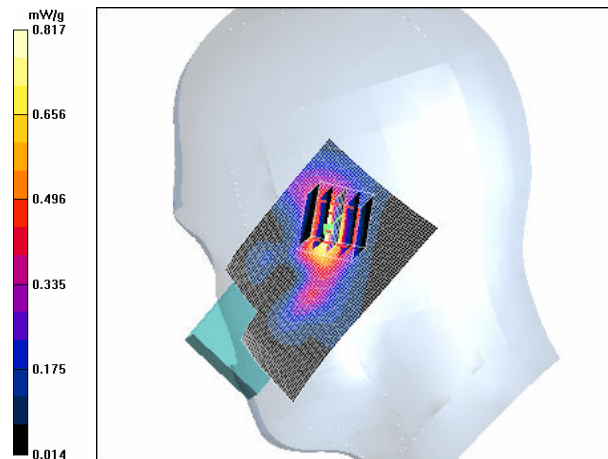
Peak SAR (extrapolated) = 1.20 W/kg

SAR(1 g) = 0.746 mW/g

SAR(10 g) = 0.420 mW/g

Power Drift = 0.076 dB

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



Date/Time: 2007-12-19 15:46:40

Test Laboratory: TCC Nokia

Type: RM-426; Serial: 004401012862302

Communication System: 3-slot GPRS1900

Frequency: 1850.2 MHz; Duty Cycle: 1:2.8

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

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.39$ mho/m; $\epsilon_r = 38.8$; $\rho = 1000$ 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

Right Cheek - Low - BT active/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.804 mW/g

Right Cheek - Low - BT active/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 14.2 V/m

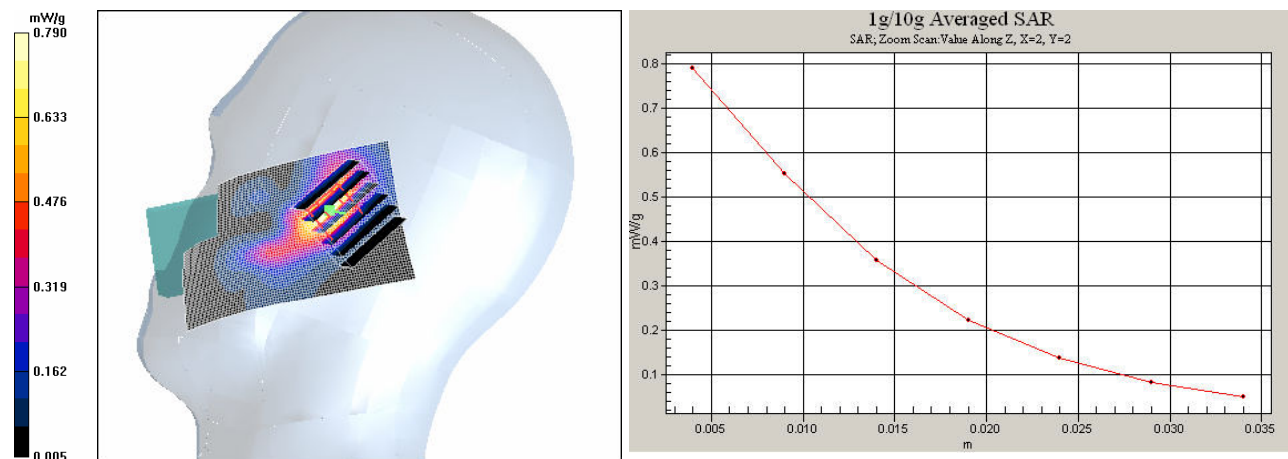
Peak SAR (extrapolated) = 1.24 W/kg

SAR(1 g) = 0.749 mW/g

SAR(10 g) = 0.423 mW/g

Power Drift = 0.071 dB

Maximum value of SAR (measured) = 0.790 mW/g



SAR Report

SAR_SD_0750_01

Applicant: Nokia Corporation

Type: RM-426

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Date/Time: 2007-12-18 16:22:20

Test Laboratory: TCC Nokia

Type: RM-426; Serial: 004401012862302

Communication System: WLAN2450

Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: 2400MHz Head; Medium Notes: T=20.5C

Medium parameters used: $f = 2462$ MHz; $\sigma = 1.91$ mho/m; $\epsilon_r = 41$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(4.63, 4.63, 4.63); 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

Left Tilt - High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.385 mW/g

Left Tilt - High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 9.04 V/m

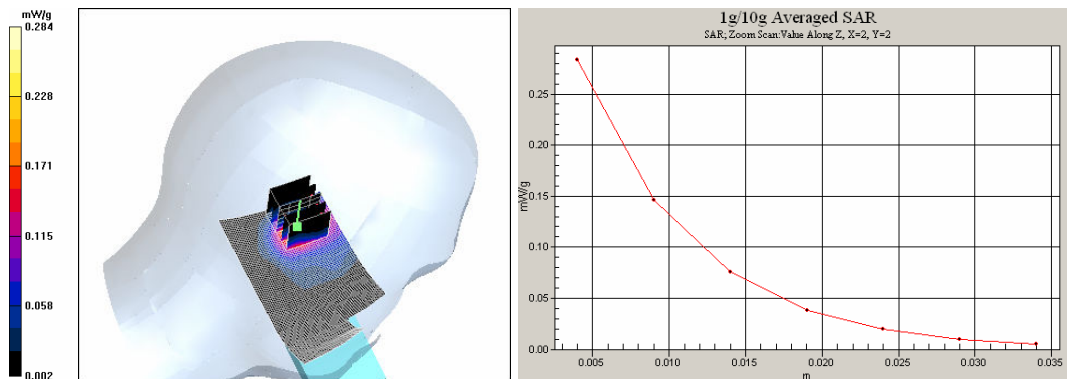
Peak SAR (extrapolated) = 0.646 W/kg

SAR(1 g) = 0.259 mW/g

SAR(10 g) = 0.121 mW/g

Power Drift = 0.457 dB

Maximum value of SAR (measured) = 0.284 mW/g



SAR Report

SAR_SD_0750_01

Applicant: Nokia Corporation

Type: RM-426

Copyright © 2008 TCC Nokia

Date/Time: 2007-12-13 11:47:13

Test Laboratory: TCC Nokia

Type: RM-426; Serial: 004401012862302

Communication System: 2-slot GPRS850

Frequency: 848.8 MHz; Duty Cycle: 1:4.2

Medium: HSL850; Medium Notes: T=21.2C

Medium parameters used: $f = 849$ MHz; $\sigma = 0.994$ mho/m; $\epsilon_r = 55.3$; $\rho = 1000$ 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 (Locations From Previous Scan Used))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

Body measurement – High - No accessory/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.589 mW/g

Body measurement - High - No accessory/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 16.3 V/m

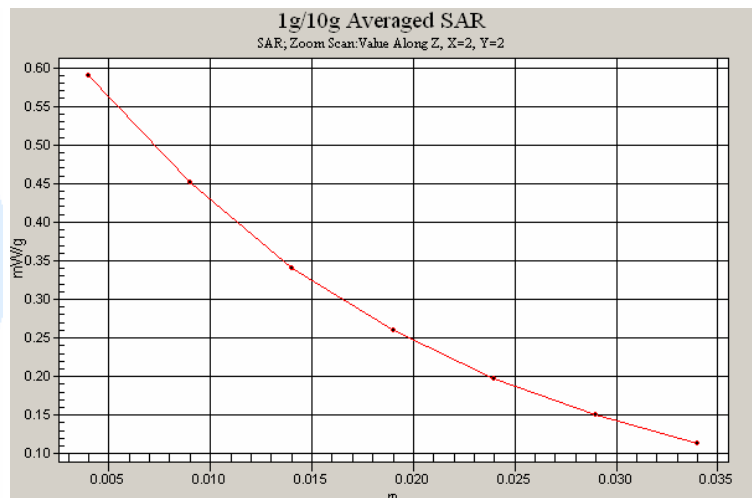
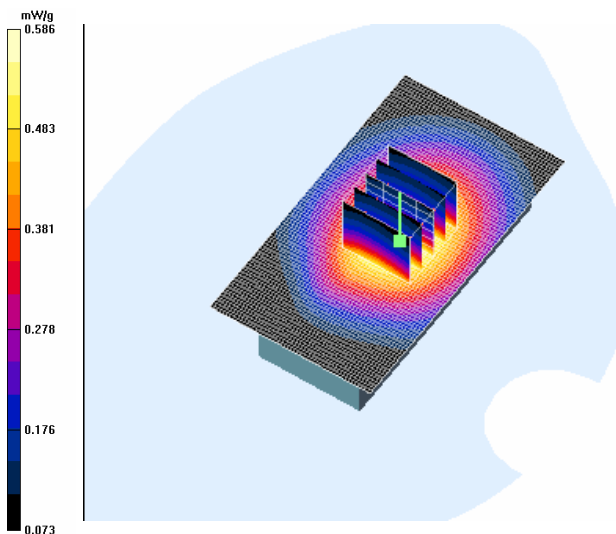
Peak SAR (extrapolated) = 0.706 W/kg

SAR(1 g) = 0.555 mW/g

SAR(10 g) = 0.408 mW/g

Power Drift = 0.027 dB

Maximum value of SAR (measured) = 0.586 mW/g



SAR Report

SAR_SD_0750_01

Applicant: Nokia Corporation

Type: RM-426

Copyright © 2008 TCC Nokia

Date/Time: 2007-12-13 14:34:14

Test Laboratory: TCC Nokia

Type: RM-426; Serial: 004401012862302

Communication System: 2-slot GPRS850

Frequency: 848.8 MHz; Duty Cycle: 1:4.2

Medium: HSL850; Medium Notes: T=21.4 C

Medium parameters used: $f = 849 \text{ MHz}$; $\sigma = 0.994 \text{ mho/m}$; $\epsilon_r = 55.3$; $\rho = 1000 \text{ kg/m}^3$

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 (Locations From Previous Scan Used))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 measurement – High - HS-47/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.306 mW/g

Body measurement - High - HS-47/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.4 V/m

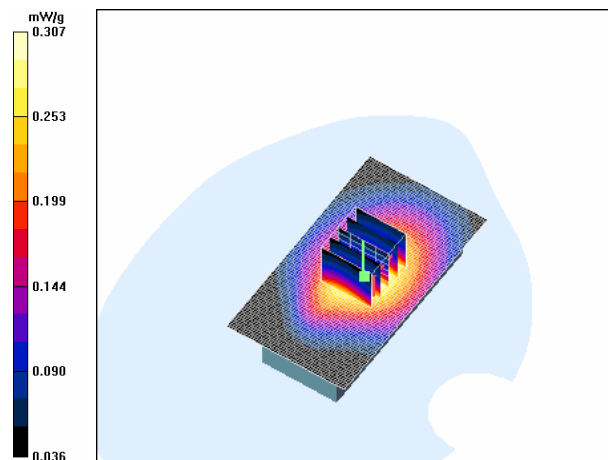
Peak SAR (extrapolated) = 0.373 W/kg

SAR(1 g) = 0.288 mW/g

SAR(10 g) = 0.211 mW/g

Power Drift = 0.048 dB

Maximum value of SAR (measured) = 0.307 mW/g



Date/Time: 2007-12-13 15:19:26

Test Laboratory: TCC Nokia

Type: RM-426; Serial: 004401012862302

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: T=21.4C

Medium parameters used: $f = 835$ MHz; $\sigma = 0.985$ mho/m; $\epsilon_r = 55.4$; $\rho = 1000$ 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 measurement – Middle – No accessory/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.500 mW/g

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

Reference Value = 14.9 V/m

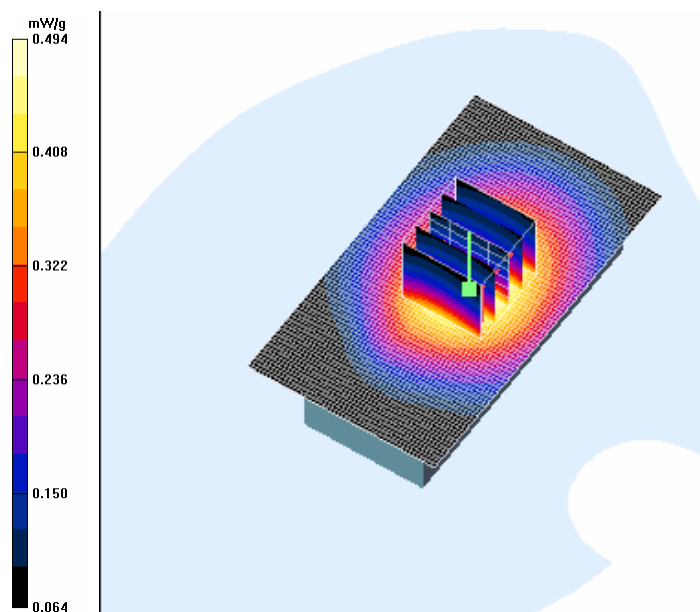
Peak SAR (extrapolated) = 0.597 W/kg

SAR(1 g) = 0.467 mW/g

SAR(10 g) = 0.343 mW/g

Power Drift = 0.008 dB

Maximum value of SAR (measured) = 0.494 mW/g



SAR Report

SAR_SD_0750_01

Applicant: Nokia Corporation

Type: RM-426

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Date/Time: 2007-12-13 16:33:07

Test Laboratory: TCC Nokia

Type: RM-426; Serial: 004401012862302

Communication System: WCDMA850

Frequency: 846.6 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: T=21.4 C

Medium parameters used: $f = 847$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 55.3$; $\rho = 1000$ 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 (Locations From Previous Scan Used))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 measurement – High - HS-47/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.340 mW/g

Body measurement - High - HS-47/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.1 V/m

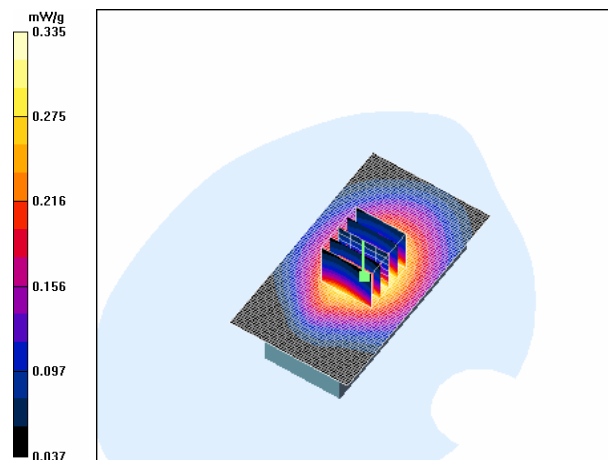
Peak SAR (extrapolated) = 0.404 W/kg

SAR(1 g) = 0.316 mW/g

SAR(10 g) = 0.230 mW/g

Power Drift = -0.118 dB

Maximum value of SAR (measured) = 0.335 mW/g



Date/Time: 2007-12-13 14:54:01

Test Laboratory: TCC Nokia

Type: RM-426; Serial: 004401012862302

Communication System: 2-slot GPRS850

Frequency: 848.8 MHz; Duty Cycle: 1:4.2

Medium: HSL850; Medium Notes: T=21.4 C

Medium parameters used: $f = 849 \text{ MHz}$; $\sigma = 0.994 \text{ mho/m}$; $\epsilon_r = 55.3$; $\rho = 1000 \text{ kg/m}^3$

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 (Locations From Previous Scan Used))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 measurement – High - No accessory - BT active/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.587 mW/g

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

Reference Value = 16.1 V/m

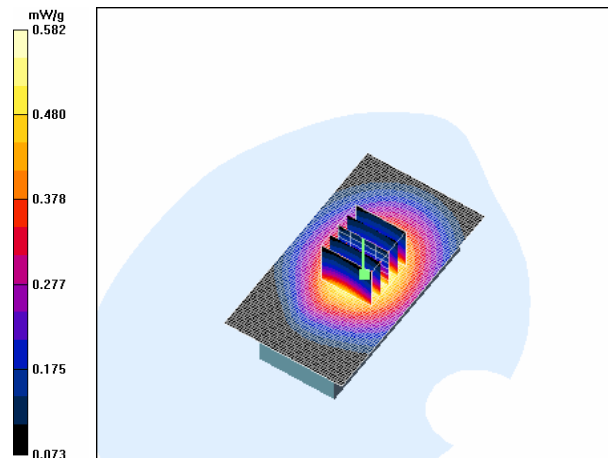
Peak SAR (extrapolated) = 0.691 W/kg

SAR(1 g) = 0.550 mW/g

SAR(10 g) = 0.405 mW/g

Power Drift = -0.008 dB

Maximum value of SAR (measured) = 0.582 mW/g



SAR Report

SAR_SD_0750_01

Applicant: Nokia Corporation

Type: RM-426

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Date/Time: 2007-12-07 7:54:57

Test Laboratory: TCC Nokia

Type: RM-426; Serial: 004401012862302

Communication System: 3-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:2.8

Medium: 1900MHz Body; Medium Notes: T=20.6C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.55$ mho/m; $\epsilon_r = 53.3$; $\rho = 1000$ 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 measurement – Middle – No accessory/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.685 mW/g

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

Reference Value = 20.2 V/m

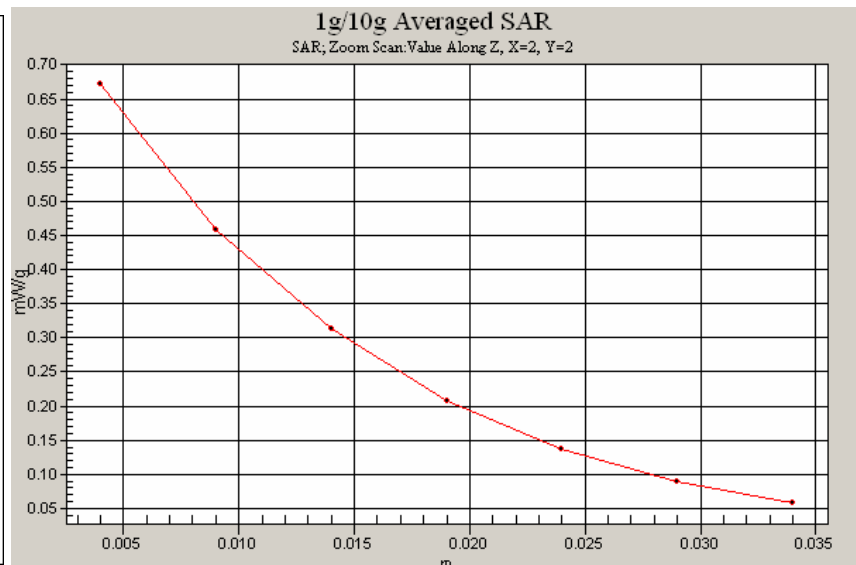
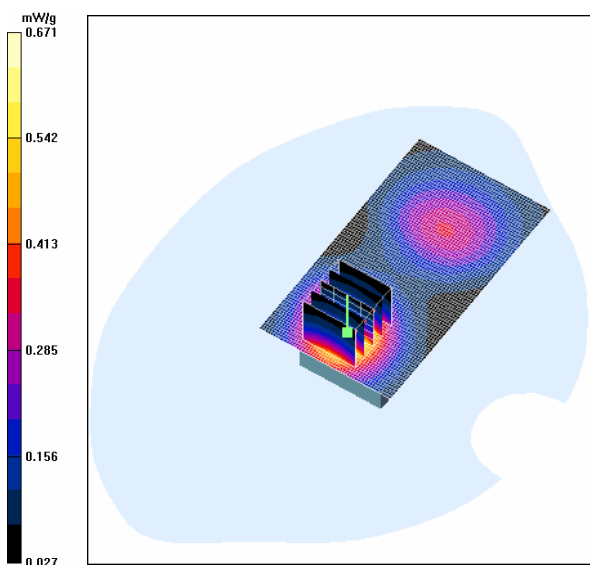
Peak SAR (extrapolated) = 0.911 W/kg

SAR(1 g) = 0.618 mW/g

SAR(10 g) = 0.392 mW/g

Power Drift = 0.809 dB

Maximum value of SAR (measured) = 0.671 mW/g



SAR Report

SAR_SD_0750_01

Applicant: Nokia Corporation

Type: RM-426

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Date/Time: 2007-12-07 8:45:34

Test Laboratory: TCC Nokia

Type: RM-426; Serial: 004401012862302

Communication System: 3-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:2.8

Medium: 1900MHz Body; Medium Notes: T=21.0C

Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.55 \text{ mho/m}$; $\epsilon_r = 53.3$; $\rho = 1000 \text{ kg/m}^3$

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 measurement - Middle - HS-47/Area Scan (51x91x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.462 mW/g

Body measurement - Middle - HS-47/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 18.2 V/m

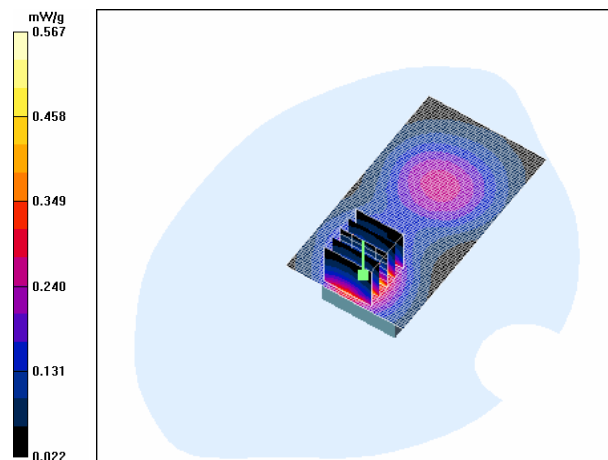
Peak SAR (extrapolated) = 0.785 W/kg

SAR(1 g) = 0.528 mW/g

SAR(10 g) = 0.333 mW/g

Power Drift = -0.325 dB

Maximum value of SAR (measured) = 0.567 mW/g



SAR Report

SAR_SD_0750_01

Applicant: Nokia Corporation

Type: RM-426

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Date/Time: 2007-12-07 11:07:32

Test Laboratory: TCC Nokia

Type: RM-426; Serial: 004401012862302

Communication System: 3-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:2.8

Medium: 1900MHz Body; Medium Notes: T=21.0C

Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.55 \text{ mho/m}$; $\epsilon_r = 53.3$; $\rho = 1000 \text{ kg/m}^3$

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 measurement - Middle - BT active – No accessory/Area Scan (51x91x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.618 mW/g

Body measurement - Middle - BT active – No accessory/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

$dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 21.4 V/m

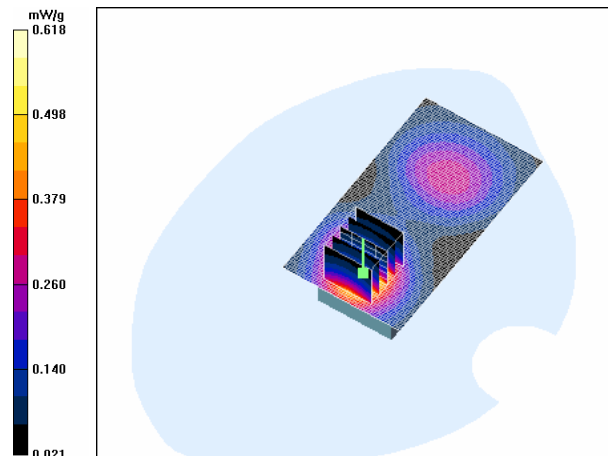
Peak SAR (extrapolated) = 0.820 W/kg

SAR(1 g) = 0.561 mW/g

SAR(10 g) = 0.356 mW/g

Power Drift = -0.042 dB

Maximum value of SAR (measured) = 0.611 mW/g



Date/Time: 2007-12-12 11:04:07

Test Laboratory: TCC Nokia

Type: RM-426; Serial: 004401012862302

Communication System: WLAN2450

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: 2450MHz Body; Medium Notes: T=20.7

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.95$ mho/m; $\epsilon_r = 53.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(4.02, 4.02, 4.02); 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 measurement - Middle - No accessory/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.057 mW/g

Body measurement - Middle - No accessory/Zoom Scan 2 (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.29 V/m

Peak SAR (extrapolated) = 0.107 W/kg

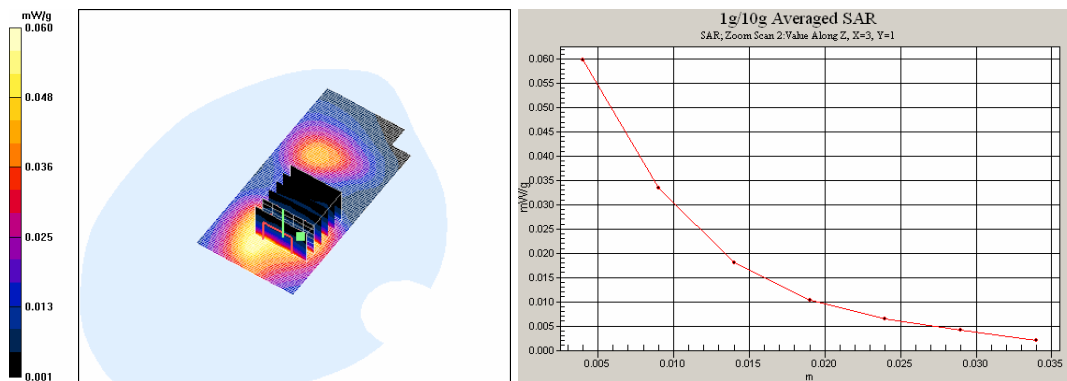
SAR(1 g) = 0.055 mW/g

SAR(10 g) = 0.032 mW/g

Power Drift = -0.098 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) = 0.060 mW/g



SAR Report

SAR_SD_0750_01

Applicant: Nokia Corporation

Type: RM-426

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Date/Time: 2007-12-12 13:14:27

Test Laboratory: TCC Nokia

Type: RM-426; Serial: 004401012862302

Communication System: WLAN2450

Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: 2450MHz Body; Medium Notes: T=20.7

Medium parameters used: $f = 2462$ MHz; $\sigma = 1.99$ mho/m; $\epsilon_r = 53.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(4.02, 4.02, 4.02); 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 measurement - High - HS-47/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.017 mW/g

Body measurement - High - HS-47/Zoom Scan 2 (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.01 V/m

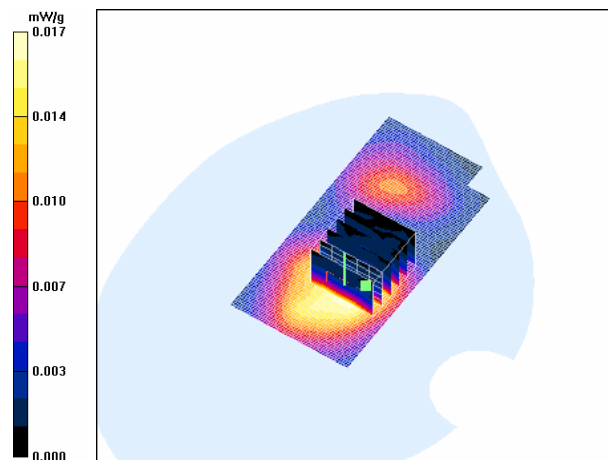
Peak SAR (extrapolated) = 0.031 W/kg

SAR(1 g) = 0.016 mW/g

SAR(10 g) = 0.0098 mW/g

Power Drift = 0.052 dB

Maximum value of SAR (measured) = 0.017 mW/g



SAR Report

SAR_SD_0750_01

Applicant: Nokia Corporation

Type: RM-426

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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-426

SAR Report

SAR_SD_0750_01

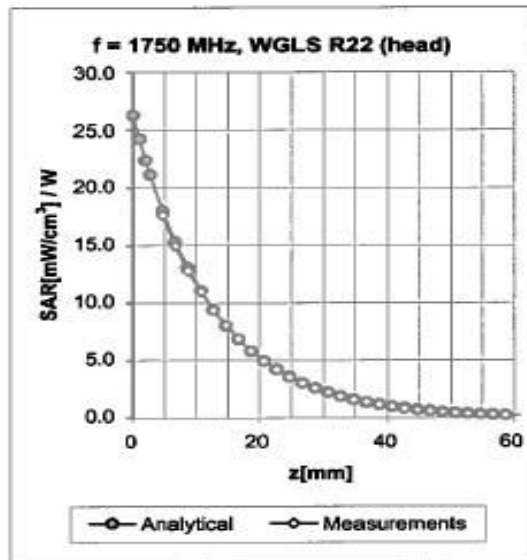
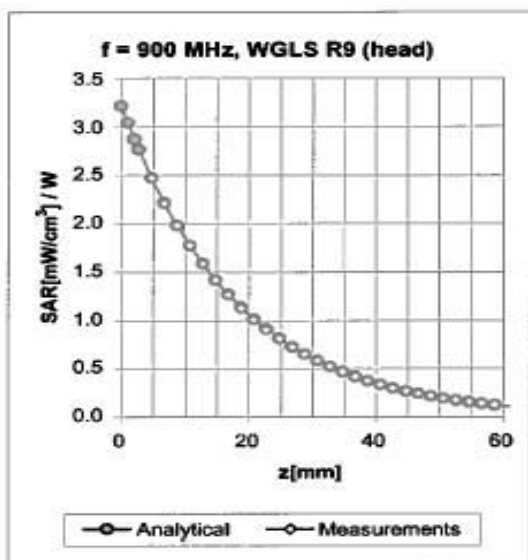
Applicant: Nokia Corporation

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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

SAR_SD_0750_01

Applicant: Nokia Corporation

Type: RM-426

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**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: **ET3-1505_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

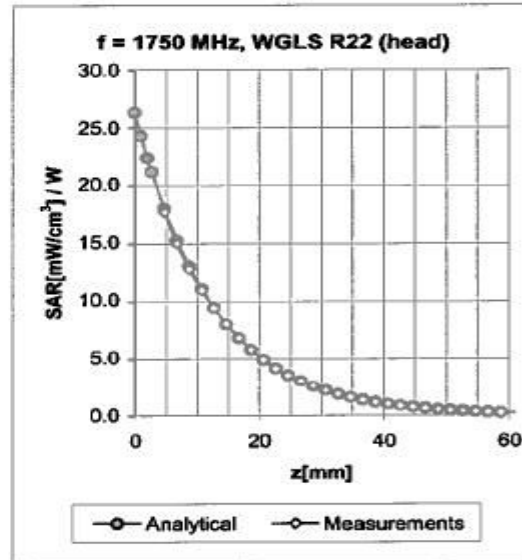
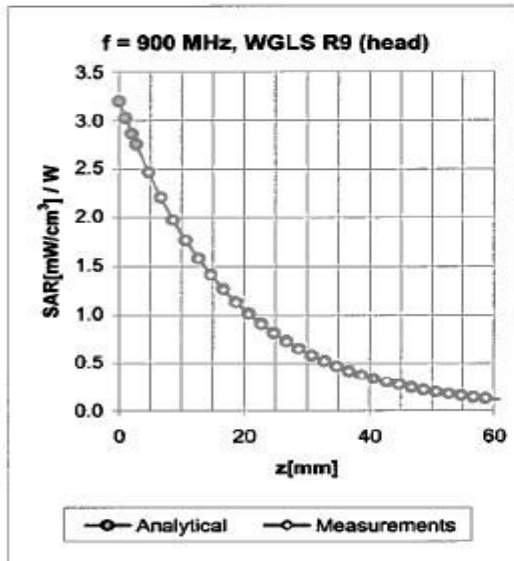
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390595	18-Oct-01 (SPEAG, in house check Oct-06)	In house check: Oct-07

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

Issued: August 29, 2007

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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
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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 $(22 \pm 3)^{\circ}\text{C}$ and humidity $< 70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter 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

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

Issued: November 23, 2006

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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:

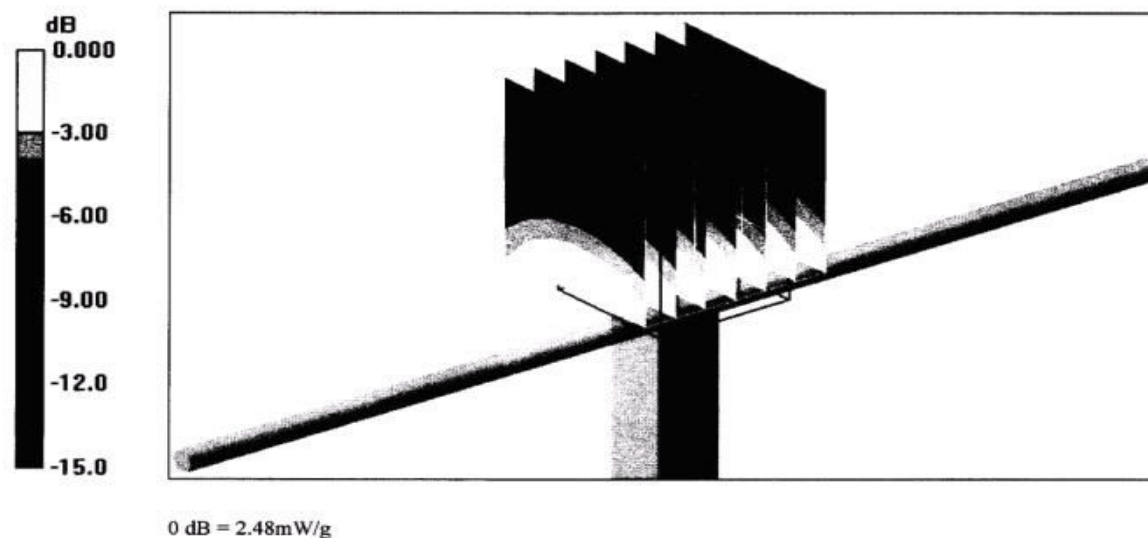
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

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:

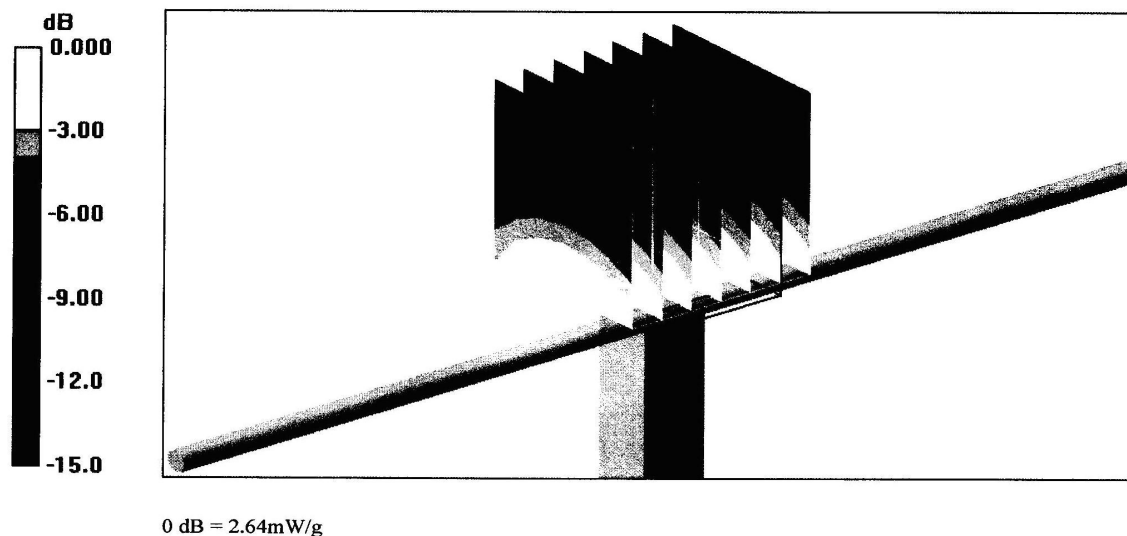
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

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



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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

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

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:

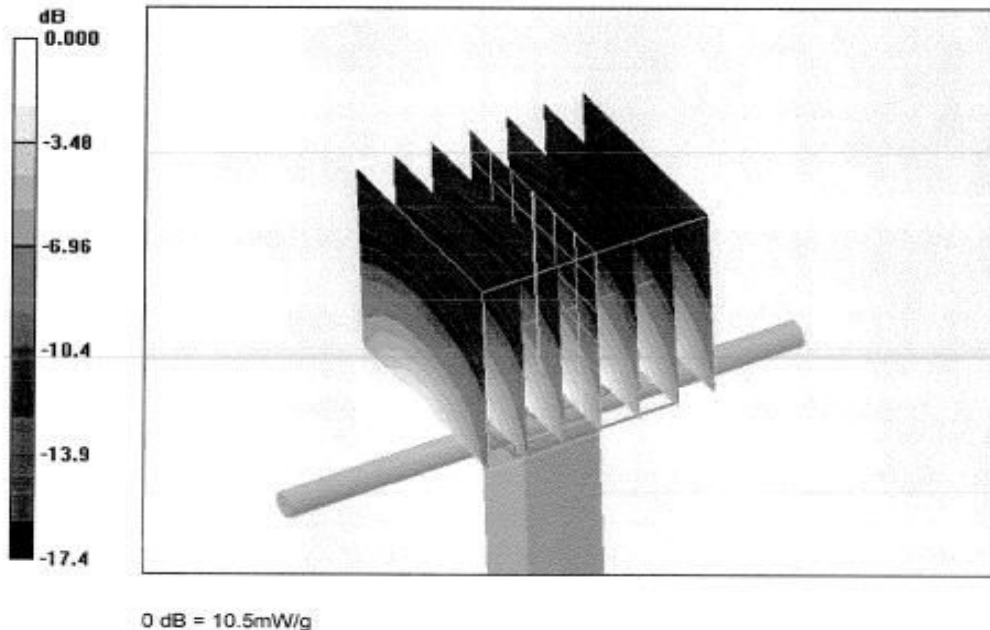
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

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:

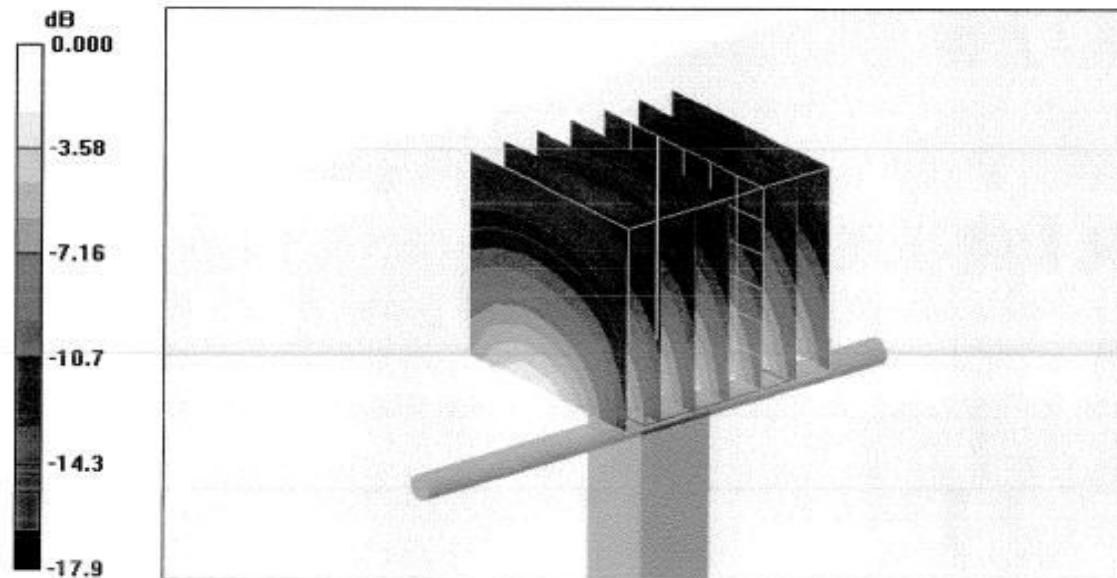
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

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

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Accreditation No.: **SCS 108**

Client **Nokia SD TCC**

Certificate No: **D2450V2-757_Sep06**

CALIBRATION CERTIFICATE

Object **D2450V2 - SN: 757**

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

Calibration date: **September 14, 2006**

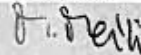
Condition of the calibrated item **In Tolerance**

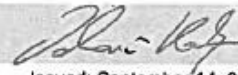
This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
 The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature $(22 \pm 3)^{\circ}\text{C}$ and humidity $< 70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter 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 ES3DV2	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: **Mike Meili** **Function** Laboratory Technician **Signature** 

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

Issued: September 14, 2006

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DASY4 Validation Report for Head TSL

Date/Time: 14.09.2006 12:29:34

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN757

Communication System: CW-2450; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: HSL U10 BB_060425;

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.78$ mho/m; $\epsilon_r = 37.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV2 - SN3025 (HF); ConvF(4.4, 4.4, 4.4); 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 2/Zoom Scan (7x7x7)/Cube 0:

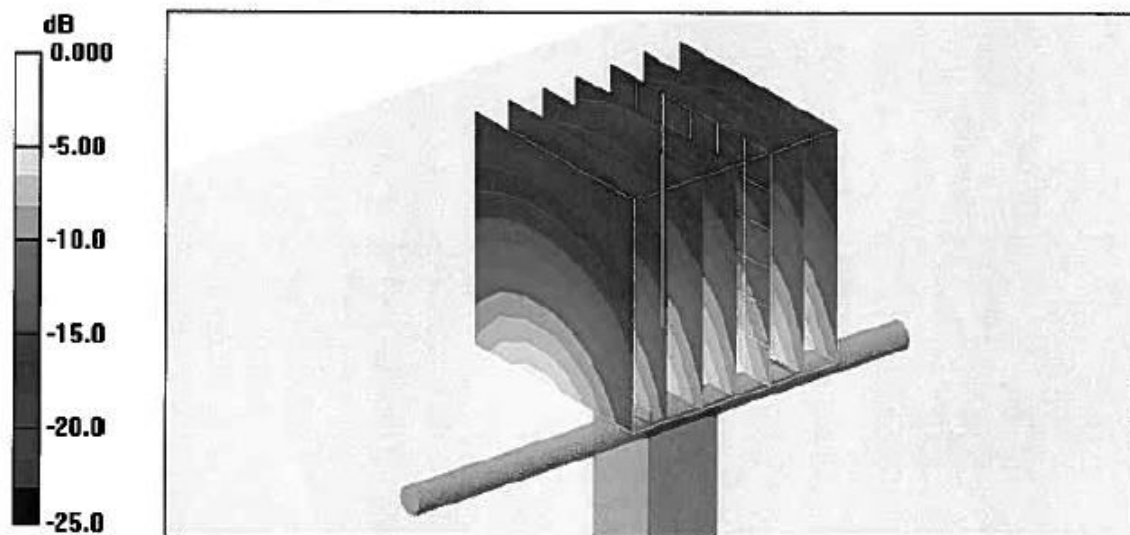
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 89.8 V/m; Power Drift = 0.037 dB

Peak SAR (extrapolated) = 28.3 W/kg

SAR(1 g) = 13.5 mW/g; SAR(10 g) = 6.29 mW/g

Maximum value of SAR (measured) = 15.1 mW/g



0 dB = 15.1mW/g

DASY4 Validation Report for Body TSL

Date/Time: 14.09.2006 14:54:20

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN757

Communication System: CW-2450; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: MSL U10;

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.96$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV2 - SN3025 (HF); ConvF(4.06, 4.06, 4.06); Calibrated: 28.10.2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 5.0 (back); 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:

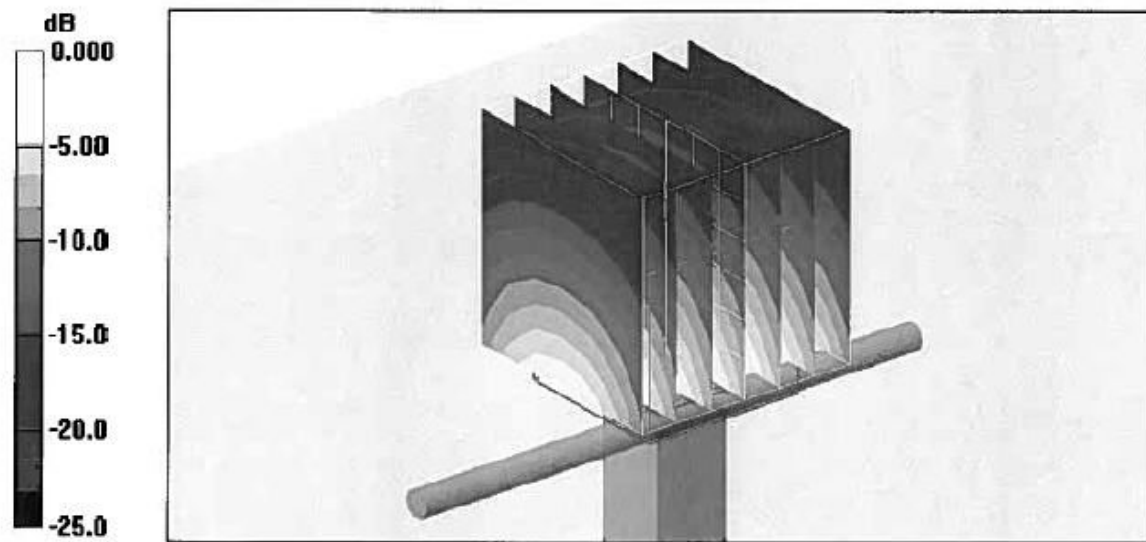
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 89.9 V/m; Power Drift = -0.011 dB

Peak SAR (extrapolated) = 29.8 W/kg

SAR(1 g) = 13.7 mW/g; SAR(10 g) = 6.32 mW/g

Maximum value of SAR (measured) = 15.6 mW/g



0 dB = 15.6mW/g