

SAR Compliance Test Report

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Measurements made by:	Jose Gomez		
Tested device:	RH-108		
FCC ID:	QMNRH-108	IC:	661X-RH108
Supplement reports:	WR1192.003_2		
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 D. Gomez
Certification Test Engineer

2007-07-26

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1. SUMMARY OF SAR TEST REPORT

1.1 Test Details

Period of test	2007-07-23 to 2007-07-25
SN, HW and SW numbers of tested device	SN: A00000011E6E56, HW: 2001, SW: SH_0240B_GEN, DUT: 1
Batteries used in testing	BL-5B, DUT: 2
Headsets used in testing	HS-9, DUT: 3
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
CDMA800	777 / 848.31	24.05 dBm	Right, Cheek	1.01W/kg	1.13W/kg	1.6 W/kg	PASSED
CDMA1900	25 / 1851.25	23.47 dBm	Right, Tilt	1.14W/Kg	1.28W/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
CDMA800	1013 / 824.70	24.61 dBm	2.2cm	0.559W/kg	0.63W/kg	1.6 W/kg	PASSED
CDMA1900	25 / 1851.25	23.47 dBm	2.2cm	0.569W/kg	0.64W/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	0.24dB

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)
CDMA	800 1900	QPSK	1	824 – 849 1850 – 1910

This is a CDMA2000 1x device.

2.1 Description of the Antenna

The device has an internal antenna.

3. TEST CONDITIONS

3.1 Temperature and Humidity

Ambient temperature (°C):	21.1 -21.6
Ambient humidity (RH %):	43 - 46

3.2 Test Signal, Frequencies and Output Power

The device was put into operation by using call tester.

Communication between the device and the call tester was established by air link

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

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

4. DESCRIPTION OF THE TEST EQUIPMENT

4.1 Measurement System and Components

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

The following table lists calibration dates of SPEAG components:

Test Equipment	Serial Number	Calibration interval	Calibration expiry
DAE 3	604	12 months	2008-11
E-field Probe ET3DV6	1505	12 months	2008-09
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	Agilent E4432B	US 40052231	24 months	2008-05
Amplifier	Milmega AS0825-20L	1009777	-	-
Power Meter	Agilent E4417A	GB41290918	12 months	2007-11
Power Sensor	Agilent E9327A	US 40411295	12 months	2008-04
Call Tester	R&S CMU200	106232	24 months	2008-03
Vector Network Analyzer	Agilent 8753ES	US39174327	12 months	2008-05
Dielectric Probe Kit	Agilent 85070D	US 01440165	-	-

4.1.1 Isotropic E-field Probe Type ET3DV6

Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection system Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., butyl diglycol)
Calibration	Calibration certificate in Appendix C
Frequency	10 MHz to 3 GHz (dosimetry); Linearity: ± 0.2 dB (30 MHz to 3 GHz)
Optical Surface Detection	± 0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.4 dB in HSL (rotation normal to probe axis)
Dynamic Range	5 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	39.74	55.97
HEC	0.25	1.21
Sugar	58.31	41.76
Preservative	0.15	0.27
Salt	1.55	0.79

1900MHz band

Ingredient	Head (% by weight)	Body (% by weight)
Deionised Water	54.50	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			
	2007-07-24	2.51	42.5	0.92	21.1
1900	Reference result	9.38	38.6	1.41	
	$\pm 10\%$ window	8.44 - 10.32			
	2007-07-23	10.3	39.7	1.46	21.6

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			
	2007-07-25	2.47	53.2	0.96	21.1
1900	Reference result	10.1	52.6	1.56	
	$\pm 10\%$ window	9.1 - 11.1			
	2007-07-24	9.95	53.2	1.58	21.1

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	
	2007-07-24	42.5	0.92	21.1
1880	Recommended value	40.0	1.40	
	$\pm 5\%$ window	38.0 – 42.0	1.33 – 1.47	
	2007-07-23	39.8	1.44	21.6

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	
	2007-07-25	53.2	0.96	21.1
1880	Recommended value	53.3	1.52	
	$\pm 5\%$ window	50.6 – 56.0	1.44 – 1.60	
	2007-07-24	53.3	1.57	21.1

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_i	$G_i \cdot u_i$ (%)	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:

800MHz Head SAR results

Option used	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch1013 824.70MHz	Ch384 836.52MHz	Ch777 848.31MHz
RC3 / S055	Power		24.61 dBm	24.35 dBm	24.05 dBm
CDMA800	Left	Cheek	0.842	0.826	0.922
		Tilt	-	0.474	-
	Right	Cheek	0.921	0.921	1.01
		Tilt	-	0.529	-

1900MHz Head SAR results

Option used	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch25 1851.25MHz	Ch600 1880.00MHz	Ch1175 1908.75MHz
RC3 / S055	Power		23.47 dBm	23.57 dBm	23.42 dBm
CDMA1900	Left	Cheek	-	0.639	-
		Tilt	0.927	0.818	0.864
	Right	Cheek	1.06	0.982	0.921
		Tilt	1.14	1.02	1.04

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

800MHz Body SAR results

Option used	Test configuration	SAR, averaged over 1g (W/kg)		
		Ch 1013 824.70 MHz	Ch 384 836.52 MHz	Ch 777 848.31 MHz
RC3 / S055	Power	24.61 dBm	24.35 dBm	24.05 dBm
CDMA 800	Without headset	0.559	0.501	0.509
	Headset HS-9	-	0.315	-

1900MHz Body SAR results

Option used	Test configuration	SAR, averaged over 1g (W/kg)		
		Ch25 1851.25MHz	Ch600 1880.00MHz	Ch1175 1908.75MHz
RC3 / S055	Power	23.47 dBm	23.57 dBm	23.42 dBm
CDMA1900	Without headset	-	0.446	-
	Headset HS-9	0.569	0.468	0.528

Plots of the Measurement scans are given in Appendix B.

APPENDIX A: SYSTEM CHECKING SCANS

Date/Time: 2007-07-24 6:29:55

Test Laboratory: TCC Nokia

Type: D835V2; Serial: 487

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Cellular Head; Medium Notes: Liquid Temperature; 21.1

Medium parameters used: $f = 835$ MHz; $\sigma = 0.918$ mho/m; $\epsilon_r = 42.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.7, 6.7, 6.7); Calibrated: 2006-09-19
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 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) = 2.71 mW/g

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

Reference Value = 56.2 V/m

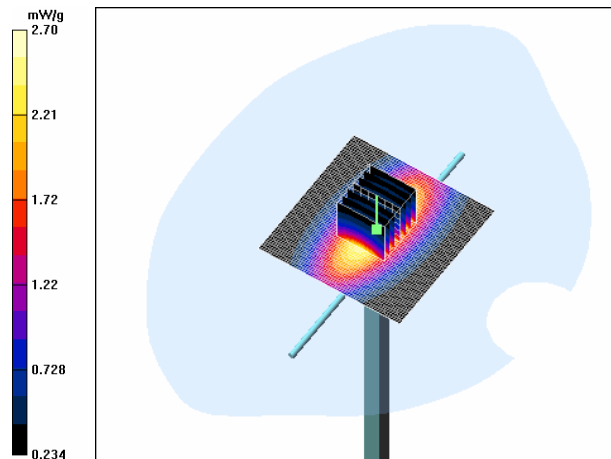
Peak SAR (extrapolated) = 3.77 W/kg

SAR(1 g) = 2.51 mW/g

SAR(10 g) = 1.63 mW/g

Power Drift = 0.005 dB

Maximum value of SAR (measured) = 2.70 mW/g



Date/Time: 2007-07-23 9:52:33

Test Laboratory: TCC Nokia

Type: D1900V2; Serial: 534

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: Cellular Head; Medium Notes: Liquid Temperature: 21.6

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.46$ mho/m; $\epsilon_r = 39.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(5.09, 5.09, 5.09); Calibrated: 2006-09-19
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 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) = 12.9 mW/g

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

Reference Value = 94.5 V/m

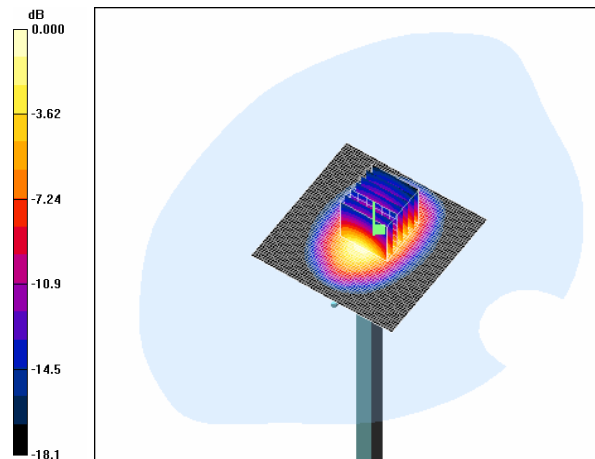
Peak SAR (extrapolated) = 17.5 W/kg

SAR(1 g) = 10.3 mW/g

SAR(10 g) = 5.45 mW/g

Power Drift = 0.026 dB

Maximum value of SAR (measured) = 11.7 mW/g



Date/Time: 2007-07-25 10:32:39

Test Laboratory: TCC Nokia

Type: D835V2; Serial: 487

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Cellular Body; Medium Notes: Liquid Temperature: 21.1

Medium parameters used: $f = 835$ MHz; $\sigma = 0.959$ mho/m; $\epsilon_r = 53.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.54, 6.54, 6.54); Calibrated: 2006-09-19
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 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) = 2.67 mW/g

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

Reference Value = 54.3 V/m

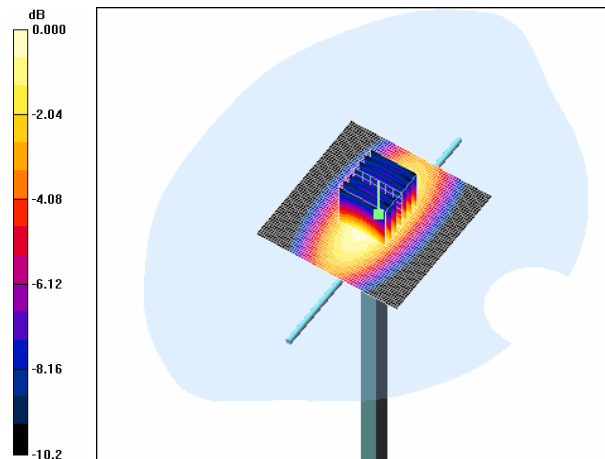
Peak SAR (extrapolated) = 3.64 W/kg

SAR(1 g) = 2.47 mW/g

SAR(10 g) = 1.62 mW/g

Power Drift = 0.048 dB

Maximum value of SAR (measured) = 2.68 mW/g



Date/Time: 2007-07-24 15:31:34

Test Laboratory: TCC Nokia

Type: D1900V2; Serial: 534

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: Cellular Body; Medium Notes: Liquid Temperature: 21.1

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.58$ mho/m; $\epsilon_r = 53.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(4.57, 4.57, 4.57); Calibrated: 2006-09-19
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 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) = 12.4 mW/g

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

Reference Value = 90.5 V/m

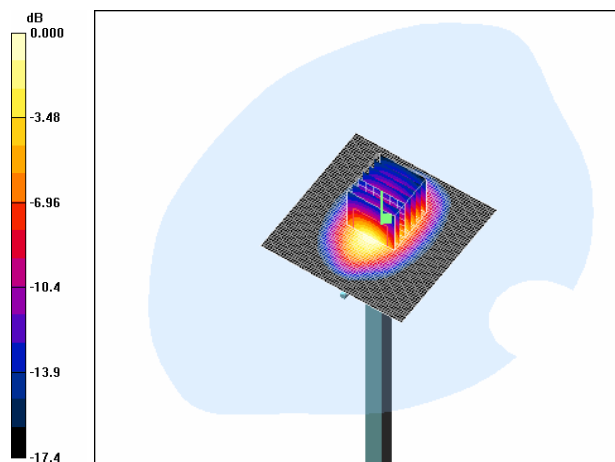
Peak SAR (extrapolated) = 16.4 W/kg

SAR(1 g) = 9.95 mW/g

SAR(10 g) = 5.33 mW/g

Power Drift = 0.012 dB

Maximum value of SAR (measured) = 11.4 mW/g



APPENDIX B: MEASUREMENT SCANS

Date/Time: 2007-07-24 7:40:45

Test Laboratory: TCC Nokia

Type: RH-108; Serial: A00000011E6E56

Communication System: CDMA800

Frequency: 848.31 MHz; Duty Cycle: 1:1

Medium: Cellular Head; Medium Notes: Liquid Temperature; 21.1

Medium parameters used (interpolated): $f = 848.31$ MHz; $\sigma = 0.932$ mho/m; $\epsilon_r = 42.3$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.7, 6.7, 6.7); Calibrated: 2006-09-19
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Left Cheek - High/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 24.4 V/m

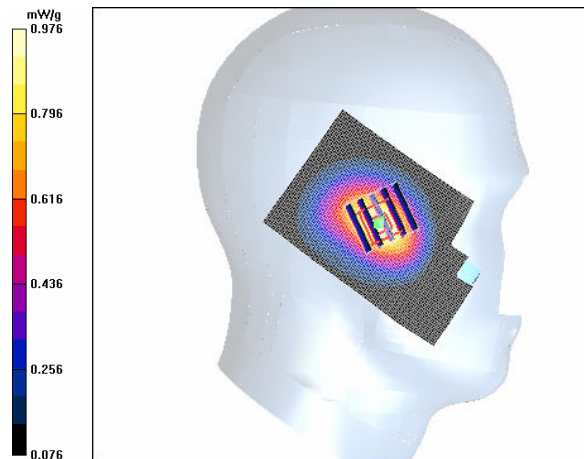
Peak SAR (extrapolated) = 1.32 W/kg

SAR(1 g) = 0.922 mW/g

SAR(10 g) = 0.613 mW/g

Power Drift = -0.080 dB

Maximum value of SAR (measured) = 0.976 mW/g



Date/Time: 2007-07-24 7:21:48

Test Laboratory: TCC Nokia

Type: RH-108; Serial: A00000011E6E56

Communication System: CDMA800

Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: Cellular Head; Medium Notes: Liquid Temperature; 21.1

Medium parameters used: $f = 837$ MHz; $\sigma = 0.922$ mho/m; $\epsilon_r = 42.5$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.7, 6.7, 6.7); Calibrated: 2006-09-19
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

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

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

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

Reference Value = 21.9 V/m

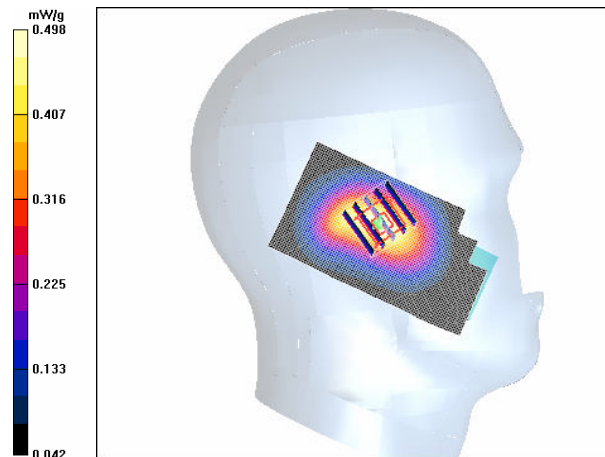
Peak SAR (extrapolated) = 0.685 W/kg

SAR(1 g) = 0.474 mW/g

SAR(10 g) = 0.319 mW/g

Power Drift = -0.148 dB

Maximum value of SAR (measured) = 0.498 mW/g



Date/Time: 2007-07-24 9:02:20

Test Laboratory: TCC Nokia

Type: RH-108; Serial: A00000011E6E56

Communication System: CDMA800

Frequency: 848.31 MHz; Duty Cycle: 1:1

Medium: Cellular Head; Medium Notes: Liquid Temperature; 21.1

Medium parameters used (interpolated): $f = 848.31$ MHz; $\sigma = 0.932$ mho/m; $\epsilon_r = 42.3$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.7, 6.7, 6.7); Calibrated: 2006-09-19
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Right Cheek - High/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.09 mW/g

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

Reference Value = 26.5 V/m

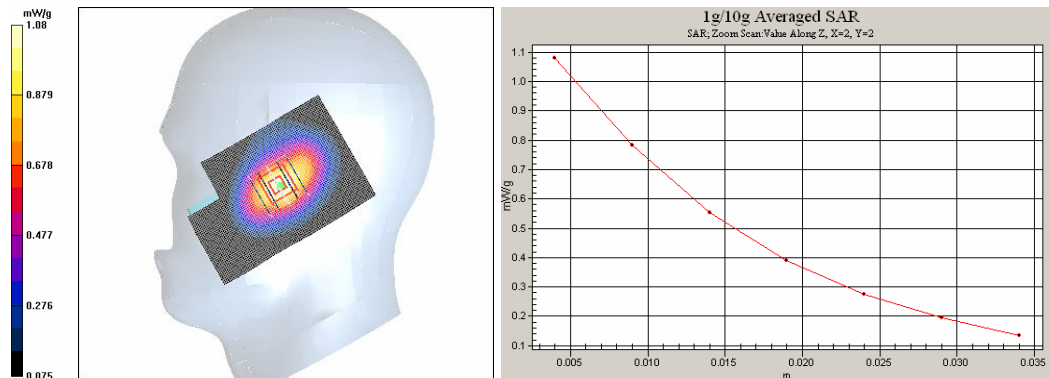
Peak SAR (extrapolated) = 1.42 W/kg

SAR(1 g) = 1.01 mW/g

SAR(10 g) = 0.666 mW/g

Power Drift = -0.151 dB

Maximum value of SAR (measured) = 1.08 mW/g



SAR Report

WR1192.002_2

Applicant: Nokia Corporation

Type: RH-108

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2007-07-24 9:23:43

Test Laboratory: TCC Nokia

Type: RH-108; Serial: A00000011E6E56

Communication System: CDMA800

Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: Cellular Head; Medium Notes: Liquid Temperature; 21.1

Medium parameters used: $f = 837$ MHz; $\sigma = 0.922$ mho/m; $\epsilon_r = 42.5$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.7, 6.7, 6.7); Calibrated: 2006-09-19
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

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

Maximum value of SAR (interpolated) = 0.588 mW/g

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

Reference Value = 23.4 V/m

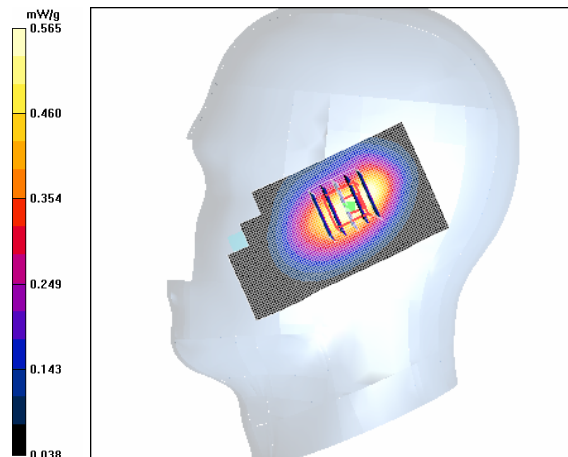
Peak SAR (extrapolated) = 0.826 W/kg

SAR(1 g) = 0.529 mW/g

SAR(10 g) = 0.350 mW/g

Power Drift = 0.039 dB

Maximum value of SAR (measured) = 0.565 mW/g



Date/Time: 2007-07-23 10:27:20

Test Laboratory: TCC Nokia

Type: RH-108; Serial: A00000011E6E56

Communication System: CDMA 1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: Cellular Head; Medium Notes: Liquid Temperature; 21.6

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.44$ mho/m; $\epsilon_r = 39.8$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(5.09, 5.09, 5.09); Calibrated: 2006-09-19
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM1; Type:Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Left Cheek – Middle/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.702 mW/g

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

Reference Value = 23.1 V/m

Peak SAR (extrapolated) = 1.02 W/kg

SAR(1 g) = 0.639 mW/g

SAR(10 g) = 0.360 mW/g

Power Drift = 0.058 dB

Maximum value of SAR (measured) = 0.701 mW/g

Left cheek/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.1 V/m

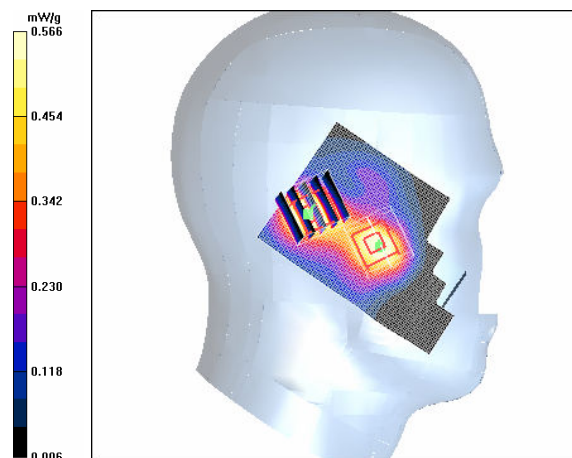
Peak SAR (extrapolated) = 0.781 W/kg

SAR(1 g) = 0.538 mW/g

SAR(10 g) = 0.328 mW/g

Power Drift = 0.058 dB

Maximum value of SAR (measured) = 0.566 mW/g



SAR Report

WR1192.002_2

Applicant: Nokia Corporation

Type: RH-108

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Date/Time: 2007-07-23 13:23:41

Test Laboratory: TCC Nokia

Type: RH-108; Serial: A00000011E6E56

Communication System: CDMA 1900

Frequency: 1851.25 MHz; Duty Cycle: 1:1

Medium: Cellular Head; Medium Notes: Liquid Temperature; 21.6

Medium parameters used (interpolated): $f = 1851.25$ MHz; $\sigma = 1.42$ mho/m; $\epsilon_r = 39.9$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(5.09, 5.09, 5.09); Calibrated: 2006-09-19
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM1; Type:Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

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

Maximum value of SAR (interpolated) = 1.07 mW/g

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

Reference Value = 27.1 V/m

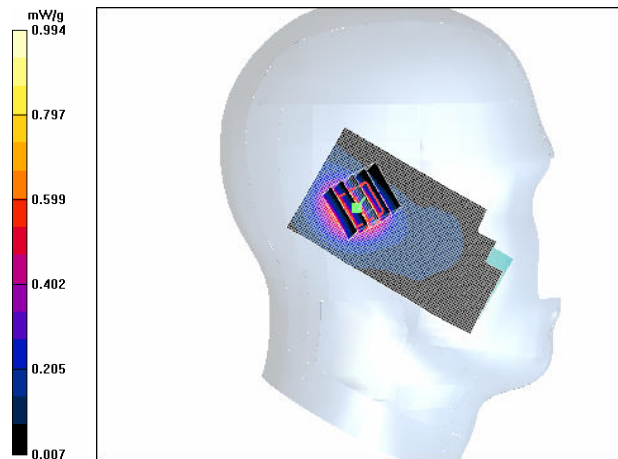
Peak SAR (extrapolated) = 1.51 W/kg

SAR(1 g) = 0.927 mW/g

SAR(10 g) = 0.506 mW/g

Power Drift = -0.157 dB

Maximum value of SAR (measured) = 0.994 mW/g



Date/Time: 2007-07-23 12:03:11

Test Laboratory: TCC Nokia

Type: RH-108; Serial: A00000011E6E56

Communication System: CDMA 1900

Frequency: 1851.25 MHz; Duty Cycle: 1:1

Medium: Cellular Head; Medium Notes: Liquid Temperature; 21.6

Medium parameters used (interpolated): $f = 1851.25$ MHz; $\sigma = 1.42$ mho/m; $\epsilon_r = 39.9$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(5.09, 5.09, 5.09); Calibrated: 2006-09-19
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM1; Type:Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Right Cheek - Low/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.27 mW/g

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

Reference Value = 25.4 V/m

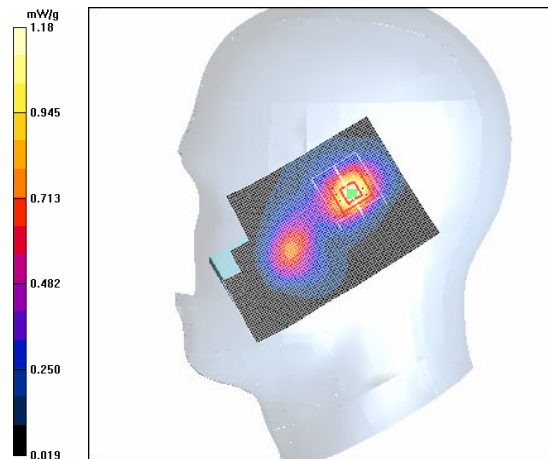
Peak SAR (extrapolated) = 1.74 W/kg

SAR(1 g) = 1.06 mW/g

SAR(10 g) = 0.572 mW/g

Power Drift = 0.024 dB

Maximum value of SAR (measured) = 1.18 mW/g



Date/Time: 2007-07-23 12:59:45

Test Laboratory: TCC Nokia

Type: RH-108; Serial: A00000011E6E56

Communication System: CDMA 1900

Frequency: 1851.25 MHz; Duty Cycle: 1:1

Medium: Cellular Head; Medium Notes: Liquid Temperature; 21.6

Medium parameters used (interpolated): $f = 1851.25$ MHz; $\sigma = 1.42$ mho/m; $\epsilon_r = 39.9$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(5.09, 5.09, 5.09); Calibrated: 2006-09-19
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM1; Type:Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

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

Maximum value of SAR (interpolated) = 1.31 mW/g

Right Tilt - Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 28.1 V/m

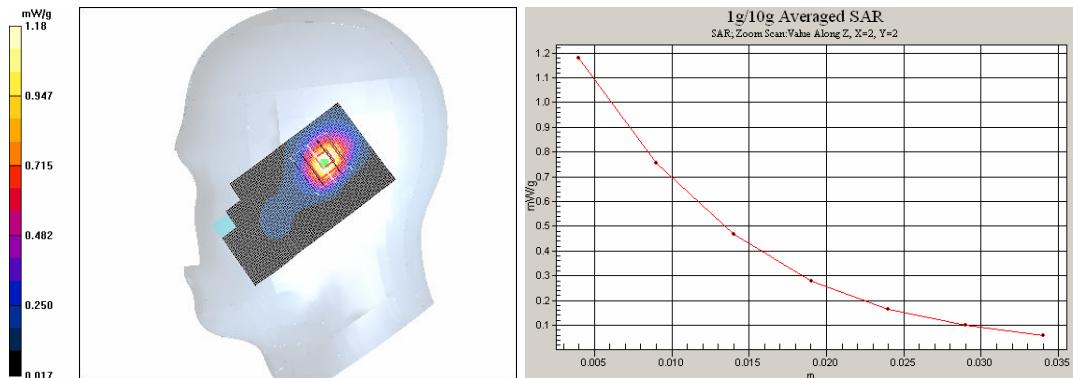
Peak SAR (extrapolated) = 1.92 W/kg

SAR(1 g) = 1.14 mW/g

SAR(10 g) = 0.606 mW/g

Power Drift = 0.003 dB

Maximum value of SAR (measured) = 1.18 mW/g



SAR Report

WR1192.002_2

Applicant: Nokia Corporation

Type: RH-108

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Date/Time: 2007-07-25 12:00:32

Test Laboratory: TCC Nokia

Type: RH-108; Serial: A00000011E6E56

Communication System: CDMA800

Frequency: 824.7 MHz; Duty Cycle: 1:1

Medium: Cellular Body; Medium Notes: Liquid temperature at 21.3 C

Medium parameters used: $f = 825$ MHz; $\sigma = 0.949$ mho/m; $\epsilon_r = 53.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(4.57, 4.57, 4.57); Calibrated: 2006-09-19
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM1; Type: SAM; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

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

Maximum value of SAR (interpolated) = 0.600 mW/g

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

Reference Value = 12.3 V/m

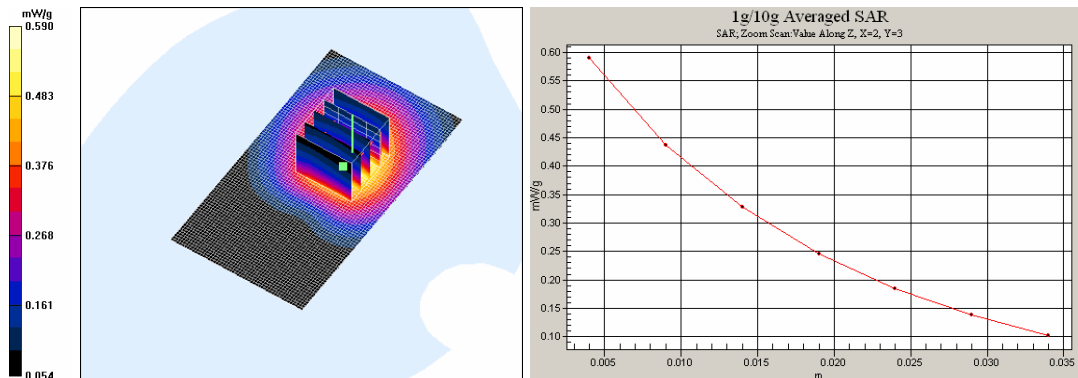
Peak SAR (extrapolated) = 0.748 W/kg

SAR(1 g) = 0.559 mW/g

SAR(10 g) = 0.399 mW/g

Power Drift = 0.028 dB

Maximum value of SAR (measured) = 0.590 mW/g



SAR Report

WR1192.002_2

Applicant: Nokia Corporation

Type: RH-108

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Date/Time: 2007-07-25 11:18:12

Test Laboratory: TCC Nokia

Type: RH-108; Serial: A00000011E6E56

Communication System: CDMA800

Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: Cellular Body; Medium Notes: Liquid temperature at 21.3 C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.961$ mho/m; $\epsilon_r = 53.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(4.57, 4.57, 4.57); Calibrated: 2006-09-19
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM1; Type: SAM; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

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

Maximum value of SAR (interpolated) = 0.345 mW/g

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

Reference Value = 10.2 V/m

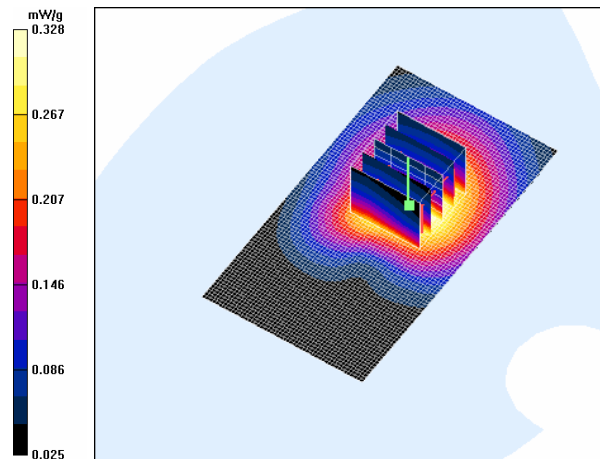
Peak SAR (extrapolated) = 0.430 W/kg

SAR(1 g) = 0.315 mW/g

SAR(10 g) = 0.224 mW/g

Power Drift = -0.025 dB

Maximum value of SAR (measured) = 0.328 mW/g



Date/Time: 2007-07-24 16:01:01 PM

Test Laboratory: TCC Nokia

Type: RH-108; Serial: A00000011E6E56

Communication System: CDMA 1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: Cellular Body; Medium Notes: Liquid temperature at 21.3 C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.57$ mho/m; $\epsilon_r = 53.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(4.57, 4.57, 4.57); Calibrated: 2006-09-19
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM1; Type: SAM; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

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

Maximum value of SAR (interpolated) = 0.489 mW/g

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

Reference Value = 17.3 V/m

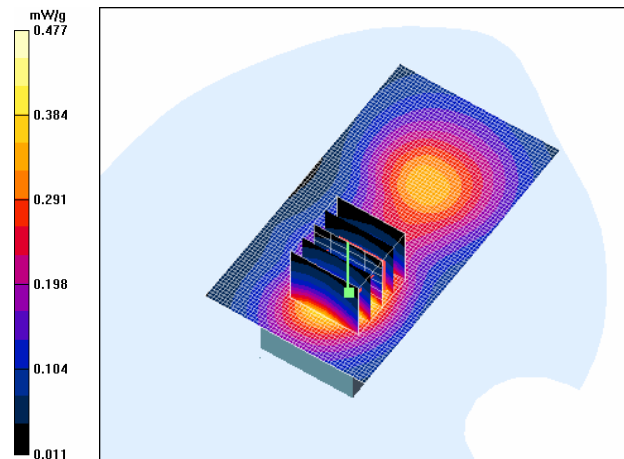
Peak SAR (extrapolated) = 0.628 W/kg

SAR(1 g) = 0.446 mW/g

SAR(10 g) = 0.282 mW/g

Power Drift = -0.164 dB

Maximum value of SAR (measured) = 0.477 mW/g



Date/Time: 2007-07-24 16:37:53

Test Laboratory: TCC Nokia

Type: RH-108; Serial: A00000011E6E56

Communication System: CDMA 1900

Frequency: 1851.25 MHz; Duty Cycle: 1:1

Medium: Cellular Body; Medium Notes: Liquid temperature at 21.3 C

Medium parameters used (interpolated): $f = 1851.25$ MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 53.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(4.57, 4.57, 4.57); Calibrated: 2006-09-19
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2006-11-13
- Phantom: SAM1; Type: SAM; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

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

Maximum value of SAR (interpolated) = 0.615 mW/g

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

Reference Value = 19.0 V/m

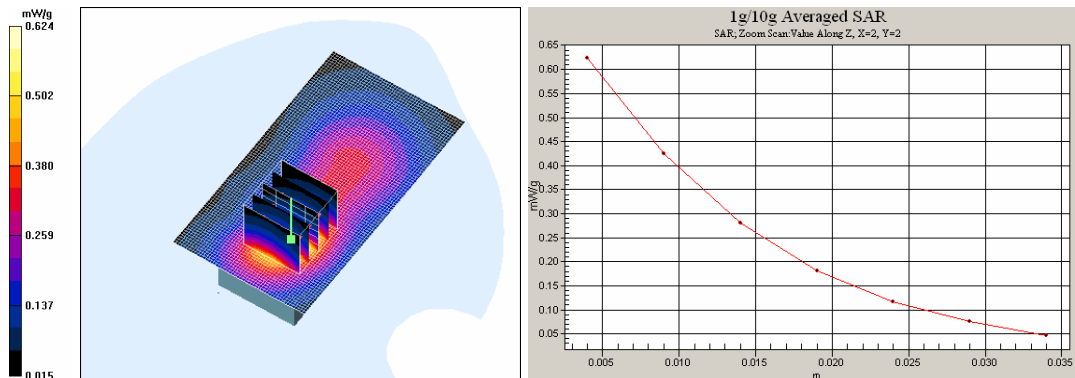
Peak SAR (extrapolated) = 0.820 W/kg

SAR(1 g) = 0.569 mW/g

SAR(10 g) = 0.355 mW/g

Power Drift = 0.072 dB

Maximum value of SAR (measured) = 0.624 mW/g



SAR Report

WR1192.002_2

Applicant: Nokia Corporation

Type: RH-108

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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 TX**

Certificate No: **ET3-1505_Sep06**

CALIBRATION CERTIFICATE																																																															
Object	ET3DV6 - SN:1505																																																														
Calibration procedure(s)	QA CAL-01.v5 Calibration procedure for dosimetric E-field probes																																																														
Calibration date:	September 19, 2006																																																														
Condition of the calibrated item	In Tolerance																																																														
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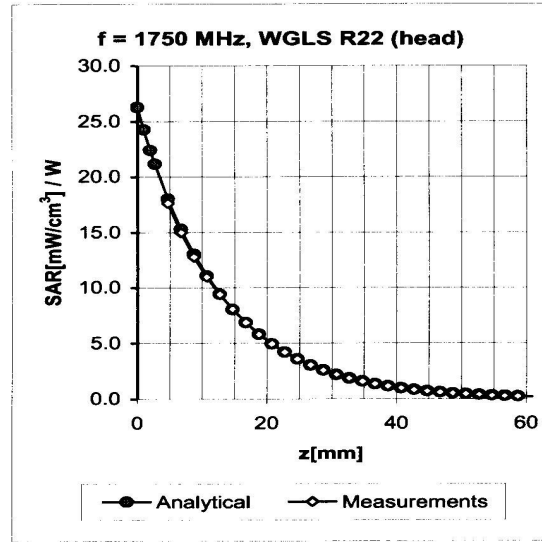
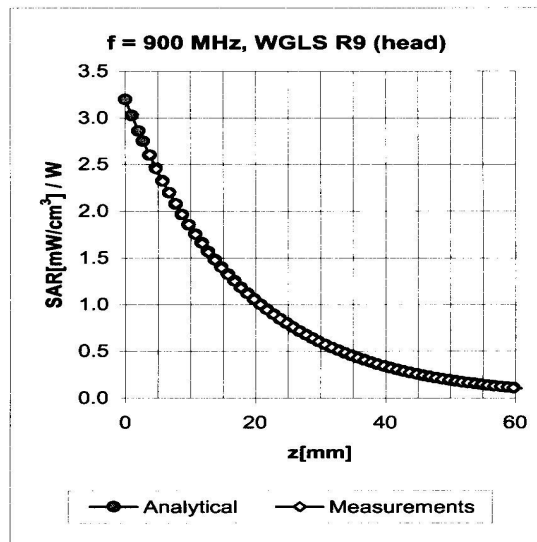
Certificate No: ET3-1505_Sep06

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ET3DV6 SN:1505

September 19, 2006

Conversion Factor Assessment



f [MHz]	Validity [MHz] ^c	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF	Uncertainty
835	± 50 / ± 100	Head	41.5 ± 5%	0.90 ± 5%	0.59	1.71	6.70	± 11.0% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.49	1.96	6.52	± 11.0% (k=2)
1750	± 50 / ± 100	Head	40.1 ± 5%	1.37 ± 5%	0.46	2.81	5.28	± 11.0% (k=2)
1900	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.49	2.89	5.09	± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.61	1.98	4.55	± 11.8% (k=2)
835	± 50 / ± 100	Body	55.2 ± 5%	0.97 ± 5%	0.46	2.04	6.54	± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.42	2.19	6.35	± 11.0% (k=2)
1750	± 50 / ± 100	Body	53.4 ± 5%	1.49 ± 5%	0.60	2.89	4.73	± 11.0% (k=2)
1900	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.60	2.83	4.57	± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.58	1.71	4.06	± 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
Approved by:	Katja Pokovic	Technical Manager	

Issued: November 23, 2006

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