

SAR Compliance Test Report

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Measurements made by:	Jose Gomez		
Tested device:	RM-347		
FCC ID:	QMNRM-347	IC:	661X-RM347
Supplement reports:	SD_SAR_0814_02		
Testing has been carried out in accordance with:	47CFR §2.1093 Radiofrequency Radiation Exposure Evaluation: Portable Devices FCC OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01) Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields RSS-102 Evaluation Procedure for Mobile and Portable Radio Transmitters with Respect to Health Canada's Safety Code 6 for Exposure of Humans to Radio Frequency Fields IEEE 1528 - 2003 IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Technique		
Documentation:	The documentation of the testing performed on the tested devices is archived for 15 years at TCC San Diego.		
Test results:	The tested device complies with the requirements in respect of all parameters subject to the test. The test results and statements relate only to the items tested. The test report shall not be reproduced except in full, without written approval of the laboratory.		

Date and signatures:

For the contents:


Jose Gomez
Certification Test Engineer

2008-04-02

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1. SUMMARY OF SAR TEST REPORT

1.1 Test Details

Period of test	2008-03-25 to 2008-03-28
SN, HW and SW numbers of tested device	SN: A00000011E5A2A, HW: 6000, SW: BL_4047T02_VZW_203, DUT: 30528
Batteries used in testing	BL-5C, DUT: 30529, 30530 BL-10C, DUT: 3044, 3045
Headsets used in testing	HS-9, DUT: 30531
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	384 / 836.52	24.37dBm	Right, Cheek	0.860W/kg	0.96W/kg	1.6 W/kg	PASSED
CDMA1900	25 / 1851.25	23.76dBm	Left, Cheek	0.637W/kg	0.71W/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	384 / 836.52	25.37dBm	2.2cm	0.750W/kg	0.84W/kg	1.6 W/kg	PASSED
CDMA1900	600 / 1880.00	25.74dBm	2.2cm	0.441W/kg	0.49W/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	0.50dB

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 RTT and 1x EV-DO Rev0 device.

2.1 Description of the Antenna

The device has an internal antenna.

3. TEST CONDITIONS

3.1 Temperature and Humidity

Ambient temperature (°C):	20.0 to 21.6
Ambient humidity (RH %):	36 to 51

3.2 Test Signal, Frequencies and Output Power

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

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

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

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 4	604	12 months	2008-08
DAE 3	377	12 months	2008-05
E-field Probe ET3DV6	1504	12 months	2008-08
E-field Probe ET3DV6	1505	12 months	2008-08
Dipole Validation Kit, D835V2	487	24 months	2008-11
Dipole Validation Kit, D1900V2	534	24 months	2008-09
DASY Software	Version 4.7	-	-

Additional test equipment used in testing:

Test Equipment	Model	Serial Number	Calibration interval	Calibration expiry
Signal Generator	HP E4432B	US 40052231	24 months	2008-05
Signal Generator	HP E4432B	US 39260114	24 months	2008-06
Amplifier	Milmega AS0825-20L	1009777	-	-
Amplifier	Comtech PST AR8829-5	N2S7A00-1011	-	-
Power Meter	Agilent E4416A	GB41291842	12 months	2008-04
Power Meter	Agilent E4419B	GB39290694	12 months	2008-11
Power Sensor	Agilent E	US39210503	12 months	2008-07
Power Sensor	Agilent E9327A	US40411295	12 months	2008-04
Power Sensor	Agilent E9301A	MY41495224	12 months	2008-04
Call Tester	Agilent 8960	GB41070261	-	-
Call Tester	Agilent 8960	GB44350217	-	-
Call Tester	CMU 200	837727/071	-	-
Call Tester	CMU 200	837727/008	-	-
Vector Network Analyzer	Agilent 8753ES	US39174327	12 months	2008-05
Dielectric Probe Kit	Agilent 85070D	US01440165	-	-

4.1.1 Isotropic E-field Probe Type ET3DV6

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

4.2 Phantoms

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

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

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

4.3 Tissue Simulants

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

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

4.3.1 Tissue Simulant Recipes

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

800MHz band

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

1900MHz band

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

4.3.2 System Checking

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

System checking, head tissue simulant

<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			
	2008-03-27	2.25	40.8	0.90	21.6
1900	Reference result	9.38	38.6	1.41	
	± 10% window	8.44 – 10.32			
	2008-03-25	9.65	39.6	1.42	20.0

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			
	2008-03-28	2.31	53.7	0.99	21.1
1900	Reference result	10.1	52.6	1.56	
	± 10% window	9.1 - 11.1			
	2008-03-26	9.86	51.8	1.52	20.2

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

4.3.3 Tissue Simulants used in the Measurements

Head tissue simulant measurements

f [MHz]	Description	Dielectric Parameters		Temp [°C]
		ϵ_r	σ [S/m]	
836	Recommended value	41.5	0.90	
	$\pm 5\%$ window	39.4 – 43.6	0.86 – 0.95	
	2008-03-27	40.8	0.91	21.6
1880	Recommended value	40.0	1.40	
	$\pm 5\%$ window	38.0 – 42.0	1.33 – 1.47	
	2008-03-25	39.7	1.40	20.0

Body tissue simulant measurements

f [MHz]	Description	Dielectric Parameters		Temp [°C]
		ϵ_r	σ [S/m]	
836	Recommended value	55.2	0.97	
	$\pm 5\%$ window	52.4 – 58.0	0.92 – 1.02	
	2008-03-28	53.7	0.99	21.1
1880	Recommended value	53.3	1.52	
	$\pm 5\%$ window	50.6 – 56.0	1.44 – 1.60	
	2008-03-26	51.9	1.50	20.2

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	C_i	$C_i \cdot U_i$ (%)	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:

CDMA800 Head SAR results

Battery used	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		24.77dBm	24.37dBm	24.47dBm
BL-5C	Flip Open	Left	Cheek	-	0.611	-
			Tilt	-	0.154	-
		Right	Cheek	0.796	0.821	0.700
			Tilt	-	0.136	-
BL-10C	Flip Open	Right Cheek		0.728	0.673	0.576
BL-5C	Flip Open	Right Cheek, BT active		-	0.860	-

CDMA1900 Head SAR results

Battery used	Option used	Test configuration		SAR, averaged over 1g (W/kg)		
				Ch25 1851.25MHz	Ch600 1880.00MHz	Ch1175 1908.75MHz
RC3 / S055		Power		23.76dBm	24.31dBm	24.00dBm
BL-5C	Flip Open	Left	Cheek	0.637	0.616	0.560
			Tilt	-	0.180	-
		Right	Cheek	-	0.474	-
			Tilt	-	0.173	-
BL-10C	Flip Open	Left Cheek		0.470	0.336	0.390
BL-5C	Flip Open	Left Cheek, BT active		0.568	-	-

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

CDMA800 Body SAR results

Battery used	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
RTAP 9.6kbps		Power	26.35dBm	25.37dBm	25.32dBm
BL-5C	Flip Closed	Without headset	0.540	0.725	0.637
		Headset HS-9	0.485	0.466	0.361
BL-10C	Flip Closed	Without headset	0.332	0.435	0.323
BL-5C	Flip Closed	Without headset, BT active	-	0.750	-

CDMA1900 Body SAR results

Battery used	Option used	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch25 1851.25MHz	Ch600 1880.00MHz	Ch1175 1908.75MHz
RTAP 9.6kbps		Power	25.26dBm	25.74dBm	25.22dBm
BL-5C	Flip Closed	Without headset	0.282	0.301	0.321
		Headset HS-9	0.308	0.441	0.340
BL-10C	Flip Closed	Headset HS-9	0.223	0.290	0.248
BL-5C	Flip Closed	Headset HS-9, BT active	-	0.364	-

Plots of the Measurement scans are given in Appendix B.

APPENDIX A: SYSTEM CHECKING SCANS

Date/Time: 2008-03-27 10:54:13

Test Laboratory: TCC Nokia

Type: D835V2; Serial: 487

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL835; Medium Notes: T=21.6 C

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.904 \text{ mho/m}$; $\epsilon_r = 40.8$; $\rho = 1000 \text{ kg/m}^3$

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 Sn377; Calibrated: 2007-05-04
- 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) = 2.42 mW/g

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

Reference Value = 53.5 V/m

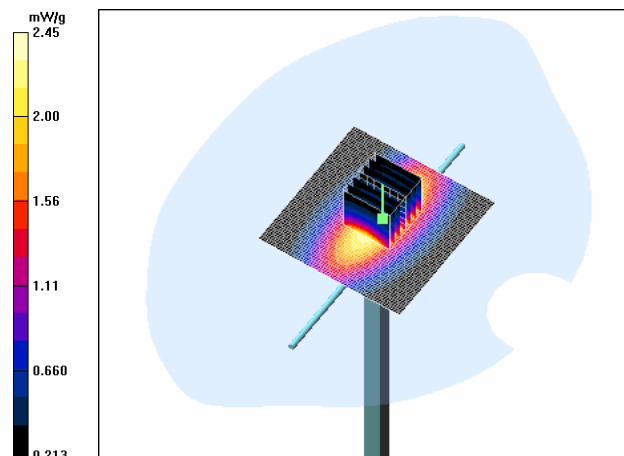
Peak SAR (extrapolated) = 3.38 W/kg

SAR(1 g) = 2.25 mW/g

SAR(10 g) = 1.46 mW/g

Power Drift = -0.003 dB

Maximum value of SAR (measured) = 2.45 mW/g



Date/Time: 2008-03-25 10:01:34

Test Laboratory: TCC Nokia

Type: D1900V2; Serial: 534

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: T=20.1C

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.42$ mho/m; $\epsilon_r = 39.6$; $\rho = 1000$ 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: DAE4 Sn604; Calibrated: 2007-08-29
- Phantom: SAM 1; Type: Twin Phantom; Serial: NMP3310
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

System Check/Area Scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 85.7 V/m

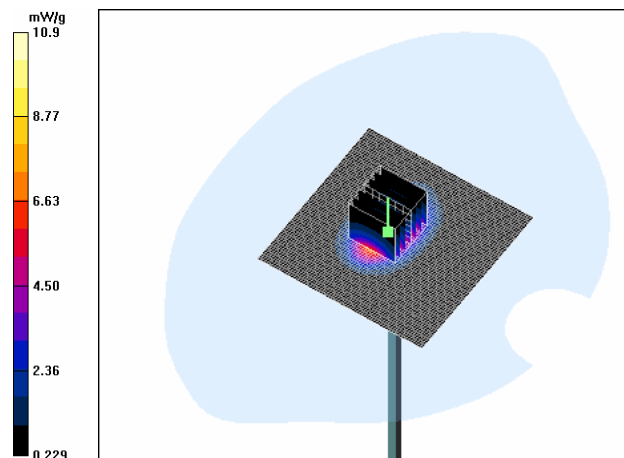
Peak SAR (extrapolated) = 16.1 W/kg

SAR(1 g) = 9.65 mW/g

SAR(10 g) = 5.2 mW/g

Power Drift = 0.014 dB

Maximum value of SAR (measured) = 10.9 mW/g



Date/Time: 2008-03-28 9:45:57

Test Laboratory: TCC Nokia

Type: D835V2; Serial: 487

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: MSL835; Medium Notes: T=21.1C

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.991 \text{ mho/m}$; $\epsilon_r = 53.7$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.49, 6.49, 6.49); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn377; Calibrated: 2007-05-04
- 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: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 2.52 mW/g

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

Reference Value = 51.5 V/m

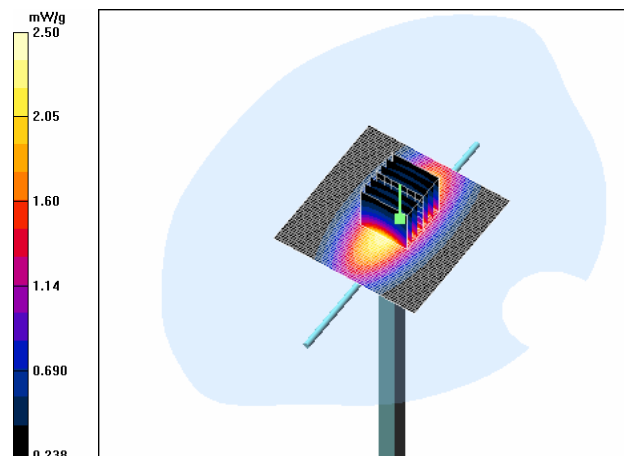
Peak SAR (extrapolated) = 3.36 W/kg

SAR(1 g) = 2.31 mW/g

SAR(10 g) = 1.51 mW/g

Power Drift = 0.001 dB

Maximum value of SAR (measured) = 2.50 mW/g



Date/Time: 2008-03-26 9:47:32

Test Laboratory: TCC Nokia

Type: D1900V2; Serial: 534

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: T=20.2

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 51.8$; $\rho = 1000$ 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: DAE4 Sn604; Calibrated: 2007-08-29
- Phantom: SAM 3; Type: Twin Phantom; Serial: NMP03311
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

System Check/Area Scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

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 = 81.8 V/m

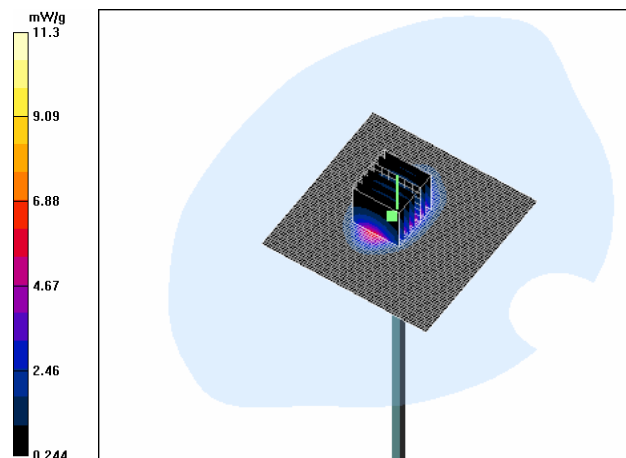
Peak SAR (extrapolated) = 16.1 W/kg

SAR(1 g) = 9.86 mW/g

SAR(10 g) = 5.36 mW/g

Power Drift = -0.029 dB

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



APPENDIX B: MEASUREMENT SCANS

Date/Time: 2008-03-27 11:32:08

Test Laboratory: TCC Nokia

Type: RM-347; Serial: A00000011E5A2A

Communication System: CDMA800

Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: HSL835; Medium Notes: T=21.6C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.905$ mho/m; $\epsilon_r = 40.8$; $\rho = 1000$ 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 Sn377; Calibrated: 2007-05-04
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Cheek, Middle, Flip open, BL-5C/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.656 mW/g

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

Reference Value = 6.32 V/m

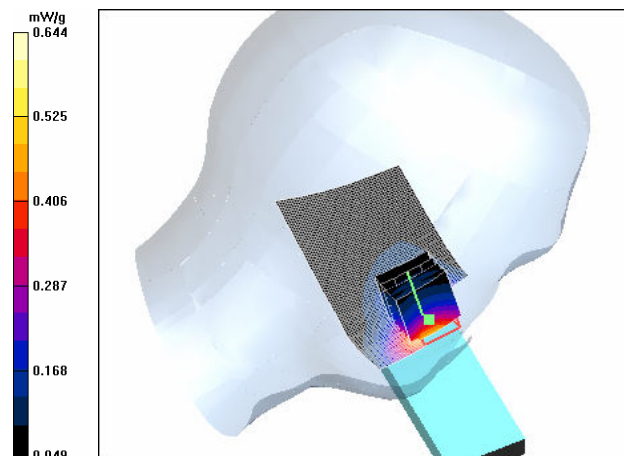
Peak SAR (extrapolated) = 1.09 W/kg

SAR(1 g) = 0.611 mW/g

SAR(10 g) = 0.379 mW/g

Power Drift = -0.498 dB

Maximum value of SAR (measured) = 0.644 mW/g



Date/Time: 2008-03-27 11:47:23

Test Laboratory: TCC Nokia

Type: RM-347; Serial: A00000011E5A2A

Communication System: CDMA800

Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: HSL835; Medium Notes: T=21.6C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.905$ mho/m; $\epsilon_r = 40.8$; $\rho = 1000$ 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 Sn377; Calibrated: 2007-05-04
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Tilt, Middle, Flip open, BL-5C/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.164 mW/g

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

Reference Value = 10.1 V/m

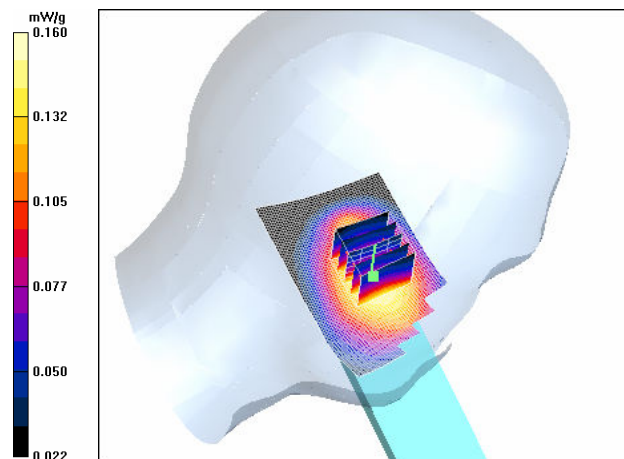
Peak SAR (extrapolated) = 0.194 W/kg

SAR(1 g) = 0.154 mW/g

SAR(10 g) = 0.118 mW/g

Power Drift = 0.180 dB

Maximum value of SAR (measured) = 0.160 mW/g



Date/Time: 2008-03-27 12:18:27

Test Laboratory: TCC Nokia

Type: RM-347; Serial: A00000011E5A2A

Communication System: CDMA800

Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: HSL835; Medium Notes: T=21.6C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.905$ mho/m; $\epsilon_r = 40.8$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.86, 6.86, 6.86); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn377; Calibrated: 2007-05-04
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Cheek, Middle, Flip open, BL-5C/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.794 mW/g

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

Reference Value = 5.78 V/m

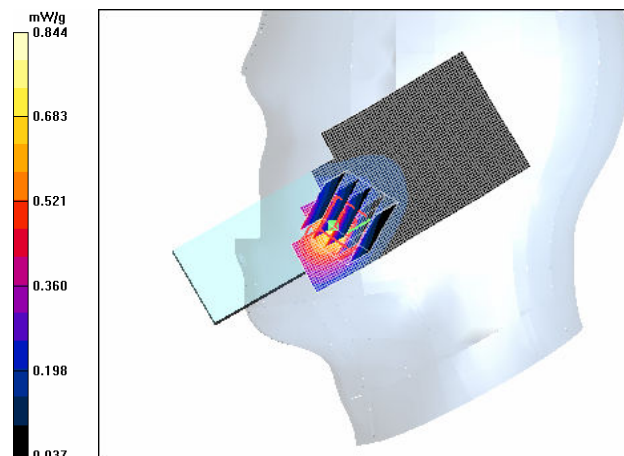
Peak SAR (extrapolated) = 1.99 W/kg

SAR(1 g) = 0.821 mW/g

SAR(10 g) = 0.465 mW/g

Power Drift = -0.245 dB

Maximum value of SAR (measured) = 0.844 mW/g



Date/Time: 2008-03-27 12:46:46

Test Laboratory: TCC Nokia

Type: RM-347; Serial: A00000011E5A2A

Communication System: CDMA800

Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: HSL835; Medium Notes: T=21.6C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.905$ mho/m; $\epsilon_r = 40.8$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.86, 6.86, 6.86); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn377; Calibrated: 2007-05-04
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Tilt, Middle, Flip open, BL-5C/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.149 mW/g

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

Reference Value = 9.13 V/m

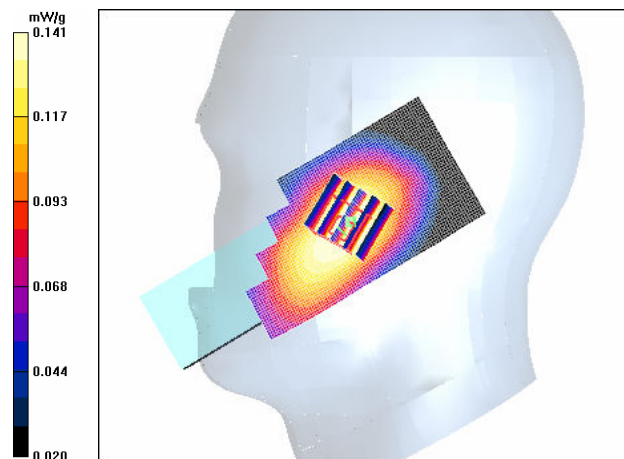
Peak SAR (extrapolated) = 0.163 W/kg

SAR(1 g) = 0.136 mW/g

SAR(10 g) = 0.105 mW/g

Power Drift = -0.105 dB

Maximum value of SAR (measured) = 0.141 mW/g



Date/Time: 2008-03-27 15:03:12

Test Laboratory: TCC Nokia

Type: RM-347; Serial: A00000011E5A2A

Communication System: CDMA800

Frequency: 824.7 MHz; Duty Cycle: 1:1

Medium: HSL835; Medium Notes: T=21.6C

Medium parameters used: $f = 825 \text{ MHz}$; $\sigma = 0.897 \text{ mho/m}$; $\epsilon_r = 40.9$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.86, 6.86, 6.86); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn377; Calibrated: 2007-05-04
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Cheek, Low, Flip open, BL-10C/Area Scan (51x91x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.765 mW/g

Cheek, Low, Flip open, BL-10C/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 5.30 V/m

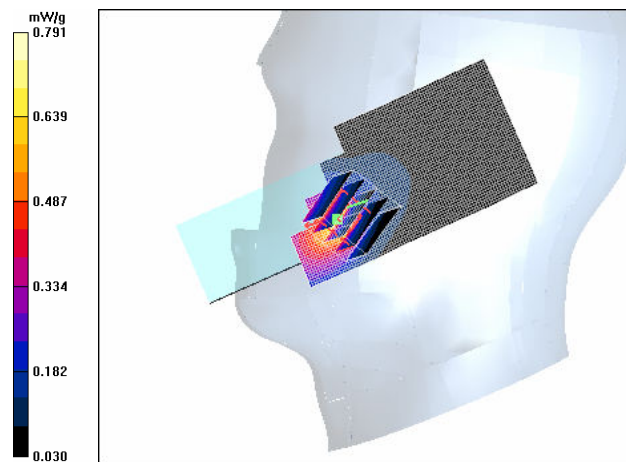
Peak SAR (extrapolated) = 1.87 W/kg

SAR(1 g) = 0.728 mW/g

SAR(10 g) = 0.393 mW/g

Power Drift = 0.165 dB

Maximum value of SAR (measured) = 0.791 mW/g



Date/Time: 2008-03-27 14:09:02

Test Laboratory: TCC Nokia

Type: RM-347; Serial: A00000011E5A2A

Communication System: CDMA800

Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: HSL835; Medium Notes: T=21.6C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.905$ mho/m; $\epsilon_r = 40.8$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.86, 6.86, 6.86); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn377; Calibrated: 2007-05-04
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Cheek, Middle, Flip open, BL-5C, BT active/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.926 mW/g

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

Reference Value = 6.28 V/m

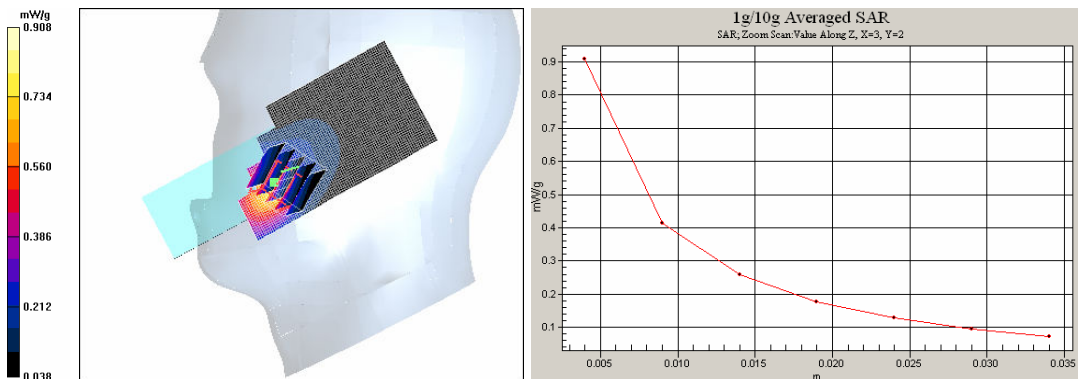
Peak SAR (extrapolated) = 2.18 W/kg

SAR(1 g) = 0.860 mW/g

SAR(10 g) = 0.474 mW/g

Power Drift = -0.320 dB

Maximum value of SAR (measured) = 0.908 mW/g



SAR Report

SD_SAR_0814_01

Applicant: Nokia Corporation

Type: RM-347

Copyright © 2008 TCC Nokia

Date/Time: 2008-03-25 12:25:17

Test Laboratory: TCC Nokia

Type: RM-347; Serial: A00000011E5A2A

Communication System: CDMA1900

Frequency: 1851.25 MHz; Duty Cycle: 1:1

Medium: 1900MHz Head; Medium Notes: T=20.0C

Medium parameters used (interpolated): $f = 1851.25$ MHz; $\sigma = 1.38$ mho/m; $\epsilon_r = 39.8$; $\rho = 1000$ 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 (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2007-08-29
- Phantom: SAM 1; Type: Twin Phantom; Serial: NMP3310
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Cheek, Low, Flip Open, BL-5C/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.769 mW/g

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

Reference Value = 9.47 V/m

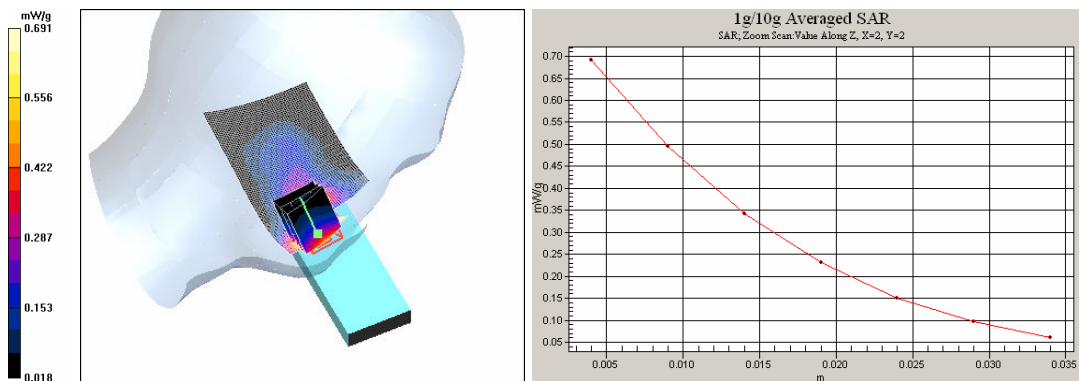
Peak SAR (extrapolated) = 0.875 W/kg

SAR(1 g) = 0.637 mW/g

SAR(10 g) = 0.404 mW/g

Power Drift = -0.463 dB

Maximum value of SAR (measured) = 0.691 mW/g



SAR Report

SD_SAR_0814_01

Applicant: Nokia Corporation

Type: RM-347

Copyright © 2008 TCC Nokia

Date/Time: 2008-03-25 11:05:54

Test Laboratory: TCC Nokia

Type: RM-347; Serial: A00000011E5A2A

Communication System: CDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900MHz Head; Medium Notes: T=20.0C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.4$ mho/m; $\epsilon_r = 39.7$; $\rho = 1000$ 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 (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2007-08-29
- Phantom: SAM 1; Type: Twin Phantom; Serial: NMP3310
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Tilt, Middle, Flip Open, BL-5C/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.216 mW/g

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

Reference Value = 12.2 V/m

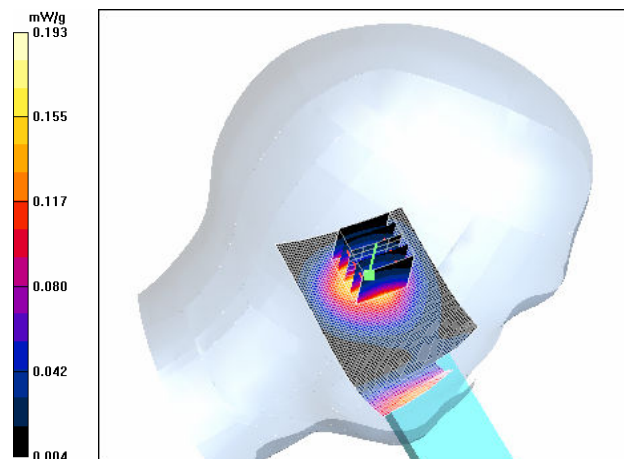
Peak SAR (extrapolated) = 0.258 W/kg

SAR(1 g) = 0.180 mW/g

SAR(10 g) = 0.112 mW/g

Power Drift = -0.120 dB

Maximum value of SAR (measured) = 0.193 mW/g



Date/Time: 2008-03-25 11:37:54

Test Laboratory: TCC Nokia

Type: RM-347; Serial: A00000011E5A2A

Communication System: CDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900MHz Head; Medium Notes: T=20.0C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.4$ mho/m; $\epsilon_r = 39.7$; $\rho = 1000$ 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: DAE4 Sn604; Calibrated: 2007-08-29
- Phantom: SAM 1; Type: Twin Phantom; Serial: NMP3310
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Cheek, Middle, Flip Open, BL-5C/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.469 mW/g

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

Reference Value = 7.61 V/m

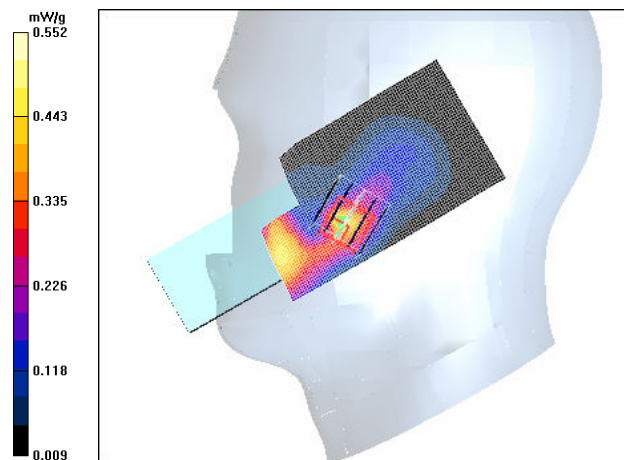
Peak SAR (extrapolated) = 0.956 W/kg

SAR(1 g) = 0.474 mW/g

SAR(10 g) = 0.231 mW/g

Power Drift = -0.092 dB

Maximum value of SAR (measured) = 0.552 mW/g



Date/Time: 2008-03-25 11:54:06

Test Laboratory: TCC Nokia

Type: RM-347; Serial: A00000011E5A2A

Communication System: CDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900MHz Head; Medium Notes: T=20.0C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.4$ mho/m; $\epsilon_r = 39.7$; $\rho = 1000$ 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: DAE4 Sn604; Calibrated: 2007-08-29
- Phantom: SAM 1; Type: Twin Phantom; Serial: NMP3310
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Tilt, Middle, Flip Open, BL-5C/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 11.4 V/m

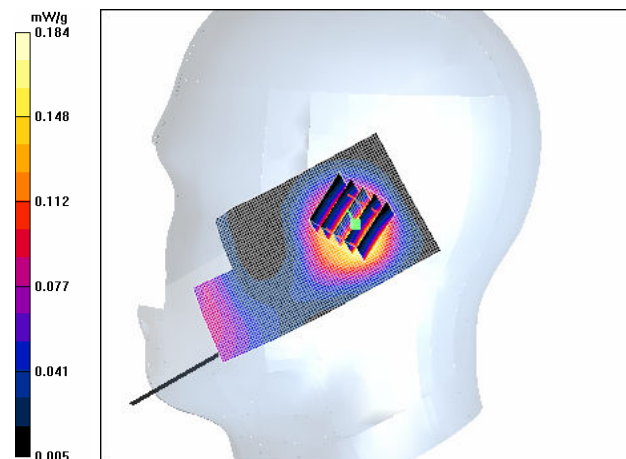
Peak SAR (extrapolated) = 0.236 W/kg

SAR(1 g) = 0.173 mW/g

SAR(10 g) = 0.113 mW/g

Power Drift = 0.003 dB

Maximum value of SAR (measured) = 0.184 mW/g



Date/Time: 2008-03-25 14:32:39

Test Laboratory: TCC Nokia

Type: RM-347; Serial: A00000011E5A2A

Communication System: CDMA1900

Frequency: 1851.25 MHz; Duty Cycle: 1:1

Medium: 1900MHz Head; Medium Notes: T=20.0C

Medium parameters used (interpolated): $f = 1851.25$ MHz; $\sigma = 1.38$ mho/m; $\epsilon_r = 39.8$; $\rho = 1000$ 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 (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2007-08-29
- Phantom: SAM 1; Type: Twin Phantom; Serial: NMP3310
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Cheek, Low, Flip Open, BL-10C/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.584 mW/g

Cheek, low, Flip Open, BL-10C/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 7.69 V/m

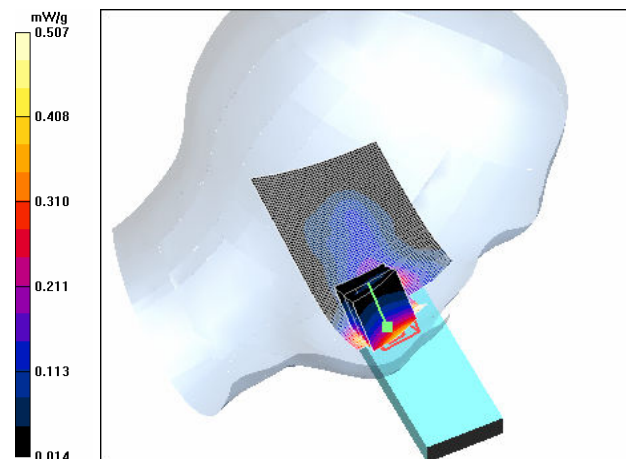
Peak SAR (extrapolated) = 0.647 W/kg

SAR(1 g) = 0.470 mW/g

SAR(10 g) = 0.305 mW/g

Power Drift = -0.264 dB

Maximum value of SAR (measured) = 0.507 mW/g



Date/Time: 2008-03-25 17:02:35

Test Laboratory: TCC Nokia

Type: RM-347; Serial: A00000011E5A2A

Communication System: CDMA1900

Frequency: 1851.25 MHz; Duty Cycle: 1:1

Medium: 1900MHz Head; Medium Notes: T=20.0C

Medium parameters used (interpolated): $f = 1851.25$ MHz; $\sigma = 1.38$ mho/m; $\epsilon_r = 39.8$; $\rho = 1000$ 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 (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2007-08-29
- Phantom: SAM 1; Type: Twin Phantom; Serial: NMP3310
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Cheek, Low, Flip Open, BL-5C, BT active/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.637 mW/g

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

Reference Value = 7.69 V/m

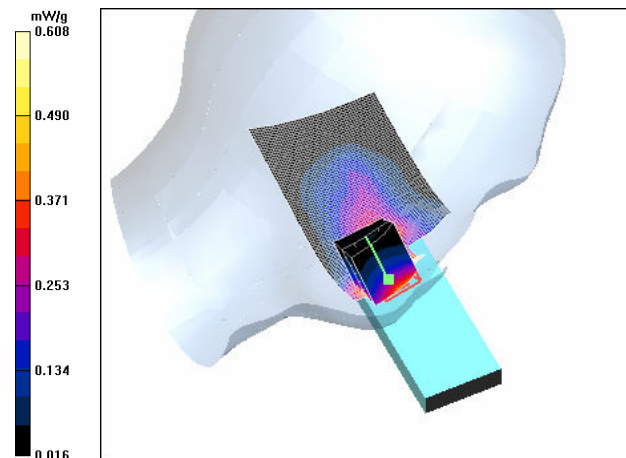
Peak SAR (extrapolated) = 0.803 W/kg

SAR(1 g) = 0.568 mW/g

SAR(10 g) = 0.356 mW/g

Power Drift = -0.374 dB

Maximum value of SAR (measured) = 0.608 mW/g



Date/Time: 2008-03-28 14:07:44

Test Laboratory: TCC Nokia

Type: RM-347; Serial: A00000011E5A2A

Communication System: CDMA800

Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: Cellular Body; Medium Notes: Liquid temperature at 21.1C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 53.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.49, 6.49, 6.49); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn377; Calibrated: 2007-05-04
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Body, Middle, Flip Closed, BL-5C, No accessories/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm

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

Body, Middle, Flip Closed, BL-5C, No accessories/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 23.1 V/m

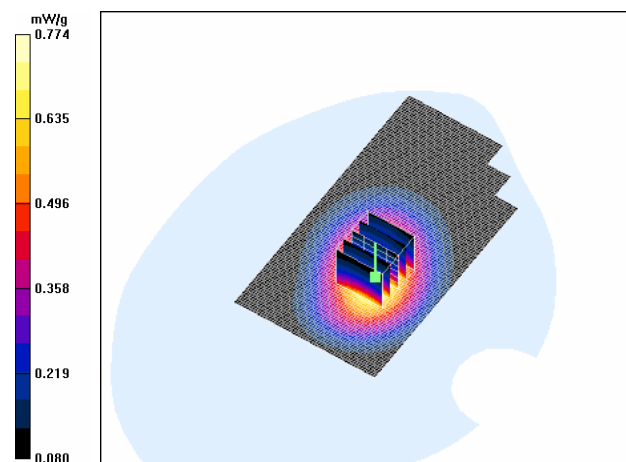
Peak SAR (extrapolated) = 0.953 W/kg

SAR(1 g) = 0.725 mW/g

SAR(10 g) = 0.509 mW/g

Power Drift = -0.249 dB

Maximum value of SAR (measured) = 0.774 mW/g



Date/Time: 2008-03-28 14:49:13

Test Laboratory: TCC Nokia

Type: RM-347; Serial: A00000011E5A2A

Communication System: CDMA800

Frequency: 824.7 MHz; Duty Cycle: 1:1

Medium: Cellular Body; Medium Notes: Liquid temperature at 21.1C

Medium parameters used: $f = 825$ MHz; $\sigma = 0.984$ mho/m; $\epsilon_r = 53.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.49, 6.49, 6.49); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn377; Calibrated: 2007-05-04
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Body, Low, Flip Closed, BL-5C, HS-9/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.526 mW/g

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

Reference Value = 18.4 V/m

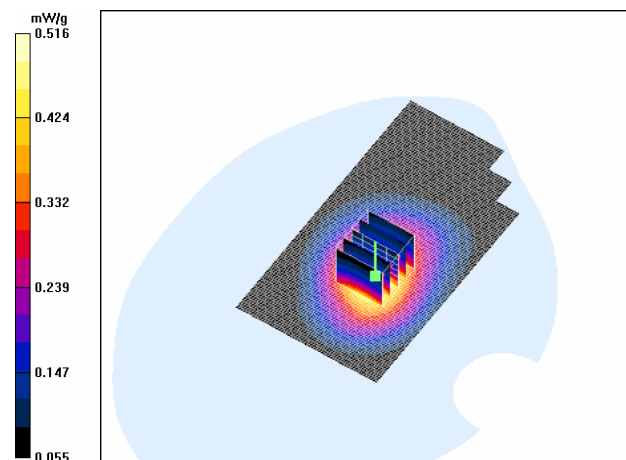
Peak SAR (extrapolated) = 0.636 W/kg

SAR(1 g) = 0.485 mW/g

SAR(10 g) = 0.344 mW/g

Power Drift = -0.212 dB

Maximum value of SAR (measured) = 0.516 mW/g



SAR Report

SD_SAR_0814_01

Applicant: Nokia Corporation

Type: RM-347

Copyright © 2008 TCC Nokia

Date/Time: 2008-03-28 16:08:05

Test Laboratory: TCC Nokia

Type: RM-347; Serial: A00000011E5A2A

Communication System: CDMA800

Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: Cellular Body; Medium Notes: Liquid temperature at 21.1C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 53.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.49, 6.49, 6.49); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn377; Calibrated: 2007-05-04
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Body, Middle, Flip Closed, BL-10C, No accessories/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm

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

Body, Middle, Flip Closed, BL-10C, No accessories/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 18.2 V/m

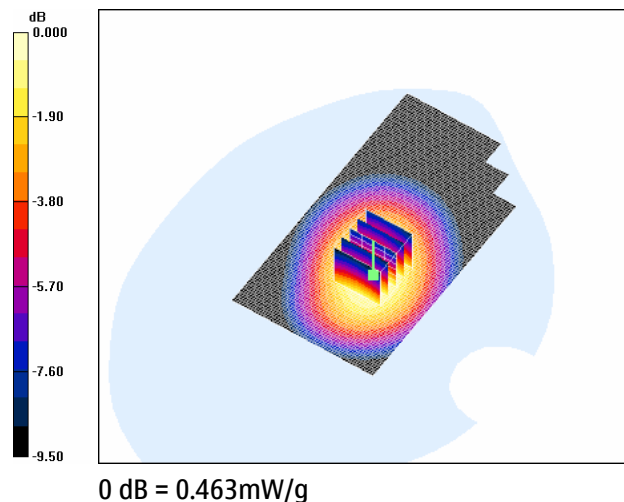
Peak SAR (extrapolated) = 0.572 W/kg

SAR(1 g) = 0.435 mW/g

SAR(10 g) = 0.308 mW/g

Power Drift = -0.188 dB

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



Date/Time: 2008-03-28 16:37:43

Test Laboratory: TCC Nokia

Type: RM-347; Serial: A00000011E5A2A

Communication System: CDMA800

Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: Cellular Body; Medium Notes: Liquid temperature at 21.1C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 53.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1505; Probe Notes:
- ConvF(6.49, 6.49, 6.49); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn377; Calibrated: 2007-05-04
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Body, Middle, Flip Closed, BL-5C, No accessories, BT active/Area Scan (61x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.844 mW/g

Body, Middle, Flip Closed, BL-5C, No accessories, BT active/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 25.3 V/m

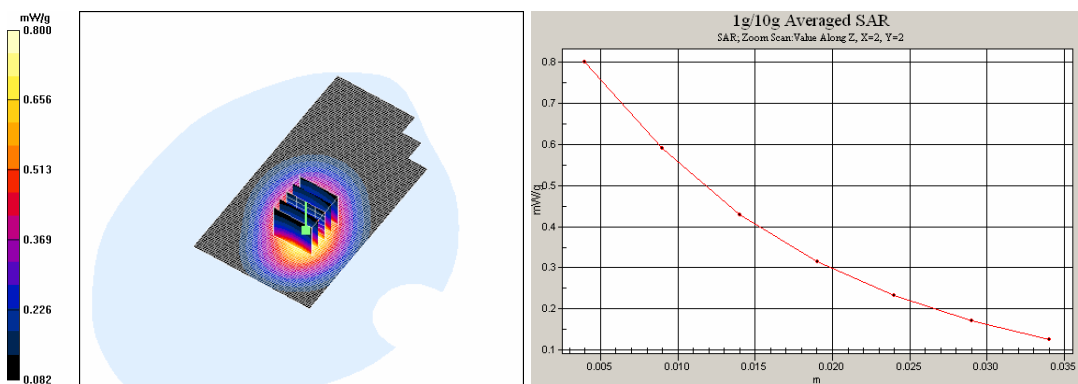
Peak SAR (extrapolated) = 0.988 W/kg

SAR(1 g) = 0.750 mW/g

SAR(10 g) = 0.526 mW/g

Power Drift = -0.352 dB

Maximum value of SAR (measured) = 0.800 mW/g



SAR Report

SD_SAR_0814_01

Applicant: Nokia Corporation

Type: RM-347

Copyright © 2008 TCC Nokia

Date/Time: 2008-03-26 14:39:36

Test Laboratory: TCC Nokia

Type: RM-347; Serial: A00000011E5A2A

Communication System: CDMA1900

Frequency: 1908.75 MHz; Duty Cycle: 1:1

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

Medium parameters used: $f = 1909$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 51.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(4.6, 4.6, 4.6); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2007-08-29
- Phantom: SAM 3; Type: Twin Phantom; Serial: NMP03311
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Body, High, Flip Closed, BL-5C, No accessories/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.347 mW/g

Body, High, Flip Closed, BL-5C, No accessories/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 14.4 V/m

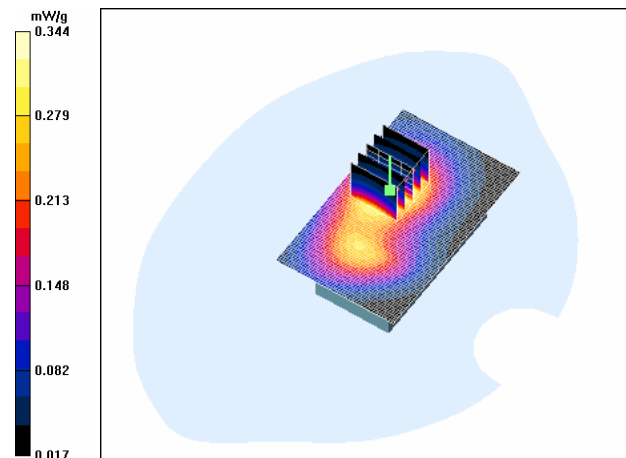
Peak SAR (extrapolated) = 0.486 W/kg

SAR(1 g) = 0.321 mW/g

SAR(10 g) = 0.207 mW/g

Power Drift = -0.118 dB

Maximum value of SAR (measured) = 0.344 mW/g



Date/Time: 2008-03-26 15:04:01

Test Laboratory: TCC Nokia

Type: RM-347; Serial: A00000011E5A2A

Communication System: CDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

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

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 51.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(4.6, 4.6, 4.6); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2007-08-29
- Phantom: SAM 3; Type: Twin Phantom; Serial: NMP03311
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Body, Middle, Flip Closed, BL-5C, HS-9/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.421 mW/g

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

Reference Value = 15.0 V/m

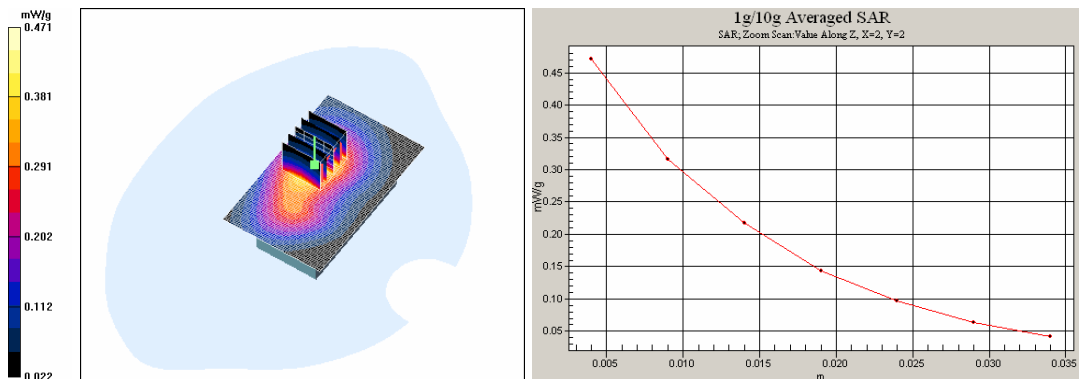
Peak SAR (extrapolated) = 0.664 W/kg

SAR(1 g) = 0.441 mW/g

SAR(10 g) = 0.287 mW/g

Power Drift = 0.202 dB

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



SAR Report

SD_SAR_0814_01

Applicant: Nokia Corporation

Type: RM-347

Copyright © 2008 TCC Nokia

Date/Time: 2008-03-26 17:42:09

Test Laboratory: TCC Nokia

Type: RM-347; Serial: A00000011E5A2A

Communication System: CDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

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

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 51.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(4.6, 4.6, 4.6); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2007-08-29
- Phantom: SAM 3; Type: Twin Phantom; Serial: NMP03311
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Body, Middle, Flip Closed, BL-10C, HS-9/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.315 mW/g

Body, Middle, Flip Closed, BL-10C, HS-9/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 12.8 V/m

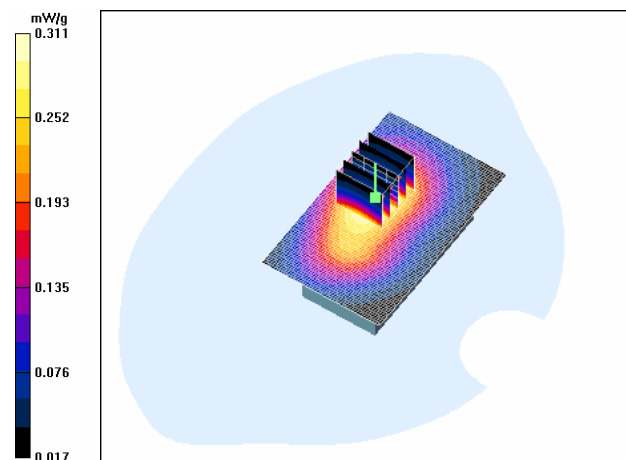
Peak SAR (extrapolated) = 0.431 W/kg

SAR(1 g) = 0.290 mW/g

SAR(10 g) = 0.190 mW/g

Power Drift = -0.119 dB

Maximum value of SAR (measured) = 0.311 mW/g



Date/Time: 2008-03-26 18:36:53

Test Laboratory: TCC Nokia

Type: RM-347; Serial: A00000011E5A2A

Communication System: CDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

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

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 51.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1504; Probe Notes:
- ConvF(4.6, 4.6, 4.6); Calibrated: 2007-08-29
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn604; Calibrated: 2007-08-29
- Phantom: SAM 3; Type: Twin Phantom; Serial: NMP03311
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Body, Middle, Flip Closed, BL-5C, HS-9, BT active/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.406 mW/g

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

Reference Value = 14.6 V/m

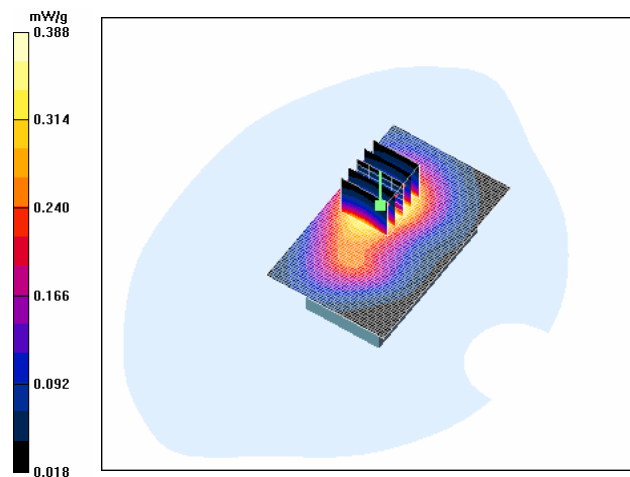
Peak SAR (extrapolated) = 0.549 W/kg

SAR(1 g) = 0.364 mW/g

SAR(10 g) = 0.236 mW/g

Power Drift = 0.469 dB

Maximum value of SAR (measured) = 0.388 mW/g



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**

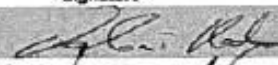
This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

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

	Name	Function	Signature
Calibrated by:	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

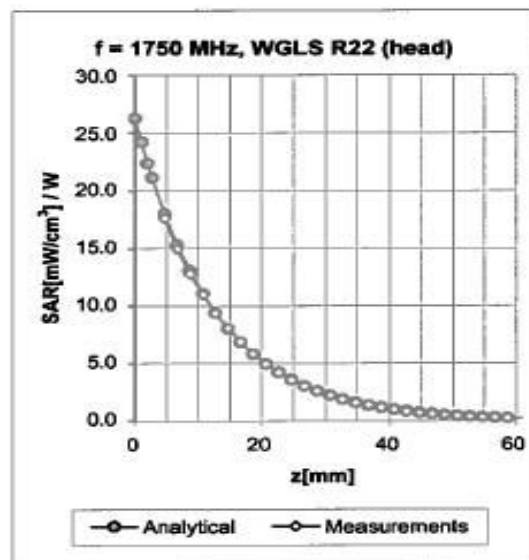
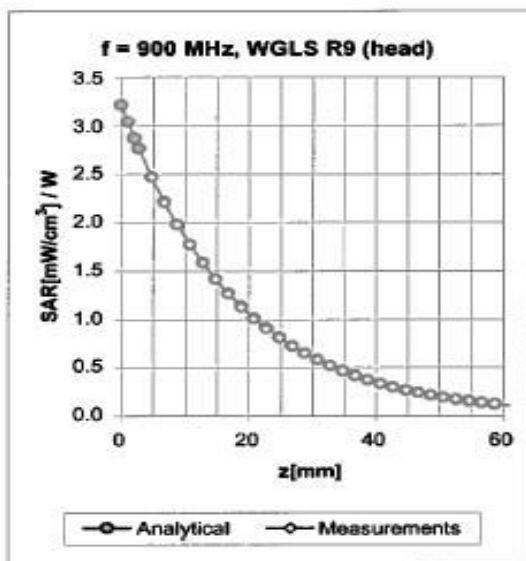
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SAR Report
SD_SAR_0814_01
Applicant: Nokia Corporation

Type: RM-347

Copyright © 2008 TCC Nokia

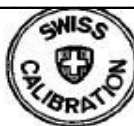
Conversion Factor Assessment



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.

**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**

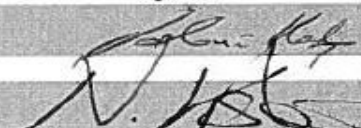
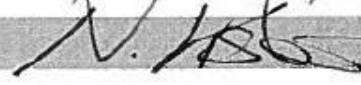
This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

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	US37390585	18-Oct-01 (SPEAG, in house check Oct-06)	In house check: Oct-07

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

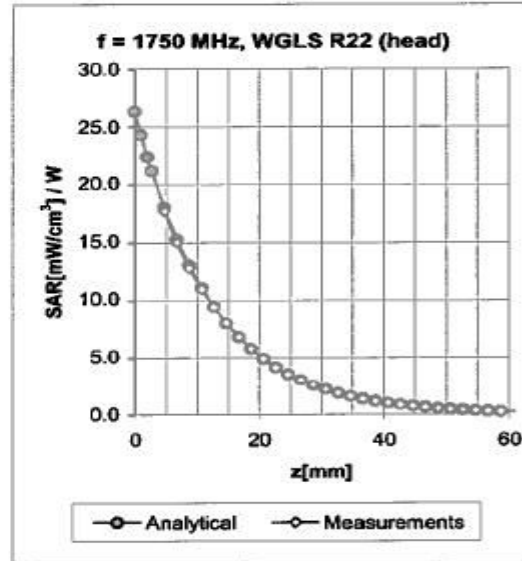
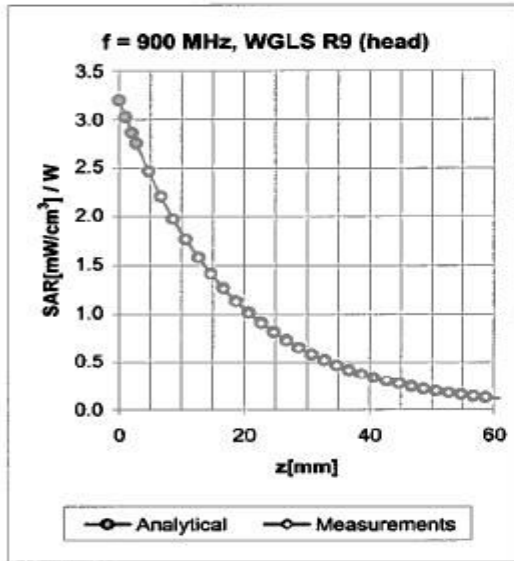
Issued: August 29, 2007

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

Certificate No: ET3-1505_Aug07

Page 1 of 9

Conversion Factor Assessment



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

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

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

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



S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Federal Office of Metrology and Accreditation
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **Nokia SD TCC**

Certificate No: **D835V2-487_Nov06**

CALIBRATION CERTIFICATE

Object **D835V2 - SN: 487**

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

Calibration date: **November 21, 2006**

Condition of the calibrated item **In Tolerance**

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

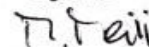
All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	03-Oct-06 (METAS, No. 217-00608)	Oct-07
Power sensor HP 8481A	US37292783	03-Oct-06 (METAS, No. 217-00608)	Oct-07
Reference 20 dB Attenuator	SN: 5086 (20g)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference 10 dB Attenuator	SN: 5047.2 (10r)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference Probe ET3DV6 (HF)	SN 1507	19-Oct-06 (SPEAG, No. ET3-1507_Oct06)	Oct-07
DAE4	SN 601	15-Dec-05 (SPEAG, No. DAE4-601_Dec05)	Dec-06
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-05)	In house check: Oct-07
RF generator Agilent E4421B	MY41000675	11-May-05 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Oct-06)	In house check: Oct-07

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

Signature



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:

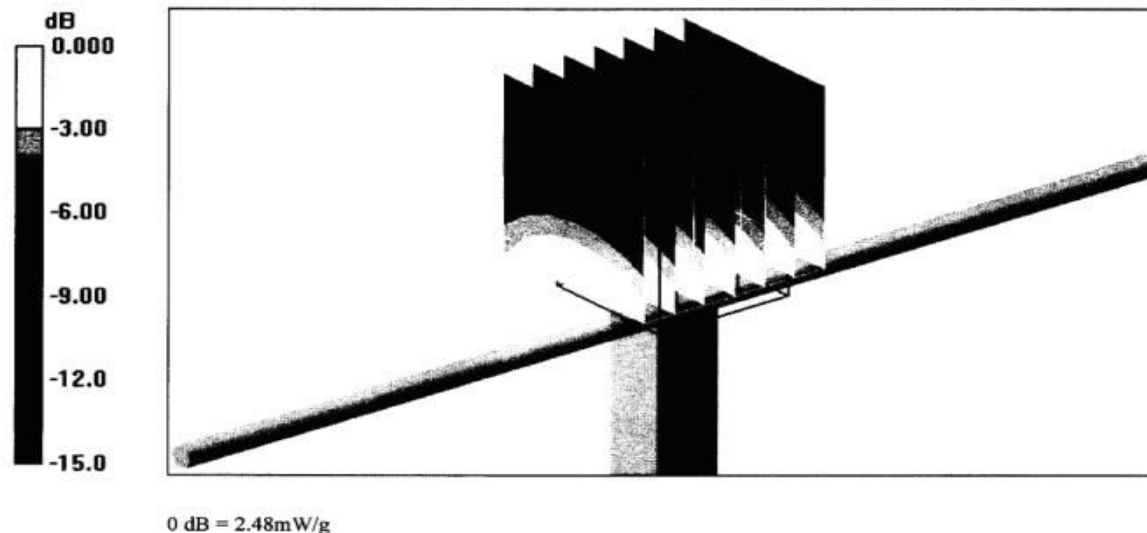
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

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:

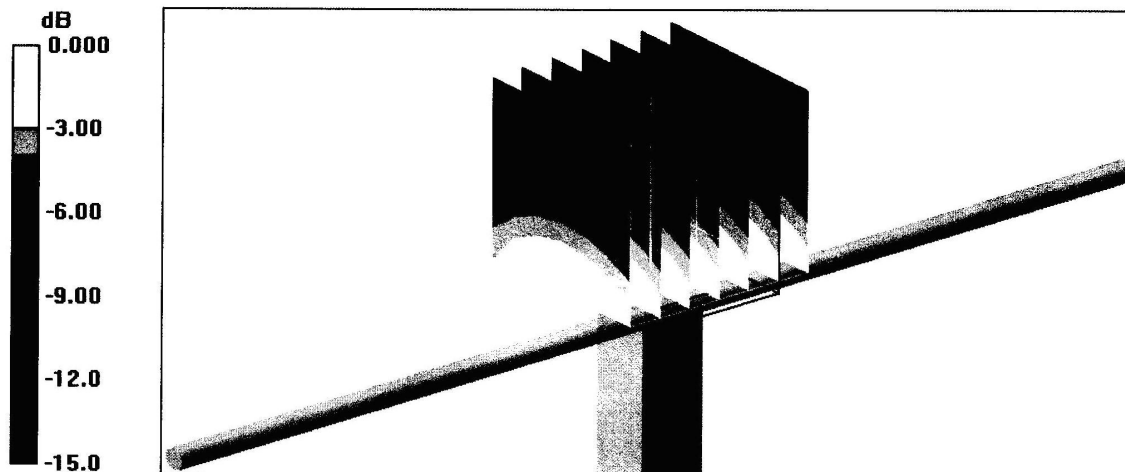
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

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



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



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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **Nokia SD TCC**

Certificate No: **D1900V2-534_Sep06**

CALIBRATION CERTIFICATE

Object **D1900V2 - SN: 534**

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

Calibration date: **September 20, 2006**

Condition of the calibrated item **In Tolerance**

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

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	04-Oct-05 (METAS, No. 251-00516)	Oct-06
Power sensor HP 8481A	US37292783	04-Oct-05 (METAS, No. 251-00516)	Oct-06
Reference 20 dB Attenuator	SN: 5086 (20g)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference 10 dB Attenuator	SN: 5047.2 (10r)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference Probe ET3DV6	SN: 1507	28-Oct-05 (SPEAG, No. ET3-1507_Oct05)	Oct-06
Reference Probe ES3DV3	SN: 3025	28-Oct-05 (SPEAG, No. ES3-3025_Oct05)	Oct-06
DAE4	SN: 601	15-Dec-05 (SPEAG, No. DAE4-601_Dec05)	Dec-06
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-05)	In house check: Oct-07
RF generator Agilent E4421B	MY41000675	11-May-05 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Nov-05)	In house check: Nov-06

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

Issued: September 20, 2006

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Certificate No: D1900V2-534_Sep06

Page 1 of 9

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:

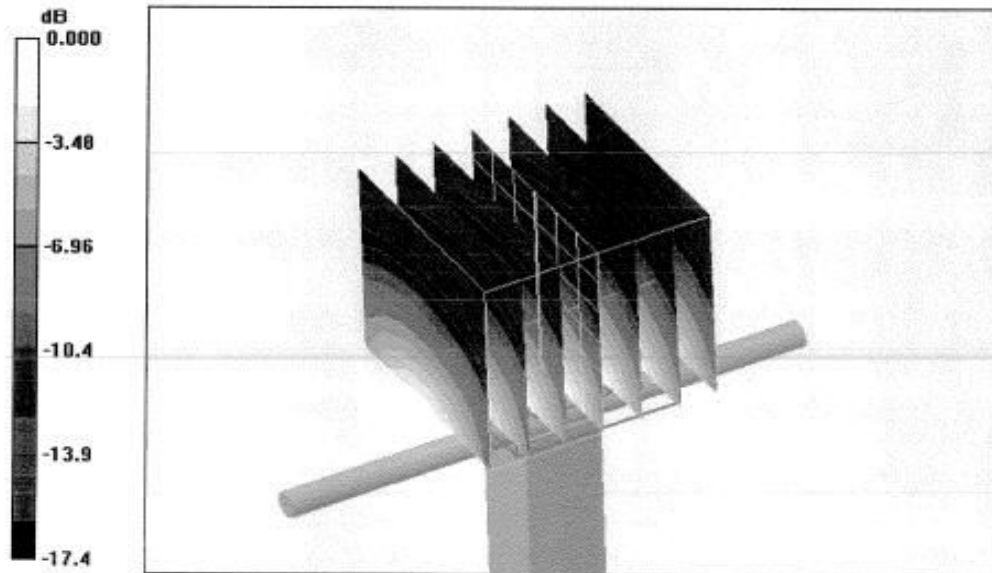
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

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



0 dB = 10.5mW/g

DASY4 Validation Report for Body TSL

Date/Time: 20.09.2006 10:57:32

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: MSL U10;

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

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

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:

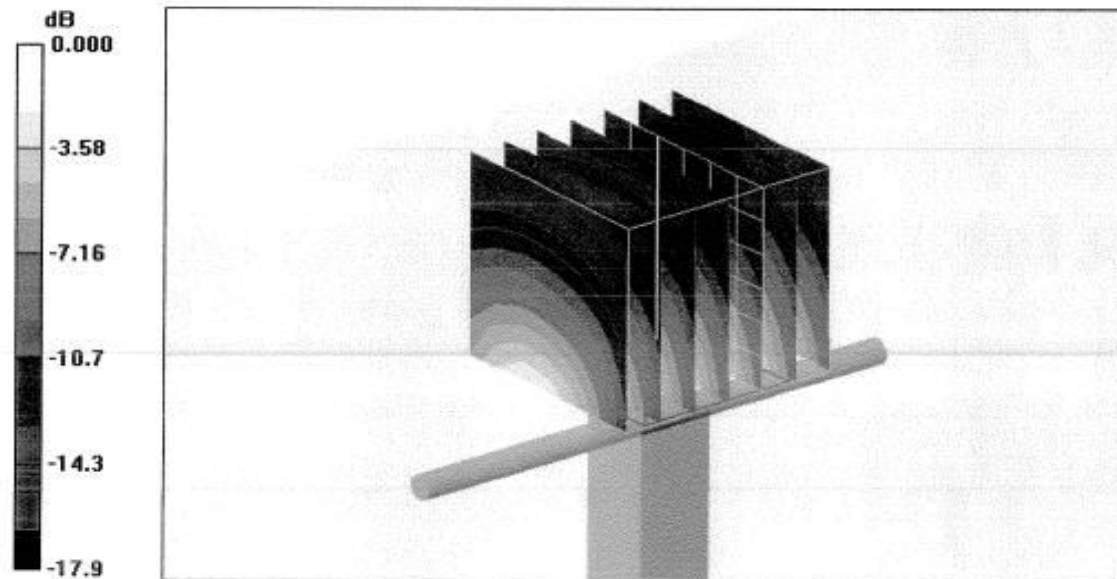
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 85.6 V/m; Power Drift = 0.060 dB

Peak SAR (extrapolated) = 16.5 W/kg

SAR(1 g) = 10.1 mW/g; SAR(10 g) = 5.37 mW/g

Maximum value of SAR (measured) = 11.2 mW/g



0 dB = 11.2mW/g

APPENDIX E: CONDUCTED POWER MEASUREMENTS FOR SUPPORTED TRANSMISSION MODES

Test Laboratory: TCC Nokia

Type: RM-347; Serial: A00000011E5A2A

CDMA800

Radio Configuration	Service Options and Channel Configurations	Supported	Ch 1013 824.70 MHz	Ch 384 836.52 MHz	Ch 777 848.31 MHz
			Pavg (dBm)	Pavg (dBm)	Pavg (dBm)
RC1	S01	no	-	-	-
RC1	S02	yes	24.68	24.51	24.65
RC1	S03	no	-	-	-
RC1	S055	yes	24.76	24.46	24.57
RC2	S09	yes	24.73	24.41	24.56
RC2	S055	yes	24.77	24.58	24.55
RC3	S01	no	-	-	-
RC3	S02	yes	24.78	24.36	24.49
RC3	S03	no	-	-	-
RC3	S032 (no SCH1)	no	-	-	-
RC3	S032 (SCH1 9.6 kpbs)	no	-	-	-
RC3	S032 (SCH1 19.2 kpbs)	no	-	-	-
RC3	S032 (SCH1 38.4 kpbs)	no	-	-	-
RC3	S032 (SCH1 76.8 kpbs)	no	-	-	-
RC3	S032 (SCH1 153.6 kpbs)	no	-	-	-
RC3	S033 (SCH1 9.6 kpbs)	no	-	-	-
RC3	S033 (SCH1 19.2 kpbs)	no	-	-	-
RC3	S033 (SCH1 38.4 kpbs)	no	-	-	-
RC3	S033 (SCH1 76.8 kpbs)	no	-	-	-
RC3	S033 (SCH1 153.6 kpbs)	no	-	-	-
RC3	S055	yes	24.77	24.37	24.47
RC4	S01	no	-	-	-
RC4	S02	yes	24.78	24.35	24.50
RC4	S03	no	-	-	-
RC4	S032 (no SCH1)	no	-	-	-
RC4	S032 (SCH1 9.6 kpbs)	no	-	-	-
RC4	S032 (SCH1 19.2 kpbs)	no	-	-	-
RC4	S032 (SCH1 38.4 kpbs)	no	-	-	-
RC4	S032 (SCH1 76.8 kpbs)	no	-	-	-
RC4	S032 (SCH1 153.6 kpbs)	no	-	-	-
RC4	S033 (SCH1 9.6 kpbs)	no	-	-	-
RC4	S033 (SCH1 19.2 kpbs)	no	-	-	-
RC4	S033 (SCH1 38.4 kpbs)	no	-	-	-
RC4	S033 (SCH1 76.8 kpbs)	no	-	-	-
RC4	S033 (SCH1 153.6 kpbs)	no	-	-	-

SAR Report

SD_SAR_0814_01

Applicant: Nokia Corporation

Type: RM-347

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RC4	S055	yes	24.82	24.41	24.49
RC5	S09	yes	24.74	24.34	24.47
RC5	S033 (SCH1 9.6 kpbs)	no	-	-	-
RC5	S033 (SCH1 19.2 kpbs)	no	-	-	-
RC5	S033 (SCH1 38.4 kpbs)	no	-	-	-
RC5	S033 (SCH1 76.8 kpbs)	no	-	-	-
RC5	S033 (SCH1 153.6 kpbs)	no	-	-	-
RC5	S055	yes	24.76	24.42	24.42

Application Configuration	Data Rate (kbps)	Supported	Ch 1013 824.70 MHz	Ch 384 836.52 MHz	Ch 777 848.31 MHz
			Pavg (dBm)	Pavg (dBm)	Pavg (dBm)
RTAP	9.6	yes	26.35	25.37	25.32
RTAP	19.2	yes	25.40	25.79	25.66
RTAP	38.4	yes	25.71	25.41	25.20
RTAP	76.8	yes	24.29	24.98	24.94
RTAP	153.6	yes	24.92	24.61	24.59

Note: FTAP set to 2 slots at 307.2kbps

CDMA1900

Radio Configuration	Service Options and Channel Configurations	Supported	Ch25 1851.25MHz	Ch600 1880.00MHz	Ch1175 1908.75MHz
			Pavg (dBm)	Pavg (dBm)	Pavg (dBm)
RC1	S01	no	-	-	-
RC1	S02	yes	23.84	24.26	23.03
RC1	S03	no	-	-	-
RC1	S055	yes	23.67	24.19	24.06
RC2	S09	yes	23.92	24.06	23.97
RC2	S055	yes	24.01	24.27	24.03
RC3	S01	no	-	-	-
RC3	S02	yes	23.84	24.21	23.97
RC3	S03	no	-	-	-
RC3	S032 (no SCH1)	no	-	-	-
RC3	S032 (SCH1 9.6 kpbs)	no	-	-	-
RC3	S032 (SCH1 19.2 kpbs)	no	-	-	-
RC3	S032 (SCH1 38.4 kpbs)	no	-	-	-
RC3	S032 (SCH1 76.8 kpbs)	no	-	-	-
RC3	S032 (SCH1 153.6 kpbs)	no	-	-	-
RC3	S033 (SCH1 9.6 kpbs)	no	-	-	-
RC3	S033 (SCH1 19.2 kpbs)	no	-	-	-
RC3	S033 (SCH1 38.4 kpbs)	no	-	-	-
RC3	S033 (SCH1 76.8 kpbs)	no	-	-	-
RC3	S033 (SCH1 153.6 kpbs)	no	-	-	-
RC3	S055	yes	23.76	24.31	24.00
RC4	S01	no	-	-	-
RC4	S02	yes	23.81	24.36	23.91
RC4	S03	no	-	-	-
RC4	S032 (no SCH1)	no	-	-	-
RC4	S032 (SCH1 9.6 kpbs)	no	-	-	-
RC4	S032 (SCH1 19.2 kpbs)	no	-	-	-
RC4	S032 (SCH1 38.4 kpbs)	no	-	-	-
RC4	S032 (SCH1 76.8 kpbs)	no	-	-	-
RC4	S032 (SCH1 153.6 kpbs)	no	-	-	-
RC4	S033 (SCH1 9.6 kpbs)	no	-	-	-
RC4	S033 (SCH1 19.2 kpbs)	no	-	-	-
RC4	S033 (SCH1 38.4 kpbs)	no	-	-	-
RC4	S033 (SCH1 76.8 kpbs)	no	-	-	-
RC4	S033 (SCH1 153.6 kpbs)	no	-	-	-
RC4	S055	yes	23.87	23.26	23.95
RC5	S09	yes	23.75	23.29	23.74
RC5	S033 (SCH1 9.6 kpbs)	no	-	-	-
RC5	S033 (SCH1 19.2 kpbs)	no	-	-	-
RC5	S033 (SCH1 38.4 kpbs)	no	-	-	-

RC5	S033 (SCH1 76.8 kpbs)	no	-	-	-
RC5	S033 (SCH1 153.6 kpbs)	no	-	-	-
RC5	S055	yes	23.82	24.32	23.84

Application Configuration	Data Rate (kbps)	Supported	Ch25 1851.25MHz	Ch600 1880.00MHz	Ch1175 1908.75MHz
			Pavg (dBm)	Pavg (dBm)	Pavg (dBm)
RTAP	9.6	yes	25.26	25.74	25.22
RTAP	19.2	yes	25.01	25.56	25.01
RTAP	38.4	yes	24.74	25.17	24.61
RTAP	76.8	yes	24.32	24.77	24.26
RTAP	153.6	yes	24.05	24.43	24.02

Note: FTAP set to 2 slots at 307.2kbps