TCC
Nokia

FINAS
Finnish Accreditation Service
T117 (EN ISO/IEC 17025)

SAR Compliance Test Report

Test report no.:	Salo_SAR_0634_10	**Date of report:**	2006-08-31
Template version:	2.0	**Number of pages:**	27
Testing laboratory:	TCC Nokia Salo Laboratory P.O.Box 86 Joensuunkatu 7H / Kiila 1B FIN-24101 SALO, FINLAND Tel. +358 (0) 7180 08000 Fax. +358 (0) 7180 45220	**Client:**	Nokia Corporation Lise Meitner Strasse 10 89081 ULM GERMANY Tel. +49 731 1754 0 Fax. +49 731 1754 6800
Responsible test engineer:	Virpi Tuominen	**Product contact person:**	Thomas Reitmayer
Measurements made by:	Virpi Tuominen		
Tested device:	RM-209		
FCC ID:	PPIRM-209	**IC:**	661U-RM209
Supplement reports:	-		

Testing has been carried out in accordance with:

47CFR §2.1093
Radiofrequency Radiation Exposure Evaluation: Portable Devices

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

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

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

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

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:

Digitally signed by Virpi Tuominen
DN: cn=Virpi Tuominen, c=FI, o=Nokia, ou=CertT, email=virpi.t.tuominen@nokia.com
Date: 2006.08.31 09:28:53 +03'00'

Copyright © 2006 TCC Nokia

CONTENTS

1. SUMMARY OF SAR TEST REPORT 3

1.1 TEST DETAILS 3
1.2 MAXIMUM RESULTS 3
1.2.1 Head Configuration 3
1.2.2 Body Worn Configuration 3
1.2.3 Maximum Drift 3
1.2.4 Measurement Uncertainty 4

2. DESCRIPTION OF THE DEVICE UNDER TEST 4

2.1 PICTURE OF THE DEVICE 4
2.2 DESCRIPTION OF THE ANTENNA 5

3. TEST CONDITIONS 5

3.1 TEMPERATURE AND HUMIDITY 5
3.2 TEST SIGNAL, FREQUENCIES AND OUTPUT POWER 5

4. DESCRIPTION OF THE TEST EQUIPMENT 6

4.1 MEASUREMENT SYSTEM AND COMPONENTS 6
4.1.1 Isotropic E-field Probe Type ET3DV6 7
4.2 PHANTOMS 7
4.3 TISSUE SIMULANTS 7
4.3.1 Tissue Simulant Recipes 8
4.3.2 System Checking 8
4.3.3 Tissue Simulants used in the Measurements 9

5. DESCRIPTION OF THE TEST PROCEDURE 10

5.1 DEVICE HOLDER 10
5.2 TEST POSITIONS 10
5.2.1 Against Phantom Head 10
5.2.2 Body Worn Configuration 11
5.3 SCAN PROCEDURES 12
5.4 SAR AVERAGING METHODS 12

6. MEASUREMENT UNCERTAINTY 13

7. RESULTS 14

APPENDIX A: SYSTEM CHECKING SCANS 15

APPENDIX B: MEASUREMENT SCANS 18

APPENDIX C: RELEVANT PAGES FROM PROBE CALIBRATION REPORT(S) 26

APPENDIX D: RELEVANT PAGES FROM DIPOLE VALIDATION KIT REPORT(S) 27

Copyright © 2006 TCC Nokia

1. SUMMARY OF SAR TEST REPORT

1.1 Test Details

Period of test	2006-08-22 to 2006-08-28
SN, HW and SW numbers of tested device	SN: 004400/91/163985/2, HW: 0200, SW: 3.11.1, DUT: 11370
Batteries used in testing	BL-4B, DUT: 11369, 11373
Headsets used in testing	HS-6, DUT: 11062
Other accessories used in testing	-
State of sample	Prototype unit
Notes	-

1.2 Maximum Results

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

1.2.1 Head Configuration

Mode	Ch / *f* (MHz)	Radiated power	Position	Measured SAR value (1g avg)	Scaled* SAR value (1g avg)	SAR limit (1g avg)	Result
GSM1900	661 / 1880.0	31.1dBm EIRP	Right, Cheek	0.496 W/kg	**0.56 W/kg**	1.6 W/kg	PASSED

1.2.2 Body Worn Configuration

Mode	Ch / *f* (MHz)	Radiated power	Separation distance	Measured SAR value (1g avg)	Scaled* SAR value (1g avg)	SAR limit (1g avg)	Result
2-slot GPRS1900	810 / 1909.8	30.8dBm EIRP	2.2cm	0.421 W/kg	**0.47 W/kg**	1.6 W/kg	PASSED

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

1.2.3 Maximum Drift

Maximum drift covered by 12% scaling up of the SAR values	Maximum drift during measurements
0.5dB	0.42 dB

Copyright © 2006 TCC Nokia

1.2.4 Measurement Uncertainty

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

2. DESCRIPTION OF THE DEVICE UNDER TEST

Device category	Portable
Exposure environment	General population / uncontrolled

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

Outside of USA and Canada, the transmitter of the device is capable of operating also in 900 / 1800 MHz bands, which are not part of this filing.

8PSK EGPRS mode was not measured, because maximum averaged output power is more than 3dB lower in 8PSK EGPRS mode than in GPRS mode.

2.1 Picture of the Device

Copyright © 2006 TCC Nokia

2.2 Description of the Antenna

The device has a internal antenna.

3. TEST CONDITIONS

3.1 Temperature and Humidity

Ambient temperature (°C):	21.4 to 21.5
Ambient humidity (RH %):	50 to 63

3.2 Test Signal, Frequencies and Output Power

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

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

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

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

Copyright © 2006 TCC Nokia

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	538	12 months	2007-05
E-field Probe ET3DV6	1395	12 months	2007-07
Dipole Validation Kit, D1900V2	5d030	24 months	2007-02
DASY4 software	Version 4.7	-	-

Additional test equipment used in testing:

Test Equipment	Model	Serial Number	Calibration interval	Calibration expiry
Signal Generator	SML03	101265	12 months	2007-07
Amplifier	ZHL-42 (SMA)	N072095-5	12 months	2007-07
Power Meter	NRVS	849305/028	12 months	2007-07
Power Sensor	NRV-Z32	839176/020	12 months	2007-07
Call Tester	CMU 200	101111	-	-
Call Tester	CMU 200	104983	-	-
Vector Network Analyzer	8753E	US38432928	12 months	2007-07
Dielectric Probe Kit	85070B	US33020420	-	-

Copyright © 2006 TCC Nokia

4.1.1 Isotropic E-field Probe Type ET3DV6

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

4.2 Phantoms

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

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

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

4.3 Tissue Simulants

Recommended values for the dielectric parameters of the tissue simulants are given in IEEE 1528 - 2003 and FCC Supplement C to OET Bulletin 65. All tests were carried out using simulants

Copyright © 2006 TCC Nokia

whose dielectric parameters were within ± 5% of the recommended values. All tests were carried out within 24 hours of measuring the dielectric parameters.

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

4.3.1 Tissue Simulant Recipes

The following recipes were used for Head and Body tissue simulants:

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.

Copyright © 2006 TCC Nokia

System checking, head tissue simulant

f [MHz]	Description	SAR [W/kg], 1g	Dielectric Parameters		Temp [°C]
			ε_r	σ [S/m]	
	Reference result	9.76	39.5	1.46	
	± 10% window	8.78 – 10.74			
1900	2006-08-22	9.68	38.9	1.41	21.0
	2006-08-23	9.57	39.2	1.40	21.0

System checking, body tissue simulant

f [MHz]	Description	SAR [W/kg], 1g	Dielectric Parameters		Temp [°C]
			ε_r	σ [S/m]	
	Reference result	9.94	52.2	1.57	
	± 10% window	8.95 – 10.93			
1900	2006-08-28	10.4	52.9	1.53	21.0

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

4.3.3 Tissue Simulants used in the Measurements

Head tissue simulant measurements

f [MHz]	Description	Dielectric Parameters		Temp [°C]
		ε_r	σ [S/m]	
	Recommended value	40.0	1.40	
	± 5% window	38.0 – 42.0	1.33 – 1.47	
1880	2006-08-22	39.0	1.39	21.0
	2006-08-23	39.3	1.39	21.0

Body tissue simulant measurements

f [MHz]	Description	Dielectric Parameters		Temp [°C]
		ε_r	σ [S/m]	
	Recommended value	53.3	1.52	
	± 5% window	50.6 – 56.0	1.44 – 1.60	
1880	2006-08-28	53.0	1.52	21.0

Copyright © 2006 TCC Nokia

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".

Copyright © 2006 TCC Nokia

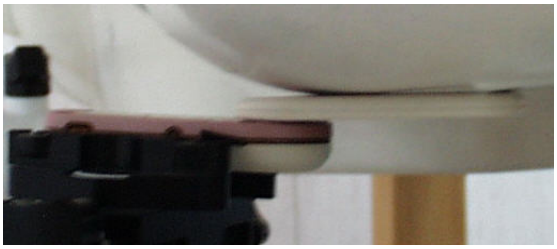


Photo of the device, slide open, in “cheek” position

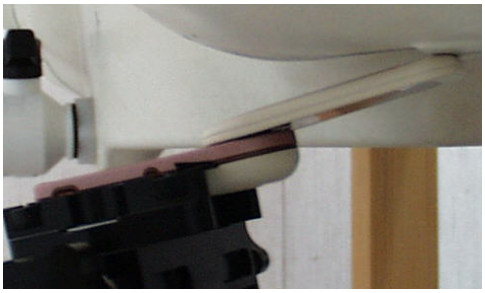


Photo of the device, slide open, in “tilt” position

Photo of the device, slide closed, in “cheek” position

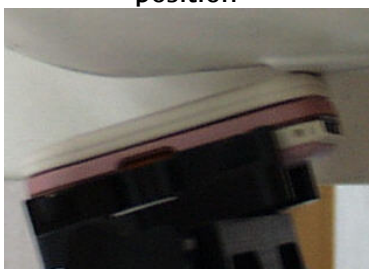


Photo of the device, slide closed, in “tilt” position

5.2.2 Body Worn Configuration

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

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

Copyright © 2006 TCC Nokia

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.

Copyright © 2006 TCC Nokia

6. MEASUREMENT UNCERTAINTY

Table 6.1 – Measurement uncertainty evaluation

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

Copyright © 2006 TCC Nokia

7. RESULTS

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

1900MHz Head SAR results

Swivel	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz
GSM	**Power**		**29.8 dBm**	**29.5 dBm**	**30.2 dBm**
Closed	Left	Cheek	0.368	0.374	0.324
		Tilt	-	0.100	-
	Right	Cheek	-	0.241	-
		Tilt	-	0.102	-
GSM	**Power**		**30.6 dBm**	**31.1 dBm**	**31.2 dBm**
Open	Left	Cheek	-	0.326	-
		Tilt	-	0.179	-
	Right	Cheek	0.409	**0.496**	0.445
		Tilt	-	0.184	-
Open	Right Cheek, BT active		-	0.481	-

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

1900MHz Body SAR results

Swivel	Test configuration	SAR, averaged over 1g (W/kg)		
		Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz
GSM	**Power**	**29.8 dBm**	**29.5 dBm**	**30.2 dBm**
Closed	Without headset	-	0.165	-
2-slot GPRS	**Power**	**29.7 dBm**	**29.2 dBm**	**30.8 dBm**
Closed	Without headset	0.285	0.301	0.394
	Headset HS-6	0.271	0.313	**0.403**
Closed	Headset HS-6, BT active	-	-	**0.421**

Plots of the Measurement scans are given in Appendix B.

Copyright © 2006 TCC Nokia

APPENDIX A: SYSTEM CHECKING SCANS

Date/Time: 2006-08-22 11:00:19

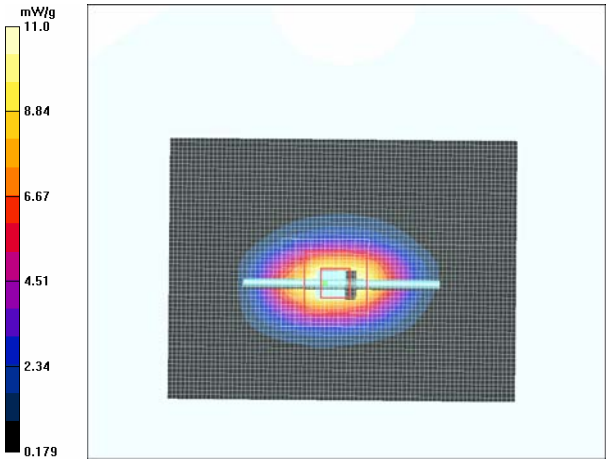
Test Laboratory: TCC Nokia, Salo Laboratory
Type: D1900V2; Serial: D1900V2 - SN:5d030

Communication System: CW
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: HSL1900; Medium Notes: 21.2 C
Medium parameters used: f = 1900 MHz; σ = 1.41 mho/m; ε_r = 38.9; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1395; Probe Notes: Advanced extrapolation
- ConvF(4.76, 4.76, 4.76); Calibrated: 14.07.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 17.05.2006
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 21; Postprocessing SW: SEMCAD, V1.8 Build 170

d=15mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 11.6 mW/g

d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.7 V/m; Power Drift = -0.004 dB
Peak SAR (extrapolated) = 16.8 W/kg
SAR(1 g) = 9.68 mW/g; SAR(10 g) = 5.1 mW/g
Maximum value of SAR (measured) = 11.0 mW/g



Copyright © 2006 TCC Nokia

Date/Time: 2006-08-23 12:31:54

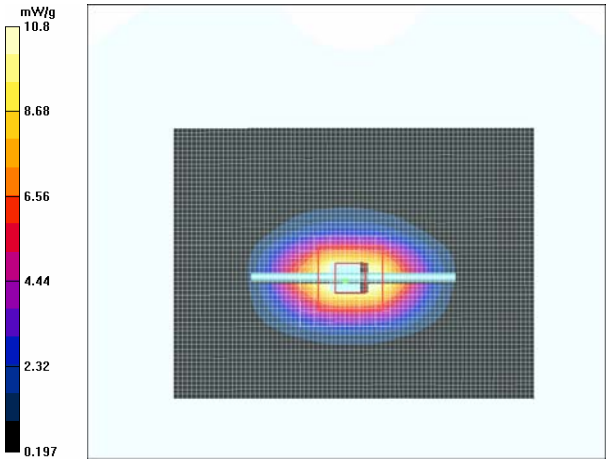
Test Laboratory: TCC Nokia, Salo Laboratory
Type: D1900V2; Serial: D1900V2 - SN:5d030

Communication System: CW
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: HSL1900; Medium Notes: 21.2 C
Medium parameters used: f = 1900 MHz; σ = 1.4 mho/m; ε_r = 39.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1395; Probe Notes: Advanced extrapolation
- ConvF(4.76, 4.76, 4.76); Calibrated: 14.07.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 17.05.2006
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 21; Postprocessing SW: SEMCAD, V1.8 Build 170

d=15mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 11.5 mW/g

d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.5 V/m; Power Drift = 0.013 dB
Peak SAR (extrapolated) = 16.6 W/kg
SAR(1 g) = 9.57 mW/g; SAR(10 g) = 5.04 mW/g
Maximum value of SAR (measured) = 10.8 mW/g



Copyright © 2006 TCC Nokia

Date/Time: 2006-08-28 10:05:27

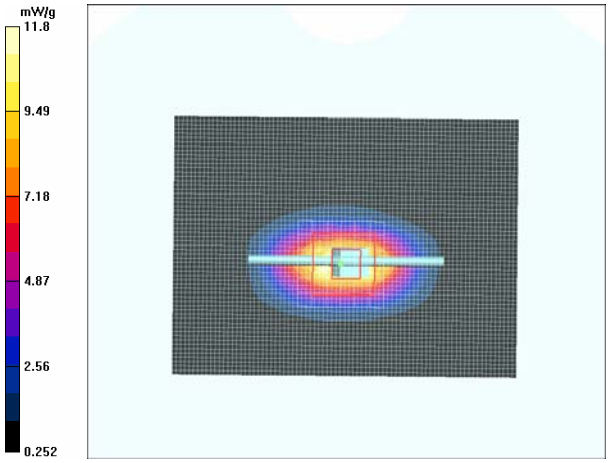
Test Laboratory: TCC Nokia, Salo Laboratory
Type: D1900V2; Serial: D1900V2 - SN:5d030

Communication System: CW
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: M1900; Medium Notes: 21.1 C
Medium parameters used: f = 1900 MHz; σ = 1.53 mho/m; ε_r = 52.9; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1395; Probe Notes: Advanced extrapolation
- ConvF(4.35, 4.35, 4.35); Calibrated: 14.07.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 17.05.2006
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 21; Postprocessing SW: SEMCAD, V1.8 Build 170

d=15mm, Pin=250mW/Area Scan (61x81x1): 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 = 93.3 V/m; Power Drift = -0.040 dB
Peak SAR (extrapolated) = 18.3 W/kg
SAR(1 g) = 10.4 mW/g; SAR(10 g) = 5.47 mW/g
Maximum value of SAR (measured) = 11.8 mW/g



Copyright © 2006 TCC Nokia

APPENDIX B: MEASUREMENT SCANS

Date/Time: 2006-08-23 13:46:02

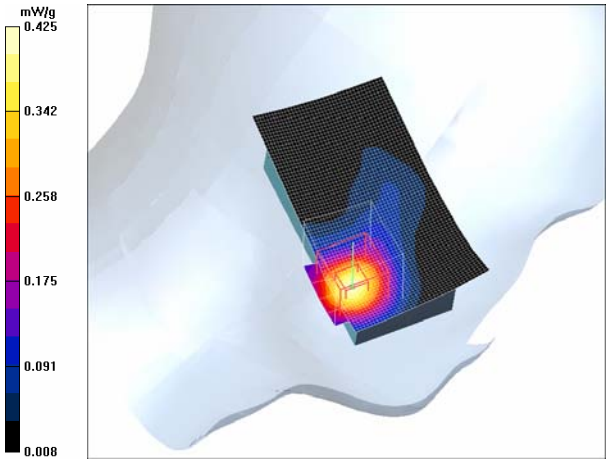
Test Laboratory: TCC Nokia, Salo Laboratory
Type: RM-209; Serial: 004400/91/163985/2

Communication System: GSM1900
Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: HSL1900; Medium Notes: 21.0 C
Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; ε_r = 39.3; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1395; Probe Notes: Advanced extrapolation
- ConvF(4.76, 4.76, 4.76); Calibrated: 14.07.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 17.05.2006
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 21; Postprocessing SW: SEMCAD, V1.8 Build 170

Cheek position - Middle, closed/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.413 mW/g

Cheek position - Middle, closed/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 5.08 V/m; Power Drift = -0.162 dB
Peak SAR (extrapolated) = 0.662 W/kg
SAR(1 g) = 0.374 mW/g; SAR(10 g) = 0.199 mW/g
Maximum value of SAR (measured) = 0.425 mW/g



Copyright © 2006 TCC Nokia

Date/Time: 2006-08-22 13:44:54

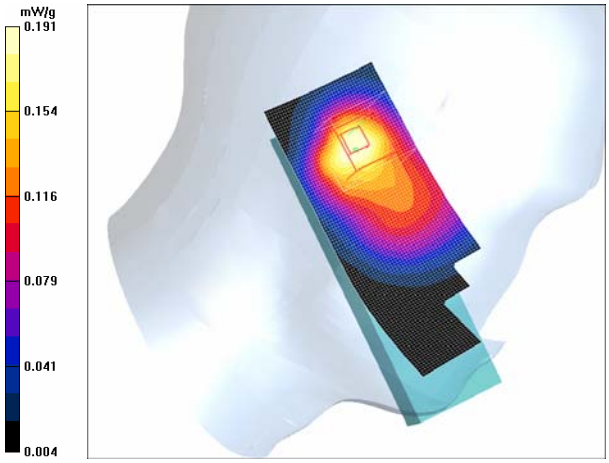
Test Laboratory: TCC Nokia, Salo Laboratory
Type: RM-209; Serial: 004400/91/163985/2

Communication System: GSM1900
Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: HSL1900; Medium Notes: 21.2 C
Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; ε_r = 39; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1395; Probe Notes: Advanced extrapolation
- ConvF(4.76, 4.76, 4.76); Calibrated: 14.07.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 17.05.2006
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 21; Postprocessing SW: SEMCAD, V1.8 Build 170

Tilt position – Middle, open/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.210 mW/g

Tilt position – Middle, open/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 11.4 V/m; Power Drift = -0.364 dB
Peak SAR (extrapolated) = 0.276 W/kg
SAR(1 g) = 0.179 mW/g; SAR(10 g) = 0.110 mW/g
Maximum value of SAR (measured) = 0.191 mW/g



Copyright © 2006 TCC Nokia

Date/Time: 2006-08-22 14:30:37

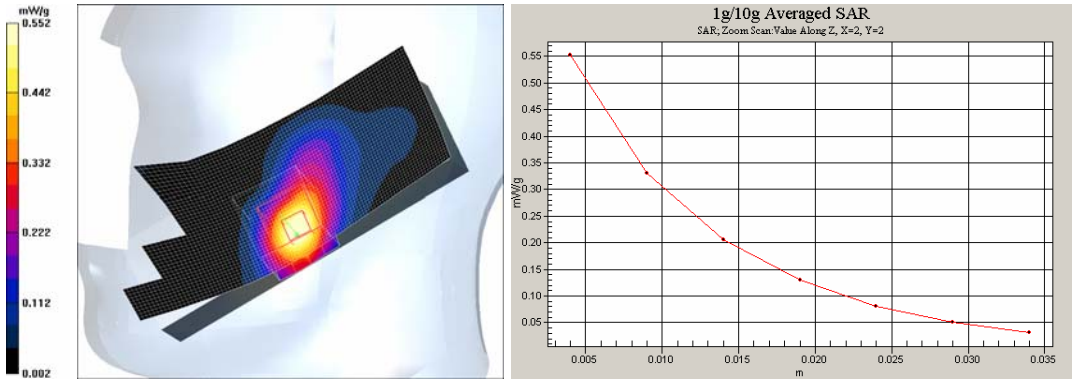
Test Laboratory: TCC Nokia, Salo Laboratory
Type: RM-209; Serial: 004400/91/163985/2

Communication System: GSM1900
Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: HSL1900; Medium Notes: 21.0 C
Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; ε_r = 39; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1395; Probe Notes: Advanced extrapolation
- ConvF(4.76, 4.76, 4.76); Calibrated: 14.07.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 17.05.2006
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 21; Postprocessing SW: SEMCAD, V1.8 Build 170

Cheek position – Middle, open/Area Scan (41x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.564 mW/g

Cheek position – Middle, open/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 6.79 V/m; Power Drift = -0.138 dB
Peak SAR (extrapolated) = 0.851 W/kg
SAR(1 g) = 0.496 mW/g; SAR(10 g) = 0.271 mW/g
Maximum value of SAR (measured) = 0.552 mW/g



Copyright © 2006 TCC Nokia

Date/Time: 2006-08-22 14:48:16

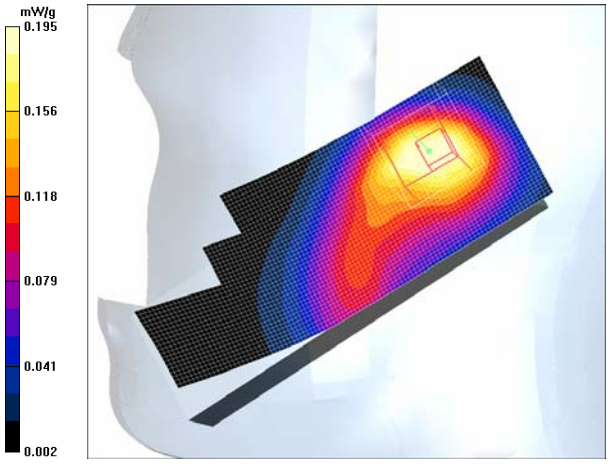
Test Laboratory: TCC Nokia, Salo Laboratory
Type: RM-209; Serial: 004400/91/163985/2

Communication System: GSM1900
Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: HSL1900; Medium Notes: 21.0 C
Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; ε_r = 39; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1395; Probe Notes: Advanced extrapolation
- ConvF(4.76, 4.76, 4.76); Calibrated: 14.07.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 17.05.2006
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 21; Postprocessing SW: SEMCAD, V1.8 Build 170

Tilt position – Middle, open/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.218 mW/g

Tilt position – Middle, open/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 11.9 V/m; Power Drift = -0.142 dB
Peak SAR (extrapolated) = 0.290 W/kg
SAR(1 g) = 0.184 mW/g; SAR(10 g) = 0.114 mW/g
Maximum value of SAR (measured) = 0.195 mW/g



Copyright © 2006 TCC Nokia

Date/Time: 2006-08-28 11:24:44

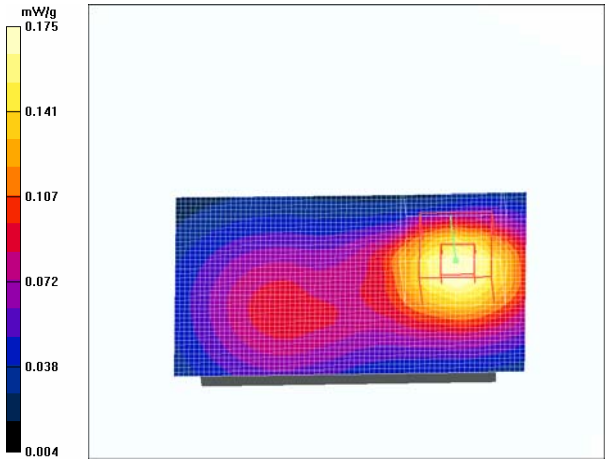
Test Laboratory: TCC Nokia, Salo Laboratory
Type: RM-209; Serial: 004400/91/163985/2

Communication System: GSM1900
Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: M1900; Medium Notes: 21.0 C
Medium parameters used: f = 1880 MHz; σ = 1.52 mho/m; ε_r = 53; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1395; Probe Notes: Advanced extrapolation
- ConvF(4.35, 4.35, 4.35); Calibrated: 14.07.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 17.05.2006
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 21; Postprocessing SW: SEMCAD, V1.8 Build 170

Body Measurement, Middle, closed/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.199 mW/g

Body Measurement, Middle, closed/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 7.37 V/m; Power Drift = -0.079 dB
Peak SAR (extrapolated) = 0.267 W/kg
SAR(1 g) = 0.165 mW/g; SAR(10 g) = 0.100 mW/g
Maximum value of SAR (measured) = 0.175 mW/g



Copyright © 2006 TCC Nokia

Date/Time: 2006-08-28 14:10:40

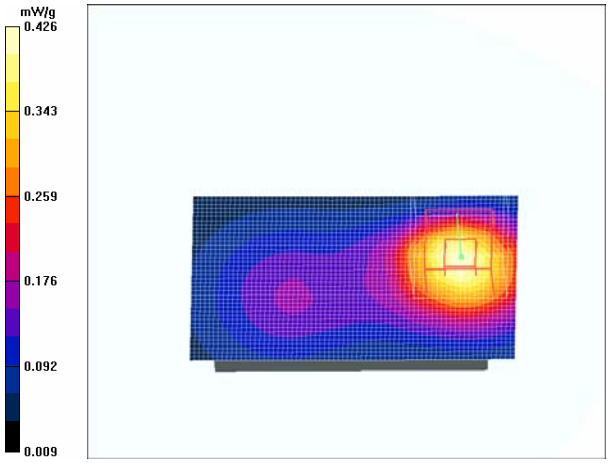
Test Laboratory: TCC Nokia, Salo Laboratory
Type: RM-209; Serial: 004400/91/163985/2

Communication System: 2-slot GPRS1900
Frequency: 1850.2 MHz; Duty Cycle: 1:4.2
Medium: M1900; Medium Notes: 21.0 C
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.5 mho/m; ε_r = 53; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1395; Probe Notes: Advanced extrapolation
- ConvF(4.35, 4.35, 4.35); Calibrated: 14.07.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 17.05.2006
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 21; Postprocessing SW: SEMCAD, V1.8 Build 170

Body Measurement, High, closed/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.474 mW/g

Body Measurement, High, closed/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 9.74 V/m; Power Drift = -0.416 dB
Peak SAR (extrapolated) = 0.658 W/kg
SAR(1 g) = 0.394 mW/g; SAR(10 g) = 0.234 mW/g
Maximum value of SAR (measured) = 0.426 mW/g



Copyright © 2006 TCC Nokia

Date/Time: 2006-08-28 13:24:31

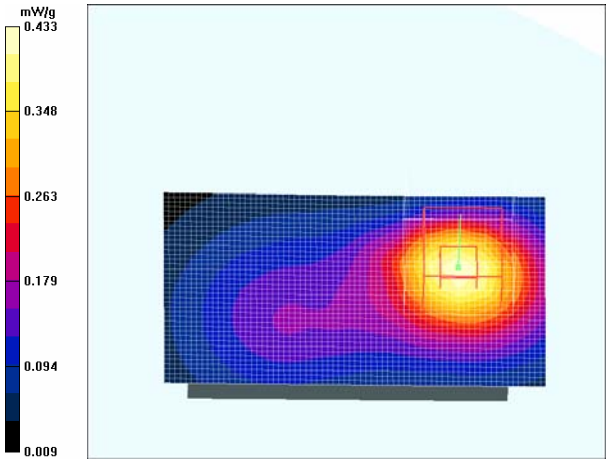
Test Laboratory: TCC Nokia, Salo Laboratory
Type: RM-209; Serial: 004400/91/163985/2

Communication System: 2-slot GPRS1900
Frequency: 1850.2 MHz; Duty Cycle: 1:4.2
Medium: M1900; Medium Notes: 21.0 C
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.5 mho/m; ε_r = 53; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1395; Probe Notes: Advanced extrapolation
- ConvF(4.35, 4.35, 4.35); Calibrated: 14.07.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 17.05.2006
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 21; Postprocessing SW: SEMCAD, V1.8 Build 170

Body Measurement, High, closed, HS-6/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.471 mW/g

Body Measurement, High, closed, HS-6/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 9.39 V/m; Power Drift = -0.357 dB
Peak SAR (extrapolated) = 0.674 W/kg
SAR(1 g) = 0.403 mW/g; SAR(10 g) = 0.240 mW/g
Maximum value of SAR (measured) = 0.433 mW/g



Copyright © 2006 TCC Nokia

Date/Time: 2006-08-28 14:27:27

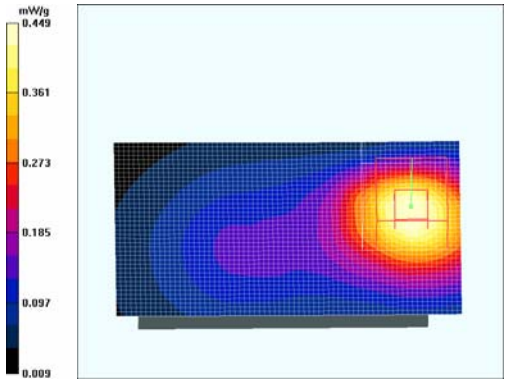
Test Laboratory: TCC Nokia, Salo Laboratory
Type: RM-209; Serial: 004400/91/163985/2

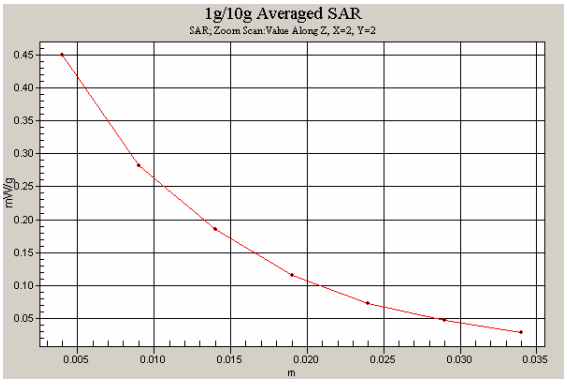
Communication System: 2-slot GPRS1900
Frequency: 1850.2 MHz; Duty Cycle: 1:4.2
Medium: M1900; Medium Notes: 21.0 C
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.5 mho/m; ε_r = 53; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1395; Probe Notes: Advanced extrapolation
- ConvF(4.35, 4.35, 4.35); Calibrated: 14.07.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 17.05.2006
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 21; Postprocessing SW: SEMCAD, V1.8 Build 170

Body Measurement, High, closed, HS-6, BT/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.475 mW/g

Body Measurement, High, closed, HS-6, BT/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 8.21 V/m; Power Drift = -0.383 dB
Peak SAR (extrapolated) = 0.701 W/kg
SAR(1 g) = 0.421 mW/g; SAR(10 g) = 0.249 mW/g
Maximum value of SAR (measured) = 0.449 mW/g





Copyright © 2006 TCC Nokia

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

E-field probe ET3DV6, SN: 1395
See the next three pages

Copyright © 2006 TCC Nokia

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 Salo TCC**

Certificate No: ET3-1395_Jul06

CALIBRATION CERTIFICATE

Object	ET3DV6 - SN:1395
Calibration procedure(s)	QA CAL-01.v5 and QA CAL-12.v4 Calibration procedure for dosimetric E-field probes
Calibration date:	July 14, 2006
Condition of the calibrated item	In Tolerance

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41495277	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41498087	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Reference 3 dB Attenuator	SN: S5054 (3c)	11-Aug-05 (METAS, No. 251-00499)	Aug-06
Reference 20 dB Attenuator	SN: S5086 (20b)	4-Apr-06 (METAS, No. 251-00558)	Apr-07
Reference 30 dB Attenuator	SN: S5129 (30b)	11-Aug-05 (METAS, No. 251-00500)	Aug-06
Reference Probe ES3DV2	SN: 3013	2-Jan-06 (SPEAG, No. ES3-3013_Jan06)	Jan-07
DAE4	SN: 654	21-Jun-06 (SPEAG, No. DAE4-654_Jun06)	Jun-07

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

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

Issued: July 17, 2006

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

DASY - Parameters of Probe: ET3DV6 SN:1395

Sensitivity in Free Space[A]

Diode Compression[B]

NormX	**1.96** ± 10.1%	$\mu V/(V/m)^2$	DCP X	**94** mV
NormY	**1.72** ± 10.1%	$\mu V/(V/m)^2$	DCP Y	**94** mV
NormZ	**1.81** ± 10.1%	$\mu V/(V/m)^2$	DCP Z	**92** mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL **900 MHz** **Typical SAR gradient: 5 % per mm**

Sensor Center to Phantom Surface Distance		**3.7 mm**	**4.7 mm**
SAR_{be} [%]	Without Correction Algorithm	9.7	5.1
SAR_{be} [%]	With Correction Algorithm	0.1	0.2

TSL **1750 MHz** **Typical SAR gradient: 10 % per mm**

Sensor Center to Phantom Surface Distance		**3.7 mm**	**4.7 mm**
SAR_{be} [%]	Without Correction Algorithm	11.0	6.3
SAR_{be} [%]	With Correction Algorithm	0.4	0.5

Sensor Offset

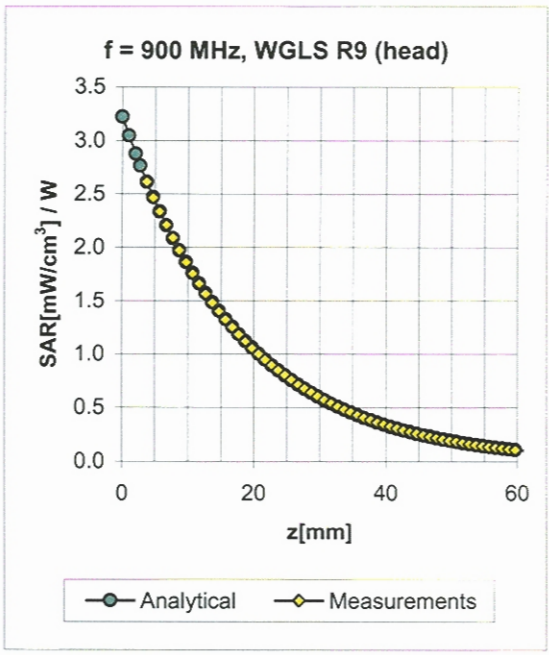
Probe Tip to Sensor Center	**2.7** mm

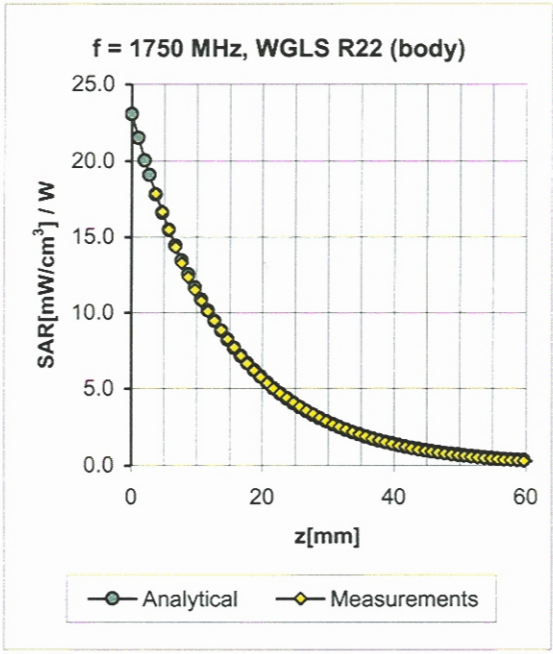
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Page 8).

[B] Numerical linearization parameter: uncertainty not required.

Conversion Factor Assessment





f [MHz]	Validity [MHz][C]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty	
450	± 50 / ± 100	Head	43.5 ± 5%	0.87 ± 5%	0.38	1.92	6.70	± 13.3% (k=2)
835	± 50 / ± 100	Head	41.5 ± 5%	0.90 ± 5%	0.71	1.77	6.05	± 11.0% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.66	1.83	5.90	± 11.0% (k=2)
1750	± 50 / ± 100	Head	40.1 ± 5%	1.37 ± 5%	0.56	2.47	4.93	± 11.0% (k=2)
1900	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.59	2.49	4.76	± 11.0% (k=2)
1950	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.63	2.37	4.70	± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.99	1.59	4.37	± 11.8% (k=2)
450	± 50 / ± 100	Body	56.7 ± 5%	0.94 ± 5%	0.32	1.98	7.26	± 13.3% (k=2)
835	± 50 / ± 100	Body	55.2 ± 5%	0.97 ± 5%	0.66	1.90	5.96	± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.63	1.94	5.75	± 11.0% (k=2)
1750	± 50 / ± 100	Body	53.4 ± 5%	1.49 ± 5%	0.65	2.42	4.37	± 11.0% (k=2)
1900	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.90	1.98	4.35	± 11.0% (k=2)
1950	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.94	1.91	4.23	± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.90	1.68	4.03	± 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)

Dipole D1900V2, SN: 5d030
See the next three pages.

Copyright © 2006 TCC Nokia

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
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 Oulu 2

Certificate No: D1900V2-5d030_Feb05

CALIBRATION CERTIFICATE

Object: D1900V2 - SN: 5d030

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

Calibration date: February 18, 2005

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 E442	GB37480704	12-Oct-04 (METAS, No. 251-00412)	Oct-05
Power sensor HP 8481A	US37292783	12-Oct-04 (METAS, No. 251-00412)	Oct-05
Reference 20 dB Attenuator	SN: 5086 (20g)	10-Aug-04 (METAS, No 251-00402)	Aug-05
Reference 10 dB Attenuator	SN: 5047.2 (10r)	10-Aug-04 (METAS, No 251-00402)	Aug-05
Reference Probe ET3DV6	SN 1507	26-Oct-04 (SPEAG, No. ET3-1507_Oct04)	Oct-05
DAE4	SN 601	07-Jan-05 (SPEAG, No. DAE4-601_Jan05)	Jan-06

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-03)	In house check: Oct-05
RF generator R&S SML-03	100698	27-Mar-02 (SPEAG, in house check Dec-03)	In house check: Dec-05
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Nov-04)	In house check: Nov 05

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

Issued: February 25, 2005

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

Date/Time: 18.02.2005 15:49:29

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d030

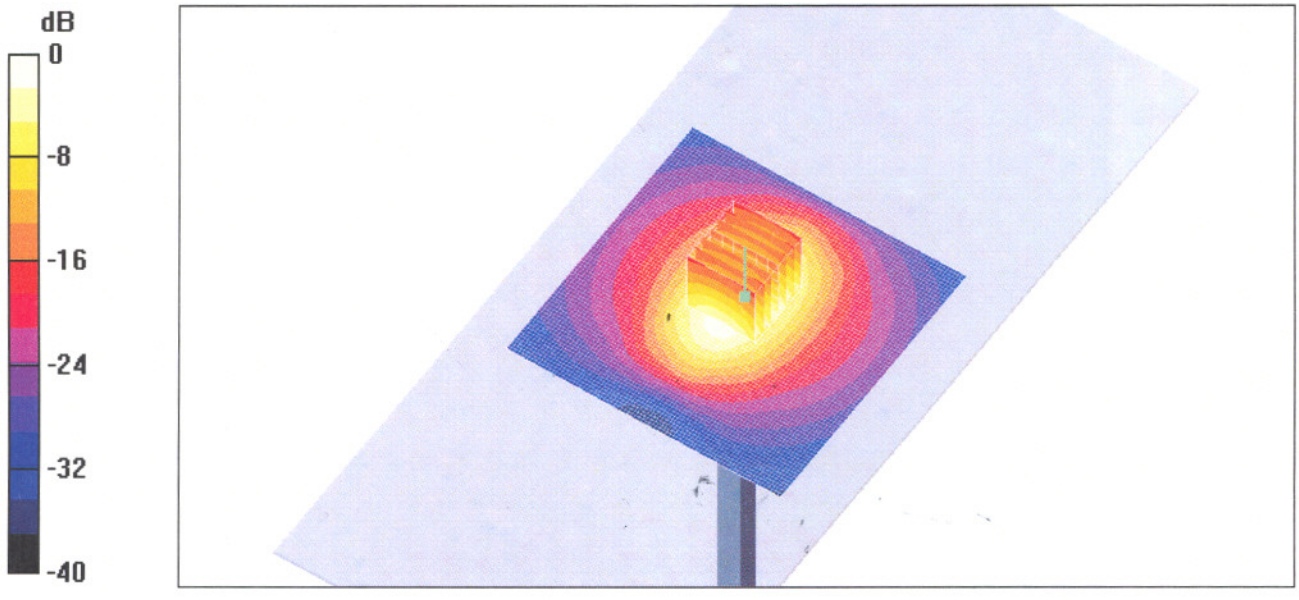
Communication System: CW-1900; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL 1800 MHz;
Medium parameters used: f = 1900 MHz; σ = 1.46 mho/m; ε_r = 39.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(4.96, 4.96, 4.96); Calibrated: 26.10.2004
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.01.2005
- Phantom: Flat Phantom 5.0; Type: QD000P50AA; Serial: 1001;
- Measurement SW: DASY4, V4.5 Build 11; Postprocessing SW: SEMCAD, V1.8 Build 144

Pin = 250 mW; d = 10 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 11.2 mW/g

Pin = 250 mW; d = 10 mm/Zoom Scan 2 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.4 V/m; Power Drift = 0.020 dB
Peak SAR (extrapolated) = 17.1 W/kg
SAR(1 g) = 9.76 mW/g; SAR(10 g) = 5.09 mW/g
Maximum value of SAR (measured) = 11.1 mW/g



0 dB = 11.1 mW/g

Date/Time: 14.02.2005 17:05:1

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d030

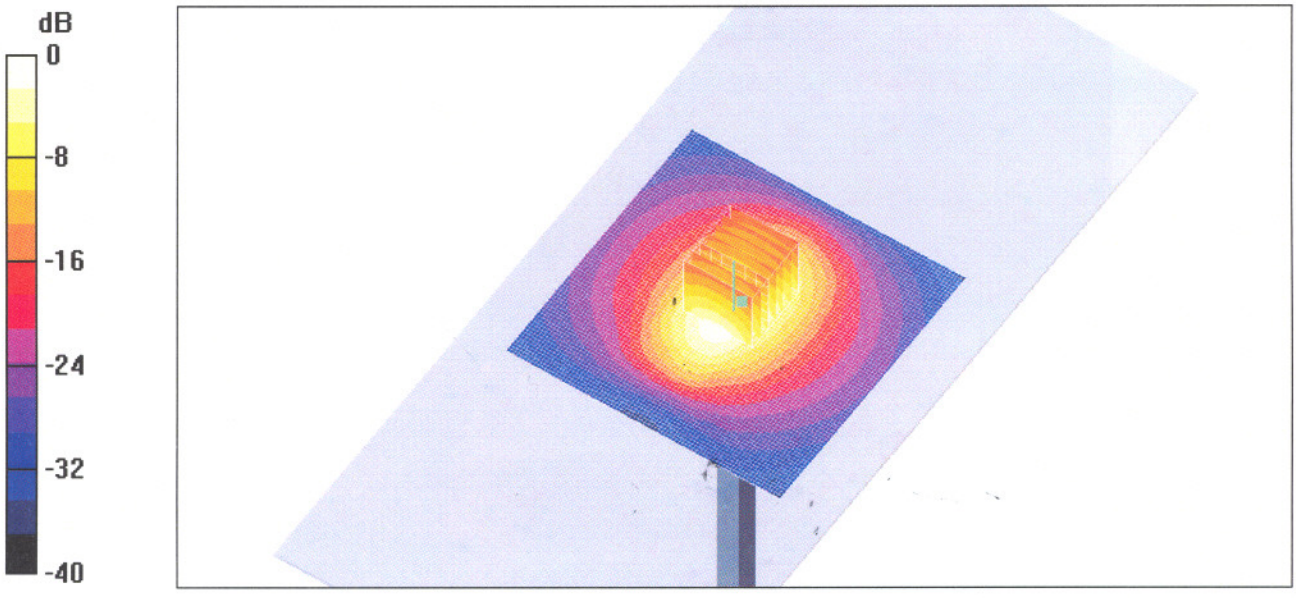
Communication System: CW-1900; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: Muscle 1800 MHz;
Medium parameters used: f = 1900 MHz; σ = 1.57 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(4.43, 4.43, 4.43); Calibrated: 26.10.2004
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.01.2005
- Phantom: Flat Phantom 5.0; Type: QD000P50AA; Serial: 1001;
- Measurement SW: DASY4, V4.5 Build 13; Postprocessing SW: SEMCAD, V1.8 Build 142

Pin = 250 mW; d = 10 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 11.5 mW/g

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 89.4 V/m; Power Drift = 0.0 dB
Peak SAR (extrapolated) = 16.7 W/kg
SAR(1 g) = 9.94 mW/g; SAR(10 g) = 5.3 mW/g
Maximum value of SAR (measured) = 11.2 mW/g



0 dB = 11.2 mW/g