

SAR Compliance Test Report

Test report no.:	FCC_RM-675_01	Date of report:	2010-07-29
Template version:	15.0	Number of pages:	110
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 Nokia House Summit Avenue, Southwood FARNBOROUGH HAMPSHIRE GU14 ONG UK Tel. +44 1252 866000 Fax. +44 1252 866001
Responsible test engineer:	Janne Hirsimäki	Product contact person:	Alison Lenaghan
Measurements made by:	Janne Hirsimäki, Heikki Kuusela, Alina Tähkäpää		
Tested device:	RM-675		
FCC ID:	QFXRM-675	IC:	661Z-RM675
Supplement reports:	SAR_Photo_RM-675_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 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:			

CONTENTS

1. SUMMARY OF SAR TEST REPORT.....	4
1.1 TEST DETAILS.....	4
1.2 MAXIMUM RESULTS.....	4
1.2.1 Head Configuration.....	4
1.2.2 Body Worn Configuration	5
1.2.3 Maximum Drift	5
1.2.4 Measurement Uncertainty	5
2. DESCRIPTION OF THE DEVICE UNDER TEST	6
2.1 DESCRIPTION OF THE ANTENNA	7
3. TEST CONDITIONS	7
3.1 TEMPERATURE AND HUMIDITY	7
3.2 TEST SIGNAL, FREQUENCIES AND OUTPUT POWER	7
3.3 TEST CASES AND TEST MINIMISATION	8
4. DESCRIPTION OF THE TEST EQUIPMENT	10
4.1 MEASUREMENT SYSTEM AND COMPONENTS	10
4.1.1 Isotropic E-field Probe Type ES3DV3	11
4.1.2 Isotropic E-field Probe Type EX3DV4.....	12
4.2 PHANTOMS	12
4.3 TISSUE SIMULANTS	12
4.3.1 Tissue Simulant Recipes	13
4.3.2 System Checking	13
4.3.3 Tissue Simulants used in the Measurements.....	15
5. DESCRIPTION OF THE TEST PROCEDURE	17
5.1 DEVICE HOLDER.....	17
5.2 TEST POSITIONS.....	17
5.2.1 Against Phantom Head.....	17
5.2.2 Body Worn Configuration	18
5.3 SCAN PROCEDURES.....	18
5.4 SAR AVERAGING METHODS.....	18
6. MEASUREMENT UNCERTAINTY	19
7. RESULTS	20
APPENDIX A: SYSTEM CHECKING SCANS.....	27
APPENDIX B: MEASUREMENT SCANS.....	37
APPENDIX C: CONDUCTED AVERAGE POWER MEASUREMENTS FOR WCDMA AND HSUPA	106
APPENDIX D: RELEVANT PAGES FROM PROBE CALIBRATION REPORT(S).....	109

APPENDIX E: RELEVANT PAGES FROM DIPOLE VALIDATION KIT REPORT(S).....	110
--	-----

1. SUMMARY OF SAR TEST REPORT

1.1 Test Details

Period of test	2010-06-15 to 2010-07-08
SN, HW and SW numbers of tested device	SN: 004402/13/142309/1, HW: 3001, SW: 010.021, DUT: 14813
Batteries used in testing	BL-5K, DUT: 14815, 14816, 14817, 14818
Headsets used in testing	WH-102, DUT: 14881, 14445
Other accessories used in testing	-
State of sample	Prototype unit
Notes	-

1.2 Maximum Results

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

1.2.1 Head Configuration

Mode	Ch / f (MHz)	Conducted power	Position	Measured SAR value (1g avg)	Scaled* SAR value (1g avg)	SAR limit (1g avg)	Result
GSM850	251 / 848.8	32.5 dBm	Right, Cheek	0.551 W/kg	0.62 W/kg	1.6 W/kg	PASSED
WCDMA850	4233 / 846.6	23.5 dBm	Right, Cheek	0.603 W/kg	0.68 W/kg	1.6 W/kg	PASSED
WCDMA1700/2100	1513 / 1752.6	23.5 dBm	Right, Cheek	0.899 W/kg	1.01 W/kg	1.6 W/kg	PASSED
2-slot GPRS1900	661 / 1880.0	26.5 dBm	Left, Cheek	0.441 W/kg	0.49 W/kg	1.6 W/kg	PASSED
WCDMA1900	9400 / 1880.0	22.5 dBm	Right, Cheek	0.807 W/kg	0.90 W/kg	1.6 W/kg	PASSED
WLAN2450	7 / 2442.0	18.0 dBm	Right, Cheek	0.460 W/kg	0.52 W/kg	1.6 W/kg	PASSED
GSM850 + WLAN2450	-	-	Right, Cheek	0.588 W/kg	0.66 W/kg	1.6 W/kg	PASSED
WCDMA850 + WLAN2450	-	-	Right, Cheek	0.630 W/kg	0.71 W/kg	1.6 W/kg	PASSED
WCDMA1700/2100 + WLAN2450	-	-	Right, Cheek	0.916 W/kg	1.03 W/kg	1.6 W/kg	PASSED
2-slot GPRS1900 + WLAN2450	-	-	Right, Cheek	0.518 W/kg	0.58 W/kg	1.6 W/kg	PASSED
WCDMA1900 + WLAN2450	-	-	Right, Cheek	0.837 W/kg	0.94 W/kg	1.6 W/kg	PASSED

1.2.2 Body Worn Configuration

Mode	Ch / f (MHz)	Conducted power	Separation distance	Measured SAR value (1g avg)	Scaled* SAR value (1g avg)	SAR limit (1g avg)	Result
GSM850	251 / 848.8	32.5 dBm	1.5 cm	0.561 W/kg	0.63 W/kg	1.6 W/kg	PASSED
WCDMA850	4233 / 846.6	23.5 dBm	1.5 cm	0.587 W/kg	0.66 W/kg	1.6 W/kg	PASSED
WCDMA1700/2100	1513 / 1752.6	23.5 dBm	1.5 cm	0.718 W/kg	0.80 W/kg	1.6 W/kg	PASSED
2-slot GPRS1900	512 / 1850.2	26.5 dBm	1.5 cm	0.380 W/kg	0.43 W/kg	1.6 W/kg	PASSED
WCDMA1900	9400 / 1880.0	22.5 dBm	1.5 cm	0.659 W/kg	0.74 W/kg	1.6 W/kg	PASSED
WLAN2450	7 / 2442.0	18.0 dBm	1.5 cm	0.089 W/kg	0.10 W/kg	1.6 W/kg	PASSED
GSM850 + WLAN2450	-	-	1.5 cm	0.576 W/kg	0.65 W/kg	1.6 W/kg	PASSED
WCDMA850 + WLAN2450	-	-	1.5 cm	0.604 W/kg	0.68 W/kg	1.6 W/kg	PASSED
WCDMA1700/2100 + WLAN2450	-	-	1.5 cm	0.744 W/kg	0.83 W/kg	1.6 W/kg	PASSED
2-slot GPRS1900 + WLAN2450	-	-	1.5 cm	0.397 W/kg	0.44 W/kg	1.6 W/kg	PASSED
WCDMA1900 + WLAN2450	-	-	1.5 cm	0.678 W/kg	0.76 W/kg	1.6 W/kg	PASSED

* SAR values are scaled up by 12% to cover measurement drift. As a consequence of this upwards correction of the SAR values, the contribution of measurement drift to the overall measurement uncertainty (Section 6) is reduced to zero.

1.2.3 Maximum Drift

Maximum drift covered by 12% scaling up of the SAR values	Maximum drift during measurements
0.5dB	0.49 dB

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 of Operation	Bands	Modulation Mode	Duty Cycle	Transmitter Frequency Range (MHz)
GSM	850 1900	GMSK	1/8	824 – 849 1850 – 1910
GPRS	850 1900	GMSK	1/8 to 4/8	824 – 849 1850 – 1910
EGPRS	850 1900	GMSK / 8PSK	1/8 to 4/8	824 – 849 1850 – 1910
WCDMA	850 (Band V) 1700/2100 (Band IV) 1900 (Band II)		1	826 – 847 1712 – 1753 1852 – 1908
HSUPA	850 (Band V) 1700/2100 (Band IV) 1900 (Band II)		1	826 – 847 1712 – 1753 1852 – 1908
BT	2450	GFSK	1	2402 – 2480
WLAN b-mode	2450	11Mbps QPSK	1	2412 – 2462
WLAN n-mode 20MHz	2450	6.5Mbps BPSK	1	2412 – 2462

Outside of USA and Canada, the transmitter of the device is capable of operating also in GSM/GPRS/EGPRS900, GSM/GPRS/EGPRS1800, WCDMA900 and WCDMA2100 bands which are not part of this filing.

This device has Voice-over-IP/Dual Transfer Mode capability for use at the ear. Therefore, SAR for multi slot GPRS mode was evaluated against the head profile of the phantom. Dual Transfer Mode is a feature that utilises the multi-slot GPRS capability in this device; it allows simultaneous transmission of voice and data during the same call, using the same transmitter and antenna.

This is a WCDMA HSUPA device, but SAR tests for HSUPA mode have not been performed as no HSUPA Sub-test mode has an average power > 0.25dB above the basic WCDMA 12.2kbps RMC mode. Appendix C of this report gives a summary of the measured WCDMA and HSUPA average powers; a detailed report of these WCDMA and HSUPA conducted power tests is submitted separately.

This is a BT Class 1 device, but as the power tuning target is 10dBm (10mW), SAR testing was deemed unnecessary.

2.1 Description of the Antenna

The device has internal antennas for both cellular and WLAN use. The cellular antenna is located at the bottom underneath the back cover. The WLAN antenna is located at the top underneath the back cover.

3. TEST CONDITIONS

3.1 Temperature and Humidity

Ambient temperature (°C):	20.1 to 22.3
Ambient humidity (RH %):	51 to 66

3.2 Test Signal, Frequencies and Output Power

The device was put into operation by using a call tester except for testing WLAN2450 where control software was used. Communication between the device and the call tester was established by air link.

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

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

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

The radiated output power of the device was measured by a separate test laboratory on the same unit(s) as used for SAR testing. The results are given in the EMC report supporting this application.

The transmission mode of the device in all WLAN b-mode tests was DSSS QPSK 11Mbps. This mode has the highest (or equal highest) time-averaged output power of all the WLAN b and g modulation modes in Nokia devices. In WLAN n-mode tests, BPSK 6.5Mbps with 20MHz bandwidth was used.

3.3 Test Cases and Test Minimisation

The tested device examined in this report may not incorporate all of the features described in the text that follows, but its SAR evaluation will have been subjected to the same considerations and test logic described below.

Whilst it's possible to identify the maximum SAR test cases from inspection of the conducted power levels given in the Results tables (Section 7), different modes in the same band and multi-slot transmit GSM/GPRS modes can create some difficulties. Therefore the sequence of the SAR tests made in evaluating this device has used test logic that is based on measured SAR values. Comparison of measured SAR values in this way, can also allow some test minimization (i.e. test elimination) to be made.

For example, when SAR testing multi-slot GSM/GPRS/EGPRS modes, it is an inefficient use of test resources to fully SAR test every test configuration in each of the different modes as these modes have a fixed power relationship between them that is the same, irrespective of the test configuration. In the case of multi-slot GSM/GPRS modes, a single comparative SAR test - using the same test channel and test configuration - is made in each of the n-slot modes; the mode with the highest measured SAR value is then subjected to full SAR testing in all test configurations. These comparative SAR tests (same frequency, same test configuration) are regarded as extremely accurate as they are relative tests in which the tested device changes neither its frequency nor its position between tests. For different modes that operate in the same band and use the same antenna e.g. GSM/GPRS850 and WCDMA850, full SAR testing is carried out in the GSM/GPRS850 mode but WCDMA850 testing is limited to 3 channel testing in the maximum SAR test configuration for GSM/GPRS850.

Multi-slot SAR testing against the Head is always performed whenever such a device offers Push to Talk over cellular with the internal earpiece active, Dual Transfer Mode (i.e. the ability to transmit voice and data simultaneously using the same transmitter) or has WLAN (which enables a Voice over IP call to take place whilst the device can simultaneously transmit data on a cellular band). Whenever a device has an intended multi-slot use against the head, it is also Head SAR tested in EGPRS mode. It should be noted that EGPRS transmit modes can have either GMSK or 8PSK modulation but, when tested, only 8PSK EGPRS will appear explicitly in the results tables, as GMSK EGPRS mode has identical time-averaged power to the reported GPRS mode.

Devices that have flips or slides are fully SAR tested in all device configurations consistent with their intended usage. For example, flip phones that can receive a call in closed mode are SAR tested against the head in both open and closed configurations. Similarly, slide phones are fully SAR tested in all slide configurations in which calls are intended to be made or received.

In the results tables in Section 7, the maximum SAR value for the 'basic' tests (i.e. left cheek, left tilt, right cheek and right tilt in Head SAR testing; with and without headset with the back &/or

display side facing the flat phantom in Body SAR testing) is bolded for each band. In some cases, after full testing of the basic SAR test configurations has been completed, additional checking SAR tests are made. These checking tests are always based on the bolded result from the 'basic' testing. When the SAR value of a checking test exceeds the maximum value from the basic tests, it is also bolded and used as the basis for any further checking tests that might be needed.

Checking tests are largely voluntary and can cover optional batteries, different camera slide positions, optional covers, etc. In the case of optional batteries, if the construction of the optional battery is significantly different to the battery used in the full testing e.g. if the outer can is floating electrically rather than grounded, then the maximum SAR test configuration in each band is tested with the optional battery in 3 channels. For camera slides, if the slide material is metal, then checking tests in 3 channels are again run for the maximum SAR test configuration in each band. For plastic camera slides, SAR checking is only carried out in the channel that provided the maximum SAR value for the original. Optional front and back covers are tested if their shape differs significantly from the original or if their metallic content varies by more than 15% from the original; in the former case, the testing depends on the extent of the physical differences, whereas in the latter case, 3 channel SAR testing is performed in every band in the max SAR test configuration.

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	555	12 months	2010-10
DAE 4	728	12 months	2011-03
DAE 4	1213	12 months	2010-11
E-field Probe ES3DV3	3131	12 months	2010-10
E-field Probe ES3DV3	3194	12 months	2010-11
E-field Probe EX3DV4	3573	12 months	2010-11
Dipole Validation Kit, D835V2	480	24 months	2011-10
Dipole Validation Kit, D1800V2	256	24 months	2011-10
Dipole Validation Kit, D1900V2	5d013	24 months	2012-03
Dipole Validation Kit, D2450V2	749	24 months	2011-10
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	2010-09
Amplifier	ZHL-42 (SMA)	N072095-5	12 months	2010-09
Power Meter	NRVS	838624/032	12 months	2010-09
Power Sensor	NRV-Z32	839176/020	12 months	2010-09
Call Tester	CMU 200	101111	-	-
Call Tester	CMU 200	103293	-	-
Vector Network Analyzer	8753E	US38432928	12 months	2010-09
Dielectric Probe Kit	85070B	US33020420	-	-
Signal Generator	E4436B	US39260114	12 months	2010-12
Amplifier	5S1G4	25583	-	-
Power Meter	NRVS	849305/028	12 months	2010-09
Power Sensor	NRV-Z32	825600/004	12 months	2010-09

4.1.1 Isotropic E-field Probe Type ES3DV3

Construction	Symmetrical design with triangular core Interleaved sensors 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 4 GHz (dosimetry); Linearity: ± 0.2 dB (30 MHz to 4 GHz)
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.3 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: 20 mm Body diameter: 12 mm Tip diameter: 3.9 mm
Application	Distance from probe tip to dipole centers: 2.0 mm General dosimetry up to 4 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms

4.1.2 Isotropic E-field Probe Type EX3DV4

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	Calibration certificate in Appendix D
Frequency	10 MHz to >6 GHz (dosimetry); Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	10 μ W/g to > 100 mW/g, Linearity: ± 0.2 dB
Dimensions	Overall length: 330 mm Tip length: 10 mm Body diameter: 12 mm Tip diameter: 2.5 mm Distance from probe tip to dipole centers: 1.0 mm
Application	General dosimetry up to 6 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 at least 15.0 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

1800MHz band

Ingredient	Head (% by weight)	Body (% by weight)
Deionised Water	54.0	70.20
Tween 20	45.6	29.37
Salt	0.4	0.43

1900MHz band

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

2450MHz band

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

4.3.2 System Checking

The manufacturer calibrates the probes annually. Dielectric parameters of the tissue simulants were measured every day using the dielectric probe kit and the network analyser. A system check measurement was made following the determination of the dielectric parameters of the

simulant, using the dipole validation kit. A power level of 250 mW was supplied to the dipole antenna, which was placed under the flat section of the twin SAM phantom. The system checking results (dielectric parameters and SAR values) are given in the table below.

System checking, head tissue simulant

f [MHz]	Description	SAR [W/kg], 1g	Dielectric Parameters		Temp [°C]
			ϵ_r	σ [S/m]	
835	Reference result	2.36	40.5	0.88	
	$\pm 10\%$ window	2.12 – 2.60			
	2010-07-07	2.46	41.0	0.89	21.0
	2010-07-08	2.34	40.6	0.87	21.0
1800	Reference result	9.90	40.0	1.40	
	$\pm 10\%$ window	8.91 – 10.89			
	2010-06-15	9.31	39.2	1.35	21.0
	2010-06-16	9.30	38.9	1.36	21.0
1900	Reference result	10.2	41.2	1.45	
	$\pm 10\%$ window	9.2 – 11.2			
	2010-06-17	10.1	39.7	1.39	21.0
	2010-06-23	10.6	39.7	1.40	21.0
2450	Reference result	13.2	39.1	1.78	
	$\pm 10\%$ window	11.9 – 14.5			
	2010-06-30	14.2	37.7	1.81	21.0
	2010-07-01	14.3	37.7	1.83	21.0

System checking, body tissue simulant

f [MHz]	Description	SAR [W/kg], 1g	Dielectric Parameters		Temp [°C]
			ϵ_r	σ [S/m]	
1900	Reference result	10.4	55.0	1.58	
	$\pm 10\%$ window	9.4 – 11.4			
	2010-06-24	11.1	53.1	1.54	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]	
835	Recommended value	41.5	0.90	
	$\pm 5\%$ window	39.4 – 43.6	0.86 – 0.95	
	2010-07-07	41.0	0.89	21.0
	2010-07-08	40.6	0.87	21.0
836	Recommended value	41.5	0.90	
	$\pm 5\%$ window	39.4 – 43.6	0.86 – 0.95	
	2010-07-07	40.9	0.89	21.0
1732	Recommended value	40.1	1.36	
	$\pm 5\%$ window	38.1 – 42.1	1.29 – 1.43	
	2010-06-15	39.5	1.30	21.0
1880	Recommended value	40.0	1.40	
	$\pm 5\%$ window	38.0 – 42.0	1.33 – 1.47	
	2010-06-17	39.8	1.37	21.0
	2010-06-23	39.8	1.38	21.0
2442	Recommended value	39.2	1.79	
	$\pm 5\%$ window	37.3 – 41.2	1.70 – 1.88	
	2010-06-30	37.8	1.80	21.0

Body tissue simulant measurements

f [MHz]	Description	Dielectric Parameters		Temp [°C]
		ϵ_r	σ [S/m]	
835	Recommended value	55.2	0.97	
	$\pm 5\%$ window	52.4 – 58.0	0.92 – 1.02	
	2010-07-08	53.8	0.99	21.0
836	Recommended value	55.2	0.97	
	$\pm 5\%$ window	52.4 – 58.0	0.92 – 1.02	
	2010-07-08	53.7	0.99	21.0
1732	Recommended value	53.5	1.48	
	$\pm 5\%$ window	50.8 – 56.2	1.40 – 1.55	
	2010-06-16	51.4	1.43	21.0
1880	Recommended value	53.3	1.52	
	$\pm 5\%$ window	50.6 – 56.0	1.44 – 1.60	
	2010-06-23	53.0	1.51	21.0
	2010-06-24	53.2	1.51	21.0
2442	Recommended value	52.7	1.94	
	$\pm 5\%$ window	50.1 – 55.3	1.85 – 2.04	
	2010-06-30	50.9	2.00	21.0
	2010-07-01	50.9	2.00	21.0

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 both sides facing the phantom to find the highest 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	$C_i \cdot U_i$ (%)	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	

7. RESULTS

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

850MHz Head SAR results

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
GSM	Conducted Power		32.5 dBm	32.5 dBm	32.5 dBm
	Left	Cheek	-	0.437	-
		Tilt	-	0.346	-
	Right	Cheek	0.446	0.497	0.551
		Tilt	-	0.331	-
2-slot GPRS	Conducted Power		-	29.5 dBm	-
	Left	Cheek	-	0.415	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
3-slot GPRS	Conducted Power		-	27.7 dBm	-
	Left	Cheek	-	0.406	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
4-slot GPRS	Conducted Power		-	26.5 dBm	-
	Left	Cheek	-	0.405	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
1-slot 8PSK EGPRS	Conducted Power		-	27.0 dBm	-
	Left	Cheek	-	-	-
		Tilt	-	-	-
	Right	Cheek	-	-	0.123
		Tilt	-	-	-

(850MHz Table continues)

(850MHz Table continues)

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz
WCDMA	Conducted Power		23.5 dBm	23.5 dBm	23.5 dBm
	Left	Cheek	-	0.447	-
		Tilt	-	0.348	-
	Right	Cheek	0.451	0.513	0.603
		Tilt	-	0.352	-

1700/2100MHz Head SAR results

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 1312 1712.4 MHz	Ch 1412 1732.4 MHz	Ch 1513 1752.6 MHz
WCDMA	Conducted Power		23.5 dBm	23.5 dBm	23.5 dBm
	Left	Cheek	-	0.771	-
		Tilt	-	0.447	-
	Right	Cheek	0.754	0.816	0.899
		Tilt	-	0.320	-

1900MHz Head SAR results

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz
GSM	Conducted Power		29.5 dBm	29.5 dBm	29.5 dBm
	Left	Cheek	-	0.398	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
2-slot GPRS	Conducted Power		-	26.5 dBm	-
	Left	Cheek	0.408	0.441	0.362
		Tilt	-	0.209	-
	Right	Cheek	-	0.378	-
		Tilt	-	0.175	-
3-slot GPRS	Conducted Power		-	24.7 dBm	-
	Left	Cheek	-	0.438	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
4-slot GPRS	Conducted Power		-	23.5 dBm	-
	Left	Cheek	-	0.436	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
2-slot 8PSK EGPRS	Conducted Power		-	26.0 dBm	-
	Left	Cheek	-	0.261	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz
WCDMA	Conducted Power		22.5 dBm	22.5 dBm	22.5 dBm
	Left	Cheek	-	0.769	-
		Tilt	-	0.420	-
	Right	Cheek	0.744	0.807	0.693
		Tilt	-	0.289	-

2450MHz Head SAR results

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 1 2412.0 MHz	Ch 7 2442.0 MHz	Ch 11 2462.0 MHz
WLAN b-mode	Conducted Power		18.0 dBm	18.0 dBm	18.0 dBm
	Left	Cheek	-	0.327	-
		Tilt	-	0.366	-
	Right	Cheek	0.251	0.460	0.182
		Tilt	-	0.386	-
WLAN n-mode	Conducted Power		12.5 dBm	12.5 dBm	12.5 dBm
	Left	Cheek	-	-	-
		Tilt	-	-	-
	Right	Cheek	0.067	0.067	0.052
		Tilt	-	-	-

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

850MHz Body SAR results

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
GSM		Conducted Power	32.5 dBm	32.5 dBm	32.5 dBm
	Display facing phantom	Without headset	-	0.457	-
		Headset WH-102	-	0.362	-
	Back facing phantom	Without headset	0.465	0.524	0.561
		Headset WH-102	-	0.385	-
Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz
WCDMA		Conducted Power	23.5 dBm	23.5 dBm	23.5 dBm
	Display facing phantom	Without headset	-	0.465	-
		Headset WH-102	-	0.312	-
	Back facing phantom	Without headset	0.507	0.510	0.587
		Headset WH-102	-	0.425	-

1700/2100MHz Body SAR results

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 1312 1712.4 MHz	Ch 1412 1732.4 MHz	Ch 1513 1752.6 MHz
WCDMA		Conducted Power	23.5 dBm	23.5 dBm	23.5 dBm
	Display facing phantom	Without headset	-	0.626	-
		Headset WH-102	-	0.553	-
	Back facing phantom	Without headset	0.614	0.671	0.718
		Headset WH-102	-	0.559	-

1900MHz Body SAR results

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz
2-slot GPRS		Conducted Power	26.5 dBm	26.5 dBm	26.5 dBm
	Display facing phantom	Without headset	-	0.314	-
		Headset WH-102	-	0.286	-
	Back facing phantom	Without headset	0.380	0.371	0.344
		Headset WH-102	-	0.329	-
Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz
WCDMA		Conducted Power	22.5 dBm	22.5 dBm	22.5 dBm
	Display facing phantom	Without headset	-	0.581	-
		Headset WH-102	-	0.546	-
	Back facing phantom	Without headset	0.630	0.659	0.536
		Headset WH-102	-	0.612	-

2450MHz Body SAR results

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 1 2412.0 MHz	Ch 7 2442.0 MHz	Ch 11 2462.0 MHz
WLAN b-mode		Conducted Power	18.0 dBm	18.0 dBm	18.0 dBm
	Display facing phantom	Without headset	-	0.084	-
		Headset WH-102	-	0.072	-
	Back facing Phantom	Without headset	0.045	0.089	0.033
		Headset WH-102	-	0.086	-
WLAN n-mode		Conducted Power	12.5 dBm	12.5 dBm	12.5 dBm
	Display facing phantom	Without headset	-	-	-
		Headset WH-102	-	-	-
	Back facing phantom	Without headset	0.012	0.011	0.011
		Headset WH-102	-	-	-

Simultaneous transmissions: Combined SAR results – Individual band Max results

Test configuration	Max. 1g SAR results					
	WLAN	GSM850	WCDMA 850	WCDMA 1700/2100	2-slot GPRS1900	WCDMA 1900
Head: Left, Cheek	0.327	0.437	0.447	0.771	0.441	0.769
Head: Left, Tilt	0.366	0.346	0.348	0.447	0.209	0.420
Head: Right, Cheek	0.460	0.551	0.603	0.899	0.378	0.807
Head: Right, Tilt	0.386	0.331	0.352	0.320	0.175	0.289
Body: Without Headset	0.089	0.561	0.587	0.718	0.380	0.659
Body: Headset WH-701	0.086	0.385	0.425	0.559	0.329	0.612

Simultaneous transmissions: Combined SAR results – Max + Max combined results

Test configuration	Combined 1g SAR values				
	WLAN + GSM850	WLAN + WCDMA850	WLAN + WCDMA 1700/2100	WLAN + 2-slot GPRS1900	WLAN + WCDMA 1900
Head: Left, Cheek	0.764	0.774	1.098	0.768	1.096
Head: Left, Tilt	0.712	0.714	0.813	0.575	0.786
Head: Right, Cheek	1.011	1.063	1.359	0.838	1.267
Head: Right, Tilt	0.717	0.738	0.706	0.561	0.675
Body: Without Headset	0.650	0.676	0.807	0.469	0.748
Body: Headset WH-701	0.471	0.511	0.645	0.415	0.698

The following table gives a more accurate assessment of the SAR values for simultaneous transmission. These values have been calculated using the SPEAG Combined Multiband algorithm, which is based on area scans. It a) converts the 2D area scans into 3D volume scans by assuming frequency-dependent decay characteristics for the E-field, b) sums the SAR values for WLAN2450 and the cellular bands point-by-point and c) calculates the combined average SAR values. It is these values that appear in the Summary table in Section 1.2.

**Simultaneous transmissions: Combined SAR results –
SPEAG Combined Multiband algorithm results**

Test configuration	Combined 1g SAR values				
	WLAN + GSM850	WLAN + WCDMA850	WLAN + WCDMA 1700/2100	WLAN + 2-slot GPRS1900	WLAN + WCDMA 1900
Head: Left, Cheek	-	-	-	-	-
Head: Left, Tilt	-	-	-	-	-
Head: Right, Cheek	0.588	0.630	0.916	0.518	0.837
Head: Right, Tilt	-	-	-	-	-
Body: Without Headset	0.576	0.604	0.744	0.397	0.678
Body: Headset WH-701	-	-	-	-	-

Note: Simultaneous Transmission Procedures as described in KDB648474 are not required for this product. The Combined SAR data given in the tables above has been voluntarily calculated.

Plots of the Measurement scans are given in Appendix B.

APPENDIX A: SYSTEM CHECKING SCANS

Date/Time: 2010-07-07 08:10:10

Test Laboratory: TCC Nokia
Type: D835V2; Serial: D835V2 - SN:480

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 20.4 C

Medium parameters used: f = 835 MHz; $\sigma = 0.887$ mho/m; $\epsilon_r = 41$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.85, 5.85, 5.85); Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2009-11-16
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

d=15mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 2.63 mW/g

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

Reference Value = 55.6 V/m

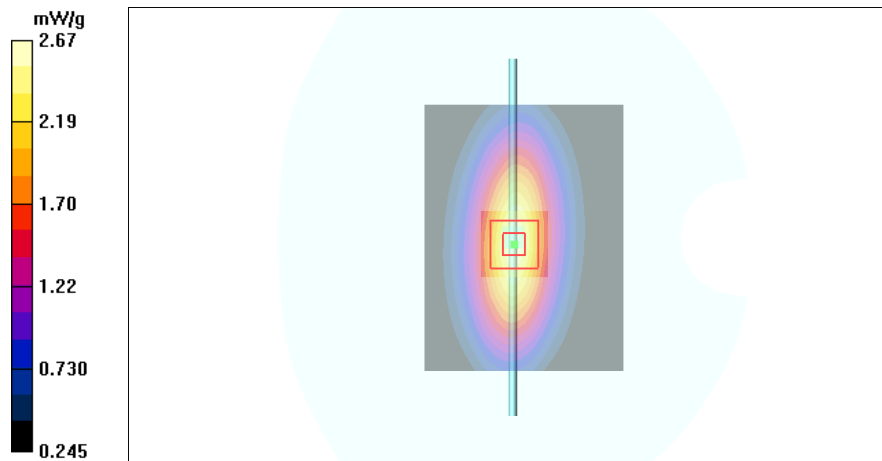
Peak SAR (extrapolated) = 3.60 W/kg

SAR(1 g) = 2.46 mW/g

SAR(10 g) = 1.61 mW/g

Power Drift = 0.023 dB

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



Date/Time: 2010-07-08 08:04:02

Test Laboratory: TCC Nokia
Type: D835V2; Serial: D835V2 - SN:480

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 20.5 C

Medium parameters used: f = 835 MHz; $\sigma = 0.873$ mho/m; $\epsilon_r = 40.6$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.85, 5.85, 5.85); Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2009-11-16
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

d=15mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 55.0 V/m

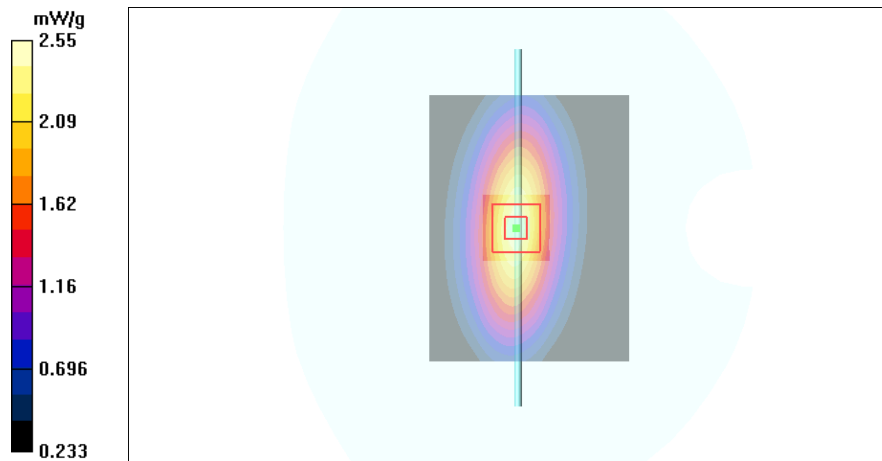
Peak SAR (extrapolated) = 3.45 W/kg

SAR(1 g) = 2.34 mW/g

SAR(10 g) = 1.53 mW/g

Power Drift = -0.022 dB

Maximum value of SAR (measured) = 2.55 mW/g



Date/Time: 2010-06-15 09:04:56

Test Laboratory: TCC Nokia

Type: D1800V2; Serial: D1800V2 - SN:256

Communication System: CW1800

Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: HSL1800; Medium Notes: t= 20.4 C

Medium parameters used: f = 1800 MHz; $\sigma = 1.35$ mho/m; $\epsilon_r = 39.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(5.25, 5.25, 5.25); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

d=15mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 10.7 mW/g

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

Reference Value = 86.3 V/m

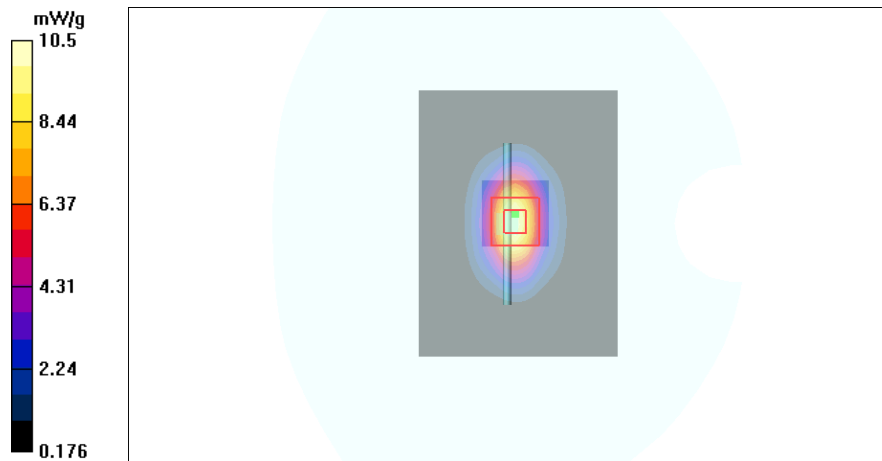
Peak SAR (extrapolated) = 17.0 W/kg

SAR(1 g) = 9.31 mW/g

SAR(10 g) = 4.87 mW/g

Power Drift = 0.090 dB

Maximum value of SAR (measured) = 10.5 mW/g



Date/Time: 2010-06-16 08:41:25

Test Laboratory: TCC Nokia

Type: D1800V2; Serial: D1800V2 - SN:256

Communication System: CW1800

Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: HSL1800; Medium Notes: t= 20.5 C

Medium parameters used: f = 1800 MHz; $\sigma = 1.36$ mho/m; $\epsilon_r = 38.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(5.25, 5.25, 5.25); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

d=15mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 10.6 mW/g

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

Reference Value = 87.2 V/m

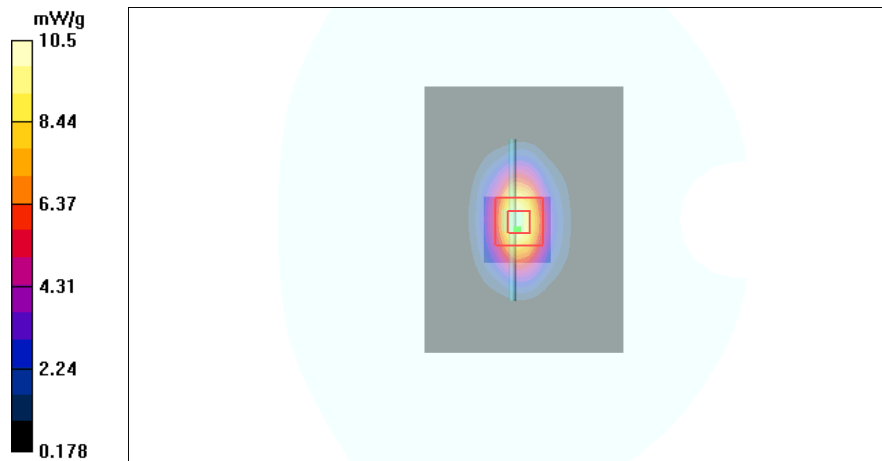
Peak SAR (extrapolated) = 17.0 W/kg

SAR(1 g) = 9.3 mW/g

SAR(10 g) = 4.88 mW/g

Power Drift = 0.056 dB

Maximum value of SAR (measured) = 10.5 mW/g



Date/Time: 2010-06-17 09:15:40

Test Laboratory: TCC Nokia
Type: D1900V2; Serial: D1900V2 - SN:5d013

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: t= 21.2 C

Medium parameters used: f = 1900 MHz; σ = 1.39 mho/m; ϵ_r = 39.7; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(5.06, 5.06, 5.06); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

d=15mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 11.9 mW/g

d=15mm, Pin=250mW/Zoom Scan 2 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 91.1 V/m

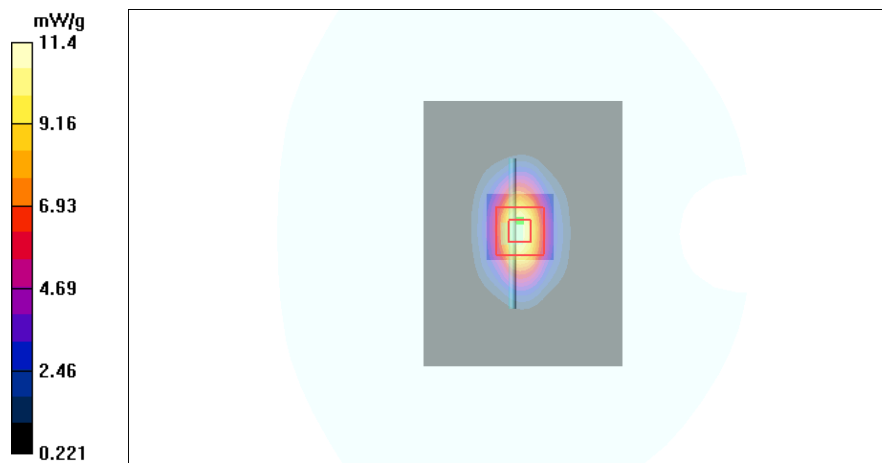
Peak SAR (extrapolated) = 17.6 W/kg

SAR(1 g) = 10.1 mW/g

SAR(10 g) = 5.33 mW/g

Power Drift = -0.022 dB

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



Date/Time: 2010-06-23 08:22:37

Test Laboratory: TCC Nokia
Type: D1900V2; Serial: D1900V2 - SN:5d013

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: t= 20.5C

Medium parameters used: f = 1900 MHz; $\sigma = 1.4$ mho/m; $\epsilon_r = 39.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(5.06, 5.06, 5.06); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

d=15mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 12.8 mW/g

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

Reference Value = 95.8 V/m

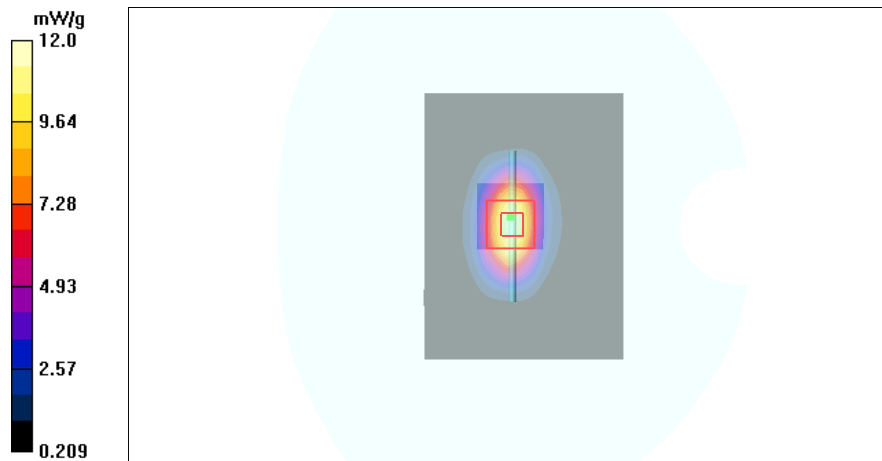
Peak SAR (extrapolated) = 18.6 W/kg

SAR(1 g) = 10.6 mW/g

SAR(10 g) = 5.59 mW/g

Power Drift = -0.056 dB

Maximum value of SAR (measured) = 12.0 mW/g



Date/Time: 2010-06-30 10:20:57

Test Laboratory: TCC Nokia

Type: D2450V2; Serial: D2450V2 - SN:749

Communication System: CW2450

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: $t = 20.3\text{ C}$

Medium parameters used: $f = 2450\text{ MHz}$; $\sigma = 1.81\text{ mho/m}$; $\epsilon_r = 37.7$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3573
- ConvF(6.56, 6.56, 6.56); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2009-10-15
- Phantom: SAM1; Type: SAM; Serial: TP-1126
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

d=15mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 17.2 mW/g

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

Reference Value = 94.7 V/m

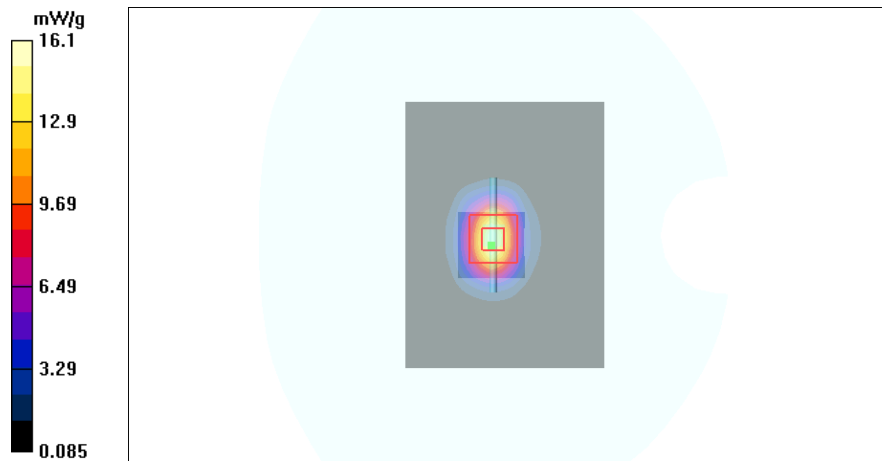
Peak SAR (extrapolated) = 30.0 W/kg

SAR(1 g) = 14.2 mW/g

SAR(10 g) = 6.53 mW/g

Power Drift = 0.030 dB

Maximum value of SAR (measured) = 16.1 mW/g



Date/Time: 2010-07-01 08:10:45

Test Laboratory: TCC Nokia

Type: D2450V2; Serial: D2450V2 - SN:749

Communication System: CW2450

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: HSL2450 ; Medium Notes: t= 20.9 C

Medium parameters used: f = 2450 MHz; $\sigma = 1.83$ mho/m; $\epsilon_r = 37.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3573
- ConvF(6.56, 6.56, 6.56); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2009-10-15
- Phantom: SAM1; Type: SAM; Serial: TP-1126
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

d=15mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 16.8 mW/g

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

Reference Value = 93.9 V/m

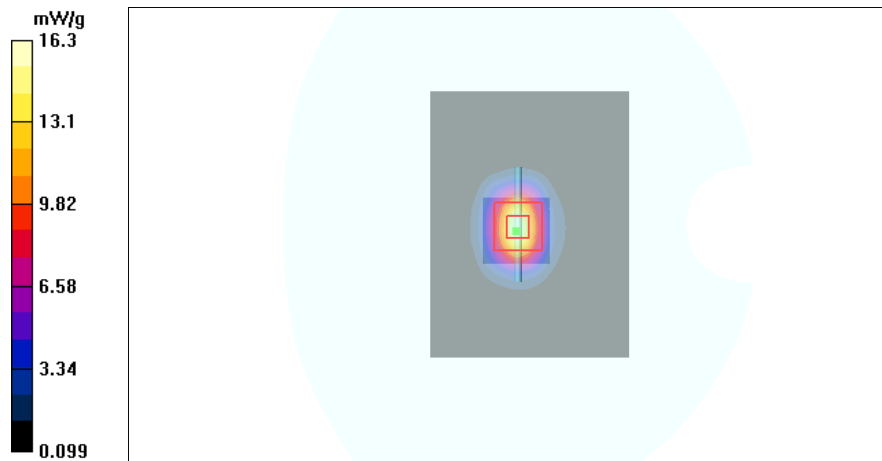
Peak SAR (extrapolated) = 30.1 W/kg

SAR(1 g) = 14.3 mW/g

SAR(10 g) = 6.59 mW/g

Power Drift = 0.063 dB

Maximum value of SAR (measured) = 16.3 mW/g



Date/Time: 2010-06-24 09:35:22

Test Laboratory: TCC Nokia
Type: D1900V2; Serial: D1900V2 - SN:5d013

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: t= 20.9 C

Medium parameters used: f = 1900 MHz; σ = 1.54 mho/m; ϵ_r = 53.1; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(4.67, 4.67, 4.67); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

d=15mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 13.0 mW/g

d=15mm, Pin=250mW/Zoom Scan 2 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 94.0 V/m

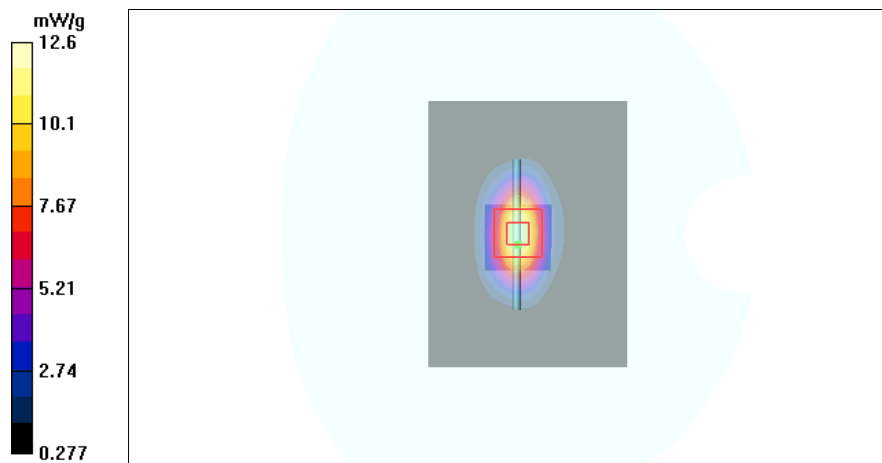
Peak SAR (extrapolated) = 19.0 W/kg

SAR(1 g) = 11.1 mW/g

SAR(10 g) = 5.91 mW/g

Power Drift = -0.088 dB

Maximum value of SAR (measured) = 12.6 mW/g



APPENDIX B: MEASUREMENT SCANS

Date/Time: 2010-07-07 11:54:55

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: HSL850; Medium Notes: t= 20.4 C

Medium parameters used: f = 837 MHz; σ = 0.889 mho/m; ϵ_r = 40.9; ρ = 1000 kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.85, 5.85, 5.85); Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2009-11-16
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.464 mW/g

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

Reference Value = 10.2 V/m

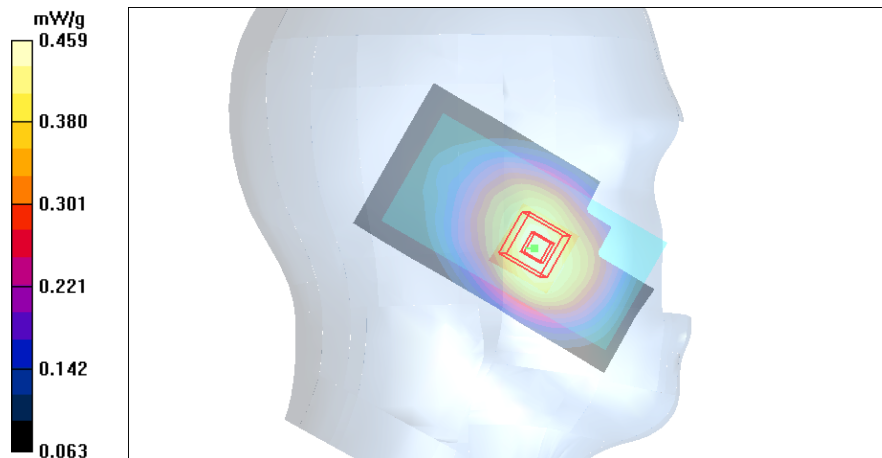
Peak SAR (extrapolated) = 0.536 W/kg

SAR(1 g) = 0.437 mW/g

SAR(10 g) = 0.334 mW/g

Power Drift = -0.261 dB

Maximum value of SAR (measured) = 0.459 mW/g



Date/Time: 2010-07-07 12:50:54

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: HSL850; Medium Notes: t= 20.4 C

Medium parameters used: f = 837 MHz; σ = 0.889 mho/m; ϵ_r = 40.9; ρ = 1000 kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.85, 5.85, 5.85); Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2009-11-16
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.354 mW/g

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

Reference Value = 16.2 V/m

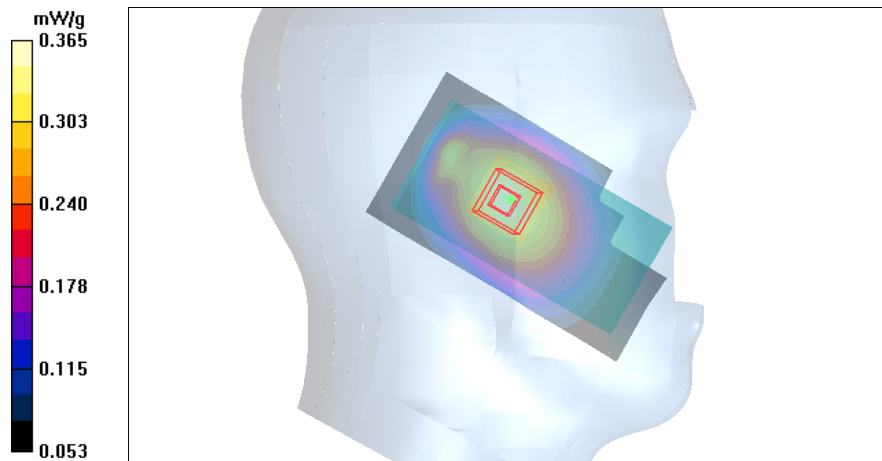
Peak SAR (extrapolated) = 0.425 W/kg

SAR(1 g) = 0.346 mW/g

SAR(10 g) = 0.261 mW/g

Power Drift = -0.029 dB

Maximum value of SAR (measured) = 0.365 mW/g



Date/Time: 2010-07-07 13:58:04

Test Laboratory: TCC Nokia
Type: RM-675; Serial: 004402/13/142309/1

Communication System: GSM850

Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: HSL850; Medium Notes: t= 20.4 C

Medium parameters used: f = 849 MHz; $\sigma = 0.896$ mho/m; $\epsilon_r = 40.9$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.85, 5.85, 5.85); Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2009-11-16
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.594 mW/g

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

Reference Value = 11.3 V/m

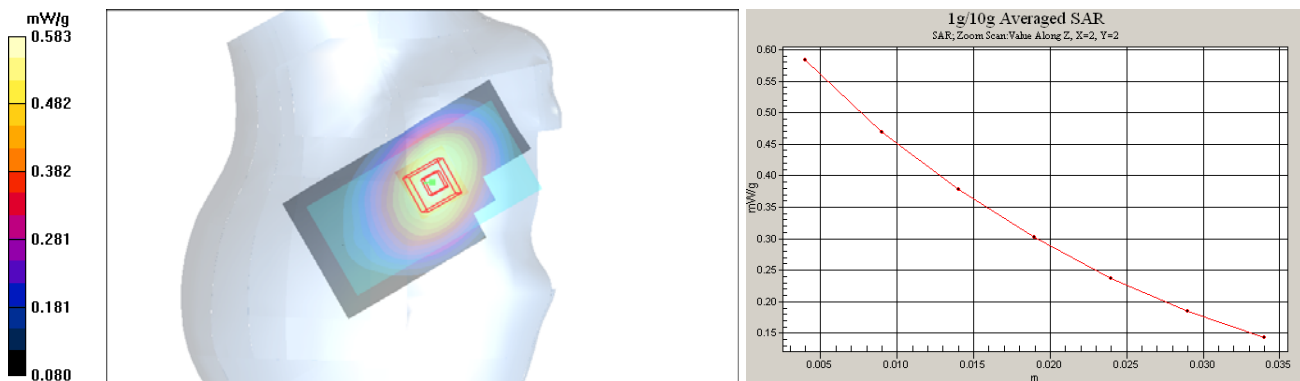
Peak SAR (extrapolated) = 0.669 W/kg

SAR(1 g) = 0.551 mW/g

SAR(10 g) = 0.421 mW/g

Power Drift = -0.023 dB

Maximum value of SAR (measured) = 0.583 mW/g



Date/Time: 2010-07-07 13:19:24

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: HSL850; Medium Notes: t= 20.4 C

Medium parameters used: f = 837 MHz; σ = 0.889 mho/m; ϵ_r = 40.9; ρ = 1000 kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.85, 5.85, 5.85); Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2009-11-16
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

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

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

Reference Value = 15.6 V/m

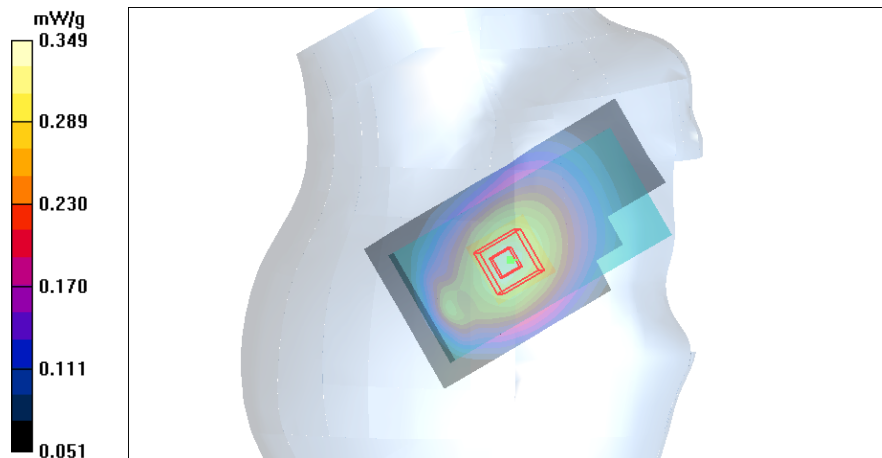
Peak SAR (extrapolated) = 0.404 W/kg

SAR(1 g) = 0.331 mW/g

SAR(10 g) = 0.250 mW/g

Power Drift = -0.011 dB

Maximum value of SAR (measured) = 0.349 mW/g



Date/Time: 2010-07-07 12:08:49

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: 2-slot GPRS850

Frequency: 836.6 MHz; Duty Cycle: 1:4.2

Medium: HSL850; Medium Notes: t= 20.4 C

Medium parameters used: f = 837 MHz; σ = 0.889 mho/m; ϵ_r = 40.9; ρ = 1000 kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.85, 5.85, 5.85); Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2009-11-16
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.433 mW/g

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

Reference Value = 9.90 V/m

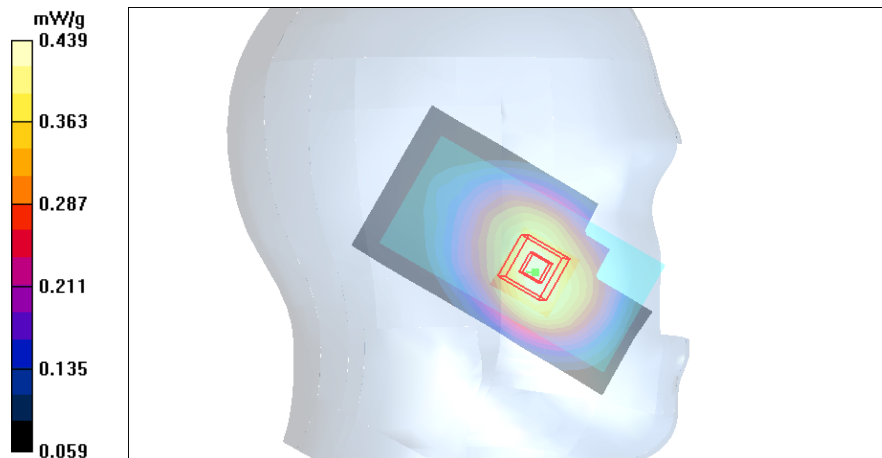
Peak SAR (extrapolated) = 0.503 W/kg

SAR(1 g) = 0.415 mW/g

SAR(10 g) = 0.316 mW/g

Power Drift = -0.079 dB

Maximum value of SAR (measured) = 0.439 mW/g



Date/Time: 2010-07-07 12:22:34

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: 3-slot GPRS850

Frequency: 836.6 MHz; Duty Cycle: 1:2.8

Medium: HSL850; Medium Notes: t= 20.4 C

Medium parameters used: f = 837 MHz; σ = 0.889 mho/m; ϵ_r = 40.9; ρ = 1000 kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.85, 5.85, 5.85); Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2009-11-16
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.423 mW/g

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

Reference Value = 9.64 V/m

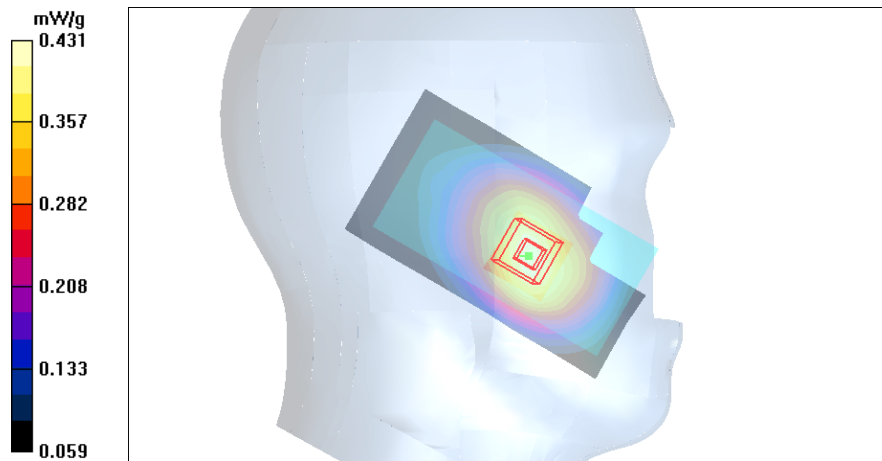
Peak SAR (extrapolated) = 0.489 W/kg

SAR(1 g) = 0.406 mW/g

SAR(10 g) = 0.310 mW/g

Power Drift = 0.072 dB

Maximum value of SAR (measured) = 0.431 mW/g



Date/Time: 2010-07-07 12:36:10

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: 4-slot GPRS850

Frequency: 836.6 MHz; Duty Cycle: 1:2.1

Medium: HSL850; Medium Notes: t= 20.4 C

Medium parameters used: f = 837 MHz; σ = 0.889 mho/m; ϵ_r = 40.9; ρ = 1000 kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.85, 5.85, 5.85); Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2009-11-16
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.422 mW/g

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

Reference Value = 9.64 V/m

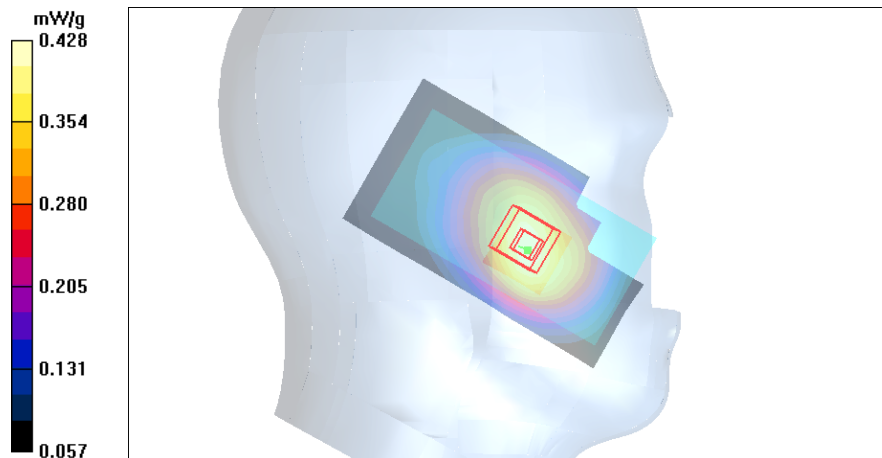
Peak SAR (extrapolated) = 0.489 W/kg

SAR(1 g) = 0.405 mW/g

SAR(10 g) = 0.309 mW/g

Power Drift = 0.044 dB

Maximum value of SAR (measured) = 0.428 mW/g



Date/Time: 2010-07-07 14:18:34

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: 1-slot 8PSK EGPRS850

Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: HSL850; Medium Notes: t= 20.4 C

Medium parameters used: f = 849 MHz; $\sigma = 0.896$ mho/m; $\epsilon_r = 40.9$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.85, 5.85, 5.85); Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2009-11-16
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.129 mW/g

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

Reference Value = 5.22 V/m

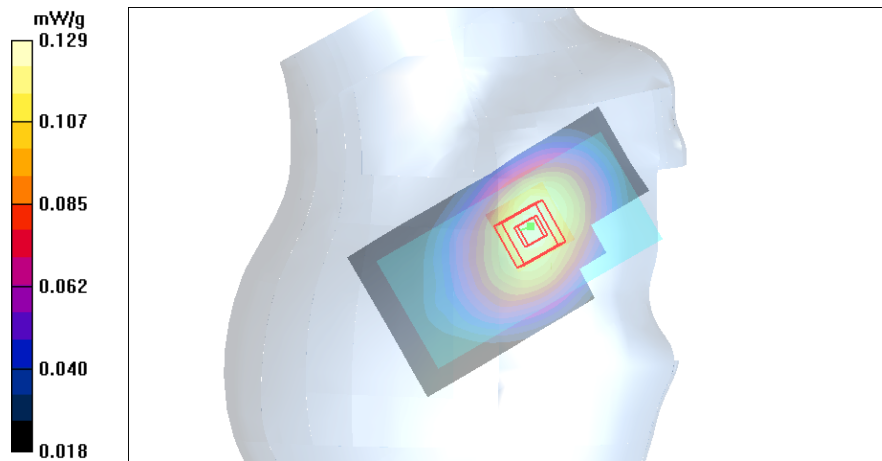
Peak SAR (extrapolated) = 0.148 W/kg

SAR(1 g) = 0.123 mW/g

SAR(10 g) = 0.094 mW/g

Power Drift = 0.163 dB

Maximum value of SAR (measured) = 0.129 mW/g



Date/Time: 2010-07-07 14:35:50

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 20.4 C

Medium parameters used: f = 835 MHz; $\sigma = 0.887$ mho/m; $\epsilon_r = 41$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.85, 5.85, 5.85); Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2009-11-16
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

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

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

Reference Value = 10.3 V/m

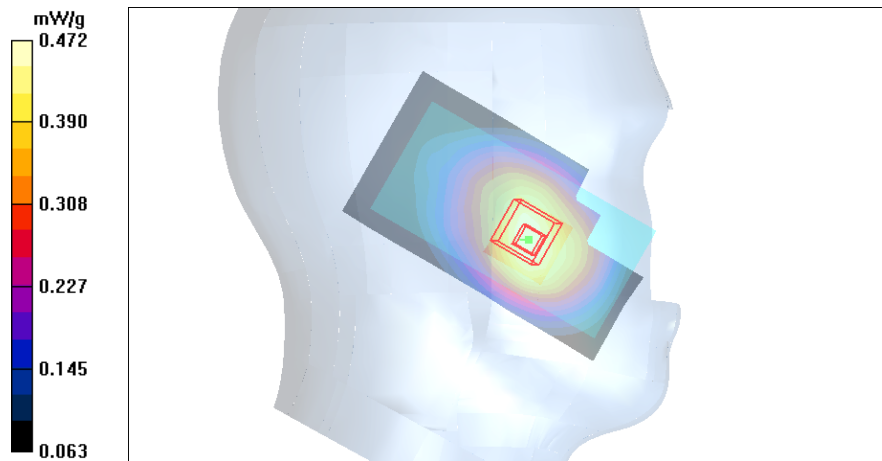
Peak SAR (extrapolated) = 0.542 W/kg

SAR(1 g) = 0.447 mW/g

SAR(10 g) = 0.342 mW/g

Power Drift = -0.197 dB

Maximum value of SAR (measured) = 0.472 mW/g



Date/Time: 2010-07-07 14:49:42

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 20.4 C

Medium parameters used: f = 835 MHz; $\sigma = 0.887$ mho/m; $\epsilon_r = 41$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.85, 5.85, 5.85); Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2009-11-16
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.364 mW/g

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

Reference Value = 16.0 V/m

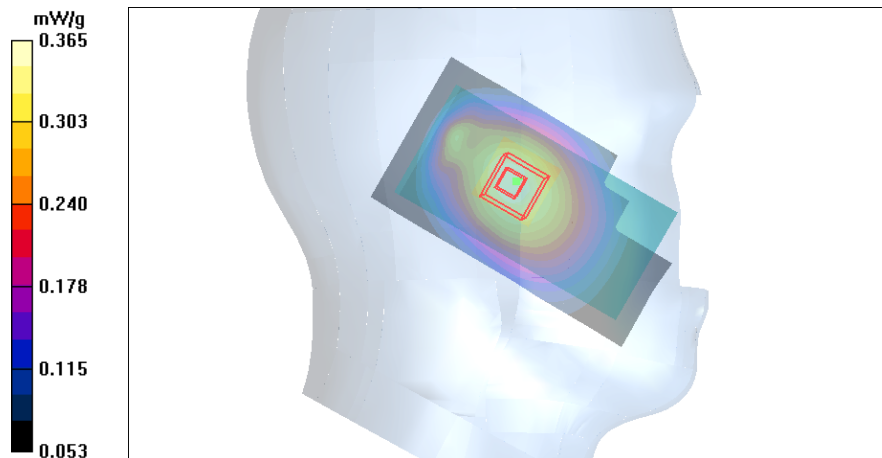
Peak SAR (extrapolated) = 0.426 W/kg

SAR(1 g) = 0.348 mW/g

SAR(10 g) = 0.264 mW/g

Power Drift = -0.006 dB

Maximum value of SAR (measured) = 0.365 mW/g



Date/Time: 2010-07-08 09:44:40

Test Laboratory: TCC Nokia
Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA850

Frequency: 846.6 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 20.5 C

Medium parameters used: f = 847 MHz; $\sigma = 0.882$ mho/m; $\epsilon_r = 40.5$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.85, 5.85, 5.85); Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2009-11-16
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.640 mW/g

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

Reference Value = 11.4 V/m

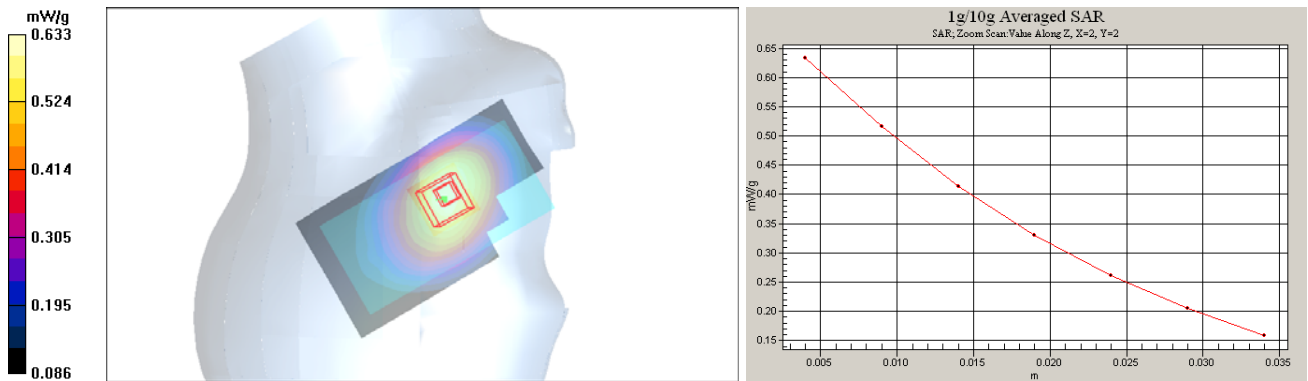
Peak SAR (extrapolated) = 0.747 W/kg

SAR(1 g) = 0.603 mW/g

SAR(10 g) = 0.460 mW/g

Power Drift = 0.129 dB

Maximum value of SAR (measured) = 0.633 mW/g



Date/Time: 2010-07-08 09:17:23

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 20.5 C

Medium parameters used: f = 835 MHz; $\sigma = 0.873$ mho/m; $\epsilon_r = 40.6$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.85, 5.85, 5.85); Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2009-11-16
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.365 mW/g

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

Reference Value = 16.7 V/m

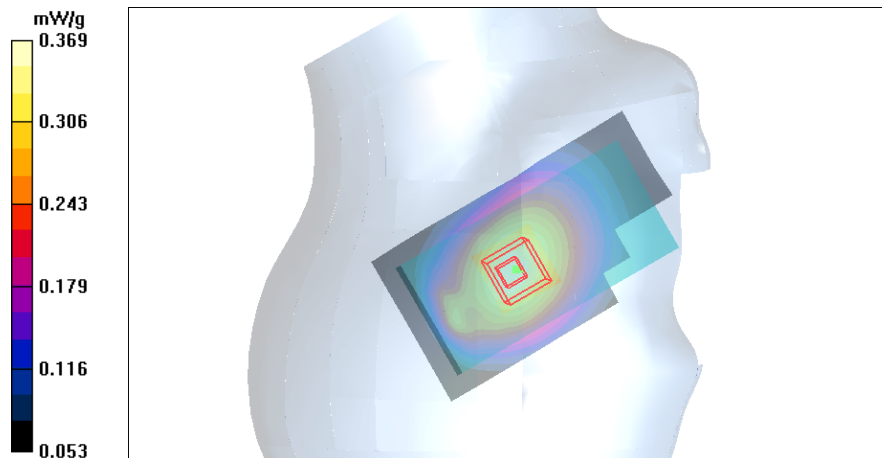
Peak SAR (extrapolated) = 0.429 W/kg

SAR(1 g) = 0.352 mW/g

SAR(10 g) = 0.268 mW/g

Power Drift = -0.069 dB

Maximum value of SAR (measured) = 0.369 mW/g



Date/Time: 2010-06-15 13:46:26

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA1700/2100

Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: HSL1800; Medium Notes: $t = 20.4$ C

Medium parameters used (interpolated): $f = 1732.4$ MHz; $\sigma = 1.3$ mho/m; $\epsilon_r = 39.5$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(5.25, 5.25, 5.25); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.895 mW/g

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

Reference Value = 6.89 V/m

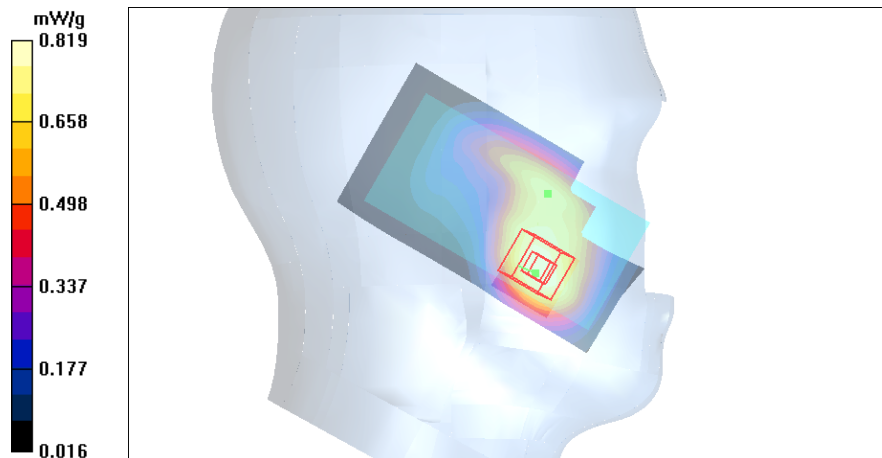
Peak SAR (extrapolated) = 1.15 W/kg

SAR(1 g) = 0.771 mW/g

SAR(10 g) = 0.509 mW/g

Power Drift = 0.142 dB

Maximum value of SAR (measured) = 0.819 mW/g



Date/Time: 2010-06-15 14:08:24

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA1700/2100

Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: HSL1800; Medium Notes: t= 20.4 C

Medium parameters used (interpolated): f = 1732.4 MHz; σ = 1.3 mho/m; ϵ_r = 39.5; ρ = 1000 kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194

- ConvF(5.25, 5.25, 5.25); Calibrated: 2009-11-20

- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE4 Sn728; Calibrated: 2010-03-19

- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018

- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.537 mW/g

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

Reference Value = 12.7 V/m

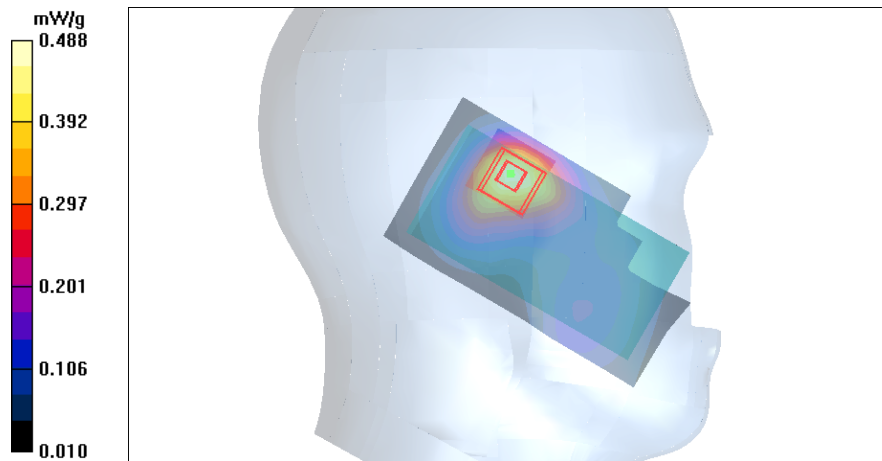
Peak SAR (extrapolated) = 0.659 W/kg

SAR(1 g) = 0.447 mW/g

SAR(10 g) = 0.280 mW/g

Power Drift = -0.317 dB

Maximum value of SAR (measured) = 0.488 mW/g



Date/Time: 2010-06-15 15:19:23

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA1700/2100

Frequency: 1752.6 MHz; Duty Cycle: 1:1

Medium: HSL1800; Medium Notes: t= 20.4 C

Medium parameters used: f = 1753 MHz; $\sigma = 1.32$ mho/m; $\epsilon_r = 39.4$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194

- ConvF(5.25, 5.25, 5.25); Calibrated: 2009-11-20

- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE4 Sn728; Calibrated: 2010-03-19

- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018

- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 1.03 mW/g

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

Reference Value = 8.00 V/m

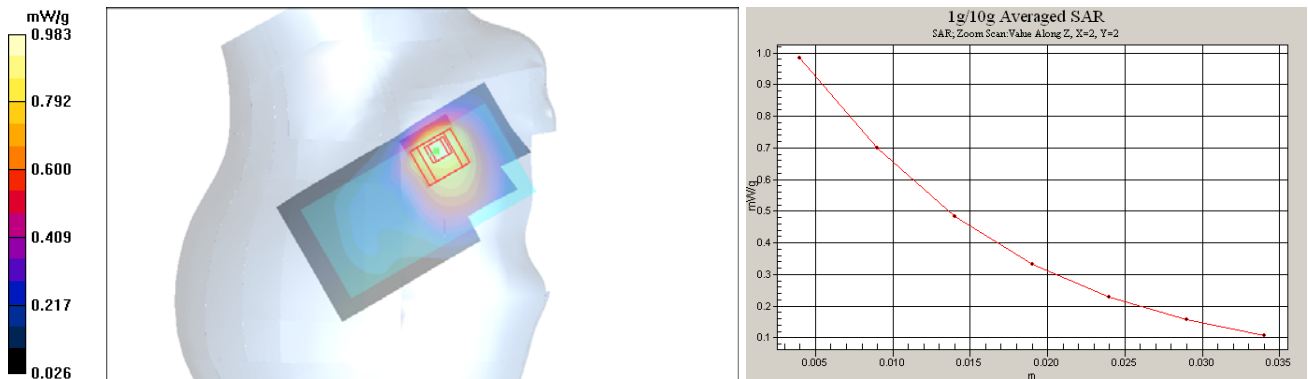
Peak SAR (extrapolated) = 1.33 W/kg

SAR(1 g) = 0.899 mW/g

SAR(10 g) = 0.584 mW/g

Power Drift = 0.080 dB

Maximum value of SAR (measured) = 0.983 mW/g



SAR Report

FCC_RM-675_01

Applicant: Nokia Corporation

Type: RM-675

Copyright © 2010 TCC Nokia

Date/Time: 2010-06-15 14:40:02

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA1700/2100

Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: HSL1800; Medium Notes: t= 20.4 C

Medium parameters used (interpolated): f = 1732.4 MHz; $\sigma = 1.3$ mho/m; $\epsilon_r = 39.5$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194

- ConvF(5.25, 5.25, 5.25); Calibrated: 2009-11-20

- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE4 Sn728; Calibrated: 2010-03-19

- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018

- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.374 mW/g

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

Reference Value = 13.4 V/m

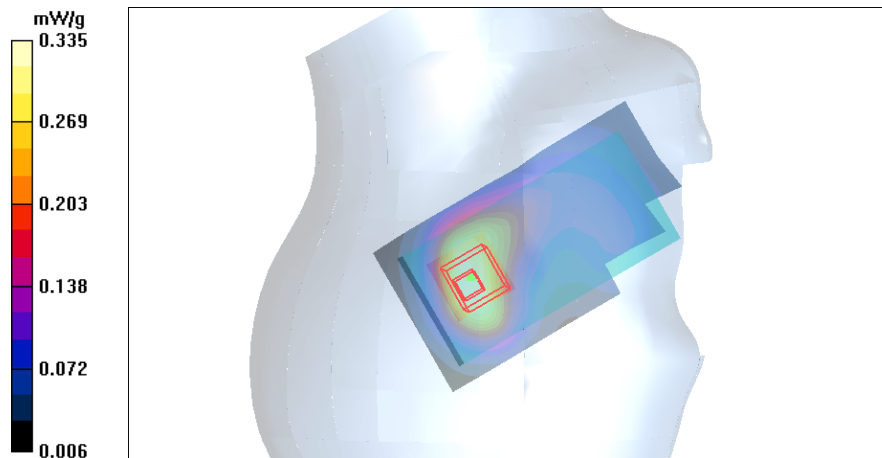
Peak SAR (extrapolated) = 0.468 W/kg

SAR(1 g) = 0.320 mW/g

SAR(10 g) = 0.207 mW/g

Power Drift = -0.376 dB

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



SAR Report

FCC_RM-675_01

Applicant: Nokia Corporation

Type: RM-675

Copyright © 2010 TCC Nokia

Date/Time: 2010-06-17 13:12:41

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: GSM1900

Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium: HSL1900; Medium Notes: $t = 21.2$ C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.37$ mho/m; $\epsilon_r = 39.8$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(5.06, 5.06, 5.06); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.468 mW/g

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

Reference Value = 5.64 V/m

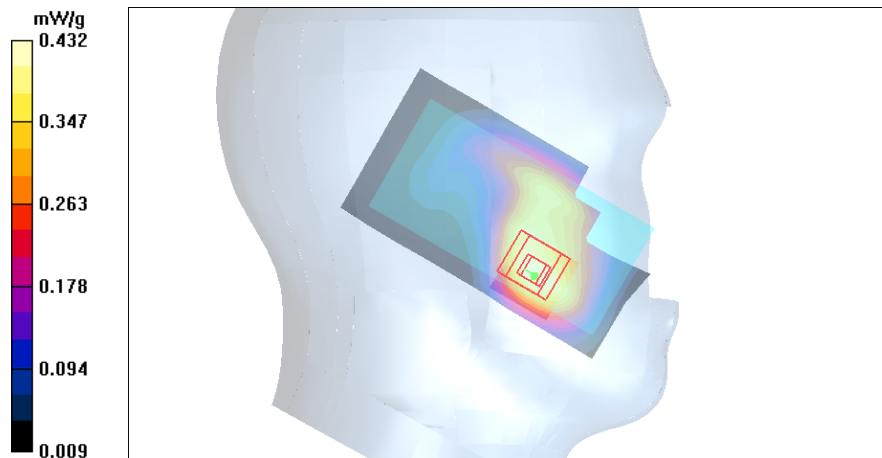
Peak SAR (extrapolated) = 0.561 W/kg

SAR(1 g) = 0.398 mW/g

SAR(10 g) = 0.264 mW/g

Power Drift = -0.278 dB

Maximum value of SAR (measured) = 0.432 mW/g



Date/Time: 2010-06-17 13:45:37

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: HSL1900; Medium Notes: $t = 21.2$ C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.37$ mho/m; $\epsilon_r = 39.8$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(5.06, 5.06, 5.06); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.522 mW/g

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

Reference Value = 5.73 V/m

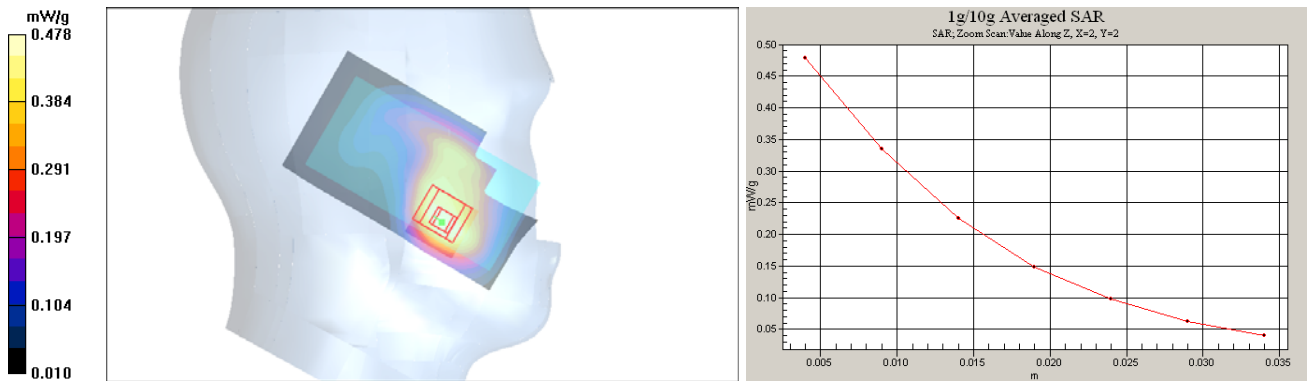
Peak SAR (extrapolated) = 0.631 W/kg

SAR(1 g) = 0.441 mW/g

SAR(10 g) = 0.291 mW/g

Power Drift = 0.087 dB

Maximum value of SAR (measured) = 0.478 mW/g



Date/Time: 2010-06-17 14:52:36

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: HSL1900; Medium Notes: t= 21.2 C

Medium parameters used: f = 1880 MHz; $\sigma = 1.37$ mho/m; $\epsilon_r = 39.8$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(5.06, 5.06, 5.06); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.245 mW/g

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

Reference Value = 10.1 V/m

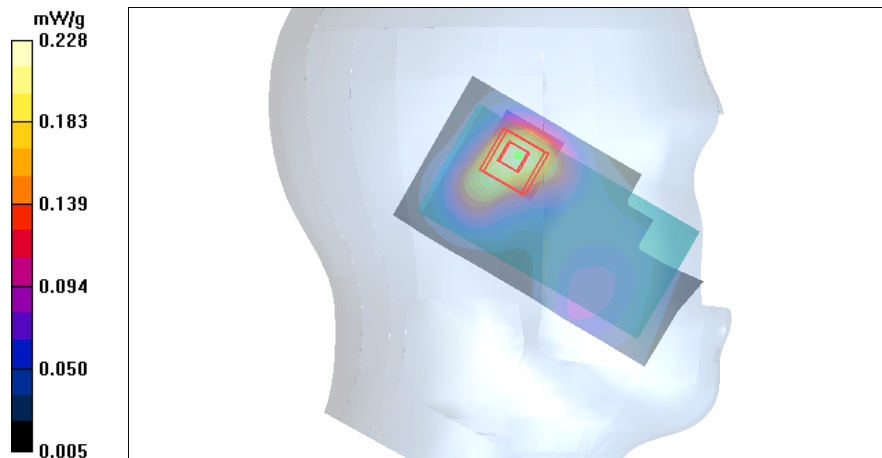
Peak SAR (extrapolated) = 0.293 W/kg

SAR(1 g) = 0.209 mW/g

SAR(10 g) = 0.131 mW/g

Power Drift = -0.237 dB

Maximum value of SAR (measured) = 0.228 mW/g



Date/Time: 2010-06-17 15:06:13

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: HSL1900; Medium Notes: $t = 21.2$ C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.37$ mho/m; $\epsilon_r = 39.8$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(5.06, 5.06, 5.06); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.437 mW/g

Cheek - Middle/Zoom Scan 3 (5x5x7)/Cube 0: Measurement grid: $dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm

Reference Value = 7.06 V/m

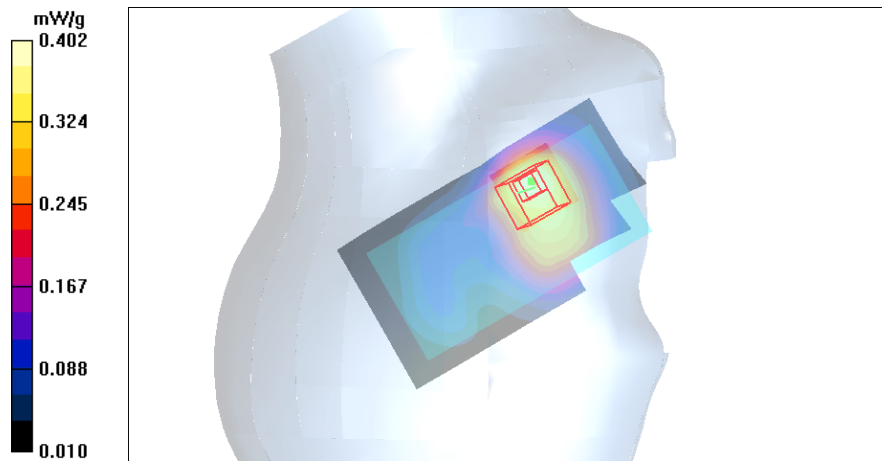
Peak SAR (extrapolated) = 0.524 W/kg

SAR(1 g) = 0.378 mW/g

SAR(10 g) = 0.252 mW/g

Power Drift = 0.096 dB

Maximum value of SAR (measured) = 0.402 mW/g



Date/Time: 2010-06-17 15:30:01

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: HSL1900; Medium Notes: t= 21.2 C

Medium parameters used: f = 1880 MHz; $\sigma = 1.37$ mho/m; $\epsilon_r = 39.8$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(5.06, 5.06, 5.06); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.199 mW/g

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

Reference Value = 11.0 V/m

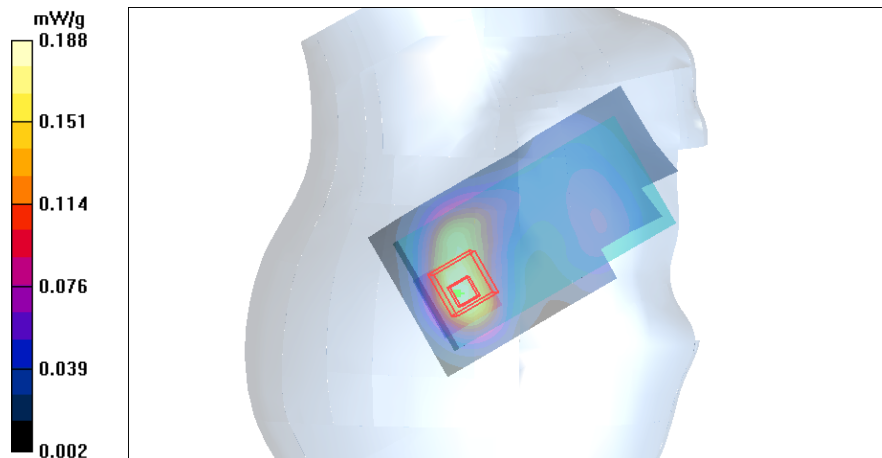
Peak SAR (extrapolated) = 0.257 W/kg

SAR(1 g) = 0.175 mW/g

SAR(10 g) = 0.107 mW/g

Power Drift = -0.227 dB

Maximum value of SAR (measured) = 0.188 mW/g



Date/Time: 2010-06-17 14:02:05

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: 3-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:2.8

Medium: HSL1900; Medium Notes: t= 21.2 C

Medium parameters used: f = 1880 MHz; $\sigma = 1.37$ mho/m; $\epsilon_r = 39.8$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(5.06, 5.06, 5.06); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

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

Cheek - Middle/Zoom Scan 3 (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 5.63 V/m

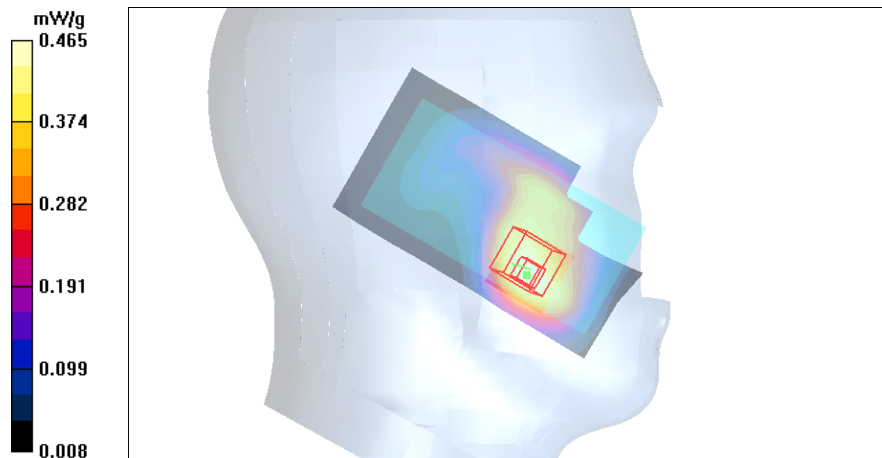
Peak SAR (extrapolated) = 0.635 W/kg

SAR(1 g) = 0.438 mW/g

SAR(10 g) = 0.288 mW/g

Power Drift = 0.128 dB

Maximum value of SAR (measured) = 0.465 mW/g



Date/Time: 2010-06-17 14:24:24

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: 4-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:2.1

Medium: HSL1900; Medium Notes: $t = 21.2$ C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.37$ mho/m; $\epsilon_r = 39.8$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(5.06, 5.06, 5.06); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.505 mW/g

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

Reference Value = 5.62 V/m

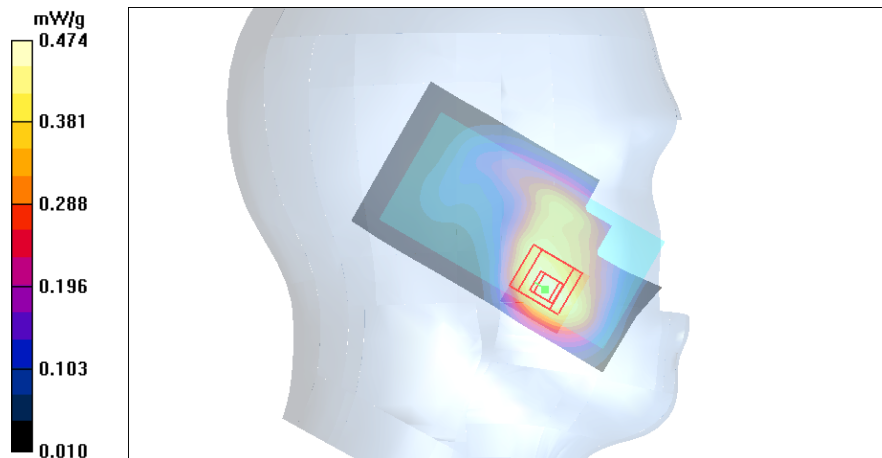
Peak SAR (extrapolated) = 0.626 W/kg

SAR(1 g) = 0.436 mW/g

SAR(10 g) = 0.287 mW/g

Power Drift = 0.144 dB

Maximum value of SAR (measured) = 0.474 mW/g



Date/Time: 2010-06-17 16:10:53

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: 2-slot 8PSK EGPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: HSL1900; Medium Notes: t= 21.2 C

Medium parameters used: f = 1880 MHz; $\sigma = 1.37$ mho/m; $\epsilon_r = 39.8$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(5.06, 5.06, 5.06); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.309 mW/g

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

Reference Value = 4.17 V/m

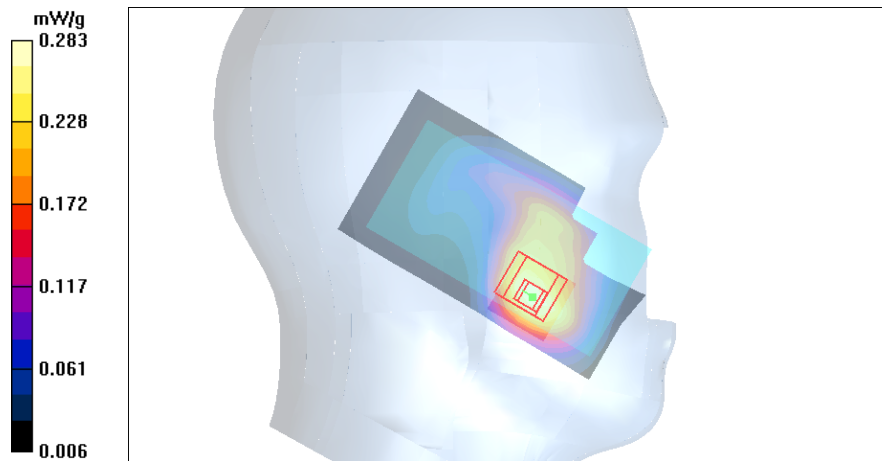
Peak SAR (extrapolated) = 0.375 W/kg

SAR(1 g) = 0.261 mW/g

SAR(10 g) = 0.169 mW/g

Power Drift = 0.265 dB

Maximum value of SAR (measured) = 0.283 mW/g



Date/Time: 2010-06-23 09:30:28

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: t= 20.5C

Medium parameters used: f = 1880 MHz; σ = 1.38 mho/m; ϵ_r = 39.8; ρ = 1000 kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(5.06, 5.06, 5.06); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.883 mW/g

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

Reference Value = 7.95 V/m

Peak SAR (extrapolated) = 1.09 W/kg

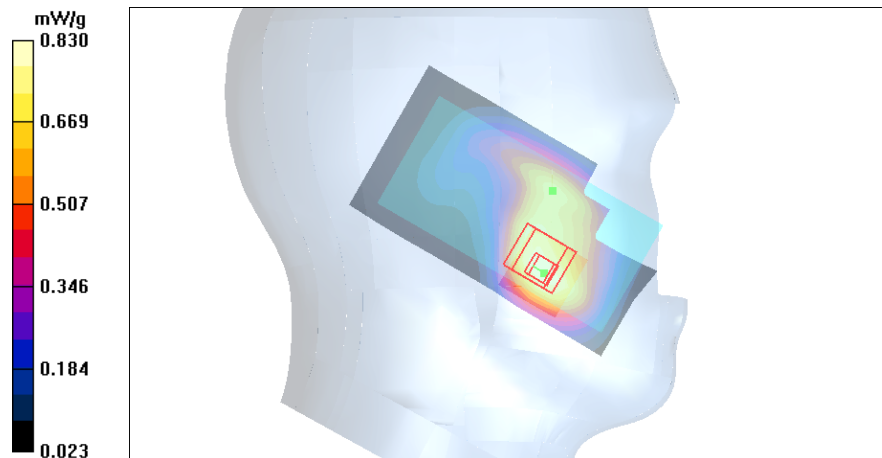
SAR(1 g) = 0.769 mW/g

SAR(10 g) = 0.514 mW/g

Power Drift = 0.200 dB

Warning: Maximum averaged SAR over 10 g is located on the boundary of the measurement cube. This cube might not incorporate the absolute averaged SAR. Please consider a refinement of the Area Scan measurement.

Maximum value of SAR (measured) = 0.830 mW/g



Date/Time: 2010-06-23 09:52:00

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: t= 20.5C

Medium parameters used: f = 1880 MHz; $\sigma = 1.38$ mho/m; $\epsilon_r = 39.8$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(5.06, 5.06, 5.06); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.517 mW/g

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

Reference Value = 14.0 V/m

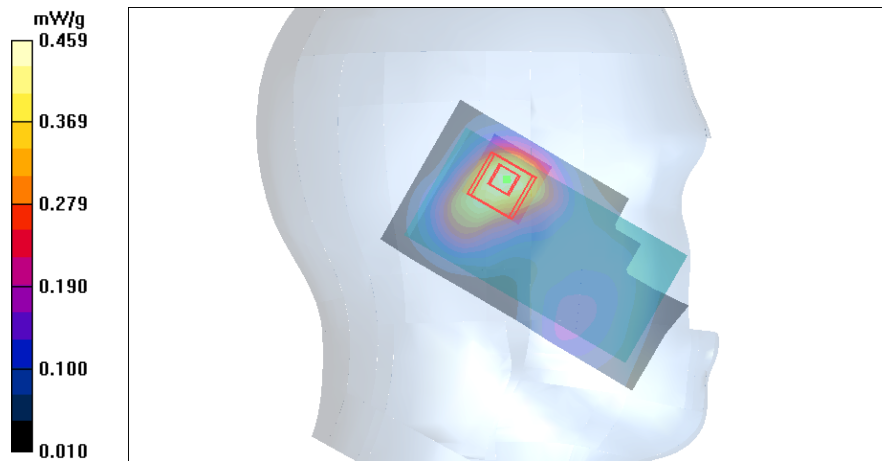
Peak SAR (extrapolated) = 0.592 W/kg

SAR(1 g) = 0.420 mW/g

SAR(10 g) = 0.266 mW/g

Power Drift = -0.200 dB

Maximum value of SAR (measured) = 0.459 mW/g



Date/Time: 2010-06-23 10:06:00

Test Laboratory: TCC Nokia
Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: t= 20.5C

Medium parameters used: f = 1880 MHz; $\sigma = 1.38$ mho/m; $\epsilon_r = 39.8$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(5.06, 5.06, 5.06); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.929 mW/g

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

Reference Value = 8.71 V/m

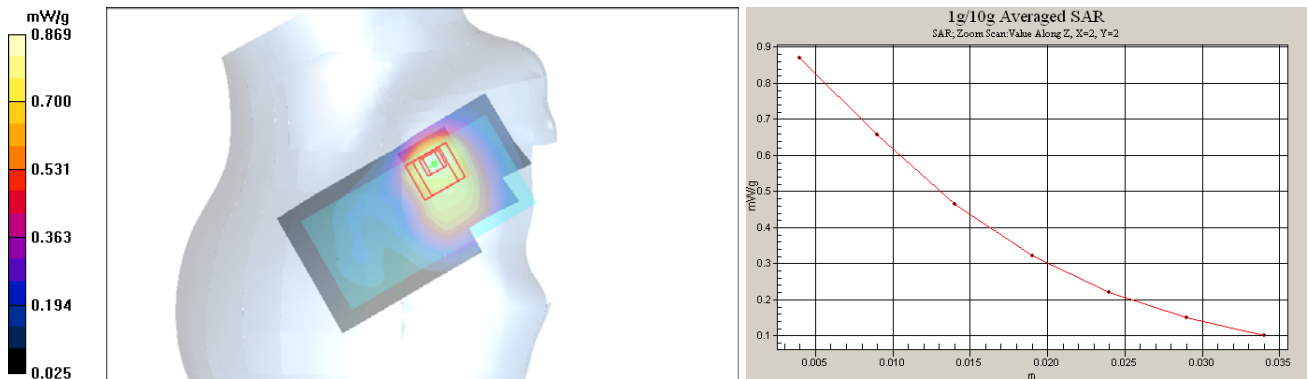
Peak SAR (extrapolated) = 1.12 W/kg

SAR(1 g) = 0.807 mW/g

SAR(10 g) = 0.540 mW/g

Power Drift = 0.237 dB

Maximum value of SAR (measured) = 0.869 mW/g



Date/Time: 2010-06-23 12:09:59

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: t= 20.5C

Medium parameters used: f = 1880 MHz; $\sigma = 1.38$ mho/m; $\epsilon_r = 39.8$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194

- ConvF(5.06, 5.06, 5.06); Calibrated: 2009-11-20

- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE4 Sn728; Calibrated: 2010-03-19

- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449

- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.326 mW/g

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

Reference Value = 14.1 V/m

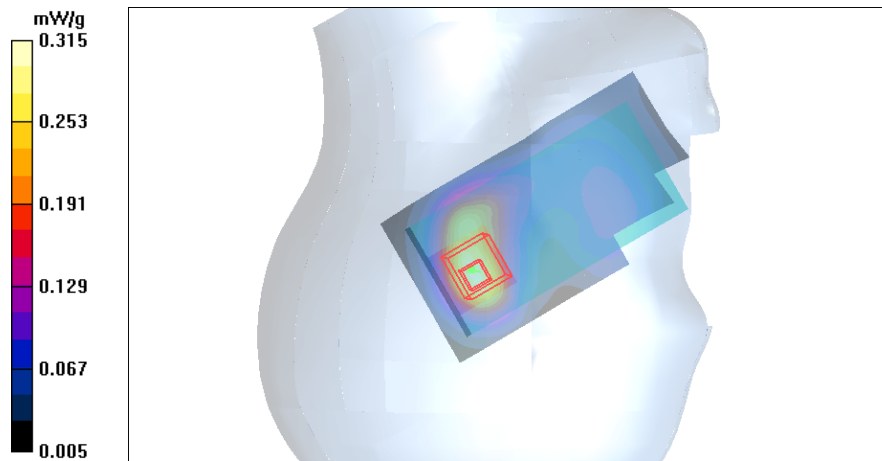
Peak SAR (extrapolated) = 0.428 W/kg

SAR(1 g) = 0.289 mW/g

SAR(10 g) = 0.175 mW/g

Power Drift = -0.167 dB

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



Date/Time: 2010-06-30 12:01:22

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: $t = 20.3\text{ C}$

Medium parameters used: $f = 2442\text{ MHz}$; $\sigma = 1.8\text{ mho/m}$; $\epsilon_r = 37.8$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Left Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3573
- ConvF(6.56, 6.56, 6.56); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2009-10-15
- Phantom: SAM1; Type: SAM; Serial: TP-1126
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.370 mW/g

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

Reference Value = 12.6 V/m

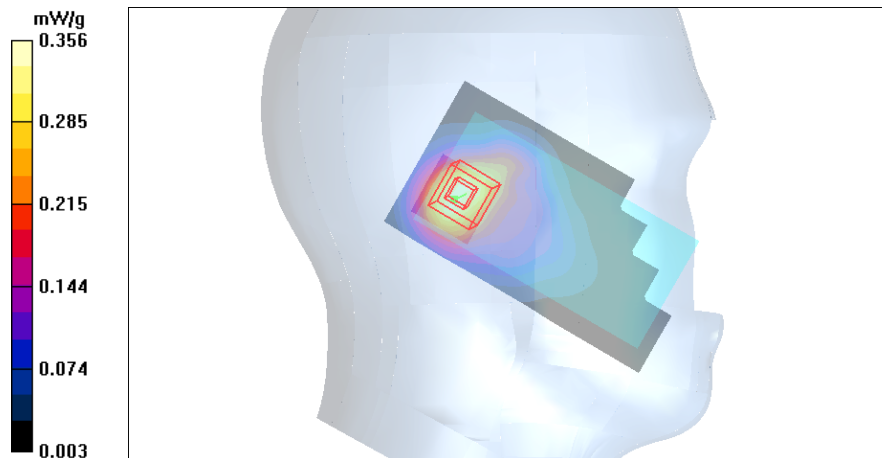
Peak SAR (extrapolated) = 0.596 W/kg

SAR(1 g) = 0.327 mW/g

SAR(10 g) = 0.180 mW/g

Power Drift = -0.003 dB

Maximum value of SAR (measured) = 0.356 mW/g



Date/Time: 2010-06-30 12:15:18

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: $t = 20.3$ C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.8$ mho/m; $\epsilon_r = 37.8$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3573
- ConvF(6.56, 6.56, 6.56); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2009-10-15
- Phantom: SAM1; Type: SAM; Serial: TP-1126
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

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

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

Reference Value = 14.9 V/m

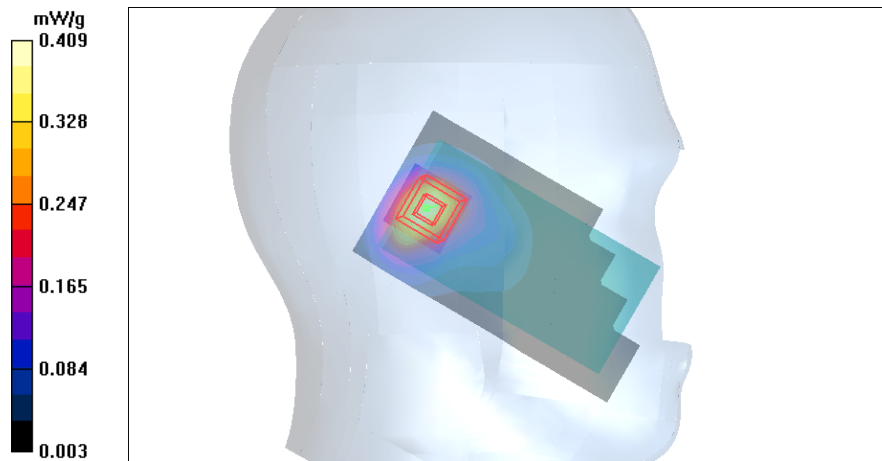
Peak SAR (extrapolated) = 0.691 W/kg

SAR(1 g) = 0.366 mW/g

SAR(10 g) = 0.189 mW/g

Power Drift = -0.043 dB

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



Date/Time: 2010-06-30 12:28:28

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: $t = 20.3\text{ C}$

Medium parameters used: $f = 2442\text{ MHz}$; $\sigma = 1.8\text{ mho/m}$; $\epsilon_r = 37.8$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Right Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3573
- ConvF(6.56, 6.56, 6.56); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2009-10-15
- Phantom: SAM1; Type: SAM; Serial: TP-1126
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

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

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

Reference Value = 12.3 V/m

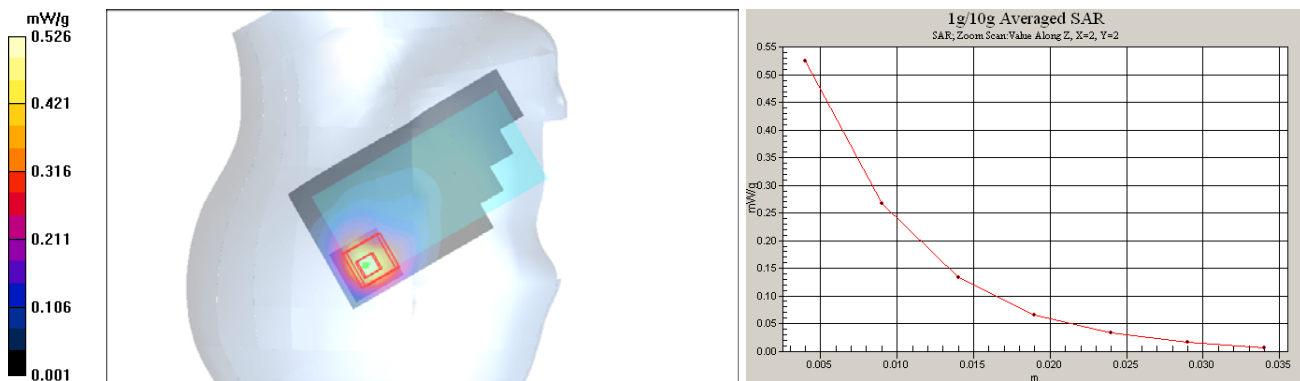
Peak SAR (extrapolated) = 0.952 W/kg

SAR(1 g) = 0.460 mW/g

SAR(10 g) = 0.225 mW/g

Power Drift = 0.066 dB

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



SAR Report

FCC_RM-675_01

Applicant: Nokia Corporation

Type: RM-675

Copyright © 2010 TCC Nokia

Date/Time: 2010-06-30 12:40:53

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: t= 20.3 C

Medium parameters used: f = 2442 MHz; $\sigma = 1.8$ mho/m; $\epsilon_r = 37.8$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3573
- ConvF(6.56, 6.56, 6.56); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2009-10-15
- Phantom: SAM1; Type: SAM; Serial: TP-1126
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.449 mW/g

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

Reference Value = 13.8 V/m

Peak SAR (extrapolated) = 0.817 W/kg

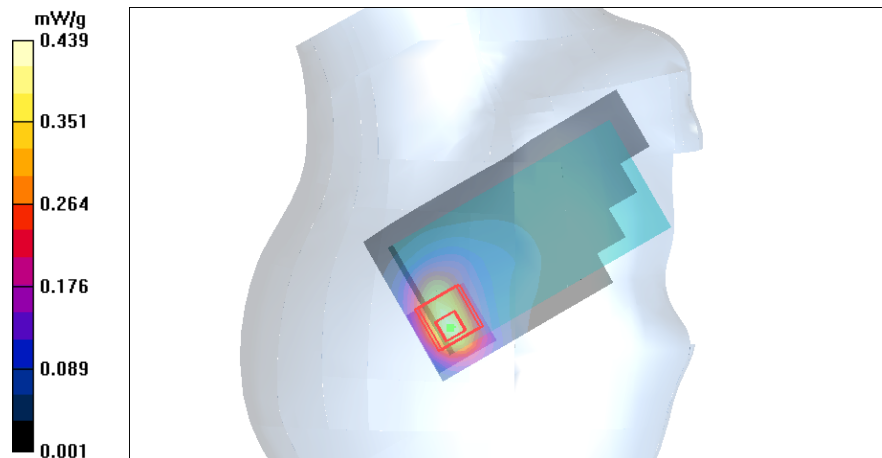
SAR(1 g) = 0.386 mW/g

SAR(10 g) = 0.192 mW/g

Power Drift = 0.046 dB

Warning: Maximum averaged SAR over 10 g is located on the boundary of the measurement cube. This cube might not incorporate the absolute averaged SAR. Please consider a refinement of the Area Scan measurement.

Maximum value of SAR (measured) = 0.439 mW/g



Date/Time: 2010-06-30 13:41:13

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WLAN2450 n-mode

Frequency: 2412 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: $t = 20.3\text{ C}$

Medium parameters used: $f = 2412\text{ MHz}$; $\sigma = 1.77\text{ mho/m}$; $\epsilon_r = 37.9$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Right Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3573
- ConvF(6.56, 6.56, 6.56); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2009-10-15
- Phantom: SAM1; Type: SAM; Serial: TP-1126
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.080 mW/g

Cheek - Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 5.05 V/m

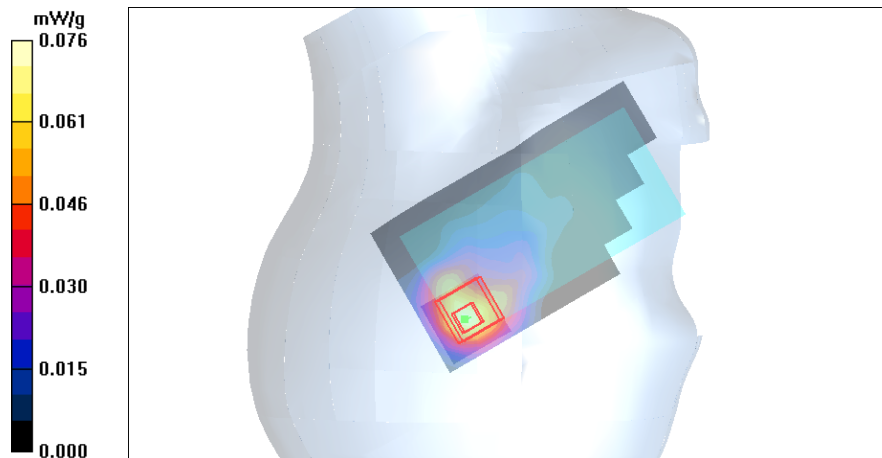
Peak SAR (extrapolated) = 0.147 W/kg

SAR(1 g) = 0.067 mW/g

SAR(10 g) = 0.033 mW/g

Power Drift = 0.375 dB

Maximum value of SAR (measured) = 0.076 mW/g



Date/Time: 2010-07-08 11:29:11

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: BSL850; Medium Notes: t= 20.5 C

Medium parameters used: f = 837 MHz; σ = 0.99 mho/m; ϵ_r = 53.7; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.69, 5.69, 5.69); Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2009-11-16
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - No Accessory - Display Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

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

Body - Middle - No Accessory - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 9.33 V/m

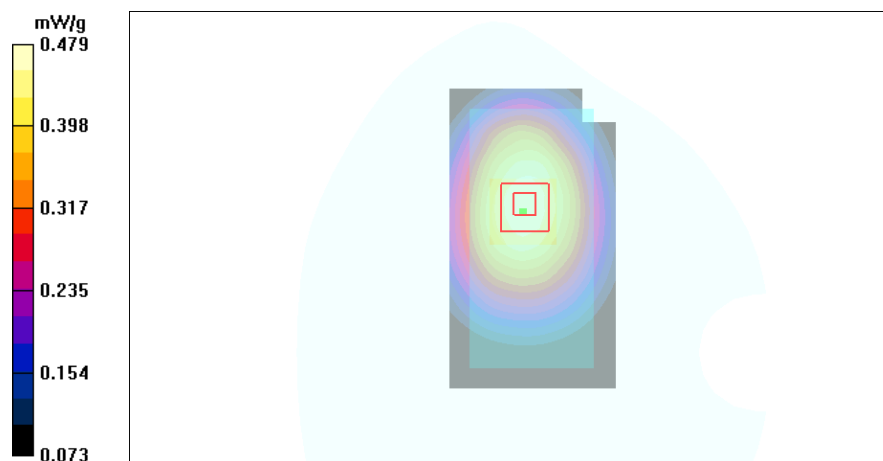
Peak SAR (extrapolated) = 0.558 W/kg

SAR(1 g) = 0.457 mW/g

SAR(10 g) = 0.346 mW/g

Power Drift = -0.034 dB

Maximum value of SAR (measured) = 0.479 mW/g



Date/Time: 2010-07-08 11:47:07

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: BSL850; Medium Notes: t= 20.5 C

Medium parameters used: f = 837 MHz; σ = 0.99 mho/m; ϵ_r = 53.7; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.69, 5.69, 5.69); Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2009-11-16
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - WH-102 - Display Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.375 mW/g

Body - Middle - WH-102 - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 8.62 V/m

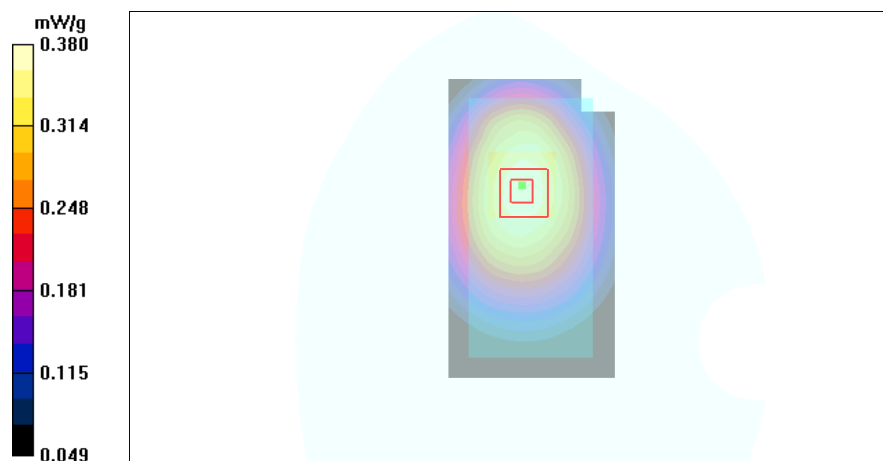
Peak SAR (extrapolated) = 0.448 W/kg

SAR(1 g) = 0.362 mW/g

SAR(10 g) = 0.273 mW/g

Power Drift = -0.004 dB

Maximum value of SAR (measured) = 0.380 mW/g



Date/Time: 2010-07-08 12:50:57

Test Laboratory: TCC Nokia
Type: RM-675; Serial: 004402/13/142309/1

Communication System: GSM850

Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: BSL850; Medium Notes: t= 20.5 C

Medium parameters used: f = 849 MHz; $\sigma = 0.999$ mho/m; $\epsilon_r = 53.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.69, 5.69, 5.69); Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2009-11-16
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - High - No Accessory - Back Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.593 mW/g

Body - High - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 8.22 V/m

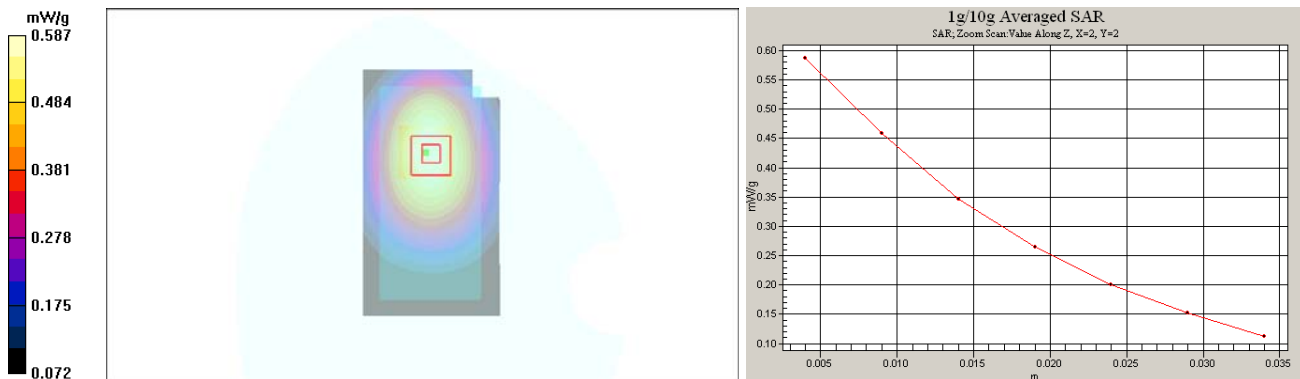
Peak SAR (extrapolated) = 0.703 W/kg

SAR(1 g) = 0.561 mW/g

SAR(10 g) = 0.416 mW/g

Power Drift = 0.014 dB

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



Date/Time: 2010-07-08 12:30:57

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: BSL850; Medium Notes: t= 20.5 C

Medium parameters used: f = 837 MHz; σ = 0.99 mho/m; ϵ_r = 53.7; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.69, 5.69, 5.69); Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2009-11-16
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - WH-102 - Back Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

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

Body - Middle - WH-102 - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 9.22 V/m

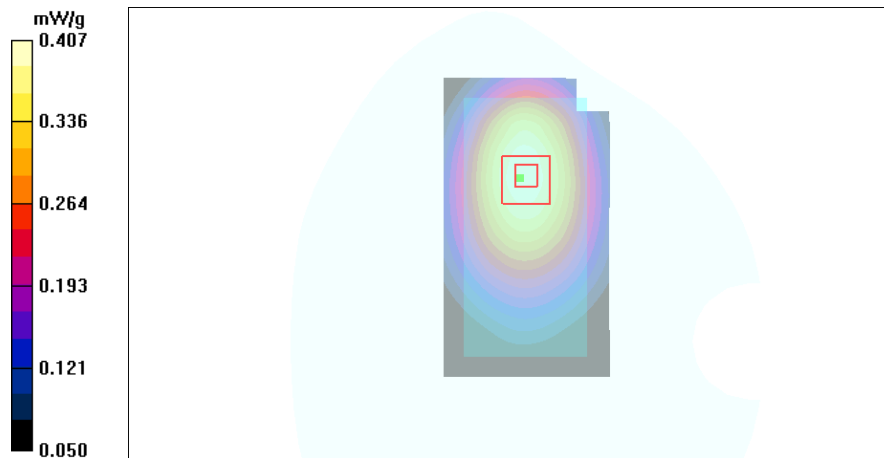
Peak SAR (extrapolated) = 0.484 W/kg

SAR(1 g) = 0.385 mW/g

SAR(10 g) = 0.285 mW/g

Power Drift = -0.046 dB

Maximum value of SAR (measured) = 0.407 mW/g



Date/Time: 2010-07-08 10:06:43

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.5 C

Medium parameters used: f = 835 MHz; $\sigma = 0.989$ mho/m; $\epsilon_r = 53.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.69, 5.69, 5.69); Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2009-11-16
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - No Accessory - Display Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

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

Body - Middle - No Accessory - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 9.77 V/m

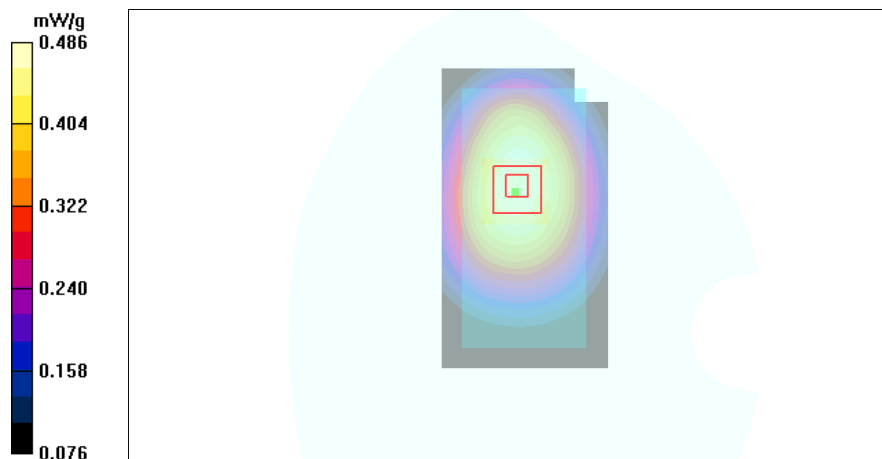
Peak SAR (extrapolated) = 0.569 W/kg

SAR(1 g) = 0.465 mW/g

SAR(10 g) = 0.354 mW/g

Power Drift = -0.247 dB

Maximum value of SAR (measured) = 0.486 mW/g



Date/Time: 2010-07-08 10:20:19

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.5 C

Medium parameters used: f = 835 MHz; $\sigma = 0.989$ mho/m; $\epsilon_r = 53.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.69, 5.69, 5.69); Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2009-11-16
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - WH-102 - Display Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.323 mW/g

Body - Middle - WH-102 - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 7.80 V/m

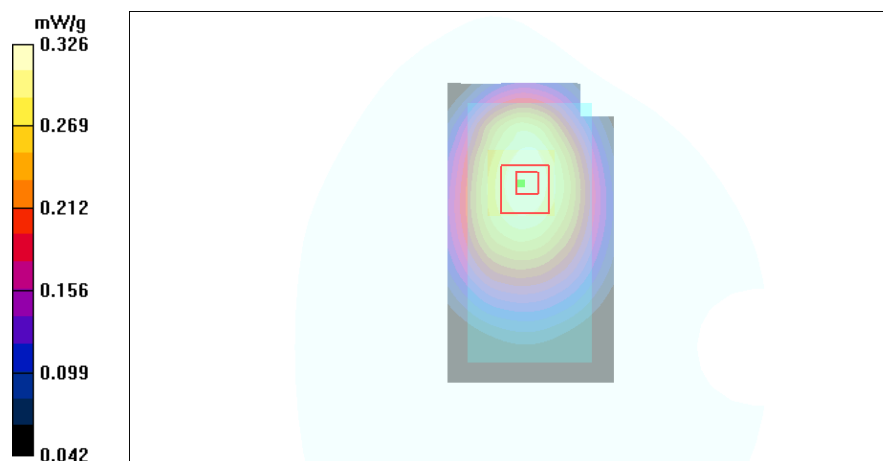
Peak SAR (extrapolated) = 0.386 W/kg

SAR(1 g) = 0.312 mW/g

SAR(10 g) = 0.235 mW/g

Power Drift = 0.007 dB

Maximum value of SAR (measured) = 0.326 mW/g



SAR Report

FCC_RM-675_01

Applicant: Nokia Corporation

Type: RM-675

Copyright © 2010 TCC Nokia

Date/Time: 2010-07-08 10:54:35

Test Laboratory: TCC Nokia
Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA850

Frequency: 846.6 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.5 C

Medium parameters used: f = 847 MHz; $\sigma = 0.997$ mho/m; $\epsilon_r = 53.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.69, 5.69, 5.69); Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2009-11-16
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - High - No Accessory - Back Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.617 mW/g

Body - High - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 9.12 V/m

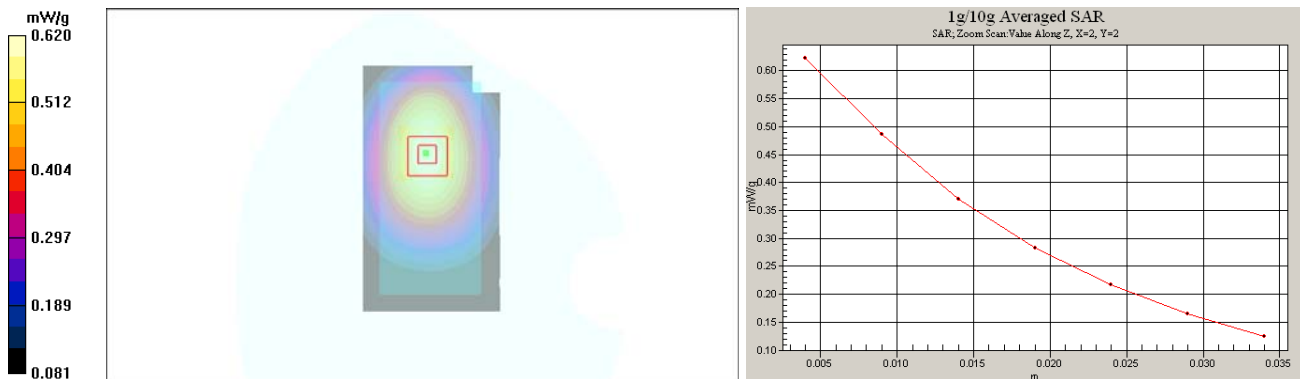
Peak SAR (extrapolated) = 0.731 W/kg

SAR(1 g) = 0.587 mW/g

SAR(10 g) = 0.438 mW/g

Power Drift = 0.081 dB

Maximum value of SAR (measured) = 0.620 mW/g



Date/Time: 2010-07-08 10:34:19

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.5 C

Medium parameters used: f = 835 MHz; $\sigma = 0.989$ mho/m; $\epsilon_r = 53.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.69, 5.69, 5.69); Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2009-11-16
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - WH-102 - Back Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.453 mW/g

Body - Middle - WH-102 - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 8.32 V/m

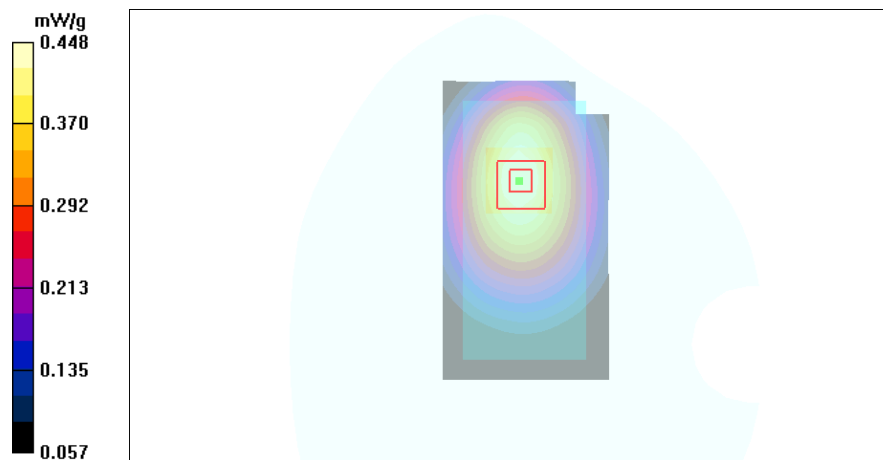
Peak SAR (extrapolated) = 0.533 W/kg

SAR(1 g) = 0.425 mW/g

SAR(10 g) = 0.315 mW/g

Power Drift = -0.141 dB

Maximum value of SAR (measured) = 0.448 mW/g



Date/Time: 2010-06-16 12:53:57

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA1700/2100

Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: BSL1800; Medium Notes: t=20.3 C

Medium parameters used (interpolated): $f = 1732.4$ MHz; $\sigma = 1.43$ mho/m; $\epsilon_r = 51.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(4.92, 4.92, 4.92); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - No Accessory - Display Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.714 mW/g

Body - Middle - No Accessory - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 12.0 V/m

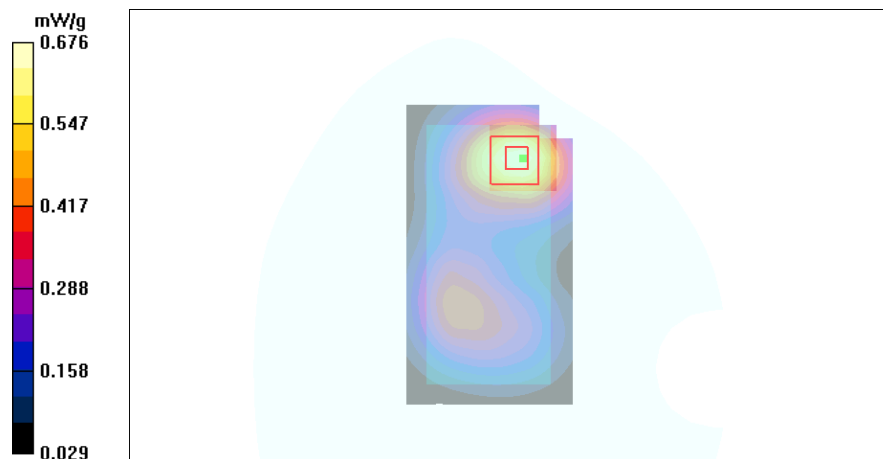
Peak SAR (extrapolated) = 0.956 W/kg

SAR(1 g) = 0.626 mW/g

SAR(10 g) = 0.392 mW/g

Power Drift = -0.203 dB

Maximum value of SAR (measured) = 0.676 mW/g



Date/Time: 2010-06-16 13:13:39

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA1700/2100

Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: BSL1800; Medium Notes: t=20.3 C

Medium parameters used (interpolated): $f = 1732.4$ MHz; $\sigma = 1.43$ mho/m; $\epsilon_r = 51.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194

- ConvF(4.92, 4.92, 4.92); Calibrated: 2009-11-20

- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE4 Sn728; Calibrated: 2010-03-19

- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179

- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - WH-102 - Display Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

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

Body - Middle - WH-102 - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 11.3 V/m

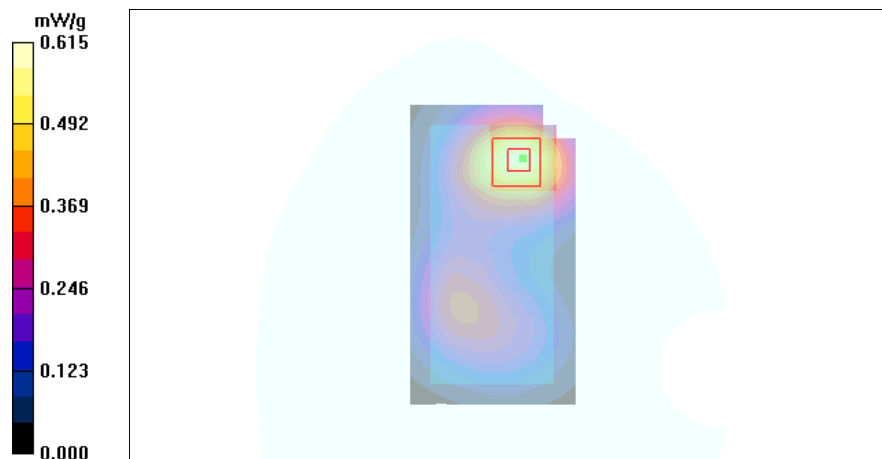
Peak SAR (extrapolated) = 0.842 W/kg

SAR(1 g) = 0.553 mW/g

SAR(10 g) = 0.348 mW/g

Power Drift = 0.091 dB

Maximum value of SAR (measured) = 0.595 mW/g



Date/Time: 2010-06-16 13:57:27

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA1700/2100

Frequency: 1752.6 MHz; Duty Cycle: 1:1

Medium: BSL1800; Medium Notes: t=20.3 C

Medium parameters used: f = 1753 MHz; $\sigma = 1.45$ mho/m; $\epsilon_r = 51.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(4.92, 4.92, 4.92); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - High - No Accessory - Back Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

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

Body - High - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 11.8 V/m

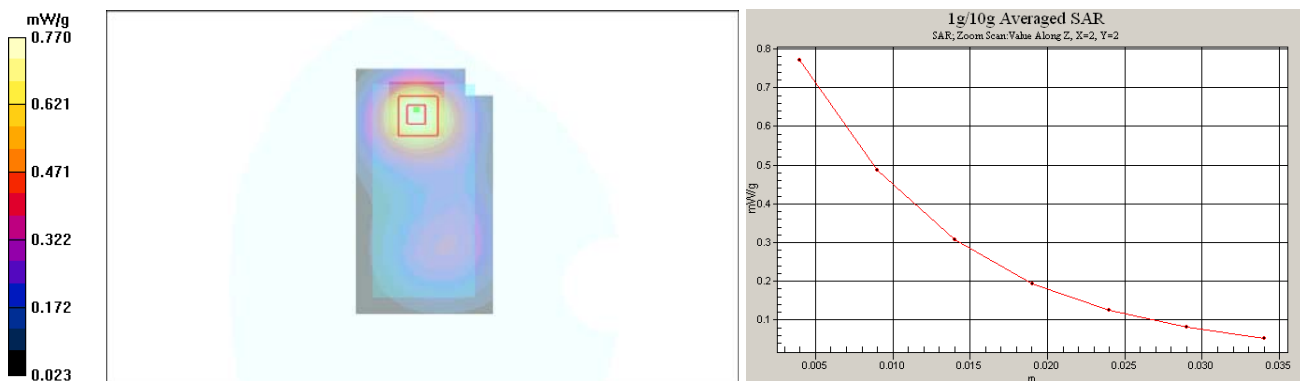
Peak SAR (extrapolated) = 1.13 W/kg

SAR(1 g) = 0.718 mW/g

SAR(10 g) = 0.443 mW/g

Power Drift = -0.069 dB

Maximum value of SAR (measured) = 0.770 mW/g



Date/Time: 2010-06-16 13:35:54

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA1700/2100

Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: BSL1800; Medium Notes: t=20.3 C

Medium parameters used (interpolated): f = 1732.4 MHz; σ = 1.43 mho/m; ϵ_r = 51.3; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194

- ConvF(4.92, 4.92, 4.92); Calibrated: 2009-11-20

- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE4 Sn728; Calibrated: 2010-03-19

- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179

- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - WH-102 - Back Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.609 mW/g

Body - Middle - WH-102 - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 9.02 V/m

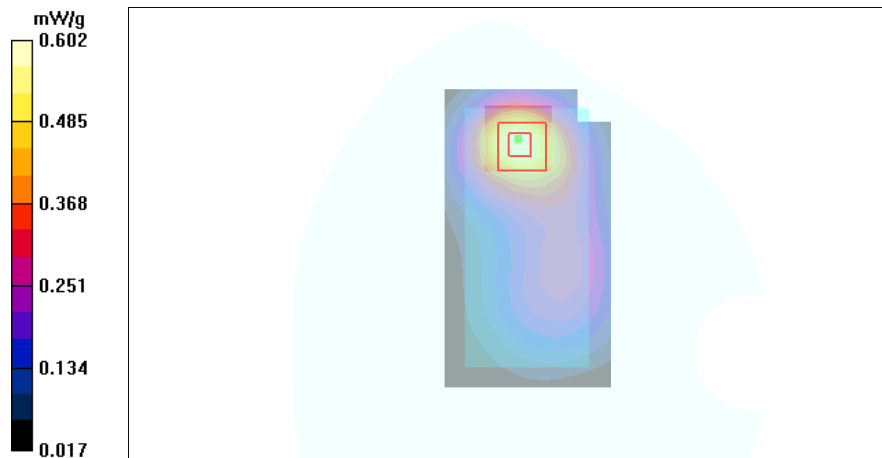
Peak SAR (extrapolated) = 0.879 W/kg

SAR(1 g) = 0.559 mW/g

SAR(10 g) = 0.345 mW/g

Power Drift = 0.359 dB

Maximum value of SAR (measured) = 0.602 mW/g



Date/Time: 2010-06-24 11:33:09

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: BSL1900; Medium Notes: t= 20.9 C

Medium parameters used: f = 1880 MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 53.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(4.67, 4.67, 4.67); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - No Accessory - Display Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.346 mW/g

Body - Middle - No Accessory - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 8.99 V/m

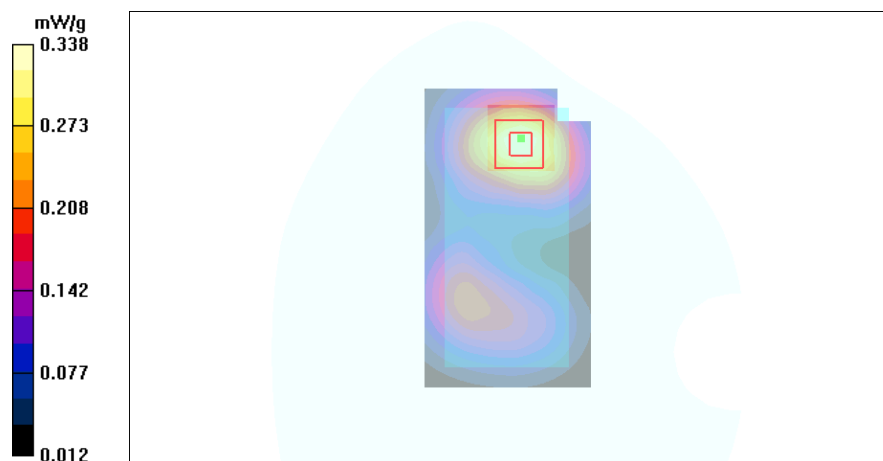
Peak SAR (extrapolated) = 0.468 W/kg

SAR(1 g) = 0.314 mW/g

SAR(10 g) = 0.199 mW/g

Power Drift = -0.096 dB

Maximum value of SAR (measured) = 0.338 mW/g



Date/Time: 2010-06-24 11:51:50

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: BSL1900; Medium Notes: $t = 20.9$ C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 53.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194

- ConvF(4.67, 4.67, 4.67); Calibrated: 2009-11-20

- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE4 Sn728; Calibrated: 2010-03-19

- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177

- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - WH-102 - Display Facing Phantom/Area Scan (51x91x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 0.314 mW/g

Body - Middle - WH-102 - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm

Reference Value = 8.51 V/m

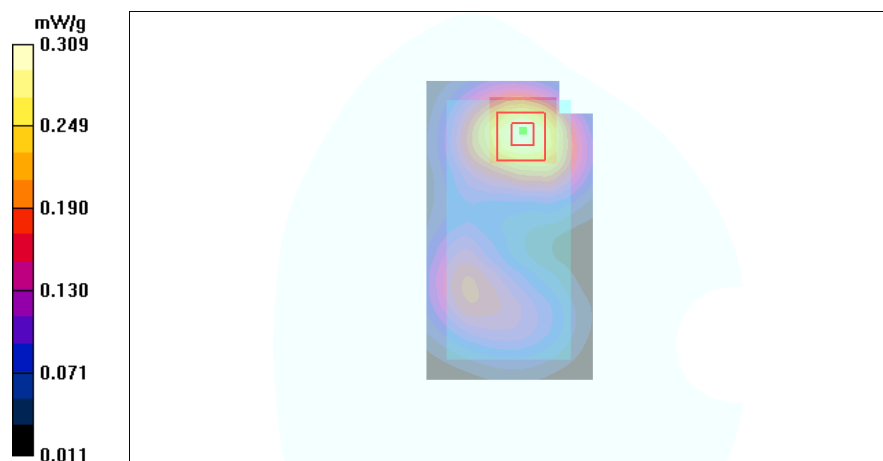
Peak SAR (extrapolated) = 0.433 W/kg

SAR(1 g) = 0.286 mW/g

SAR(10 g) = 0.180 mW/g

Power Drift = -0.025 dB

Maximum value of SAR (measured) = 0.309 mW/g



Date/Time: 2010-06-24 12:24:50

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: 2-slot GPRS1900

Frequency: 1850.2 MHz; Duty Cycle: 1:4.2

Medium: BSL1900; Medium Notes: $t = 20.9$ C

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.49$ mho/m; $\epsilon_r = 53.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(4.67, 4.67, 4.67); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Low - No Accessory - Back Facing Phantom/Area Scan (51x91x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 0.418 mW/g

Body - Low - No Accessory - Back Facing Phantom/Zoom Scan 3 (5x5x7)/Cube 0: Measurement grid: $dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm

Reference Value = 9.31 V/m

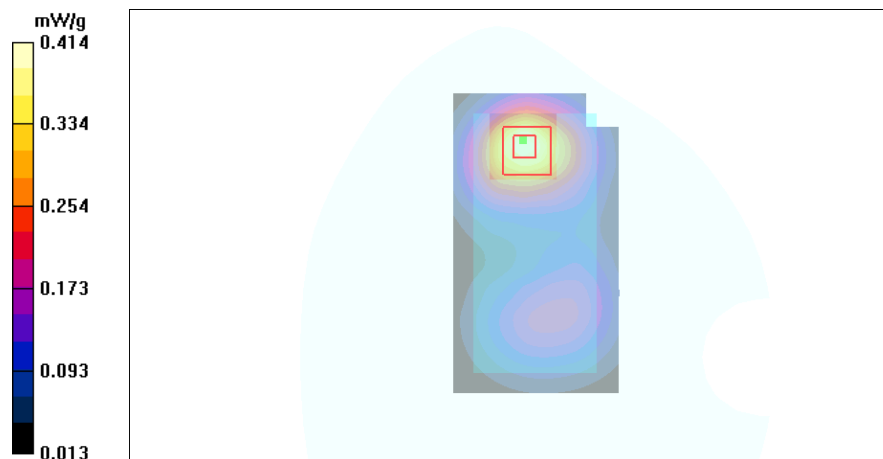
Peak SAR (extrapolated) = 0.576 W/kg

SAR(1 g) = 0.380 mW/g

SAR(10 g) = 0.236 mW/g

Power Drift = -0.055 dB

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



Date/Time: 2010-06-24 12:13:46

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: BSL1900; Medium Notes: $t = 20.9$ C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 53.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(4.67, 4.67, 4.67); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - WH-102 - Back Facing Phantom/Area Scan (51x91x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 0.363 mW/g

Body - Middle - WH-102 - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm

Reference Value = 8.72 V/m

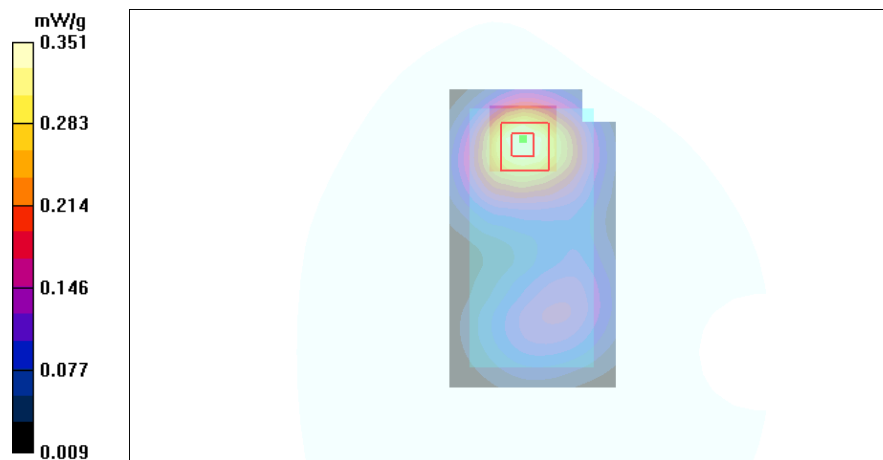
Peak SAR (extrapolated) = 0.498 W/kg

SAR(1 g) = 0.329 mW/g

SAR(10 g) = 0.206 mW/g

Power Drift = -0.071 dB

Maximum value of SAR (measured) = 0.351 mW/g



Date/Time: 2010-06-23 12:30:56

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: t=20.6 C

Medium parameters used: f = 1880 MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 53$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(4.67, 4.67, 4.67); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - No Accessory - Display Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.662 mW/g

Body - Middle - No Accessory - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 11.2 V/m

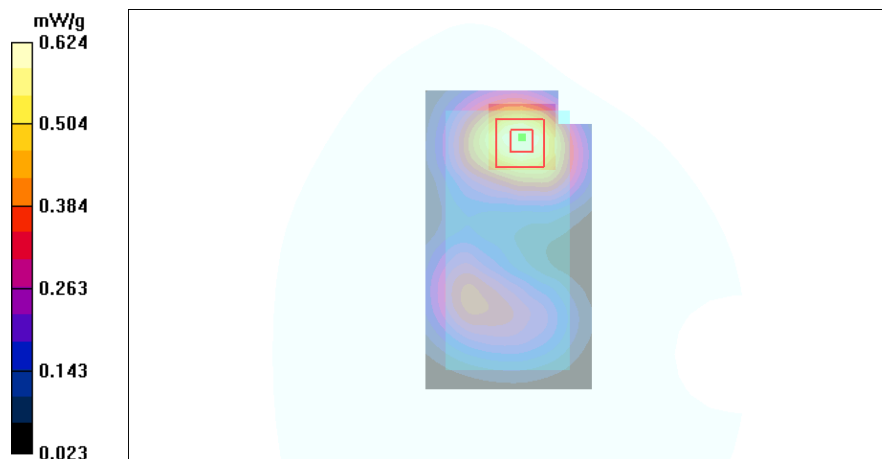
Peak SAR (extrapolated) = 0.869 W/kg

SAR(1 g) = 0.581 mW/g

SAR(10 g) = 0.368 mW/g

Power Drift = -0.030 dB

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



Date/Time: 2010-06-23 12:45:16

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: t=20.6 C

Medium parameters used: f = 1880 MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 53$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(4.67, 4.67, 4.67); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle -WH-102 - Display Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.607 mW/g

Body - Middle -WH-102 - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 10.9 V/m

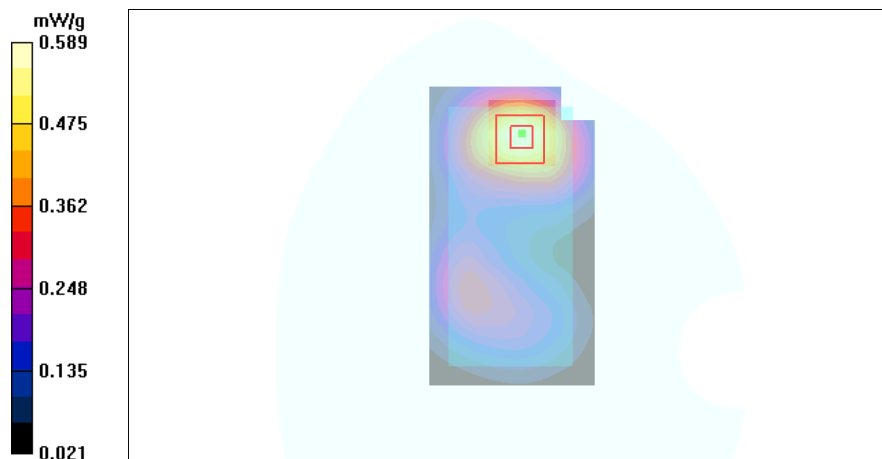
Peak SAR (extrapolated) = 0.819 W/kg

SAR(1 g) = 0.546 mW/g

SAR(10 g) = 0.345 mW/g

Power Drift = -0.051 dB

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



Date/Time: 2010-06-23 12:56:52

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: t=20.6 C

Medium parameters used: f = 1880 MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 53$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(4.67, 4.67, 4.67); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - No Accessory - Back Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.721 mW/g

Body - Middle - No Accessory - Back Facing Phantom/Zoom Scan 3 (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 12.1 V/m

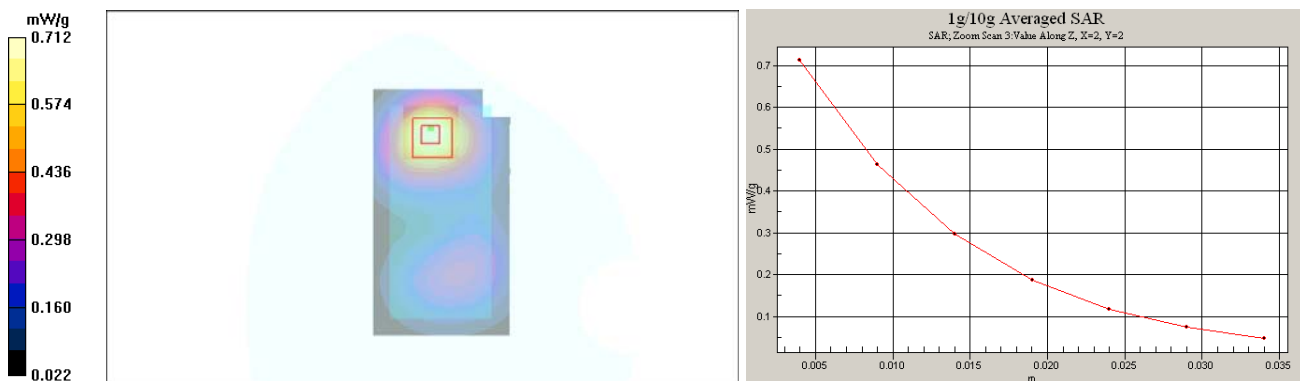
Peak SAR (extrapolated) = 0.998 W/kg

SAR(1 g) = 0.659 mW/g

SAR(10 g) = 0.412 mW/g

Power Drift = -0.109 dB

Maximum value of SAR (measured) = 0.712 mW/g



SAR Report

FCC_RM-675_01

Applicant: Nokia Corporation

Type: RM-675

Copyright © 2010 TCC Nokia

Date/Time: 2010-06-23 13:17:00

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: t=20.6 C

Medium parameters used: f = 1880 MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 53$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(4.67, 4.67, 4.67); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2010-03-19
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle -WH-102 - Back Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.681 mW/g

Body - Middle -WH-102 - Back Facing Phantom/Zoom Scan 3 (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 11.4 V/m

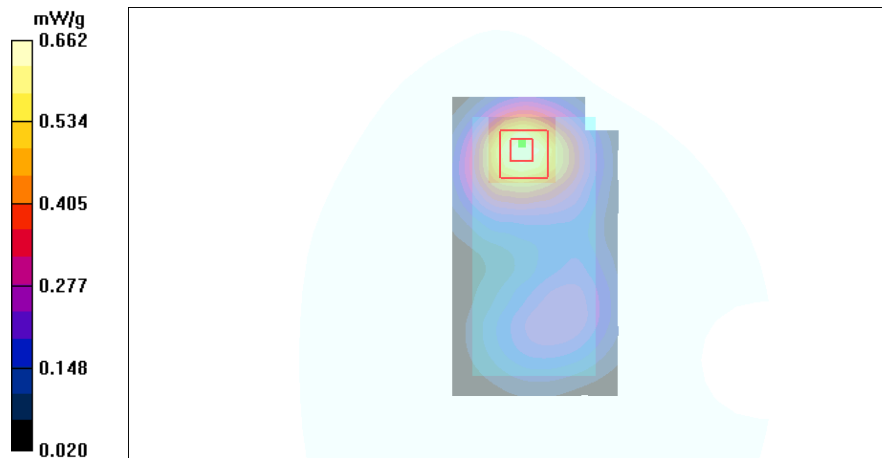
Peak SAR (extrapolated) = 0.934 W/kg

SAR(1 g) = 0.612 mW/g

SAR(10 g) = 0.382 mW/g

Power Drift = 0.008 dB

Maximum value of SAR (measured) = 0.662 mW/g



Date/Time: 2010-06-30 14:18:48

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes: $t = 20.5$ C

Medium parameters used: $f = 2442$ MHz; $\sigma = 2$ mho/m; $\epsilon_r = 50.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3573
- ConvF(6.63, 6.63, 6.63); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2009-10-15
- Phantom: SAM2; Type: - Serial: -
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - No Accessory - Display Facing Phantom/Area Scan (51x91x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 0.090 mW/g

Body - Middle - No Accessory - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm

Reference Value = 5.57 V/m

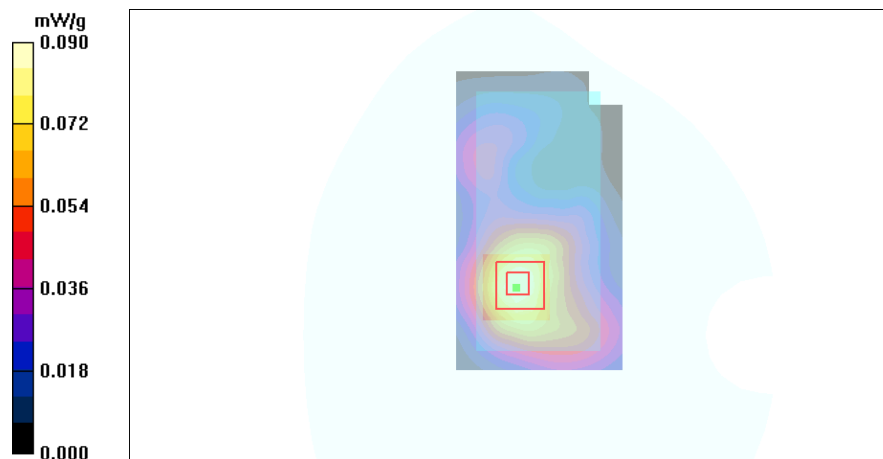
Peak SAR (extrapolated) = 0.141 W/kg

SAR(1 g) = 0.084 mW/g

SAR(10 g) = 0.049 mW/g

Power Drift = -0.128 dB

Maximum value of SAR (measured) = 0.090 mW/g



Date/Time: 2010-06-30 14:31:42

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes: t= 20.5 C

Medium parameters used: f = 2442 MHz; σ = 2 mho/m; ϵ_r = 50.9; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3573
- ConvF(6.63, 6.63, 6.63); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2009-10-15
- Phantom: SAM2; Type: -; Serial: -
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - WH-102 - Display Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.081 mW/g

Body - Middle - WH-102 - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 4.98 V/m

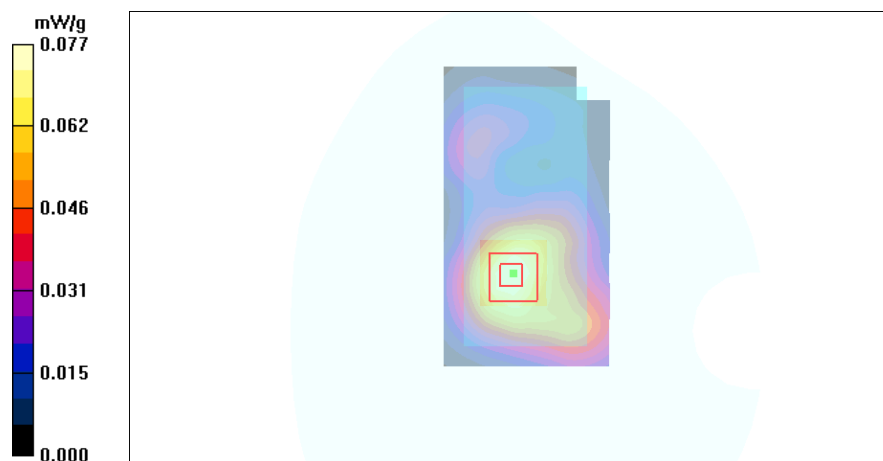
Peak SAR (extrapolated) = 0.126 W/kg

SAR(1 g) = 0.072 mW/g

SAR(10 g) = 0.042 mW/g

Power Drift = 0.073 dB

Maximum value of SAR (measured) = 0.077 mW/g



Date/Time: 2010-06-30 14:42:37

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes: t= 20.5 C

Medium parameters used: f = 2442 MHz; $\sigma = 2$ mho/m; $\epsilon_r = 50.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3573
- ConvF(6.63, 6.63, 6.63); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2009-10-15
- Phantom: SAM2; Type: -; Serial: -
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - No Accessory - Back Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.100 mW/g

Body - Middle - No Accessory - Back Facing Phantom/Zoom Scan 4 (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 6.56 V/m

Peak SAR (extrapolated) = 0.158 W/kg

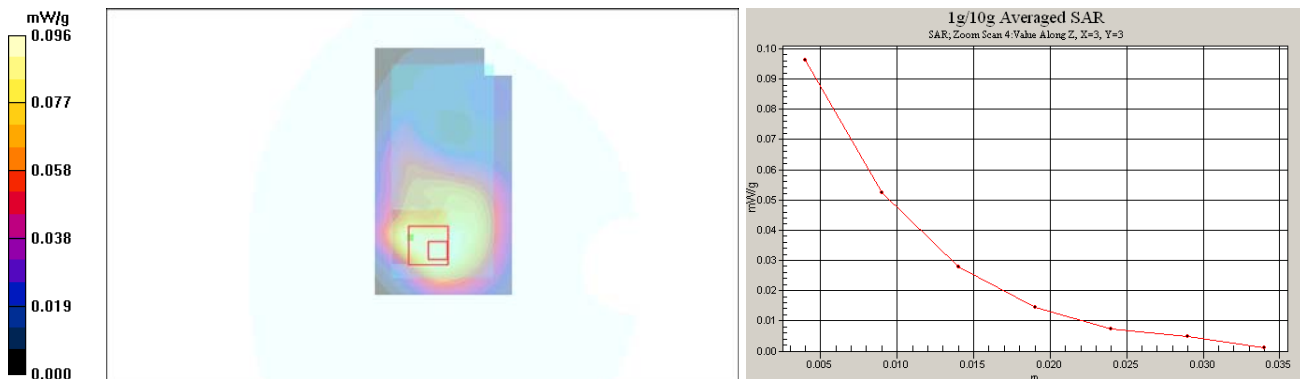
SAR(1 g) = 0.089 mW/g

SAR(10 g) = 0.050 mW/g

Power Drift = 0.058 dB

Warning: Maximum averaged SAR over 1 g is located on the boundary of the measurement cube. This cube might not incorporate the absolute averaged SAR. Please consider a refinement of the Area Scan measurement. Maximum averaged SAR over 10 g is located on the boundary of the measurement cube. This cube might not incorporate the absolute averaged SAR. Please consider a refinement of the Area Scan measurement.

Maximum value of SAR (measured) = 0.096 mW/g



Date/Time: 2010-06-30 15:09:44

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes: t= 20.5 C

Medium parameters used: f = 2442 MHz; σ = 2 mho/m; ϵ_r = 50.9; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3573
- ConvF(6.63, 6.63, 6.63); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2009-10-15
- Phantom: SAM2; Type: -; Serial: -
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - WH-102 - Back Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.103 mW/g

Body - Middle - WH-102 - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 5.97 V/m

Peak SAR (extrapolated) = 0.168 W/kg

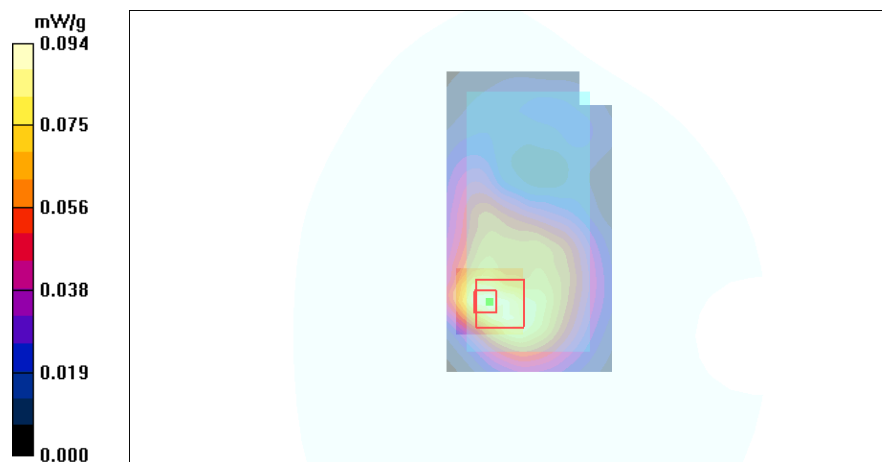
SAR(1 g) = 0.086 mW/g

SAR(10 g) = 0.048 mW/g

Power Drift = 0.179 dB

Warning: Maximum averaged SAR over 10 g is located on the boundary of the measurement cube. This cube might not incorporate the absolute averaged SAR. Please consider a refinement of the Area Scan measurement.

Maximum value of SAR (measured) = 0.094 mW/g



Date/Time: 2010-07-01 09:48:27

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WLAN2450 n-mode

Frequency: 2412 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes: $t = 21.2$ C

Medium parameters used: $f = 2412$ MHz; $\sigma = 1.96$ mho/m; $\epsilon_r = 50.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3573
- ConvF(6.63, 6.63, 6.63); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2009-10-15
- Phantom: SAM2; Type: -; Serial: -
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Low - No Accessory - Back Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.031 mW/g

Body - Low - No Accessory - Back Facing Phantom/Zoom Scan 3 (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 2.35 V/m

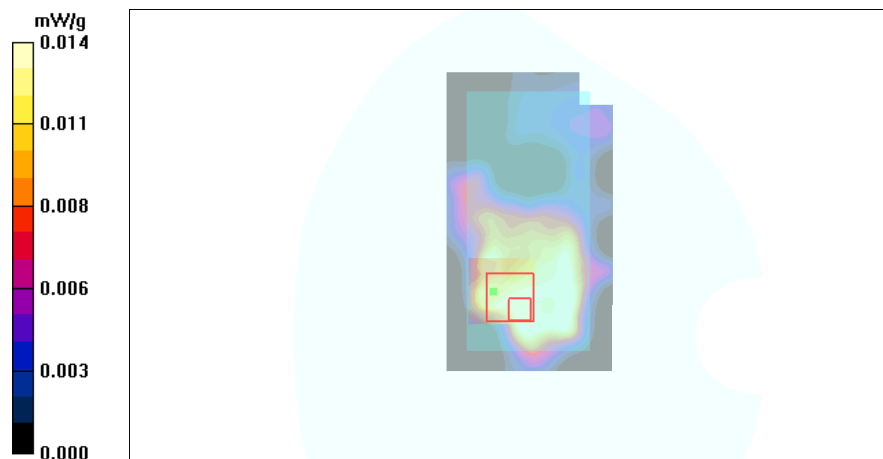
Peak SAR (extrapolated) = 0.019 W/kg

SAR(1 g) = 0.012 mW/g

SAR(10 g) = 0.00604 mW/g

Power Drift = 0.207 dB

Maximum value of SAR (measured) = 0.014 mW/g



Date/Time: 2010-06-30 12:28:28, Date/Time: 2010-07-07 13:58:04

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WLAN2450 b-mode, Communication System: GSM850

Frequency: 2442 MHz, Frequency: 848.8 MHz; Duty Cycle: 1:1, Duty Cycle: 1:8.3

Medium: HSL2450, Medium: HSL850; Medium Notes: t= 20.3 C, Medium Notes: t= 20.4 C

Medium parameters used: f = 2442 MHz; σ = 1.8 mho/m; ϵ_r = 37.8; ρ = 1000 kg/m³, Medium parameters used:
f = 849 MHz; σ = 0.896 mho/m; ϵ_r = 40.9; ρ = 1000 kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3573, Probe: ES3DV3 - SN3131
- ConvF(6.56, 6.56, 6.56), ConvF(5.85, 5.85, 5.85); Calibrated: 2009-11-20, Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn555, Electronics: DAE4 Sn1213; Calibrated: 2009-10-15, Calibrated: 2009-11-16
- Phantom: SAM1, Phantom: SAM 3; Type: SAM, Type: Twin SAM 040 CA; Serial: TP-1126, Serial: TP-1179
- ; SEMCAD X Version 14.0 Build 61

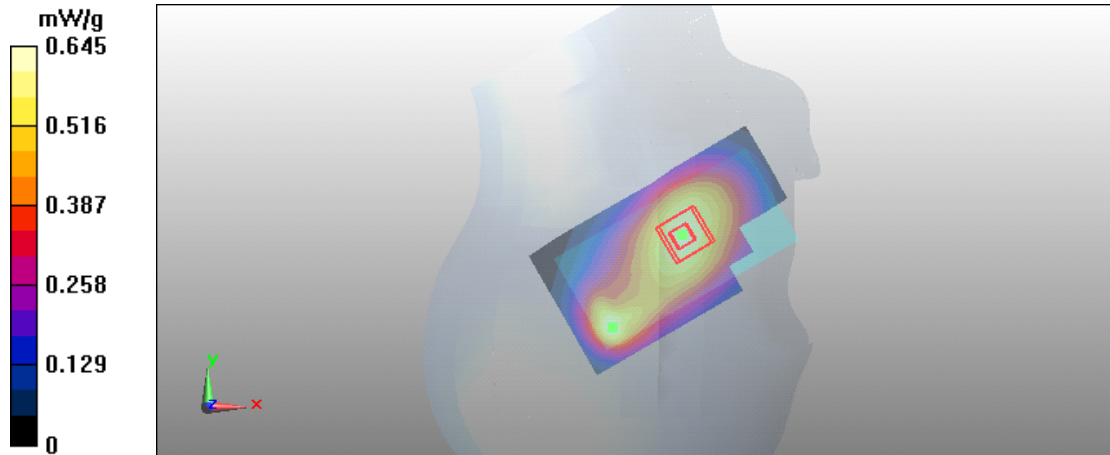
Configuration/Cheek - Middle/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Configuration/Cheek - High/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.588 mW/g

SAR(10 g) = 0.407 mW/g

Maximum value of SAR (measured) = 0.645 mW/g



Date/Time: 2010-06-30 12:28:28, Date/Time: 2010-07-08 09:44:40

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WLAN2450 b-mode, Communication System: WCDMA850

Frequency: 2442 MHz, Frequency: 846.6 MHz; Duty Cycle: 1:1

Medium: HSL2450, Medium: HSL850; Medium Notes: $t = 20.3$ C, Medium Notes: $t = 20.5$ C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.8$ mho/m; $\epsilon_r = 37.8$; $\rho = 1000$ kg/m³, Medium parameters used:
 $f = 847$ MHz; $\sigma = 0.882$ mho/m; $\epsilon_r = 40.5$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3573, Probe: ES3DV3 - SN3131
- ConvF(6.56, 6.56, 6.56), ConvF(5.85, 5.85, 5.85); Calibrated: 2009-11-20, Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn555, Electronics: DAE4 Sn1213; Calibrated: 2009-10-15, Calibrated: 2009-11-16
- Phantom: SAM1, Phantom: SAM 3; Type: SAM, Type: Twin SAM 040 CA; Serial: TP-1126, Serial: TP-1179
- ; SEMCAD X Version 14.0 Build 61

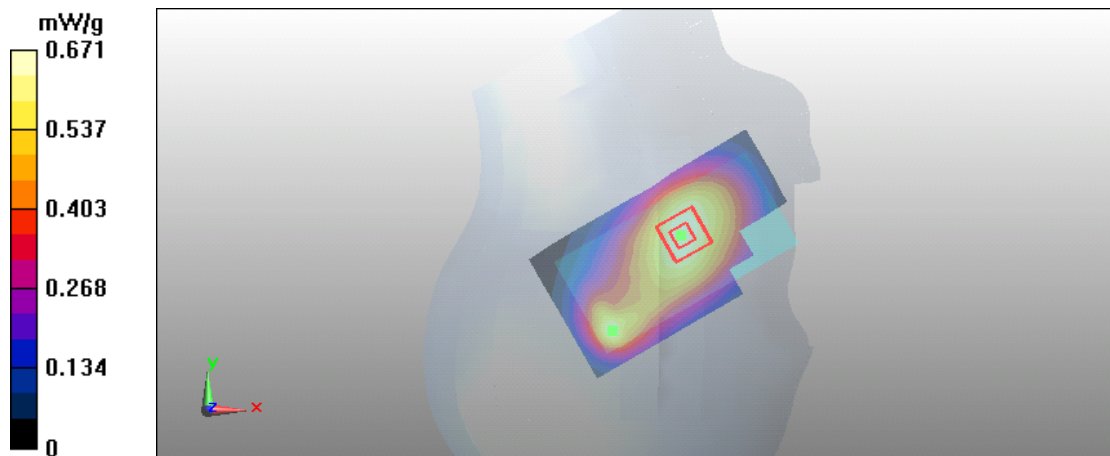
Configuration/Cheek - Middle/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Configuration/Cheek -High/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.630 mW/g

SAR(10 g) = 0.438 mW/g

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



Date/Time: 2010-06-30 12:28:28, Date/Time: 2010-06-15 15:19:23

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WLAN2450 b-mode, Communication System: WCDMA1700/2100

Frequency: 2442 MHz, Frequency: 1752.6 MHz; Duty Cycle: 1:1

Medium: HSL2450, Medium: HSL1800; Medium Notes: $t = 20.3$ C, Medium Notes: $t = 20.4$ C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.8$ mho/m; $\epsilon_r = 37.8$; $\rho = 1000$ kg/m³, Medium parameters used:
 $f = 1753$ MHz; $\sigma = 1.32$ mho/m; $\epsilon_r = 39.4$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3573, Probe: ES3DV3 - SN3194
- ConvF(6.56, 6.56, 6.56), ConvF(5.25, 5.25, 5.25); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn555, Electronics: DAE4 Sn728; Calibrated: 2009-10-15, Calibrated: 2010-03-19
- Phantom: SAM1, Phantom: SAM 4; Type: SAM, Type: Twin SAM 040 CA; Serial: TP-1126, Serial: TP-1018
- ; SEMCAD X Version 14.0 Build 61

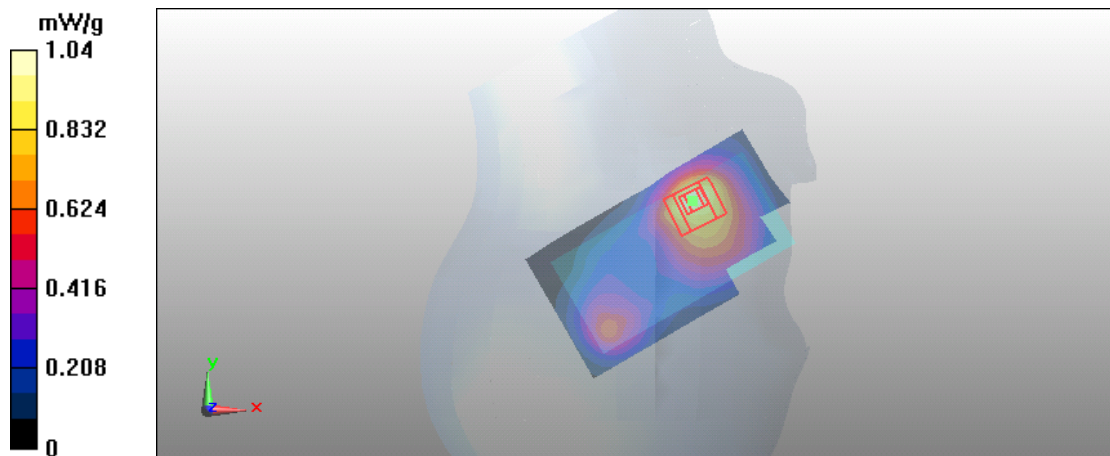
Configuration/Cheek - Middle/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Configuration/Cheek - High/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.916 mW/g

SAR(10 g) = 0.541 mW/g

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



Date/Time: 2010-06-17 15:06:13, Date/Time: 2010-06-30 12:28:28

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: 2-slot GPRS1900, Communication System: WLAN2450 b-mode

Frequency: 1880 MHz; Frequency: 2442 MHz; Duty Cycle: 1:4.2, Duty Cycle: 1:1

Medium: HSL1900, Medium: HSL2450; Medium Notes: $t = 21.2$ C, Medium Notes: $t = 20.3$ C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.37$ mho/m; $\epsilon_r = 39.8$; $\rho = 1000$ kg/m³, Medium parameters used:
 $f = 2442$ MHz; $\sigma = 1.8$ mho/m; $\epsilon_r = 37.8$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

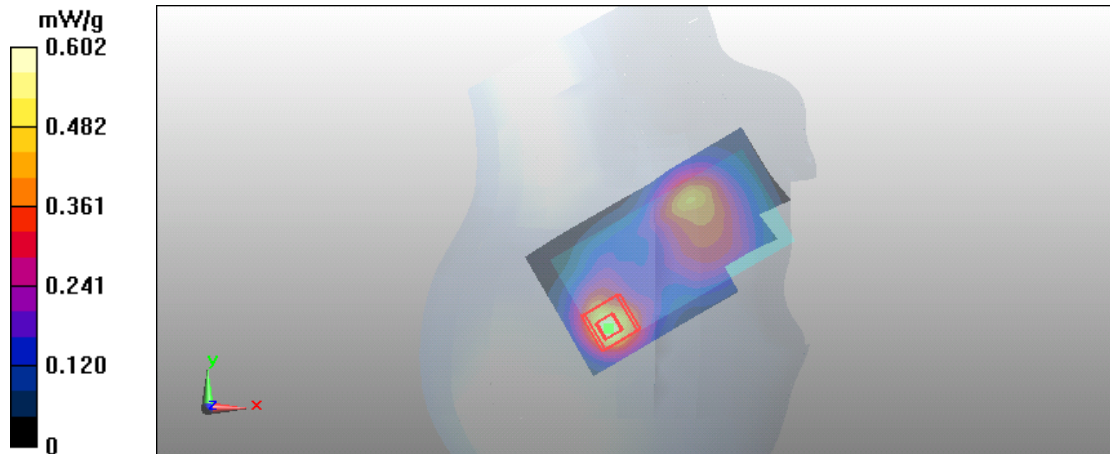
- Probe: ES3DV3 - SN3194, Probe: EX3DV4 - SN3573
- ConvF(5.06, 5.06, 5.06), ConvF(6.56, 6.56, 6.56); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728, Electronics: DAE4 Sn555; Calibrated: 2010-03-19, Calibrated: 2009-10-15
- Phantom: SAM 1, Phantom: SAM1; Type: Twin SAM 040 CA, Type: SAM; Serial: TP-1449, Serial: TP-1126
- ; SEMCAD X Version 14.0 Build 61

Configuration/Cheek - Middle/Area Scan (6x10x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.518 mW/g

SAR(10 g) = 0.253 mW/g

Maximum value of SAR (measured) = 0.602 mW/g



Date/Time: 2010-06-23 10:06:00, Date/Time: 2010-06-30 12:28:28

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA1900, Communication System: WLAN2450 b-mode

Frequency: 1880 MHz, Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL1900, Medium: HSL2450; Medium Notes: $t = 20.5^\circ\text{C}$, Medium Notes: $t = 20.3^\circ\text{C}$

Medium parameters used: $f = 1880\text{ MHz}$; $\sigma = 1.38\text{ mho/m}$; $\epsilon_r = 39.8$; $\rho = 1000\text{ kg/m}^3$, Medium parameters used:
 $f = 2442\text{ MHz}$; $\sigma = 1.8\text{ mho/m}$; $\epsilon_r = 37.8$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Right Section

DASY4 Configuration:

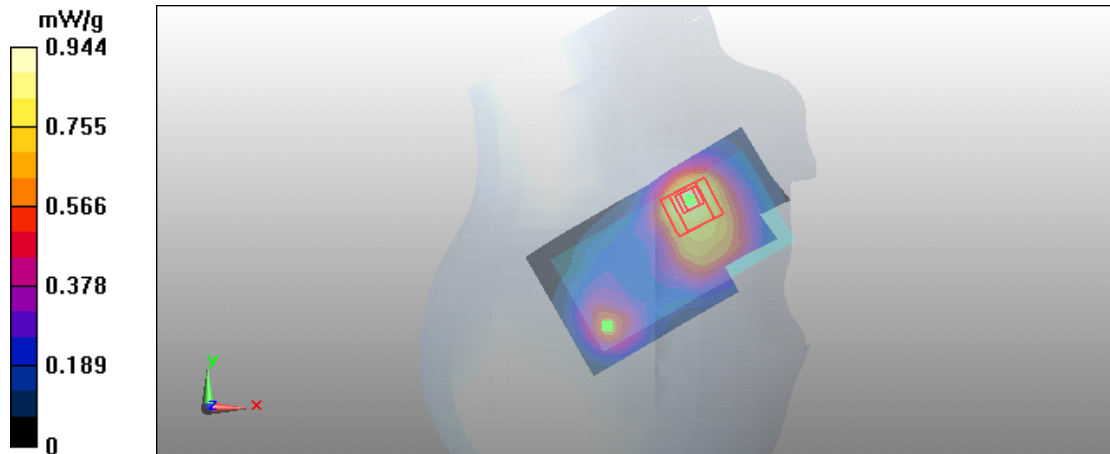
- Probe: ES3DV3 - SN3194, Probe: EX3DV4 - SN3573
- ConvF(5.06, 5.06, 5.06), ConvF(6.56, 6.56, 6.56); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728, Electronics: DAE4 Sn555; Calibrated: 2010-03-19, Calibrated: 2009-10-15
- Phantom: SAM 1, Phantom: SAM1; Type: Twin SAM 040 CA, Type: SAM; Serial: TP-1449, Serial: TP-1126
- ; SEMCAD X Version 14.0 Build 61

Configuration/Cheek - Middle/Area Scan (6x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.837 mW/g

SAR(10 g) = 0.491 mW/g

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



Date/Time: 2010-07-08 12:50:57, Date/Time: 2010-06-30 14:42:37

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: GSM850, Communication System: WLAN2450 b-mode

Frequency: 848.8 MHz, Frequency: 2442 MHz; Duty Cycle: 1:8.3, Duty Cycle: 1:1

Medium: BSL850, Medium: BSL2450; Medium Notes: t= 20.5 C

Medium parameters used: f = 849 MHz; σ = 0.999 mho/m; ϵ_r = 53.7; ρ = 1000 kg/m³, Medium parameters used:
f = 2442 MHz; σ = 2 mho/m; ϵ_r = 50.9; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131, Probe: EX3DV4 - SN3573
- ConvF(5.69, 5.69, 5.69), ConvF(6.63, 6.63, 6.63); Calibrated: 2009-10-27, Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn1213, Electronics: DAE4 Sn555; Calibrated: 2009-11-16, Calibrated: 2009-10-15
- Phantom: SAM 1, Phantom: SAM2; Type: Twin SAM 040 CA, Type: -; Serial: TP-1179, Serial: -
- ; SEMCAD X Version 14.0 Build 61

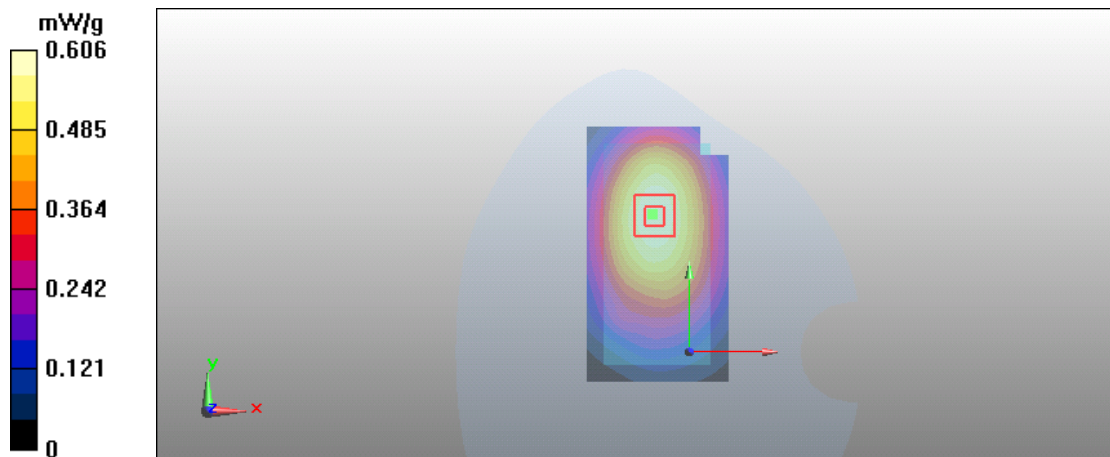
Configuration/Body - High - No Accessory - Back Facing Phantom/Area Scan (6x10x1): Measurement grid:
dx=15mm, dy=15mm

Configuration/Body - Middle - No Accessory - Back Facing Phantom/Area Scan (6x10x1): Measurement grid:
dx=15mm, dy=15mm

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.576 mW/g

SAR(10 g) = 0.408 mW/g

Maximum value of SAR (measured) = 0.606 mW/g



Date/Time: 2010-06-30 14:42:37, Date/Time: 2010-07-08 10:54:35

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WLAN2450 b-mode, Communication System: WCDMA850

Frequency: 2442 MHz; Frequency: 846.6 MHz; Duty Cycle: 1:1

Medium: BSL2450, Medium: BSL850; Medium Notes: t= 20.5 C

Medium parameters used: f = 2442 MHz; $\sigma = 2$ mho/m; $\epsilon_r = 50.9$; $\rho = 1000$ kg/m³, Medium parameters used: f = 847 MHz; $\sigma = 0.997$ mho/m; $\epsilon_r = 53.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3573, Probe: ES3DV3 - SN3131
- ConvF(6.63, 6.63, 6.63), ConvF(5.69, 5.69, 5.69); Calibrated: 2009-11-20, Calibrated: 2009-10-27
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn555, Electronics: DAE4 Sn1213; Calibrated: 2009-10-15, Calibrated: 2009-11-16
- Phantom: SAM2, Phantom: SAM 1; Type: -, Type: Twin SAM 040 CA; Serial: -, Serial: TP-1179
- ; SEMCAD X Version 14.0 Build 61

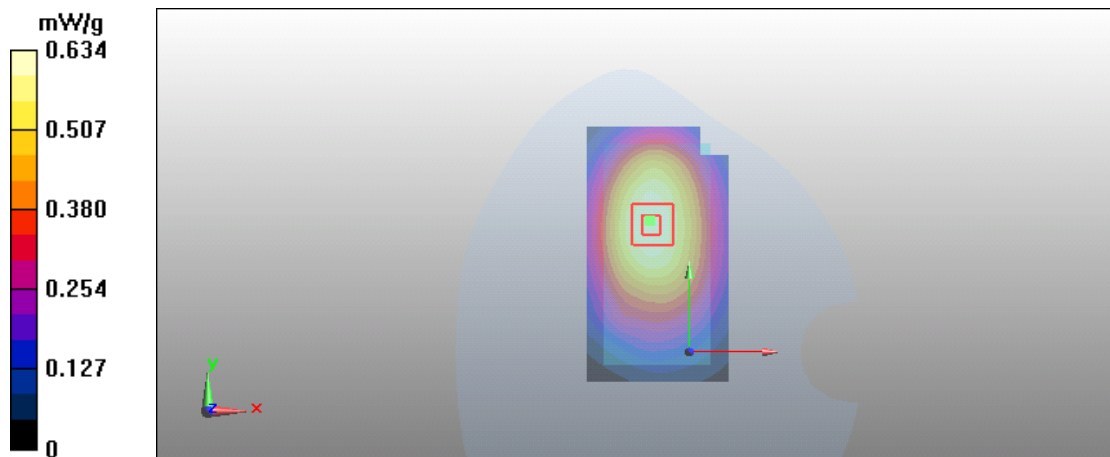
Configuration/Body - Middle - No Accessory - Back Facing Phantom/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Configuration/Body - High - No Accessory - Back Facing Phantom/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.604 mW/g

SAR(10 g) = 0.427 mW/g

Maximum value of SAR (measured) = 0.634 mW/g



Date/Time: 2010-06-16 13:57:27, Date/Time: 2010-06-30 14:42:37

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA1700/2100, Communication System: WLAN2450 b-mode

Frequency: 1752.6 MHz, Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: BSL1800, Medium: BSL2450; Medium Notes: t=20.3 C, Medium Notes: t= 20.5 C

Medium parameters used: f = 1753 MHz; $\sigma = 1.45$ mho/m; $\epsilon_r = 51.3$; $\rho = 1000$ kg/m³, Medium parameters used: f = 2442 MHz; $\sigma = 2$ mho/m; $\epsilon_r = 50.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194, Probe: EX3DV4 - SN3573
- ConvF(4.92, 4.92, 4.92), ConvF(6.63, 6.63, 6.63); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn728, Electronics: DAE4 Sn555; Calibrated: 2010-03-19, Calibrated: 2009-10-15
- Phantom: SAM 3, Phantom: SAM2; Type: Twin SAM 040 CA, Type: -; Serial: TP-1179, Serial: -
- ; SEMCAD X Version 14.0 Build 61

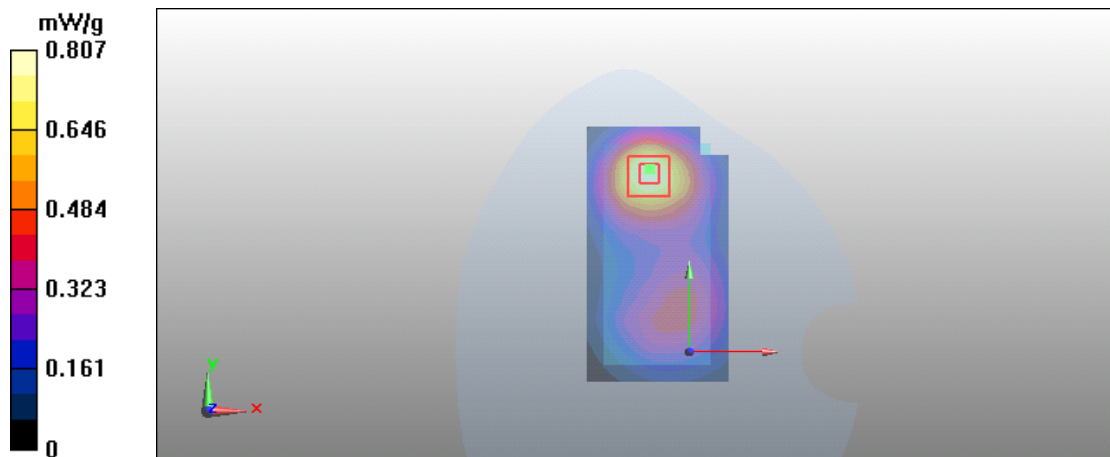
Configuration/Body - High - No Accessory - Back Facing Phantom/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Configuration/Body - Middle - No Accessory - Back Facing Phantom/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.744 mW/g

SAR(10 g) = 0.451 mW/g

Maximum value of SAR (measured) = 0.807 mW/g



Date/Time: 2010-06-24 12:24:50, Date/Time: 2010-06-30 14:42:37

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: 2-slot GPRS1900, Communication System: WLAN2450 b-mode

Frequency: 1850.2 MHz, Frequency: 2442 MHz; Duty Cycle: 1:4.2, Duty Cycle: 1:1

Medium: BSL1900, Medium: BSL2450; Medium Notes: t= 20.9 C, Medium Notes: t= 20.5 C

Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.49 mho/m; ϵ_r = 53.4; ρ = 1000 kg/m³, Medium parameters used: f = 2442 MHz; σ = 2 mho/m; ϵ_r = 50.9; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194, Probe: EX3DV4 - SN3573
- ConvF(4.67, 4.67, 4.67), ConvF(6.63, 6.63, 6.63); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn728, Electronics: DAE4 Sn555; Calibrated: 2010-03-19, Calibrated: 2009-10-15
- Phantom: SAM 2, Phantom: SAM2; Type: Twin SAM 040 CA, Type: -; Serial: TP - 1177, Serial: -
- ; SEMCAD X Version 14.0 Build 61

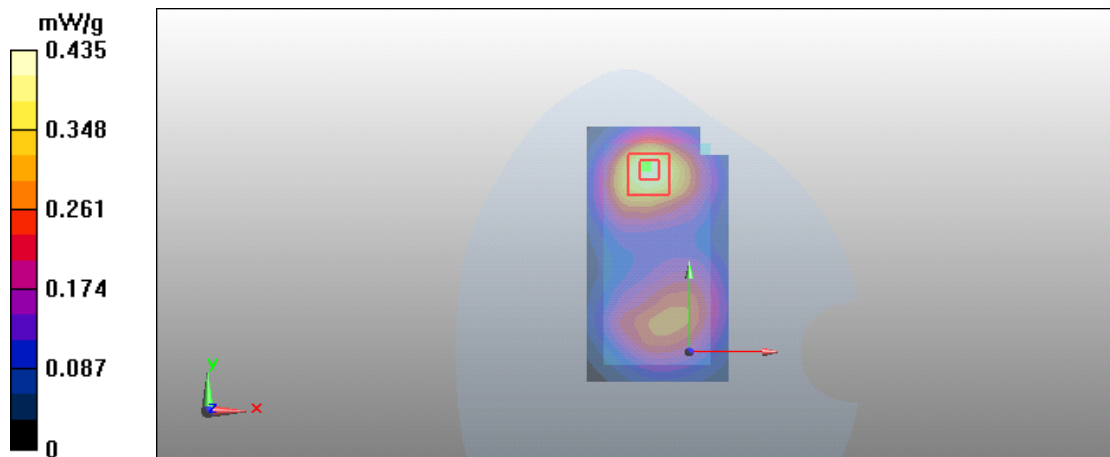
Configuration/Body - Low - No Accessory - Back Facing Phantom/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Configuration/Body - Middle - No Accessory - Back Facing Phantom/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.397 mW/g

SAR(10 g) = 0.236 mW/g

Maximum value of SAR (measured) = 0.435 mW/g



Date/Time: 2010-06-23 12:56:52, Date/Time: 2010-06-30 14:42:37

Test Laboratory: TCC Nokia

Type: RM-675; Serial: 004402/13/142309/1

Communication System: WCDMA1900, Communication System: WLAN2450 b-mode

Frequency: 1880 MHz, Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: BSL1900, Medium: BSL2450; Medium Notes: t=20.6 C, Medium Notes: t= 20.5 C

Medium parameters used: f = 1880 MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 53$; $\rho = 1000$ kg/m³, Medium parameters used: f = 2442 MHz; $\sigma = 2$ mho/m; $\epsilon_r = 50.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

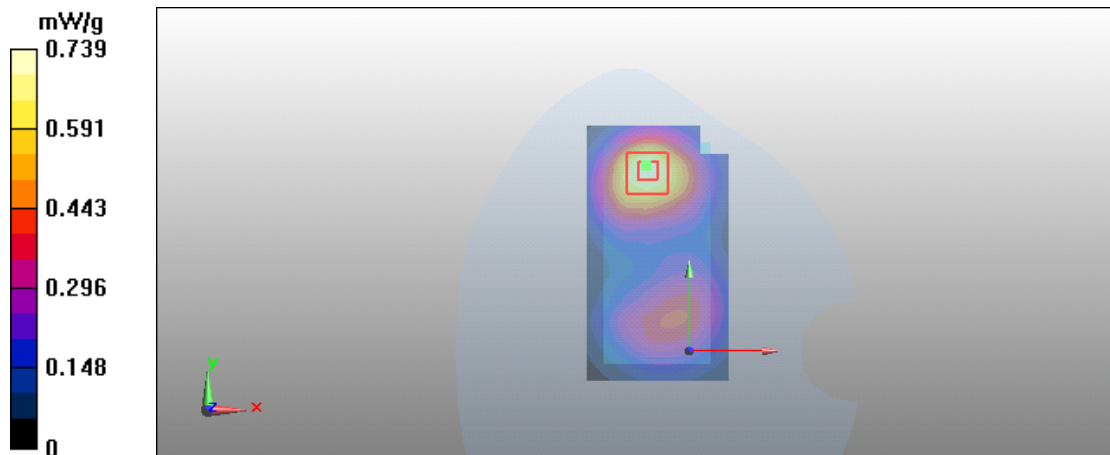
- Probe: ES3DV3 - SN3194, Probe: EX3DV4 - SN3573
- ConvF(4.67, 4.67, 4.67), ConvF(6.63, 6.63, 6.63); Calibrated: 2009-11-20
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn728, Electronics: DAE4 Sn555; Calibrated: 2010-03-19, Calibrated: 2009-10-15
- Phantom: SAM 2, Phantom: SAM2; Type: Twin SAM 040 CA, Type: -; Serial: TP - 1177, Serial: -
- ; SEMCAD X Version 14.0 Build 61

Configuration/Body - Middle - No Accessory - Back Facing Phantom/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.678 mW/g

SAR(10 g) = 0.404 mW/g

Maximum value of SAR (measured) = 0.739 mW/g



APPENDIX C: CONDUCTED AVERAGE POWER MEASUREMENTS FOR WCDMA AND HSUPA

Test Laboratory: TCC Nokia

Type:RM-675; Serial: 004402/13/142183/0, HW: 3900, SW: 011.002

C.1. WCDMA850 Test results

Average power

Ch / f (MHz)	P [dBm]
4133	23.14
4175	23.13
4232	23.16

C.2. HSUPA850 Test results

Average power

Ch / f (MHz)	P [dBm]				
	Subtest mode 1	Subtest mode 2	Subtest mode 3	Subtest mode 4	Subtest mode 5
4133	19.69	19.67	20.45	19.70	22.25
4175	19.31	18.51	20.11	19.63	22.11
4232	18.89	18.35	20.16	19.22	21.82

Note: In HSUPA operation, the output power is reduced relative to the tuning target power for WCDMA. This device runs two separate HSUPA power control routines: MPR and E-TFC MPR. In each Subtest mode, the routine with the higher power reduction dominates. In addition, to ensure linearity of the PA output, a further 2dB power reduction is implemented in Subtest modes 1 to 4 and a further 1dB power reduction is implemented in Subtest mode 5. As a result, the overall MPR for each of the Subtest modes is as follows:

Maximum Power Reduction (MPR)				
Subtest mode 1	Subtest mode 2	Subtest mode 3	Subtest mode 4	Subtest mode 5
3.5dB	4.0dB	3.0dB	4.0dB	1.0dB

Test Laboratory: TCC Nokia
Type:RM-675; Serial: 004402/13/142183/0, HW: 3900, SW: 011.002

C.3. WCDMA1700/2100 Test results

Average power

Ch / f (MHz)	P [dBm]
1313	23.06
1450	23.03
1512	22.97

C.4. HSUPA1700/2100 Test results

Average power

Ch / f (MHz)	P [dBm]				
	Subtest mode 1	Subtest mode 2	Subtest mode 3	Subtest mode 4	Subtest mode 5
1313	19.74	19.81	21.07	20.53	22.62
1450	20.68	19.98	20.99	19.76	22.71
1512	18.23	18.48	18.50	18.25	21.71

Note: In HSUPA operation, the output power is reduced relative to the tuning target power for WCDMA. This device runs two separate HSUPA power control routines: MPR and E-TFC MPR. In each Subtest mode, the routine with the higher power reduction dominates. In addition, to ensure linearity of the PA output, a further 2dB power reduction is implemented in Subtest modes 1 to 4 and a further 1dB power reduction is implemented in Subtest mode 5. As a result, the overall MPR for each of the Subtest modes is as follows:

Maximum Power Reduction (MPR)				
Subtest mode 1	Subtest mode 2	Subtest mode 3	Subtest mode 4	Subtest mode 5
3.5dB	4.0dB	3.0dB	4.0dB	1.0dB

Test Laboratory: TCC Nokia
Type:RM-675; Serial: 004402/13/142183/0, HW: 3900, SW: 011.002

C.5. WCDMA1900 Test results

Average power

Ch / f (MHz)	P [dBm]
9263	21.96
9400	21.83
9537	21.94

C.6. HSUPA1900 Test results

Average power

Ch / f (MHz)	P [dBm]				
	Subtest mode 1	Subtest mode 2	Subtest mode 3	Subtest mode 4	Subtest mode 5
9263	18.38	18.90	18.86	18.65	21.87
9400	18.71	18.80	18.85	18.55	21.87
9537	18.27	18.75	19.25	18.78	21.84

Note: In HSUPA operation, the output power is reduced relative to the tuning target power for WCDMA. This device runs two separate HSUPA power control routines: MPR and E-TFC MPR. In each Subtest mode, the routine with the higher power reduction dominates. In addition, to ensure linearity of the PA output, a further 1dB power reduction is implemented in Subtest modes 1 to 4 but no further power reduction is implemented in Subtest mode 5. As a result, the overall MPR for each of the Subtest modes is as follows:

Maximum Power Reduction (MPR)				
Subtest mode 1	Subtest mode 2	Subtest mode 3	Subtest mode 4	Subtest mode 5
2.5dB	3.0dB	2.0dB	3.0dB	0.0dB

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



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 108**

The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Client **Nokia Salo TCC**

Certificate No: **ES3-3131_Oct09**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3131**

Calibration procedure(s) **QA CAL-01.v6, QA CAL-23.v3 and QA CAL-25.v2
Calibration procedure for dosimetric E-field probes**

Calibration date: **October 27, 2009**

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 (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41495277	1-Apr-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41498087	1-Apr-09 (No. 217-01030)	Apr-10
Reference 3 dB Attenuator	SN: S5054 (3c)	31-Mar-09 (No. 217-01026)	Mar-10
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-09 (No. 217-01028)	Mar-10
Reference 30 dB Attenuator	SN: S5129 (30b)	31-Mar-09 (No. 217-01027)	Mar-10
Reference Probe ES3DV2	SN: 3013	2-Jan-09 (No. ES3-3013_Jan09)	Jan-10
DAE4	SN: 660	29-Sep-09 (No. DAE4-660_Sep09)	Sep-10

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-09)	In house check: Oct10

	Name	Function	Signature
Calibrated by:	Marcel Fehr	Laboratory Technician	

Approved by:	Katja Pokovic	Technical Manager	
--------------	---------------	-------------------	--

Issued: October 27, 2009

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

DASY - Parameters of Probe: ES3DV3 SN:3131**Basic Calibration Parameters**

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	1.36	1.30	1.29	± 10.1%
DCP (mV) ^B	95.7	92.8	93.9	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dBuV	C	VR mV	Unc (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	300	± 1.5%
			Y	0.00	0.00	1.00	300	
			Z	0.00	0.00	1.00	300	

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 E²-field uncertainty inside TSL (see Pages 5 and 6).

^B Numerical linearization parameter: uncertainty not required.

DASY - Parameters of Probe: ES3DV3 SN:3131

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz]	Validity [MHz] ^c	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth Unc (k=2)
835	± 50 / ± 100	41.5 ± 5%	0.90 ± 5%	5.85	5.85	5.85	0.26	2.01 ± 11.0%
1750	± 50 / ± 100	40.1 ± 5%	1.37 ± 5%	5.08	5.08	5.08	0.45	1.56 ± 11.0%
1900	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	4.88	4.88	4.88	0.38	1.72 ± 11.0%
2450	± 50 / ± 100	39.2 ± 5%	1.80 ± 5%	4.31	4.31	4.31	0.44	1.66 ± 11.0%

^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.

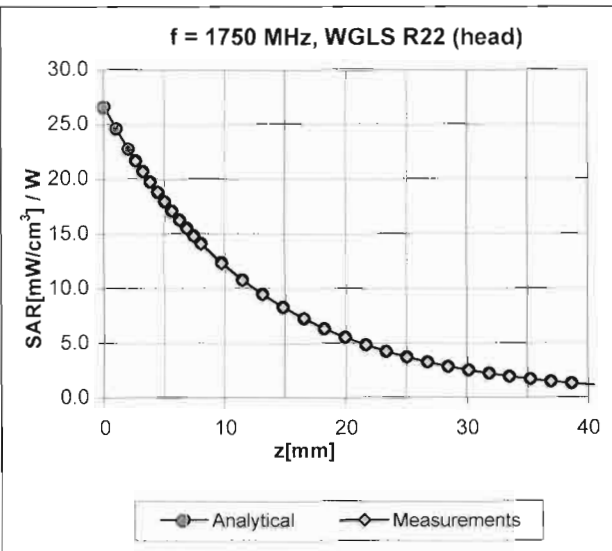
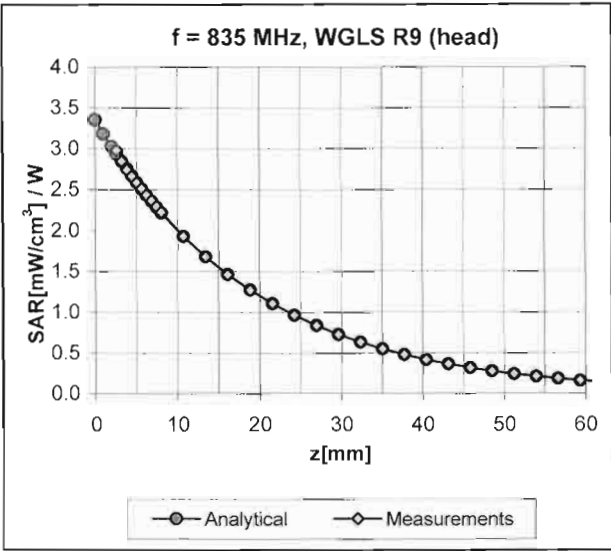
DASY - Parameters of Probe: ES3DV3 SN:3131

Calibration Parameter Determined in Body Tissue Simulating Media

f [MHz]	Validity [MHz] ^C	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth Unc (k=2)
835	± 50 / ± 100	55.2 ± 5%	0.97 ± 5%	5.69	5.69	5.69	0.32	1.93 ± 11.0%
1750	± 50 / ± 100	53.4 ± 5%	1.49 ± 5%	4.71	4.71	4.71	0.43	1.83 ± 11.0%
1900	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	4.48	4.48	4.48	0.34	2.34 ± 11.0%
2450	± 50 / ± 100	52.7 ± 5%	1.95 ± 5%	4.07	4.07	4.07	0.94	1.10 ± 11.0%

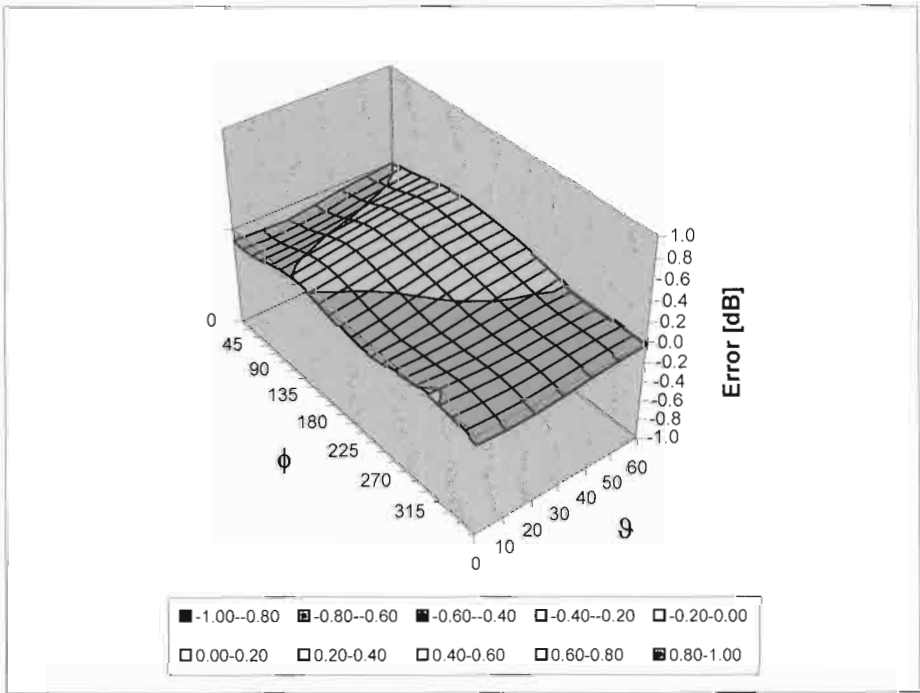
^C The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

Conversion Factor Assessment



Deviation from Isotropy in HSL

Error (ϕ , ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: $\pm 2.6\%$ (k=2)



Accredited by the Swiss Accreditation Service (SAS)
 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: **ES3-3194_Nov09**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3194**

Calibration procedure(s) **QA CAL-01.v6, QA CAL-23.v3 and QA CAL-25.v2
 Calibration procedure for dosimetric E-field probes**

Calibration date: **November 20, 2009**

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 (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41495277	1-Apr-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41498087	1-Apr-09 (No. 217-01030)	Apr-10
Reference 3 dB Attenuator	SN: S5054 (3c)	31-Mar-09 (No. 217-01026)	Mar-10
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-09 (No. 217-01028)	Mar-10
Reference 30 dB Attenuator	SN: S5129 (30b)	31-Mar-09 (No. 217-01027)	Mar-10
Reference Probe ES3DV2	SN: 3013	2-Jan-09 (No. ES3-3013_Jan09)	Jan-10
DAE4	SN: 660	29-Sep-09 (No. DAE4-660_Sep09)	Sep-10
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-09)	In house check: Oct10

Calibrated by: **Marcel Fehr** **Laboratory Technician**

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

Issued: November 23, 2009

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

DASY - Parameters of Probe: ES3DV3 SN:3194**Basic Calibration Parameters**

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V/m})^2$) ^A	1.39	1.27	1.37	$\pm 10.1\%$
DCP (mV) ^B	92.8	95.8	92.4	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dBuV	C	VR mV	Unc ^E (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	300	$\pm 1.5\%$
			Y	0.00	0.00	1.00	300	
			Z	0.00	0.00	1.00	300	

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 E²-field uncertainty inside TSL (see Pages 5 and 6).

^B Numerical linearization parameter: uncertainty not required.

^E Uncertainty is determined using the maximum deviation from linear response applying recatangular distribution and is expressed for the square of the field value.

DASY - Parameters of Probe: ES3DV3 SN:3194

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz]	Validity [MHz] ^C	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth Unc (k=2)
835	± 50 / ± 100	41.5 ± 5%	0.90 ± 5%	6.14	6.14	6.14	0.16	3.23 ± 11.0%
1750	± 50 / ± 100	40.1 ± 5%	1.37 ± 5%	5.25	5.25	5.25	0.81	1.31 ± 11.0%
1900	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	5.06	5.06	5.06	0.35	2.32 ± 11.0%
2450	± 50 / ± 100	39.2 ± 5%	1.80 ± 5%	4.47	4.47	4.47	0.56	1.72 ± 11.0%

^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.

DASY - Parameters of Probe: ES3DV3 SN:3194

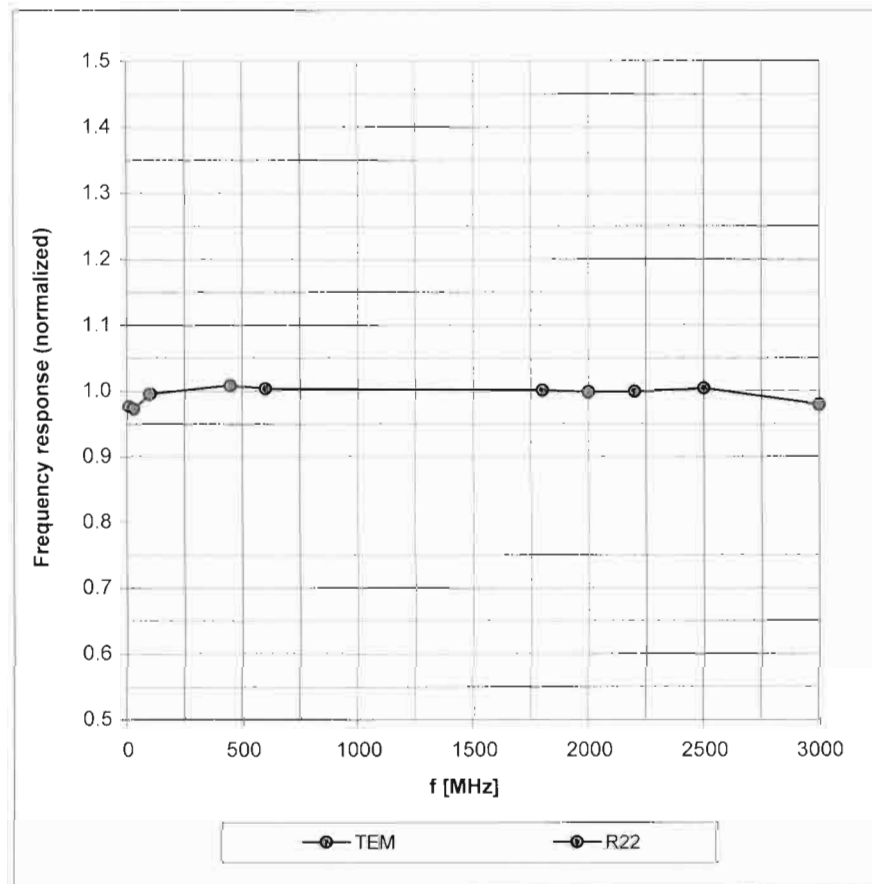
Calibration Parameter Determined in Body Tissue Simulating Media

f [MHz]	Validity [MHz] ^c	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth Unc (k=2)
835	± 50 / ± 100	55.2 ± 5%	0.97 ± 5%	5.90	5.90	5.90	0.47	1.74 ± 11.0%
1750	± 50 / ± 100	53.4 ± 5%	1.49 ± 5%	4.92	4.92	4.92	0.49	1.68 ± 11.0%
1900	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	4.67	4.67	4.67	0.37	2.21 ± 11.0%
2450	± 50 / ± 100	52.7 ± 5%	1.95 ± 5%	4.23	4.23	4.23	0.99	1.12 ± 11.0%

^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.

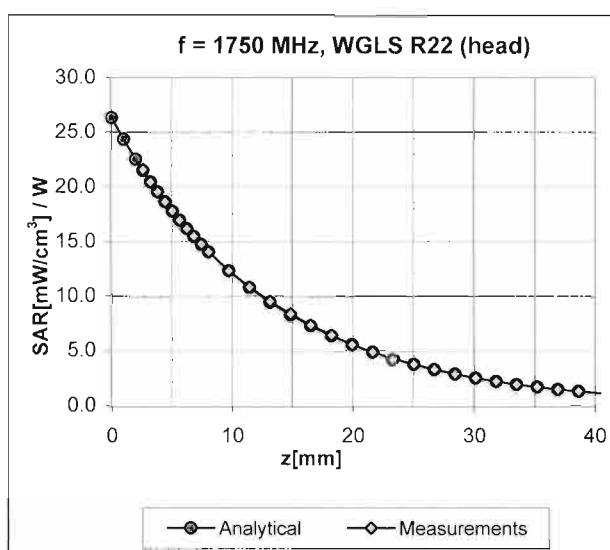
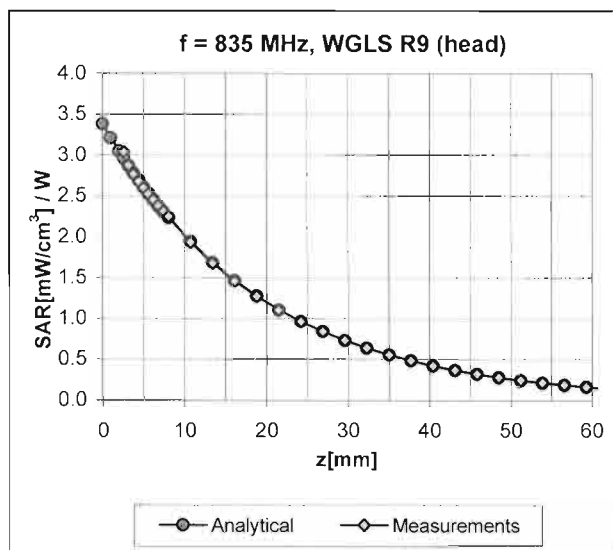
Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide: R22)



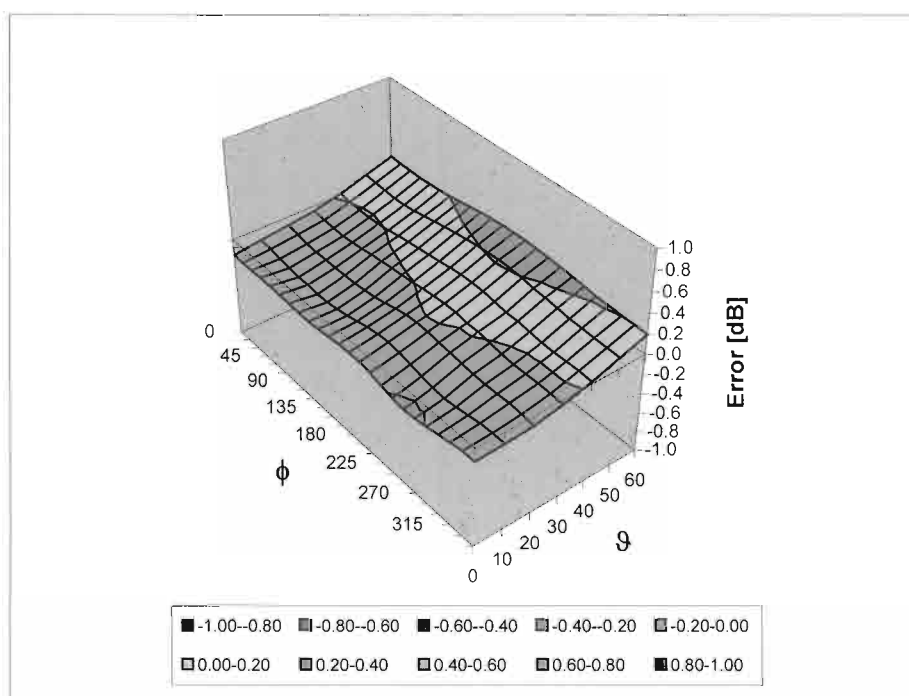
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

Conversion Factor Assessment



Deviation from Isotropy in HSL

Error (ϕ , θ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: $\pm 2.6\%$ (k=2)



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 108**

The Swiss Accreditation Service is one of the signatories to the EA
 Multilateral Agreement for the recognition of calibration certificates

Client **Nokia Salo TCC**

Certificate No: **EX3-3573_Nov09**

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3573**

Calibration procedure(s) **QA CAL-01.v6, QA CAL-23.v3 and QA CAL-25.v2
 Calibration procedure for dosimetric E-field probes**

Calibration date: **November 20, 2009**

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 (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41495277	1-Apr-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41498087	1-Apr-09 (No. 217-01030)	Apr-10
Reference 3 dB Attenuator	SN: S5054 (3c)	31-Mar-09 (No. 217-01026)	Mar-10
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-09 (No. 217-01028)	Mar-10
Reference 30 dB Attenuator	SN: S5129 (30b)	31-Mar-09 (No. 217-01027)	Mar-10
Reference Probe ES3DV2	SN: 3013	2-Jan-09 (No. ES3-3013_Jan09)	Jan-10
DAE4	SN: 660	29-Sep-09 (No. DAE4-660_Sep09)	Sep-10

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-09)	In house check: Oct10

	Name	Function	Signature
Calibrated by:	Marcel Fehr	Laboratory Technician	

	Name	Function	Signature
Approved by:	Katja Pokovic	Technical Manager	

Issued: November 23, 2009

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

DASY - Parameters of Probe: EX3DV4 SN:3573

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.47	0.43	0.54	$\pm 10.1\%$
DCP (mV) ^B	92.9	93.4	92.6	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dBuV	C	VR mV	Unc ^E (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	300	$\pm 1.5\%$
			Y	0.00	0.00	1.00	300	
			Z	0.00	0.00	1.00	300	

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 Pages 5 and 6).

^B Numerical linearization parameter: uncertainty not required.

^E Uncertainty is determined using the maximum deviation from linear response applying recatangular distribution and is expressed for the square of the field value.

DASY - Parameters of Probe: EX3DV4 SN:3573

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz]	Validity [MHz] ^c	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth Unc (k=2)
835	± 50 / ± 100	41.5 ± 5%	0.90 ± 5%	8.56	8.56	8.56	0.58	0.68 ± 11.0%
1750	± 50 / ± 100	40.1 ± 5%	1.37 ± 5%	7.41	7.41	7.41	0.69	0.63 ± 11.0%
1900	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	7.16	7.16	7.16	0.60	0.68 ± 11.0%
2450	± 50 / ± 100	39.2 ± 5%	1.80 ± 5%	6.56	6.56	6.56	0.37	0.84 ± 11.0%

^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.

DASY - Parameters of Probe: EX3DV4 SN:3573

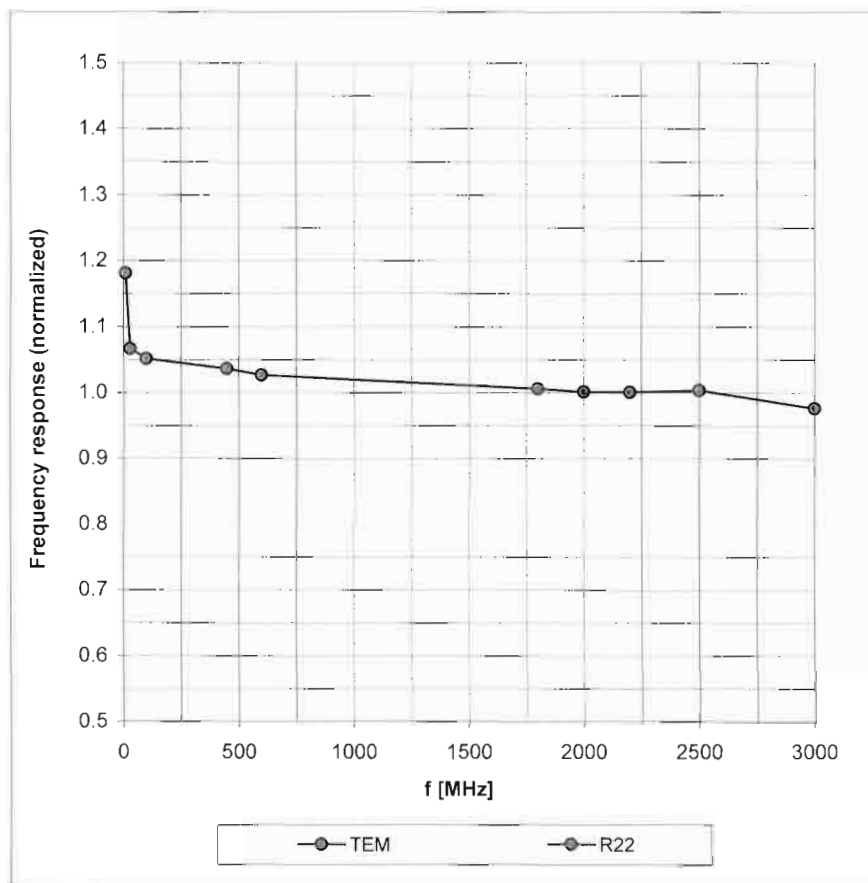
Calibration Parameter Determined in Body Tissue Simulating Media

f [MHz]	Validity [MHz] ^c	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth Unc (k=2)
835	± 50 / ± 100	55.2 ± 5%	0.97 ± 5%	8.42	8.42	8.42	0.70	0.71 ± 11.0%
1750	± 50 / ± 100	53.4 ± 5%	1.49 ± 5%	7.20	7.20	7.20	0.75	0.64 ± 11.0%
1900	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	6.83	6.83	6.83	0.61	0.63 ± 11.0%
2450	± 50 / ± 100	52.7 ± 5%	1.95 ± 5%	6.63	6.63	6.63	0.40	0.85 ± 11.0%

^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.

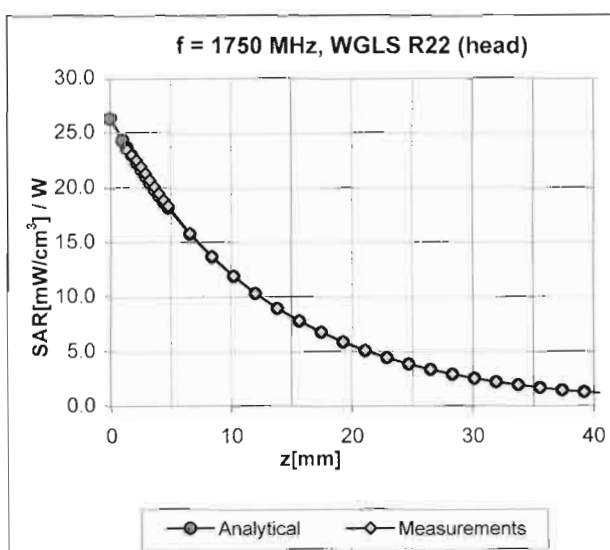
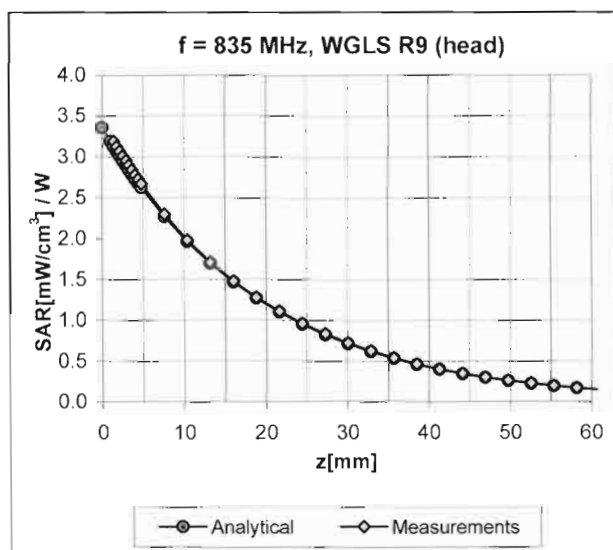
Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide: R22)



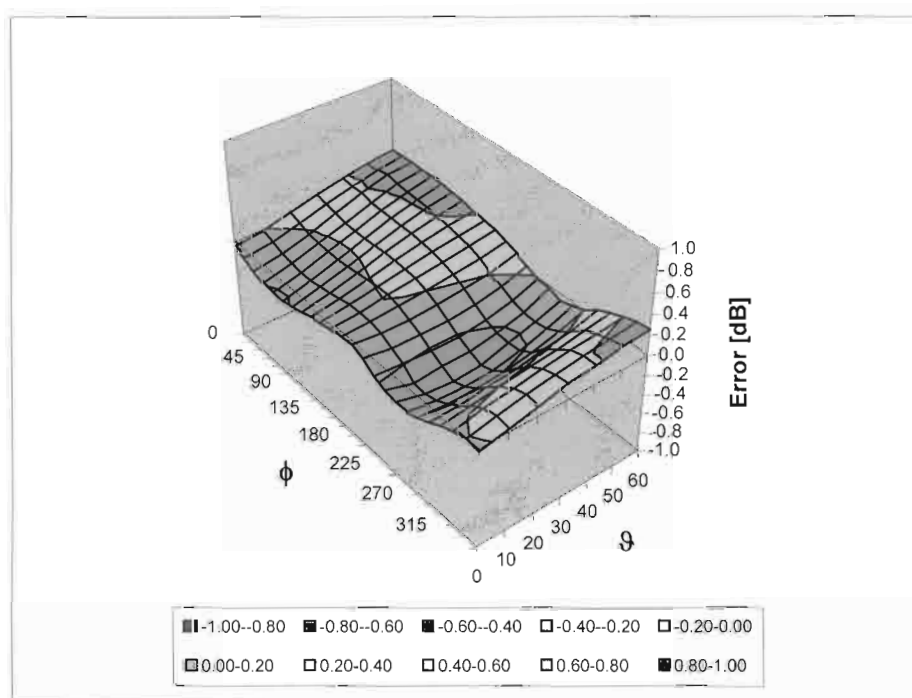
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

Conversion Factor Assessment



Deviation from Isotropy in HSL

Error (ϕ , θ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: $\pm 2.6\%$ (k=2)

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



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 108**

The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Client **Nokia Salo TCC**

Certificate No: **D835V2-480_Oct09**

CALIBRATION CERTIFICATE

Object **D835V2 - SN: 480**

Calibration procedure(s) **QA CAL-05.v7**
Calibration procedure for dipole validation kits

Calibration date: **October 19, 2009**

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 (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-09 (No. 217-01086)	Oct-10
Power sensor HP 8481A	US37292783	06-Oct-09 (No. 217-01086)	Oct-10
Reference 20 dB Attenuator	SN: 5086 (20g)	31-Mar-09 (No. 217-01025)	Mar-10
Type-N mismatch combination	SN: 5047.2 / 06327	31-Mar-09 (No. 217-01029)	Mar-10
Reference Probe ES3DV3	SN: 3205	26-Jun-09 (No. ES3-3205_Jun09)	Jun-10
DAE4	SN: 601	07-Mar-09 (No. DAE4-601_Mar09)	Mar-10

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-09)	In house check: Oct-10

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	

Approved by:	Katja Pokovic	Technical Manager
--------------	---------------	-------------------

Issued: October 19, 2009

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

DASY5 Validation Report for Head TSL

Date/Time: 19.10.2009 10:11:32

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:480

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

Medium: HSL900

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.88 \text{ mho/m}$; $\epsilon_r = 40.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.04, 6.04, 6.04); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

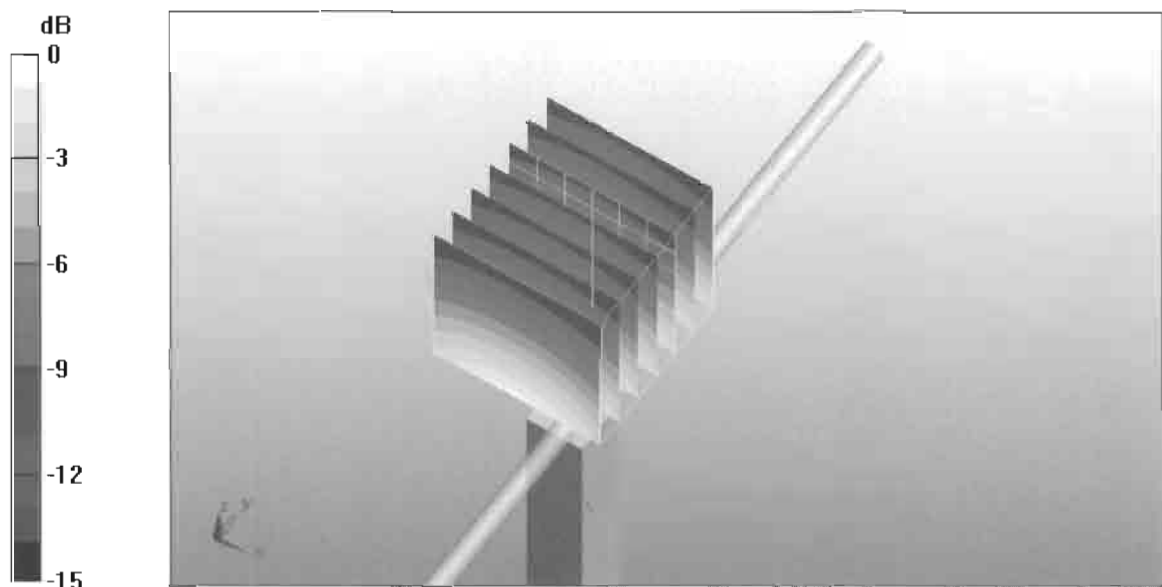
Pin=250 mW /d=15mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 57.6 V/m; Power Drift = 0.00856 dB

Peak SAR (extrapolated) = 3.53 W/kg

SAR(1 g) = 2.36 mW/g; SAR(10 g) = 1.55 mW/g

Maximum value of SAR (measured) = 2.76 mW/g



0 dB = 2.76mW/g

DASY5 Validation Report for Body

Date/Time: 19.10.2009 13:40:30

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:480

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

Medium: MSL900

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 1.01 \text{ mho/m}$; $\epsilon_r = 53.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.97, 5.97, 5.97); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

Pin250 mW /d=15mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement

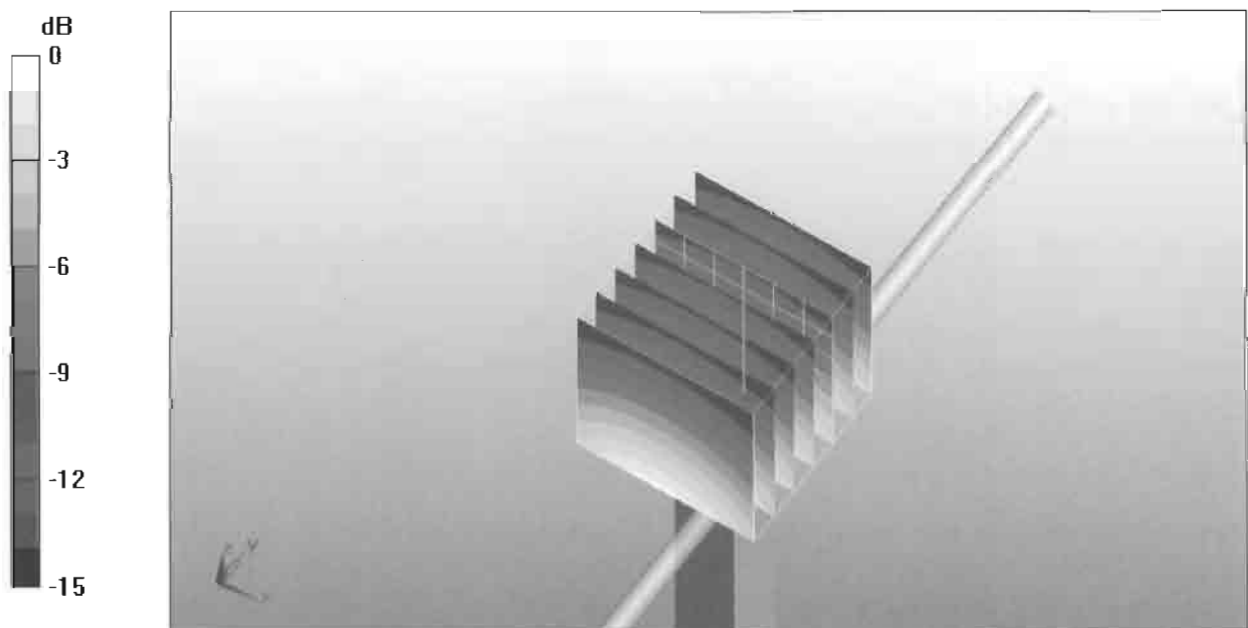
grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 55.5 V/m; Power Drift = 0.014 dB

Peak SAR (extrapolated) = 3.74 W/kg

SAR(1 g) = 2.52 mW/g; SAR(10 g) = 1.65 mW/g

Maximum value of SAR (measured) = 2.94 mW/g



0 dB = 2.94mW/g



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 108**

The Swiss Accreditation Service is one of the signatories to the EA
 Multilateral Agreement for the recognition of calibration certificates

Client **Nokia Salo TCC**

Certificate No: **D1800V2-256_Oct09**

CALIBRATION CERTIFICATE

Object **D1800V2 - SN: 256**

Calibration procedure(s) **QA CAL-05.v7**
Calibration procedure for dipole validation kits

Calibration date: **October 20, 2009**

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 (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-09 (No. 217-01086)	Oct-10
Power sensor HP 8481A	US37292783	06-Oct-09 (No. 217-01086)	Oct-10
Reference 20 dB Attenuator	SN: 5086 (20g)	31-Mar-09 (No. 217-01025)	Mar-10
Type-N mismatch combination	SN: 5047.2 / 06327	31-Mar-09 (No. 217-01029)	Mar-10
Reference Probe ES3DV3	SN: 3205	26-Jun-09 (No. ES3-3205_Jun09)	Jun-10
DAE4	SN: 601	07-Mar-09 (No. DAE4-601_Mar09)	Mar-10

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-09)	In house check: Oct-10

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	

Approved by:	Katja Pokovic	Technical Manager
--------------	---------------	-------------------

Issued: October 21, 2009

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

DASY5 Validation Report for Head TSL

Date/Time: 20.10.2009 10:26:59

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN:256

Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: HSL U11 BB

Medium parameters used: $f = 1800$ MHz; $\sigma = 1.4$ mho/m; $\epsilon_r = 40$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.25, 5.25, 5.25); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

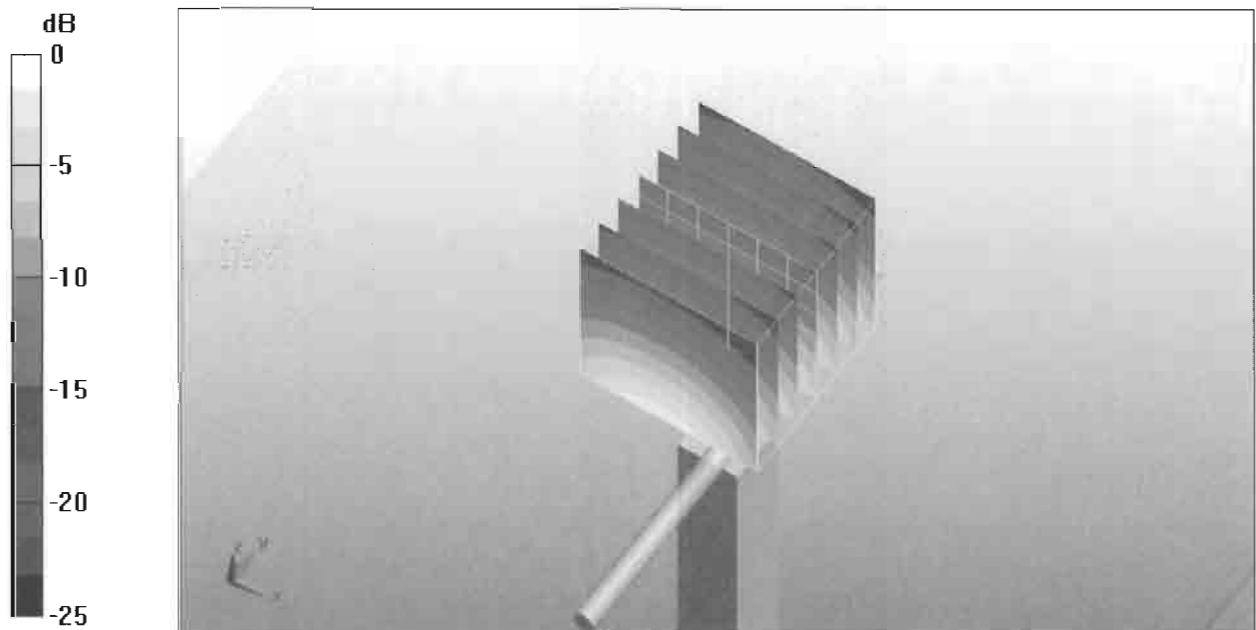
Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 97.2 V/m; Power Drift = 0.025 dB

Peak SAR (extrapolated) = 17.9 W/kg

SAR(1 g) = 9.9 mW/g; SAR(10 g) = 5.21 mW/g

Maximum value of SAR (measured) = 12.4 mW/g



0 dB = 12.4mW/g

DASY5 Validation Report for Body

Date/Time: 20.10.2009 14:52:33

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN:256

Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: MSL U10 BB

Medium parameters used: $f = 1800$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 53.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.8, 4.8, 4.8); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

Pin250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement

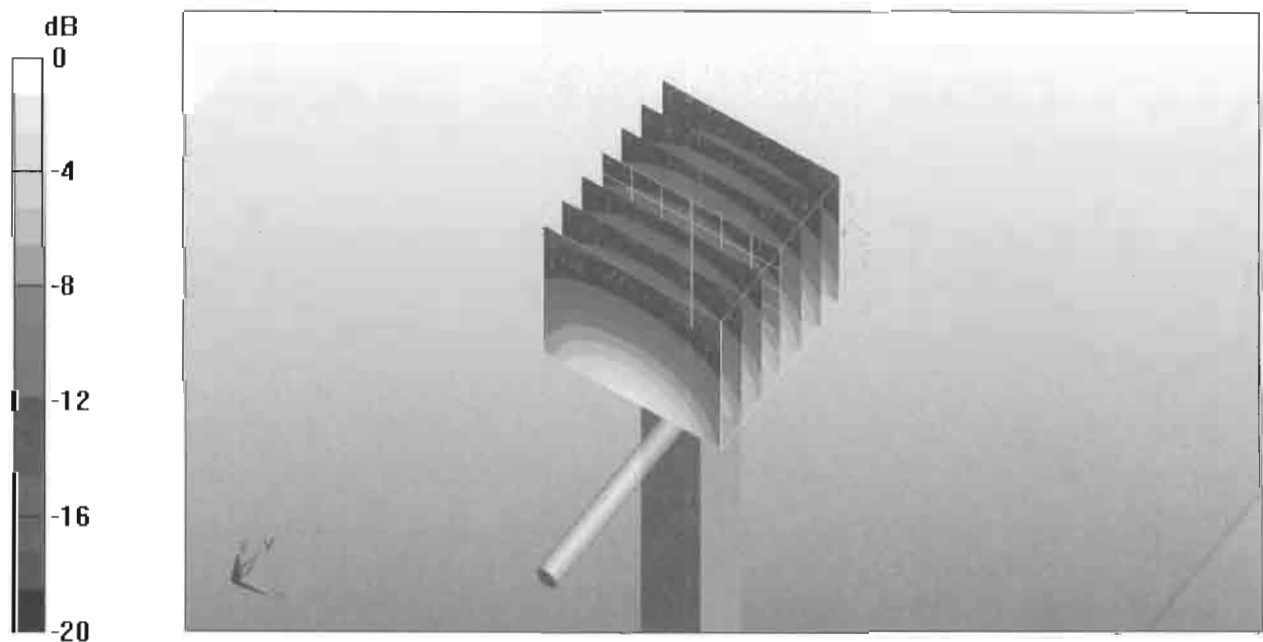
grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 94.2 V/m; Power Drift = 0.020 dB

Peak SAR (extrapolated) = 16.8 W/kg

SAR(1 g) = 9.61 mW/g; SAR(10 g) = 5.07 mW/g

Maximum value of SAR (measured) = 12.2 mW/g



0 dB = 12.2mW/g



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 108**

The Swiss Accreditation Service is one of the signatories to the EA
 Multilateral Agreement for the recognition of calibration certificates

Client **Nokia Salo TCC**

Certificate No: **D1900V2-5d013_Mar10**

CALIBRATION CERTIFICATE

Object **D1900V2 - SN: 5d013**

Calibration procedure(s) **QA CAL-05.v7
 Calibration procedure for dipole validation kits**

Calibration date: **March 23, 2010**

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 (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-09 (No. 217-01086)	Oct-10
Power sensor HP 8481A	US37292783	06-Oct-09 (No. 217-01086)	Oct-10
Reference 20 dB Attenuator	SN: 5086 (20g)	31-Mar-09 (No. 217-01025)	Mar-10
Type-N mismatch combination	SN: 5047.2 / 06327	31-Mar-09 (No. 217-01029)	Mar-10
Reference Probe ES3DV3	SN: 3205	26-Jun-09 (No. ES3-3205_Jun09)	Jun-10
DAE4	SN: 601	02-Mar-10 (No. DAE4-601_Mar10)	Mar-11
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-09)	In house check: Oct-10

Calibrated by:	Name Dinco Iliev	Function Laboratory Technician	Signature
Approved by:	Katja Pokovic	Technical Manager	

Issued: March 23, 2010

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

DASY5 Validation Report for Head TSL

Date/Time: 23.03.2010 10:16:39

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d013

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

Medium: HSL U11 BB

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.45$ mho/m; $\epsilon_r = 41.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.09, 5.09, 5.09); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

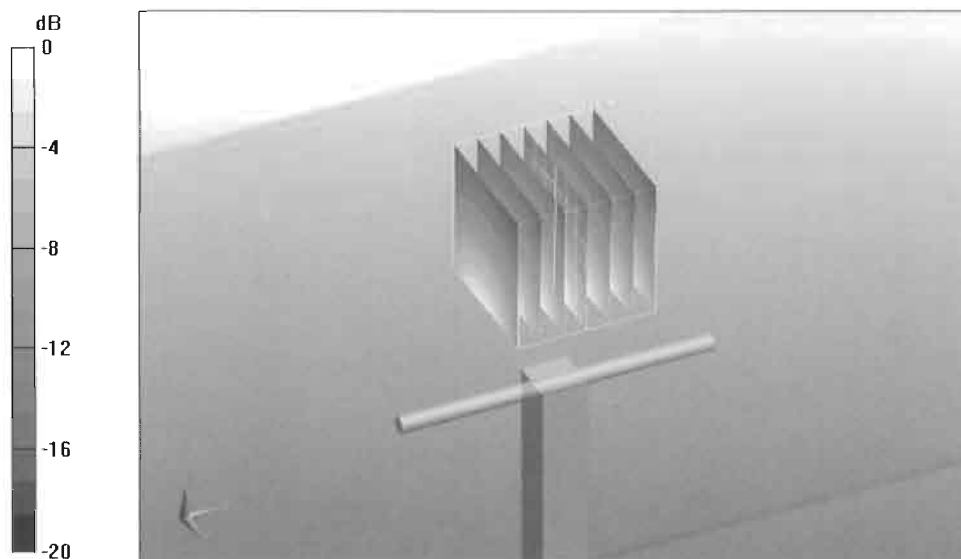
Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 96.4 V/m; Power Drift = 0.028 dB

Peak SAR (extrapolated) = 18.5 W/kg

SAR(1 g) = 10.2 mW/g; SAR(10 g) = 5.32 mW/g

Maximum value of SAR (measured) = 12.6 mW/g



0 dB = 12.6mW/g

DASY5 Validation Report for Body

Date/Time: 23.03.2010 13:12:18

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d013

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

Medium: MSL U11 BB

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.58$ mho/m; $\epsilon_r = 55$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.59, 4.59, 4.59); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

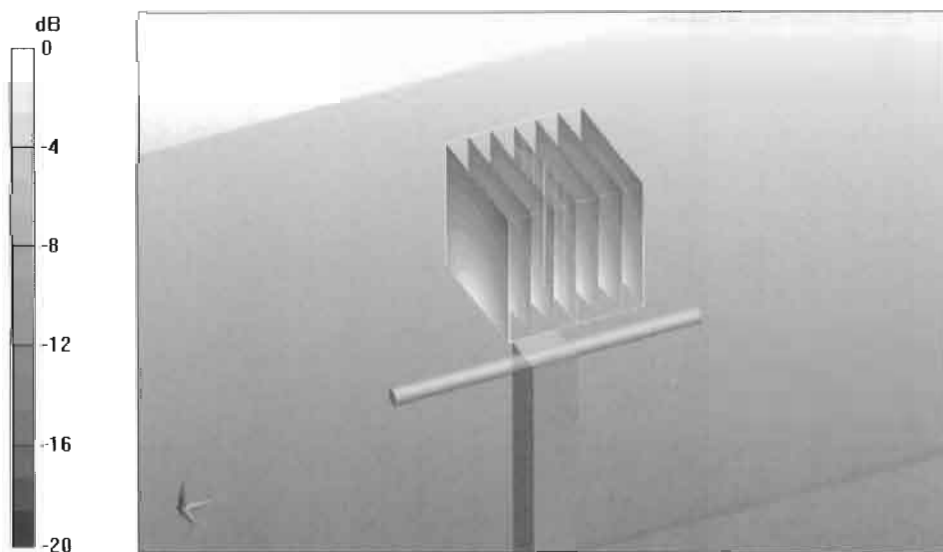
Pin250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 94.9 V/m; Power Drift = 0.00956 dB

Peak SAR (extrapolated) = 17.5 W/kg

SAR(1 g) = 10.4 mW/g; SAR(10 g) = 5.58 mW/g

Maximum value of SAR (measured) = 12.7 mW/g



0 dB = 12.7mW/g



Accredited by the Swiss Accreditation Service (SAS)
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: **D2450V2-749_Oct09**

CALIBRATION CERTIFICATE

Object **D2450V2 - SN: 749**

Calibration procedure(s) **QA CAL-05.v7**
Calibration procedure for dipole validation kits

Calibration date: **October 21, 2009**

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 (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-09 (No. 217-01086)	Oct-10
Power sensor HP 8481A	US37292783	06-Oct-09 (No. 217-01086)	Oct-10
Reference 20 dB Attenuator	SN: 5086 (20g)	31-Mar-09 (No. 217-01025)	Mar-10
Type-N mismatch combination	SN: 5047.2 / 06327	31-Mar-09 (No. 217-01029)	Mar-10
Reference Probe ES3DV3	SN: 3205	26-Jun-09 (No. ES3-3205_Jun09)	Jun-10
DAE4	SN: 601	07-Mar-09 (No. DAE4-601_Mar09)	Mar-10
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-09)	In house check: Oct-10

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: October 22, 2009

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

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:749

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

Medium: HSL U11 BB

Medium parameters used: $f = 2450 \text{ MHz}$; $\sigma = 1.78 \text{ mho/m}$; $\epsilon_r = 39.1$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.53, 4.53, 4.53); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

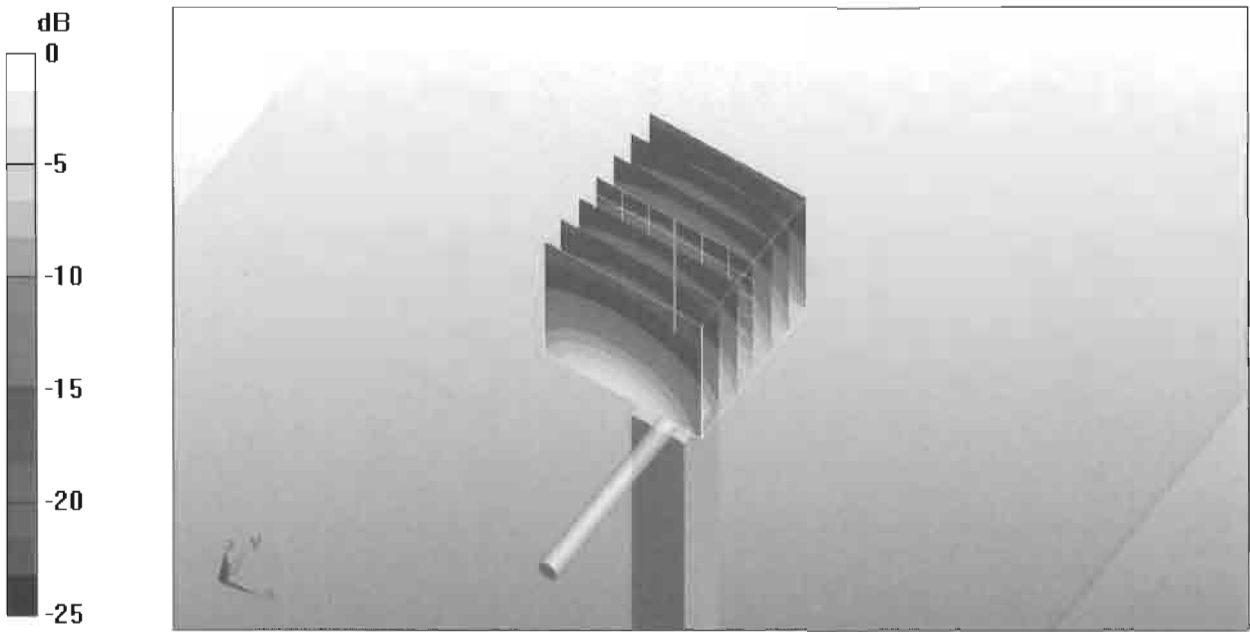
Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 100.7 V/m; Power Drift = 0.078 dB

Peak SAR (extrapolated) = 26.8 W/kg

SAR(1 g) = 13.2 mW/g; SAR(10 g) = 6.18 mW/g

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



0 dB = 16.9mW/g

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:749

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

Medium: MSL U10 BB

Medium parameters used: $f = 2450 \text{ MHz}$; $\sigma = 1.98 \text{ mho/m}$; $\epsilon_r = 52.7$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.31, 4.31, 4.31); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

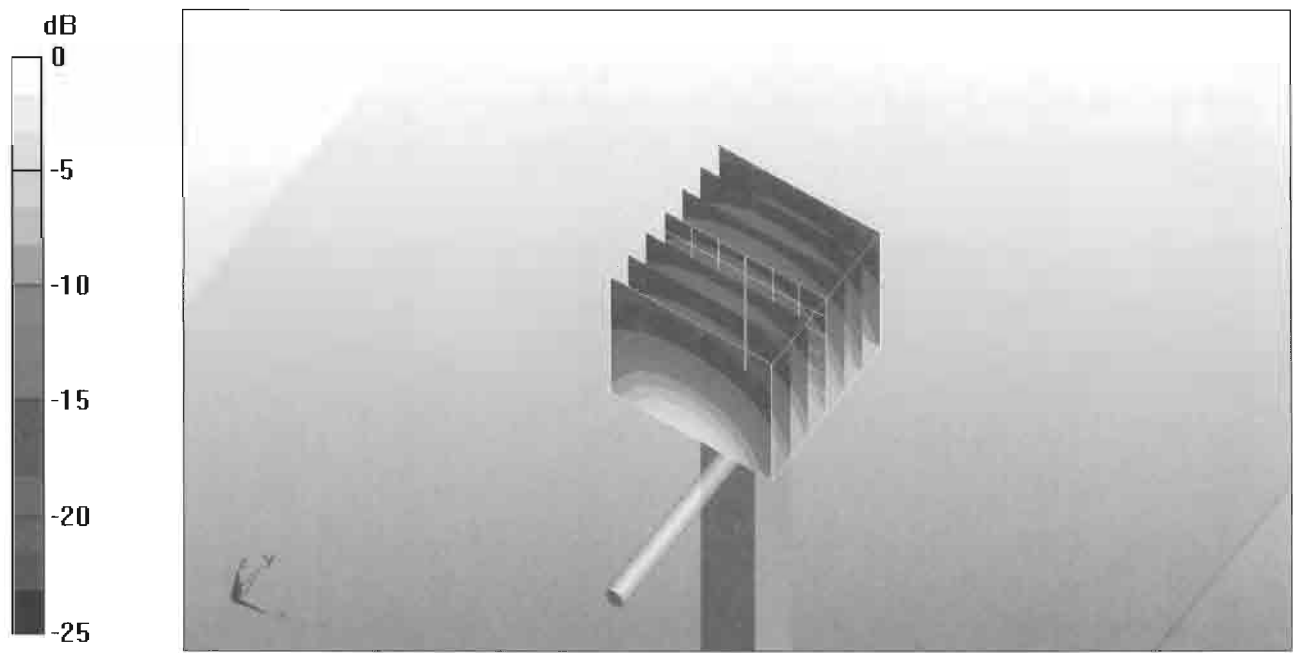
Pin250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 93.9 V/m; Power Drift = 0.046 dB

Peak SAR (extrapolated) = 25.8 W/kg

SAR(1 g) = 12.5 mW/g; SAR(10 g) = 5.81 mW/g

Maximum value of SAR (measured) = 16.4 mW/g



0 dB = 16.4mW/g