

SAR Compliance Test Report

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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.		
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1. SUMMARY OF SAR TEST REPORT

1.1 Test Details

Period of test	2011-09-02 to 2011-09-06
SN, HW and SW numbers of tested device	SN: 008600/08/025927/7, HW: 1407, SW: 023.011, DUT: 52268
Batteries used in testing	BL-4D, DUT: 52270, 52271
Headsets used in testing	WH-102: DUT: 52038 CMMB + HP-1: DUT: 52044 + 52045
Other accessories used in testing	-
State of sample	Prototype unit
Notes	-

1.2 Maximum Results

1.2.1 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.

Mode	Ch / f (MHz)	Conducted power	Position	Measured SAR value (1g avg)	Scaled* SAR value (1g avg)	SAR limit (1g avg)	Result
2-slot GPRS850**	251 / 848.8	30.5 dBm	Left, Cheek	0.542 W/kg	0.61 W/kg	1.6 W/kg	PASSED
2-slot GPRS1900**	810 / 1909.8	27.5 dBm	Right, Cheek	1.11 W/kg	1.24 W/kg	1.6 W/kg	PASSED
WLAN2450	7 / 2442.0	15.4 dBm	Left, Tilt	0.248 W/kg	0.28 W/kg	1.6 W/kg	PASSED
2-slot GPRS850 + WLAN2450	-	-	Left, Cheek	0.550 W/kg	0.62 W/kg	1.6 W/kg	PASSED
2-slot GPRS1900 + WLAN2450	-	-	Right, Cheek	1.11 W/kg	1.24 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
2-slot GPRS850**	251 / 848.8	30.5 dBm	1.5 cm	0.530 W/kg	0.59 W/kg	1.6 W/kg	PASSED
2-slot GPRS1900**	661 / 1880.0	27.5 dBm	1.5 cm	0.691 W/kg	0.77 W/kg	1.6 W/kg	PASSED
WLAN2450	7 / 2442.0	15.4 dBm	1.5 cm	0.088 W/kg	0.10 W/kg	1.6 W/kg	PASSED
2-slot GPRS850 + WLAN2450	-	-	1.5 cm	0.547 W/kg	0.61 W/kg	1.6 W/kg	PASSED
2-slot GPRS1900 + WLAN2450	-	-	1.5 cm	0.772 W/kg	0.86 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.

** SAR values taken from FCC_RM-730_07.

1.2.3 Maximum Drift

Maximum drift covered by 12% scaling up of the SAR values	Maximum drift during measurements
0.5dB	0.50dB

1.2.4 Measurement Uncertainty

Expanded Uncertainty (k=2) 95%	± 25.8%
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2. DESCRIPTION OF THE DEVICE UNDER TEST

Device category	Portable
Exposure environment	General population / uncontrolled

Modes of Operation	Bands	Modulation Mode	Duty Cycle	Transmitter Frequency Range (MHz)
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
BT	2450	GFSK	1	2402 – 2480
WLAN b-mode	2450	Up to 11Mbps QPSK	1	2412 – 2462
WLAN g-mode	2450	Up to 54Mbps 64QAM	1	2412 – 2462
WLAN n-mode 20MHz	2450	Up to 72.2Mbps 64QAM	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, TD-SCDMA1900 and TD-SCDMA2000 bands which are not part of this filing.

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):	21.8 - 22.5
Ambient humidity (RH %):	35 - 55

3.2 Test Signal, Frequencies and Output Power

The device was put into operation for testing WLAN by using control software.

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

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

The 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, BPSK 6.5Mbps with 20MHz bandwidth was used.

All of the cellular band SAR data given in this report have been taken from the earlier report FCC_RM-730_07.

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.

This report presents test details and results for Body SAR testing at 10.0mm separation distance (i.e. Wireless Router “Hotspot” mode) only; these details and results are given in Appendix E.

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	860	12 months	2011-10
E-field Probe EX3DV4	3574	12 months	2011-10
Dipole Validation Kit, D2450V2	760	24 months	2013-03
DASY4 software	Version 4.7	-	-

Additional test equipment used in testing:

Test Equipment	Model	Serial Number	Calibration interval	Calibration expiry
Signal Generator	E4432B	US40052231	12 months	2012-05
Amplifier	AR 5SIG4M3	302339	12 months	2012-05
RF Network Analyzer	8753ES	My40002096	12 months	2012-05
Dielectric Probe Kit	85070C	01033717	-	-
Power Meter	Agilent E4419B	My41291520	12 months	2012-05
Power Sensor	Agilent 8482A	US37295411	12 months	2012-05

4.1.1 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 C
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
Application	Distance from probe tip to dipole centers: 1.0 mm 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):

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]	
2450	Reference result	13.3	38.7	1.72	22.0
	$\pm 10\%$ window	12.0 – 14.6			
	2011-09-06	13.1	37.4	1.77	

System checking, body tissue simulant

f [MHz]	Description	SAR [W/kg], 1g	Dielectric Parameters		Temp [°C]
			ϵ_r	σ [S/m]	
2450	Reference result	13.3	51.7	1.93	
	$\pm 10\%$ window	12.0 – 14.6			
	2011-09-02	12.4	53.0	1.94	22.0
	2011-09-05	12.7	52.5	1.99	22.0

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]	
2442	Recommended value	39.2	1.79	
	$\pm 5\%$ window	37.3 – 41.2	1.70 – 1.88	
	2011-09-06	37.4	1.76	22.0

Body tissue simulant measurements

f [MHz]	Description	Dielectric Parameters		Temp [°C]
		ϵ_r	σ [S/m]	
2442	Recommended value	52.7	1.94	
	$\pm 5\%$ window	50.1 – 55.3	1.85 – 2.04	
	2011-09-02	53.0	1.92	22.0
	2011-09-05	52.5	1.98	22.0

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.

Nokia body-worn accessories are commonly available for the separation distance used in this testing.

5.2.3 Wireless Router Configuration

The device was placed in the SPEAG holder using the Nokia spacer and was positioned 10.0mm away from the flat phantom. The spacer was removed before the start of the measurements.

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
2-slot GPRS	Conducted Power		30.5 dBm	30.5 dBm	30.5 dBm
	Left	Cheek	0.406	0.478	0.542
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-

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
2-slot GPRS	Conducted Power		27.5 dBm	27.5 dBm	27.5 dBm
	Left	Cheek	-	-	-
		Tilt	-	-	-
	Right	Cheek	1.01	1.09	1.11
		Tilt	-	-	-

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		13.4 dBm	15.4 dBm	13.4 dBm
	Left	Cheek	-	0.161	-
		Tilt	0.248	0.218	0.193
	Right	Cheek	-	0.112	-
		Tilt	-	0.138	-
WLAN n-mode	Conducted Power		12.4 dBm	15.4 dBm	12.4 dBm
	Left	Cheek	-	-	-
		Tilt	0.175	0.166	0.131
	Right	Cheek	-	-	-
		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
2-slot GPRS		Conducted Power	30.5 dBm	30.5 dBm	30.5 dBm
	Display facing phantom	Without headset	0.447	0.503	0.530
		Headset WH-102	-	-	-
		Headset CMMB + HP-1	-	-	-
	Back facing phantom	Without headset	-	-	-
		Headset WH-102	-	-	-
		Headset CMMB + HP-1	-	-	-

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	27.5 dBm	27.5 dBm	27.5 dBm
	Display facing phantom	Without headset	-	-	-
		Headset WH-102	-	-	-
		Headset CMMB + HP-1	-	-	-
	Back facing phantom	Without headset	-	-	-
		Headset WH-102	0.684	0.691	0.645
		Headset CMMB + HP-1	-	-	-

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	13.4 dBm	15.4 dBm	13.4 dBm
	Display facing phantom	Without headset	-	0.032	-
		Headset WH-102	-	0.028	-
		Headset CMMB + HP-1	-	0.031	-
	Back facing phantom	Without headset	-	0.082	-
		Headset WH-102	-	0.087	-
		Headset CMMB + HP-1	0.078	0.088	0.076
WLAN n-mode		Conducted Power	12.4 dBm	15.4 dBm	12.4 dBm
	Display facing phantom	Without headset	-	-	-
		Headset WH-102	-	-	-
		Headset CMMB + HP-1	-	-	-
	Back facing phantom	Without headset	-	-	-
		Headset WH-102	-	-	-
		Headset CMMB + HP-1	0.057	0.059	0.055

**Simultaneous transmissions: Combined SAR results –
Individual band Max results**

Test configuration	Max. 1g SAR results		
	WLAN	2-slot GPRS850**	2-slot GPRS1900**
Head: Left, Cheek	0.161	0.542	-
Head: Left, Tilt	-	-	-
Head: Right, Cheek	0.112	-	1.11
Head: Right, Tilt	-	-	-
Body: Display facing phantom, Without Headset	0.032	0.530	-
Body: Display facing phantom, Headset WH-102	-	-	-
Body: Display facing phantom, Headset CMMB + HP-1	-	-	-
Body: Back facing phantom, Without Headset	-	-	-
Body: Back facing phantom, Headset WH-102	0.087	-	0.691
Body: Back facing phantom, Headset CMMB + HP-1	-	-	-

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

Test configuration	Max. 1g SAR results	
	2-slot GPRS850 + WLAN	2-slot GPRS1900 + WLAN
Head: Left, Cheek	0.703	-
Head: Left, Tilt	-	-
Head: Right, Cheek	-	1.222
Head: Right, Tilt	-	-
Body: Display facing phantom, Without Headset	0.562	-
Body: Display facing phantom, Headset WH-102	-	-
Body: Display facing phantom, Headset CMMB + HP-1	-	-
Body: Back facing phantom, Without Headset	-	-
Body: Back facing phantom, Headset WH-102	-	0.778
Body: Back facing phantom, Headset CMMB + HP-1	-	-

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.

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

Test configuration	Max. 1g SAR results	
	2-slot GPRS850 + WLAN	2-slot GPRS1900 + WLAN
Head: Left, Cheek	0.550	-
Head: Left, Tilt	-	-
Head: Right, Cheek	-	1.08
Head: Right, Tilt	-	-
Body: Display facing phantom, Without Headset	0.547	-
Body: Display facing phantom, Headset WH-102	-	-
Body: Display facing phantom, Headset CMMB + HP-1	-	-
Body: Back facing phantom, Without Headset	-	-
Body: Back facing phantom, Headset WH-102	-	0.772
Body: Back facing phantom, Headset CMMB + HP-1	-	-

** SAR values taken from FCC_RM-730_07.

Some of the Combined SAR values in the above table are less than the maximum SAR values for the contributing cellular band. This is due to a) minimal overlap of the SAR distributions of the cellular band with WLAN2450 and b) uncertainties associated with the different methods of calculation. In these cases, the maximum SAR values given for the combined Modes in the Summary table in Section 1.2 are those for the individual cellular band.”

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: 2011-09-06 09:39:20

Test Laboratory: TCC Nokia

Type: D2450V2; Serial: D2450V2 - SN:760

Communication System: CW2450

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: Head 2450; Medium Notes: Medium Temperature: $t=22.0\text{ }^{\circ}\text{C}$

Medium parameters used: $f = 2450\text{ MHz}$; $\sigma = 1.77\text{ mho/m}$; $\epsilon_r = 37.4$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3574; Probe Notes:
- ConvF(6.37, 6.37, 6.37); Calibrated: 2010-10-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2010-10-25
- Phantom: SAM5; Type: SAM; Serial: TP - 1178
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

d=10mm, Pin=250mW/Area Scan (71x71x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 15.2 mW/g

d=10mm, Pin=250mW/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 90.9 V/m

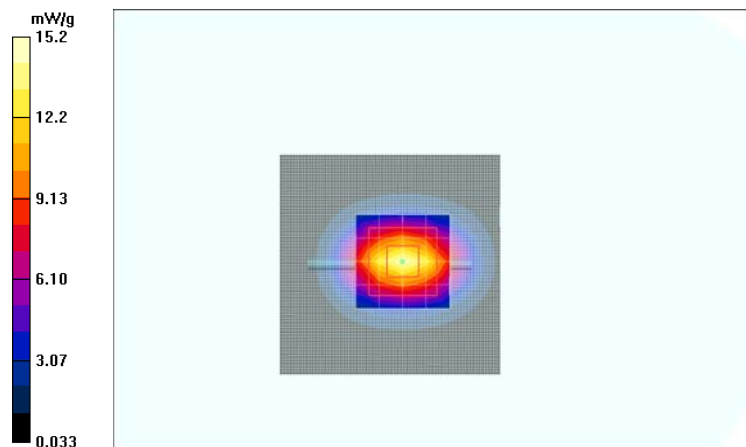
Peak SAR (extrapolated) = 28.7 W/kg

SAR(1 g) = 13.1 mW/g

SAR(10 g) = 5.91 mW/g

Power Drift = -0.126 dB

Maximum value of SAR (measured) = 15.0 mW/g



Date/Time: 2011-09-02 09:39:51

Test Laboratory: TCC Nokia

Type: D2450V2; Serial: D2450V2 - SN:760

Communication System: CW2450

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: $t=22.0\text{ }^{\circ}\text{C}$

Medium parameters used: $f = 2450\text{ MHz}$; $\sigma = 1.94\text{ mho/m}$; $\epsilon_r = 53$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3574; Probe Notes:
- ConvF(6.45, 6.45, 6.45); Calibrated: 2010-10-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2010-10-25
- Phantom: SAM6; Type: SAM; Serial: TP - 1426
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

d=10mm, Pin=250mW/Area Scan (71x71x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 14.5 mW/g

d=10mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 83.2 V/m

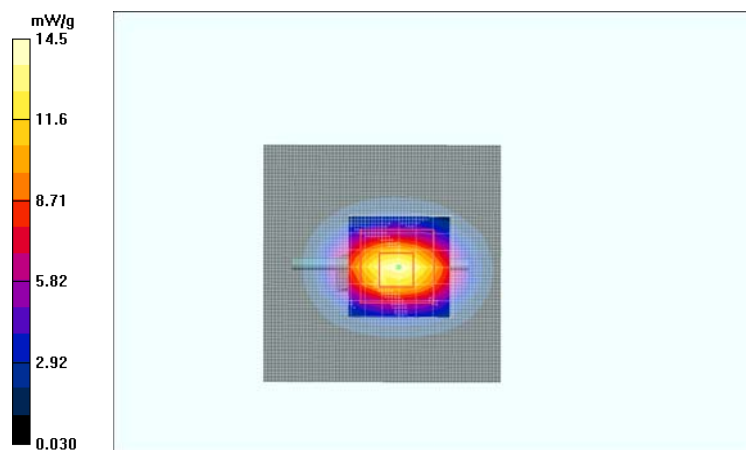
Peak SAR (extrapolated) = 25.0 W/kg

SAR(1 g) = 12.4 mW/g

SAR(10 g) = 5.75 mW/g

Power Drift = 0.031 dB

Maximum value of SAR (measured) = 14.3 mW/g



Date/Time: 2011-09-05 09:44:12

Test Laboratory: TCC Nokia
Type: D2450V2; Serial: D2450V2 - SN:760

Communication System: CW2450

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: $t=22.0\text{ C}$

Medium parameters used: $f = 2450\text{ MHz}$; $\sigma = 1.99\text{ mho/m}$; $\epsilon_r = 52.5$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3574; Probe Notes:
- ConvF(6.45, 6.45, 6.45); Calibrated: 2010-10-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2010-10-25
- Phantom: SAM6; Type: SAM; Serial: TP - 1426
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

d=10mm, Pin=250mW/Area Scan (71x71x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 14.9 mW/g

d=10mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 85.0 V/m

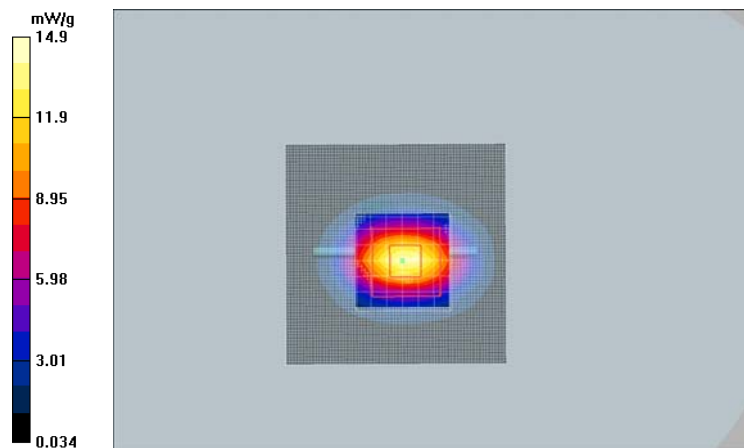
Peak SAR (extrapolated) = 25.5 W/kg

SAR(1 g) = 12.7 mW/g

SAR(10 g) = 5.9 mW/g

Power Drift = -0.025 dB

Maximum value of SAR (measured) = 14.6 mW/g



APPENDIX B: MEASUREMENT SCANS

Date/Time: 2011-07-19 11:34:03

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/010536/3

Communication System: 2-slot GPRS850

Frequency: 848.8 MHz; Duty Cycle: 1:4.2

Medium: Head 835; Medium Notes: Medium Temperature: $t = 22.0\text{ }^{\circ}\text{C}$

Medium parameters used: $f = 849\text{ MHz}$; $\sigma = 0.884\text{ mho/m}$; $\epsilon_r = 40.7$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1652; Probe Notes:
- ConvF(6.04, 6.04, 6.04); Calibrated: 2010-10-21
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn480; Calibrated: 2010-10-25
- Phantom: SAM1; Type: SAM; Serial: TP - 01097
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek - High/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

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

Reference Value = 10.9 V/m

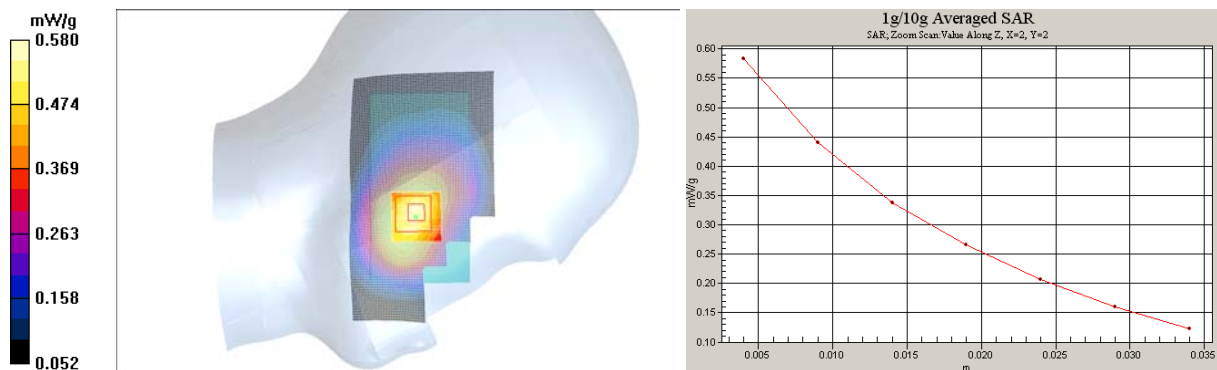
Peak SAR (extrapolated) = 0.722 W/kg

SAR(1 g) = 0.542 mW/g

SAR(10 g) = 0.395 mW/g

Power Drift = -0.148 dB

Maximum value of SAR (measured) = 0.580 mW/g



Date/Time: 2011-07-21 15:58:53

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/010536/3

Communication System: 2-slot GPRS1900

Frequency: 1909.8 MHz; Duty Cycle: 1:4.2

Medium: Head 1900; Medium Notes: Medium Temperature: t=22.0C

Medium parameters used: f = 1910 MHz; σ = 1.47 mho/m; ϵ_r = 39.1; ρ = 1000 kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1652; Probe Notes:
- ConvF(4.91, 4.91, 4.91); Calibrated: 2010-10-21
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn480; Calibrated: 2010-10-25
- Phantom: SAM4; Type: SAM; Serial: TP - 1427
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek - High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 11.1 V/m

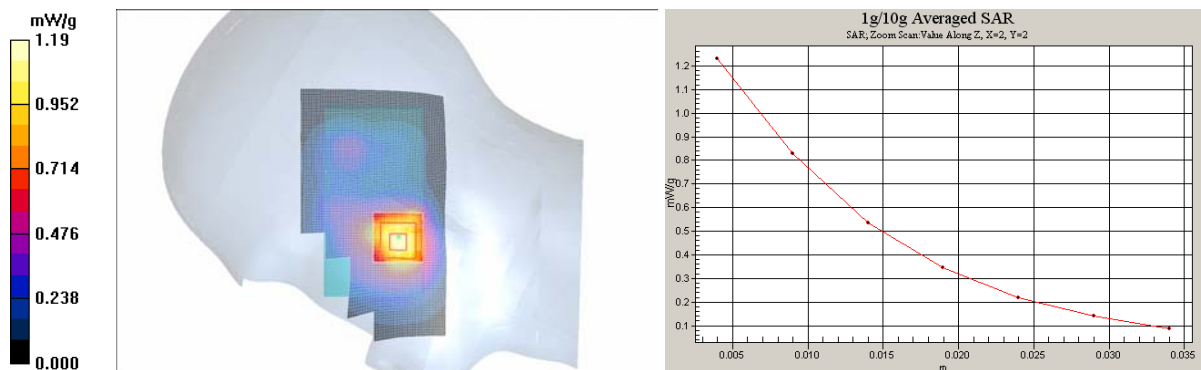
Peak SAR (extrapolated) = 1.57 W/kg

SAR(1 g) = 1.11 mW/g

SAR(10 g) = 0.672 mW/g

Power Drift = -0.141 dB

Maximum value of SAR (measured) = 1.23 mW/g



Date/Time: 2011-09-06 12:47:25

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/025927/7

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Head 2450; Medium Notes: Medium Temperature: t=22.0 C

Medium parameters used: f = 2442 MHz; $\sigma = 1.76$ mho/m; $\epsilon_r = 37.4$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3574; Probe Notes:
- ConvF(6.37, 6.37, 6.37); Calibrated: 2010-10-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2010-10-25
- Phantom: SAM5; Type: SAM; Serial: TP - 1178
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek - Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.171 mW/g

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

Reference Value = 5.23 V/m

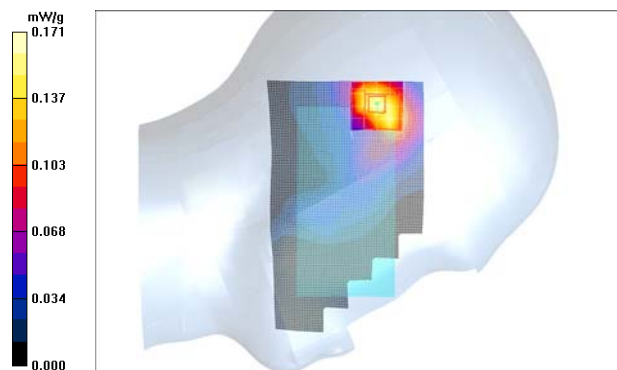
Peak SAR (extrapolated) = 0.376 W/kg

SAR(1 g) = 0.161 mW/g

SAR(10 g) = 0.080 mW/g

Power Drift = 0.235 dB

Maximum value of SAR (measured) = 0.175 mW/g



Date/Time: 2011-09-06 14:00:10

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/025927/7

Communication System: WLAN2450 b-mode

Frequency: 2412 MHz; Duty Cycle: 1:1

Medium: Head 2450; Medium Notes: Medium Temperature: $t=22.0\text{ }^{\circ}\text{C}$

Medium parameters used: $f = 2412\text{ MHz}$; $\sigma = 1.72\text{ mho/m}$; $\epsilon_r = 37.4$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Left Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3574; Probe Notes:
- ConvF(6.37, 6.37, 6.37); Calibrated: 2010-10-19
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2010-10-25
- Phantom: SAM5; Type: SAM; Serial: TP - 1178
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt - Low/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.254 mW/g

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

Reference Value = 5.56 V/m

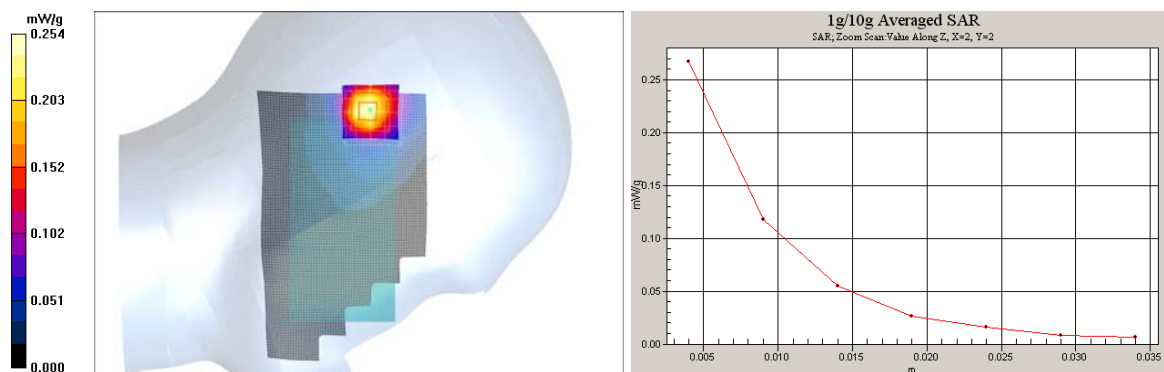
Peak SAR (extrapolated) = 0.576 W/kg

SAR(1 g) = 0.248 mW/g

SAR(10 g) = 0.113 mW/g

Power Drift = 0.496 dB

Maximum value of SAR (measured) = 0.268 mW/g



Date/Time: 2011-09-06 13:24:10

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/025927/7

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Head 2450; Medium Notes: Medium Temperature: $t=22.0\text{ }^{\circ}\text{C}$

Medium parameters used: $f = 2442\text{ MHz}$; $\sigma = 1.76\text{ mho/m}$; $\epsilon_r = 37.4$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Right Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3574; Probe Notes:
- ConvF(6.37, 6.37, 6.37); Calibrated: 2010-10-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2010-10-25
- Phantom: SAM5; Type: SAM; Serial: TP - 1178
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek - Middle/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.114 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 = 6.13 V/m

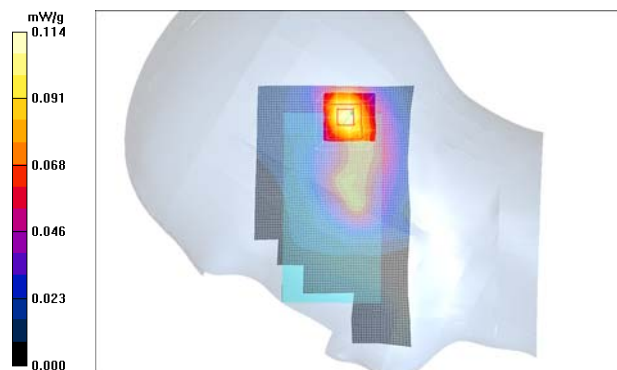
Peak SAR (extrapolated) = 0.250 W/kg

SAR(1 g) = 0.112 mW/g

SAR(10 g) = 0.056 mW/g

Power Drift = 0.418 dB

Maximum value of SAR (measured) = 0.124 mW/g



Date/Time: 2011-09-06 13:39:33

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/025927/7

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Head 2450; Medium Notes: Medium Temperature: $t=22.0\text{ }^{\circ}\text{C}$

Medium parameters used: $f = 2442\text{ MHz}$; $\sigma = 1.76\text{ mho/m}$; $\epsilon_r = 37.4$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Right Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3574; Probe Notes:
- ConvF(6.37, 6.37, 6.37); Calibrated: 2010-10-19
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2010-10-25
- Phantom: SAM5; Type: SAM; Serial: TP - 1178
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt - Middle/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.142 mW/g

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

Reference Value = 6.63 V/m

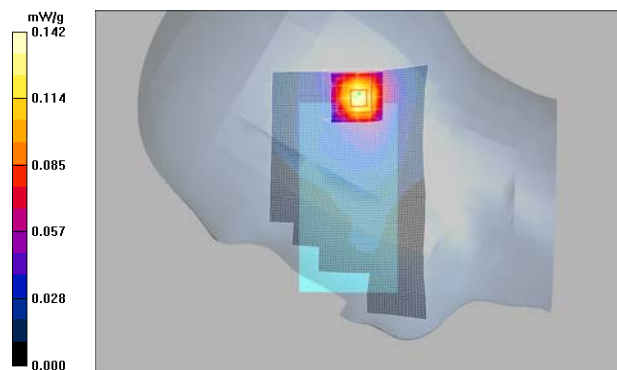
Peak SAR (extrapolated) = 0.304 W/kg

SAR(1 g) = 0.138 mW/g

SAR(10 g) = 0.067 mW/g

Power Drift = 0.262 dB

Maximum value of SAR (measured) = 0.152 mW/g



Date/Time: 2011-09-06 15:07:13

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/025927/7

Communication System: WLAN2450 n-mode

Frequency: 2412 MHz; Duty Cycle: 1:1

Medium: Head 2450; Medium Notes: Medium Temperature: $t=22.0\text{ }^{\circ}\text{C}$

Medium parameters used: $f = 2412\text{ MHz}$; $\sigma = 1.72\text{ mho/m}$; $\epsilon_r = 37.4$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Left Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3574; Probe Notes:
- ConvF(6.37, 6.37, 6.37); Calibrated: 2010-10-19
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2010-10-25
- Phantom: SAM5; Type: SAM; Serial: TP - 1178
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt - Low/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.195 mW/g

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

Reference Value = 4.77 V/m

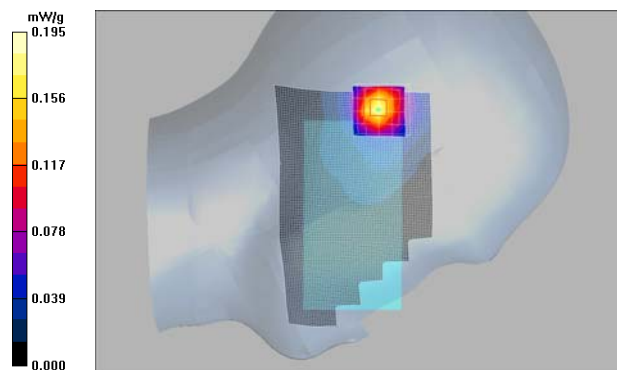
Peak SAR (extrapolated) = 0.430 W/kg

SAR(1 g) = 0.175 mW/g

SAR(10 g) = 0.079 mW/g

Power Drift = 0.492 dB

Maximum value of SAR (measured) = 0.194 mW/g



Date/Time: 2011-07-27 10:57:16

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/010536/3

Communication System: 2-slot GPRS850

Frequency: 848.8 MHz; Duty Cycle: 1:4.2

Medium: Body 835; Medium Notes: Medium Temperature: $t = 21.9\text{ C}$

Medium parameters used: $f = 849\text{ MHz}$; $\sigma = 0.98\text{ mho/m}$; $\epsilon_r = 53.8$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1652; Probe Notes:
- ConvF(5.9, 5.9, 5.9); Calibrated: 2010-10-21
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)) Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn480; Calibrated: 2010-10-25
- Phantom: SAM2; Type: SAM; Serial: TP - 1508
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body - High - No accessory - Display Facing Phantom/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.560 mW/g

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

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

Reference Value = 11.7 V/m

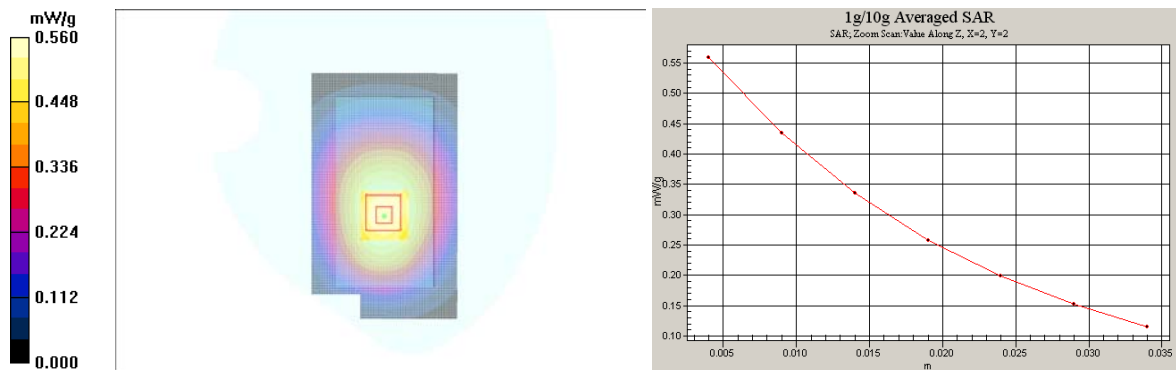
Peak SAR (extrapolated) = 0.658 W/kg

SAR(1 g) = 0.530 mW/g

SAR(10 g) = 0.400 mW/g

Power Drift = 0.028 dB

Maximum value of SAR (measured) = 0.559 mW/g



SAR Report

FCC_RM-730_11

Applicant: Nokia Corporation

Type: RM-730

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Date/Time: 2011-07-21 11:00:35

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/010536/3

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: Body1900; Medium Notes: Medium Temperature: t=22.0C

Medium parameters used: f = 1880 MHz; σ = 1.56 mho/m; ϵ_r = 51.6; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1652; Probe Notes:
- ConvF(4.33, 4.33, 4.33); Calibrated: 2010-10-21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn480; Calibrated: 2010-10-25
- Phantom: SAM3; Type: SAM; Serial: TP-1427
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body - Middle - Headset WH-102 - Back Facing Phantom/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.792 mW/g

Body - Middle - Headset WH-102 - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 14.1 V/m

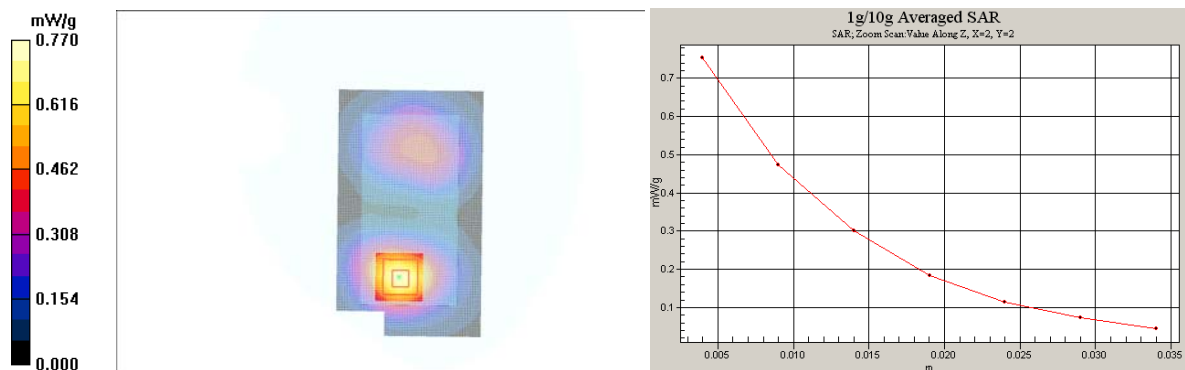
Peak SAR (extrapolated) = 1.08 W/kg

SAR(1 g) = 0.691 mW/g

SAR(10 g) = 0.416 mW/g

Power Drift = -0.070 dB

Maximum value of SAR (measured) = 0.753 mW/g



Date/Time: 2011-09-02 10:31:16

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/025927/7

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: $t=22.0\text{ C}$

Medium parameters used: $f = 2442\text{ MHz}$; $\sigma = 1.92\text{ mho/m}$; $\epsilon_r = 53$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3574; Probe Notes:
- ConvF(6.45, 6.45, 6.45); Calibrated: 2010-10-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2010-10-25
- Phantom: SAM6; Type: SAM; Serial: TP - 1426
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body - Middle - No Accessory - Display Facing Phantom/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.036 mW/g

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

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

Reference Value = 2.98 V/m

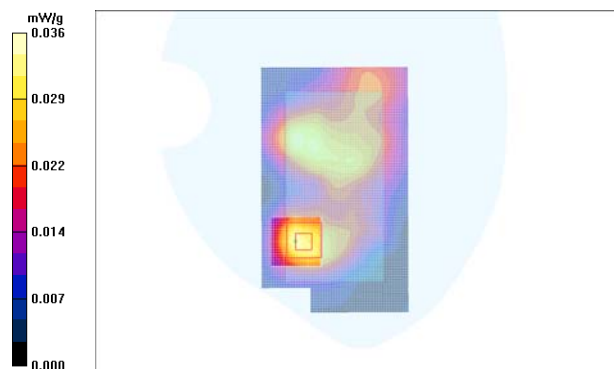
Peak SAR (extrapolated) = 0.052 W/kg

SAR(1 g) = 0.032 mW/g

SAR(10 g) = 0.020 mW/g

Power Drift = 0.280 dB

Maximum value of SAR (measured) = 0.034 mW/g



Date/Time: 2011-09-02 11:11:36

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/025927/7

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: t=22.0 C

Medium parameters used: f = 2442 MHz; σ = 1.92 mho/m; ϵ_r = 53; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3574; Probe Notes:
- ConvF(6.45, 6.45, 6.45); Calibrated: 2010-10-19
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2010-10-25
- Phantom: SAM6; Type: SAM; Serial: TP - 1426
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body - Middle - Headset WH-102 - Display Facing Phantom/Area Scan (61x101x1): Measurement grid:

dx=15mm, dy=15mm

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

Body - Middle - Headset WH-102 - Display Facing Phantom/Zoom Scan 3 (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 2.87 V/m

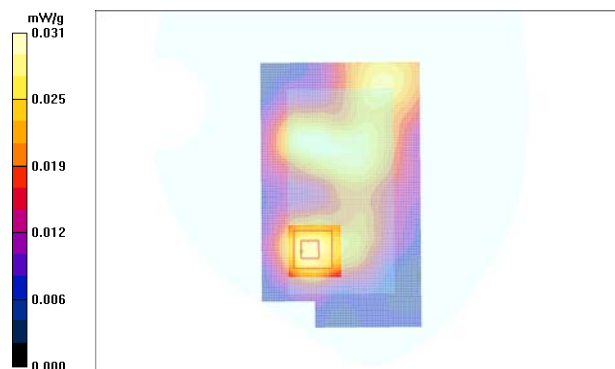
Peak SAR (extrapolated) = 0.045 W/kg

SAR(1 g) = 0.028 mW/g

SAR(10 g) = 0.018 mW/g

Power Drift = 0.490 dB

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



Date/Time: 2011-09-02 11:46:41

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/025927/7

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: t=22.0 C

Medium parameters used: f = 2442 MHz; σ = 1.92 mho/m; ϵ_r = 53; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3574; Probe Notes:
- ConvF(6.45, 6.45, 6.45); Calibrated: 2010-10-19
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2010-10-25
- Phantom: SAM6; Type: SAM; Serial: TP - 1426
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body - Middle - Headset CMMB+HP-1 - Display Facing Phantom/Area Scan (61x101x1): Measurement grid:

dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.038 mW/g

Body - Middle - Headset CMMB+HP-1 - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 3.02 V/m

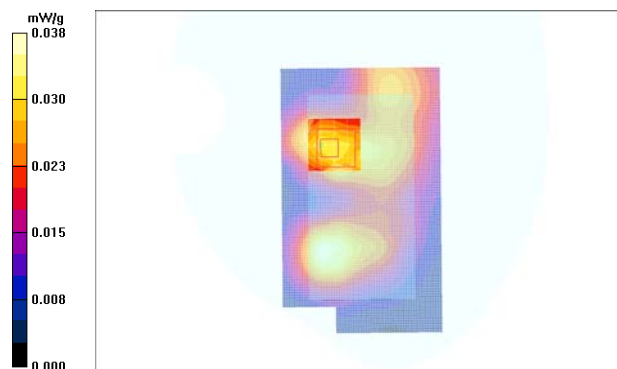
Peak SAR (extrapolated) = 0.053 W/kg

SAR(1 g) = 0.031 mW/g

SAR(10 g) = 0.020 mW/g

Power Drift = 0.375 dB

Maximum value of SAR (measured) = 0.033 mW/g



Date/Time: 2011-09-02 13:16:24

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/025927/7

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: t=22.0 C

Medium parameters used: f = 2442 MHz; σ = 1.92 mho/m; ϵ_r = 53; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3574; Probe Notes:
- ConvF(6.45, 6.45, 6.45); Calibrated: 2010-10-19
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2010-10-25
- Phantom: SAM6; Type: SAM; Serial: TP - 1426
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body - Middle - No Accessory - Back Facing Phantom/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.089 mW/g

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

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

Reference Value = 5.69 V/m

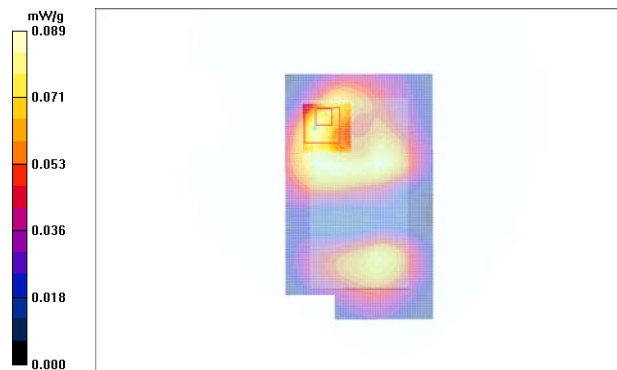
Peak SAR (extrapolated) = 0.151 W/kg

SAR(1 g) = 0.082 mW/g

SAR(10 g) = 0.045 mW/g

Power Drift = 0.001 dB

Maximum value of SAR (measured) = 0.092 mW/g



Date/Time: 2011-09-02 13:01:07

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/025927/7

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: t=22.0 C

Medium parameters used: f = 2442 MHz; $\sigma = 1.92$ mho/m; $\epsilon_r = 53$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3574; Probe Notes:
- ConvF(6.45, 6.45, 6.45); Calibrated: 2010-10-19
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2010-10-25
- Phantom: SAM6; Type: SAM; Serial: TP - 1426
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body - Middle - Headset WH-102 - Back Facing Phantom/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

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

Body - Middle - Headset WH-102 - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 5.82 V/m

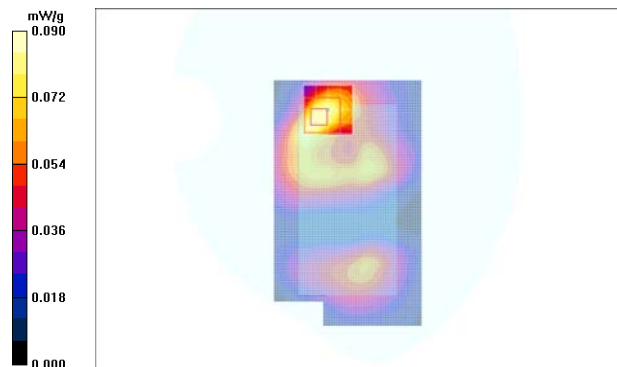
Peak SAR (extrapolated) = 0.157 W/kg

SAR(1 g) = 0.087 mW/g

SAR(10 g) = 0.048 mW/g

Power Drift = 0.107 dB

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



Date/Time: 2011-09-02 12:10:05

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/025927/7

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: $t=22.0\text{ }^{\circ}\text{C}$

Medium parameters used: $f = 2442\text{ MHz}$; $\sigma = 1.92\text{ mho/m}$; $\epsilon_r = 53$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3574; Probe Notes:
- ConvF(6.45, 6.45, 6.45); Calibrated: 2010-10-19
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2010-10-25
- Phantom: SAM6; Type: SAM; Serial: TP - 1426
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body - Middle - Headset CMMB+HP-1 - Back Facing Phantom/Area Scan (61x101x1): Measurement grid:

$dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.095 mW/g

Body - Middle - Headset CMMB+HP-1 - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 5.70 V/m

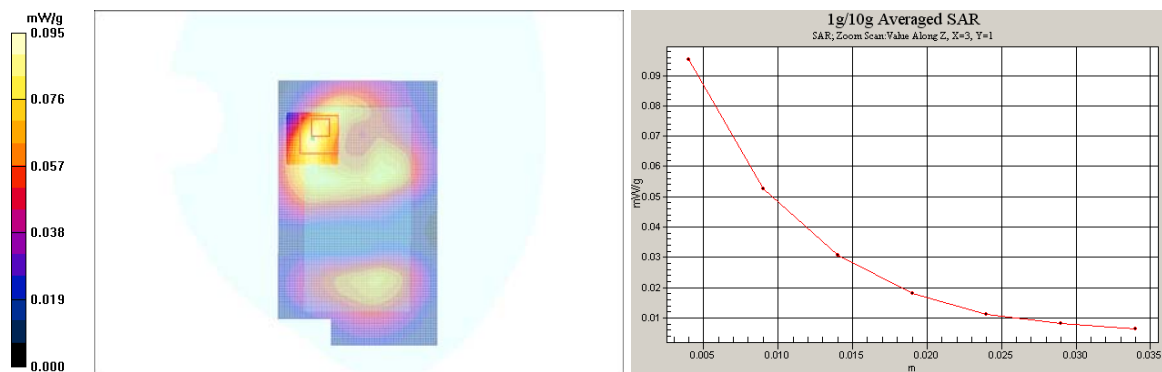
Peak SAR (extrapolated) = 0.164 W/kg

SAR(1 g) = 0.088 mW/g

SAR(10 g) = 0.048 mW/g

Power Drift = 0.034 dB

Maximum value of SAR (measured) = 0.095 mW/g



Date/Time: 2011-09-02 15:07:42

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/025927/7

Communication System: WLAN2450 n-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: t=22.0 C

Medium parameters used: f = 2442 MHz; σ = 1.92 mho/m; ϵ_r = 53; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3574; Probe Notes:
- ConvF(6.45, 6.45, 6.45); Calibrated: 2010-10-19
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2010-10-25
- Phantom: SAM6; Type: SAM; Serial: TP - 1426
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body - Middle - Headset CMMB+HP-1 - Back Facing Phantom/Area Scan (61x101x1): Measurement grid:

dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.070 mW/g

Body - Middle - Headset CMMB+HP-1 - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 5.12 V/m

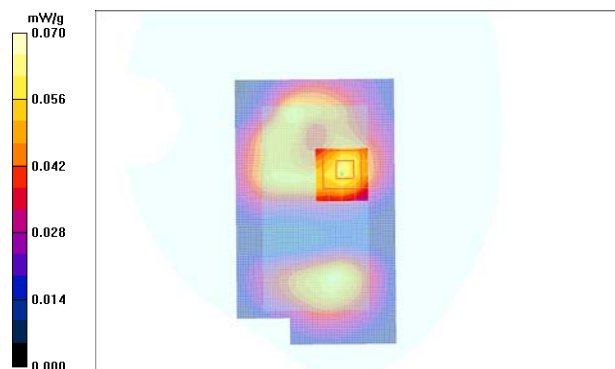
Peak SAR (extrapolated) = 0.094 W/kg

SAR(1 g) = 0.059 mW/g

SAR(10 g) = 0.036 mW/g

Power Drift = 0.139 dB

Maximum value of SAR (measured) = 0.063 mW/g



Date/Time: 2011/07/19 11:34:03, Date/Time: 2011/09/06 12:47:25

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/010536/3, Serial: 008600/08/025927/7

Communication System: 2-slot GPRS850, Communication System: WLAN2450 b-mode

Frequency: 848.8 MHz, Frequency: 2442 MHz; Duty Cycle: 1:4.2, Duty Cycle: 1:1

Medium: Head 835, Medium: Head 2450; Medium Notes: Medium Temperature: $t = 22.0$ C, Medium Notes:

Medium Temperature: $t = 22.0$ C

Medium parameters used: $f = 849$ MHz; $\sigma = 0.884$ mho/m; $\epsilon_r = 40.7$; $\rho = 1000$ kg/m³, Medium parameters used:
 $f = 2442$ MHz; $\sigma = 1.76$ mho/m; $\epsilon_r = 37.4$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1652, Probe: EX3DV4 - SN3574
- ConvF(6.04, 6.04, 6.04), ConvF(6.37, 6.37, 6.37); Calibrated: 10/21/2010, Calibrated: 10/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn480, Electronics: DAE4 Sn860; Calibrated: 10/25/2010
- Phantom: SAM1, Phantom: SAM5; Type: SAM; Serial: TP - 01097, Serial: TP - 1178
- ; SEMCAD X Version 14.0 Build 61

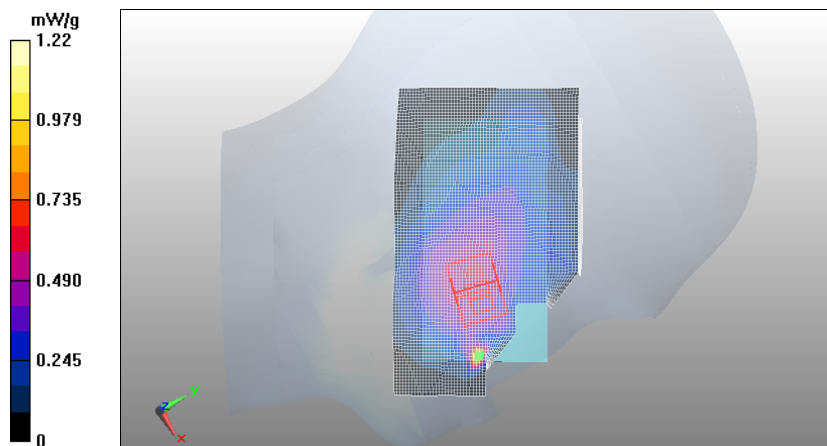
Configuration/Cheek - High/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Configuration/Cheek - Middle/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.550 mW/g

SAR(10 g) = 0.373 mW/g

Maximum value of SAR (measured) = 1.22 mW/g



Date/Time: 2011/07/21 15:58:53, Date/Time: 2011/09/06 13:24:10

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/010536/3, Serial: 008600/08/025927/7

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

Frequency: 1909.8 MHz, Frequency: 2442 MHz; Duty Cycle: 1:4.2, Duty Cycle: 1:1

Medium: Head 1900, Medium: Head 2450; Medium Notes: Medium Temperature: t=22.0C, Medium Notes:

Medium Temperature: t=22.0 C

Medium parameters used: f = 1910 MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 39.1$; $\rho = 1000$ kg/m³, Medium parameters used:
f = 2442 MHz; $\sigma = 1.76$ mho/m; $\epsilon_r = 37.4$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1652, Probe: EX3DV4 - SN3574
- ConvF(4.91, 4.91, 4.91), ConvF(6.37, 6.37, 6.37); Calibrated: 10/21/2010, Calibrated: 10/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn480, Electronics: DAE4 Sn860; Calibrated: 10/25/2010
- Phantom: SAM4, Phantom: SAM5; Type: SAM; Serial: TP - 1427, Serial: TP - 1178
- ; SEMCAD X Version 14.0 Build 61

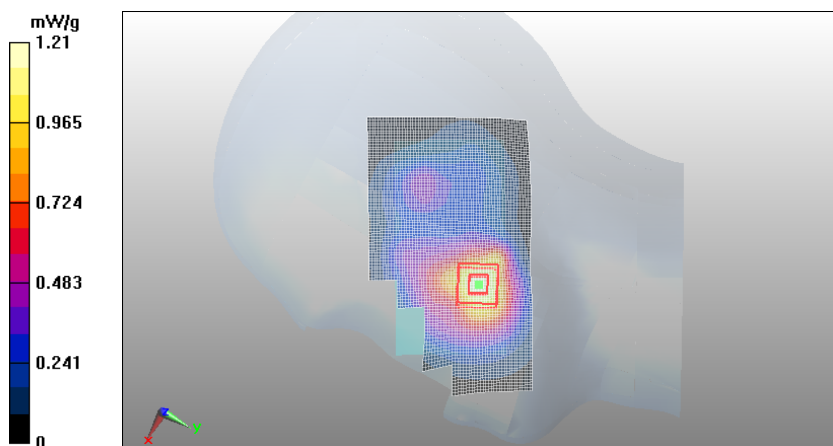
Configuration/Cheek - High/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Configuration/Cheek - Middle/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Motorola Fast SAR of Combined Scans: SAR(1 g) = 1.08 mW/g

SAR(10 g) = 0.624 mW/g

Maximum value of SAR (measured) = 1.21 mW/g



Date/Time: 2011-07-27 10:57:16, Date/Time: 2011-09-02 10:31:16

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/010536/3, Serial: 008600/08/025927/7

Communication System: 2-slot GPRS850, Communication System: WLAN2450 b-mode

Frequency: 848.8 MHz, Frequency: 2442 MHz; Duty Cycle: 1:4.2, Duty Cycle: 1:1

Medium: Body 835, Medium: Body 2450; Medium Notes: Medium Temperature: $t = 21.9\text{ C}$, Medium Notes:

Medium Temperature: $t = 22.0\text{ C}$

Medium parameters used: $f = 849\text{ MHz}$; $\sigma = 0.98\text{ mho/m}$; $\epsilon_r = 53.8$; $\rho = 1000\text{ kg/m}^3$, Medium parameters used:
 $f = 2442\text{ MHz}$; $\sigma = 1.92\text{ mho/m}$; $\epsilon_r = 53$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1652, Probe: EX3DV4 - SN3574

- ConvF(5.9, 5.9, 5.9), ConvF(6.45, 6.45, 6.45); Calibrated: 2010-10-21, Calibrated: 2010-10-19

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

- Electronics: DAE4 Sn480, Electronics: DAE4 Sn860; Calibrated: 2010-10-25

- Phantom: SAM2, Phantom: SAM6; Type: SAM; Serial: TP - 1508, Serial: TP - 1426

-; SEMCAD X Version 14.0 Build 61

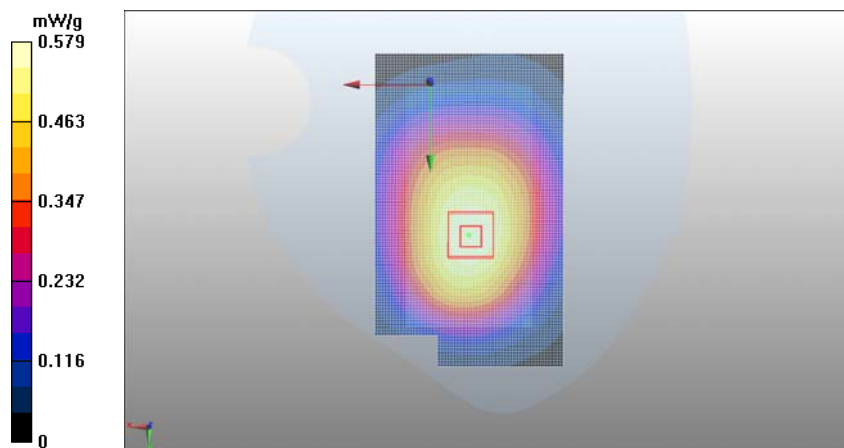
Configuration/Body - High - No accessory - Display Facing Phantom/Area Scan (7x11x1): Measurement grid:
 $dx = 15\text{mm}$, $dy = 15\text{mm}$

Configuration/Body - Middle - No Accessory - Display Facing Phantom/Area Scan (7x11x1): Measurement grid:
 $dx = 15\text{mm}$, $dy = 15\text{mm}$

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.547 mW/g

SAR(10 g) = 0.389 mW/g

Maximum value of SAR (measured) = 0.579 mW/g



Date/Time: 2011-07-21 11:00:35, Date/Time: 2011-09-02 13:01:07

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/010536/3, Serial: 008600/08/025927/7

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: Body1900, Medium: Body 2450; Medium Notes: Medium Temperature: t=22.0C, Medium Notes:

Medium Temperature: t=22.0 C

Medium parameters used: f = 1880 MHz; $\sigma = 1.56$ mho/m; $\epsilon_r = 51.6$; $\rho = 1000$ kg/m³, Medium parameters used:
f = 2442 MHz; $\sigma = 1.92$ mho/m; $\epsilon_r = 53$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1652, Probe: EX3DV4 - SN3574
- ConvF(4.33, 4.33, 4.33), ConvF(6.45, 6.45, 6.45); Calibrated: 2010-10-21, Calibrated: 2010-10-19
- Sensor-Surface: 4mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn480, Electronics: DAE4 Sn860; Calibrated: 2010-10-25
- Phantom: SAM3, Phantom: SAM6; Type: SAM; Serial: TP-1427, Serial: TP - 1426
- ; SEMCAD X Version 14.0 Build 61

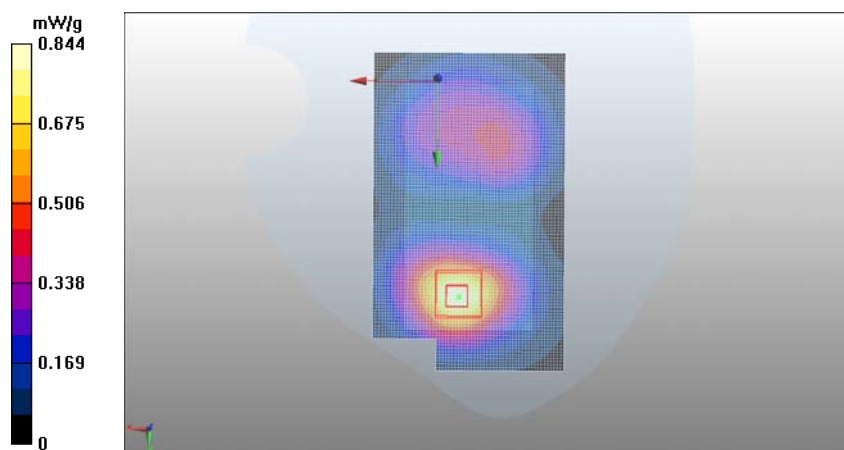
Configuration/Body - Middle - Headset WH-102 - Back Facing Phantom/Area Scan (7x11x1): Measurement grid:
dx=15mm, dy=15mm

Configuration/Body - Middle - Headset WH-102 - Back Facing Phantom/Area Scan (7x11x1): Measurement grid:
dx=15mm, dy=15mm

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.772 mW/g

SAR(10 g) = 0.444 mW/g

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



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



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 Beijing TCC**

Certificate No: **EX3-3574_Oct10**

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3574**

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 19, 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 E4419B	GB41293874	1-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41495277	1-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41498087	1-Apr-10 (No. 217-01136)	Apr-11
Reference 3 dB Attenuator	SN: S5054 (3c)	30-Mar-10 (No. 217-01159)	Mar-11
Reference 20 dB Attenuator	SN: S5086 (20b)	30-Mar-10 (No. 217-01161)	Mar-11
Reference 30 dB Attenuator	SN: S5129 (30b)	30-Mar-10 (No. 217-01160)	Mar-11
Reference Probe ES3DV2	SN: 3013	30-Dec-09 (No. ES3-3013_Dec09)	Dec-10
DAE4	SN: 660	20-Apr-10 (No. DAE4-660_Apr10)	Apr-11

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-10)	In house check: Oct-11

Calibrated by: **Claudio Leubler** Function: **Laboratory Technician**

Approved by: **Katja Poković** Technical Manager

Signature

Issued: October 21, 2010

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

DASY/EASY - Parameters of Probe: EX3DV4 SN:3574**Basic Calibration Parameters**

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.52	0.49	0.44	$\pm 10.1\%$
DCP (mV) ^B	95.2	93.3	92.2	

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 rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 SN:3574

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%	8.29	8.29	8.29	0.66	0.67 ± 11.0%
1750	± 50 / ± 100	40.1 ± 5%	1.37 ± 5%	7.43	7.43	7.43	0.45	0.79 ± 11.0%
1900	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	7.08	7.08	7.08	0.67	0.64 ± 11.0%
1950	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	6.82	6.82	6.82	0.50	0.73 ± 11.0%
2450	± 50 / ± 100	39.2 ± 5%	1.80 ± 5%	6.37	6.37	6.37	0.28	0.99 ± 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/EASY - Parameters of Probe: EX3DV4 SN:3574

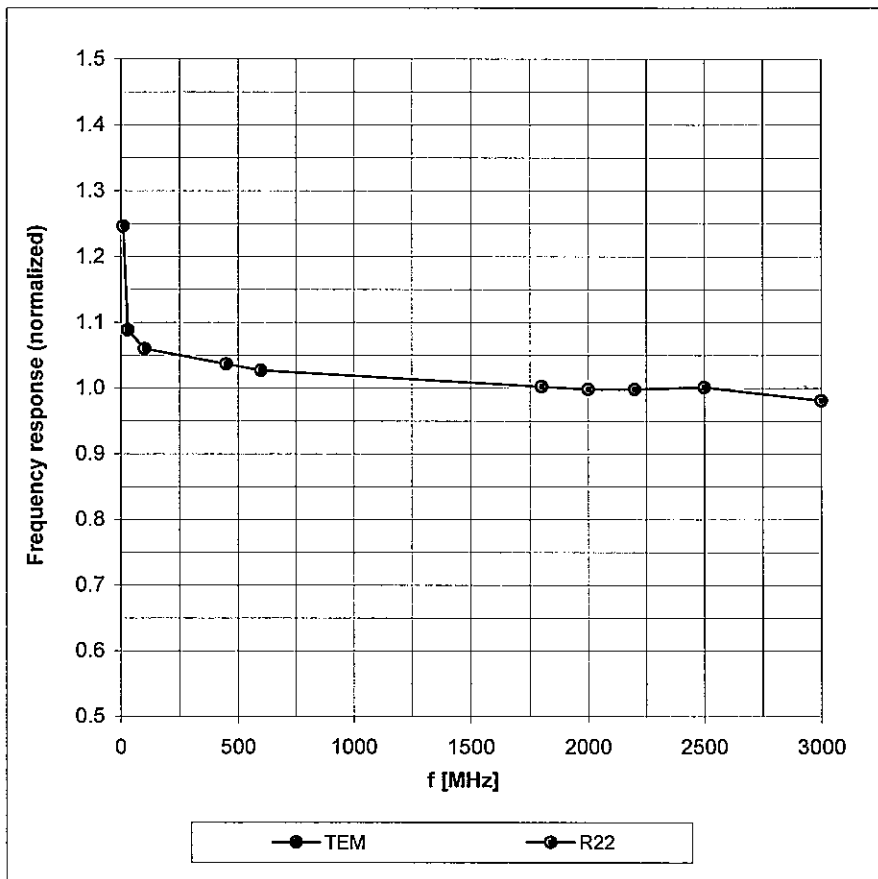
Calibration Parameter Determined in Body Tissue Simulating Media

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	0.66	0.70 ± 11.0%
1750	± 50 / ± 100	53.4 ± 5%	1.49 ± 5%	6.83	6.83	6.83	0.88	0.59 ± 11.0%
1900	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	6.62	6.62	6.62	0.55	0.74 ± 11.0%
1950	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	6.81	6.81	6.81	0.70	0.64 ± 11.0%
2450	± 50 / ± 100	52.7 ± 5%	1.95 ± 5%	6.45	6.45	6.45	0.41	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.

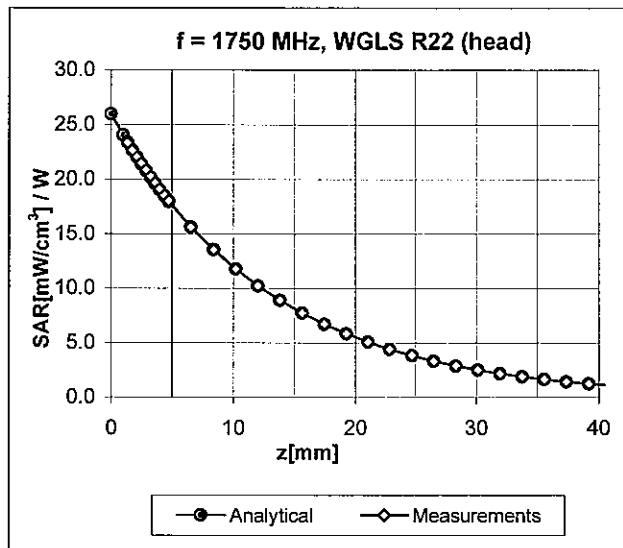
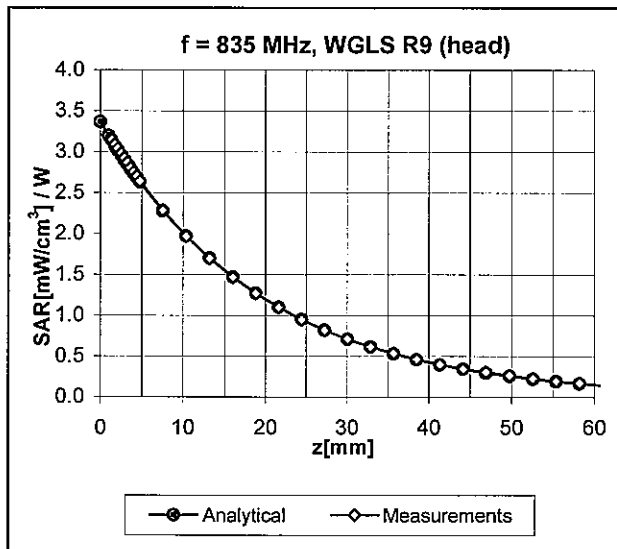
Frequency Response of E-Field

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



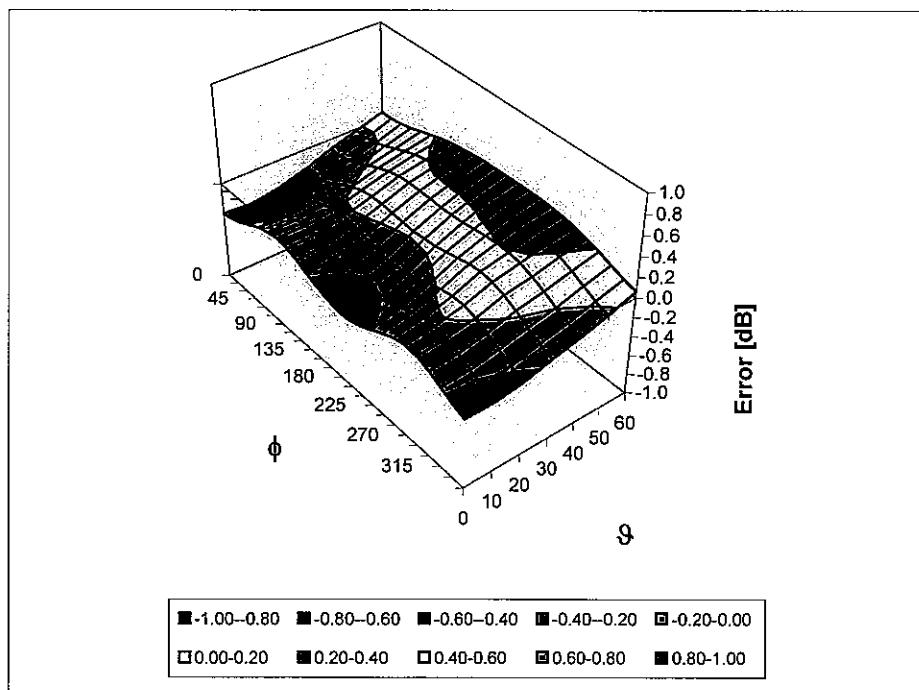
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

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



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 Beijing TCC**

Certificate No: **D2450V2-760_Mar11**

CALIBRATION CERTIFICATE

Object **D2450V2 - SN: 760**

Calibration procedure(s) **QA CAL-05.v8
Calibration procedure for dipole validation kits**

Calibration date: **March 17, 2011**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-10 (No. 217-01266)	Oct-11
Power sensor HP 8481A	US37292783	06-Oct-10 (No. 217-01266)	Oct-11
Reference 20 dB Attenuator	SN: 5086 (20g)	30-Mar-10 (No. 217-01158)	Mar-11
Type-N mismatch combination	SN: 5047.2 / 06327	30-Mar-10 (No. 217-01162)	Mar-11
Reference Probe ES3DV3	SN: 3205	30-Apr-10 (No. ES3-3205_Apr10)	Apr-11
DAE4	SN: 601	10-Jun-10 (No. DAE4-601_Jun10)	Jun-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-10)	In house check: Oct-11

	Name	Function	Signature
Calibrated by:	Dimce Iliev	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: March 17, 2011

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:760

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

Medium: HSL U12 BB

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.72$ mho/m; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

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: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY52, V52.6.2 Build (424)
- Postprocessing SW: SEMCAD X, V14.4.4 Build (2829)

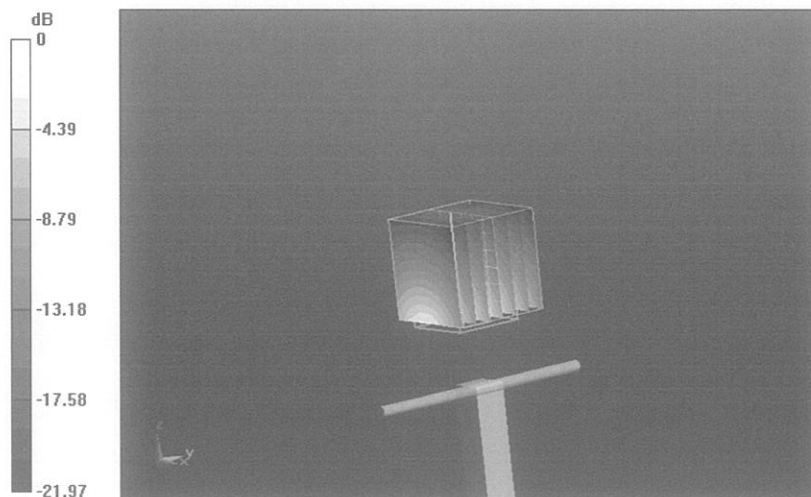
Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 101.2 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 27.253 W/kg

SAR(1 g) = 13.3 mW/g; SAR(10 g) = 6.25 mW/g

Maximum value of SAR (measured) = 17.126 mW/g



0 dB = 17.130mW/g

DASY5 Validation Report for Body TSL

Date/Time: 08.03.2011 14:08:11

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:760

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

Medium: MSL U12 BB

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.93$ mho/m; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m³

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: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY52, V52.6.2 Build (424)
- Postprocessing SW: SEMCAD X, V14.4.4 Build (2829)

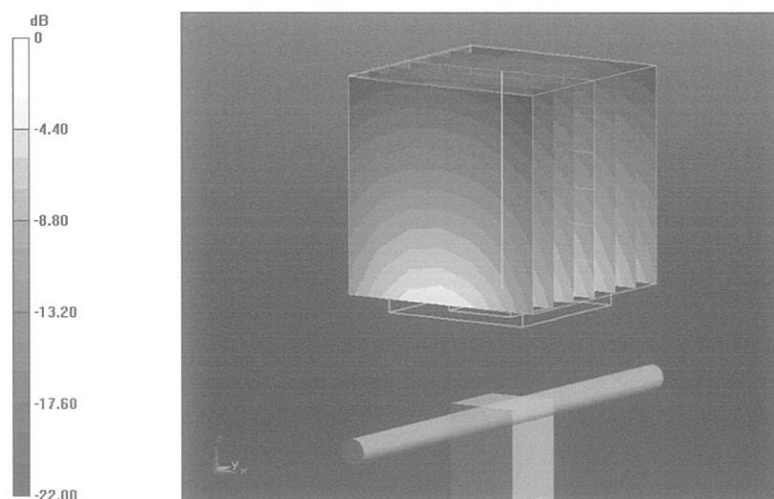
Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 97.844 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 27.853 W/kg

SAR(1 g) = 13.3 mW/g; SAR(10 g) = 6.14 mW/g

Maximum value of SAR (measured) = 17.439 mW/g



0 dB = 17.440mW/g

APPENDIX E: WIRELESS ROUTER MODE EVALUATION

E.1 Body SAR assessment of Wireless Router mode at 10.0mm separation distance

850MHz Body SAR results**

Mode	Device orientation	SAR, averaged over 1g (W/kg)		
		Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
2-slot GPRS	Conducted Power	30.5 dBm	30.5 dBm	30.5 dBm
	Display facing phantom	-	-	-
	Back facing phantom	0.702	0.778	0.815
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	0.585	0.667	0.714
	Right edge facing phantom	-	-	-

1900MHz Body SAR results**

Mode	Device orientation	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	27.5 dBm	27.5 dBm	27.5 dBm
	Display facing phantom	-	-	-
	Back facing phantom	1.48	1.33	1.14
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-

2450MHz Body SAR results

Mode	Device orientation	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	13.4 dBm	15.4 dBm	13.4 dBm
	Display facing phantom	-	0.044	-
	Back facing phantom	-	0.146	-
	Top edge facing phantom	0.189	0.179	0.151
	Bottom edge facing phantom	-	0.020	-
	Left edge facing phantom	-	0.041	-
	Right edge facing phantom	-	0.111	-

Simultaneous transmissions: Combined SAR results – Individual band Max results

Test configuration	Max. 1g SAR results		
	WLAN	2-slot GPRS850**	2-slot GPRS1900**
Display facing phantom	-	-	-
Back facing phantom	0.146	0.815	1.48
Top edge facing phantom	-	-	-
Bottom edge facing phantom	-	-	-
Left edge facing phantom	0.041	0.714	-
Right edge facing phantom	-	-	-

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

Test configuration	Max. 1g SAR results	
	2-slot GPRS850 + WLAN	2-slot GPRS1900 + WLAN
Display facing phantom	-	-
Back facing phantom	0.961	1.626
Top edge facing phantom	-	-
Bottom edge facing phantom	-	-
Left edge facing phantom	0.755	-
Right edge facing phantom	-	-

For 2-slot GPRS1900 + WLAN Back facing phantom, the combined Max + Max SAR value > 1.6. The separation distance between the SAR peaks on the plots is 9.0cm, hence the value of (Max + Max SAR i.e.1.62)/(separation distance in cm) = 0.18. As this ratio < 0.3, expanded zoom SAR scanning is not required to evaluate the combined SAR value.

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 are entered in the Summary table in Appendix E.2.

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

Test configuration	Max. 1g SAR results	
	2-slot GPRS850 + WLAN	2-slot GPRS1900 + WLAN
Display facing phantom	-	-
Back facing phantom	0.876	1.59
Top edge facing phantom	-	-
Bottom edge facing phantom	-	-
Left edge facing phantom	-	-
Right edge facing phantom	-	-

** SAR values taken from FCC_RM-730_07.

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.

E.2 Summary of Maximum Results for Wireless Router mode at 10.0mm

Mode	Ch / f (MHz)	Conducted power	Separation distance	Measured SAR value (1g avg)	SAR limit (1g avg)	Result
2-slot GPRS 850**	251 / 848.8	30.5 dBm	1.0 cm	0.815 W/kg	1.6 W/kg	PASSED
2-slot GPRS 1900**	512 / 1850.2	27.5 dBm	1.0 cm	1.48 W/kg	1.6 W/kg	PASSED
WLAN2450	1 / 2412.0	13.4 dBm	1.0 cm	0.189 W/kg	1.6 W/kg	PASSED
2-slot GPRS 850 + WLAN2450	-	-	1.0 cm	0.876 W/kg	1.6 W/kg	PASSED
2-slot GPRS 1900 + WLAN2450	-	-	1.0 cm	1.59 W/kg	1.6 W/kg	PASSED

** SAR values taken from FCC_RM-730_07.

E.3 SAR plots corresponding to the Wireless Router mode results given above

Date/Time: 2011-08-02 10:44:13

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/010536/3

Communication System: 2-slot GPRS850

Frequency: 848.8 MHz; Duty Cycle: 1:4.2

Medium: Body 835; Medium Notes: Medium Temperature: $t = 22.0\text{ }^{\circ}\text{C}$

Medium parameters used: $f = 849\text{ MHz}$; $\sigma = 0.975\text{ mho/m}$; $\epsilon_r = 53.4$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1652; Probe Notes:
- ConvF(5.9, 5.9, 5.9); Calibrated: 2010-10-21
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn480; Calibrated: 2010-10-25
- Phantom: SAM2; Type: SAM; Serial: TP - 1508
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body - High - No Accessory - Back Facing Phantom/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.860 mW/g

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

Reference Value = 12.8 V/m

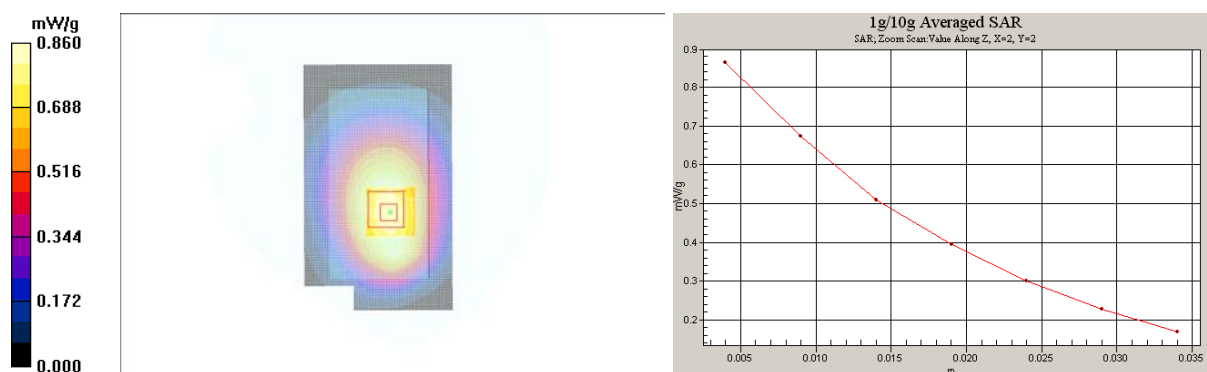
Peak SAR (extrapolated) = 1.01 W/kg

SAR(1 g) = 0.815 mW/g

SAR(10 g) = 0.608 mW/g

Power Drift = -0.037 dB

Maximum value of SAR (measured) = 0.863 mW/g



Date/Time: 2011-07-19 14:38:01

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/010536/3

Communication System: 2-slot GPRS850

Frequency: 848.8 MHz; Duty Cycle: 1:4.2

Medium: Body 835; Medium Notes: Medium Temperature: $t = 22.0\text{ }^{\circ}\text{C}$

Medium parameters used: $f = 849\text{ MHz}$; $\sigma = 0.981\text{ mho/m}$; $\epsilon_r = 53.5$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1652; Probe Notes:
- ConvF(5.9, 5.9, 5.9); Calibrated: 2010-10-21
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn480; Calibrated: 2010-10-25
- Phantom: SAM2; Type: SAM; Serial: TP - 1508
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body - High - No Accessory - Left Edge Facing Phantom/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.762 mW/g

Body - High - No Accessory - Left Edge Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 14.4 V/m

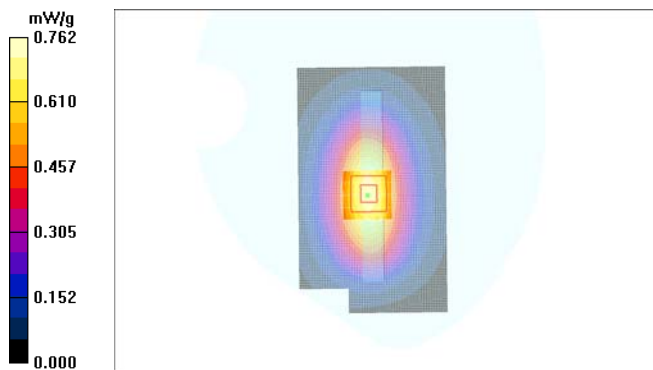
Peak SAR (extrapolated) = 0.992 W/kg

SAR(1 g) = 0.714 mW/g

SAR(10 g) = 0.487 mW/g

Power Drift = -0.042 dB

Maximum value of SAR (measured) = 0.766 mW/g



Date/Time: 2011-07-21 13:00:06

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/010536/3

Communication System: 2-slot GPRS1900

Frequency: 1850.2 MHz; Duty Cycle: 1:4.2

Medium: Body1900; Medium Notes: Medium Temperature: t=22.0C

Medium parameters used (interpolated): f = 1850.2 MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1652; Probe Notes:
- ConvF(4.33, 4.33, 4.33); Calibrated: 2010-10-21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn480; Calibrated: 2010-10-25
- Phantom: SAM3; Type: SAM; Serial: TP-1427
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body - Low - No Accessory - Back Facing Phantom/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.70 mW/g

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

Reference Value = 19.4 V/m

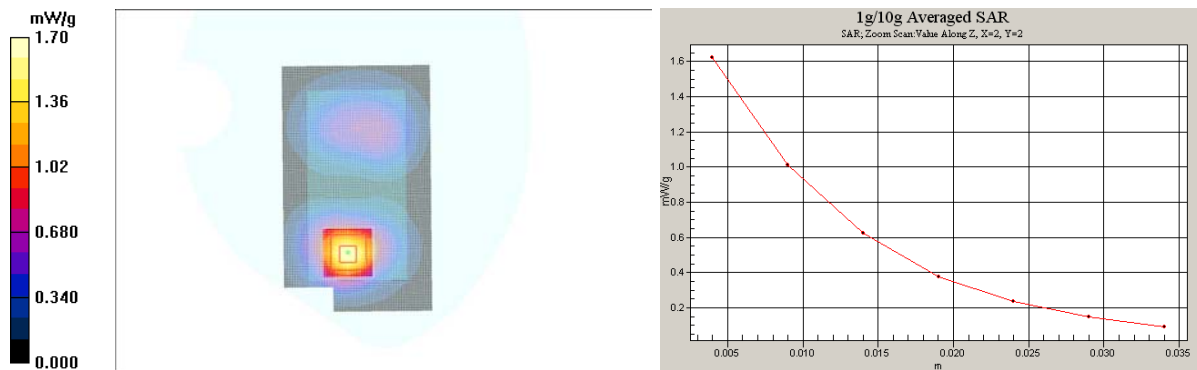
Peak SAR (extrapolated) = 2.35 W/kg

SAR(1 g) = 1.48 mW/g

SAR(10 g) = 0.870 mW/g

Power Drift = -0.039 dB

Maximum value of SAR (measured) = 1.62 mW/g



Date/Time: 2011-09-02 16:19:31

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/025927/7

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: $t=22.0\text{ C}$

Medium parameters used: $f = 2442\text{ MHz}$; $\sigma = 1.92\text{ mho/m}$; $\epsilon_r = 53$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3574; Probe Notes:
- ConvF(6.45, 6.45, 6.45); Calibrated: 2010-10-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2010-10-25
- Phantom: SAM6; Type: SAM; Serial: TP - 1426
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body - Middle - No Accessory - Display Facing Phantom/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.051 mW/g

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

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

Reference Value = 3.55 V/m

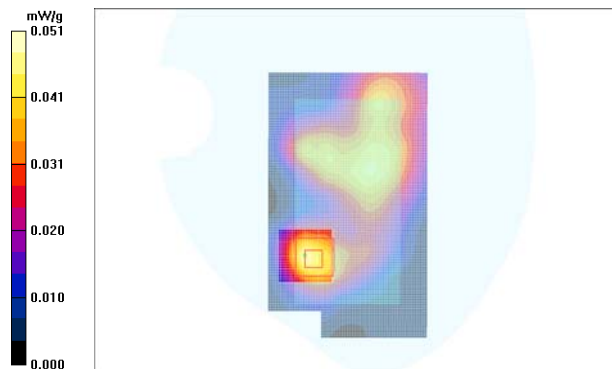
Peak SAR (extrapolated) = 0.076 W/kg

SAR(1 g) = 0.044 mW/

SAR(10 g) = 0.026 mW/

Power Drift = 0.098 dB

Maximum value of SAR (measured) = 0.046 mW/g



Date/Time: 2011-09-02 16:47:10

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/025927/7

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: t=22.0 C

Medium parameters used: f = 2442 MHz; $\sigma = 1.92$ mho/m; $\epsilon_r = 53$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3574; Probe Notes:
- ConvF(6.45, 6.45, 6.45); Calibrated: 2010-10-19
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2010-10-25
- Phantom: SAM6; Type: SAM; Serial: TP - 1426
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body - Middle - No Accessory - Back Facing Phantom/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.150 mW/g

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

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

Reference Value = 7.09 V/m

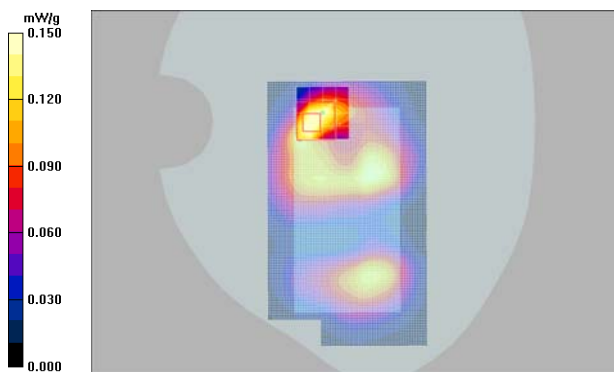
Peak SAR (extrapolated) = 0.289 W/kg

SAR(1 g) = 0.146 mW/g

SAR(10 g) = 0.072 mW/g

Power Drift = -0.018 dB

Maximum value of SAR (measured) = 0.167 mW/g



Date/Time: 2011-09-05 12:00:23

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/025927/7

Communication System: WLAN2450 b-mode

Frequency: 2412 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: $t=22.0\text{ C}$

Medium parameters used: $f = 2412\text{ MHz}$; $\sigma = 1.94\text{ mho/m}$; $\epsilon_r = 52.6$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3574; Probe Notes:
- ConvF(6.45, 6.45, 6.45); Calibrated: 2010-10-19
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2010-10-25
- Phantom: SAM6; Type: SAM; Serial: TP - 1426
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body - Low - No Accessory - Top Edge Facing Phantom/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.220 mW/g

Body - Low - No Accessory - Top Edge Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 6.64 V/m

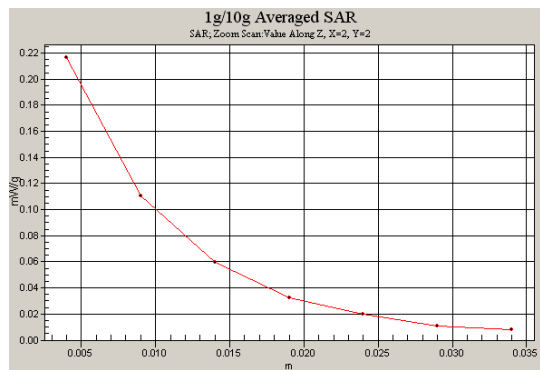
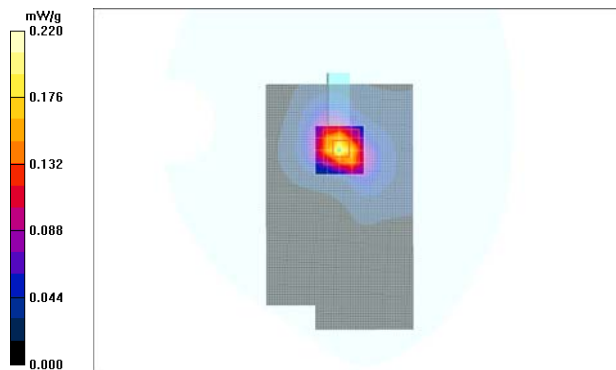
Peak SAR (extrapolated) = 0.384 W/kg

SAR(1 g) = 0.189 mW/g

SAR(10 g) = 0.091 mW/g

Power Drift = 0.099 dB

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



Date/Time: 2011-09-05 11:20:17

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/025927/7

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: t=22.0 C

Medium parameters used: f = 2442 MHz; σ = 1.98 mho/m; ϵ_r = 52.5; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3574; Probe Notes:
- ConvF(6.45, 6.45, 6.45); Calibrated: 2010-10-19
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2010-10-25
- Phantom: SAM6; Type: SAM; Serial: TP - 1426
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body - Middle - No Accessory - Bottom Edge Facing Phantom/Area Scan (61x101x1): Measurement grid:

dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.021 mW/g

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

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

Reference Value = 2.42 V/m

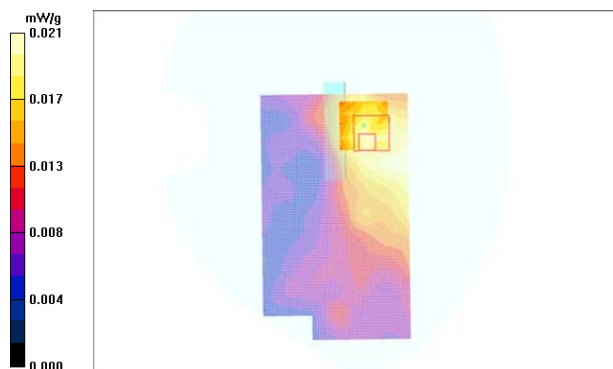
Peak SAR (extrapolated) = 0.034 W/kg

SAR(1 g) = 0.020 mW/g

SAR(10 g) = 0.013 mW/g

Power Drift = 0.394 dB

Maximum value of SAR (measured) = 0.021 mW/g



Date/Time: 2011-09-05 10:23:15

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/025927/7

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: t=22.0 C

Medium parameters used: f = 2442 MHz; σ = 1.98 mho/m; ϵ_r = 52.5; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3574; Probe Notes:
- ConvF(6.45, 6.45, 6.45); Calibrated: 2010-10-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2010-10-25
- Phantom: SAM6; Type: SAM; Serial: TP - 1426
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body - Middle - No Accessory - Left Edge Facing Phantom/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.044 mW/g

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

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

Reference Value = 3.31 V/m

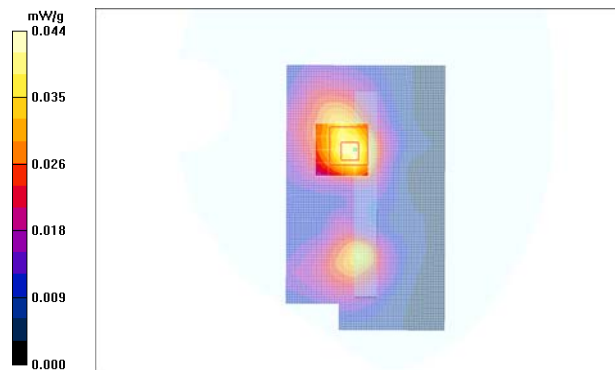
Peak SAR (extrapolated) = 0.074 W/kg

SAR(1 g) = 0.041 mW/g

SAR(10 g) = 0.025 mW/g

Power Drift = 0.145 dB

Maximum value of SAR (measured) = 0.045 mW/g



Date/Time: 2011-09-02 17:15:08

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/025927/7

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: t=22.0 C

Medium parameters used: f = 2442 MHz; σ = 1.92 mho/m; ϵ_r = 53; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3574; Probe Notes:
- ConvF(6.45, 6.45, 6.45); Calibrated: 2010-10-19
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2010-10-25
- Phantom: SAM6; Type: SAM; Serial: TP - 1426
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body - Middle - No Accessory - Right Edge Facing Phantom/Area Scan (61x101x1): Measurement grid:

dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.127 mW/g

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

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

Reference Value = 6.70 V/m

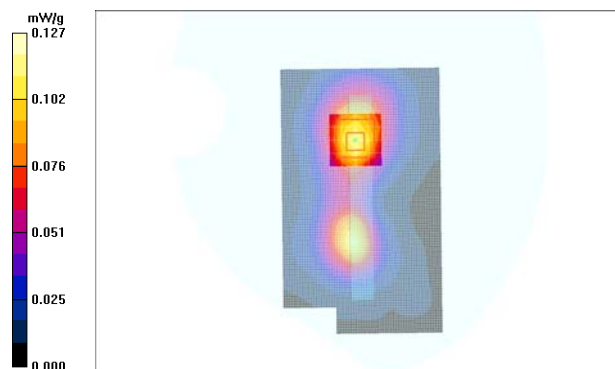
Peak SAR (extrapolated) = 0.199 W/kg

SAR(1 g) = 0.111 mW/g

SAR(10 g) = 0.062 mW/g

Power Drift = 0.017 dB

Maximum value of SAR (measured) = 0.122 mW/g



Date/Time: 2011/08/02 10:44:13, Date/Time: 2011/09/02 16:47:10

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/010536/3, Serial: 008600/08/025927/7

Communication System: 2-slot GPRS850, Communication System: WLAN2450 b-mode

Frequency: 848.8 MHz, Frequency: 2442 MHz; Duty Cycle: 1:4.2, Duty Cycle: 1:1

Medium: Body 835, Medium: Body 2450; Medium Notes: Medium Temperature: t= 22.0 C, Medium Notes:

Medium Temperature: t=22.0 C

Medium parameters used: f = 849 MHz; σ = 0.975 mho/m; ϵ_r = 53.4; ρ = 1000 kg/m³, Medium parameters used:
f = 2442 MHz; σ = 1.92 mho/m; ϵ_r = 53; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY4 Configuration:

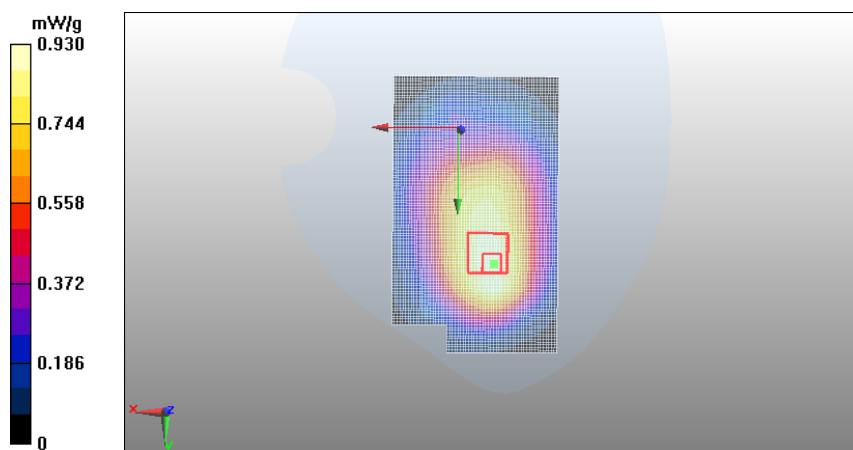
- Probe: ET3DV6 - SN1652, Probe: EX3DV4 - SN3574
- ConvF(5.9, 5.9, 5.9), ConvF(6.45, 6.45, 6.45); Calibrated: 10/21/2010, Calibrated: 10/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn480, Electronics: DAE4 Sn860; Calibrated: 10/25/2010
- Phantom: SAM2, Phantom: SAM6; Type: SAM; Serial: TP - 1508, Serial: TP - 1426
- ; SEMCAD X Version 14.0 Build 61

Configuration/Body - High - No Accessory - Back Facing Phantom/Area Scan (7x11x1): Measurement grid:
dx=15mm, dy=15mm

Configuration/Body - Middle - No Accessory - Back Facing Phantom/Area Scan (7x11x1): Measurement grid:
dx=15mm, dy=15mm

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.876 mW/g
SAR(10 g) = 0.608 mW/g

Maximum value of SAR (measured) = 0.930 mW/g



Date/Time: 2011/09/02 16:47:10, Date/Time: 2011/07/21 13:00:06

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/025927/7, Serial: 008600/08/010536/3

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

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

Medium: Body 2450, Medium: Body1900; Medium Notes: Medium Temperature: t=22.0 C, Medium Notes:

Medium Temperature: t=22.0C

Medium parameters used: f = 2442 MHz; $\sigma = 1.92$ mho/m; $\epsilon_r = 53$; $\rho = 1000$ kg/m³, Medium parameters used (interpolated): f = 1850.2 MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3574, Probe: ET3DV6 - SN1652

- ConvF(6.45, 6.45, 6.45), ConvF(4.33, 4.33, 4.33); Calibrated: 10/19/2010, Calibrated: 10/21/2010

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

- Electronics: DAE4 Sn860, Electronics: DAE4 Sn480; Calibrated: 10/25/2010

- Phantom: SAM6, Phantom: SAM3; Type: SAM; Serial: TP - 1426, Serial: TP-1427

- ; SEMCAD X Version 14.0 Build 61

Configuration/Body - Middle - No Accessory - Back Facing Phantom/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Configuration/Body - Low - No Accessory - Back Facing Phantom/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Motorola Fast SAR of Combined Scans: SAR(1 g) = 1.59 mW/g

SAR(10 g) = 0.899 mW/g

Maximum value of SAR (measured) = 1.755 mW/g

