

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	2011-07-19 to 2011-08-02
SN, HW and SW numbers of tested device	SN: 008600/08/010536/3, HW: 1301, SW: 022.008, DUT: 52359
Batteries used in testing	BL-4D, DUT: 52036, 52037
Headsets used in testing	WH-102: 52038
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
2-slot GPRS 850	251 / 848.8	30.5 dBm	Left, Cheek	0.542 W/kg	0.61 W/kg	1.6 W/kg	PASSED
2-slot GPRS 1900	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, Cheek	0.143 W/kg	0.16 W/kg	1.6 W/kg	PASSED
2-slot GPRS 850 + WLAN2450	-	-	Left, Cheek	0.557 W/kg	0.62 W/kg	1.6 W/kg	PASSED
2-slot GPRS 1900 + 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 GPRS 850	251 / 848.8	30.5 dBm	1.5 cm	0.530 W/kg	0.59 W/kg	1.6 W/kg	PASSED
2-slot GPRS 1900	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	0.078 W/kg	0.09 W/kg	1.6 W/kg	PASSED
2-slot GPRS 850 + WLAN2450	-	-	1.5 cm	0.538 W/kg	0.60 W/kg	1.6 W/kg	PASSED
2-slot GPRS 1900 + WLAN2450	-	-	1.5 cm	0.744 W/kg	0.83 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_03.

1.2.3 Maximum Drift

Maximum drift covered by 12% scaling up of the SAR values	Maximum drift during measurements
0.5dB	0.17dB

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):	20.5 – 22.5
Ambient humidity (RH %):	35 - 55

3.2 Test Signal, Frequencies and Output Power

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

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

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

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

The number of test cases reported in this document has been minimised based on the earlier testing in FCC_RM-730_03. Some of the SAR results given in this SAR report are taken from the same earlier report.

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	480	12 months	2011-10
E-field Probe ET3DV6	1652	12 months	2011-10
Dipole Validation Kit, D835V2	4d005	24 months	2012-03
Dipole Validation Kit, D1900V2	547	24 months	2011-09
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
Call Tester	CMU200	835352/008	-	-
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 ET3DV6

Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection system Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., butyl diglycol)
Calibration	Calibration certificate in Appendix C
Frequency	10 MHz to 3 GHz (dosimetry); Linearity: ± 0.2 dB (30 MHz to 3 GHz)
Optical Surface Detection	± 0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces

Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.4 dB in HSL (rotation normal to probe axis)
Dynamic Range	5 µW/g to > 100 mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 330 mm Tip length: 16 mm Body diameter: 12 mm Tip diameter: 6.8 mm Distance from probe tip to dipole centers: 2.7 mm
Application	General dosimetry up to 3 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms

4.2 Phantoms

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

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

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

4.3 Tissue Simulants

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

The depth of the tissue simulant was 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	39.74	55.97
HEC	0.25	1.21
Sugar	58.31	41.76
Preservative	0.15	0.27
Salt	1.55	0.79

1900MHz band

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

4.3.2 System Checking

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

System checking, head tissue simulant

f [MHz]	Description	SAR [W/kg], 1g	Dielectric Parameters		Temp [°C]
			ϵ_r	σ [S/m]	
835	Reference result	2.41	42.9	0.91	
	$\pm 10\%$ window	2.17 – 2.65			
	2011-07-19	2.55	40.9	0.87	22.0
1900	Reference result	10.4	40.8	1.45	
	$\pm 10\%$ window	9.4 – 11.4			
	2011-07-21	10.4	39.1	1.47	22.0

System checking, body tissue simulant

f [MHz]	Description	SAR [W/kg],	Dielectric Parameters		Temp [°C]
		1g	ϵ_r	σ [S/m]	
835	Reference result	2.56	55.3	1.01	
	± 10% window	2.30 – 2.82			
	2011-07-19	2.70	53.7	0.97	22.0
	2011-07-27	2.65	53.9	0.97	21.9
	2011-08-02	2.64	53.6	0.96	22.0
1900	Reference result	10.2	53.9	1.57	
	± 10% window	9.2 – 11.2			
	2011-07-21	10.1	51.6	1.58	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]	
836	Recommended value	41.5	0.90	
	± 5% window	39.4 – 43.6	0.86 – 0.95	
	2011-07-19	40.8	0.87	22.0
1880	Recommended value	40.0	1.40	
	± 5% window	38.0 – 42.0	1.33 – 1.47	
	2011-07-21	39.2	1.45	22.0

Body tissue simulant measurements

F [MHz]	Description	Dielectric Parameters		Temp [°C]
		ϵ_r	σ [S/m]	
836	Recommended value	55.2	0.97	
	± 5% window	52.4 – 58.0	0.92 – 1.02	
	2011-07-19	53.6	0.97	22.0
	2011-07-27	53.9	0.97	21.9
	2011-08-02	53.5	0.96	22.0
1880	Recommended value	53.3	1.52	
	± 5% window	50.6 – 56.0	1.44 – 1.60	
	2011-07-21	51.6	1.56	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” position 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.

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	0.076	0.143	0.057
		Tilt	-	0.136	-
	Right	Cheek	-	0.111	-
		Tilt	-	0.080	-
WLAN n-mode	Conducted Power		12.4 dBm	15.4 dBm	12.4 dBm
	Left	Cheek	0.056	0.129	0.045
		Tilt	-	-	-
	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	-	0.029	-
		Headset WH-102	-	0.028	-
		Headset CMMB + HP-1	-	0.019	-
	Back facing phantom	Without headset	-	0.044	-
		Headset WH-102	-	0.048	-
		Headset CMMB + HP-1	0.053	0.077	0.034
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	0.034	0.078	0.032

**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	0.143	0.542	-
Head: Left, Tilt	-	-	-
Head: Right, Cheek	0.111	-	1.11
Head: Right, Tilt	-	-	-
Body: Display facing phantom, Without Headset	0.029	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	0.048	-	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	0.685	-
Head: Left, Tilt	-	-
Head: Right, Cheek	-	1.221
Head: Right, Tilt	-	-
Body: Display facing phantom, Without Headset	0.559	-
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	-	0.739
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. 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	Max. 1g SAR results	
	2-slot GPRS850 + WLAN	2-slot GPRS1900 + WLAN
Head: Left, Cheek	0.557	-
Head: Left, Tilt	-	-
Head: Right, Cheek	-	1.11
Head: Right, Tilt	-	-
Body: Display facing phantom, Without Headset	0.538	-
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	-	0.744
Body: Back facing phantom, Headset CMMB + HP-1	-	-

** SAR values taken from FCC_RM-730_03.

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: 2011-07-19 10:25:16

Test Laboratory: TCC Nokia
Type: D835V2; Serial: 4d005

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

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

Medium parameters used: $f = 835\text{ MHz}$; $\sigma = 0.87\text{ mho/m}$; $\epsilon_r = 40.9$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat 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)
- 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

d=15mm, Pin=250mW/Area Scan (61x121x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 2.77 mW/g

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

Reference Value = 58.5 V/m

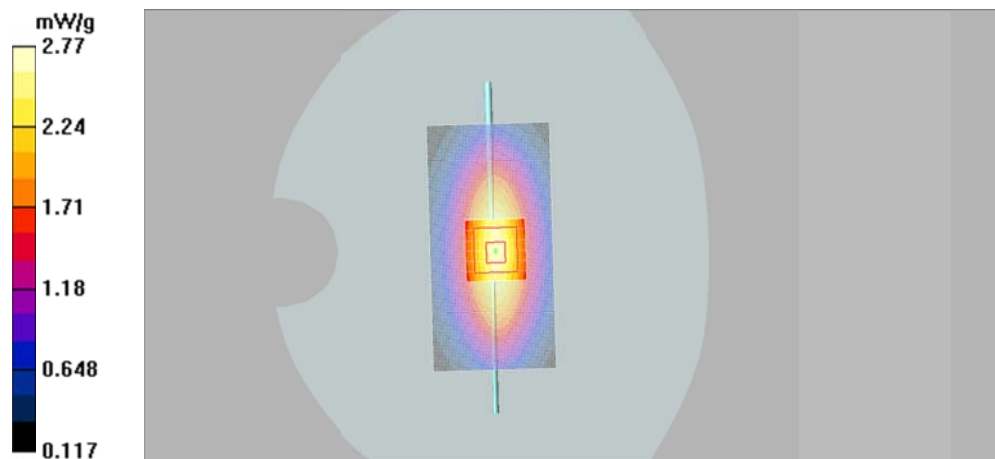
Peak SAR (extrapolated) = 3.70 W/kg

SAR(1 g) = 2.55 mW/g

SAR(10 g) = 1.68 mW/g

Power Drift = -0.033 dB

Maximum value of SAR (measured) = 2.75 mW/g



Date/Time: 2011-07-21 10:09:12

Test Laboratory: TCC Nokia
Type: D1900V2; Serial: 547

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

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

Medium parameters used: f = 1900 MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 39.1$; $\rho = 1000$ kg/m³

Phantom section: Flat 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)
- 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

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

Maximum value of SAR (interpolated) = 12.1 mW/g

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

Reference Value = 93.8 V/m

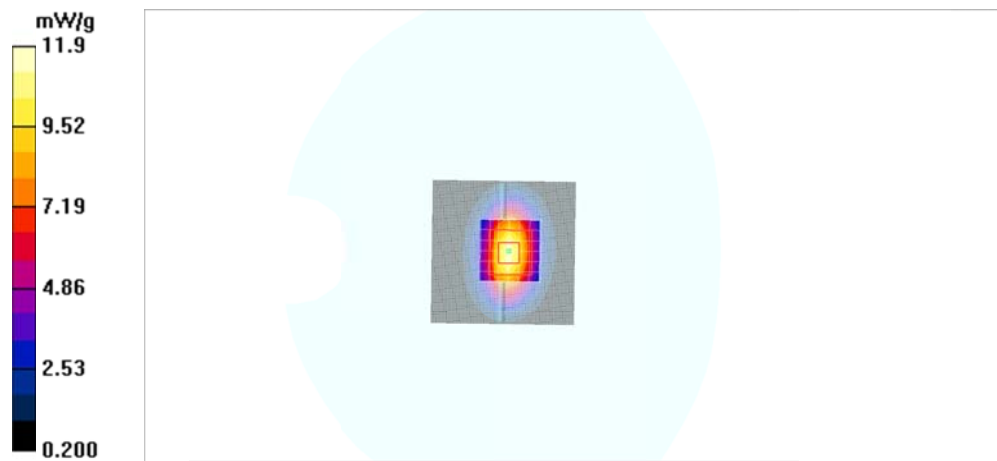
Peak SAR (extrapolated) = 18.0 W/kg

SAR(1 g) = 10.4 mW/g

SAR(10 g) = 5.45 mW/g

Power Drift = -0.039 dB

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



Date/Time: 2011-07-19 13:26:19

Test Laboratory: TCC Nokia
Type: D835V2; Serial: 4d005

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

SAR Report

FCC_RM-730_07

Applicant: Nokia Corporation

Type: RM-730

Copyright © 2011 TCC Nokia

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

Medium parameters used: $f = 835\text{ MHz}$; $\sigma = 0.966\text{ mho/m}$; $\epsilon_r = 53.7$; $\rho = 1000\text{ kg/m}^3$

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)
- 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

d=15mm, Pin=250mW/Area Scan (61x121x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 2.93 mW/g

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

Reference Value = 57.4 V/m

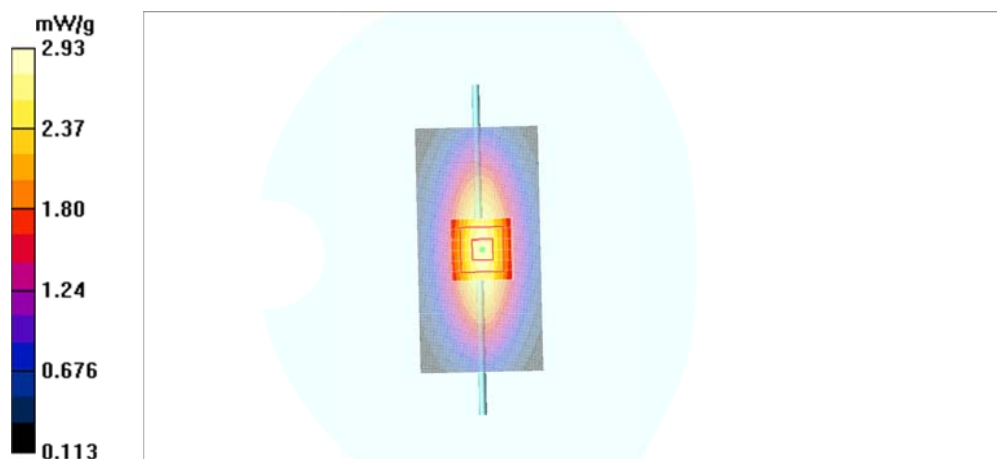
Peak SAR (extrapolated) = 3.88 W/kg

SAR(1 g) = 2.7 mW/g

SAR(10 g) = 1.78 mW/g

Power Drift = -0.024 dB

Maximum value of SAR (measured) = 2.92 mW/g



Date/Time: 2011-07-27 10:06:32

Test Laboratory: TCC Nokia
Type: D835V2; Serial: 4d005

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

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

Medium parameters used: $f = 835\text{ MHz}$; $\sigma = 0.966\text{ mho/m}$; $\epsilon_r = 53.9$; $\rho = 1000\text{ kg/m}^3$

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)
- 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

d=15mm, Pin=250mW/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 2.87 mW/g

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

Reference Value = 57.1 V/m

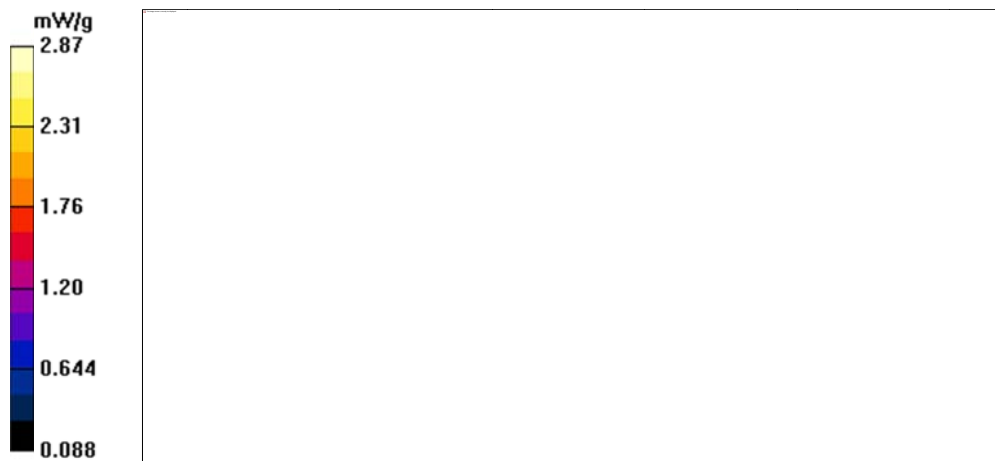
Peak SAR (extrapolated) = 3.80 W/kg

SAR(1 g) = 2.65 mW/g

SAR(10 g) = 1.75 mW/g

Power Drift = -0.008 dB

Maximum value of SAR (measured) = 2.87 mW/g



Date/Time: 2011-08-02 09:53:44

Test Laboratory: TCC Nokia
Type: D835V2; Serial: 4d005

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

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

Medium parameters used: $f = 835\text{ MHz}$; $\sigma = 0.962\text{ mho/m}$; $\epsilon_r = 53.6$; $\rho = 1000\text{ kg/m}^3$

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)
- 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

d=15mm, Pin=250mW/Area Scan (61x121x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 2.88 mW/g

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

Reference Value = 57.3 V/m

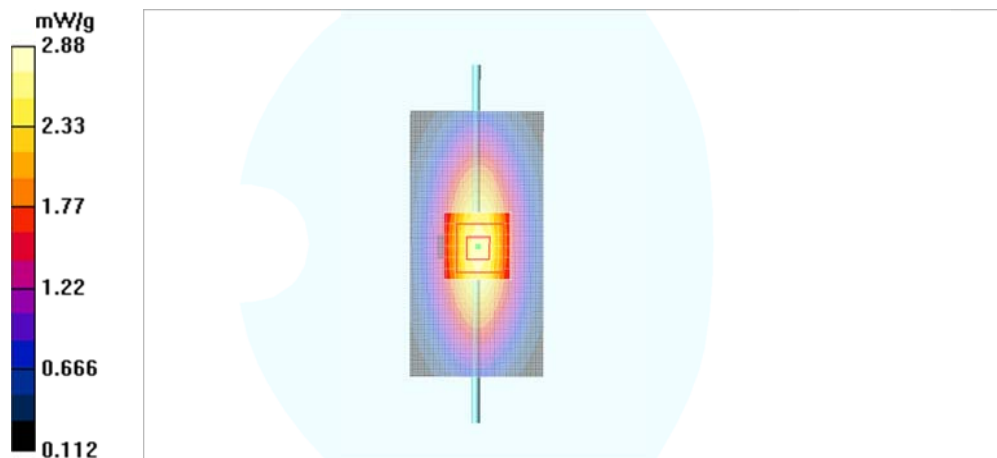
Peak SAR (extrapolated) = 3.82 W/kg

SAR(1 g) = 2.64 mW/g

SAR(10 g) = 1.73 mW/g

Power Drift = -0.079 dB

Maximum value of SAR (measured) = 2.87 mW/g



Date/Time: 2011-07-21 10:31:00

Test Laboratory: TCC Nokia
Type: D1900V2; Serial: 547

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

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

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.58$ mho/m; $\epsilon_r = 51.6$; $\rho = 1000$ 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

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

Maximum value of SAR (interpolated) = 11.8 mW/g

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

Reference Value = 91.3 V/m

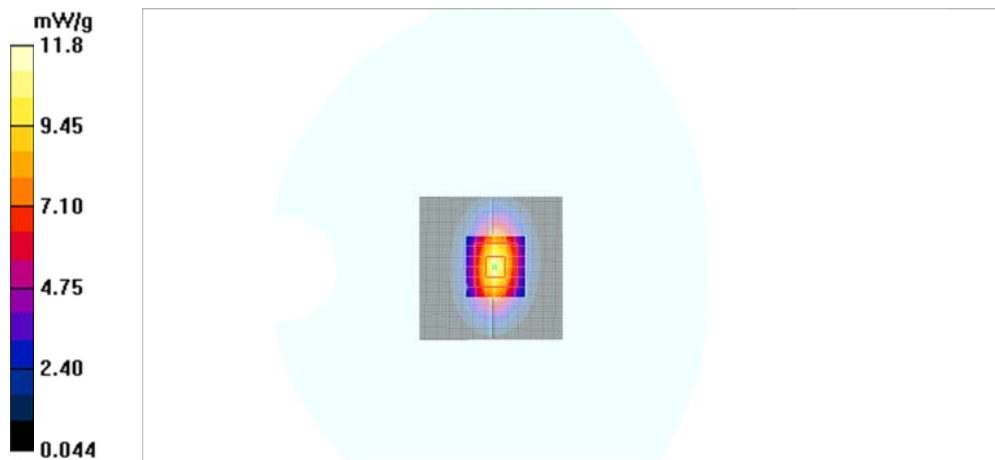
Peak SAR (extrapolated) = 16.4 W/kg

SAR(1 g) = 10.1 mW/g

SAR(10 g) = 5.4 mW/g

Power Drift = -0.009 dB

Maximum value of SAR (measured) = 11.5 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: $t = 22.0\text{ C}$

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

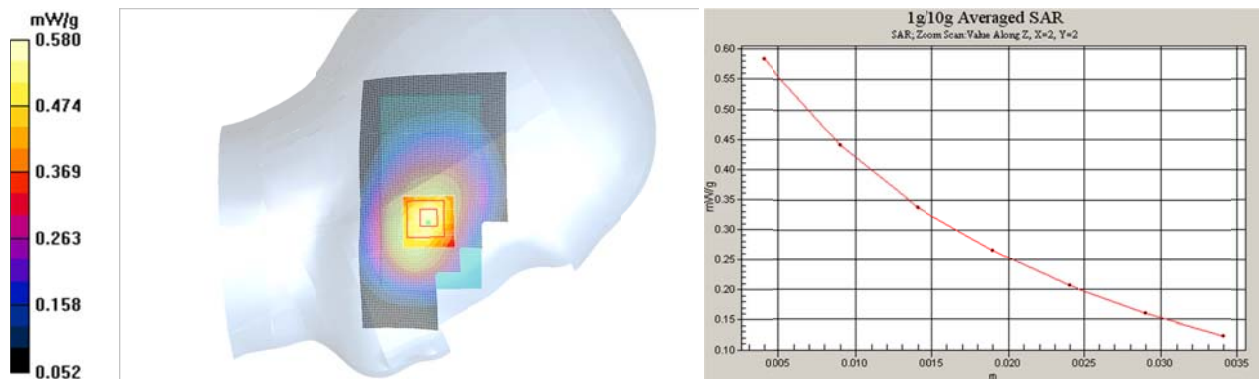
Peak SAR (extrapolated) = 0.722 W/kg

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; $\sigma = 1.47$ mho/m; $\epsilon_r = 39.1$; $\rho = 1000$ 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

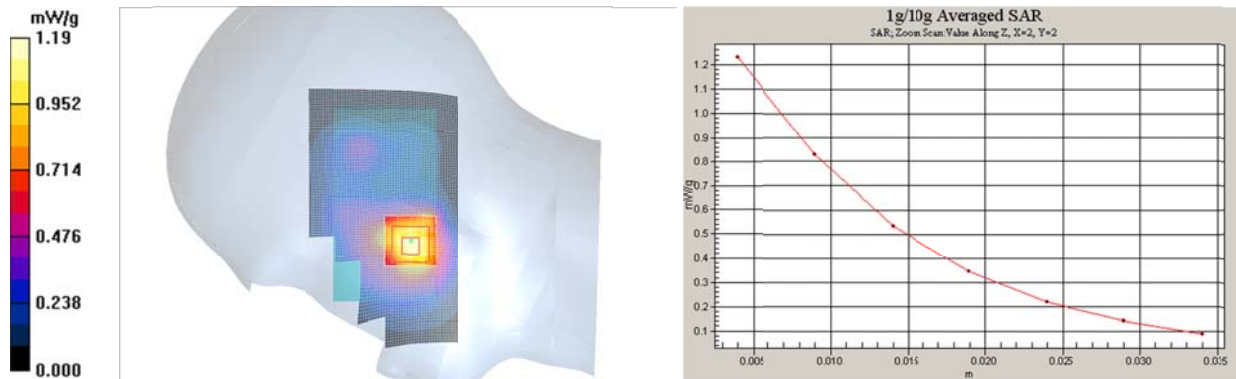
Peak SAR (extrapolated) = 1.57 W/kg

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



SAR Report

FCC_RM-730_07

Applicant: Nokia Corporation

Type: RM-730

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Date/Time: 2011-05-17 10:34:49

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/003943/0

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Head 2450; Medium Notes: Medium Temperature: 21.6 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.85$ mho/m; $\epsilon_r = 40.2$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3116; Probe Notes:
- ConvF(4.5, 4.5, 4.5); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2010-09-17
- Phantom: SAM 9; Type: Twin Phantom; Serial: TP-1408
- 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) = 0.144 mW/g

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

Reference Value = 6.92 V/m

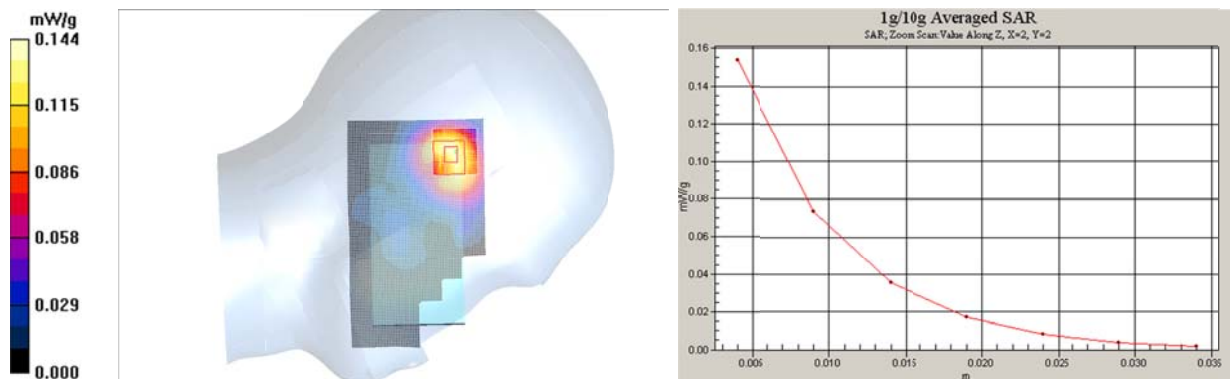
Peak SAR (extrapolated) = 0.290 W/kg

SAR(1 g) = 0.143 mW/g

SAR(10 g) = 0.077 mW/g

Power Drift = -0.449 dB

Maximum value of SAR (measured) = 0.154 mW/g



SAR Report

FCC_RM-730_07

Applicant: Nokia Corporation

Type: RM-730

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Date/Time: 2011-05-17 11:46:39

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/003943/0

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Head 2450; Medium Notes: Medium Temperature: 21.6 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.85$ mho/m; $\epsilon_r = 40.2$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3116; Probe Notes:
- ConvF(4.5, 4.5, 4.5); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2010-09-17
- Phantom: SAM 9; Type: Twin Phantom; Serial: TP-1408
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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

Maximum value of SAR (interpolated) = 0.157 mW/g

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

Reference Value = 7.18 V/m

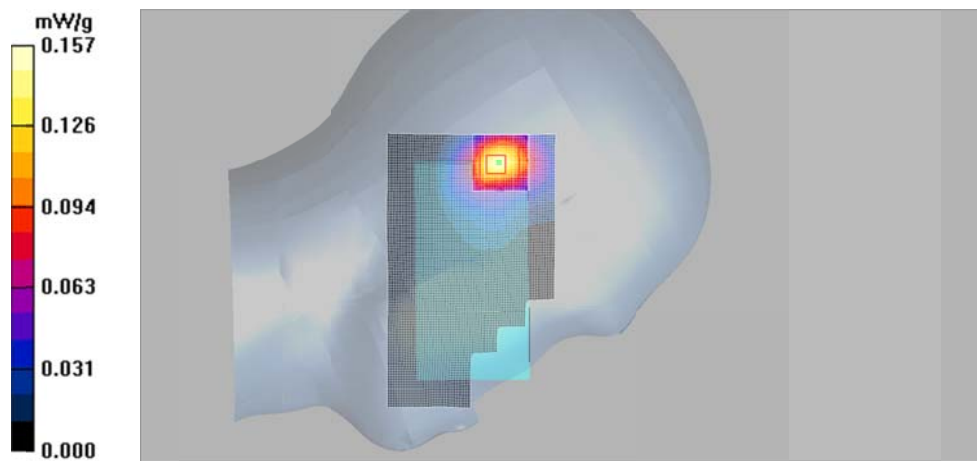
Peak SAR (extrapolated) = 0.301 W/kg

SAR(1 g) = 0.136 mW/g

SAR(10 g) = 0.065 mW/g

Power Drift = -0.484 dB

Maximum value of SAR (measured) = 0.154 mW/g



Date/Time: 2011-05-17 12:04:21

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/003943/0

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Head 2450; Medium Notes: Medium Temperature: 21.6 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.85$ mho/m; $\epsilon_r = 40.2$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3116; Probe Notes:
- ConvF(4.5, 4.5, 4.5); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2010-09-17
- Phantom: SAM 9; Type: Twin Phantom; Serial: TP-1408
- 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) = 0.112 mW/g

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

Reference Value = 6.36 V/m

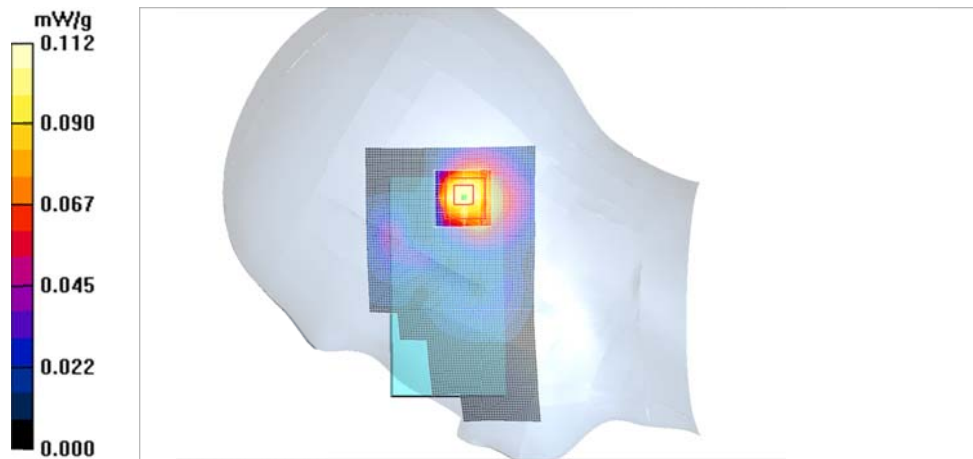
Peak SAR (extrapolated) = 0.197 W/kg

SAR(1 g) = 0.111 mW/g

SAR(10 g) = 0.060 mW/g

Power Drift = 0.062 dB

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



Date/Time: 2011-05-17 12:41:38

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/003943/0

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Head 2450; Medium Notes: Medium Temperature: 21.6 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.85$ mho/m; $\epsilon_r = 40.2$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3116; Probe Notes:
- ConvF(4.5, 4.5, 4.5); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2010-09-17
- Phantom: SAM 9; Type: Twin Phantom; Serial: TP-1408
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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

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

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

Reference Value = 6.53 V/m

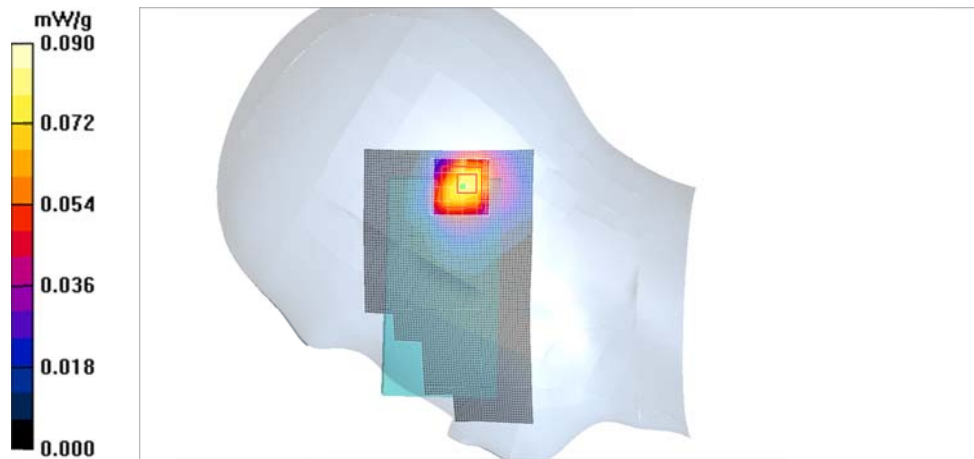
Peak SAR (extrapolated) = 0.163 W/kg

SAR(1 g) = 0.080 mW/g

SAR(10 g) = 0.042 mW/g

Power Drift = -0.367 dB

Maximum value of SAR (measured) = 0.086 mW/g



Date/Time: 2011-05-18 09:46:11

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/003943/0

Communication System: WLAN2450 n-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Head 2450; Medium Notes: Medium Temperature: 21.6 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.85$ mho/m; $\epsilon_r = 39.9$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3116; Probe Notes:
- ConvF(4.5, 4.5, 4.5); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2010-09-17
- Phantom: SAM 9; Type: Twin Phantom; Serial: TP-1408
- 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) = 0.130 mW/g

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

Reference Value = 6.37 V/m

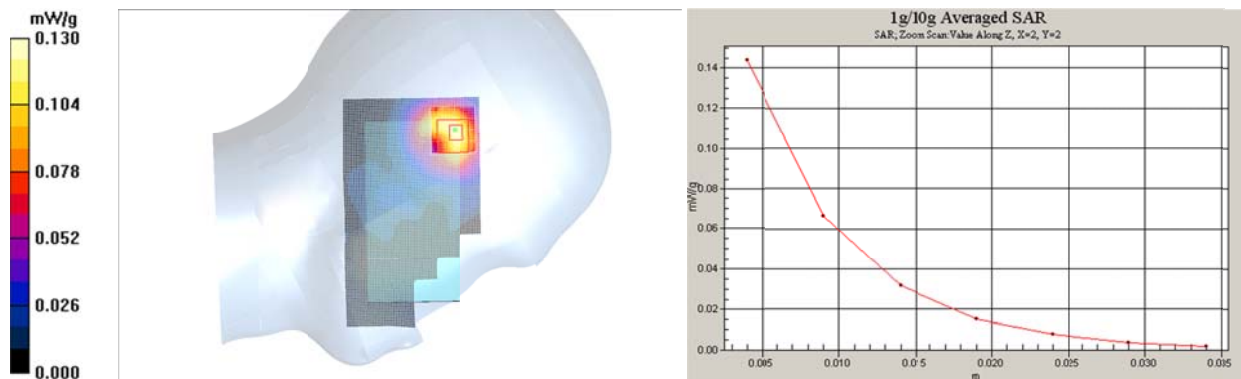
Peak SAR (extrapolated) = 0.261 W/kg

SAR(1 g) = 0.129 mW/g

SAR(10 g) = 0.066 mW/g

Power Drift = -0.271 dB

Maximum value of SAR (measured) = 0.144 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

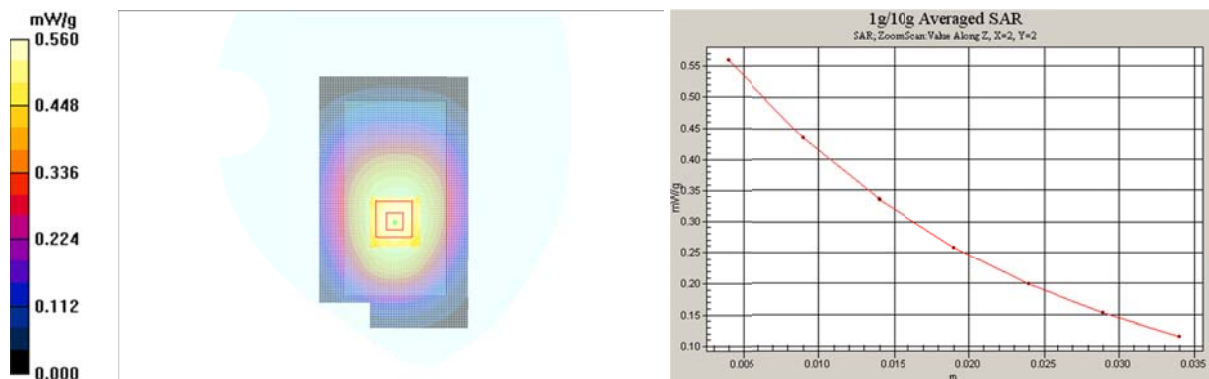
Peak SAR (extrapolated) = 0.658 W/kg

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



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; $\sigma = 1.56$ mho/m; $\epsilon_r = 51.6$; $\rho = 1000$ 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 - 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

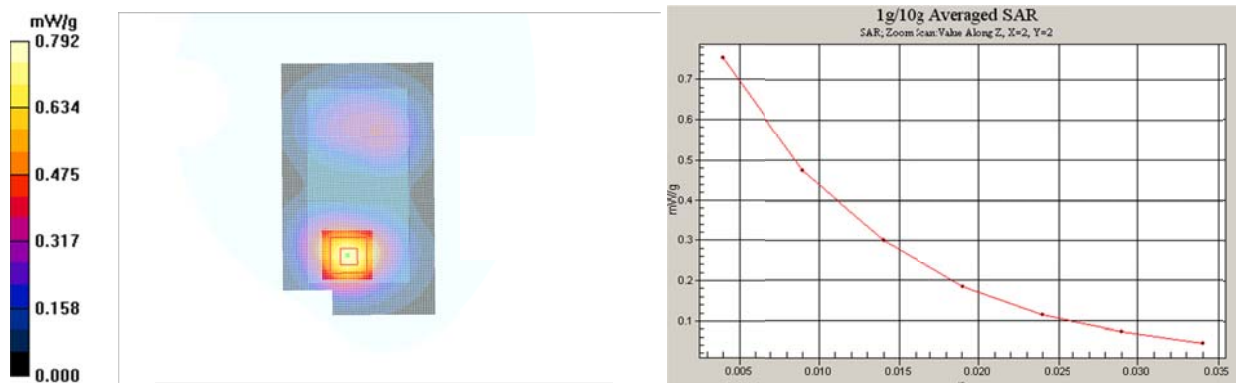
Peak SAR (extrapolated) = 1.08 W/kg

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



SAR Report

FCC_RM-730_07

Applicant: Nokia Corporation

Type: RM-730

Copyright © 2011 TCC Nokia

Date/Time: 2011-05-18 12:22:25

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/003943/0

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: 21.8 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.95$ mho/m; $\epsilon_r = 50.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3116; Probe Notes:
- ConvF(4.29, 4.29, 4.29); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2010-09-17
- Phantom: SAM 8; Type: SAM Twin Phantom; Serial: TP-1328
- 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=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.030 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 = 2.48 V/m

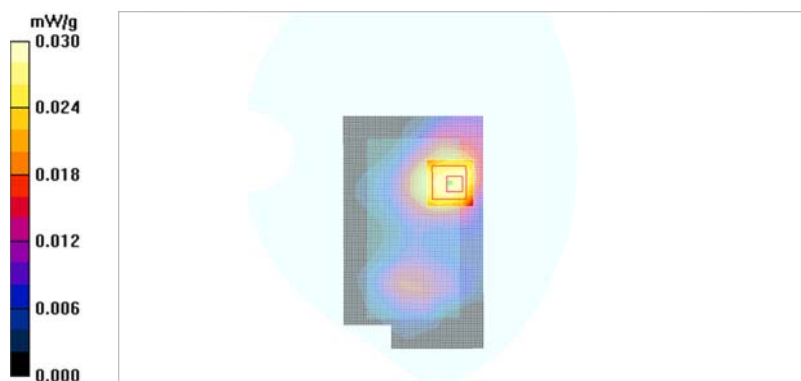
Peak SAR (extrapolated) = 0.050 W/kg

SAR(1 g) = 0.029 mW/g

SAR(10 g) = 0.017 mW/g

Power Drift = -0.232 dB

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



Date/Time: 2011-05-18 12:41:51

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/003943/0

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: 21.8 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.95$ mho/m; $\epsilon_r = 50.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3116; Probe Notes:
- ConvF(4.29, 4.29, 4.29); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2010-09-17
- Phantom: SAM 8; Type: SAM Twin Phantom; Serial: TP-1328
- 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) = 0.032 mW/g

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

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

Reference Value = 2.53 V/m

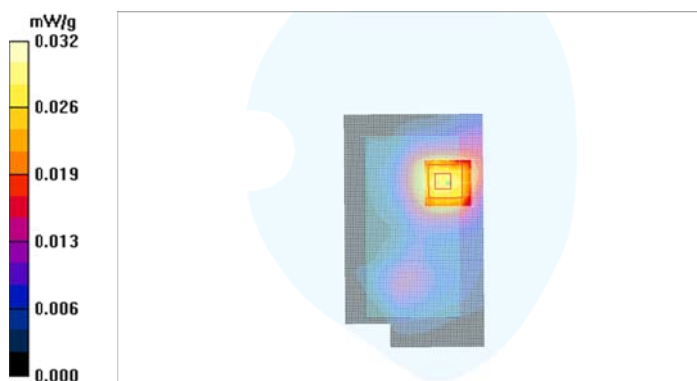
Peak SAR (extrapolated) = 0.049 W/kg

SAR(1 g) = 0.028 mW/g

SAR(10 g) = 0.017 mW/g

Power Drift = 0.435 dB

Maximum value of SAR (measured) = 0.030 mW/g



Date/Time: 2011-05-18 13:02:00

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/003943/0

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: 21.8 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.95$ mho/m; $\epsilon_r = 50.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3116; Probe Notes:
- ConvF(4.29, 4.29, 4.29); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2010-09-17
- Phantom: SAM 8; Type: SAM Twin Phantom; Serial: TP-1328
- 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) = 0.021 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 = 1.94 V/m

Peak SAR (extrapolated) = 0.034 W/kg

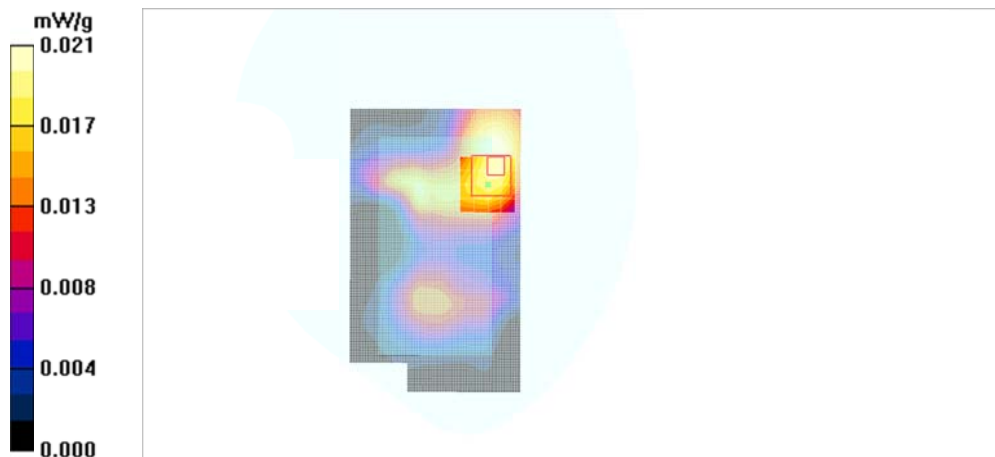
SAR(1 g) = 0.019 mW/g

SAR(10 g) = 0.011 mW/g

Power Drift = 0.050 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) = 0.021 mW/g



Date/Time: 2011-05-18 13:19:55

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/003943/0

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: 21.8 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.95$ mho/m; $\epsilon_r = 50.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3116; Probe Notes:
- ConvF(4.29, 4.29, 4.29); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2010-09-17
- Phantom: SAM 8; Type: SAM Twin Phantom; Serial: TP-1328
- 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) = 0.050 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 = 4.52 V/m

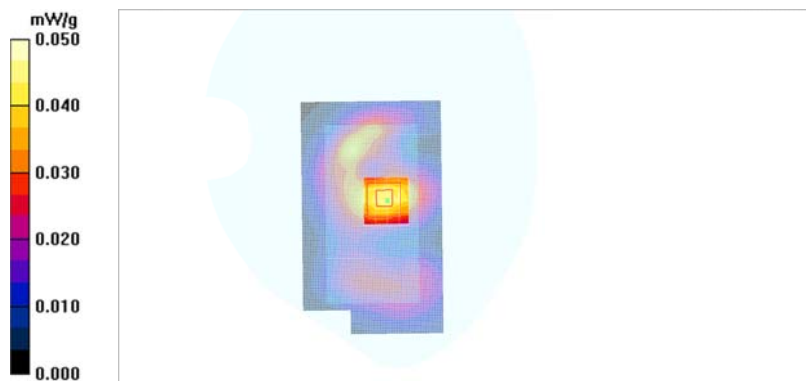
Peak SAR (extrapolated) = 0.077 W/kg

SAR(1 g) = 0.044 mW/g

SAR(10 g) = 0.025 mW/g

Power Drift = 0.471 dB

Maximum value of SAR (measured) = 0.047 mW/g



Date/Time: 2011-05-18 13:35:20

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/003943/0

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: 21.8 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.95$ mho/m; $\epsilon_r = 50.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3116; Probe Notes:
- ConvF(4.29, 4.29, 4.29); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2010-09-17
- Phantom: SAM 8; Type: SAM Twin Phantom; Serial: TP-1328
- 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) = 0.056 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 = 5.40 V/m

Peak SAR (extrapolated) = 0.097 W/kg

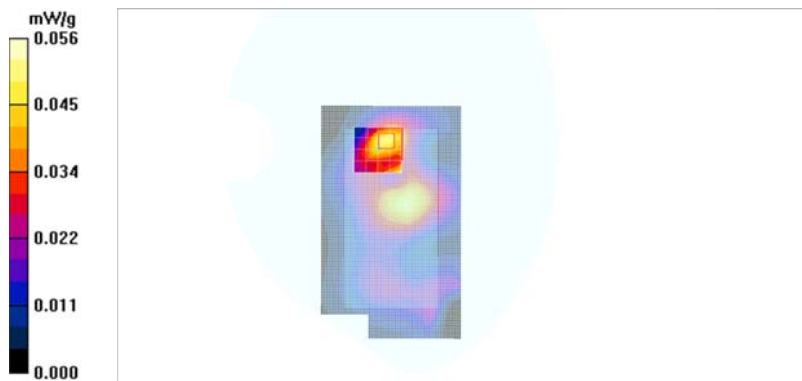
SAR(1 g) = 0.048 mW/g

SAR(10 g) = 0.024 mW/g

Power Drift = -0.248 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) = 0.052 mW/g



Date/Time: 2011-05-18 14:10:33

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/003943/0

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: 21.8 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.95$ mho/m; $\epsilon_r = 50.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3116; Probe Notes:
- ConvF(4.29, 4.29, 4.29); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2010-09-17
- Phantom: SAM 8; Type: SAM Twin Phantom; Serial: TP-1328
- 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) = 0.074 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 = 6.43 V/m

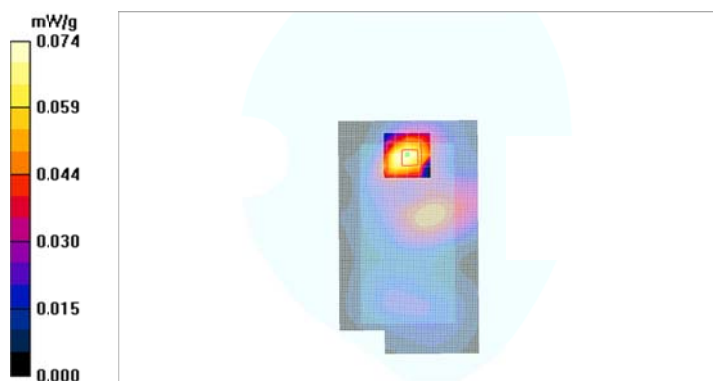
Peak SAR (extrapolated) = 0.168 W/kg

SAR(1 g) = 0.077 mW/g

SAR(10 g) = 0.038 mW/g

Power Drift = -0.423 dB

Maximum value of SAR (measured) = 0.079 mW/g



Date/Time: 2011-05-18 16:03:33

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/003943/0

Communication System: WLAN2450 n-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: 21.8 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.95$ mho/m; $\epsilon_r = 50.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3116; Probe Notes:
- ConvF(4.29, 4.29, 4.29); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2010-09-17
- Phantom: SAM 8; Type: SAM Twin Phantom; Serial: TP-1328
- 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) = 0.073 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 = 6.29 V/m

Peak SAR (extrapolated) = 0.147 W/kg

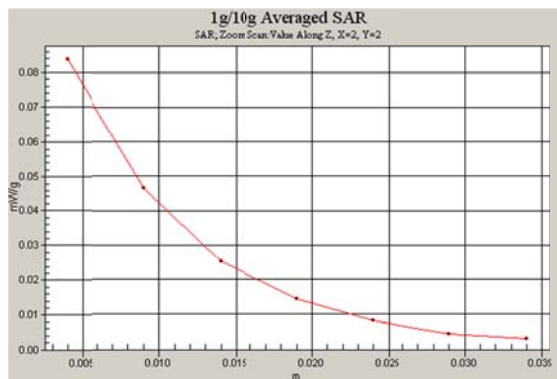
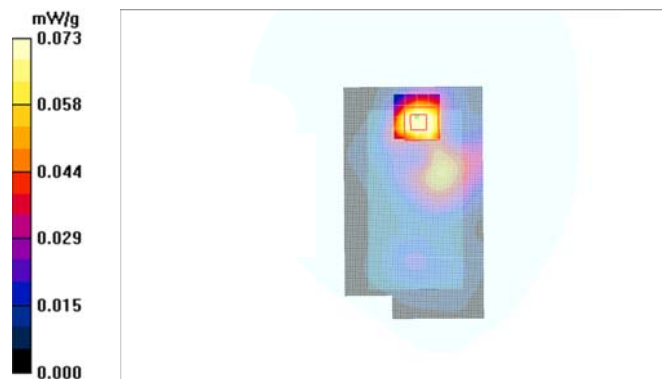
SAR(1 g) = 0.078 mW/g

SAR(10 g) = 0.041 mW/g

Power Drift = -0.155 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) = 0.084 mW/g



Date/Time: 2011-7-19 11:34:03, Date/Time: 2011-5-17 10:34:49

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/010536/3, Serial: 008600/08/003943/0

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: 21.6 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; $\sigma = 1.85$ mho/m; $\epsilon_r = 40.2$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1652, Probe: ES3DV3 - SN3116
- ConvF(6.04, 6.04, 6.04), ConvF(4.5, 4.5, 4.5); Calibrated: 2010-10-21, Calibrated: 2011-2-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn480, Electronics: DAE4 Sn710; Calibrated: 2010-10-25, Calibrated: 2010-9-17
- Phantom: SAM1, Phantom: SAM 9; Type: SAM, Type: Twin Phantom; Serial: TP - 01097, Serial: TP-1408
- ; SEMCAD X Version 14.0 Build 61

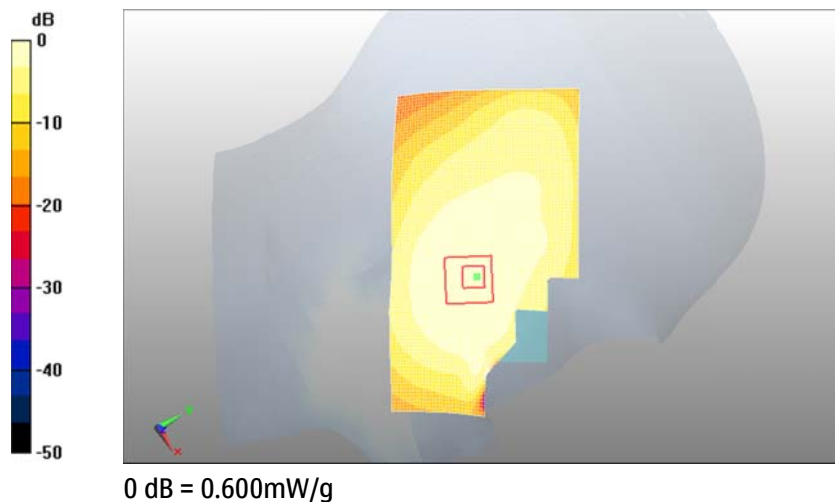
Configuration/Cheek - High/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

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

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.557 mW/g

SAR(10 g) = 0.383 mW/g

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



Date/Time: 2011-7-21 15:58:53, Date/Time: 2011-5-17 12:04:21

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/010536/3, Serial: 008600/08/003943/0

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: 21.6 C

Medium parameters used: $f = 1910 \text{ MHz}$; $\sigma = 1.47 \text{ mho/m}$; $\epsilon_r = 39.1$; $\rho = 1000 \text{ kg/m}^3$, Medium parameters used:

$f = 2442 \text{ MHz}$; $\sigma = 1.85 \text{ mho/m}$; $\epsilon_r = 40.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1652, Probe: ES3DV3 - SN3116

- ConvF(4.91, 4.91, 4.91), ConvF(4.5, 4.5, 4.5); Calibrated: 2010-10-21, Calibrated: 2011-2-17

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

- Electronics: DAE4 Sn480, Electronics: DAE4 Sn710; Calibrated: 2010-10-25, Calibrated: 2010-9-17

- Phantom: SAM4, Phantom: SAM 9; Type: SAM, Type: Twin Phantom; Serial: TP - 1427, Serial: TP-1408

- ; SEMCAD X Version 14.0 Build 61

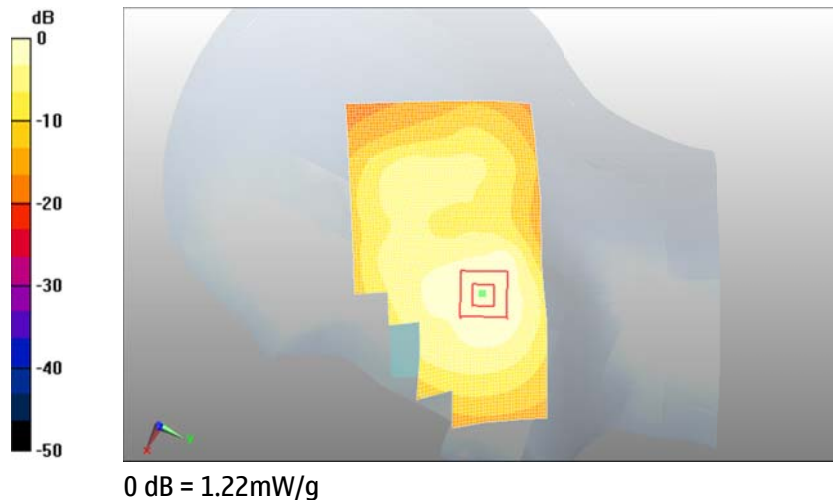
Configuration/Cheek - High/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

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

Motorola Fast SAR of Combined Scans: SAR(1 g) = 1.11 mW/g

SAR(10 g) = 0.640 mW/g

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



Date/Time: 2011-7-27 10:57:16, Date/Time: 2011-5-18 12:22:25

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/010536/3, Serial: 008600/08/003943/0

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: 21.8 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: $f = 2442\text{ MHz}$; $\sigma = 1.95\text{ mho/m}$; $\epsilon_r = 50.2$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

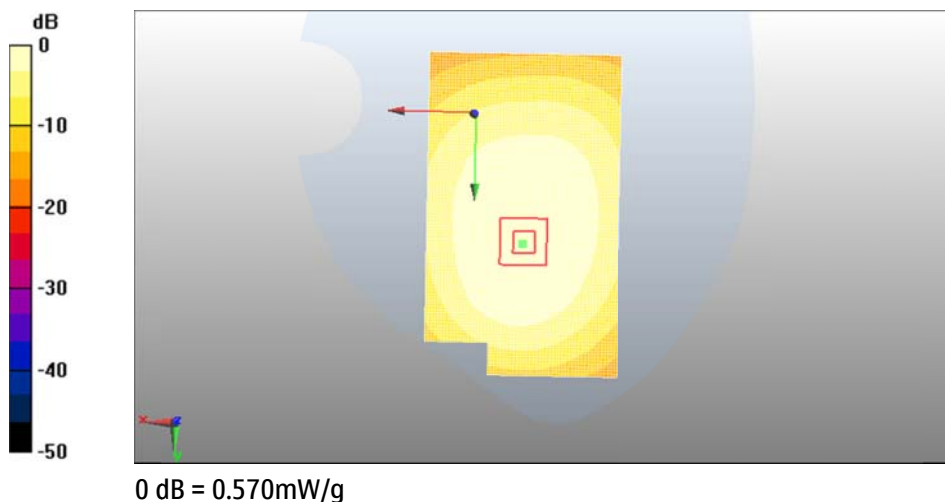
- Probe: ET3DV6 - SN1652, Probe: ES3DV3 - SN3116
- ConvF(5.9, 5.9, 5.9), ConvF(4.29, 4.29, 4.29); Calibrated: 2010-10-21, Calibrated: 2011-2-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn480, Electronics: DAE4 Sn710; Calibrated: 2010-10-25, Calibrated: 2010-9-17
- Phantom: SAM2, Phantom: SAM 8; Type: SAM, Type: SAM Twin Phantom; Serial: TP - 1508, Serial: TP-1328
- ; 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) = 0.538 mW/g
SAR(10 g) = 0.383 mW/g

Maximum value of SAR (measured) = 0.570 mW/g



Date/Time: 2011-7-21 11:00:35, Date/Time: 2011-5-18 13:35:20

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/010536/3, Serial: 008600/08/003943/0

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: 21.8 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; $\sigma = 1.95$ mho/m; $\epsilon_r = 50.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1652, Probe: ES3DV3 - SN3116

- ConvF(4.33, 4.33, 4.33), ConvF(4.29, 4.29, 4.29); Calibrated: 2010-10-21, Calibrated: 2011-2-17

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

- Electronics: DAE4 Sn480, Electronics: DAE4 Sn710; Calibrated: 2010-10-25, Calibrated: 2010-9-17

- Phantom: SAM3, Phantom: SAM 8; Type: SAM, Type: SAM Twin Phantom; Serial: TP-1427, Serial: TP-1328

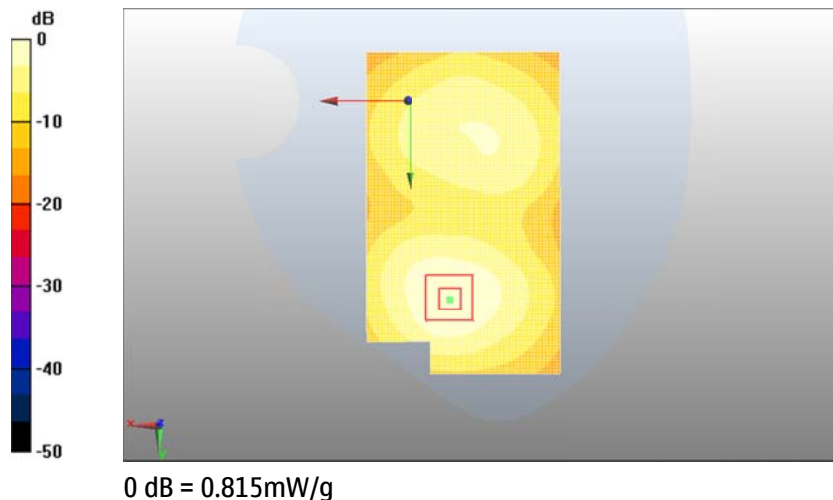
-; SEMCAD X Version 14.0 Build 61

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) = 0.744 mW/g
SAR(10 g) = 0.429 mW/g

Maximum value of SAR (measured) = 0.815 mW/g



APPENDIX C: 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 Beijing TCC**

Certificate No: **ET3-1652_Oct10**

CALIBRATION CERTIFICATE

Object **ET3DV6 - SN:1652**

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 21, 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 $(22 \pm 3)^\circ\text{C}$ and humidity $< 70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter 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** **Laboratory Technician**

Signature

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

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: ET3DV6 SN:1652

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V/m})^2$) ^A	2.00	2.06	2.00	± 10.1%
DCP (mV) ^B	91.7	93.3	92.5	

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	300.0	± 1.5%
			Y	0.00	0.00	1.00	300.0	
			Z	0.00	0.00	1.00	300.0	

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: ET3DV6 SN:1652

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%	6.04	6.04	6.04	0.52	2.09 ± 11.0%
1750	± 50 / ± 100	40.1 ± 5%	1.37 ± 5%	5.15	5.15	5.15	0.54	2.71 ± 11.0%
1900	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	4.91	4.91	4.91	0.69	2.30 ± 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.

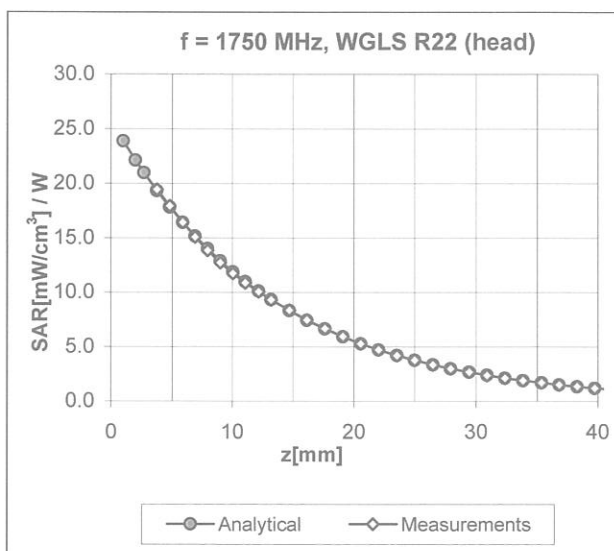
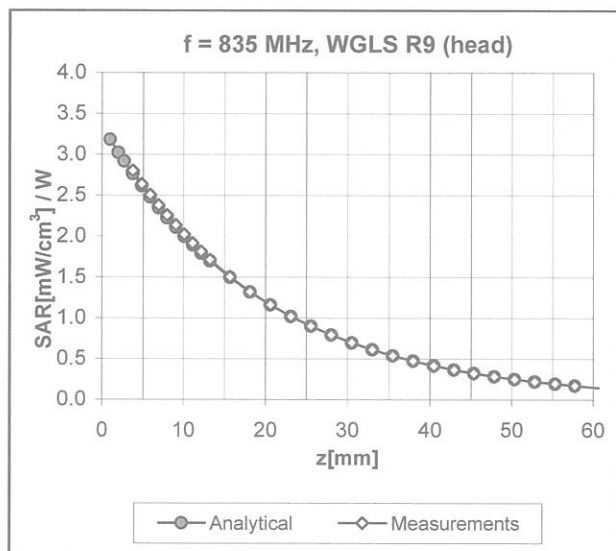
DASY/EASY - Parameters of Probe: ET3DV6 SN:1652

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	0.50	2.25 ± 11.0%
1750	± 50 / ± 100	53.4 ± 5%	1.49 ± 5%	4.57	4.57	4.57	0.65	2.93 ± 11.0%
1900	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	4.33	4.33	4.33	0.93	2.28 ± 11.0%

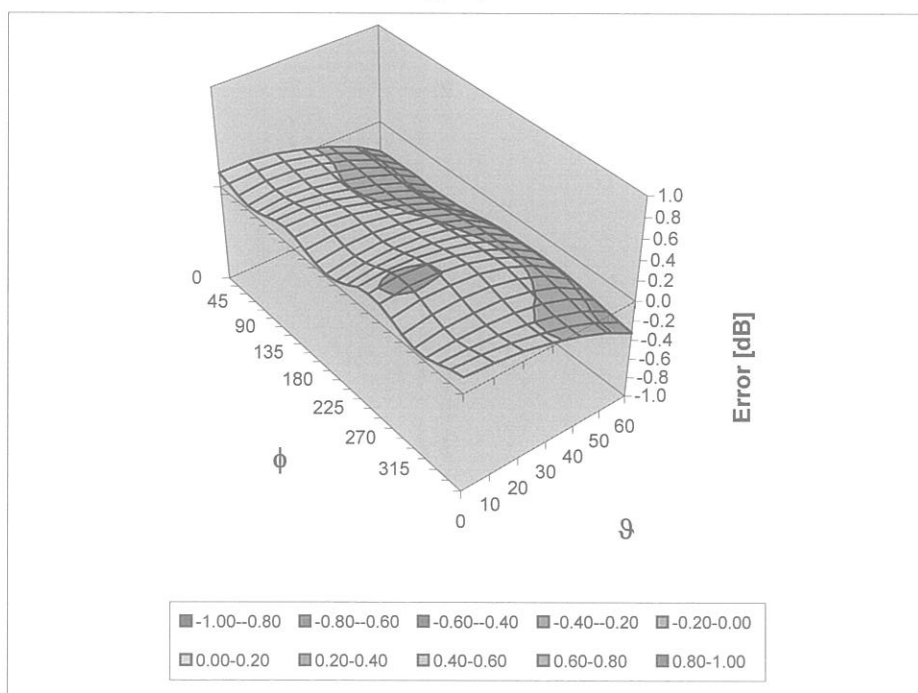
^c The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

Conversion Factor Assessment



Deviation from Isotropy in HSL

Error (ϕ , ϑ), f = 900 MHz



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

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: **D835V2-4d005_Mar10**

CALIBRATION CERTIFICATE

Object **D835V2 - SN: 4d005**

Calibration procedure(s) **QA CAL-05.v7**
Calibration procedure for dipole validation kits

Calibration date: **March 15, 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

	Name	Function	Signature
Calibrated by:	Dimce Iliev	Laboratory Technician	

Approved by:	Katja Pokovic	Technical Manager
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Issued: March 15, 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: 08.03.2010 10:09:46

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d005

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL900

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.91 \text{ mho/m}$; $\epsilon_r = 42.9$; $\rho = 1000 \text{ kg/m}^3$

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: 02.03.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

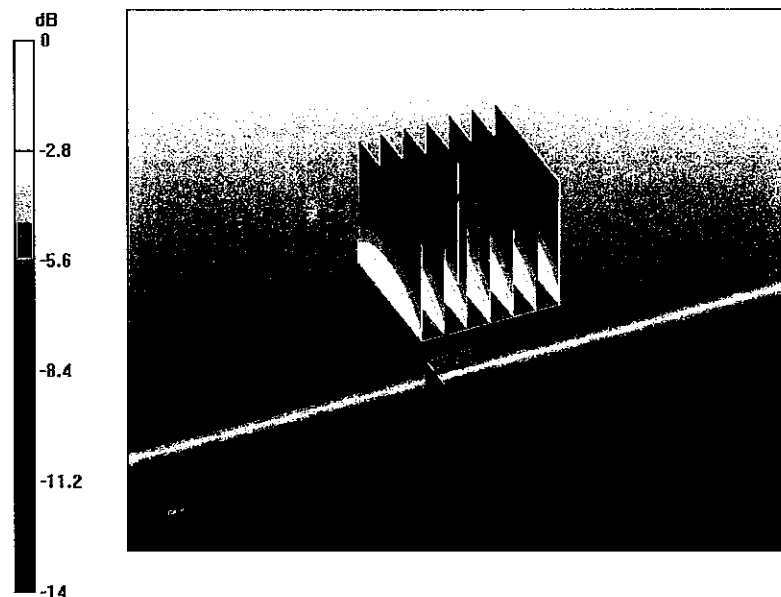
Pin=250 mW /d=15mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 57.1 V/m; Power Drift = 0.033 dB

Peak SAR (extrapolated) = 3.61 W/kg

SAR(1 g) = 2.41 mW/g; SAR(10 g) = 1.57 mW/g

Maximum value of SAR (measured) = 2.81 mW/g



0 dB = 2.81mW/g

DASY5 Validation Report for Body

Date/Time: 15.03.2010 10:35:39

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d005

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: MSL900

Medium parameters used: $f = 835$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 55.3$; $\rho = 1000$ kg/m³

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: 02.03.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

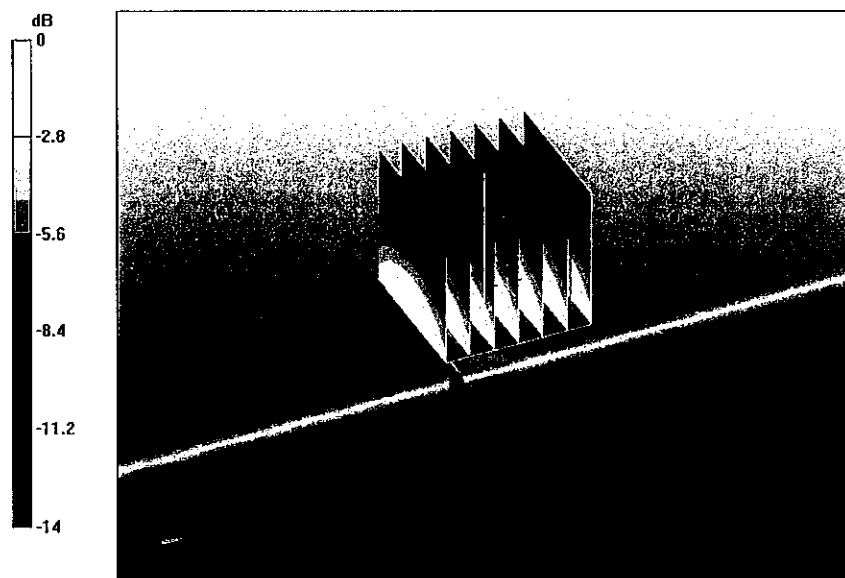
Pin250 mW /d=15mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 56 V/m; Power Drift = 0.021 dB

Peak SAR (extrapolated) = 3.78 W/kg

SAR(1 g) = 2.56 mW/g; SAR(10 g) = 1.67 mW/g

Maximum value of SAR (measured) = 2.99 mW/g



0 dB = 2.99mW/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 Beijing TCC**

Certificate No: **D1900V2-547-Sep09**

CALIBRATION CERTIFICATE

Object **D1900V2 - SN: 547**

Calibration procedure(s) **QA CAL-05.v7**
Calibration procedure for dipole validation kits

Calibration date: **September 15, 2009**

Condition of the calibrated item **In Tolerance**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	08-Oct-08 (No. 217-00898)	Oct-09
Power sensor HP 8481A	US37292783	08-Oct-08 (No. 217-00898)	Oct-09
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-07)	In house check: Oct-09
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-08)	In house check: Oct-09

Calibrated by: **Name** Jeton Kastrati **Function** Laboratory Technician

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

Signature

Issued: September 18, 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: 08.09.2009 12:19:44

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:547

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; $\epsilon_r = 40.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC)

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: 07.03.2009
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY 5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Pin = 250 mW; dip = 10 mm/Zoom Scan (dist=3.0 mm, probe 0deg) (7x7x7)/Cube 0:

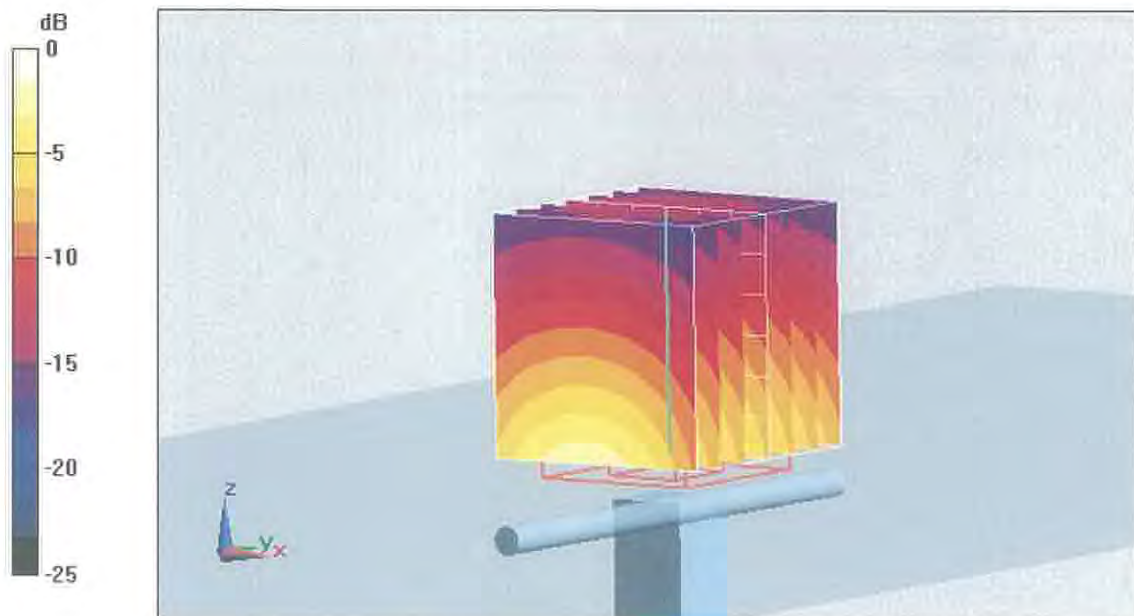
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 97.7 V/m; Power Drift = 0.017 dB

Peak SAR (extrapolated) = 19.1 W/kg

SAR(1 g) = 10.4 mW/g; SAR(10 g) = 5.41 mW/g

Maximum value of SAR (measured) = 13 mW/g



0 dB = 13mW/g

DASY5 Validation Report for Body TSL

Date/Time: 15.09.2009 12:45:32

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:547

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

Medium: MSL U10 BB

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.57$ mho/m; $\epsilon_r = 53.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC)

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: 07.03.2009
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY 5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Pin = 250 mW; dip = 10 mm/Zoom Scan (dist=3.0mm, probe 0deg) (7x7x7)/Cube 0:

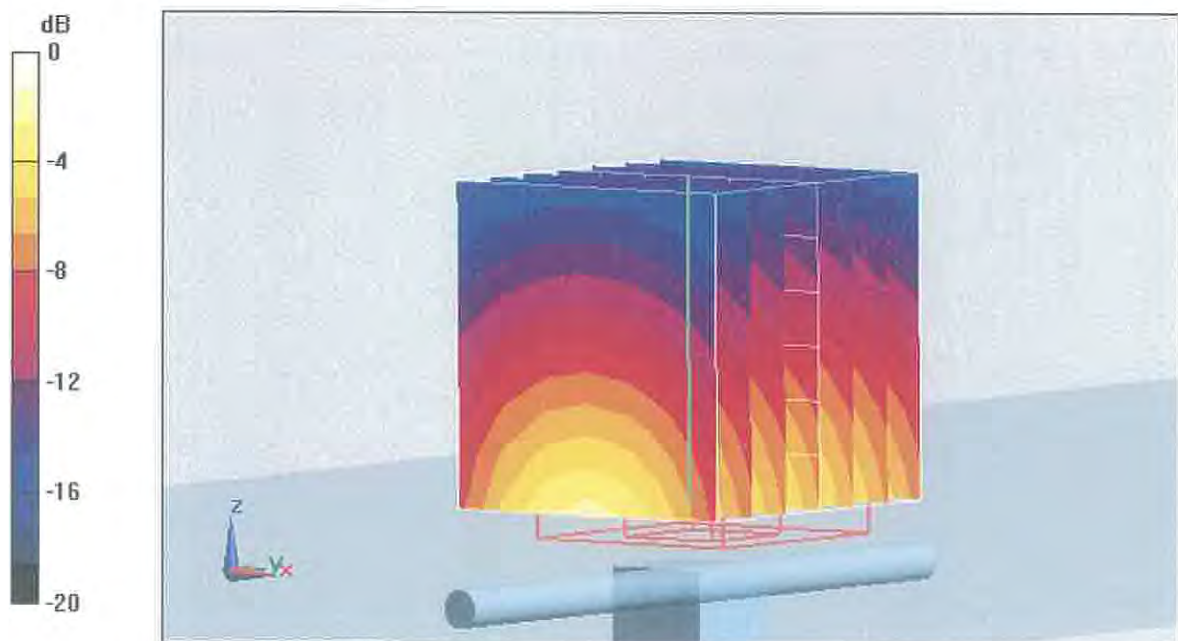
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 95.7 V/m; Power Drift = 0.00524 dB

Peak SAR (extrapolated) = 17.6 W/kg

SAR(1 g) = 10.2 mW/g; SAR(10 g) = 5.34 mW/g

Maximum value of SAR (measured) = 12.9 mW/g



0 dB = 12.9mW/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	-	0.058	-
	Back facing phantom	0.084	0.138	0.043
	Top edge facing phantom	-	0.080	-
	Bottom edge facing phantom	-	0.008	-
	Left edge facing phantom	-	0.019	-
	Right edge facing phantom	-	0.081	-
WLAN n-mode	Conducted Power	12.4 dBm	15.4 dBm	12.4 dBm
	Display facing phantom	-	-	-
	Back facing phantom	0.036	0.087	0.032
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-

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	0.138	0.815	1.48
Top edge facing phantom	-	-	-
Bottom edge facing phantom	-	-	-
Left edge facing phantom	0.019	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	0.953	1.62
Top edge facing phantom	-	-
Bottom edge facing phantom	-	-
Left edge facing phantom	0.733	-
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	0.871	1.56
Top edge facing phantom	-	-
Bottom edge facing phantom	-	-
Left edge facing phantom	-	-
Right edge facing phantom	-	-

** SAR values taken from FCC_RM-730_03.

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**	7 / 2442.0	15.4 dBm	1.0 cm	0.138 W/kg	1.6 W/kg	PASSED
2-slot GPRS 850 + WLAN2450	-	-	1.0 cm	0.871 W/kg	1.6 W/kg	PASSED
2-slot GPRS 1900 + WLAN2450	-	-	1.0 cm	1.56 W/kg	1.6 W/kg	PASSED

** SAR values duplicated from FCC_RM-730_03.

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 C

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

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=15mm, dy=15mm

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

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

Reference Value = 12.8 V/m

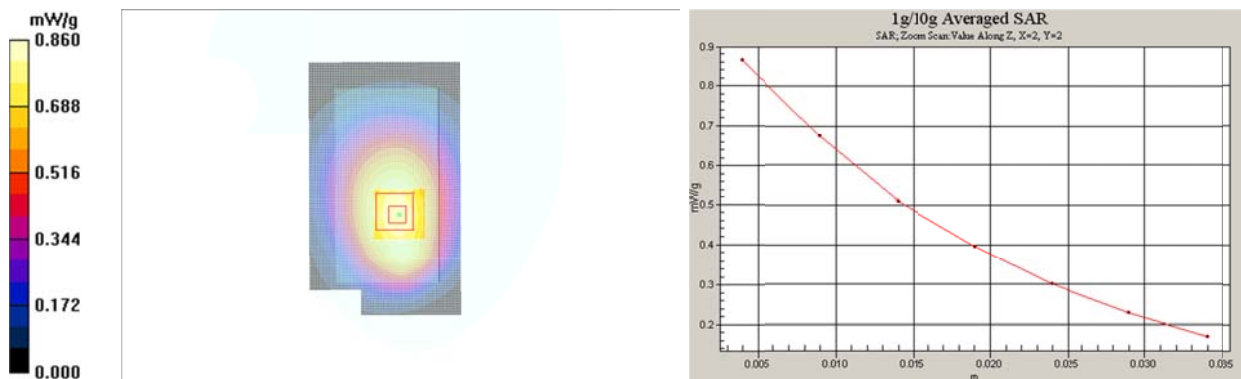
Peak SAR (extrapolated) = 1.01 W/kg

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 C

Medium parameters used: f = 849 MHz; σ = 0.981 mho/m; ϵ_r = 53.5; ρ = 1000 kg/m³

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=15mm, dy=15mm

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

Reference Value = 14.4 V/m

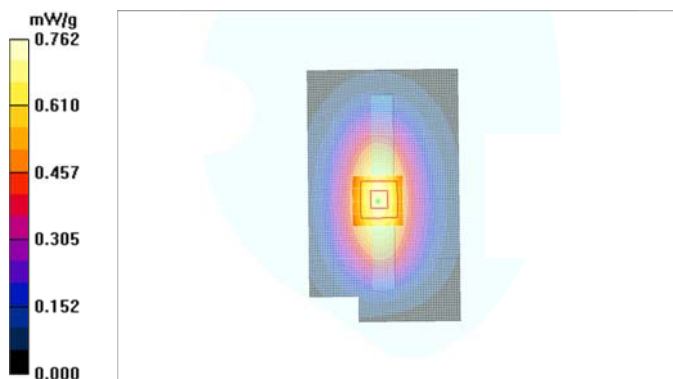
Peak SAR (extrapolated) = 0.992 W/kg

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

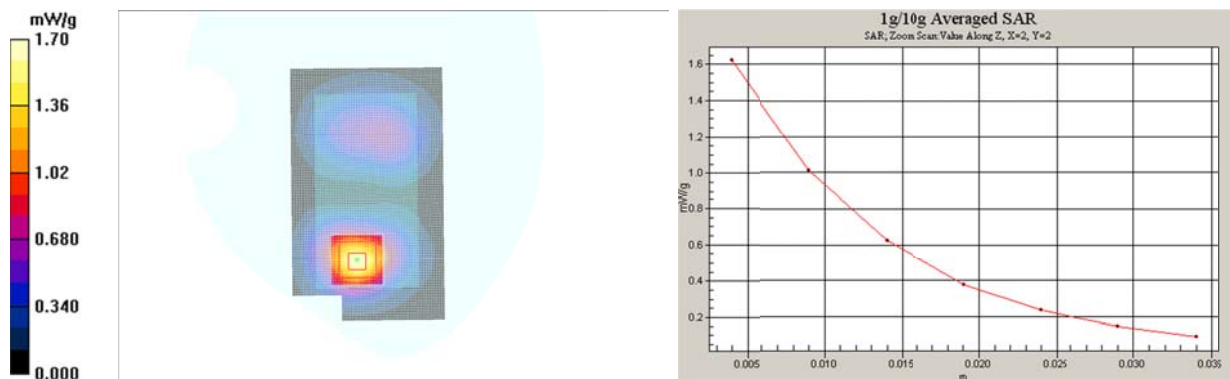
Peak SAR (extrapolated) = 2.35 W/kg

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: 2011-05-24 10:54:57

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/003943/0

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: 21.6 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.95$ mho/m; $\epsilon_r = 50.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3117; Probe Notes:
- ConvF(4.12, 4.12, 4.12); Calibrated: 2010-07-19
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn501; Calibrated: 2011-02-18
- Phantom: SAM 8; Type: SAM Twin Phantom; Serial: TP-1328
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body - Middle - No Accessory - Display Facing Phantom 2/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.069 mW/g

Body - Middle - No Accessory - Display Facing Phantom 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 3.61 V/m

Peak SAR (extrapolated) = 0.099 W/kg

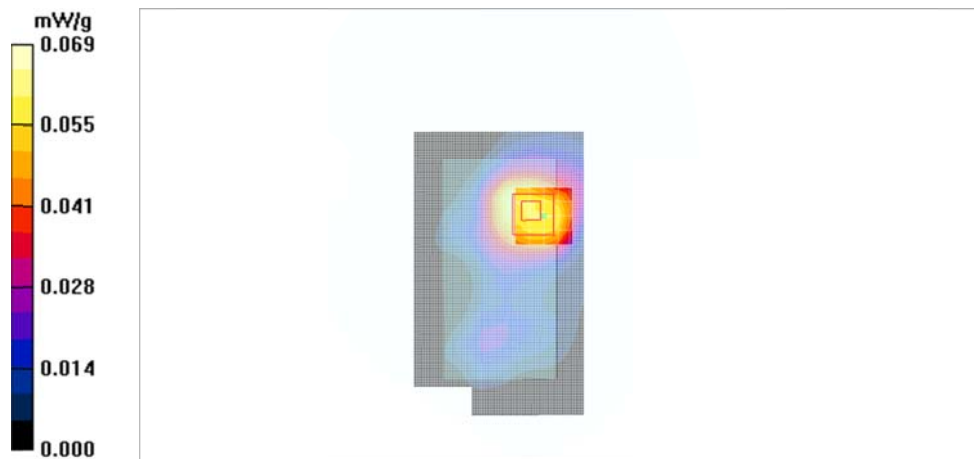
SAR(1 g) = 0.058 mW/g

SAR(10 g) = 0.036 mW/g

Power Drift = -0.137 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) = 0.061 mW/g



Date/Time: 2011-05-24 11:34:07

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/003943/0

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: 21.6 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.95$ mho/m; $\epsilon_r = 50.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3117; Probe Notes:
- ConvF(4.12, 4.12, 4.12); Calibrated: 2010-07-19
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn501; Calibrated: 2011-02-18
- Phantom: SAM 8; Type: SAM Twin Phantom; Serial: TP-1328
- 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) = 0.158 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 = 6.80 V/m

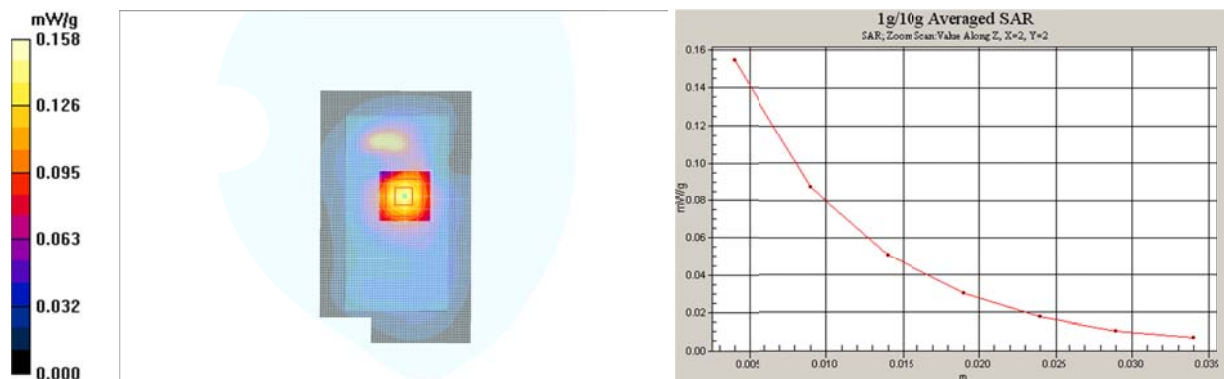
Peak SAR (extrapolated) = 0.248 W/kg

SAR(1 g) = 0.138 mW/g

SAR(10 g) = 0.076 mW/g

Power Drift = 0.075 dB

Maximum value of SAR (measured) = 0.154 mW/g



Date/Time: 2011-05-24 11:55:40

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/003943/0

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: 21.6 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.95$ mho/m; $\epsilon_r = 50.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3117; Probe Notes:
- ConvF(4.12, 4.12, 4.12); Calibrated: 2010-07-19
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn501; Calibrated: 2011-02-18
- Phantom: SAM 8; Type: SAM Twin Phantom; Serial: TP-1328
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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

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

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

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

Reference Value = 2.51 V/m

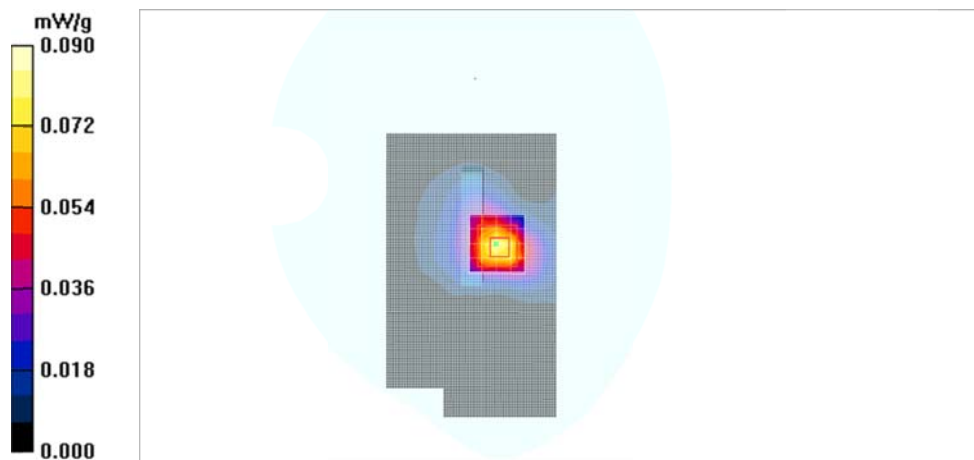
Peak SAR (extrapolated) = 0.169 W/kg

SAR(1 g) = 0.080 mW/g

SAR(10 g) = 0.039 mW/g

Power Drift = -0.099 dB

Maximum value of SAR (measured) = 0.088 mW/g



Date/Time: 2011-05-24 12:08:51

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/003943/0

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: 21.6 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.95$ mho/m; $\epsilon_r = 50.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3117; Probe Notes:
- ConvF(4.12, 4.12, 4.12); Calibrated: 2010-07-19
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn501; Calibrated: 2011-02-18
- Phantom: SAM 8; Type: SAM Twin Phantom; Serial: TP-1328
- 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) = 0.010 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 = 1.70 V/m

Peak SAR (extrapolated) = 0.012 W/kg

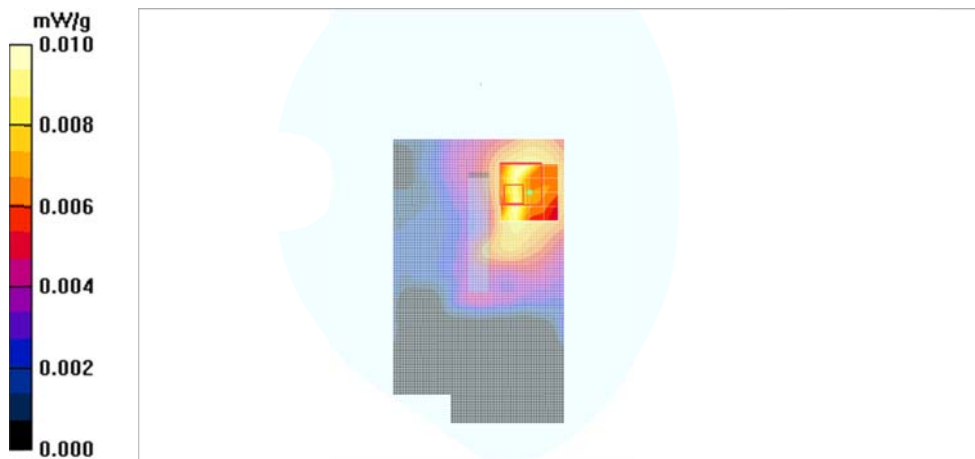
SAR(1 g) = 0.00776 mW/g

SAR(10 g) = 0.00377 mW/g

Power Drift = -0.460 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) = 0.010 mW/g



Date/Time: 2011-05-24 12:25:48

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/003943/0

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: 21.6 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.95$ mho/m; $\epsilon_r = 50.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3117; Probe Notes:
- ConvF(4.12, 4.12, 4.12); Calibrated: 2010-07-19
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn501; Calibrated: 2011-02-18
- Phantom: SAM 8; Type: SAM Twin Phantom; Serial: TP-1328
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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

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

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

Reference Value = 2.14 V/m

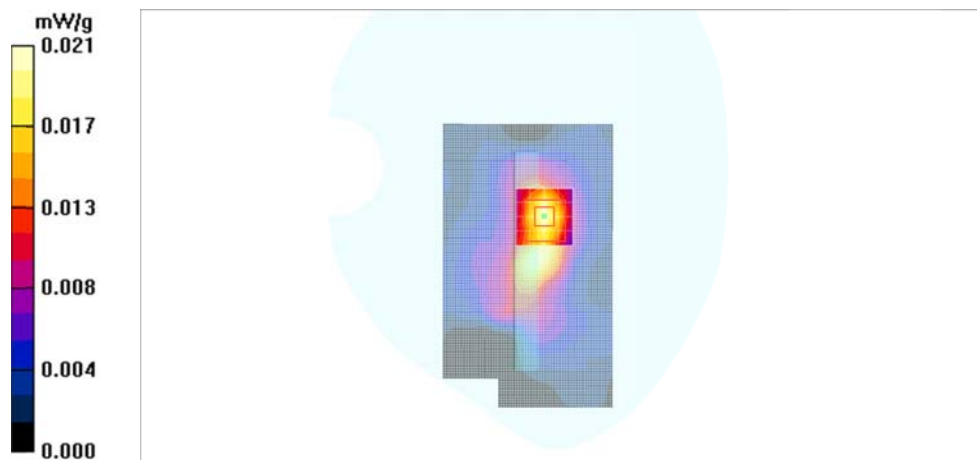
Peak SAR (extrapolated) = 0.034 W/kg

SAR(1 g) = 0.019 mW/g

SAR(10 g) = 0.00917 mW/g

Power Drift = 0.160 dB

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



Date/Time: 2011-05-24 12:39:10

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/003943/0

Communication System: WLAN2450 b-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: 21.6 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.95$ mho/m; $\epsilon_r = 50.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3117; Probe Notes:
- ConvF(4.12, 4.12, 4.12); Calibrated: 2010-07-19
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn501; Calibrated: 2011-02-18
- Phantom: SAM 8; Type: SAM Twin Phantom; Serial: TP-1328
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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

dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.093 mW/g

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

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

Reference Value = 5.65 V/m

Peak SAR (extrapolated) = 0.149 W/kg

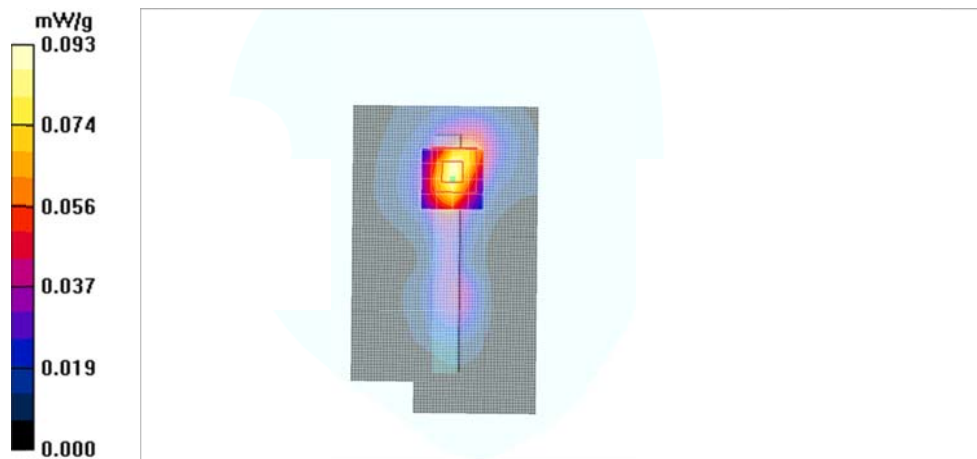
SAR(1 g) = 0.081 mW/g

SAR(10 g) = 0.041 mW/g

Power Drift = -0.059 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) = 0.092 mW/g



Date/Time: 2011-05-24 13:56:52

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/003943/0

Communication System: WLAN2450 n-mode

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: 21.6 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.95$ mho/m; $\epsilon_r = 50.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3117; Probe Notes:
- ConvF(4.12, 4.12, 4.12); Calibrated: 2010-07-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn501; Calibrated: 2011-02-18
- Phantom: SAM 8; Type: SAM Twin Phantom; Serial: TP-1328
- 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) = 0.107 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 = 6.41 V/m

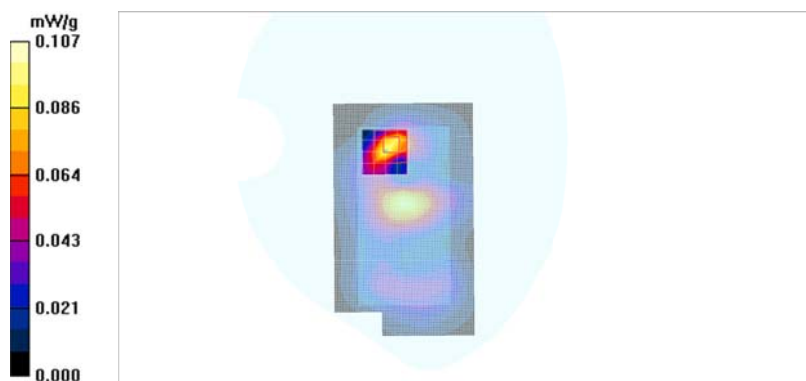
Peak SAR (extrapolated) = 0.198 W/kg

SAR(1 g) = 0.087 mW/g

SAR(10 g) = 0.037 mW/g

Power Drift = -0.193 dB

Maximum value of SAR (measured) = 0.101 mW/g



Date/Time: 2011-8-2 10:44:13, Date/Time: 2011-5-24 11:34:07

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/010536/3, Serial: 008600/08/003943/0

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: 21.6 C

Medium parameters used: f = 849 MHz; $\sigma = 0.975$ mho/m; $\epsilon_r = 53.4$; $\rho = 1000$ kg/m³, Medium parameters used:

f = 2442 MHz; $\sigma = 1.95$ mho/m; $\epsilon_r = 50.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

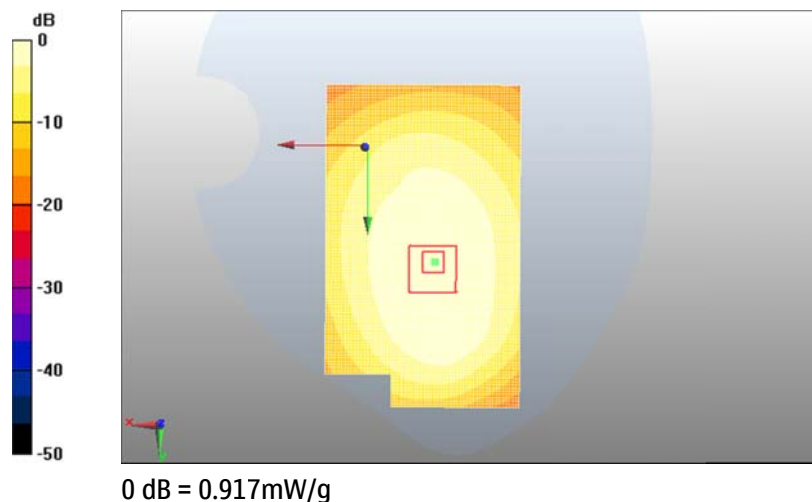
- Probe: ET3DV6 - SN1652, Probe: ES3DV3 - SN3117
- ConvF(5.9, 5.9, 5.9), ConvF(4.12, 4.12, 4.12); Calibrated: 2010-10-21, Calibrated: 2010-7-19
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn480, Electronics: DAE4 Sn501; Calibrated: 2010-10-25, Calibrated: 2011-2-18
- Phantom: SAM2, Phantom: SAM 8; Type: SAM, Type: SAM Twin Phantom; Serial: TP - 1508, Serial: TP-1328
- ; 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) = 0.871 mW/g
SAR(10 g) = 0.611 mW/g

Maximum value of SAR (measured) = 0.917 mW/g



Date/Time: 2011-7-21 13:00:06, Date/Time: 2011-5-24 11:34:07

Test Laboratory: TCC Nokia

Type: RM-730; Serial: 008600/08/010536/3, Serial: 008600/08/003943/0

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: Body1900, Medium: Body 2450; Medium Notes: Medium Temperature: t=22.0C, Medium Notes: Medium Temperature: 21.6 C

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m³, Medium parameters used: $f = 2442$ MHz; $\sigma = 1.95$ mho/m; $\epsilon_r = 50.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1652, Probe: ES3DV3 - SN3117
- ConvF(4.33, 4.33, 4.33), ConvF(4.12, 4.12, 4.12); Calibrated: 2010-10-21, Calibrated: 2010-7-19
- Sensor-Surface: 4mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn480, Electronics: DAE4 Sn501; Calibrated: 2010-10-25, Calibrated: 2011-2-18
- Phantom: SAM3, Phantom: SAM 8; Type: SAM, Type: SAM Twin Phantom; Serial: TP-1427, Serial: TP-1328
- ; SEMCAD X Version 14.0 Build 61

Configuration/Body - Low - 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) = 1.56 mW/g
SAR(10 g) = 0.881 mW/g

Maximum value of SAR (measured) = 1.73 mW/g

