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Finnish Accreditation Service
T117 (EN ISO/IEC 17025)

SAR Compliance Test Report

Test report no.:	FCC_RM-774_06	**Date of report:**	2011-11-25
Template version:	18.0	**Number of pages:**	51
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Tested device:	RM-774		
FCC ID:	PYARM-774	**IC:**	661V-RM774
Supplement reports:	SAR_Photo_RM-774_08, FCC_RM-774_03		

Testing has been carried out in accordance with:

47CFR §2.1093
Radiofrequency Radiation Exposure Evaluation: Portable Devices

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

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

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

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

Test results: **The tested device complies with the requirements in respect of all parameters subject to the test.** The test results and statements relate only to the items tested. The test report shall not be reproduced except in full, without written approval of the laboratory.

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1. SUMMARY OF SAR TEST REPORT

1.1 Test Details

Period of test	2011-11-21 to 2011-11-23
SN, HW and SW numbers of tested device	SN: 004402/13/580951/9, HW: HW2100, SW: 111.030.0607, DUT: 16054
Batteries used in testing	BL-5K, DUT: 14815, 15433, 15435, 15436, 16057, 16057
Headsets used in testing	-
Other accessories used in testing	-
State of sample	Prototype unit
Notes	-

1.1.1 Supplement reports referenced on the front cover of this report

FCC_RM-774_03: WLAN SAR data has been copied from this earlier report, 1 test sample was used, Grant date 08/06/2011.

SAR_Photos_RM-774_08: Photos of the SAR test set-up used during the testing reported in this report.

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 standards when the maximum measured SAR value is less than or equal to the limit.

1.2.1 Head Configuration

Mode	Ch / *f* (MHz)	Conducted power	Position	Measured SAR value (1g avg)	Scaled* SAR value (1g avg)	SAR limit (1g avg)	Result
GSM850	251 / 848.8	32.5 dBm	Right, Cheek	0.518 W/kg	**0.58 W/kg**	1.6 W/kg	PASSED
WCDMA850	4233 / 846.6	23.5 dBm	Right, Cheek	0.581 W/kg	**0.65 W/kg**	1.6 W/kg	PASSED
WCDMA1700/2100	1412/ 1732.4	22.5 dBm	Right, Cheek	0.951 W/kg	**1.07 W/kg**	1.6 W/kg	PASSED
4-slot GPRS1900	810 / 1909.8	24.5 dBm	Right, Cheek	0.784 W/kg	**0.88 W/kg**	1.6 W/kg	PASSED
WCDMA1900	9400 / 1880.0	23.0 dBm	Right, Cheek	1.03 W/kg	**1.15 W/kg**	1.6 W/kg	PASSED
WLAN2450**	7 / 2442.0	17.0 dBm	Right, Cheek	0.173 W/kg	**0.19 W/kg**	1.6 W/kg	PASSED
GSM850 + WLAN2450	-	-	Right, Cheek	0.529 W/kg	**0.59 W/kg**	1.6 W/kg	PASSED
WCDMA850 + WLAN2450	-	-	Right, Cheek	0.598 W/kg	**0.67 W/kg**	1.6 W/kg	PASSED

(Table continues)

(Table continues)

WCDMA1700/2100 + WLAN2450	-	-	Right, Cheek	0.990 W/kg	**1.11 W/kg**	1.6 W/kg	PASSED
4-slot GPRS1900 + WLAN2450	-	-	Right, Cheek	0.824 W/kg	**0.92 W/kg**	1.6 W/kg	PASSED
WCDMA1900 + WLAN2450	-	-	Right, Cheek	1.08 W/kg	**1.21 W/kg**	1.6 W/kg	PASSED

1.2.2 Body Worn Configuration

Mode	Ch / *f* (MHz)	Conducted power	Separation distance	Measured SAR value (1g avg)	Scaled* SAR value (1g avg)	SAR limit (1g avg)	Result
GSM850	251 / 848.8	32.5 dBm	1.5 cm	0.640 W/kg	**0.72 W/kg**	1.6 W/kg	PASSED
WCDMA850	4233 / 846.6	23.5 dBm	1.5 cm	0.673 W/kg	**0.75 W/kg**	1.6 W/kg	PASSED
WCDMA1700/2100	1412 / 1732.4	22.5 dBm	1.5 cm	0.758 W/kg	**0.85 W/kg**	1.6 W/kg	PASSED
4-slot GPRS1900	810 / 1909.8	24.5 dBm	1.5 cm	0.693 W/kg	**0.78 W/kg**	1.6 W/kg	PASSED
WCDMA1900	9538 / 1907.6	23.0 dBm	1.5 cm	0.806 W/kg	**0.90 W/kg**	1.6 W/kg	PASSED
WLAN2450**	7 / 2442.0	17.0 dBm	1.5 cm	0.035 W/kg	**0.04 W/kg**	1.6 W/kg	PASSED
GSM850 + WLAN2450	-	-	1.5 cm	0.644 W/kg	**0.72 W/kg**	1.6 W/kg	PASSED
WCDMA850 + WLAN2450	-	-	1.5 cm	0.677 W/kg	**0.76 W/kg**	1.6 W/kg	PASSED
WCDMA1700/2100 + WLAN2450	-	-	1.5 cm	0.761 W/kg	**0.85 W/kg**	1.6 W/kg	PASSED
4-slot GPRS1900 + WLAN2450	-	-	1.5 cm	0.708 W/kg	**0.79 W/kg**	1.6 W/kg	PASSED
WCDMA1900 + WLAN2450	-	-	1.5 cm	0.823 W/kg	**0.92 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 data taken from FCC_RM-774_03

1.2.3 Maximum Drift

Maximum drift covered by 12% scaling up of the SAR values	Maximum drift during measurements
0.5dB	0.43dB

1.2.4 Measurement Uncertainty

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

2. DESCRIPTION OF THE DEVICE UNDER TEST

Device category	Portable
Exposure environment	General population / uncontrolled

Modes of Operation	Bands	Modulation Mode	Duty Cycle	Transmitter Frequency Range (MHz)
GSM	850 1900	GMSK	1/8	824 – 849 1850 – 1910
GPRS	850 1900	GMSK	1/8 to 4/8	824 – 849 1850 – 1910
EGPRS	850 1900	GMSK / 8PSK	1/8 to 4/8	824 – 849 1850 – 1910
WCDMA	850 (Band V) 1700/2100 (Band IV) 1900 (Band II)		1	826 – 847 1712 – 1753 1852 – 1908
HSUPA	850 (Band V) 1700/2100 (Band IV) 1900 (Band II)		1	826 – 847 1712 – 1753 1852 – 1908
BT	2450	GFSK	1	2402 – 2480
WLAN b-mode	2450	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, WCDMA900 and WCDMA2100 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):	20.0 – 21.5
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.

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

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

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

Some of the SAR results given in this report are taken from the earlier report FCC_RM-774_03. The number of Head and Body-worn test cases reported in this document has been minimised based on the earlier testing in FCC_RM-774_03.

3.3 Test Cases and Test Minimisation

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

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

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

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

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

In the results tables in Section 7, the maximum SAR value for the ‘basic’ tests (i.e. left cheek, left tilt, right cheek and right tilt in Head SAR testing; with and without headset with the back &/or display side facing the flat phantom in Body SAR testing) is bolded for each band. In some cases, after full testing of the basic SAR test configurations has been completed, additional checking SAR tests are made. These checking tests are always based on the bolded result from the ‘basic’ testing. When the SAR value of a checking test exceeds the maximum value from the basic tests, it is also bolded and used as the basis for any further checking tests that might be needed.

Checking tests are largely voluntary and can cover optional batteries, different camera slide positions, optional covers, etc. In the case of optional batteries, if the construction of the optional battery is significantly different to the battery used in the full testing e.g. if the outer can is floating electrically rather than grounded, then the maximum SAR test configuration in each band is tested with the optional battery in 3 channels. For camera slides, if the slide

material is metal, then checking tests in 3 channels are again run for the maximum SAR test configuration in each band. For plastic camera slides, SAR checking is only carried out in the channel that provided the maximum SAR value for the original. Optional front and back covers are tested if their shape differs significantly from the original or if their metallic content varies by more than 15% from the original; in the former case, the testing depends on the extent of the physical differences, whereas in the latter case, 3 channel SAR testing is performed in every band in the max SAR test configuration.

4. DESCRIPTION OF THE TEST EQUIPMENT

4.1 Measurement System and Components

The measurements were performed using an automated near-field scanning system, DASY4, manufactured by Schmid & Partner Engineering AG (SPEAG) in Switzerland. The SAR extrapolation algorithm used in all measurements was the 'advanced extrapolation' algorithm.

The following table lists calibration dates of SPEAG components:

Test Equipment	Serial Number	Calibration date	Calibration interval	Calibration expiry
DAE4	555	2011-02-22	12 months	2012-02
DAE4	1213	2011-02-14	12 months	2012-02
E-field Probe EX3DV4	3790	2011-05-24	12 months	2012-05
E-field Probe ES3DV3	3165	2011-02-17	12 months	2012-02
Dipole Validation Kit, D835V2	462	2011-09-13	24 months	2013-09
Dipole Validation Kit, D1800V2	2d065	2011-09-15	24 months	2013-09
Dipole Validation Kit, D1900V2	5d013	2010-03-23	24 months	2012-03
DASY4 software	Version 4.7	-	-	-
DASY5 software	Version 52.6.1.408	-	-	-

Additional test equipment used in testing:

Test Equipment	Model	Serial Number	Calibration date	Calibration interval	Calibration expiry
Signal Generator	SML03	101265	2011-08-30	12 months	2012-08
Amplifier	5S1G4M3	302338	-	-	-
Power Meter	NRVS	838624/032	2011-08-30	12 months	2012-08
Power Sensor	NRV-Z32	100067	2011-08-29	12 months	2012-08
Call Tester	CMU 200	101111	-	-	-
Call Tester	CMU 200	104983	-	-	-
Vector Network Analyzer	8753E	US38432928	2011-08-29	12 months	2012-08
Dielectric Probe Kit	85070B	US33020420	-	-	-

4.1.1 Isotropic E-field Probe Type ES3DV3

Construction	Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., butyl diglycol)
Calibration	Calibration certificate in Appendix C
Frequency	10 MHz to 4 GHz (dosimetry); Linearity: ± 0.2 dB (30 MHz to 4 GHz)
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.3 dB in HSL (rotation normal to probe axis)
Dynamic Range	5 µW/g to > 100 mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 330 mm Tip length: 20 mm Body diameter: 12 mm Tip diameter: 3.9 mm Distance from probe tip to dipole centers: 2.0 mm
Application	General dosimetry up to 4 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms

4.1.2 Isotropic E-field Probe Type EX3DV4

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

4.2 Phantoms

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

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

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

4.3 Tissue Simulants

Recommended values for the dielectric parameters of the tissue simulants are given in IEEE 1528 - 2003 and FCC Supplement C to OET Bulletin 65. All tests were carried out using simulants whose dielectric parameters were within ± 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 recipes were used for Head and Body tissue simulants:

800MHz band

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

1800MHz band

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

1900MHz band

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

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]	
	Reference result	2.33	41.1	0.89	
	± 10% window	2.10 – 2.56			
835	2011-11-21	2.41	41.2	0.93	21.0
	Reference result	9.43	39.7	1.37	
	± 10% window	8.49 – 10.37			
1800	2011-11-22	9.81	38.2	1.39	21.0
	Reference result	10.2	41.2	1.45	
	± 10% window	9.2 – 11.2			
1900	2011-11-21	10.7	40.2	1.38	21.0

System checking, body tissue simulant

f [MHz]	Description	SAR [W/kg], 1g	Dielectric Parameters		Temp [°C]
			ε_r	σ [S/m]	
	Reference result	2.45	53.5	1.00	
	± 10% window	2.20 – 2.70			
835	2011-11-22	2.49	53.3	0.99	21.0
	Reference result	9.86	54.3	1.52	
	± 10% window	8.87 – 10.85			
1800	2011-11-22	10.0	51.6	1.50	21.0
	Reference result	10.4	55.0	1.58	
	± 10% window	9.4 – 11.4			
1900	2011-11-23	10.6	52.5	1.54	21.0

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

4.3.3 Tissue Simulants used in the Measurements

Head tissue simulant measurements

f [MHz]	Description	Dielectric Parameters		Temp [°C]
		ε_r	σ [S/m]	
	Recommended value	41.5	0.90	
	± 5% window	39.4 – 43.6	0.86 – 0.95	
835	2011-11-21	41.2	0.93	21.0
	Recommended value	41.5	0.90	
	± 5% window	39.4 – 43.6	0.86 – 0.95	
836	2011-11-21	41.2	0.93	21.0
	Recommended value	40.1	1.36	
	± 5% window	38.1 – 42.1	1.29 – 1.43	
1732	2011-11-22	38.3	1.33	21.0
	Recommended value	40.0	1.40	
	± 5% window	38.0 – 42.0	1.33 – 1.47	
1880	2011-11-21	40.2	1.36	21.0

Body tissue simulant measurements

f [MHz]	Description	Dielectric Parameters		Temp [°C]
		ε_r	σ [S/m]	
	Recommended value	55.2	0.97	
	± 5% window	52.4 – 58.0	0.92 – 1.02	
835	2011-11-22	53.3	0.99	21.0
	Recommended value	55.2	0.97	
	± 5% window	52.4 – 58.0	0.92 – 1.02	
836	2011-11-22	53.3	0.99	21.0
	Recommended value	53.5	1.48	
	± 5% window	50.8 – 56.2	1.40 – 1.55	
1732	2011-11-22	51.7	1.44	21.0
	Recommended value	53.3	1.52	
	± 5% window	50.6 – 56.0	1.44 – 1.60	
1880	2011-11-23	52.6	1.52	21.0

5. DESCRIPTION OF THE TEST PROCEDURE

5.1 Device Holder

The device was placed in the device holder (illustrated below) that is supplied by SPEAG as an integral part of the Dasy system.

Device holder supplied by SPEAG

A Nokia designed spacer (illustrated below) was used to position the device within the SPEAG holder. The spacer positions the device so that the holder has minimal effect on the test results but still holds the device securely. The spacer was removed before the tests.

Nokia spacer

5.2 Test Positions

5.2.1 Against Phantom Head

Measurements were made in “cheek” position on the right hand side 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.

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

7. RESULTS

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

850MHz Head SAR results

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
GSM	Conducted Power		32.5 dBm	32.5 dBm	32.5 dBm
	Left	Cheek	-	-	-
		Tilt	-	-	-
	Right	Cheek	0.351	0.438	**0.518**
		Tilt	-	-	-
Mode	**Test configuration**		**SAR, averaged over 1g (W/kg)**		
			Ch 4132 826.4 MHz	**Ch 4175 835.0 MHz**	**Ch 4233 846.6 MHz**
WCDMA	Conducted Power		23.5 dBm	23.5 dBm	23.5 dBm
	Left	Cheek	-	-	-
		Tilt	-	-	-
	Right	Cheek	0.397	0.555	**0.581**
		Tilt	-	-	-

1700/2100MHz Head SAR results

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 1312 1712.4 MHz	Ch 1412 1732.4 MHz	Ch 1513 1752.6 MHz
WCDMA	Conducted Power		22.5 dBm	22.5 dBm	22.5 dBm
	Left	Cheek	-	-	-
		Tilt	-	-	-
	Right	Cheek	0.680	**0.951**	0.825
		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
4-slot GPRS	Conducted Power		24.5 dBm	24.5 dBm	24.5 dBm
	Left	Cheek	-	-	-
		Tilt	-	-	-
	Right	Cheek	0.639	0.691	**0.784**
		Tilt	-	-	-
Mode	**Test configuration**		**SAR, averaged over 1g (W/kg)**		
			Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz
WCDMA	Conducted Power		23.0 dBm	23.0 dBm	23.0 dBm
	Left	Cheek	-	-	-
		Tilt	-	-	-
	Right	Cheek	0.935	**1.03**	0.971
		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		15.0 dBm	17.0 dBm	15.0 dBm
	Left	Cheek	-	0.122	-
		Tilt	-	0.143	-
	Right	Cheek	0.114	**0.173**	0.106
		Tilt	-	0.134	-
WLAN n-mode 20MHz	Conducted Power		14.0 dBm	17.0 dBm	14.0 dBm
	Left	Cheek	-	-	-
		Tilt	-	-	-
	Right	Cheek	0.091	0.173	0.081
		Tilt	-	-	-

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

850MHz Body SAR results

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
GSM		Conducted Power	32.5 dBm	32.5 dBm	32.5 dBm
	Display facing phantom	Without headset	-	-	-
		With headset	-	-	-
	Back facing phantom	Without headset	0.379	0.492	**0.640**
		With headset	-	-	-
Mode	**Device orientation**	**Test configuration**	**SAR, averaged over 1g (W/kg)**		
			Ch 4132 826.4 MHz	**Ch 4175 835.0 MHz**	**Ch 4233 846.6 MHz**
WCDMA		Conducted Power	23.5 dBm	23.5 dBm	23.5 dBm
	Display facing phantom	Without headset	-	-	-
		With headset	-	-	-
	Back facing phantom	Without headset	0.428	0.579	**0.673**
		With headset	-	-	-

1700/2100MHz Body SAR results

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 1312 1712.4 MHz	Ch 1412 1732.4 MHz	Ch 1513 1752.6 MHz
WCDMA		Conducted Power	22.5 dBm	22.5 dBm	22.5 dBm
	Display facing phantom	Without headset	-	-	-
		With headset	-	-	-
	Back facing phantom	Without headset	0.586	**0.758**	0.715
		With headset	-	-	-

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
4-slot GPRS		Conducted Power	24.5 dBm	24.5 dBm	24.5 dBm
	Display facing phantom	Without headset	-	-	-
		With headset	-	-	-
	Back facing phantom	Without headset	0.638	0.612	**0.693**
		With headset	-	-	-

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz
WCDMA		Conducted Power	23.0 dBm	23.0 dBm	23.0 dBm
	Display facing phantom	Without headset	-	-	-
		With headset	-	-	-
	Back facing phantom	Without headset	0.791	0.784	**0.806**
		With headset	-	-	-

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	15.0 dBm	17.0 dBm	15.0 dBm
	Display facing phantom	Without headset	-	0.032	-
		Headset WH-207	-	0.027	-
	Back facing Phantom	Without headset	0.024	**0.035**	0.018
		Headset WH-207	-	0.034	-
WLAN n-mode 20MHz		Conducted Power	14.0 dBm	17.0 dBm	14.0 dBm
	Display facing phantom	Without headset	-	-	-
		Headset WH-207	-	-	-
	Back facing phantom	Without headset	0.018	0.032	0.014
		Headset WH-207	-	-	-

Simultaneous transmissions: Combined SAR results – Individual band Max results

Test configuration	Max. 1g SAR results					
	WLAN**	GSM 850	WCDMA 850	WCDMA 1700/2100	4-slot GPRS1900	WCDMA 1900
Head: Left, Cheek	0.122	-	-	-	-	-
Head: Left, Tilt	0.143	-	-	-	-	-
Head: Right, Cheek	0.173	0.518	0.581	0.951	0.784	1.03
Head: Right, Tilt	0.134	-	-	-	-	-
Body: Display facing phantom, Without Headset	0.032	-	-	-	-	-
Body: Display facing phantom, Headset WH-207	0.027	-	-	-	-	-
Body: Back facing phantom, Without Headset	0.035	0.640	0.673	0.758	0.693	0.806
Body: Back facing phantom, Headset WH-207	0.034	-	-	-	-	-

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

Test configuration	Max. 1g SAR results				
	GSM850 + WLAN	WCDMA850 + WLAN	WCDMA 1700/2100 + WLAN	4-slot GPRS1900 + WLAN	WCDMA1900 + WLAN
Head: Left, Cheek	-	-	-	-	-
Head: Left, Tilt	-	-	-	-	-
Head: Right, Cheek	**0.691**	**0.754**	**1.124**	**0.957**	**1.203**
Head: Right, Tilt	-	-	-	-	-
Body: Display facing phantom, Without Headset	-	-	-	-	-
Body: Display facing phantom, Headset WH-207	-	-	-	-	-
Body: Back facing phantom, Without Headset	**0.675**	**0.708**	**0.793**	**0.728**	**0.841**
Body: Back facing phantom, Headset WH-207	-	-	-	-	-

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	GSM850 + WLAN	WCDMA850 + WLAN	WCDMA 1700/2100 + WLAN	4-slot GPRS1900 + WLAN	WCDMA1900 + WLAN
Head: Left, Cheek	-	-	-	-	-
Head: Left, Tilt	-	-	-	-	-
Head: Right, Cheek	**0.529**	**0.598**	**0.990**	**0.824**	**1.08**
Head: Right, Tilt	-	-	-	-	-
Body: Display facing phantom, Without Headset	-	-	-	-	-
Body: Display facing phantom, Headset WH-207	-	-	-	-	-
Body: Back facing phantom, Without Headset	**0.644**	**0.677**	**0.761**	**0.708**	**0.823**
Body: Back facing phantom, Headset WH-207	-	-	-	-	-

** SAR data taken from FCC_RM-774_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: 2011-11-21 08:19:20, Date/Time: 2011-11-21 08:25:08

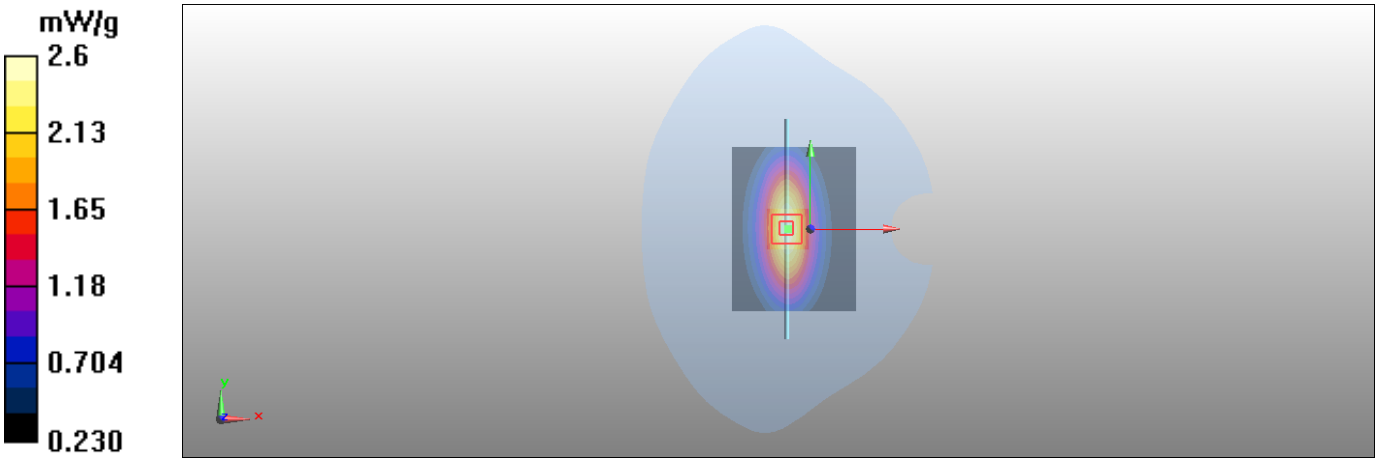
Test Laboratory: TCC Nokia
Type: D835V2; Serial: D835V2 - SN:462

Communication System: CW835
Frequency: 835 MHz; Duty Cycle: 1:1
Medium: HSL850; Medium Notes: t= 20.8 C
Medium parameters used: f = 835 MHz; σ = 0.929 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3790
- ConvF(8.74, 8.74, 8.74); Calibrated: 2011-05-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2011-02-14
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, V52.6 Build 2; SEMCAD X Version 14.0 Build 61

Configuration/d=15mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.57 mW/g

Configuration/d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.3 V/m
Peak SAR (extrapolated) = 3.63 W/kg
SAR(1 g) = 2.41 mW/g
SAR(10 g) = 1.57 mW/g
Power Drift = -0.050 dB
Maximum value of SAR (measured) = 2.6 mW/g



Date/Time: 2011-11-22 08:38:38, Date/Time: 2011-11-22 08:46:15

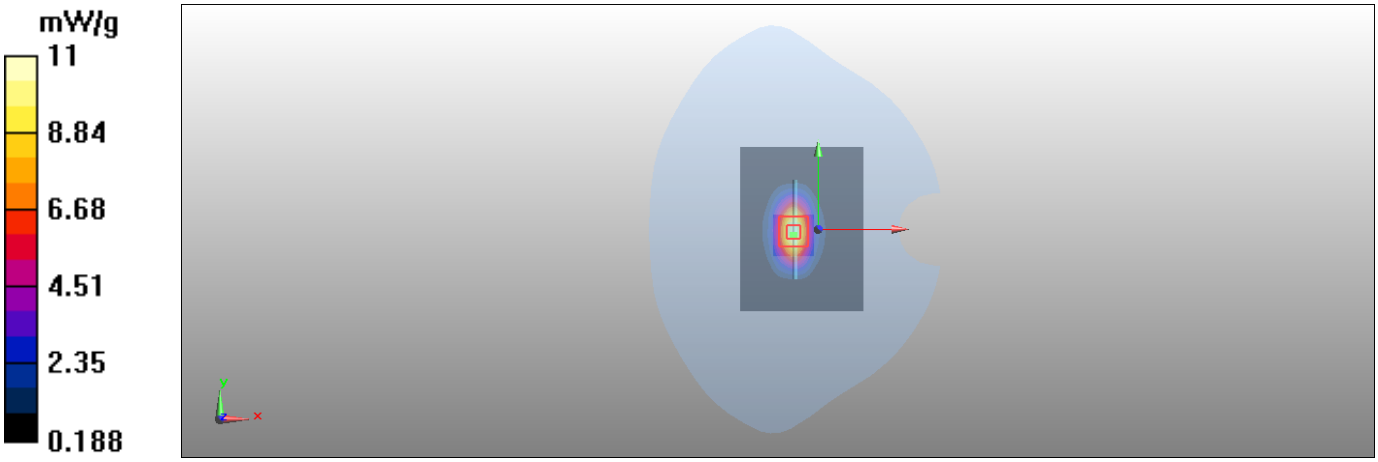
Test Laboratory: TCC Nokia
Type: D1800V2; Serial: D1800V2 - SN:2d065

Communication System: CW1800
Frequency: 1800 MHz; Duty Cycle: 1:1
Medium: HSL1800; Medium Notes: t= 20.8 C
Medium parameters used: f = 1800 MHz; σ = 1.39 mho/m; ε_r = 38.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: ES3DV3 - SN3165
- ConvF(5.19, 5.19, 5.19); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
- Measurement SW: DASY4, V4.7 Build 55; SEMCAD X Version 14.0 Build 61

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

Configuration/d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 90.2 V/m
Peak SAR (extrapolated) = 18.6 W/kg
SAR(1 g) = 9.81 mW/g
SAR(10 g) = 5.07 mW/g
Power Drift = 0.080 dB
Maximum value of SAR (measured) = 11 mW/g



Date/Time: 2011-11-21 10:14:35, Date/Time: 2011-11-21 10:21:08

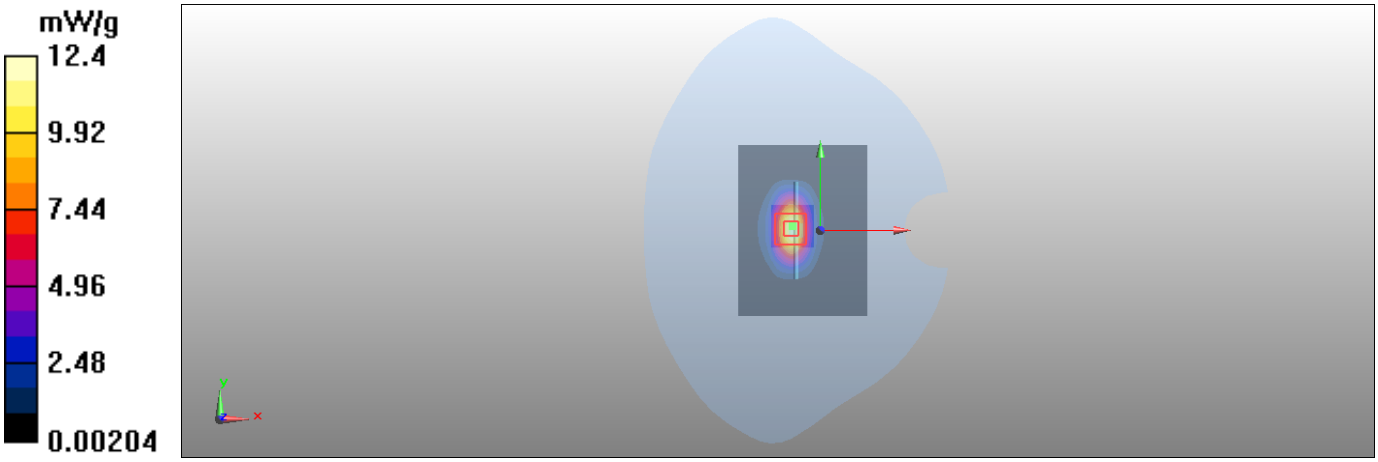
Test Laboratory: TCC Nokia
Type: D1900V2; Serial: D1900V2 - SN:5d013

Communication System: CW1900
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: HSL1900; Medium Notes: t= 21.9 C
Medium parameters used: f = 1900 MHz; σ = 1.38 mho/m; ε_r = 40.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: ES3DV3 - SN3165
- ConvF(5.03, 5.03, 5.03); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; SEMCAD X Version 14.0 Build 61

Configuration/d=15mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 12.4 mW/g

Configuration/d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 90.5 V/m
Peak SAR (extrapolated) = 20.5 W/kg
SAR(1 g) = 10.7 mW/g
SAR(10 g) = 5.53 mW/g
Power Drift = 0.235 dB
Maximum value of SAR (measured) = 12 mW/g



Date/Time: 2011-11-22 05:44:57, Date/Time: 2011-11-22 05:50:46

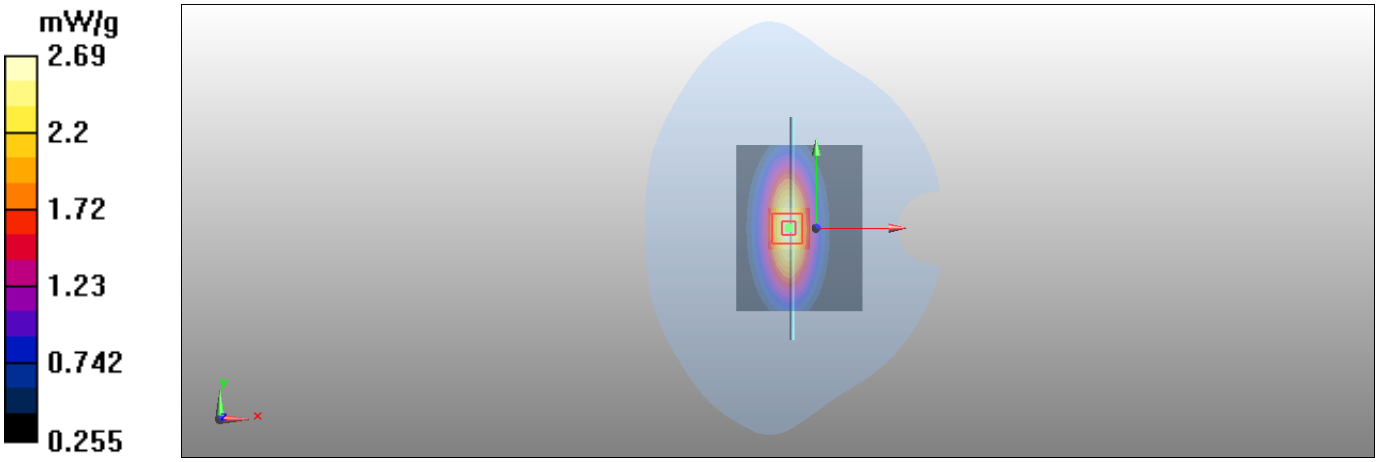
Test Laboratory: TCC Nokia
Type: D835V2; Serial: D835V2 - SN:462

Communication System: CW835
Frequency: 835 MHz; Duty Cycle: 1:1
Medium: BSL850; Medium Notes: t= 20.2 C
Medium parameters used: f = 835 MHz; σ = 0.993 mho/m; ε_r = 53.3; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3790
- ConvF(8.57, 8.57, 8.57); Calibrated: 2011-05-24
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2011-02-14
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, V52.6 Build 2; SEMCAD X Version 14.0 Build 61

Configuration/d=15mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.64 mW/g

Configuration/d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 51.4 V/m
Peak SAR (extrapolated) = 3.72 W/kg
SAR(1 g) = 2.49 mW/g
SAR(10 g) = 1.63 mW/g
Power Drift = 0.058 dB
Maximum value of SAR (measured) = 2.69 mW/g



Date/Time: 2011-11-22 09:10:30, Date/Time: 2011-11-22 09:17:04

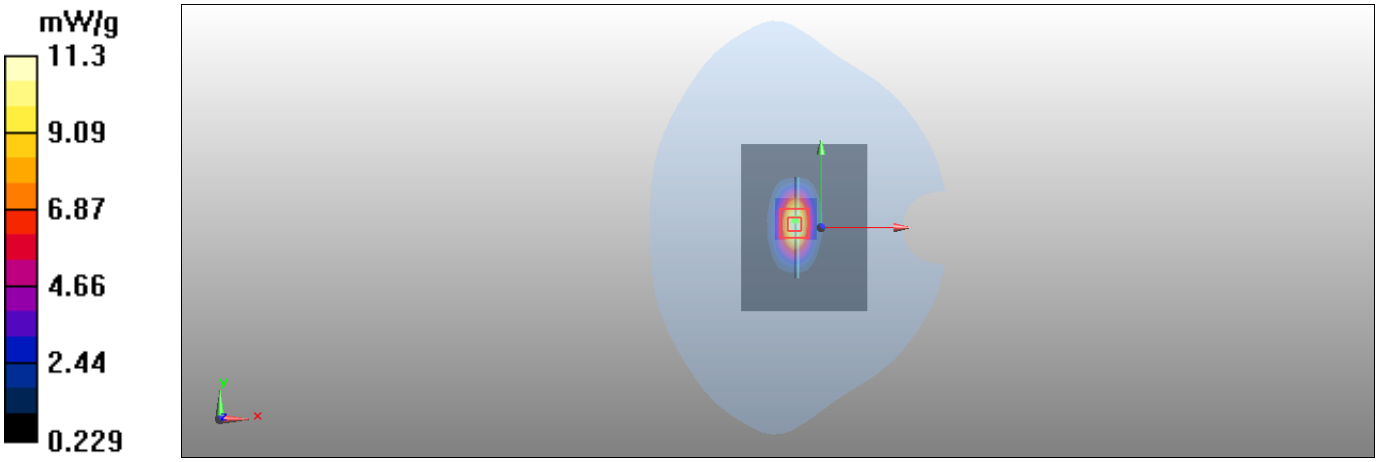
Test Laboratory: TCC Nokia
Type: D1800V2; Serial: D1800V2 - SN:2d065

Communication System: CW1800
Frequency: 1800 MHz; Duty Cycle: 1:1
Medium: BSL1800; Medium Notes: t= 20.8 C
Medium parameters used: f = 1800 MHz; σ = 1.5 mho/m; ε_r = 51.6; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: ES3DV3 - SN3165
- ConvF(4.91, 4.91, 4.91); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; SEMCAD X Version 14.0 Build 61

Configuration/d=15mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 12.1 mW/g

Configuration/d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 87.8 V/m
Peak SAR (extrapolated) = 17.4 W/kg
SAR(1 g) = 10 mW/g
SAR(10 g) = 5.28 mW/g
Power Drift = 0.131 dB
Maximum value of SAR (measured) = 11.3 mW/g



Date/Time: 2011-11-23 08:03:45, Date/Time: 2011-11-23 08:28:53

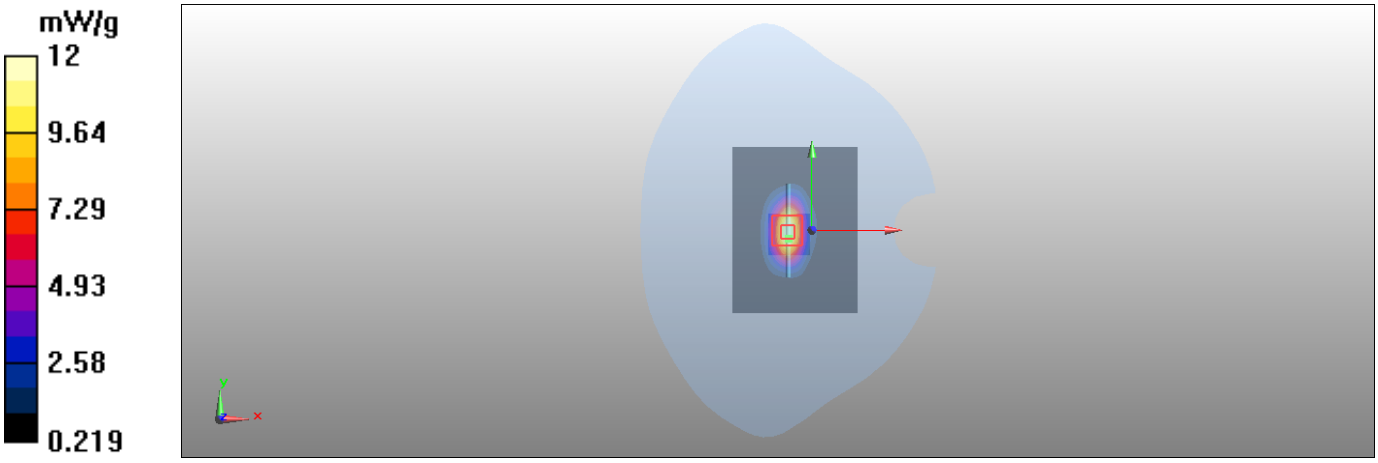
Test Laboratory: TCC Nokia
Type: D1900V2; Serial: D1900V2 - SN:5d013

Communication System: CW1900
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: BSL1900; Medium Notes: t= 20.8 C
Medium parameters used: f = 1900 MHz; σ = 1.54 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: ES3DV3 - SN3165
- ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; SEMCAD X Version 14.0 Build 61

Configuration/d=15mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 12.8 mW/g

Configuration/d=15mm, Pin=250mW/Zoom Scan 2 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 91.7 V/m
Peak SAR (extrapolated) = 19 W/kg
SAR(1 g) = 10.6 mW/g
SAR(10 g) = 5.54 mW/g
Power Drift = 0.086 dB
Maximum value of SAR (measured) = 12 mW/g



APPENDIX B: MEASUREMENT SCANS

Date/Time: 2011-11-21 12:09:41, Date/Time: 2011-11-21 12:12:57

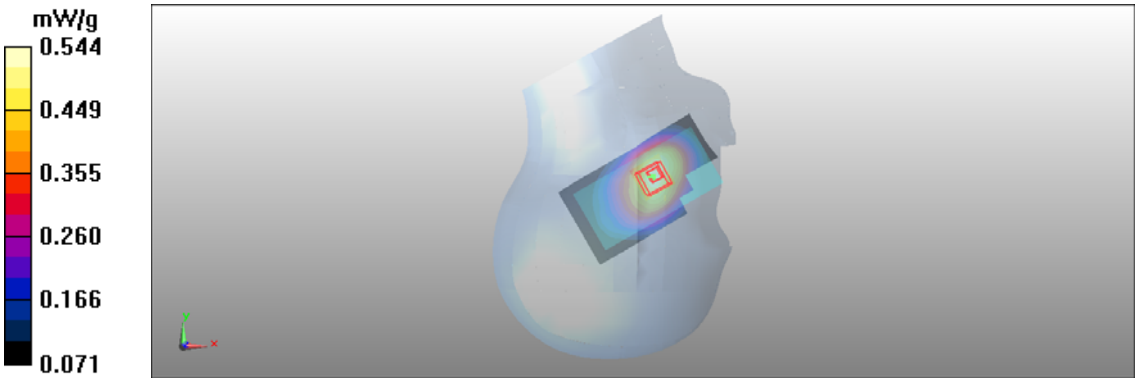
Test Laboratory: TCC Nokia
Type: RM-774; Serial: 004402/13/580951/9

Communication System: GSM850
Frequency: 848.8 MHz; Duty Cycle: 1:8.30042
Medium: HSL850; Medium Notes: t= 20.8 C
Medium parameters used: f = 849 MHz; σ = 0.938 mho/m; ε_r = 41.1; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:
- Probe: EX3DV4 - SN3790
- ConvF(8.74, 8.74, 8.74); Calibrated: 2011-05-24
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2011-02-14
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, V52.6 Build 2; SEMCAD X Version 14.0 Build 61

GSM - Right/Cheek - High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.548 mW/g

GSM - Right/Cheek - High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 10.6 V/m
Peak SAR (extrapolated) = 0.666 W/kg
SAR(1 g) = 0.518 mW/g
SAR(10 g) = 0.389 mW/g
Power Drift = 0.049 dB
Maximum value of SAR (measured) = 0.544 mW/g



Date/Time: 2011-11-21 12:57:21, Date/Time: 2011-11-21 13:00:37

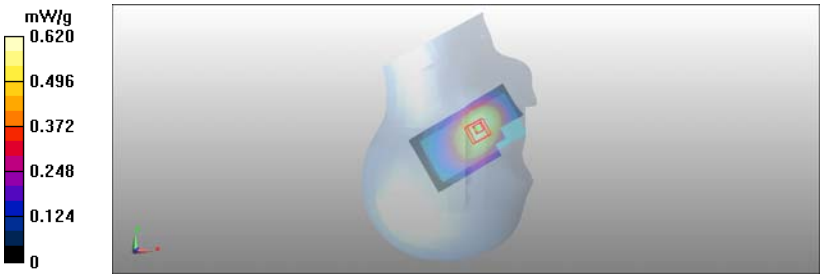
Test Laboratory: TCC Nokia
Type: RM-774; Serial: 004402/13/580951/9

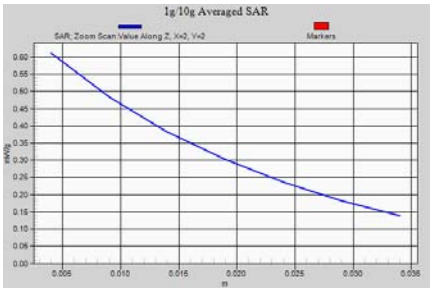
Communication System: WCDMA850
Frequency: 846.6 MHz; Duty Cycle: 1:1
Medium: HSL850; Medium Notes: t= 20.8 C
Medium parameters used: f = 847 MHz; σ = 0.938 mho/m; ε_r = 41.1; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:
- Probe: EX3DV4 - SN3790
- ConvF(8.74, 8.74, 8.74); Calibrated: 2011-05-24
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2011-02-14
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, V52.6 Build 2; SEMCAD X Version 14.0 Build 61

WCDMA - Right/Cheek - High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.620 mW/g

WCDMA - Right/Cheek - High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 11.8 V/m
Peak SAR (extrapolated) = 0.751 W/kg
SAR(1 g) = 0.581 mW/g
SAR(10 g) = 0.438 mW/g
Power Drift = 0.059 dB
Maximum value of SAR (measured) = 0.612 mW/g





Date/Time: 2011-11-22 16:23:52, Date/Time: 2011-11-22 16:28:02

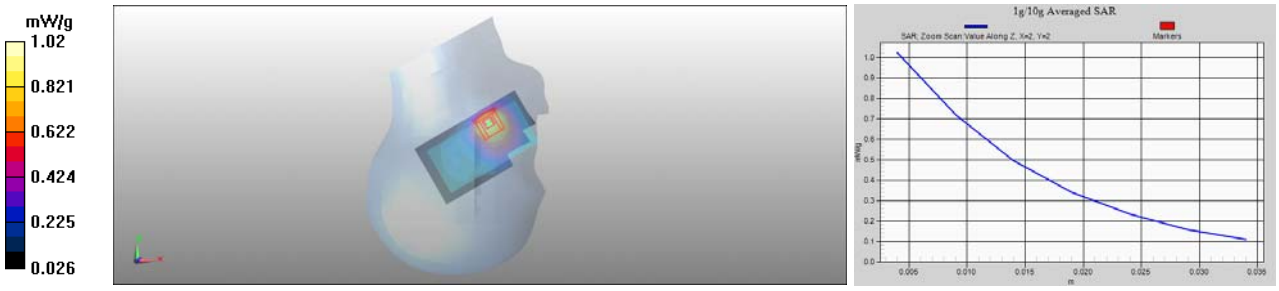
Test Laboratory: TCC Nokia
Type: RM-774; Serial: 004402/13/580951/9

Communication System: WCDMA1700/2100
Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: HSL1800; Medium Notes: t= 20.8 C
Medium parameters used (interpolated): f = 1732.4 MHz; σ = 1.32 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:
- Probe: ES3DV3 - SN3165
- ConvF(5.19, 5.19, 5.19); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
- Measurement SW: DASY4, V4.7 Build 55; SEMCAD X Version 14.0 Build 61

WCDMA - Right/Cheek - Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.11 mW/g

WCDMA - Right/Cheek - Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 9.04 V/m
Peak SAR (extrapolated) = 1.51 W/kg
SAR(1 g) = 0.951 mW/g
SAR(10 g) = 0.601 mW/g
Power Drift = -0.00347 dB
Maximum value of SAR (measured) = 1.02 mW/g



Date/Time: 2011-11-21 12:21:36, Date/Time: 2011-11-21 12:25:37

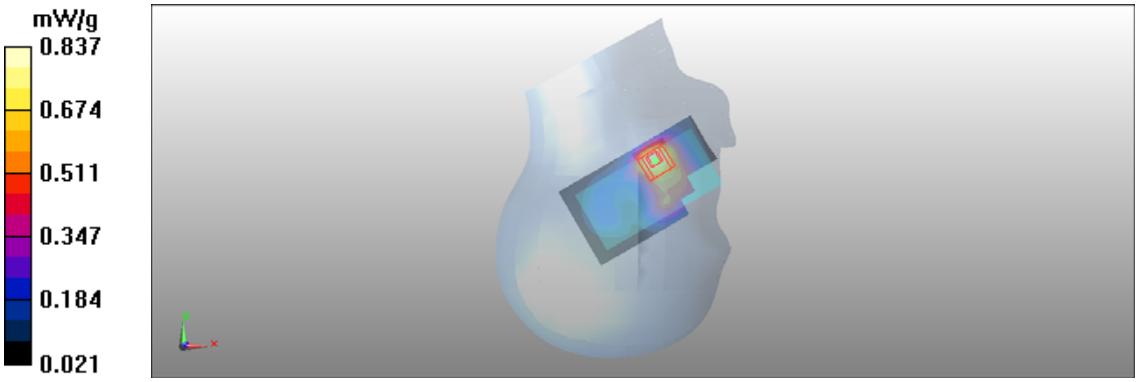
Test Laboratory: TCC Nokia
Type: RM-774; Serial: 004402/13/580951/9

Communication System: 4-slot GPRS1900
Frequency: 1909.8 MHz; Duty Cycle: 1:2.1
Medium: HSL1900; Medium Notes: t= 21.9 C
Medium parameters used: f = 1910 MHz; σ = 1.39 mho/m; ε_r = 40.2; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:
- Probe: ES3DV3 - SN3165
- ConvF(5.03, 5.03, 5.03); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; SEMCAD X Version 14.0 Build 61

4-slot GPRS - Right/Cheek - High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.923 mW/g

4-slot GPRS - Right/Cheek - High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 12.5 V/m
Peak SAR (extrapolated) = 1.28 W/kg
SAR(1 g) = 0.784 mW/g
SAR(10 g) = 0.484 mW/g
Power Drift = -0.077 dB
Maximum value of SAR (measured) = 0.837 mW/g



Date/Time: 2011-11-21 15:33:47, Date/Time: 2011-11-21 15:37:47

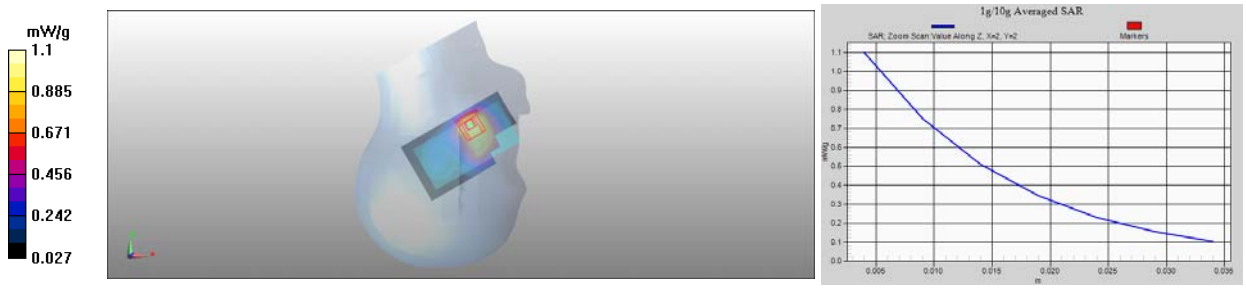
Test Laboratory: TCC Nokia
Type: RM-774; Serial: 004402/13/580951/9

Communication System: WCDMA1900
Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: HSL1900; Medium Notes: t= 21.9 C
Medium parameters used: f = 1880 MHz; σ = 1.36 mho/m; ε_r = 40.2; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:
- Probe: ES3DV3 - SN3165
- ConvF(5.03, 5.03, 5.03); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; SEMCAD X Version 14.0 Build 61

WCDMA - Right/Cheek - Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.22 mW/g

WCDMA - Right/Cheek - Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 11.9 V/m
Peak SAR (extrapolated) = 1.68 W/kg
SAR(1 g) = 1.03 mW/g
SAR(10 g) = 0.647 mW/g
Power Drift = -0.042 dB
Maximum value of SAR (measured) = 1.1 mW/g



Date/Time: 2011-11-22 07:32:32, Date/Time: 2011-11-22 07:35:28

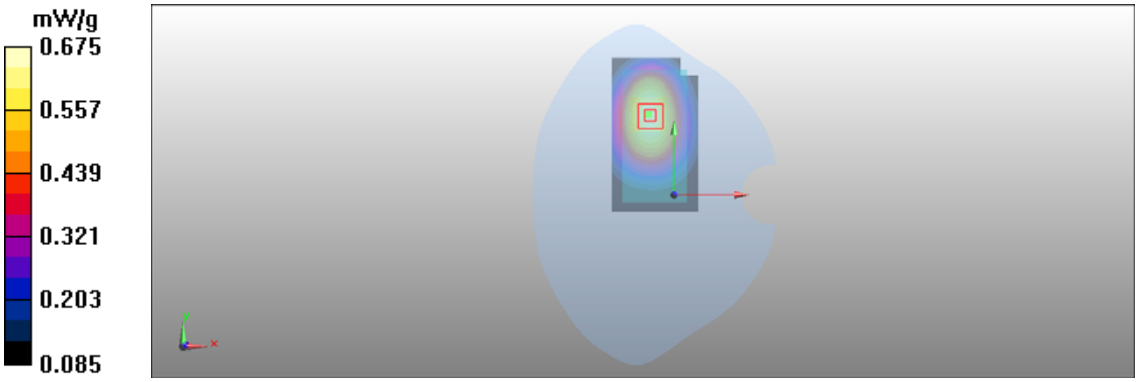
Test Laboratory: TCC Nokia
Type: RM-774; Serial: 004402/13/580951/9

Communication System: GSM850
Frequency: 848.8 MHz; Duty Cycle: 1:8.30042
Medium: BSL850; Medium Notes: t= 20.2 C
Medium parameters used: f = 849 MHz; σ = 1 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3790
- ConvF(8.57, 8.57, 8.57); Calibrated: 2011-05-24
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2011-02-14
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, V52.6 Build 2; SEMCAD X Version 14.0 Build 61

GSM - Body - High - No Accessory - Back Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.667 mW/g

GSM - Body - High - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 9.89 V/m
Peak SAR (extrapolated) = 0.825 W/kg
SAR(1 g) = 0.640 mW/g
SAR(10 g) = 0.474 mW/g
Power Drift = 0.061 dB
Maximum value of SAR (measured) = 0.675 mW/g



Date/Time: 2011-11-22 08:11:51, Date/Time: 2011-11-22 08:14:44

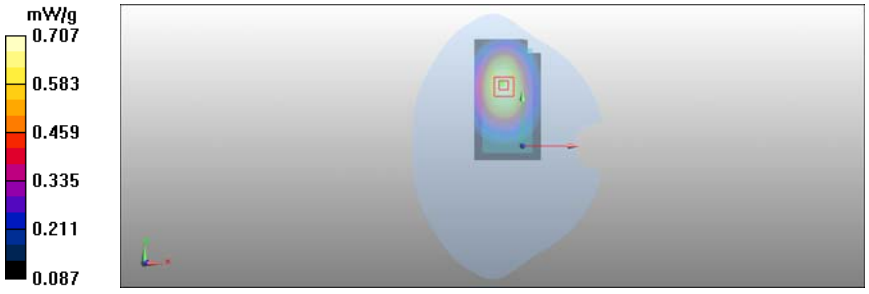
Test Laboratory: TCC Nokia
Type: RM-774; Serial: 004402/13/580951/9

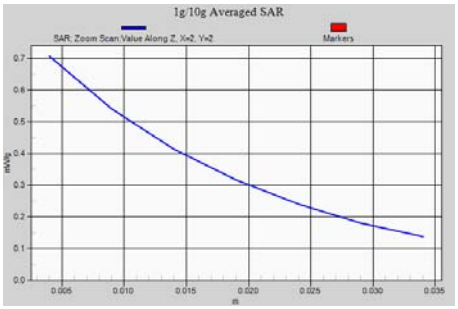
Communication System: WCDMA850
Frequency: 846.6 MHz; Duty Cycle: 1:1
Medium: BSL850; Medium Notes: t= 20.2 C
Medium parameters used: f = 847 MHz; σ = 1 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3790
- ConvF(8.57, 8.57, 8.57); Calibrated: 2011-05-24
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2011-02-14
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, V52.6 Build 2; SEMCAD X Version 14.0 Build 61

WCDMA - Body - High - No Accessory - Back Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.703 mW/g

WCDMA - Body - High - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 10.5 V/m
Peak SAR (extrapolated) = 0.870 W/kg
SAR(1 g) = 0.673 mW/g
SAR(10 g) = 0.498 mW/g
Power Drift = 0.00227 dB
Maximum value of SAR (measured) = 0.707 mW/g





Date/Time: 2011-11-22 12:02:39, Date/Time: 2011-11-22 12:06:11

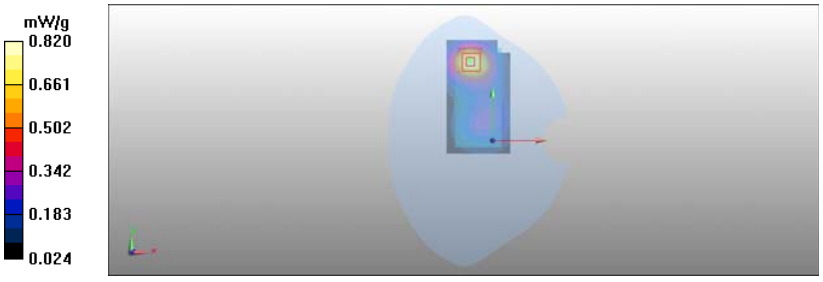
Test Laboratory: TCC Nokia
Type: RM-774; Serial: 004402/13/580951/9

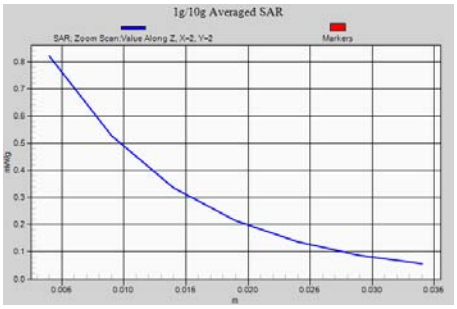
Communication System: WCDMA1700/2100
Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: BSL1800; Medium Notes: t= 20.8 C
Medium parameters used (interpolated): f = 1732.4 MHz; σ = 1.43 mho/m; ε_r = 51.7; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: ES3DV3 - SN3165
- ConvF(4.91, 4.91, 4.91); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; SEMCAD X Version 14.0 Build 61

WCDMA - Body - Middle - No Accessory - Back Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.815 mW/g

WCDMA - Body - Middle - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 12.1 V/m
Peak SAR (extrapolated) = 1.15 W/kg
SAR(1 g) = 0.758 mW/g
SAR(10 g) = 0.472 mW/g
Power Drift = -0.050 dB
Maximum value of SAR (measured) = 0.820 mW/g





Date/Time: 2011-11-23 14:14:20, Date/Time: 2011-11-23 14:20:15

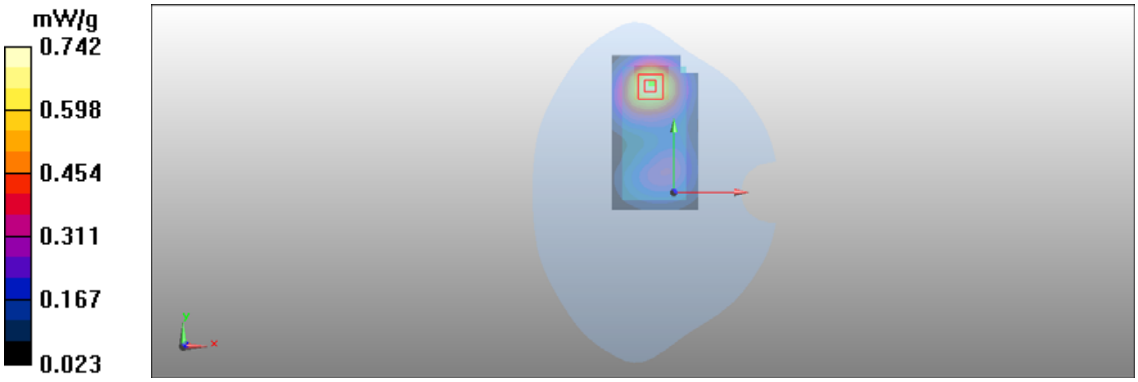
Test Laboratory: TCC Nokia
Type: RM-774; Serial: 004402/13/580951/9

Communication System: 4-slot GPRS1900
Frequency: 1909.8 MHz; Duty Cycle: 1:2.1
Medium: BSL1900; Medium Notes: t= 20.8 C
Medium parameters used: f = 1910 MHz; σ = 1.55 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: ES3DV3 - SN3165
- ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; SEMCAD X Version 14.0 Build 61

4-slot GPRS - Body - High - No Accessory - Back Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.751 mW/g

4-slot GPRS - Body - High - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 11.8 V/m
Peak SAR (extrapolated) = 1.08 W/kg
SAR(1 g) = 0.693 mW/g
SAR(10 g) = 0.432 mW/g
Power Drift = -0.054 dB
Maximum value of SAR (measured) = 0.742 mW/g



Date/Time: 2011-11-23 10:04:54, Date/Time: 2011-11-23 10:11:02

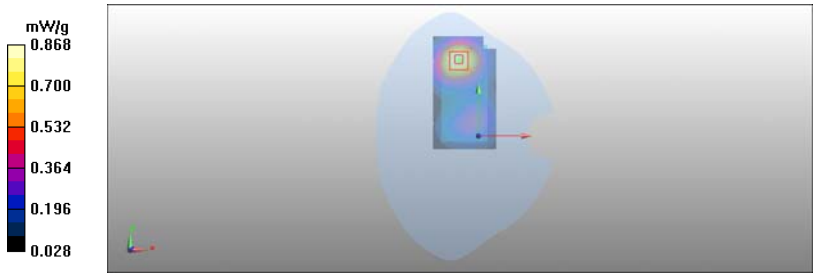
Test Laboratory: TCC Nokia
Type: RM-774; Serial: 004402/13/580951/9

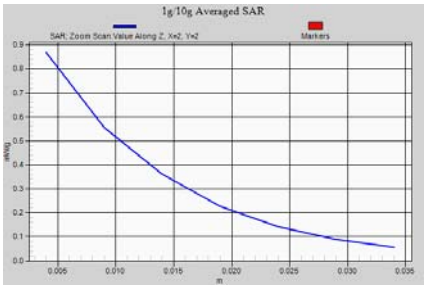
Communication System: WCDMA1900
Frequency: 1907.6 MHz; Duty Cycle: 1:1
Medium: BSL1800; Medium Notes: t= 20.8 C
Medium parameters used: f = 1908 MHz; σ = 1.55 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: ES3DV3 - SN3165
- ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; SEMCAD X Version 14.0 Build 61

WCDMA - Body - High - No Accessory - Back Facing Phantom/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.871 mW/g

WCDMA - Body - High - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 13.2 V/m
Peak SAR (extrapolated) = 1.25 W/kg
SAR(1 g) = 0.806 mW/g
SAR(10 g) = 0.505 mW/g
Power Drift = -0.031 dB
Maximum value of SAR (measured) = 0.868 mW/g





Date/Time: 2011-05-19 09:40:18, Date/Time: 2011-11-21 12:09:41

Test Laboratory: TCC Nokia

Type: RM-774; Serial: 004402/13/470209/5, Serial: 004402/13/580951/9

Communication System: WLAN2450 b-mode, Communication System: GSM850
Frequency: 2442 MHz, Frequency: 848.8 MHz; Duty Cycle: 1:1, Duty Cycle: 1:8.30042
Medium: HSL2450, Medium: HSL850; Medium Notes: t= 21.5 C, Medium Notes: t= 20.8 C
Medium parameters used: f = 2442 MHz; σ = 1.84 mho/m; ε_r = 38.1; ρ = 1000 kg/m^3 , Medium parameters used: f = 849 MHz; σ = 0.938 mho/m; ε_r = 41.1; ρ = 1000 kg/m^3
Phantom section: Right Section

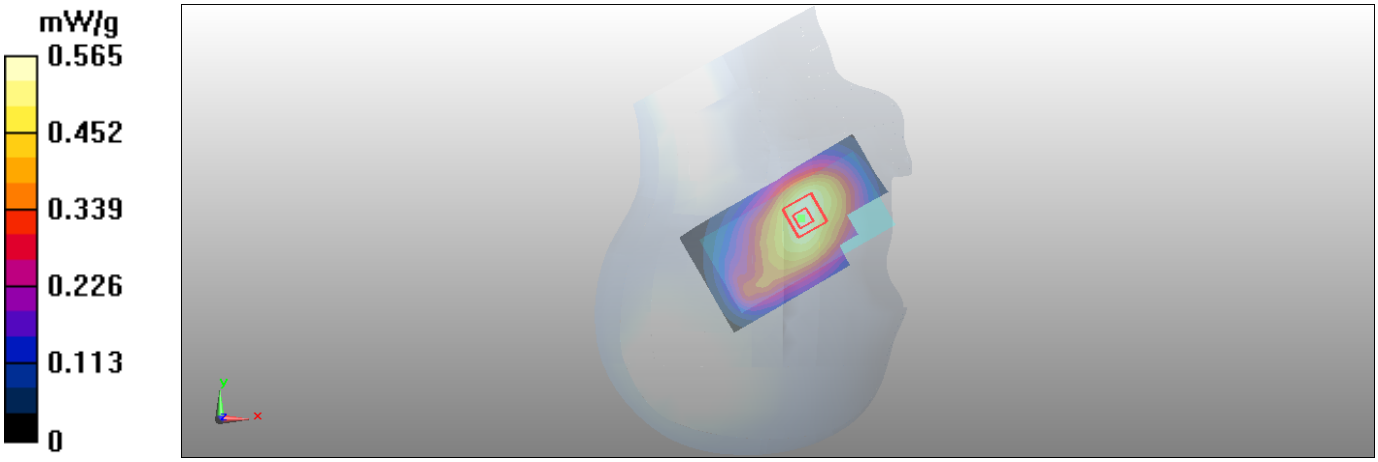
DASY Configuration:
- Probe: EX3DV4 - SN3573, Probe: EX3DV4 - SN3790
- ConvF(6.69, 6.69, 6.69), ConvF(8.74, 8.74, 8.74); Calibrated: 2011-02-17, Calibrated: 2011-05-24
- Sensor-Surface: 4mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn793, Electronics: DAE4 Sn1213; Calibrated: 2010-09-08, Calibrated: 2011-02-14
- Phantom: SAM1, Phantom: SAM 1; Type: SAM, Type: Twin SAM 040 CA; Serial: TP-1126, Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55, Measurement SW: DASY52, V52.6 Build 2; SEMCAD X Version 14.0 Build 61

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

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

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.529 mW/g
SAR(10 g) = 0.369 mW/g

Maximum value of SAR (measured) = 0.565 mW/g



Date/Time: 2011-05-19 09:40:18, Date/Time: 2011-11-21 12:57:21

Test Laboratory: TCC Nokia
Type: RM-774; Serial: 004402/13/470209/5, Serial: 004402/13/580951/9

Communication System: WLAN2450 b-mode, Communication System: WCDMA850
Frequency: 2442 MHz, Frequency: 846.6 MHz; Duty Cycle: 1:1
Medium: HSL2450, Medium: HSL850; Medium Notes: t= 21.5 C, Medium Notes: t= 20.8 C
Medium parameters used: f = 2442 MHz; σ = 1.84 mho/m; ε_r = 38.1; ρ = 1000 kg/m^3 , Medium parameters used: f = 847 MHz; σ = 0.938 mho/m; ε_r = 41.1; ρ = 1000 kg/m^3
Phantom section: Right Section

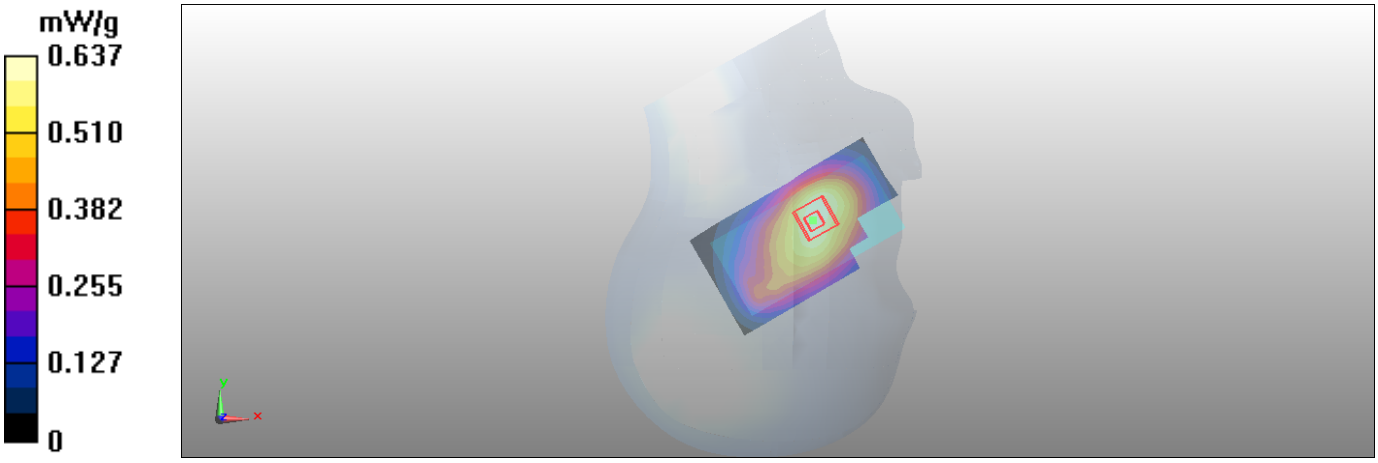
DASY Configuration:
- Probe: EX3DV4 - SN3573, Probe: EX3DV4 - SN3790
- ConvF(6.69, 6.69, 6.69), ConvF(8.74, 8.74, 8.74); Calibrated: 2011-02-17, Calibrated: 2011-05-24
- Sensor-Surface: 4mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn793, Electronics: DAE4 Sn1213; Calibrated: 2010-09-08, Calibrated: 2011-02-14
- Phantom: SAM1, Phantom: SAM 1; Type: SAM, Type: Twin SAM 040 CA; Serial: TP-1126, Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55, Measurement SW: DASY52, V52.6 Build 2; SEMCAD X Version 14.0 Build 61

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

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

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.598 mW/g
SAR(10 g) = 0.420 mW/g

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



Date/Time: 2011-05-19 09:40:18, Date/Time: 2011-11-22 16:23:52

Test Laboratory: TCC Nokia
Type: RM-774; Serial: 004402/13/470209/5, Serial: 004402/13/580951/9

Communication System: WLAN2450 b-mode, Communication System: WCDMA1700/2100
Frequency: 2442 MHz, Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: HSL2450, Medium: HSL1800; Medium Notes: t= 21.5 C, Medium Notes: t= 20.8 C
Medium parameters used: f = 2442 MHz; σ = 1.84 mho/m; ε_r = 38.1; ρ = 1000 kg/m^3 , Medium parameters used (interpolated): f = 1732.4 MHz; σ = 1.32 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3
Phantom section: Right Section

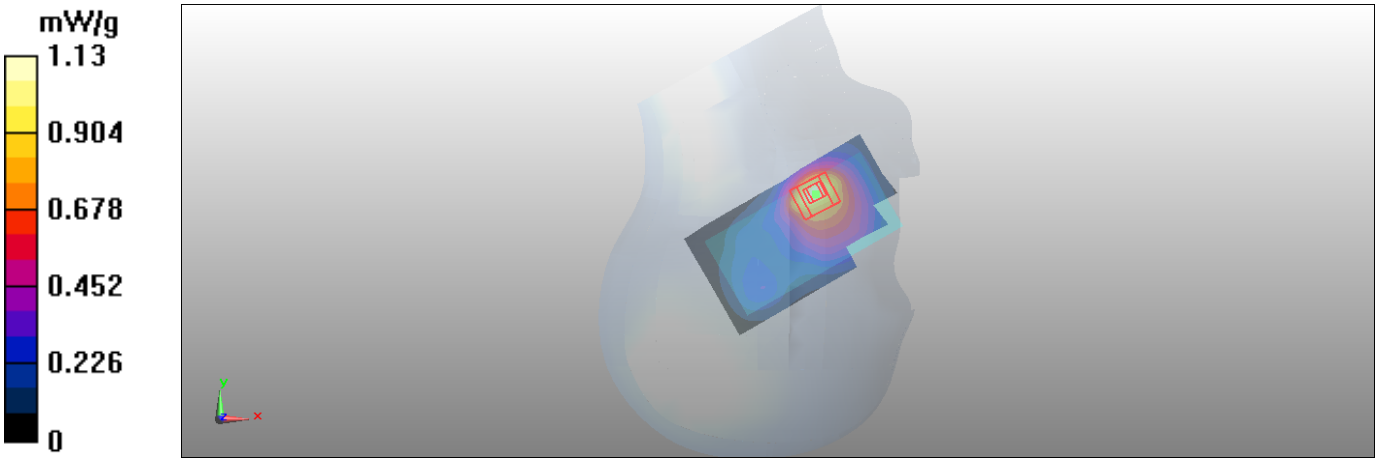
DASY Configuration:
- Probe: EX3DV4 - SN3573, Probe: ES3DV3 - SN3165
- ConvF(6.69, 6.69, 6.69), ConvF(5.19, 5.19, 5.19); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn793, Electronics: DAE4 Sn555; Calibrated: 2010-09-08, Calibrated: 2011-02-22
- Phantom: SAM1, Phantom: SAM 4; Type: SAM, Type: Twin SAM 040 CA; Serial: TP-1126, Serial: TP-1018
- Measurement SW: DASY4, V4.7 Build 55; SEMCAD X Version 14.0 Build 61

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

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

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.990 mW/g
SAR(10 g) = 0.570 mW/g

Maximum value of SAR (measured) = 1.13 mW/g



Date/Time: 2011-05-19 09:40:18, Date/Time: 2011-11-21 12:21:36

Test Laboratory: TCC Nokia
Type: RM-774; Serial: 004402/13/470209/5, Serial: 004402/13/580951/9

Communication System: WLAN2450 b-mode, Communication System: 4-slot GPRS1900
Frequency: 2442 MHz, Frequency: 1909.8 MHz; Duty Cycle: 1:1, Duty Cycle: 1:2.1
Medium: HSL2450, Medium: HSL1900; Medium Notes: t= 21.5 C, Medium Notes: t= 21.9 C
Medium parameters used: f = 2442 MHz; σ = 1.84 mho/m; ε_r = 38.1; ρ = 1000 kg/m^3 , Medium parameters used: f = 1910 MHz; σ = 1.39 mho/m; ε_r = 40.2; ρ = 1000 kg/m^3
Phantom section: Right Section

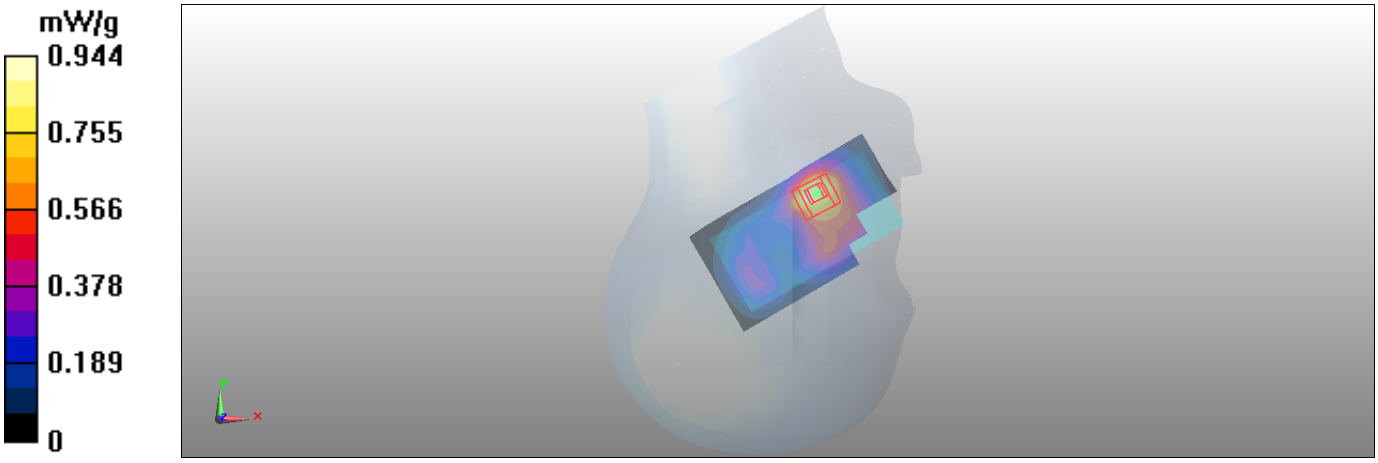
DASY Configuration:
- Probe: EX3DV4 - SN3573, Probe: ES3DV3 - SN3165
- ConvF(6.69, 6.69, 6.69), ConvF(5.03, 5.03, 5.03); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn793, Electronics: DAE4 Sn555; Calibrated: 2010-09-08, Calibrated: 2011-02-22
- Phantom: SAM1, Phantom: SAM 1; Type: SAM, Type: Twin SAM 040 CA; Serial: TP-1126, Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; SEMCAD X Version 14.0 Build 61

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

4-slot GPRS - Right/Cheek - High/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.824 mW/g
SAR(10 g) = 0.459 mW/g

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



Date/Time: 2011-05-19 09:40:18, Date/Time: 2011-11-21 15:33:47

Test Laboratory: TCC Nokia
Type: RM-774; Serial: 004402/13/470209/5, Serial: 004402/13/580951/9

Communication System: WLAN2450 b-mode, Communication System: WCDMA1900
Frequency: 2442 MHz, Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: HSL2450, Medium: HSL1900; Medium Notes: t= 21.5 C, Medium Notes: t= 21.9 C
Medium parameters used: f = 2442 MHz; σ = 1.84 mho/m; ε_r = 38.1; ρ = 1000 kg/m^3 , Medium parameters used: f = 1880 MHz; σ = 1.36 mho/m; ε_r = 40.2; ρ = 1000 kg/m^3
Phantom section: Right Section

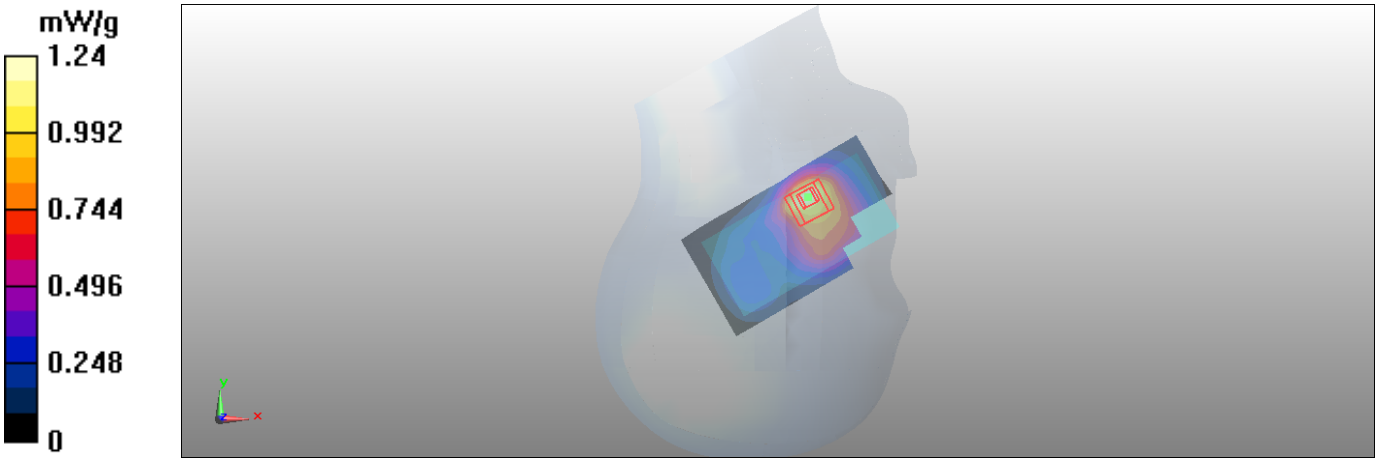
DASY Configuration:
- Probe: EX3DV4 - SN3573, Probe: ES3DV3 - SN3165
- ConvF(6.69, 6.69, 6.69), ConvF(5.03, 5.03, 5.03); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn793, Electronics: DAE4 Sn555; Calibrated: 2010-09-08, Calibrated: 2011-02-22
- Phantom: SAM1, Phantom: SAM 1; Type: SAM, Type: Twin SAM 040 CA; Serial: TP-1126, Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; SEMCAD X Version 14.0 Build 61

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

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

Motorola Fast SAR of Combined Scans: SAR(1 g) = 1.08 mW/g
SAR(10 g) = 0.618 mW/g

Maximum value of SAR (measured) = 1.24 mW/g



Date/Time: 2011-05-19 13:59:11, Date/Time: 2011-11-22 07:32:32

Test Laboratory: TCC Nokia

Type: RM-774; Serial: 004402/13/470209/5, Serial: 004402/13/580951/9

Communication System: WLAN2450 b-mode, Communication System: GSM850
Frequency: 2442 MHz, Frequency: 848.8 MHz; Duty Cycle: 1:1, Duty Cycle: 1:8.30042
Medium: BSL2450, Medium: BSL850; Medium Notes: t= 21.6 C, Medium Notes: t= 20.2 C
Medium parameters used: f = 2442 MHz; σ = 1.99 mho/m; ε_r = 51; ρ = 1000 kg/m^3 , Medium parameters used: f = 849 MHz; σ = 1 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

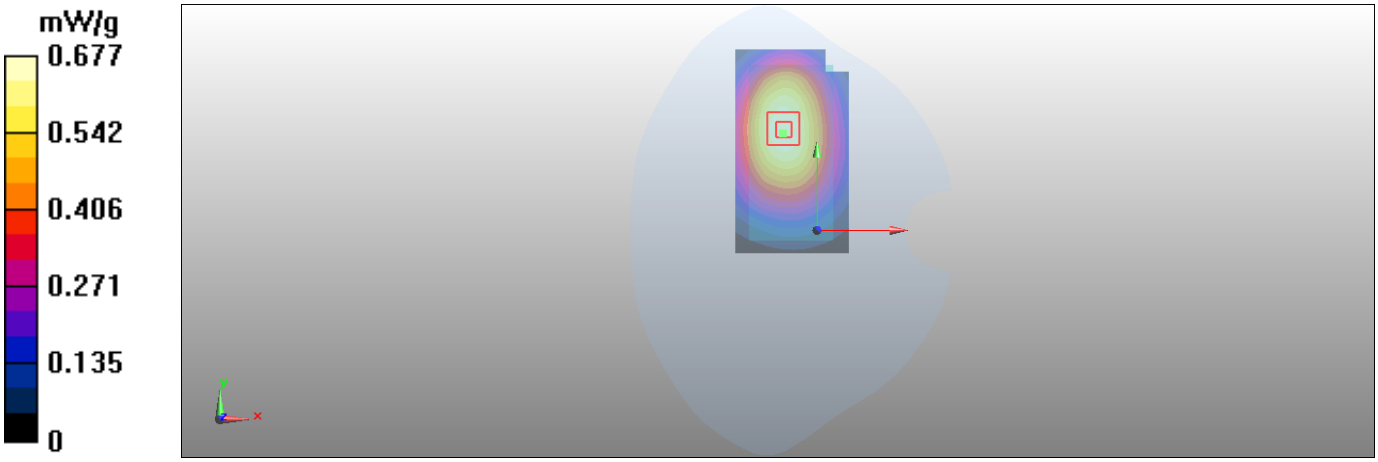
DASY Configuration:
- Probe: EX3DV4 - SN3573, Probe: EX3DV4 - SN3790
- ConvF(6.8, 6.8, 6.8), ConvF(8.57, 8.57, 8.57); Calibrated: 2011-02-17, Calibrated: 2011-05-24
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn793, Electronics: DAE4 Sn1213; Calibrated: 2010-09-08, Calibrated: 2011-02-14
- Phantom: SAM2, Phantom: SAM 3; Type: SAM, Type: Twin SAM 040 CA; Serial: TP-1570, Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55, Measurement SW: DASY52, V52.6 Build 2; SEMCAD X Version 14.0 Build 61

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

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

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.644 mW/g
SAR(10 g) = 0.457 mW/g

Maximum value of SAR (measured) = 0.677 mW/g



Date/Time: 2011-05-19 13:59:11, Date/Time: 2011-11-22 08:11:51

Test Laboratory: TCC Nokia

Type: RM-774; Serial: 004402/13/470209/5, Serial: 004402/13/580951/9

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

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

Medium: BSL2450, Medium: BSL850; Medium Notes: t= 21.6 C, Medium Notes: t= 20.2 C

Medium parameters used: f = 2442 MHz; σ = 1.99 mho/m; ε_r = 51; ρ = 1000 kg/m^3 , Medium parameters used: f = 847 MHz; σ = 1 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3

Phantom section: Flat Section

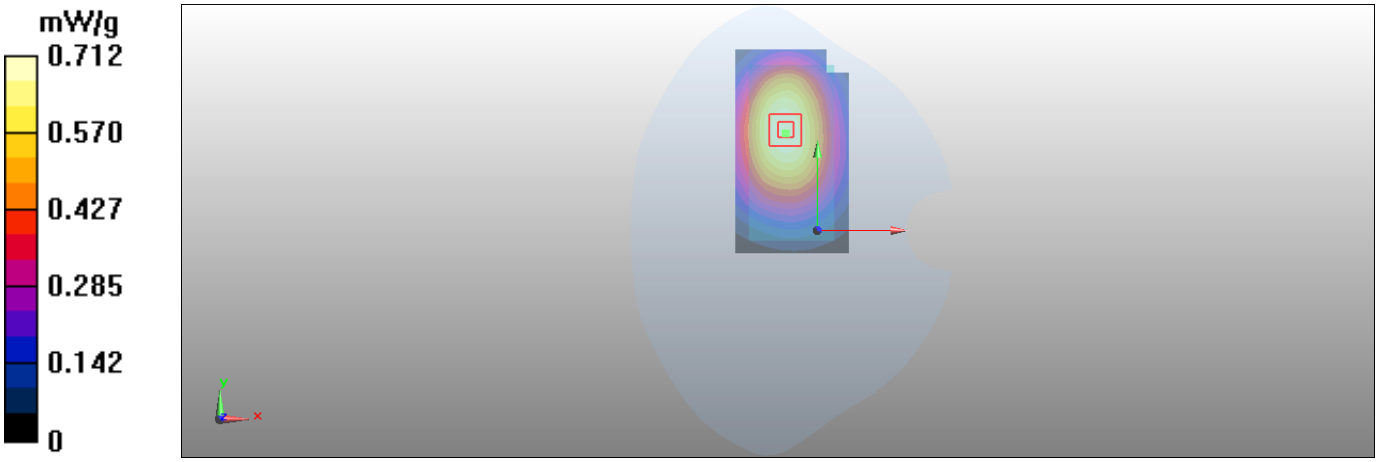
DASY Configuration:
- Probe: EX3DV4 - SN3573, Probe: EX3DV4 - SN3790
- ConvF(6.8, 6.8, 6.8), ConvF(8.57, 8.57, 8.57); Calibrated: 2011-02-17, Calibrated: 2011-05-24
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn793, Electronics: DAE4 Sn1213; Calibrated: 2010-09-08, Calibrated: 2011-02-14
- Phantom: SAM2, Phantom: SAM 3; Type: SAM, Type: Twin SAM 040 CA; Serial: TP-1570, Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55, Measurement SW: DASY52, V52.6 Build 2; SEMCAD X Version 14.0 Build 61

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

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

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.677 mW/g
SAR(10 g) = 0.481 mW/g

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



Date/Time: 2011-05-19 13:59:11, Date/Time: 2011-11-22 12:02:39

Test Laboratory: TCC Nokia
Type: RM-774; Serial: 004402/13/470209/5, Serial: 004402/13/580951/9

Communication System: WLAN2450 b-mode, Communication System: WCDMA1700/2100
Frequency: 2442 MHz, Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: BSL2450, Medium: BSL1800; Medium Notes: t= 21.6 C, Medium Notes: t= 20.8 C
Medium parameters used: f = 2442 MHz; σ = 1.99 mho/m; ε_r = 51; ρ = 1000 kg/m^3 , Medium parameters used (interpolated): f = 1732.4 MHz; σ = 1.43 mho/m; ε_r = 51.7; ρ = 1000 kg/m^3
Phantom section: Flat Section

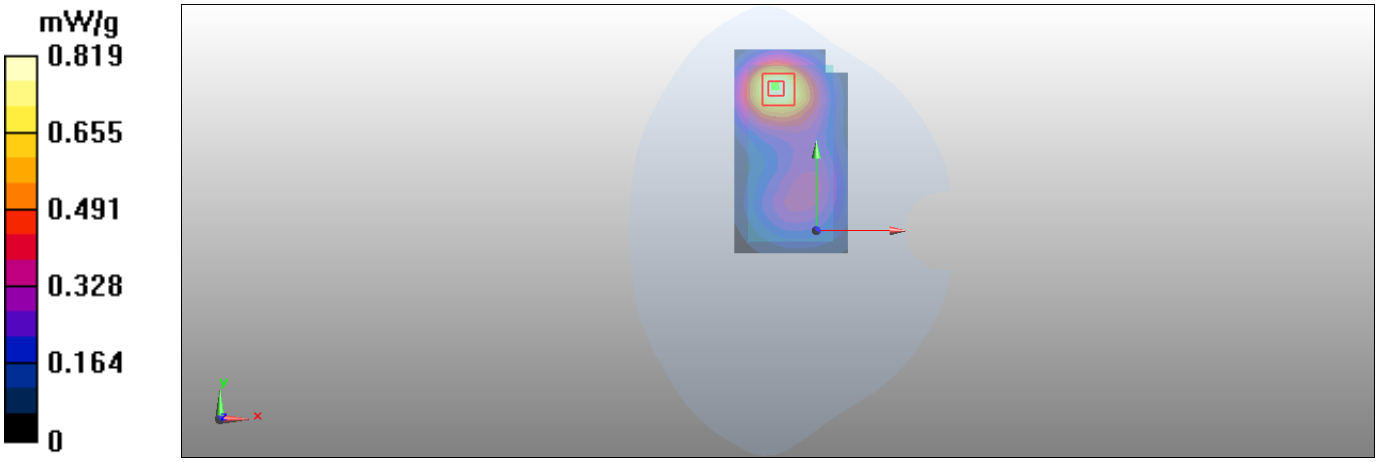
DASY Configuration:
- Probe: EX3DV4 - SN3573, Probe: ES3DV3 - SN3165
- ConvF(6.8, 6.8, 6.8), ConvF(4.91, 4.91, 4.91); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn793, Electronics: DAE4 Sn555; Calibrated: 2010-09-08, Calibrated: 2011-02-22
- Phantom: SAM2, Phantom: SAM 3; Type: SAM, Type: Twin SAM 040 CA; Serial: TP-1570, Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; SEMCAD X Version 14.0 Build 61

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

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

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.761 mW/g
SAR(10 g) = 0.466 mW/g

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



Date/Time: 2011-05-19 13:59:11, Date/Time: 2011-11-23 14:14:20

Test Laboratory: TCC Nokia
Type: RM-774; Serial: 004402/13/470209/5, Serial: 004402/13/580951/9

Communication System: WLAN2450 b-mode, Communication System: 4-slot GPRS1900
Frequency: 2442 MHz, Frequency: 1909.8 MHz; Duty Cycle: 1:1, Duty Cycle: 1:2.1
Medium: BSL2450, Medium: BSL1900; Medium Notes: t= 21.6 C, Medium Notes: t= 20.8 C
Medium parameters used: f = 2442 MHz; σ = 1.99 mho/m; ε_r = 51; ρ = 1000 kg/m^3 , Medium parameters used: f = 1910 MHz; σ = 1.55 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

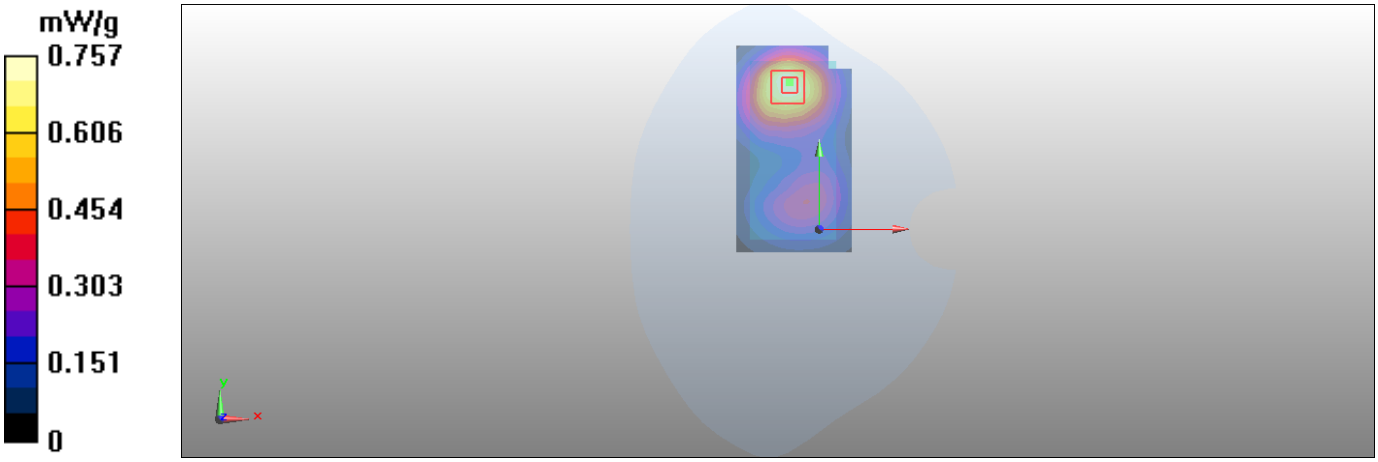
DASY Configuration:
- Probe: EX3DV4 - SN3573, Probe: ES3DV3 - SN3165
- ConvF(6.8, 6.8, 6.8), ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793, Electronics: DAE4 Sn555; Calibrated: 2010-09-08, Calibrated: 2011-02-22
- Phantom: SAM2, Phantom: SAM 2; Type: SAM, Type: Twin SAM 040 CA; Serial: TP-1570, Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; SEMCAD X Version 14.0 Build 61

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

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

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.708 mW/g
SAR(10 g) = 0.427 mW/g

Maximum value of SAR (measured) = 0.757 mW/g



Date/Time: 2011-05-19 13:59:11, Date/Time: 2011-11-23 10:04:54

Test Laboratory: TCC Nokia

Type: RM-774; Serial: 004402/13/470209/5, Serial: 004402/13/580951/9

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

Frequency: 2442 MHz, Frequency: 1907.6 MHz; Duty Cycle: 1:1

Medium: BSL2450, Medium: BSL1800; Medium Notes: t= 21.6 C, Medium Notes: t= 20.8 C

Medium parameters used: f = 2442 MHz; σ = 1.99 mho/m; ε_r = 51; ρ = 1000 kg/m^3 , Medium parameters used: f = 1908 MHz; σ = 1.55 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3

Phantom section: Flat Section

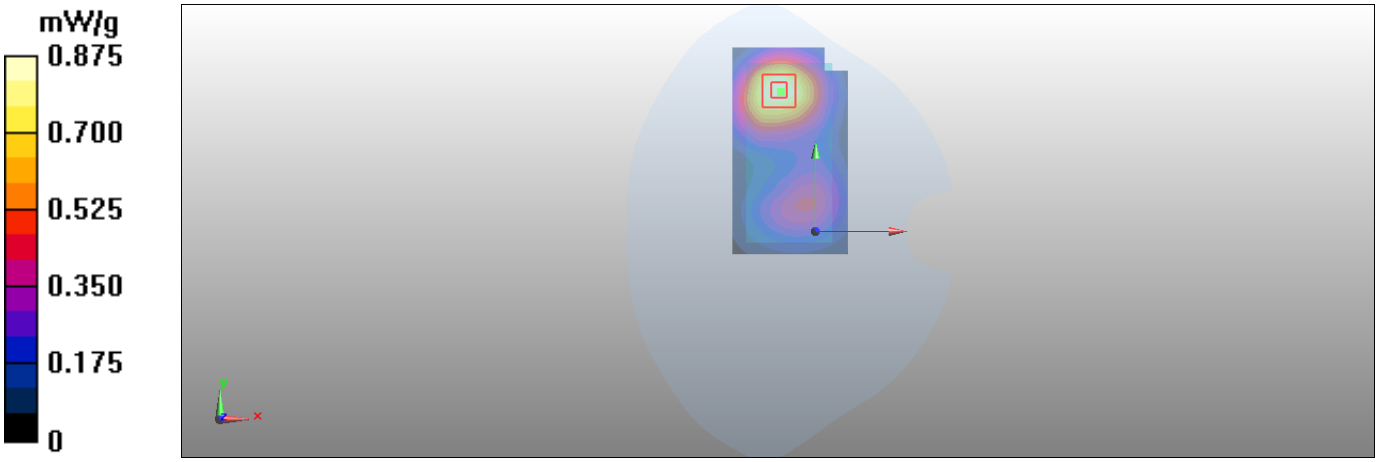
DASY Configuration:
- Probe: EX3DV4 - SN3573, Probe: ES3DV3 - SN3165
- ConvF(6.8, 6.8, 6.8), ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793, Electronics: DAE4 Sn555; Calibrated: 2010-09-08, Calibrated: 2011-02-22
- Phantom: SAM2, Phantom: SAM 2; Type: SAM, Type: Twin SAM 040 CA; Serial: TP-1570, Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; SEMCAD X Version 14.0 Build 61

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

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

Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.823 mW/g
SAR(10 g) = 0.503 mW/g

Maximum value of SAR (measured) = 0.875 mW/g



APPENDIX C: RELEVANT PAGES FROM PROBE CALIBRATION REPORTS

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

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

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Accreditation No.: SCS 108

Client Nokia Salo TCC

Certificate No: EX3-3790_May11

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3790

Calibration procedure(s): QA CAL-01.v7, QA CAL-23.v4, QA CAL-25.v3
Calibration procedure for dosimetric E-field probes

Calibration date: May 24, 2011

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41498087	31-Mar-11 (No. 217-01372)	Apr-12
Reference 3 dB Attenuator	SN: S5054 (3c)	29-Mar-11 (No. 217-01369)	Apr-12
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Reference 30 dB Attenuator	SN: S5129 (30b)	29-Mar-11 (No. 217-01370)	Apr-12
Reference Probe ES3DV2	SN: 3013	29-Dec-10 (No. ES3-3013_Dec10)	Dec-11
DAE4	SN: 654	3-May-11 (No. DAE4-654_May11)	May-12
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

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 27, 2011

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3790

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	41.9	0.89	8.74	8.74	8.74	0.80	0.72	± 12.0 %
835	41.5	0.90	8.49	8.49	8.49	0.80	0.69	± 12.0 %
1750	40.1	1.37	7.49	7.49	7.49	0.80	0.59	± 12.0 %
1900	40.0	1.40	7.25	7.25	7.25	0.80	0.59	± 12.0 %
2450	39.2	1.80	6.67	6.67	6.67	0.75	0.59	± 12.0 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

DASY/EASY - Parameters of Probe: EX3DV4- SN:3790

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	55.5	0.96	8.57	8.57	8.57	0.80	0.74	± 12.0 %
835	55.2	0.97	8.39	8.39	8.39	0.80	0.75	± 12.0 %
1750	53.4	1.49	7.72	7.72	7.72	0.80	0.72	± 12.0 %
1900	53.3	1.52	7.32	7.32	7.32	0.80	0.71	± 12.0 %
2450	52.7	1.95	6.85	6.85	6.85	0.80	0.58	± 12.0 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

Calibration Laboratory of
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Zeughausstrasse 43, 8004 Zurich, Switzerland

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Accreditation No.: SCS 108

Client Nokia Salo TCC

Certificate No: ES3-3165_Feb11

CALIBRATION CERTIFICATE

Object: ES3DV3 - SN:3165

Calibration procedure(s): QA CAL-01.v7, QA CAL-23.v4, QA CAL-25.v3
Calibration procedure for dosimetric E-field probes

Calibration date: February 17, 2011

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	01-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41495277	01-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41498087	01-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	29-Dec-10 (No. ES3-3013_Dec10)	Dec-11
DAE4	SN: 654	23-Apr-10 (No. DAE4-654_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

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: February 22, 2011

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3165

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
835	41.5	0.90	6.09	6.09	6.09	0.43	1.44	± 12.0 %
1750	40.1	1.37	5.19	5.19	5.19	0.35	1.84	± 12.0 %
1900	40.0	1.40	5.03	5.03	5.03	0.64	1.34	± 12.0 %
2450	39.2	1.80	4.44	4.44	4.44	0.79	1.13	± 12.0 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

DASY/EASY - Parameters of Probe: ES3DV3- SN:3165

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
835	55.2	0.97	6.04	6.04	6.04	0.50	1.43	± 12.0 %
1750	53.4	1.49	4.91	4.91	4.91	0.36	2.50	± 12.0 %
1900	53.3	1.52	4.61	4.61	4.61	0.34	2.38	± 12.0 %
2450	52.7	1.95	4.18	4.18	4.18	0.79	0.83	± 12.0 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

APPENDIX D: RELEVANT PAGES FROM DIPOLE VALIDATION KIT REPORTS

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

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

Accredited by the Swiss Accreditation Service (SAS) **Accreditation No.: SCS 108**
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Client Nokia Salo TCC **Certificate No: D835V2-462_Sep11**

CALIBRATION CERTIFICATE

Object D835V2 - SN: 462

Calibration procedure(s) QA CAL-05.v8
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: September 13, 2011

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

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 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-10 (No. 217-01266)	Oct-11
Power sensor HP 8481A	US37292783	06-Oct-10 (No. 217-01266)	Oct-11
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	29-Apr-11 (No. ES3-3205_Apr11)	Apr-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12

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	04-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

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

Issued: September 13, 2011

Date: 13.09.2011

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 462

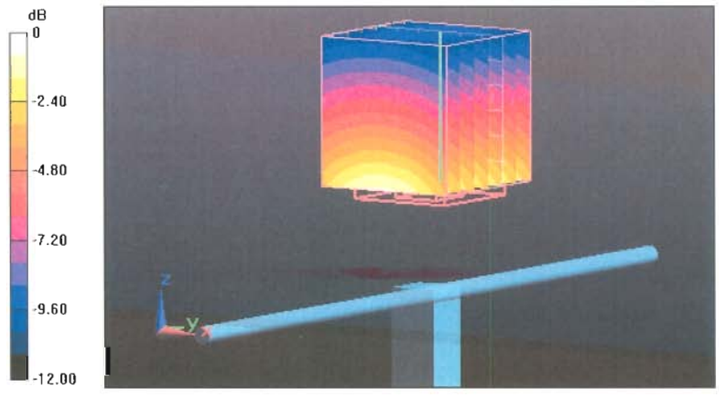
Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.89 mho/m; ε_r = 41.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.07, 6.07, 6.07); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.987 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.423 W/kg
SAR(1 g) = 2.33 mW/g; SAR(10 g) = 1.52 mW/g
Maximum value of SAR (measured) = 2.708 mW/g



0 dB = 2.710mW/g

Date: 12.09.2011

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 462

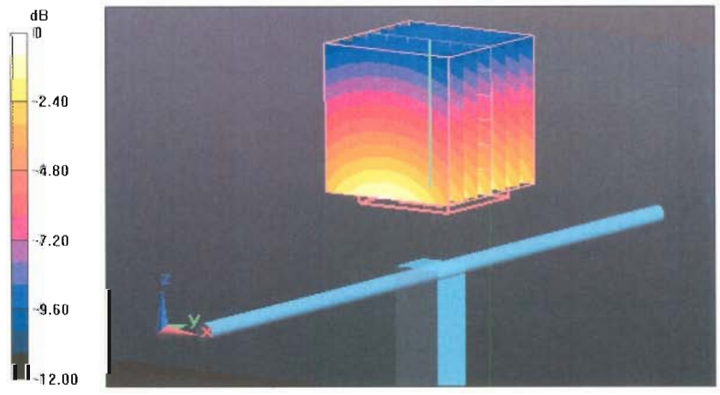
Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 1 mho/m; ε_r = 53.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.02, 6.02, 6.02); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.464 V/m; Power Drift = 0.0033 dB
Peak SAR (extrapolated) = 3.540 W/kg
SAR(1 g) = 2.45 mW/g; SAR(10 g) = 1.61 mW/g
Maximum value of SAR (measured) = 2.851 mW/g



0 dB = 2.850mW/g

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Accreditation No.: SCS 108

Client Nokia Salo TCC

Certificate No: D1800V2-2d065_Sep11

CALIBRATION CERTIFICATE

Object	D1800V2 - SN: 2d065
Calibration procedure(s)	QA CAL-05.v8 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	September 15, 2011

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

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 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-10 (No. 217-01266)	Oct-11
Power sensor HP 8481A	US37292783	06-Oct-10 (No. 217-01266)	Oct-11
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	29-Apr-11 (No. ES3-3205_Apr11)	Apr-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12

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	04-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

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

Issued: September 15, 2011

Date: 15.09.2011

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN: 2d065

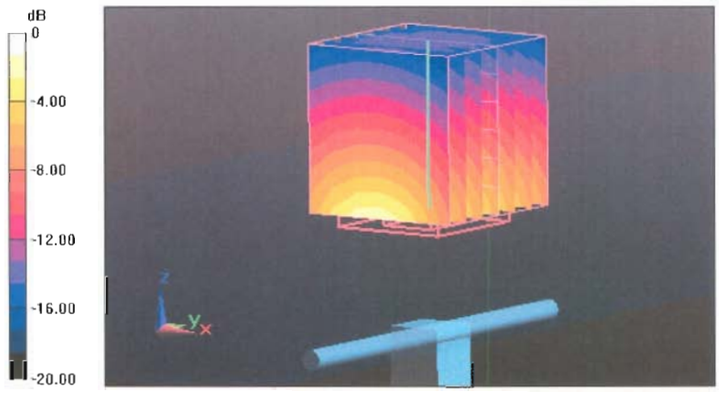
Communication System: CW; Frequency: 1800 MHz
Medium parameters used: f = 1800 MHz; σ = 1.37 mho/m; ε_r = 39.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.07, 5.07, 5.07); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.966 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 16.764 W/kg
SAR(1 g) = 9.43 mW/g; SAR(10 g) = 4.98 mW/g
Maximum value of SAR (measured) = 11.819 mW/g



0 dB = 11.820mW/g

DASY5 Validation Report for Body TSL

Date: 14.09.2011

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN: 2d065

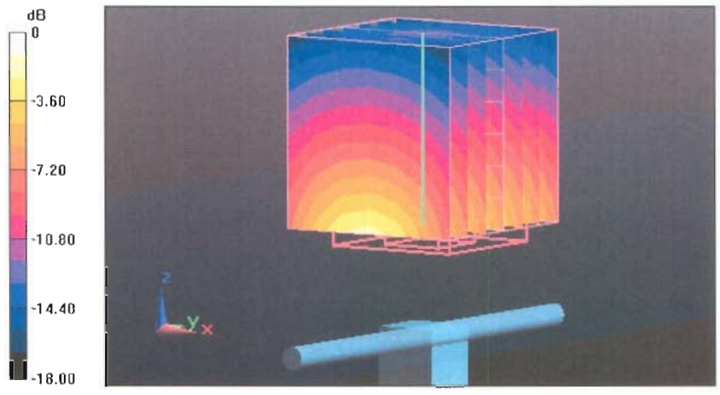
Communication System: CW; Frequency: 1800 MHz
Medium parameters used: f = 1800 MHz; σ = 1.52 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.74, 4.74, 4.74); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.166 V/m; Power Drift = -0.004 dB
Peak SAR (extrapolated) = 17.264 W/kg
SAR(1 g) = 9.86 mW/g; SAR(10 g) = 5.25 mW/g
Maximum value of SAR (measured) = 12.449 mW/g



0 dB = 12.450mW/g

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Accreditation No.: SCS 108

Client Nokia Salo TCC

Certificate No: D1900V2-5d013_Mar10

CALIBRATION CERTIFICATE

Object	D1900V2 - SN: 5d013
Calibration procedure(s)	QA CAL-05.v7 Calibration procedure for dipole validation kits
Calibration date:	March 23, 2010

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-09 (No. 217-01086)	Oct-10
Power sensor HP 8481A	US37292783	06-Oct-09 (No. 217-01086)	Oct-10
Reference 20 dB Attenuator	SN: 5086 (20g)	31-Mar-09 (No. 217-01025)	Mar-10
Type-N mismatch combination	SN: 5047.2 / 06327	31-Mar-09 (No. 217-01029)	Mar-10
Reference Probe ES3DV3	SN: 3205	26-Jun-09 (No. ES3-3205_Jun09)	Jun-10
DAE4	SN: 601	02-Mar-10 (No. DAE4-601_Mar10)	Mar-11

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-09)	In house check: Oct-10

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

Issued: March 23, 2010

DASY5 Validation Report for Head TSL

Date/Time: 23.03.2010 10:16:39

Test Laboratory: SPEAG, Zurich, Switzerland

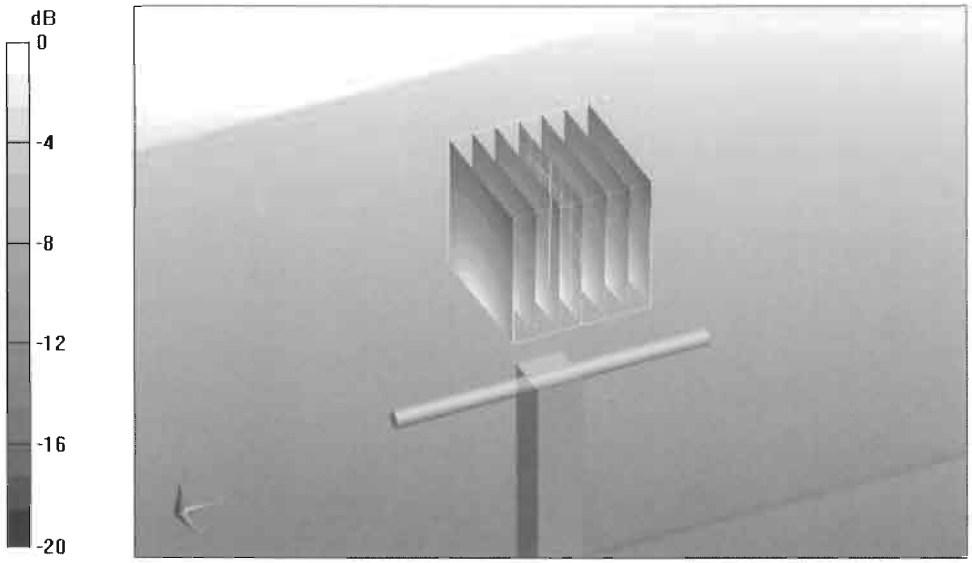
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d013

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: HSL U11 BB
Medium parameters used: f = 1900 MHz; σ = 1.45 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.09, 5.09, 5.09); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.4 V/m; Power Drift = 0.028 dB
Peak SAR (extrapolated) = 18.5 W/kg
SAR(1 g) = 10.2 mW/g; SAR(10 g) = 5.32 mW/g
Maximum value of SAR (measured) = 12.6 mW/g



0 dB = 12.6mW/g

DASY5 Validation Report for Body

Date/Time: 23.03.2010 13:12:18

Test Laboratory: SPEAG, Zurich, Switzerland

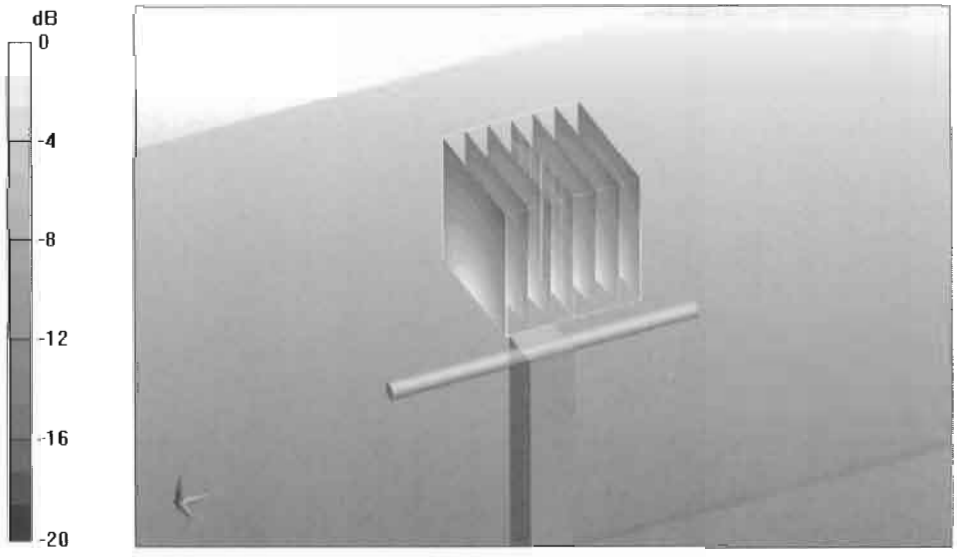
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d013

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: MSL U11 BB
Medium parameters used: f = 1900 MHz; σ = 1.58 mho/m; ε_r = 55; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.59, 4.59, 4.59); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

Pin250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.9 V/m; Power Drift = 0.00956 dB
Peak SAR (extrapolated) = 17.5 W/kg
SAR(1 g) = 10.4 mW/g; SAR(10 g) = 5.58 mW/g
Maximum value of SAR (measured) = 12.7 mW/g



0 dB = 12.7mW/g