

SAR Compliance Test Report

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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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SAR Report

Type: RM-491

FCC_RM-491_06

Applicant: Nokia Corporation

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1. SUMMARY OF SAR TEST REPORT

1.1 Test Details

Period of test	2009-04-15 to 2009-11-19
SN, HW and SW numbers of tested device	SN: 004401/10/647202/6, HW: 0503, SW: 021.000.1, DUT: 13683 SN: 004401/10/647199/4, HW: 0503, SW: 021.000.1, DUT: 13678 SN: 004401/10/769008/9, HW: 0706, SW: 022.009, DUT: 14327
Batteries used in testing	BL-5F Sony, DUT: 13679, 13680, 13681, 14329, 14331, 14332 BL-5F Matsushita, DUT: 13701, 13702, 14328, 14330
Headsets used in testing	HS-48, DUT: 12295, 13682
Other accessories used in testing	-
State of sample	Prototype unit
Notes	-

1.2 Maximum Results

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

1.2.1 Head Configuration

Mode	Ch / f (MHz)	Conducted power	Position	Measured SAR value (1g avg)	Scaled* SAR value (1g avg)	SAR limit (1g avg)	Result
2-slot GPRS850	251 / 836.6	30.5 dBm	Left, Cheek	0.840 W/kg	0.94 W/kg	1.6 W/kg	PASSED
3-slot GPRS1900	512 / 1850.2	26.7 dBm	Right, Cheek	0.896 W/kg	1.00 W/kg	1.6 W/kg	PASSED
WCDMA1900	9400 / 1880.0	21.5 dBm	Right, Cheek	0.666 W/kg	0.75 W/kg	1.6 W/kg	PASSED
WLAN2450	11 / 2462.0	18.0 dBm	Left, Cheek	0.298 W/kg	0.33 W/kg	1.6 W/kg	PASSED
2-slot GPRS850 + WLAN2450	-	-	Left, Cheek	1.138 W/kg	1.27 W/kg	1.6 W/kg	PASSED
3-slot GPRS1900 + WLAN2450	-	-	Left, Cheek	1.165 W/kg	1.30 W/kg	1.6 W/kg	PASSED
WCDMA1900 + WLAN2450	-	-	Right, Cheek	0.867 W/kg	0.97 W/kg	1.6 W/kg	PASSED

1.2.2 Body Worn Configuration

Mode	Ch / f (MHz)	Conducted power	Separation distance	Measured SAR value (1g avg)	Scaled* SAR value (1g avg)	SAR limit (1g avg)	Result
2-slot GPRS850	251 / 848.8	30.5 dBm	2.2 cm	0.540 W/kg	0.60 W/kg	1.6 W/kg	PASSED
3-slot GPRS1900	661 / 1880.0	26.7 dBm	2.2 cm	0.332 W/kg	0.37 W/kg	1.6 W/kg	PASSED
WCDMA1900	9400 / 1880.0	21.5 dBm	2.2 cm	0.317 W/kg	0.36 W/kg	1.6 W/kg	PASSED
WLAN2450	11 / 2462.0	18.0 dBm	2.2 cm	0.115 W/kg	0.13 W/kg	1.6 W/kg	PASSED
2-slot GPRS850 + WLAN2450	-	-	2.2 cm	0.626 W/kg	0.70 W/kg	1.6 W/kg	PASSED
3-slot GPRS1900 + WLAN2450	-	-	2.2 cm	0.418 W/kg	0.47 W/kg	1.6 W/kg	PASSED
WCDMA1900 + WLAN2450	-	-	2.2 cm	0.403 W/kg	0.45 W/kg	1.6 W/kg	PASSED

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

1.2.3 Maximum Drift

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

1.2.4 Measurement Uncertainty

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

Device category	Portable
Exposure environment	General population / uncontrolled

Modes of Operation	Bands	Modulation Mode	Duty Cycle	Transmitter Frequency Range (MHz)
GSM	850 1900	GMSK	1/8	824 – 849 1850 – 1910
GPRS	850 1900	GMSK	1/8 to 3/8	824 – 849 1850 – 1910
EGPRS	850 1900	GMSK / 8PSK	1/8 to 3/8	824 – 849 1850 – 1910
WCDMA	1900 (Band II)		1	1852 – 1908
HSUPA	1900 (Band II)		1	1852 – 1908
BT	2450	GFSK	1	2402 – 2480
WLAN	2450	11Mbps QPSK	1	2412 – 2462

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

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

This is a WCDMA HSUPA device. SAR tests for HSUPA mode have not been performed because none of the HSUPA Sub-test modes has an average power > 0.25dB above the basic WCDMA 12.2kbps RMC mode. Appendix C of this report gives a summary of the conducted average powers. A report detailing the conducted WCDMA and HSUPA average power values is submitted separately.

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 in the back section of the keypad slide. The WLAN antenna is located at the top in the back section of the keypad slide.

3. TEST CONDITIONS

3.1 Temperature and Humidity

Ambient temperature (°C):	19.9 to 22.7
Ambient humidity (RH %):	35 to 46

3.2 Test Signal, Frequencies and Output Power

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

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

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

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

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

The transmission mode of the device in all WLAN tests was DSSS QPSK 11Mbps. This mode has the highest (or equal highest) time-averaged output power of all the WLAN modulation modes in Nokia devices.

Two hardware builds have been SAR tested in this report: HW0503 and HW0706. The only difference between the hardware builds is in the WLAN module - there are no differences between the builds to the cellular radiated performance. Consequently, whilst both hardware builds have been SAR tested in WLAN transmission mode, only one of the hardware builds (HW0503) is reported for the cellular bands.

3.3 Test Cases and Test Minimisation

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

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

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

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

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

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

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

4. DESCRIPTION OF THE TEST EQUIPMENT

4.1 Measurement System and Components

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

The following table lists calibration dates of SPEAG components:

Test Equipment	Serial Number	Calibration interval	Calibration expiry
DAE 4	555	12 months	2009-11
DAE 4	793	12 months	2009-04
DAE 4	793	12 months	2010-05
E-field Probe ES3DV3	3131	12 months	2010-02
E-field Probe ES3DV3	3165	12 months	2009-04
E-field Probe ES3DV3	3165	12 months	2010-05
Dipole Validation Kit, D835V2	480	24 months	2009-05
Dipole Validation Kit, D1900V2	5d030	24 months	2010-01
Dipole Validation Kit, D2450V2	729	24 months	2010-01
DASY4 software	Version 4.7	-	-

Additional test equipment used in testing:

Test Equipment	Model	Serial Number	Calibration interval	Calibration expiry
Signal Generator	SML03	101265	12 months	2009-08
Signal Generator	SML03	101265	12 months	2010-09
Amplifier	ZHL-42 (SMA)	N072095-5	12 months	2009-08
Amplifier	ZHL-42 (SMA)	N072095-5	12 months	2010-09
Power Meter	NRVS	849305/028	12 months	2009-08
Power Meter	NRVS	849305/028	12 months	2010-09
Power Sensor	NRV-Z32	839176/020	12 months	2009-08
Power Sensor	NRV-Z32	839176/020	12 months	2010-09
Call Tester	CMU 200	101111	-	-
Call Tester	CMU 200	103293	-	-
Vector Network Analyzer	8753E	US38432928	12 months	2009-08
Vector Network Analyzer	8753E	US38432928	12 months	2010-09
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 μ W/g to > 100 mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 330 mm Tip length: 20 mm Body diameter: 12 mm Tip diameter: 3.9 mm
Application	Distance from probe tip to dipole centers: 2.0 mm General dosimetry up to 4 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms

4.2 Phantoms

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

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

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

4.3 Tissue Simulants

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

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

4.3.1 Tissue Simulant Recipes

The following recipe(s) were used for Head and Body tissue simulant(s):

800MHz band

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

1900MHz band

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

2450MHz band

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

4.3.2 System Checking

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

System checking, head tissue simulant

f [MHz]	Description	SAR [W/kg], 1g	Dielectric Parameters		Temp [°C]
			ϵ_r	σ [S/m]	
835	Reference result	2.29	41.6	0.90	
	± 10% window	2.06 – 2.52			
	2009-04-16	2.49	40.7	0.91	21.0
	2009-04-20	2.47	40.3	0.90	21.0
1900	Reference result	10.2	38.5	1.46	
	± 10% window	9.2 – 11.2			
	2009-05-18	10.7	38.6	1.46	21.0
2450	Reference result	14.3	37.8	1.82	
	± 10% window	12.9 – 15.7			
	2009-04-27	14.4	37.6	1.86	21.0
	2009-04-30	14.7	37.4	1.87	21.0
	2009-11-10	14.1	37.3	1.87	21.0
	2009-11-19	14.5	37.3	1.88	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]	
836	Recommended value	41.5	0.90	
	$\pm 5\%$ window	39.4 – 43.6	0.86 – 0.95	
	2009-04-16	40.7	0.91	21.0
	2009-04-20	40.3	0.90	21.0
1880	Recommended value	40.0	1.40	
	$\pm 5\%$ window	38.0 – 42.0	1.33 – 1.47	
	2009-05-18	38.7	1.45	21.0
2442	Recommended value	39.2	1.79	
	$\pm 5\%$ window	37.3 – 41.2	1.70 – 1.88	
	2009-04-30	37.5	1.86	21.0
	2009-11-10	37.3	1.86	21.0
	2009-11-19	37.3	1.87	21.0

Body tissue simulant measurements

f [MHz]	Description	Dielectric Parameters		Temp [°C]
		ϵ_r	σ [S/m]	
836	Recommended value	55.2	0.97	
	$\pm 5\%$ window	52.4 – 58.0	0.92 – 1.02	
	2009-04-16	53.3	1.00	21.0
	2009-04-20	52.9	0.99	21.0
1880	Recommended value	53.3	1.52	
	$\pm 5\%$ window	50.6 – 56.0	1.44 – 1.60	
	2009-05-18	52.6	1.58	21.0
2442	Recommended value	52.7	1.94	
	$\pm 5\%$ window	50.1 – 55.3	1.85 – 2.04	
	2009-04-27	50.8	2.02	21.0
	2009-11-19	52.9	2.03	21.0

5. DESCRIPTION OF THE TEST PROCEDURE

5.1 Device Holder

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



Device holder supplied by SPEAG

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



Nokia spacer

5.2 Test Positions

5.2.1 Against Phantom Head

Measurements were made in “cheek” and “tilt” positions on both the left hand and right hand sides of the phantom.

The positions used in the measurements were according to IEEE 1528 - 2003 "IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques".

5.2.2 Body Worn Configuration

The device was placed in the SPEAG holder using the Nokia spacer and placed below the flat section of the phantom. The distance between the device and the phantom was kept at the separation distance indicated in Section 1.2.2 using a separate flat spacer that was removed before the start of the measurements. The device was oriented with both sides facing the phantom to find the highest results.

5.3 Scan Procedures

First, area scans were used for determination of the field distribution. Next, a zoom scan, a minimum of 5x5x7 points covering a volume of at least 30x30x30mm, was performed around the highest E-field value to determine the averaged SAR value. Drift was determined by measuring the same point at the start of the area scan and again at the end of the zoom scan.

5.4 SAR Averaging Methods

The maximum SAR value was averaged over a cube of tissue using interpolation and extrapolation.

The interpolation, extrapolation and maximum search routines within Dasy4 are all based on the modified Quadratic Shepard's method (Robert J. Renka, "Multivariate Interpolation Of Large Sets Of Scattered Data", University of North Texas ACM Transactions on Mathematical Software, vol. 14, no. 2, June 1988, pp. 139-148).

The interpolation scheme combines a least-square fitted function method with a weighted average method. A trivariate 3-D / bivariate 2-D quadratic function is computed for each measurement point and fitted to neighbouring points by a least-square method. For the zoom scan, inverse distance weighting is incorporated to fit distant points more accurately. The interpolating function is finally calculated as a weighted average of the quadratics.

In the zoom scan, the interpolation function is used to extrapolate the Peak SAR from the deepest measurement points to the inner surface of the phantom.

6. MEASUREMENT UNCERTAINTY

Table 6.1 – Measurement uncertainty evaluation

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

7. RESULTS

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

850MHz Head SAR results

Option used	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	-
Slide closed BL-5F Sony	Left	Cheek	-	0.531	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
2-slot GPRS	Conducted Power		30.5 dBm	30.5 dBm	30.5 dBm
Slide closed BL-5F Sony	Left	Cheek	-	0.666	-
		Tilt	-	0.429	-
	Right	Cheek	-	0.604	-
		Tilt	-	0.402	-
Slide open BL-5F Sony	Left	Cheek	0.769	0.781	0.840
		Tilt	-	0.495	-
	Right	Cheek	-	0.748	-
		Tilt	-	0.445	-
3-slot GPRS	Conducted Power		-	28.8 dBm	-
Slide closed BL-5F Sony	Left	Cheek	-	0.653	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
2-slot 8PSK EGPRS	Conducted Power		-	-	26.5 dBm
Slide open BL-5F Sony	Left	Cheek	-	-	0.192
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
2-slot GPRS Slide open BL-5F Matsushita	Left Cheek		0.724	0.747	0.817

1900MHz Head SAR results

Option used	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz
GSM	Conducted Power		-	29.5 dBm	-
Slide closed BL-5F Sony	Left	Cheek	-	0.418	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
2-slot GPRS	Conducted Power		-	29.5 dBm	-
Slide closed BL-5F Sony	Left	Cheek	-	0.750	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
3-slot GPRS	Conducted Power		26.7 dBm	26.7 dBm	26.7 dBm
Slide closed BL-5F Sony	Left	Cheek	0.848	0.824	0.867
		Tilt	-	0.474	-
	Right	Cheek	-	0.672	-
		Tilt	-	0.413	-
Slide open BL-5F Sony	Left	Cheek	-	0.607	-
		Tilt	-	0.521	-
	Right	Cheek	0.896	0.853	0.709
		Tilt	-	0.429	-
3-slot 8PSK EGPRS	Conducted Power		23.7 dBm	-	-
Slide open BL-5F Sony	Left	Cheek	-	-	-
		Tilt	-	-	-
	Right	Cheek	0.307	-	-
		Tilt	-	-	-
Option used	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		21.5 dBm	21.5 dBm	21.5 dBm
Slide open BL-5F Sony	Left	Cheek	-	-	-
		Tilt	-	-	-
	Right	Cheek	0.563	0.666	0.449
		Tilt	-	-	-
3-slot GPRS Slide open BL-5F Matsushita	Right Cheek		0.794	0.790	0.615

2450MHz Head SAR results

HW ID	Option used	Test configuration		SAR, averaged over 1g (W/kg)			
				Ch 1 2412.0 MHz	Ch 7 2442.0 MHz	Ch 11 2462.0 MHz	
WLAN		Conducted Power		18.0 dBm	18.0 dBm	18.0 dBm	
0503	Slide closed BL-5F Sony	Left	Cheek	-	0.235	-	
			Tilt	-	0.243	-	
		Right	Cheek	-	0.186	-	
			Tilt	-	0.252	-	
	Slide open BL-5F Sony	Left	Cheek	0.203	0.272	0.273	
			Tilt	-	0.197	-	
		Right	Cheek	-	0.201	-	
			Tilt	-	0.183	-	
	WLAN Slide open BL-5F Matsushita		Left Cheek		0.206	0.265	0.267
	0706	Slide closed BL-5F Sony	Left	Cheek	-	0.109	-
Tilt				-	0.115	-	
Right			Cheek	-	0.101	-	
			Tilt	-	0.123	-	
Slide open BL-5F Sony		Left	Cheek	0.144	0.191	0.254	
			Tilt	-	0.169	-	
		Right	Cheek	-	0.129	-	
			Tilt	-	0.161	-	
WLAN Slide open BL-5F Matsushita		Left Cheek		0.141	0.213	0.298	

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

850MHz Body SAR results

Option used	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
2-slot GPRS		Conducted Power	30.5 dBm	30.5 dBm	30.5 dBm
Slide closed BL-5F Sony	Display facing phantom	Without headset	-	0.315	-
		Headset HS-48	-	0.318	-
	Back facing phantom	Without headset	0.421	0.467	0.540
		Headset HS-48	-	0.467	-
2-slot GPRS Slide closed BL-5F Matsushita	Back facing phantom	Without headset	0.411	0.469	0.518

1900MHz Body SAR results

Option used	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
3-slot GPRS		Conducted Power	26.7 dBm	26.7 dBm	26.7 dBm
Slide closed BL-5F Sony	Display facing phantom	Without headset	-	0.214	-
		Headset HS-48	-	0.169	-
	Back facing phantom	Without headset	0.303	0.329	0.322
		Headset HS-48	-	0.286	-
Option used	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	21.5 dBm	21.5 dBm	21.5 dBm
Slide closed BL-5F Matsushita	Display facing phantom	Without headset	-	-	-
		Headset HS-48	-	-	-
	Back facing phantom	Without headset	0.219	0.317	0.235
		Headset HS-48	-	-	-
3-slot GPRS Slide closed BL-5F Matsushita	Back facing phantom	Without headset	0.318	0.332	0.323

2450MHz Body SAR results

HW ID	Option used	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			Conducted Power	18.0 dBm	18.0 dBm	18.0 dBm
0503	Slide closed BL-5F Sony	Display facing phantom	Without headset	-	0.033	-
			Headset HS-48	-	0.031	-
		Back facing phantom	Without headset	0.034	0.061	0.084
			Headset HS-48	-	0.047	-
	WLAN Slide closed BL-5F Matsushita	Back facing phantom	Without headset	0.052	0.074	0.086
0706	Slide closed BL-5F Sony	Display facing phantom	Without headset	-	0.034	-
			Headset HS-48	-	0.046	-
		Back facing phantom	Without headset	-	0.077	-
			Headset HS-48	0.055	0.077	0.115
	WLAN Slide closed BL-5F Matsushita	Back facing phantom	Without headset	0.043	0.070	0.108

Simultaneous transmissions: Combined SAR results

Test configuration	Max. 1g SAR results				Combined 1g SAR values		
	WLAN	2-slot GPRS850	3-slot GPRS1900	WCDMA 1900	WLAN + 2-slot GPRS850	WLAN + 3-slot GPRS1900	WLAN + WCDMA 1900
Head: Left, Cheek	0.298	0.840	0.867	-	1.138	1.165	-
Head: Left, Tilt	0.243	0.495	0.521	-	0.738	0.764	-
Head: Right, Cheek	0.201	0.748	0.896	0.666	0.949	1.097	0.867
Head: Right, Tilt	0.252	0.445	0.429	-	0.697	0.681	-
Body: Without Headset	0.086	0.540	0.332	0.317	0.626	0.418	0.403
Body: Headset HS-48	0.115	0.467	0.286	-	0.582	0.401	-

Combining the maximum SAR values of WLAN2450 and the cellular bands tends to overestimate the SAR value since their maxima do not necessarily occur in the same location.

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: 2009-04-16 08:43:01

Test Laboratory: TCC Nokia

Type: D835V2; Serial: D835V2 - SN:480

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t=20.4 C

Medium parameters used: f = 835 MHz; σ = 0.912 mho/m; ϵ_r = 40.7; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.7, 5.7, 5.7); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

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

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

Reference Value = 55.3 V/m

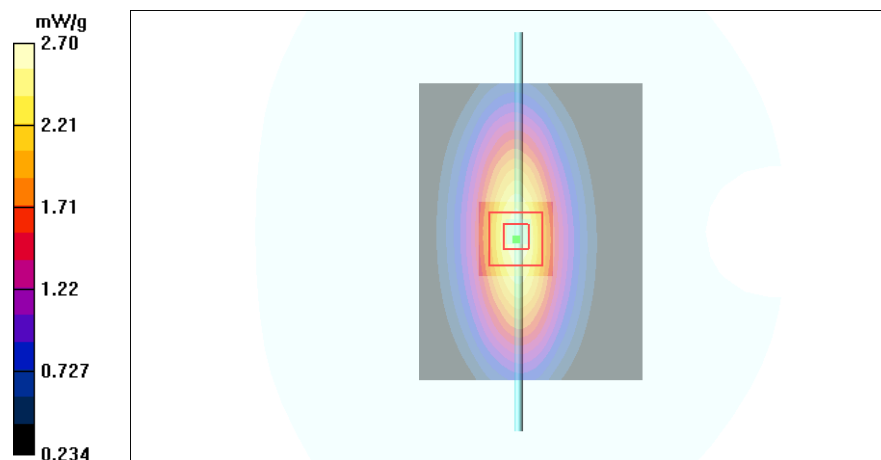
Peak SAR (extrapolated) = 3.77 W/kg

SAR(1 g) = 2.49 mW/g

SAR(10 g) = 1.61 mW/g

Power Drift = -0.079 dB

Maximum value of SAR (measured) = 2.70 mW/g



Date/Time: 2009-04-20 08:06:18

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

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t=20.2 C

Medium parameters used: f = 835 MHz; $\sigma = 0.904$ mho/m; $\epsilon_r = 40.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.7, 5.7, 5.7); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 2.64 mW/g

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

Reference Value = 55.4 V/m

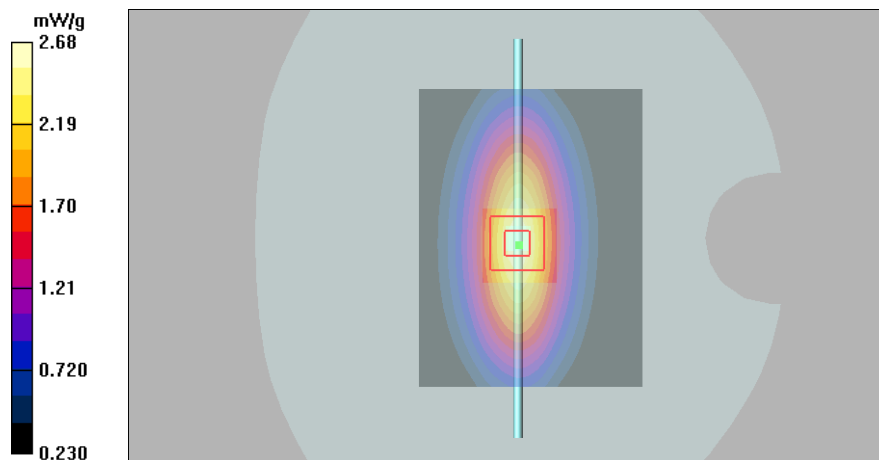
Peak SAR (extrapolated) = 3.76 W/kg

SAR(1 g) = 2.47 mW/g

SAR(10 g) = 1.6 mW/g

Power Drift = -0.026 dB

Maximum value of SAR (measured) = 2.68 mW/g



Date/Time: 2009-05-18 09:40:14

Test Laboratory: TCC Nokia

Type: D1900V2; Serial: D1900V2 - SN:5d030

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: 21.0C

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.46$ mho/m; $\epsilon_r = 38.6$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(4.86, 4.86, 4.86); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

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

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

Reference Value = 89.9 V/m

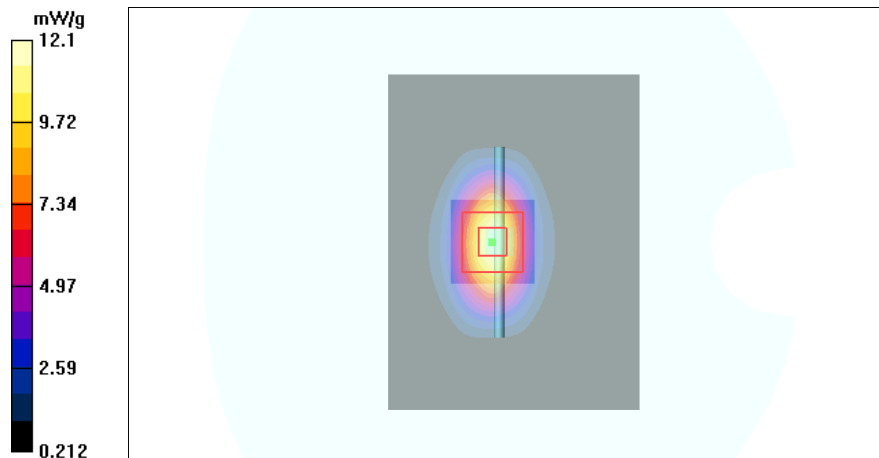
Peak SAR (extrapolated) = 20.1 W/kg

SAR(1 g) = 10.7 mW/g

SAR(10 g) = 5.52 mW/g

Power Drift = 0.042 dB

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



Date/Time: 2009-04-27 08:36:33

Test Laboratory: TCC Nokia

Type: D2450V2; Serial: D2450V2 - SN:729

Communication System: CW2450

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: 21.3C

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.86$ mho/m; $\epsilon_r = 37.6$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.57, 4.57, 4.57); Calibrated: 2008-04-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2008-04-30
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 17.5 mW/g

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

Reference Value = 94.6 V/m

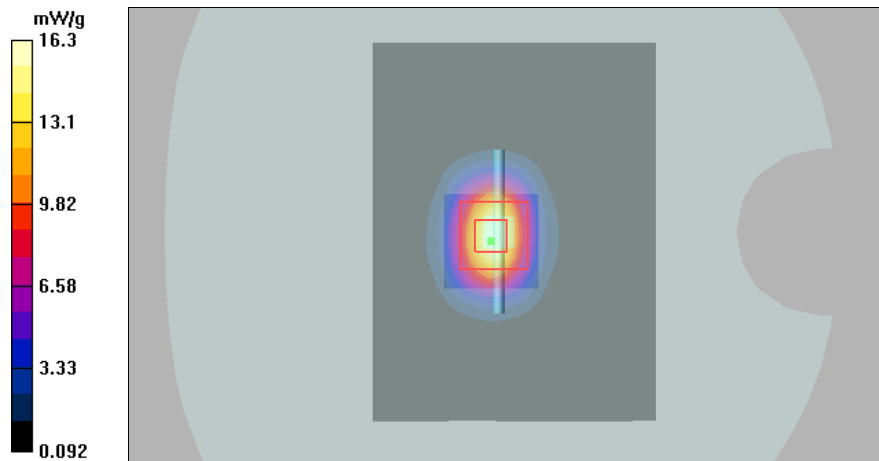
Peak SAR (extrapolated) = 30.4 W/kg

SAR(1 g) = 14.4 mW/g

SAR(10 g) = 6.62 mW/g

Power Drift = -0.027 dB

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



Date/Time: 2009-04-30 11:31:33

Test Laboratory: TCC Nokia

Type: D2450V2; Serial: D2450V2 - SN:729

Communication System: CW2450

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: 20.5C

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.87$ mho/m; $\epsilon_r = 37.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.57, 4.57, 4.57); Calibrated: 2008-04-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2008-04-30
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 17.3 mW/g

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

Reference Value = 95.9 V/m

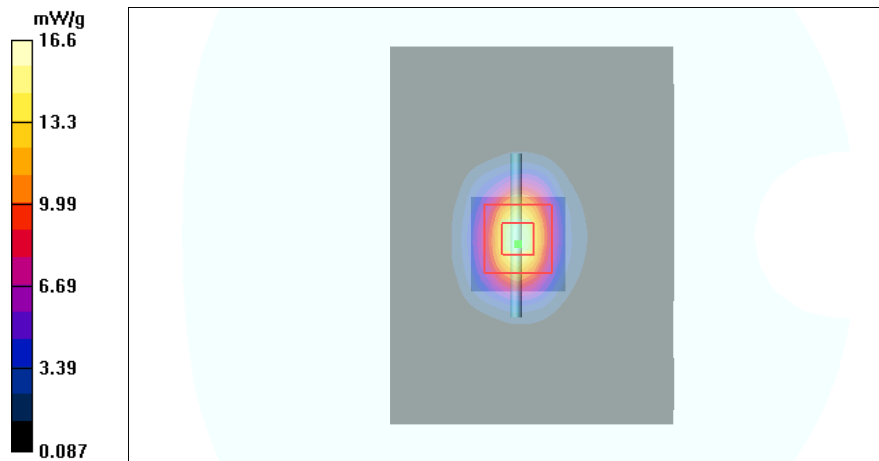
Peak SAR (extrapolated) = 31.3 W/kg

SAR(1 g) = 14.7 mW/g

SAR(10 g) = 6.7 mW/g

Power Drift = 0.030 dB

Maximum value of SAR (measured) = 16.6 mW/g



Date/Time: 2009-11-10 12:00:22

Test Laboratory: TCC Nokia

Type: D2450V2; Serial: D2450V2 - SN:729

Communication System: CW2450

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: 20.3 C

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.87$ mho/m; $\epsilon_r = 37.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.49, 4.49, 4.49); Calibrated: 2009-05-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2009-05-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 16.6 mW/g

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

Reference Value = 90.8 V/m

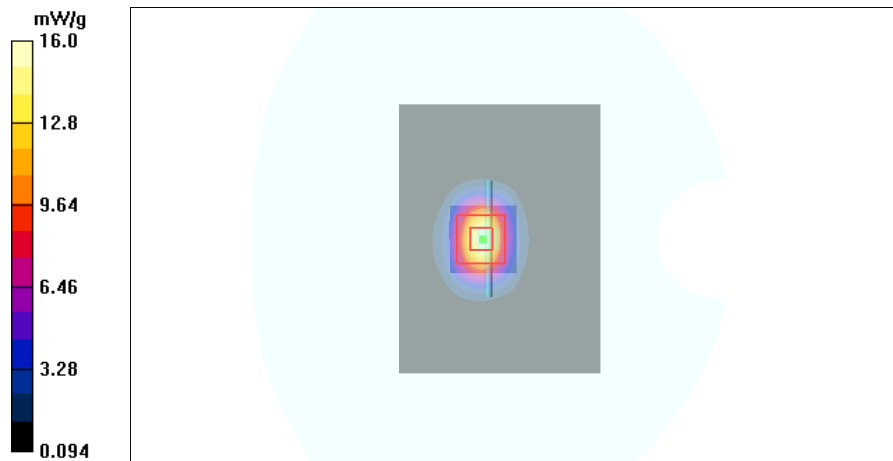
Peak SAR (extrapolated) = 29.9 W/kg

SAR(1 g) = 14.1 mW/g

SAR(10 g) = 6.49 mW/g

Power Drift = 0.057 dB

Maximum value of SAR (measured) = 16.0 mW/g



Date/Time: 2009-11-19 08:59:44

Test Laboratory: TCC Nokia

Type: D2450V2; Serial: D2450V2 - SN:729

Communication System: CW2450

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: 21.3 C

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.88$ mho/m; $\epsilon_r = 37.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.49, 4.49, 4.49); Calibrated: 2009-05-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2009-05-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 17.0 mW/g

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

Reference Value = 83.5 V/m

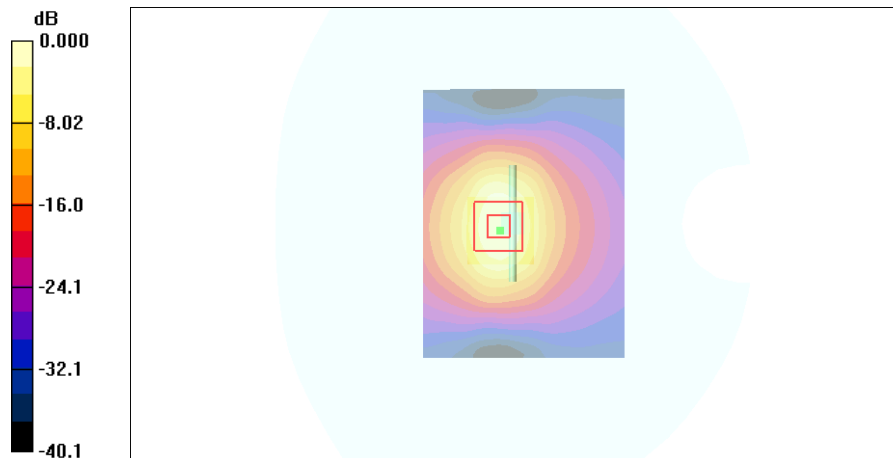
Peak SAR (extrapolated) = 30.2 W/kg

SAR(1 g) = 14.5 mW/g

SAR(10 g) = 6.71 mW/g

Power Drift = 0.077 dB

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



APPENDIX B: MEASUREMENT SCANS

Date/Time: 2009-04-16 09:24:16

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: HSL850; Medium Notes: t=20.4 C

Medium parameters used: $f = 837 \text{ MHz}$; $\sigma = 0.913 \text{ mho/m}$; $\epsilon_r = 40.7$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.7, 5.7, 5.7); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek position - Middle - Slide closed - BL-5F Sony/Area Scan (51x91x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.572 mW/g

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

Reference Value = 8.61 V/m

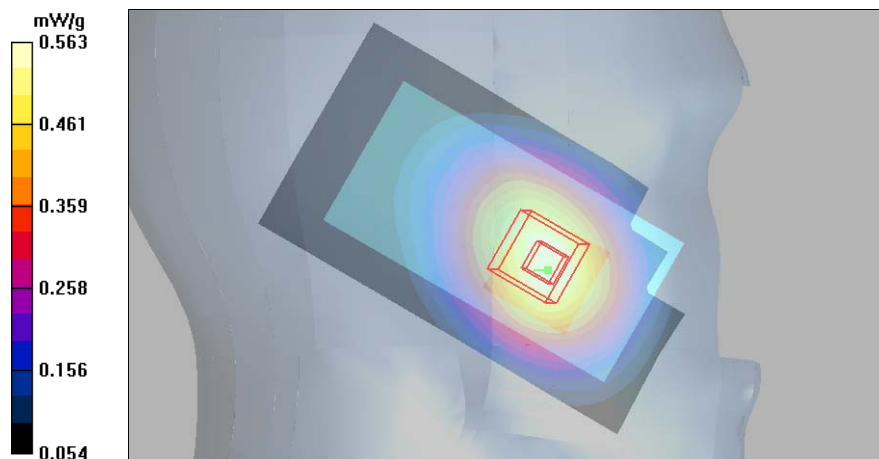
Peak SAR (extrapolated) = 0.686 W/kg

SAR(1 g) = 0.531 mW/g

SAR(10 g) = 0.388 mW/g

Power Drift = -0.261 dB

Maximum value of SAR (measured) = 0.563 mW/g



Date/Time: 2009-04-16 09:41:09

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 2-slot GPRS850

Frequency: 836.6 MHz; Duty Cycle: 1:4.2

Medium: HSL850; Medium Notes: t=20.4 C

Medium parameters used: $f = 837 \text{ MHz}$; $\sigma = 0.913 \text{ mho/m}$; $\epsilon_r = 40.7$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.7, 5.7, 5.7); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek position - Middle - Slide closed - BL-5F Sony/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.705 mW/g

Cheek position - Middle - Slide closed - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 9.34 V/m

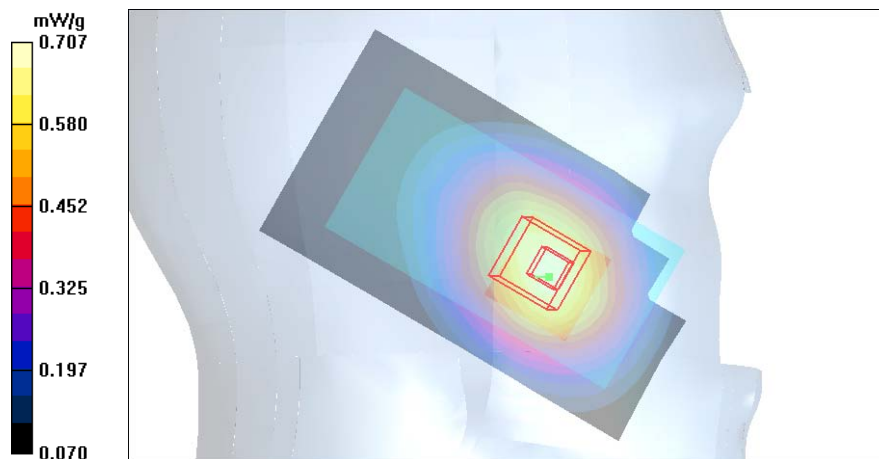
Peak SAR (extrapolated) = 0.882 W/kg

SAR(1 g) = 0.666 mW/g

SAR(10 g) = 0.484 mW/g

Power Drift = -0.101 dB

Maximum value of SAR (measured) = 0.707 mW/g



Date/Time: 2009-04-16 10:27:38

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 2-slot GPRS850

Frequency: 836.6 MHz; Duty Cycle: 1:4.2

Medium: HSL850; Medium Notes: t=20.4 C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.913$ mho/m; $\epsilon_r = 40.7$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.7, 5.7, 5.7); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Tilt position - Middle - Slide closed - BL-5F Sony/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.458 mW/g

Tilt position - Middle - Slide closed - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 15.5 V/m

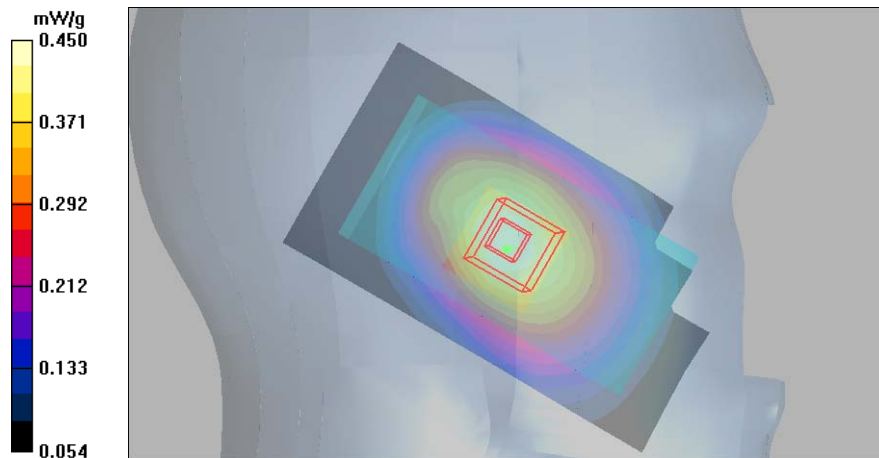
Peak SAR (extrapolated) = 0.532 W/kg

SAR(1 g) = 0.429 mW/g

SAR(10 g) = 0.319 mW/g

Power Drift = -0.158 dB

Maximum value of SAR (measured) = 0.450 mW/g



Date/Time: 2009-04-16 11:55:04

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 2-slot GPRS850

Frequency: 836.6 MHz; Duty Cycle: 1:4.2

Medium: HSL850; Medium Notes: t=20.4 C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.913$ mho/m; $\epsilon_r = 40.7$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.7, 5.7, 5.7); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek position - Middle - Slide closed - BL-5F Sony/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.651 mW/g

Cheek position - Middle - Slide closed - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 9.26 V/m

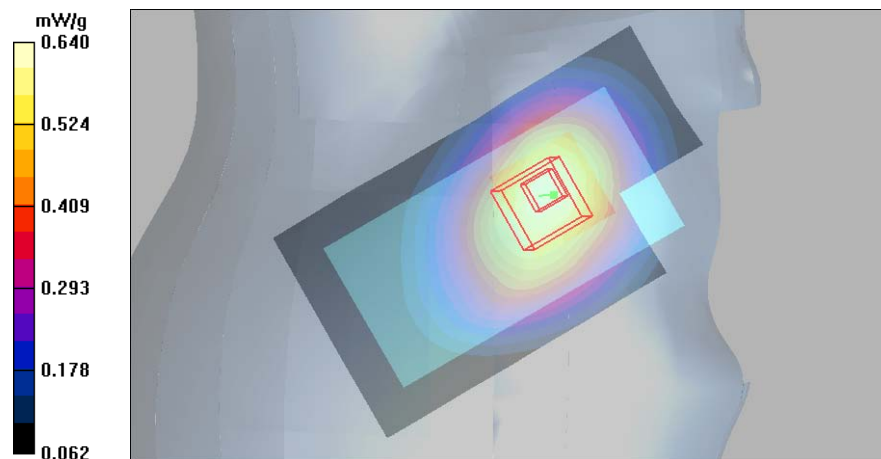
Peak SAR (extrapolated) = 0.775 W/kg

SAR(1 g) = 0.604 mW/g

SAR(10 g) = 0.444 mW/g

Power Drift = 0.030 dB

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



Date/Time: 2009-04-16 12:08:55

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 2-slot GPRS850

Frequency: 836.6 MHz; Duty Cycle: 1:4.2

Medium: HSL850; Medium Notes: t=20.4 C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.913$ mho/m; $\epsilon_r = 40.7$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131

- ConvF(5.7, 5.7, 5.7); Calibrated: 2009-02-12

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

- Electronics: DAE4 Sn555; Calibrated: 2008-11-07

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

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

Tilt position - Middle - Slide closed - BL-5F Sony/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

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

Tilt position - Middle - Slide closed - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 14.7 V/m

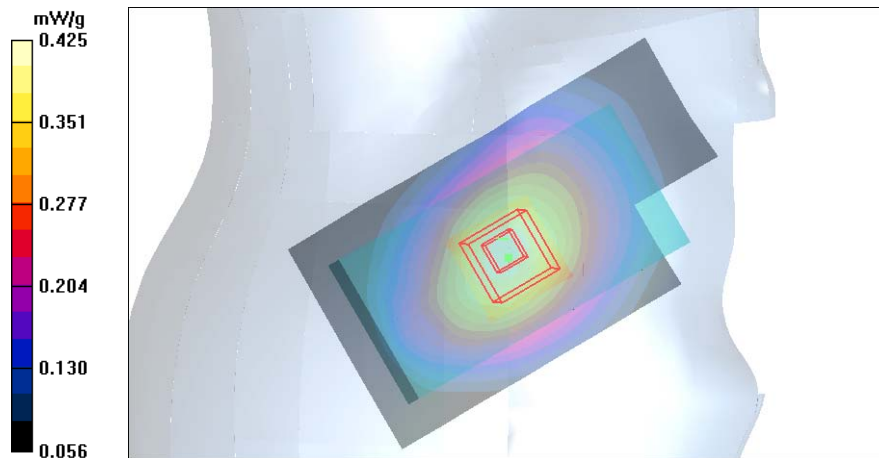
Peak SAR (extrapolated) = 0.533 W/kg

SAR(1 g) = 0.402 mW/g

SAR(10 g) = 0.298 mW/g

Power Drift = -0.087 dB

Maximum value of SAR (measured) = 0.425 mW/g



Date/Time: 2009-04-16 13:06:27

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 2-slot GPRS850

Frequency: 848.8 MHz; Duty Cycle: 1:4.2

Medium: HSL850; Medium Notes: t=20.4 C

Medium parameters used: $f = 849 \text{ MHz}$; $\sigma = 0.924 \text{ mho/m}$; $\epsilon_r = 40.6$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131

- ConvF(5.7, 5.7, 5.7); Calibrated: 2009-02-12

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

- Electronics: DAE4 Sn555; Calibrated: 2008-11-07

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

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

Cheek position - High - Slide open - BL-5F Sony/Area Scan (51x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.885 mW/g

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

Reference Value = 10.3 V/m

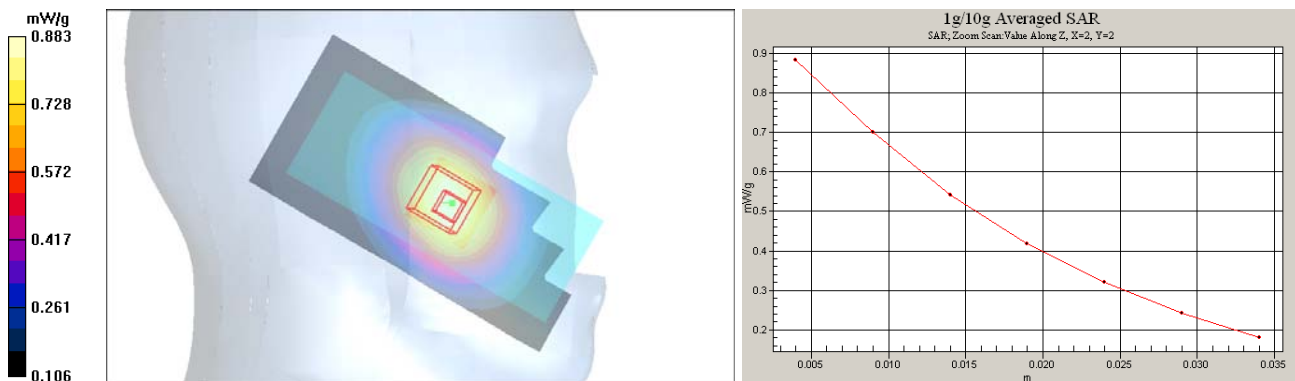
Peak SAR (extrapolated) = 1.09 W/kg

SAR(1 g) = 0.840 mW/g

SAR(10 g) = 0.620 mW/g

Power Drift = -0.178 dB

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



SAR Report

FCC_RM-491_06

Applicant: Nokia Corporation

Type: RM-491

Copyright © 2009 TCC Nokia

Date/Time: 2009-04-16 11:32:58

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 2-slot GPRS850

Frequency: 836.6 MHz; Duty Cycle: 1:4.2

Medium: HSL850; Medium Notes: t=20.4 C

Medium parameters used: $f = 837 \text{ MHz}$; $\sigma = 0.913 \text{ mho/m}$; $\epsilon_r = 40.7$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131

- ConvF(5.7, 5.7, 5.7); Calibrated: 2009-02-12

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

- Electronics: DAE4 Sn555; Calibrated: 2008-11-07

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

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

Tilt position - Middle - Slide open - BL-5F Sony/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.514 mW/g

Tilt position - Middle - Slide open - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 15.6 V/m

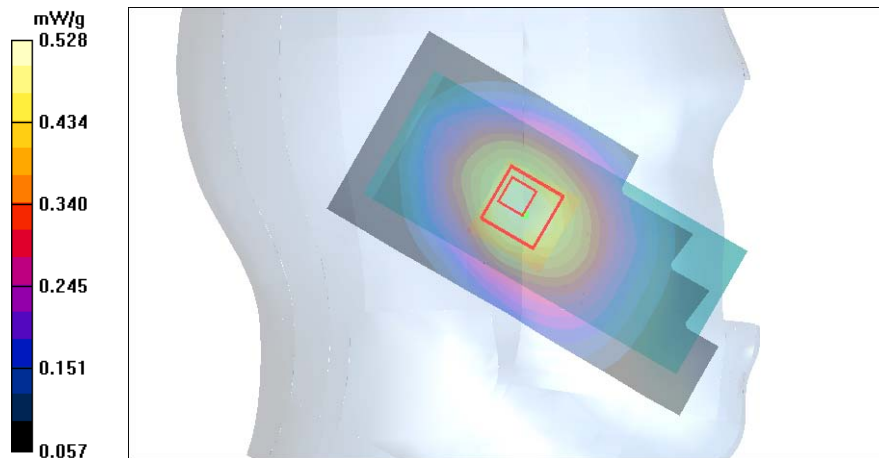
Peak SAR (extrapolated) = 0.645 W/kg

SAR(1 g) = 0.495 mW/g

SAR(10 g) = 0.365 mW/g

Power Drift = 0.124 dB

Maximum value of SAR (measured) = 0.528 mW/g



Date/Time: 2009-04-16 12:23:49

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 2-slot GPRS850

Frequency: 836.6 MHz; Duty Cycle: 1:4.2

Medium: HSL850; Medium Notes: t=20.4 C

Medium parameters used: $f = 837 \text{ MHz}$; $\sigma = 0.913 \text{ mho/m}$; $\epsilon_r = 40.7$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.7, 5.7, 5.7); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek position - Middle - Slide open - BL-5F Sony/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.799 mW/g

Cheek position - Middle - Slide open - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 9.80 V/m

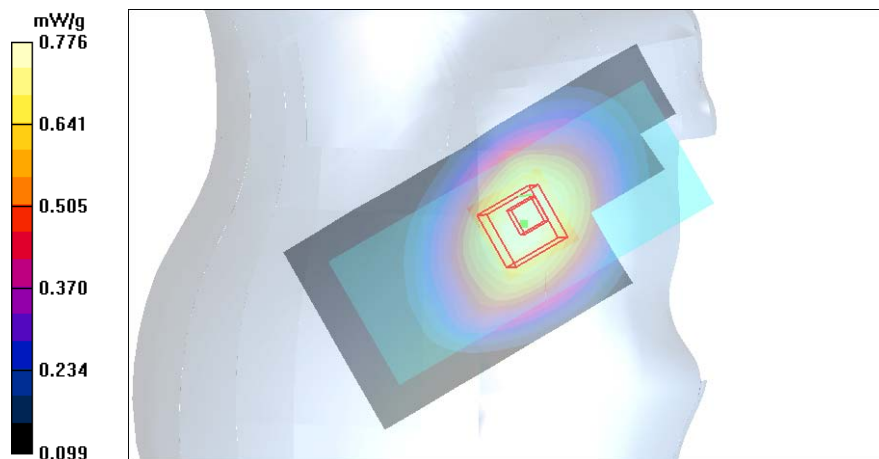
Peak SAR (extrapolated) = 1.01 W/kg

SAR(1 g) = 0.748 mW/g

SAR(10 g) = 0.559 mW/g

Power Drift = -0.065 dB

Maximum value of SAR (measured) = 0.776 mW/g



Date/Time: 2009-04-16 12:37:39

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 2-slot GPRS850

Frequency: 836.6 MHz; Duty Cycle: 1:4.2

Medium: HSL850; Medium Notes: t=20.4 C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.913$ mho/m; $\epsilon_r = 40.7$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131

- ConvF(5.7, 5.7, 5.7); Calibrated: 2009-02-12

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

- Electronics: DAE4 Sn555; Calibrated: 2008-11-07

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

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

Tilt position - Middle - Slide open - BL-5F Sony/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.469 mW/g

Tilt position - Middle - Slide open - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 14.8 V/m

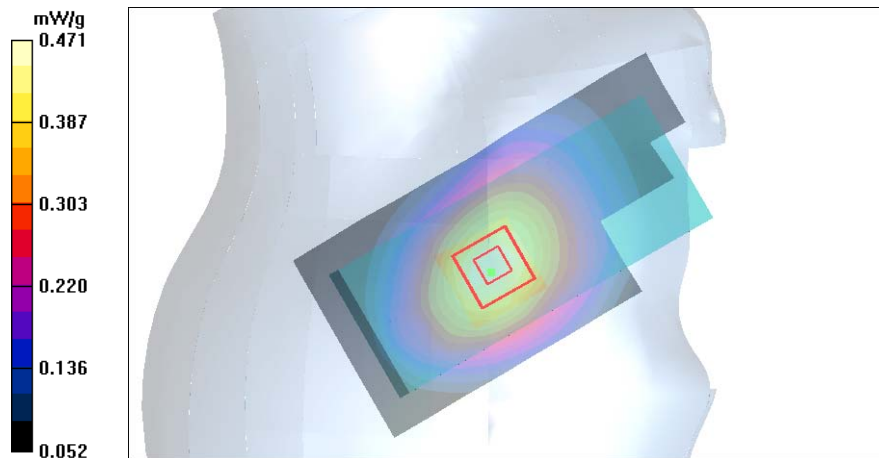
Peak SAR (extrapolated) = 0.600 W/kg

SAR(1 g) = 0.445 mW/g

SAR(10 g) = 0.331 mW/g

Power Drift = -0.016 dB

Maximum value of SAR (measured) = 0.471 mW/g



Date/Time: 2009-04-16 09:55:40

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 3-slot GPRS850

Frequency: 836.6 MHz; Duty Cycle: 1:2.8

Medium: HSL850; Medium Notes: t=20.4 C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.913$ mho/m; $\epsilon_r = 40.7$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.7, 5.7, 5.7); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek position - Middle - Slide closed - BL-5F Sony/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.703 mW/g

Cheek position - Middle - Slide closed - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 9.43 V/m

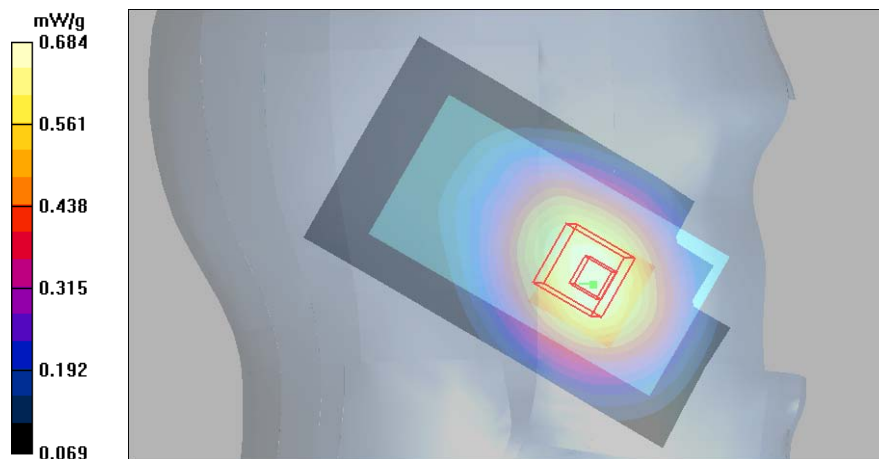
Peak SAR (extrapolated) = 0.862 W/kg

SAR(1 g) = 0.653 mW/g

SAR(10 g) = 0.484 mW/g

Power Drift = 0.056 dB

Maximum value of SAR (measured) = 0.684 mW/g



Date/Time: 2009-04-16 13:24:03

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 2-slot 8PSK EGPRS850

Frequency: 849 MHz; Duty Cycle: 1:4.2

Medium: HSL850; Medium Notes: t=20.4 C

Medium parameters used: f = 849 MHz; $\sigma = 0.924$ mho/m; $\epsilon_r = 40.6$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.7, 5.7, 5.7); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek position - High - Slide open - BL-5F Sony/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.204 mW/g

Cheek position - High - Slide open - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 4.71 V/m

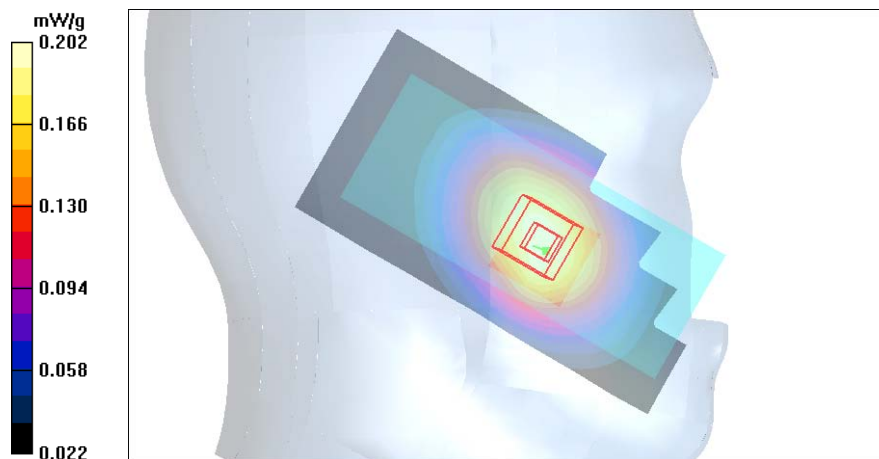
Peak SAR (extrapolated) = 0.260 W/kg

SAR(1 g) = 0.192 mW/g

SAR(10 g) = 0.141 mW/g

Power Drift = -0.086 dB

Maximum value of SAR (measured) = 0.202 mW/g



Date/Time: 2009-04-20 09:55:59

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 2-slot GPRS850

Frequency: 848.8 MHz; Duty Cycle: 1:4.2

Medium: HSL850; Medium Notes: t=20.2 C

Medium parameters used: $f = 849 \text{ MHz}$; $\sigma = 0.912 \text{ mho/m}$; $\epsilon_r = 40.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.7, 5.7, 5.7); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek position - High - Slide open - BL-5F Matsushita/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

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

Cheek position - High - Slide open - BL-5F Matsushita/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 11.1 V/m

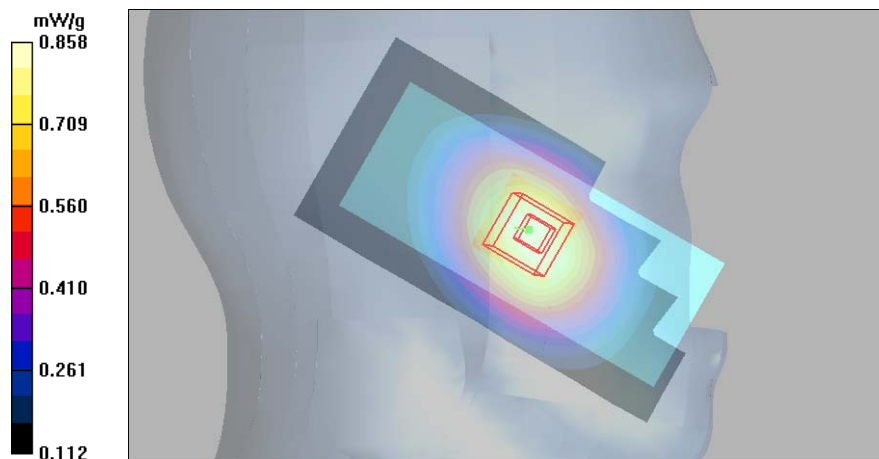
Peak SAR (extrapolated) = 1.01 W/kg

SAR(1 g) = 0.817 mW/g

SAR(10 g) = 0.613 mW/g

Power Drift = 0.239 dB

Maximum value of SAR (measured) = 0.858 mW/g



Date/Time: 2009-05-18 11:02:51

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: GSM1900

Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium: HSL1900; Medium Notes: 21.3C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.45$ mho/m; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(4.86, 4.86, 4.86); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek position - Middle - Slide closed - BL-5F Sony/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

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

Cheek position - Middle - Slide closed - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 7.82 V/m

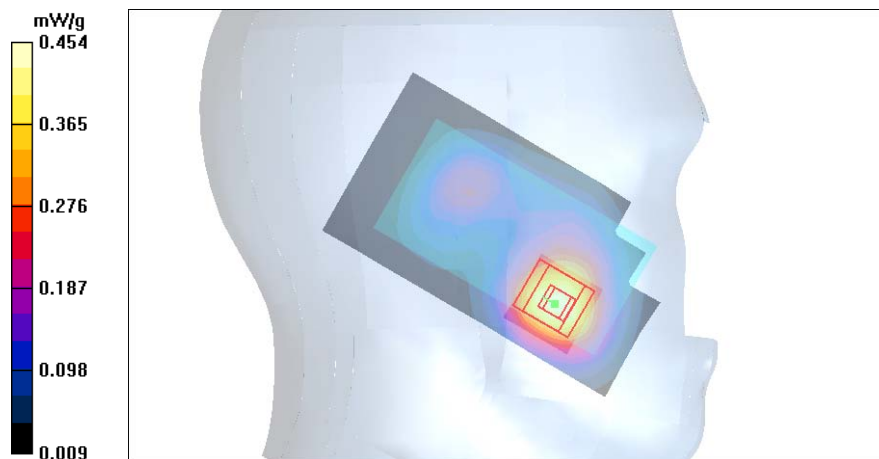
Peak SAR (extrapolated) = 0.654 W/kg

SAR(1 g) = 0.418 mW/g

SAR(10 g) = 0.253 mW/g

Power Drift = -0.053 dB

Maximum value of SAR (measured) = 0.454 mW/g



Date/Time: 2009-05-18 11:35:30

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: HSL1900; Medium Notes: 21.3C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.45$ mho/m; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(4.86, 4.86, 4.86); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek position - Middle - Slide closed - BL-5F Sony/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.858 mW/g

Cheek position - Middle - Slide closed - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 10.4 V/m

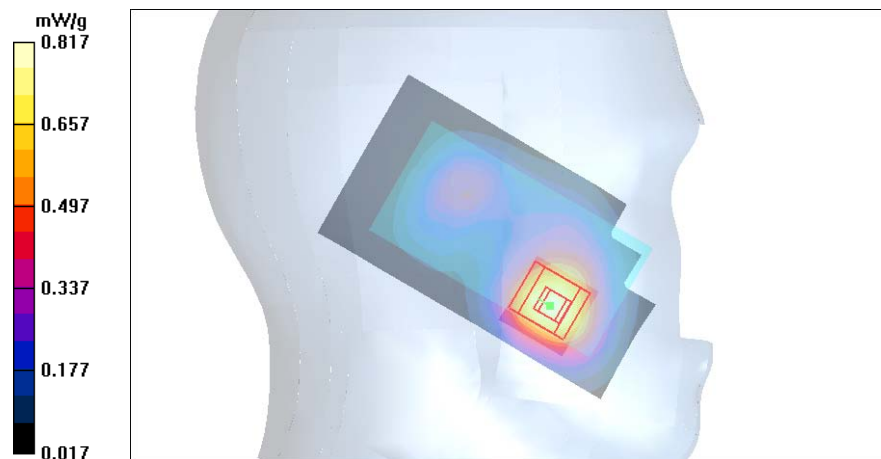
Peak SAR (extrapolated) = 1.16 W/kg

SAR(1 g) = 0.750 mW/g

SAR(10 g) = 0.455 mW/g

Power Drift = -0.029 dB

Maximum value of SAR (measured) = 0.817 mW/g



Date/Time: 2009-05-18 14:31:07

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 3-slot GPRS1900

Frequency: 1909.8 MHz; Duty Cycle: 1:2.8

Medium: HSL1900; Medium Notes: 21.3C

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 38.5$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(4.86, 4.86, 4.86); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek position - High - Slide closed - BL-5F Sony/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.968 mW/g

Cheek position - High - Slide closed - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 9.50 V/m

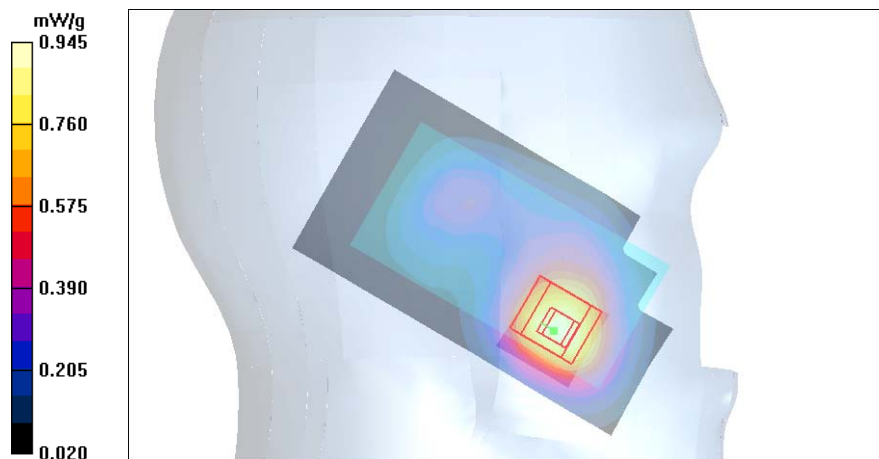
Peak SAR (extrapolated) = 1.35 W/kg

SAR(1 g) = 0.867 mW/g

SAR(10 g) = 0.521 mW/g

Power Drift = -0.039 dB

Maximum value of SAR (measured) = 0.945 mW/g



Date/Time: 2009-05-18 11:52:18

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 3-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:2.8

Medium: HSL1900; Medium Notes: 21.3C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.45$ mho/m; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(4.86, 4.86, 4.86); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Tilt position - Middle - Slide closed - BL-5F Sony/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.547 mW/g

Tilt position - Middle - Slide closed - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 14.9 V/m

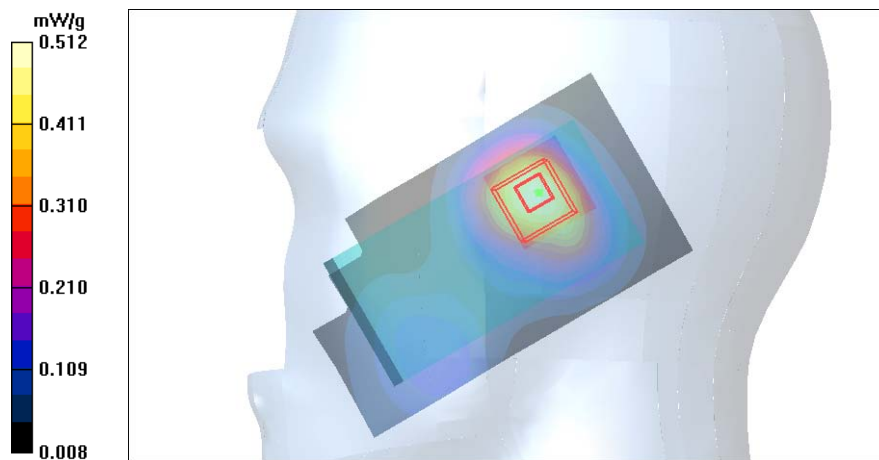
Peak SAR (extrapolated) = 0.715 W/kg

SAR(1 g) = 0.474 mW/g

SAR(10 g) = 0.292 mW/g

Power Drift = 0.029 dB

Maximum value of SAR (measured) = 0.512 mW/g



Date/Time: 2009-05-18 12:45:12

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 3-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:2.8

Medium: HSL1900; Medium Notes: 21.0C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.45$ mho/m; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(4.86, 4.86, 4.86); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek position - Middle - Slide closed - BL-5F Sony/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

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

Cheek position - Middle - Slide closed - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 12.4 V/m

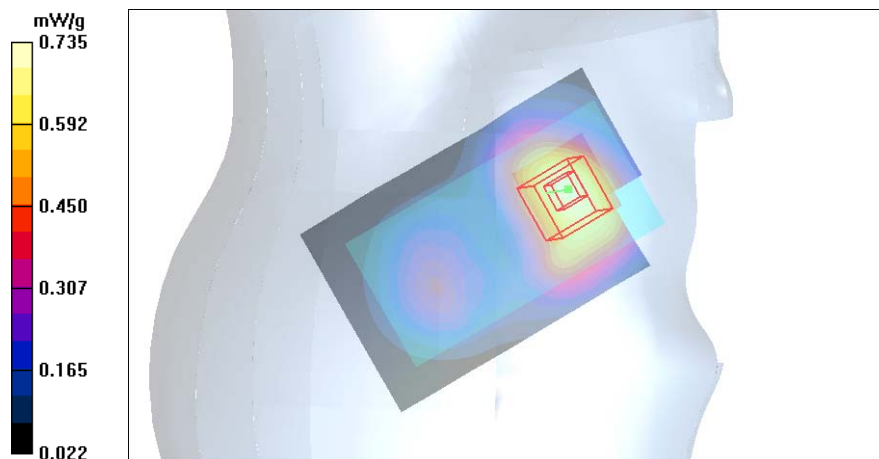
Peak SAR (extrapolated) = 0.965 W/kg

SAR(1 g) = 0.672 mW/g

SAR(10 g) = 0.432 mW/g

Power Drift = 0.235 dB

Maximum value of SAR (measured) = 0.735 mW/g



Date/Time: 2009-05-18 12:59:17

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 3-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:2.8

Medium: HSL1900; Medium Notes: 21.0C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.45$ mho/m; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(4.86, 4.86, 4.86); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Tilt position - Middle - Slide closed - BL-5F Sony/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

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

Tilt position - Middle - Slide closed - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 16.5 V/m

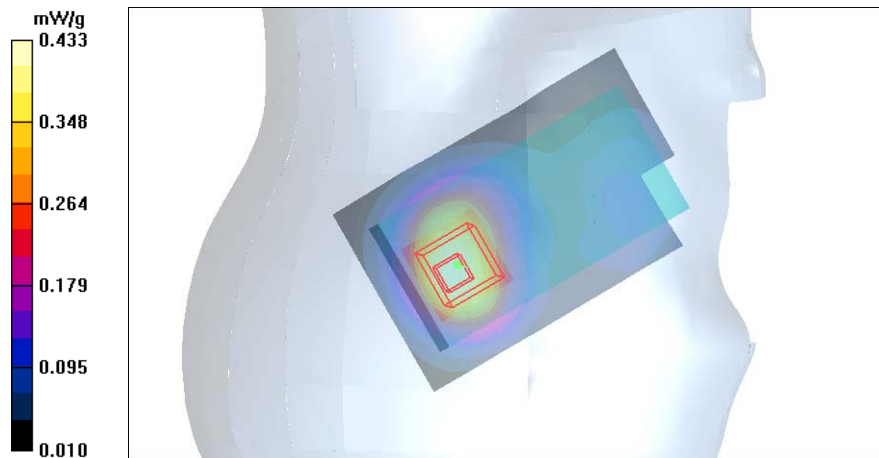
Peak SAR (extrapolated) = 0.620 W/kg

SAR(1 g) = 0.413 mW/g

SAR(10 g) = 0.258 mW/g

Power Drift = 0.033 dB

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



Date/Time: 2009-05-18 12:10:15

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 3-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:2.8

Medium: HSL1900; Medium Notes: 21.3C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.45$ mho/m; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(4.86, 4.86, 4.86); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek position - Middle - Slide open - BL-5F Sony/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.629 mW/g

Cheek position - Middle - Slide open - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 7.57 V/m

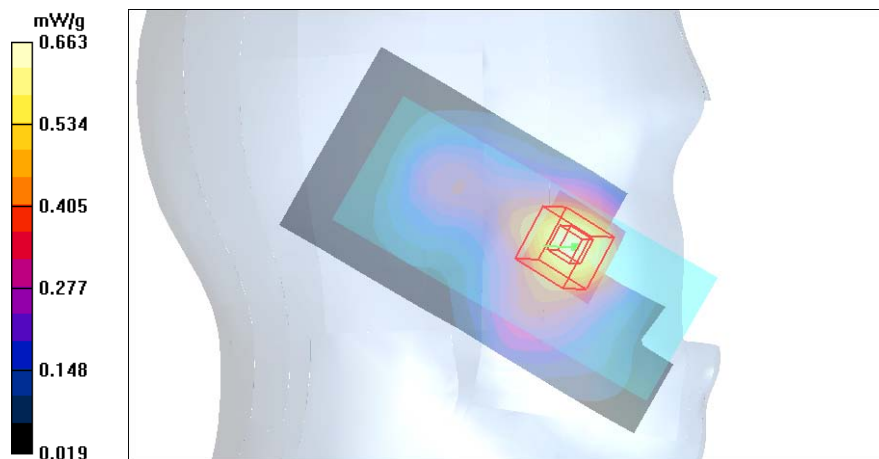
Peak SAR (extrapolated) = 0.895 W/kg

SAR(1 g) = 0.607 mW/g

SAR(10 g) = 0.376 mW/g

Power Drift = -0.237 dB

Maximum value of SAR (measured) = 0.663 mW/g



Date/Time: 2009-05-18 12:26:00

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 3-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:2.8

Medium: HSL1900; Medium Notes: 21.3C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.45$ mho/m; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(4.86, 4.86, 4.86); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Tilt position - Middle - Slide open - BL-5F Sony/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.622 mW/g

Tilt position - Middle - Slide open - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 13.1 V/m

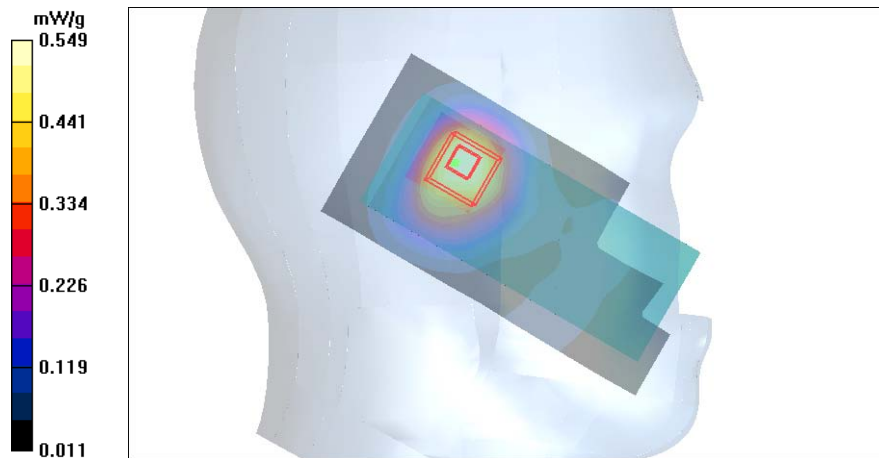
Peak SAR (extrapolated) = 0.828 W/kg

SAR(1 g) = 0.521 mW/g

SAR(10 g) = 0.317 mW/g

Power Drift = 0.143 dB

Maximum value of SAR (measured) = 0.549 mW/g



Date/Time: 2009-05-18 13:46:05

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 3-slot GPRS1900

Frequency: 1850.2 MHz; Duty Cycle: 1:2.8

Medium: HSL1900; Medium Notes: 21.0C

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.42$ mho/m; $\epsilon_r = 38.8$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(4.86, 4.86, 4.86); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek position - Low - Slide open - BL-5F Sony/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.986 mW/g

Cheek position - Low - Slide open - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 7.11 V/m

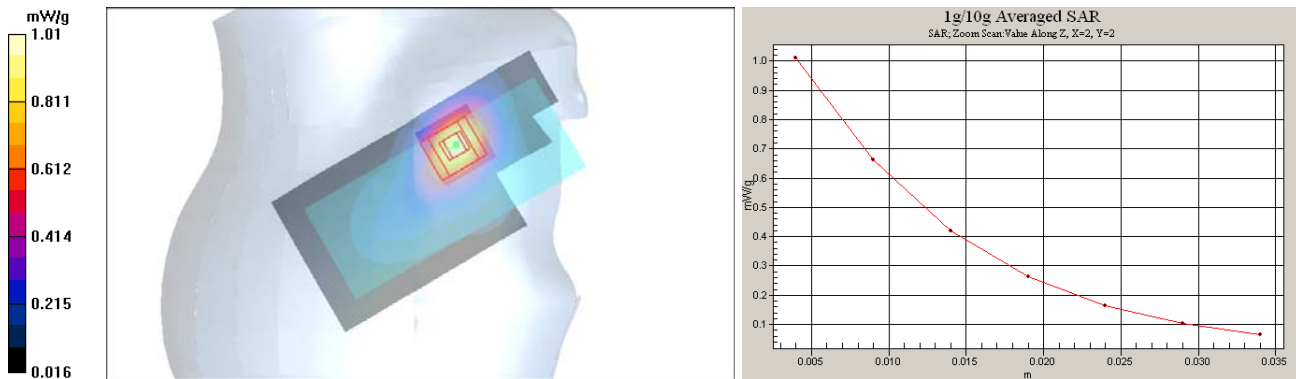
Peak SAR (extrapolated) = 1.42 W/kg

SAR(1 g) = 0.896 mW/g

SAR(10 g) = 0.509 mW/g

Power Drift = -0.199 dB

Maximum value of SAR (measured) = 1.01 mW/g



SAR Report

FCC_RM-491_06

Applicant: Nokia Corporation

Type: RM-491

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Date/Time: 2009-05-18 13:32:05

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 3-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:2.8

Medium: HSL1900; Medium Notes: 21.0C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.45$ mho/m; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(4.86, 4.86, 4.86); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Tilt position - Middle - Slide open - BL-5F Sony/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.512 mW/g

Tilt position - Middle - Slide open - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 14.4 V/m

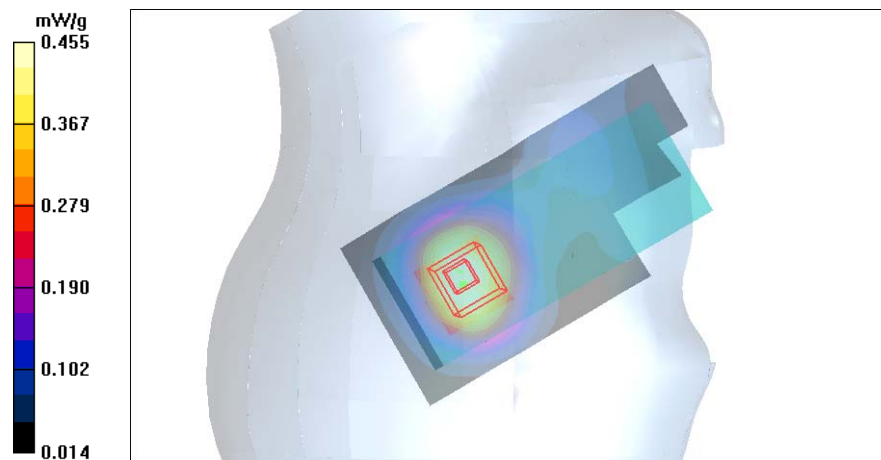
Peak SAR (extrapolated) = 0.618 W/kg

SAR(1 g) = 0.429 mW/g

SAR(10 g) = 0.283 mW/g

Power Drift = -0.166 dB

Maximum value of SAR (measured) = 0.455 mW/g



Date/Time: 2009-05-18 14:52:53

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 3-slot 8PSK EGPRS1900

Frequency: 1850.2 MHz; Duty Cycle: 1:2.8

Medium: HSL1900; Medium Notes: 21.0C

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.42$ mho/m; $\epsilon_r = 38.8$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(4.86, 4.86, 4.86); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek position - Low - Slide open - BL-5F Sony/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.336 mW/g

Cheek position - Low - Slide open - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 4.79 V/m

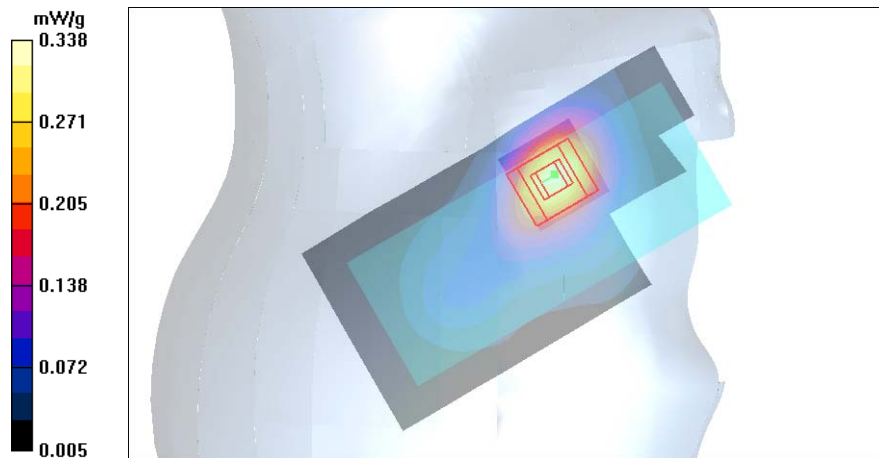
Peak SAR (extrapolated) = 0.486 W/kg

SAR(1 g) = 0.307 mW/g

SAR(10 g) = 0.178 mW/g

Power Drift = 0.080 dB

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



Date/Time: 2009-05-18 16:32:34

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: WCDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: 21.0C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.45$ mho/m; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(4.86, 4.86, 4.86); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek position - Middle - Slide open - BL-5F Sony/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.748 mW/g

Cheek position - Middle - Slide open - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 7.27 V/m

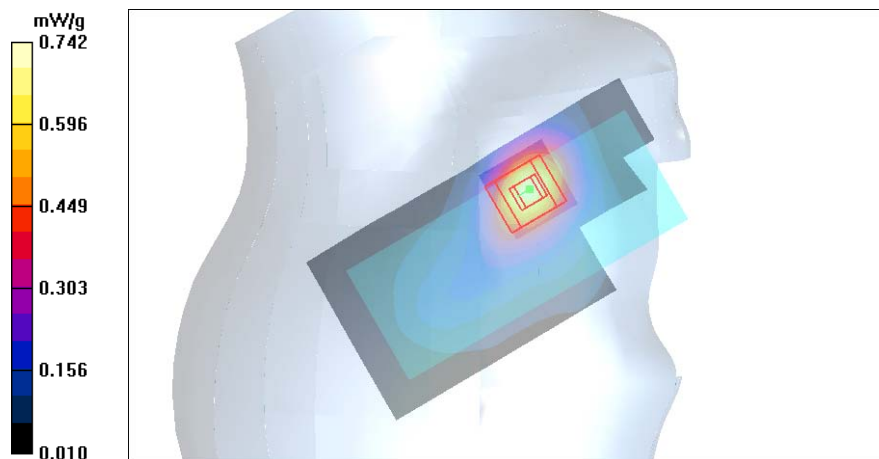
Peak SAR (extrapolated) = 1.07 W/kg

SAR(1 g) = 0.666 mW/g

SAR(10 g) = 0.379 mW/g

Power Drift = -0.487 dB

Maximum value of SAR (measured) = 0.742 mW/g



Date/Time: 2009-05-18 15:27:09

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 3-slot GPRS1900

Frequency: 1850.2 MHz; Duty Cycle: 1:2.8

Medium: HSL1900; Medium Notes: 21.0C

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.42$ mho/m; $\epsilon_r = 38.8$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(4.86, 4.86, 4.86); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek position - Low - Slide open - BL-5F Matsushita/Area Scan (51x101x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 0.862 mW/g

Cheek position - Low - Slide open - BL-5F Matsushita/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm

Reference Value = 7.36 V/m

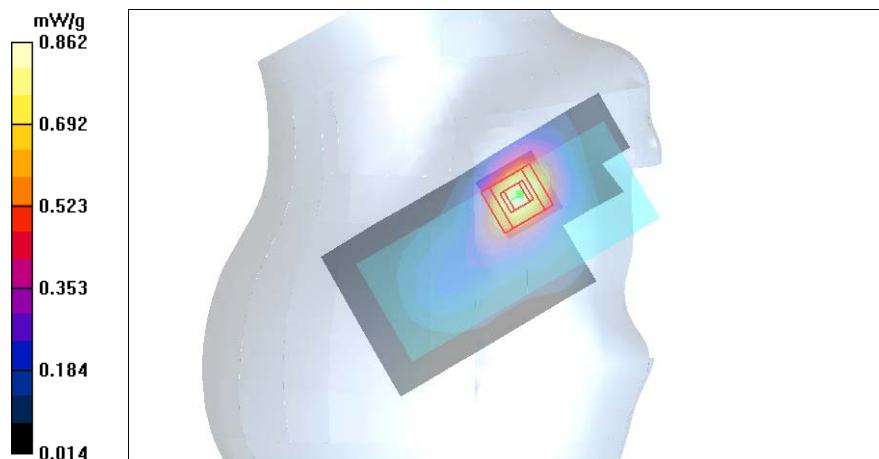
Peak SAR (extrapolated) = 1.28 W/kg

SAR(1 g) = 0.794 mW/g

SAR(10 g) = 0.462 mW/g

Power Drift = -0.117 dB

Maximum value of SAR (measured) = 0.862 mW/g



Date/Time: 2009-04-30 12:09:01

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647202/6

Communication System: WLAN2450

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: 20.7C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.86$ mho/m; $\epsilon_r = 37.5$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.57, 4.57, 4.57); Calibrated: 2008-04-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2008-04-30
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek position - Middle - Slide closed - BL-5F Sony/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.252 mW/g

Cheek position - Middle - Slide closed - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 9.97 V/m

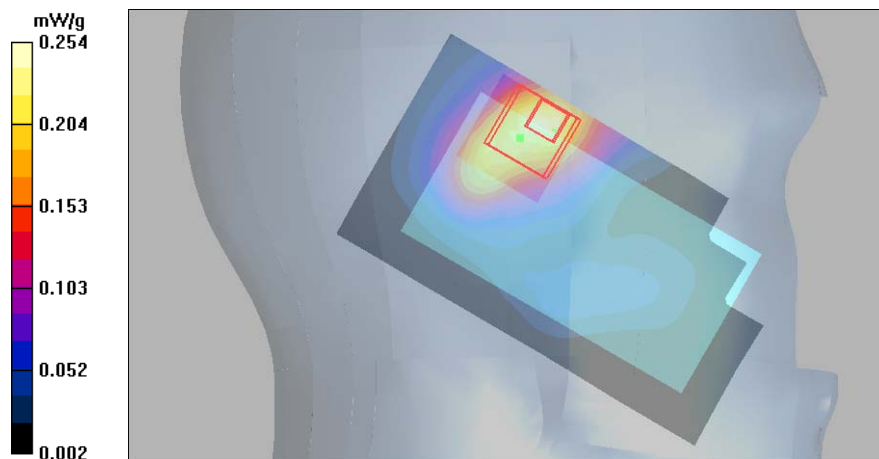
Peak SAR (extrapolated) = 0.497 W/kg

SAR(1 g) = 0.235 mW/g

SAR(10 g) = 0.119 mW/g

Power Drift = -0.233 dB

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



Date/Time: 2009-04-30 12:23:51

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647202/6

Communication System: WLAN2450

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: 20.7C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.86$ mho/m; $\epsilon_r = 37.5$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.57, 4.57, 4.57); Calibrated: 2008-04-23
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2008-04-30
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Tilt position - Middle - Slide closed - BL-5F Sony/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.264 mW/g

Tilt position - Middle - Slide closed - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 12.1 V/m

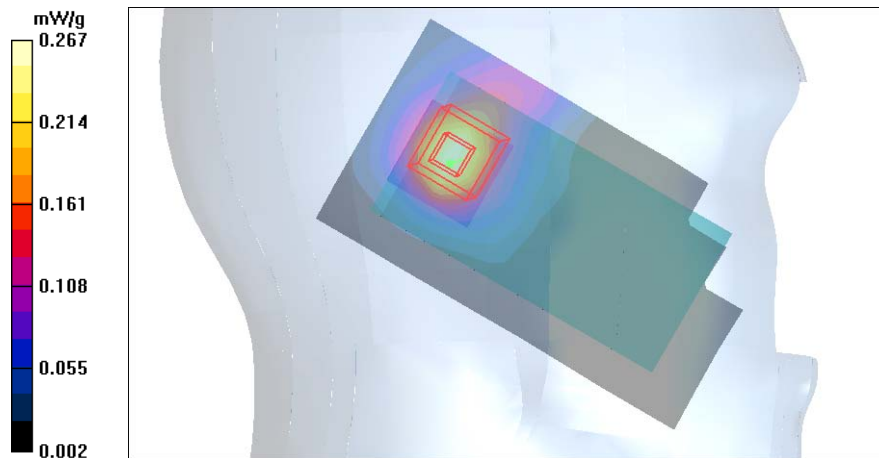
Peak SAR (extrapolated) = 0.450 W/kg

SAR(1 g) = 0.243 mW/g

SAR(10 g) = 0.125 mW/g

Power Drift = -0.071 dB

Maximum value of SAR (measured) = 0.267 mW/g



Date/Time: 2009-04-30 14:56:22

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647202/6

Communication System: WLAN2450

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: 20.5C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.86$ mho/m; $\epsilon_r = 37.5$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.57, 4.57, 4.57); Calibrated: 2008-04-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2008-04-30
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek position - Middle - Slide closed - BL-5F Sony/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

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

Cheek position - Middle - Slide closed - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 10.1 V/m

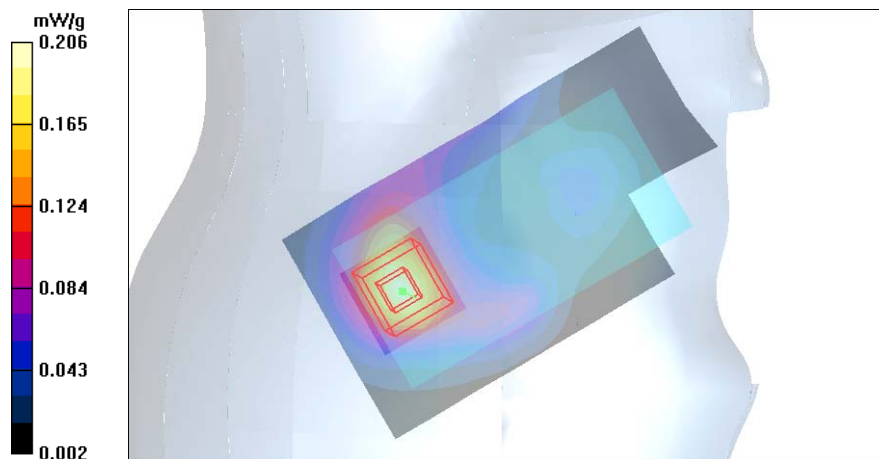
Peak SAR (extrapolated) = 0.345 W/kg

SAR(1 g) = 0.186 mW/g

SAR(10 g) = 0.098 mW/g

Power Drift = 0.017 dB

Maximum value of SAR (measured) = 0.206 mW/g



Date/Time: 2009-04-30 15:12:24

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647202/6

Communication System: WLAN2450

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: 20.5C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.86$ mho/m; $\epsilon_r = 37.5$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.57, 4.57, 4.57); Calibrated: 2008-04-23
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2008-04-30
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Tilt position - Middle - Slide closed - BL-5F Sony/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.284 mW/g

Tilt position - Middle - Slide closed - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 12.2 V/m

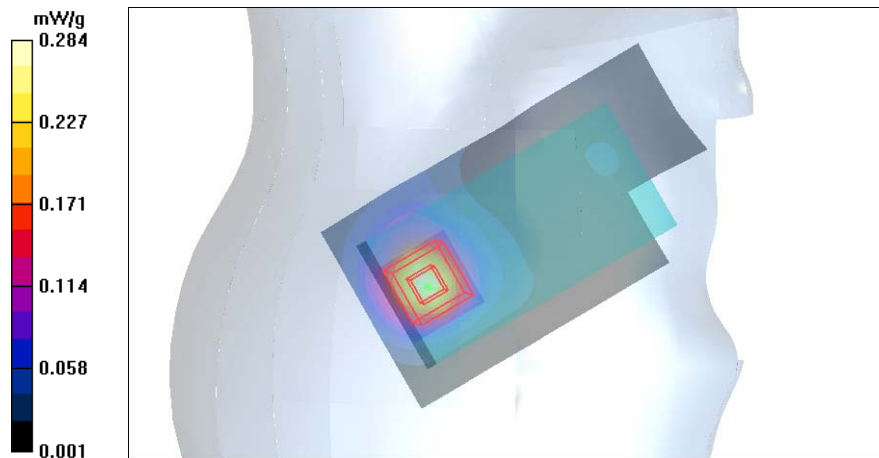
Peak SAR (extrapolated) = 0.481 W/kg

SAR(1 g) = 0.252 mW/g

SAR(10 g) = 0.126 mW/g

Power Drift = -0.108 dB

Maximum value of SAR (measured) = 0.284 mW/g



Date/Time: 2009-04-30 15:50:48

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647202/6

Communication System: WLAN2450

Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: 20.7C

Medium parameters used: $f = 2462$ MHz; $\sigma = 1.89$ mho/m; $\epsilon_r = 37.4$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.57, 4.57, 4.57); Calibrated: 2008-04-23
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2008-04-30
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek position - High - Slide open - BL-5F Sony/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.275 mW/g

Cheek position - High - Slide open - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 5.75 V/m

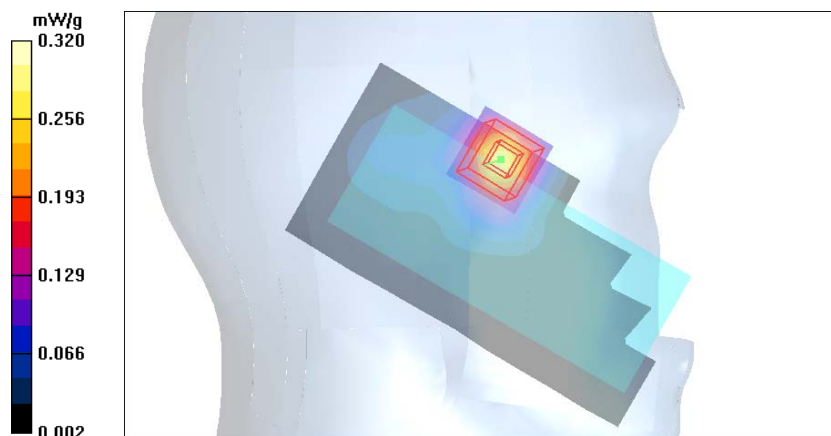
Peak SAR (extrapolated) = 0.595 W/kg

SAR(1 g) = 0.273 mW/g

SAR(10 g) = 0.127 mW/g

Power Drift = 0.159 dB

Maximum value of SAR (measured) = 0.320 mW/g



Date/Time: 2009-04-30 12:56:08

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647202/6

Communication System: WLAN2450

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: 20.7C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.86$ mho/m; $\epsilon_r = 37.5$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.57, 4.57, 4.57); Calibrated: 2008-04-23
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2008-04-30
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Tilt position - Middle - Slide open - BL-5F Sony/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.206 mW/g

Tilt position - Middle - Slide open - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 11.1 V/m

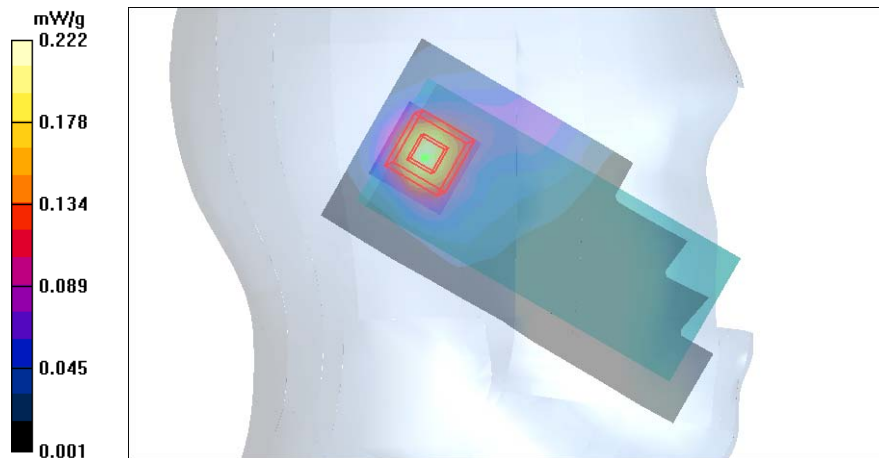
Peak SAR (extrapolated) = 0.375 W/kg

SAR(1 g) = 0.197 mW/g

SAR(10 g) = 0.097 mW/g

Power Drift = -0.003 dB

Maximum value of SAR (measured) = 0.222 mW/g



Date/Time: 2009-04-30 14:25:09

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647202/6

Communication System: WLAN2450

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: 20.5C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.86$ mho/m; $\epsilon_r = 37.5$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.57, 4.57, 4.57); Calibrated: 2008-04-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2008-04-30
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek position - Middle - Slide open - BL-5F Sony/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.213 mW/g

Cheek position - Middle - Slide open - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 6.92 V/m

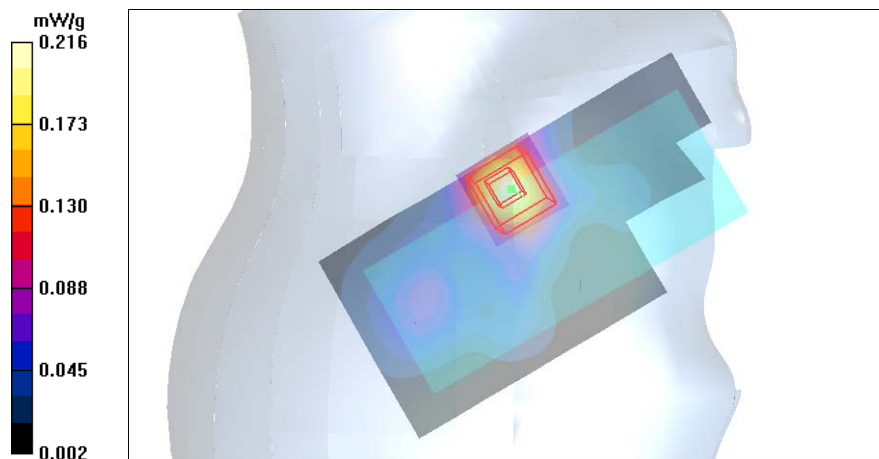
Peak SAR (extrapolated) = 0.421 W/kg

SAR(1 g) = 0.201 mW/g

SAR(10 g) = 0.100 mW/g

Power Drift = -0.350 dB

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



Date/Time: 2009-04-30 14:39:37

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647202/6

Communication System: WLAN2450

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: 20.5C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.86$ mho/m; $\epsilon_r = 37.5$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.57, 4.57, 4.57); Calibrated: 2008-04-23
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2008-04-30
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Tilt position - Middle - Slide open - BL-5F Sony/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.200 mW/g

Tilt position - Middle - Slide open - BL-5F Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 10.0 V/m

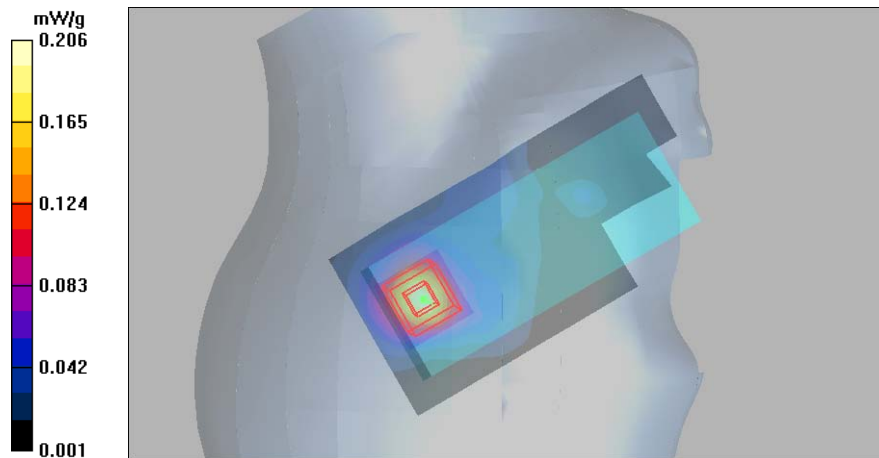
Peak SAR (extrapolated) = 0.356 W/kg

SAR(1 g) = 0.183 mW/g

SAR(10 g) = 0.091 mW/g

Power Drift = -0.108 dB

Maximum value of SAR (measured) = 0.206 mW/g



Date/Time: 2009-04-30 16:32:53

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647202/6

Communication System: WLAN2450

Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: 20.7C

Medium parameters used: $f = 2462$ MHz; $\sigma = 1.89$ mho/m; $\epsilon_r = 37.4$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.57, 4.57, 4.57); Calibrated: 2008-04-23
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2008-04-30
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek position - High - Slide open - BL-5F Matsushita/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.277 mW/g

Cheek position - High - Slide open - BL-5F Matsushita/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 5.63 V/m

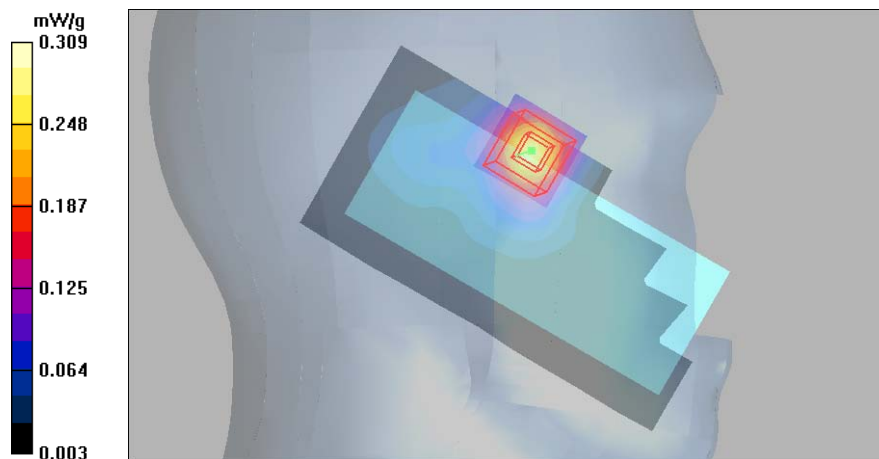
Peak SAR (extrapolated) = 0.575 W/kg

SAR(1 g) = 0.267 mW/g

SAR(10 g) = 0.125 mW/g

Power Drift = 0.171 dB

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



Date/Time: 2009-11-10 12:46:47

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/769008/9

Communication System: WLAN2450

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: 20.3 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.86$ mho/m; $\epsilon_r = 37.3$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.49, 4.49, 4.49); Calibrated: 2009-05-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2009-05-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek - Middle - BL-5F Sony - Slide closed/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 8.10 V/m

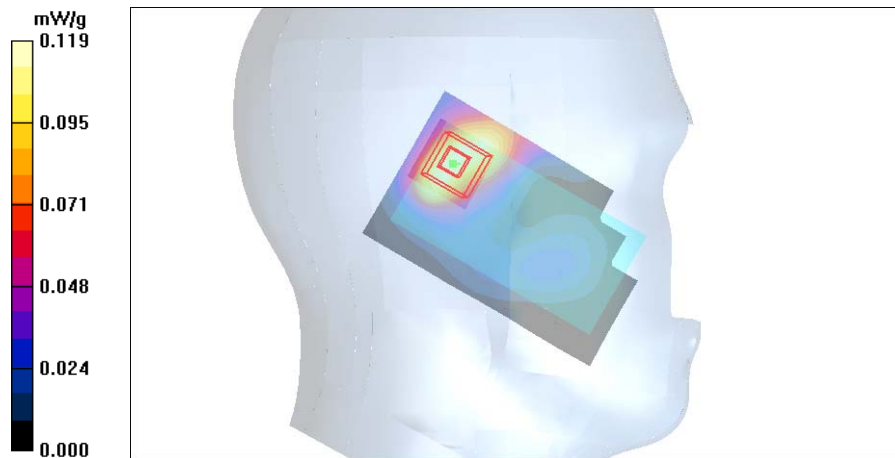
Peak SAR (extrapolated) = 0.217 W/kg

SAR(1 g) = 0.109 mW/g

SAR(10 g) = 0.059 mW/g

Power Drift = -0.181 dB

Maximum value of SAR (measured) = 0.119 mW/g



Date/Time: 2009-11-10 13:01:26

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/769008/9

Communication System: WLAN2450

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: 20.3 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.86$ mho/m; $\epsilon_r = 37.3$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.49, 4.49, 4.49); Calibrated: 2009-05-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2009-05-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Tilt - Middle - BL-5F Sony - Slide closed/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.125 mW/g

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

Reference Value = 8.66 V/m

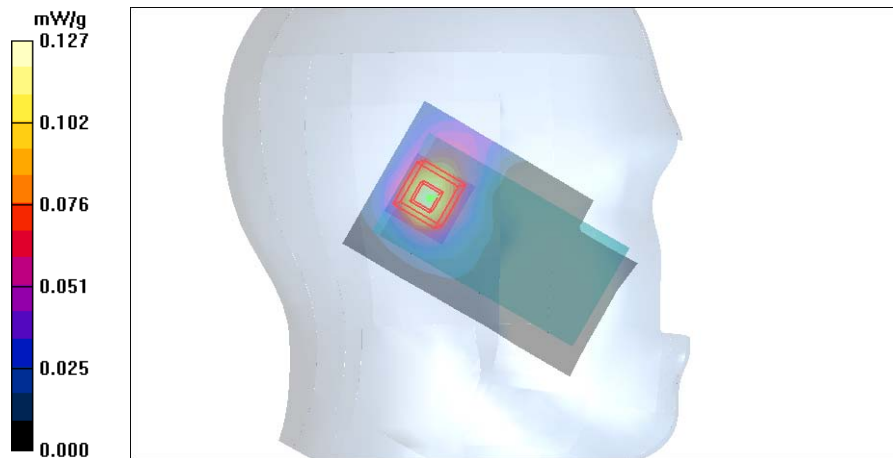
Peak SAR (extrapolated) = 0.216 W/kg

SAR(1 g) = 0.115 mW/g

SAR(10 g) = 0.058 mW/g

Power Drift = -0.151 dB

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



Date/Time: 2009-11-10 13:35:23

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/769008/9

Communication System: WLAN2450

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: 20.3 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.86$ mho/m; $\epsilon_r = 37.3$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.49, 4.49, 4.49); Calibrated: 2009-05-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2009-05-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek - Middle - BL-5F Sony - Slide closed/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.115 mW/g

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

Reference Value = 8.00 V/m

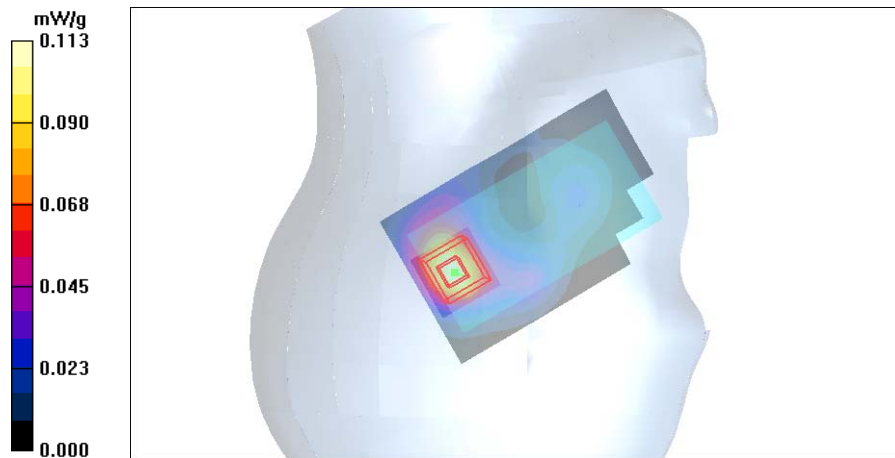
Peak SAR (extrapolated) = 0.193 W/kg

SAR(1 g) = 0.101 mW/g

SAR(10 g) = 0.051 mW/g

Power Drift = 0.067 dB

Maximum value of SAR (measured) = 0.113 mW/g



Date/Time: 2009-11-10 13:17:59

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/769008/9

Communication System: WLAN2450

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: 20.3 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.86$ mho/m; $\epsilon_r = 37.3$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.49, 4.49, 4.49); Calibrated: 2009-05-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2009-05-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Tilt - Middle - BL-5F Sony - Slide closed/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.140 mW/g

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

Reference Value = 8.96 V/m

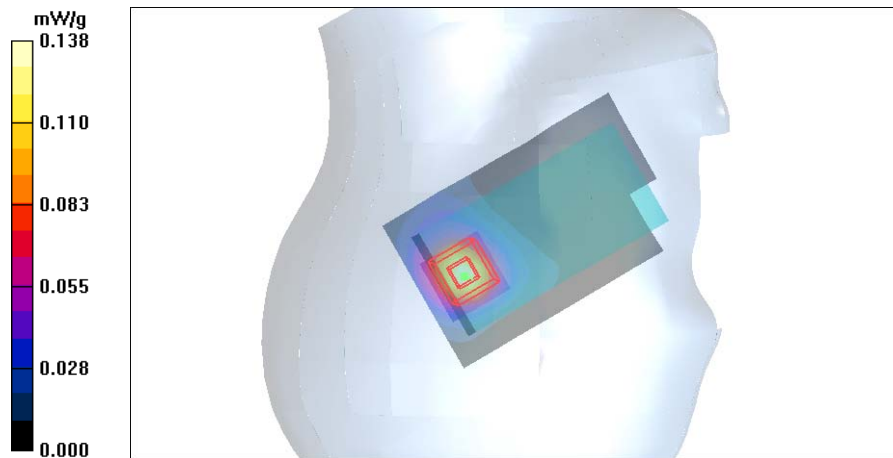
Peak SAR (extrapolated) = 0.237 W/kg

SAR(1 g) = 0.123 mW/g

SAR(10 g) = 0.061 mW/g

Power Drift = -0.158 dB

Maximum value of SAR (measured) = 0.138 mW/g



SAR Report

FCC_RM-491_06

Applicant: Nokia Corporation

Type: RM-491

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Date/Time: 2009-11-10 15:12:52

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/769008/9

Communication System: WLAN2450

Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: 20.3 C

Medium parameters used: $f = 2462$ MHz; $\sigma = 1.88$ mho/m; $\epsilon_r = 37.2$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.49, 4.49, 4.49); Calibrated: 2009-05-25
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2009-05-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek - High - BL-5F Sony - Slide open/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.297 mW/g

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

Reference Value = 6.84 V/m

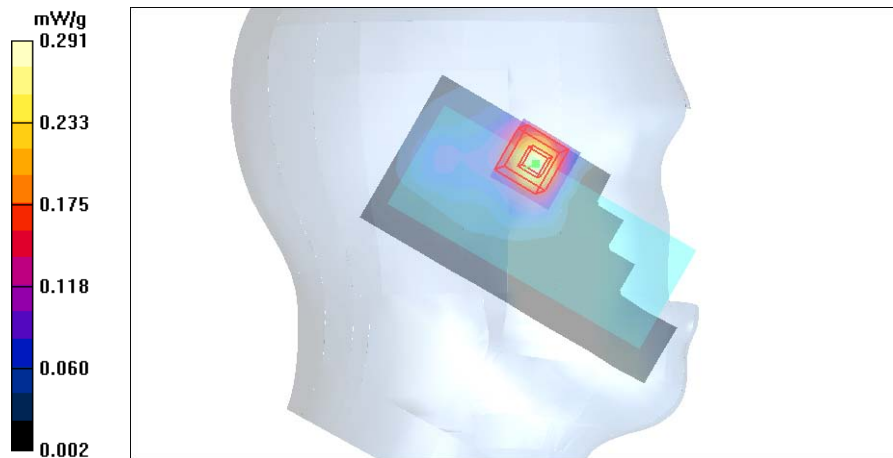
Peak SAR (extrapolated) = 0.558 W/kg

SAR(1 g) = 0.254 mW/g

SAR(10 g) = 0.119 mW/g

Power Drift = -0.011 dB

Maximum value of SAR (measured) = 0.291 mW/g



Date/Time: 2009-11-10 14:28:33

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/769008/9

Communication System: WLAN2450

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: 20.3 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.86$ mho/m; $\epsilon_r = 37.3$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.49, 4.49, 4.49); Calibrated: 2009-05-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2009-05-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Tilt - Middle - BL-5F Sony - Slide open/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.173 mW/g

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

Reference Value = 10.3 V/m

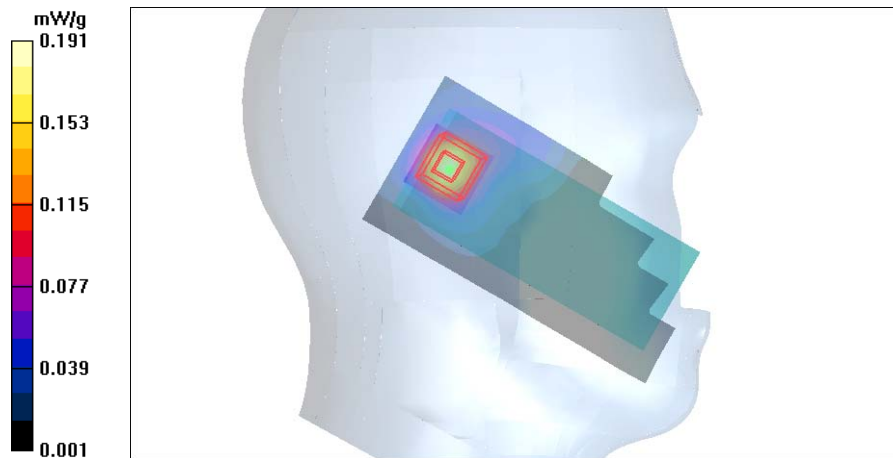
Peak SAR (extrapolated) = 0.322 W/kg

SAR(1 g) = 0.169 mW/g

SAR(10 g) = 0.084 mW/g

Power Drift = -0.010 dB

Maximum value of SAR (measured) = 0.191 mW/g



Date/Time: 2009-11-10 13:58:08

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/769008/9

Communication System: WLAN2450

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: 20.3 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.86$ mho/m; $\epsilon_r = 37.3$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.49, 4.49, 4.49); Calibrated: 2009-05-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2009-05-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek - Middle - BL-5F Sony - Slide open/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.135 mW/g

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

Reference Value = 7.58 V/m

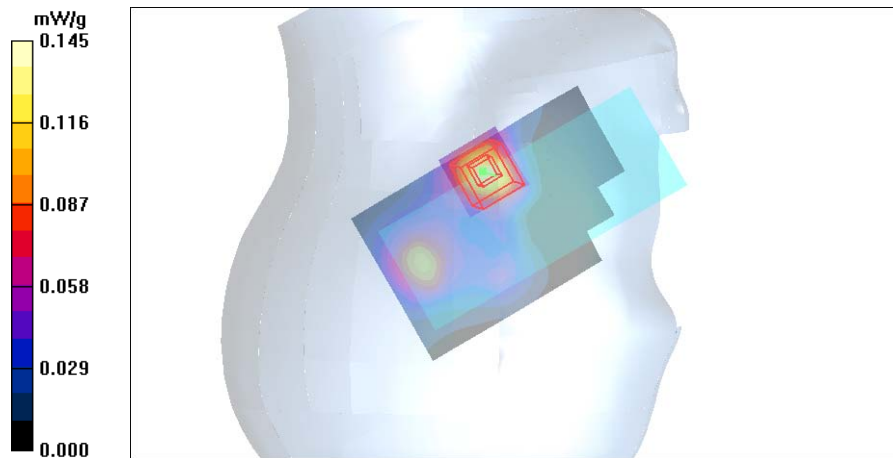
Peak SAR (extrapolated) = 0.263 W/kg

SAR(1 g) = 0.129 mW/g

SAR(10 g) = 0.062 mW/g

Power Drift = -0.121 dB

Maximum value of SAR (measured) = 0.145 mW/g



Date/Time: 2009-11-10 14:11:46

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/769008/9

Communication System: WLAN2450

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: 20.3 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.86$ mho/m; $\epsilon_r = 37.3$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.49, 4.49, 4.49); Calibrated: 2009-05-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2009-05-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Tilt - Middle - BL-5F Sony - Slide open/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.170 mW/g

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

Reference Value = 9.77 V/m

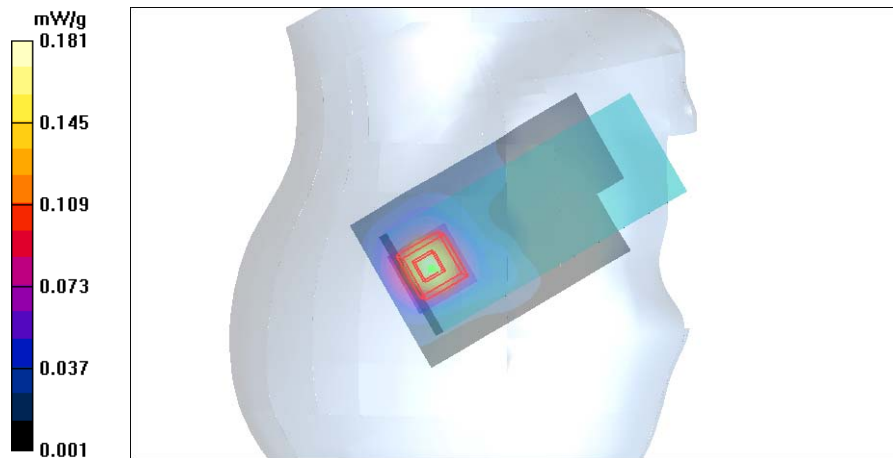
Peak SAR (extrapolated) = 0.309 W/kg

SAR(1 g) = 0.161 mW/g

SAR(10 g) = 0.081 mW/g

Power Drift = 0.091 dB

Maximum value of SAR (measured) = 0.181 mW/g



Date/Time: 2009-11-19 10:09:10

Test Laboratory: TCC Nokia
Type: RM-491; Serial: 004401/10/769008/9

Communication System: WLAN2450

Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: 21.3 C

Medium parameters used: $f = 2462$ MHz; $\sigma = 1.89$ mho/m; $\epsilon_r = 37.2$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.49, 4.49, 4.49); Calibrated: 2009-05-25
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2009-05-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Cheek - High - BL-5F Matsushita - Slide open/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.337 mW/g

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

Reference Value = 7.75 V/m

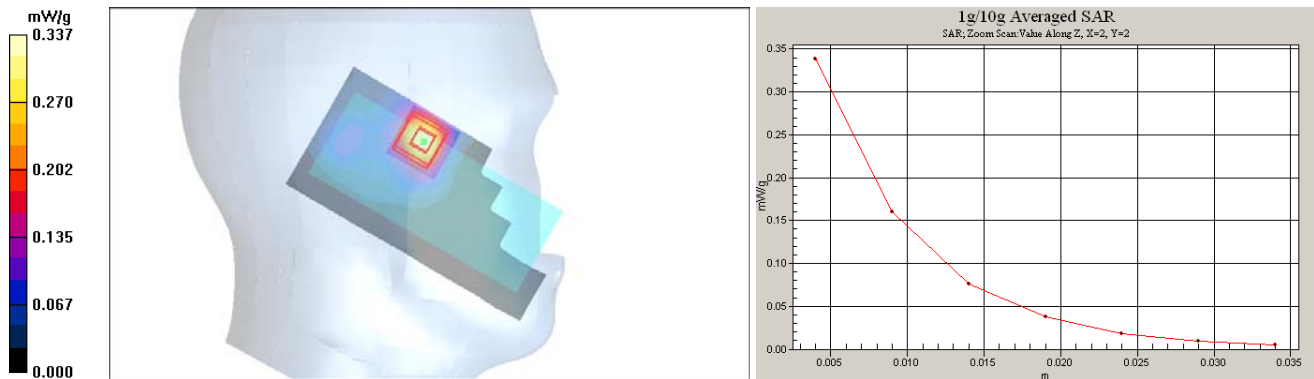
Peak SAR (extrapolated) = 0.636 W/kg

SAR(1 g) = 0.298 mW/g

SAR(10 g) = 0.141 mW/g

Power Drift = 0.073 dB

Maximum value of SAR (measured) = 0.339 mW/g



Date/Time: 2009-04-16 13:52:44

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 2-slot GPRS850

Frequency: 836.6 MHz; Duty Cycle: 1:4.2

Medium: BSL850; Medium Notes: 20.5 C

Medium parameters used: $f = 837$ MHz; $\sigma = 1$ mho/m; $\epsilon_r = 53.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.64, 5.64, 5.64); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - Slide Closed - BL-5F Sony - No Accessory - Display Facing Phantom/Area Scan (41x81x1):

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.341 mW/g

Body - Middle - Slide Closed - BL-5F Sony - No Accessory - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 8.68 V/m

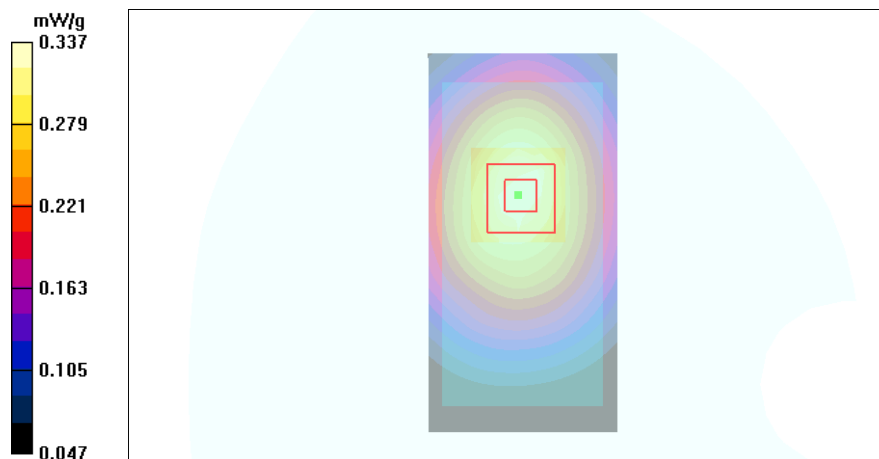
Peak SAR (extrapolated) = 0.419 W/kg

SAR(1 g) = 0.315 mW/g

SAR(10 g) = 0.231 mW/g

Power Drift = -0.245 dB

Maximum value of SAR (measured) = 0.337 mW/g



Date/Time: 2009-04-16 14:05:00

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 2-slot GPRS850

Frequency: 836.6 MHz; Duty Cycle: 1:4.2

Medium: BSL850; Medium Notes: 20.5 C

Medium parameters used: $f = 837$ MHz; $\sigma = 1$ mho/m; $\epsilon_r = 53.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.64, 5.64, 5.64); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - Slide Closed - BL-5F Sony - HS-48 - Display Facing Phantom/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.327 mW/g

Body - Middle - Slide Closed - BL-5F Sony - HS-48 - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 9.65 V/m

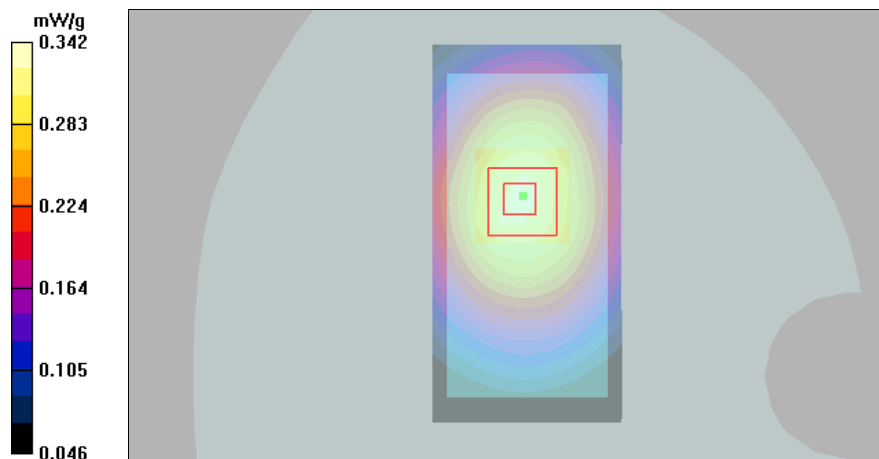
Peak SAR (extrapolated) = 0.423 W/kg

SAR(1 g) = 0.318 mW/g

SAR(10 g) = 0.235 mW/g

Power Drift = -0.061 dB

Maximum value of SAR (measured) = 0.342 mW/g



SAR Report

FCC_RM-491_06

Applicant: Nokia Corporation

Type: RM-491

Copyright © 2009 TCC Nokia

Date/Time: 2009-04-16 14:46:39

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 2-slot GPRS850

Frequency: 848.8 MHz; Duty Cycle: 1:4.2

Medium: BSL850; Medium Notes: 20.5 C

Medium parameters used: $f = 849$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 53.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.64, 5.64, 5.64); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - High - Slide Closed - BL-5F Sony - No Accessory - Back Facing Phantom/Area Scan (41x81x1):

Measurement grid: dx=15mm, dy=15mm

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

Body - High - Slide Closed - BL-5F Sony - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 10.4 V/m

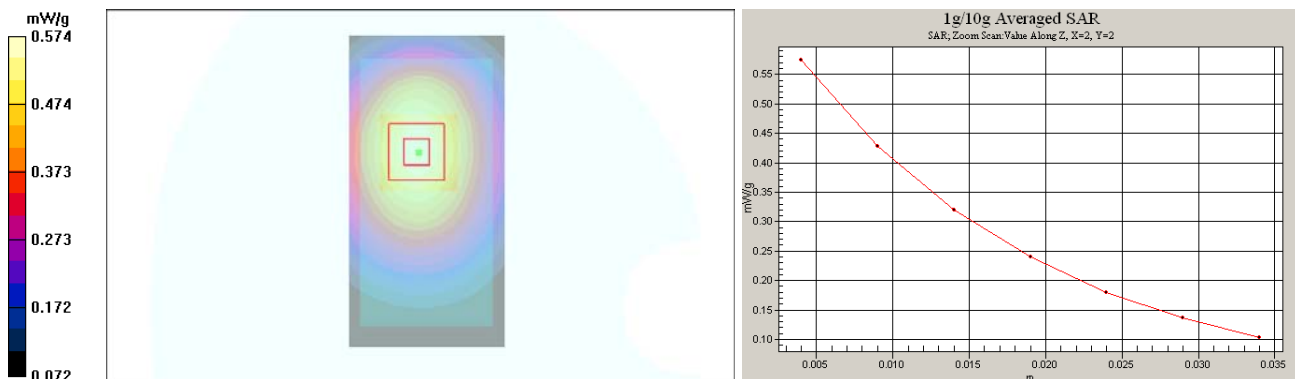
Peak SAR (extrapolated) = 0.721 W/kg

SAR(1 g) = 0.540 mW/g

SAR(10 g) = 0.389 mW/g

Power Drift = -0.004 dB

Maximum value of SAR (measured) = 0.574 mW/g



SAR Report

FCC_RM-491_06

Applicant: Nokia Corporation

Type: RM-491

Copyright © 2009 TCC Nokia

Date/Time: 2009-04-16 14:25:59

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 2-slot GPRS850

Frequency: 836.6 MHz; Duty Cycle: 1:4.2

Medium: BSL850; Medium Notes: 20.5 C

Medium parameters used: $f = 837$ MHz; $\sigma = 1$ mho/m; $\epsilon_r = 53.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.64, 5.64, 5.64); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - Slide Closed - BL-5F Sony - HS-48 - Back Facing Phantom/Area Scan (41x81x1): Measurement
grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.480 mW/g

Body - Middle - Slide Closed - BL-5F Sony - HS-48 - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 9.91 V/m

Peak SAR (extrapolated) = 0.609 W/kg

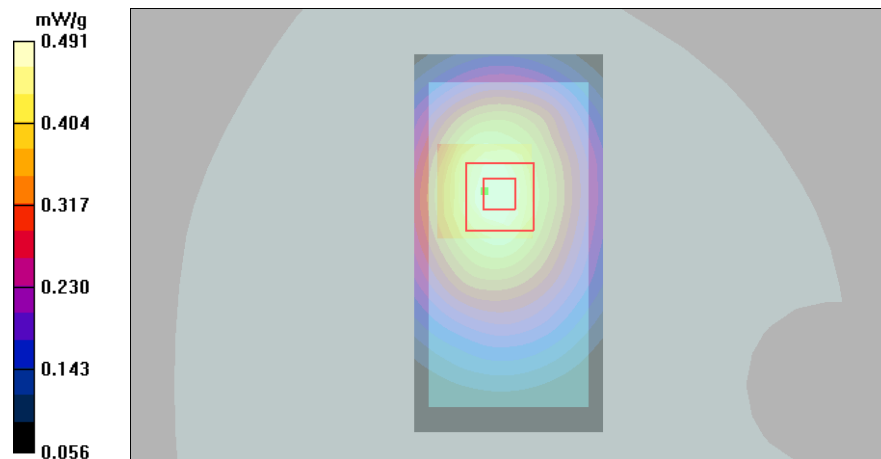
SAR(1 g) = 0.467 mW/g

SAR(10 g) = 0.336 mW/g

Power Drift = 0.097 dB

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

Maximum value of SAR (measured) = 0.491 mW/g



Date/Time: 2009-04-20 10:39:35

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 2-slot GPRS850

Frequency: 848.8 MHz; Duty Cycle: 1:4.2

Medium: BSL850; Medium Notes: t=20.4 C

Medium parameters used: $f = 849$ MHz; $\sigma = 1$ mho/m; $\epsilon_r = 52.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(5.64, 5.64, 5.64); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - High - Slide Closed - BL-5F Matsushita - No Accessory - Back Facing Phantom/Area Scan (41x81x1):

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.558 mW/g

Body - High - Slide Closed - BL-5F Matsushita - 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

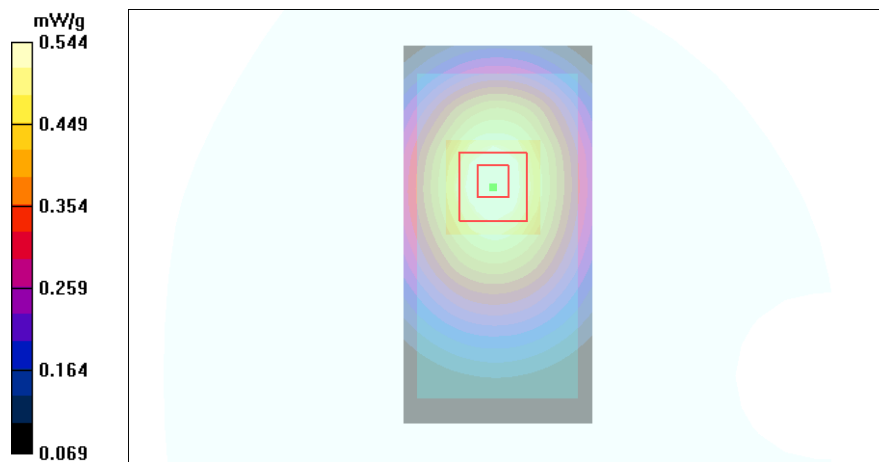
Peak SAR (extrapolated) = 0.683 W/kg

SAR(1 g) = 0.518 mW/g

SAR(10 g) = 0.376 mW/g

Power Drift = -0.079 dB

Maximum value of SAR (measured) = 0.544 mW/g



Date/Time: 2009-05-18 17:27:22

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 3-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:2.8

Medium: BSL1900; Medium Notes: 21.4 C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.58$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(4.65, 4.65, 4.65); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - Slide Closed - BL-5F Sony - No Accessory - Display Facing Phantom/Area Scan (51x81x1):

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.234 mW/g

Body - Middle - Slide Closed - BL-5F Sony - No Accessory - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 9.70 V/m

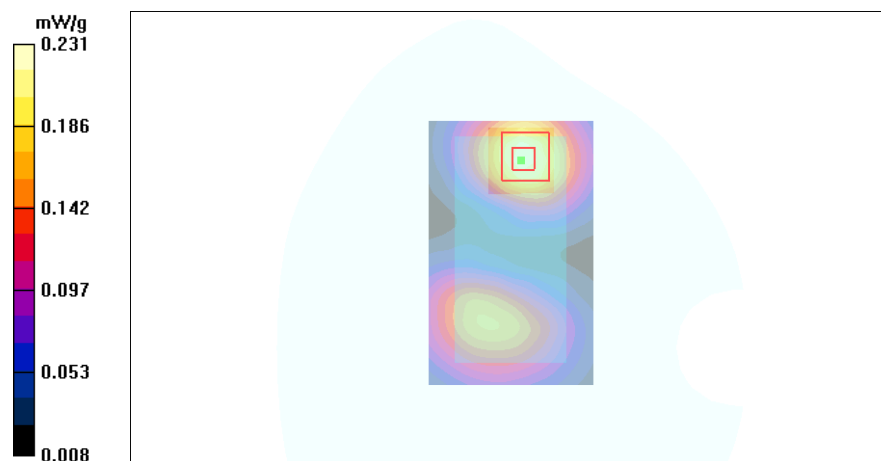
Peak SAR (extrapolated) = 0.344 W/kg

SAR(1 g) = 0.214 mW/g

SAR(10 g) = 0.134 mW/g

Power Drift = 0.060 dB

Maximum value of SAR (measured) = 0.231 mW/g



Date/Time: 2009-05-18 17:40:21

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 3-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:2.8

Medium: BSL1900; Medium Notes: 21.4 C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.58$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(4.65, 4.65, 4.65); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - Slide Closed - BL-5F Sony - HS-48 - Display Facing Phantom/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.180 mW/g

Body - Middle - Slide Closed - BL-5F Sony - HS-48 - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 8.19 V/m

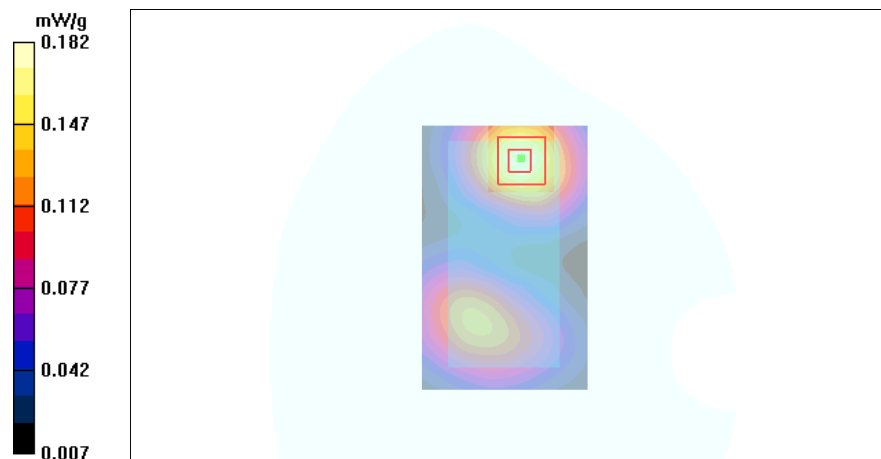
Peak SAR (extrapolated) = 0.264 W/kg

SAR(1 g) = 0.169 mW/g

SAR(10 g) = 0.106 mW/g

Power Drift = 0.029 dB

Maximum value of SAR (measured) = 0.182 mW/g



Date/Time: 2009-05-18 17:53:07

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 3-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:2.8

Medium: BSL1900; Medium Notes: 21.4 C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.58$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(4.65, 4.65, 4.65); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - Slide Closed - BL-5F Sony - No Accessory - Back Facing Phantom/Area Scan (51x81x1):

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.372 mW/g

Body - Middle - Slide Closed - BL-5F Sony - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 11.0 V/m

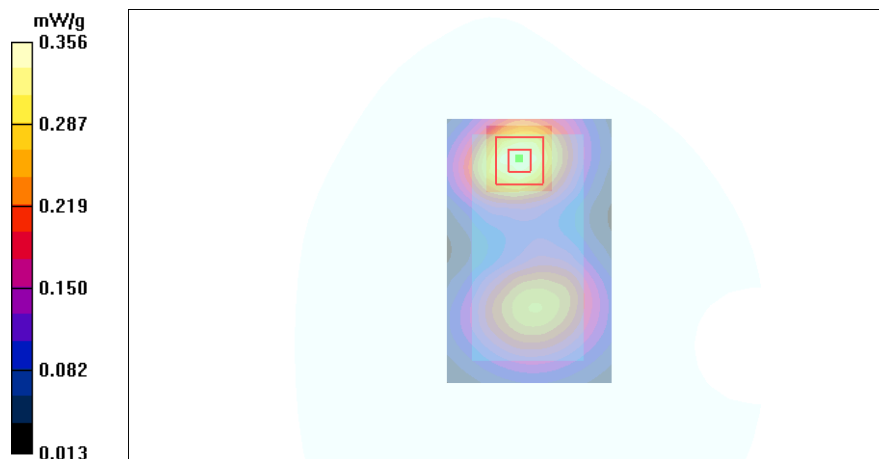
Peak SAR (extrapolated) = 0.519 W/kg

SAR(1 g) = 0.329 mW/g

SAR(10 g) = 0.201 mW/g

Power Drift = -0.265 dB

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



Date/Time: 2009-05-18 18:03:22

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 3-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:2.8

Medium: BSL1900; Medium Notes: 21.4 C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.58$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(4.65, 4.65, 4.65); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - Slide Closed - BL-5F Sony - HS-48 - Back Facing Phantom/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

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

Body - Middle - Slide Closed - BL-5F Sony - HS-48 - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 9.90 V/m

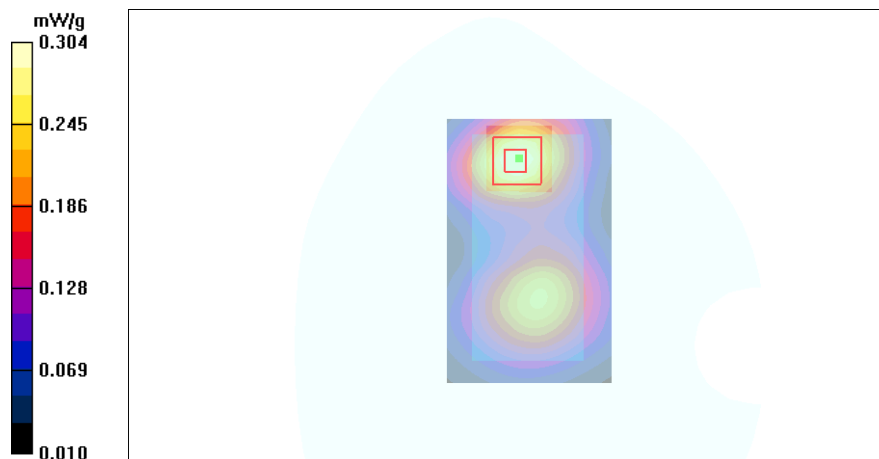
Peak SAR (extrapolated) = 0.466 W/kg

SAR(1 g) = 0.286 mW/g

SAR(10 g) = 0.176 mW/g

Power Drift = 0.047 dB

Maximum value of SAR (measured) = 0.304 mW/g



Date/Time: 2009-05-18 19:41:49

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: WCDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: 21.4 C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.58$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(4.65, 4.65, 4.65); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - Slide Closed - BL-5F Matsushita - No Accessory - Back Facing Phantom/Area Scan (51x81x1):

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.319 mW/g

Body - Middle - Slide Closed - BL-5F Matsushita - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube

0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 9.93 V/m

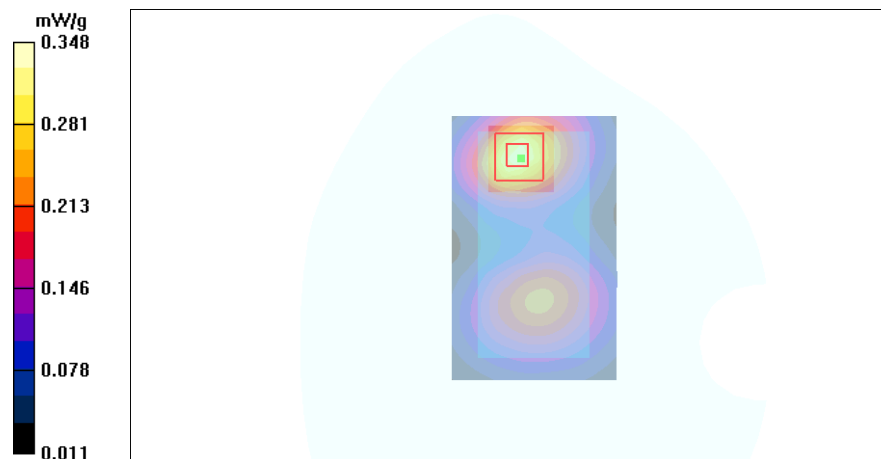
Peak SAR (extrapolated) = 0.525 W/kg

SAR(1 g) = 0.317 mW/g

SAR(10 g) = 0.188 mW/g

Power Drift = -0.055 dB

Maximum value of SAR (measured) = 0.348 mW/g



Date/Time: 2009-05-18 19:08:16

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647199/4

Communication System: 3-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:2.8

Medium: BSL1900; Medium Notes: 21.4 C

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.58$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3131
- ConvF(4.65, 4.65, 4.65); Calibrated: 2009-02-12
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2008-11-07
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body - Middle - Slide Closed - BL-5F Matsushita - No Accessory - Back Facing Phantom/Area Scan (51x81x1):

Measurement grid: dx=15mm, dy=15mm

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

Body - Middle - Slide Closed - BL-5F Matsushita - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube

0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 10.7 V/m

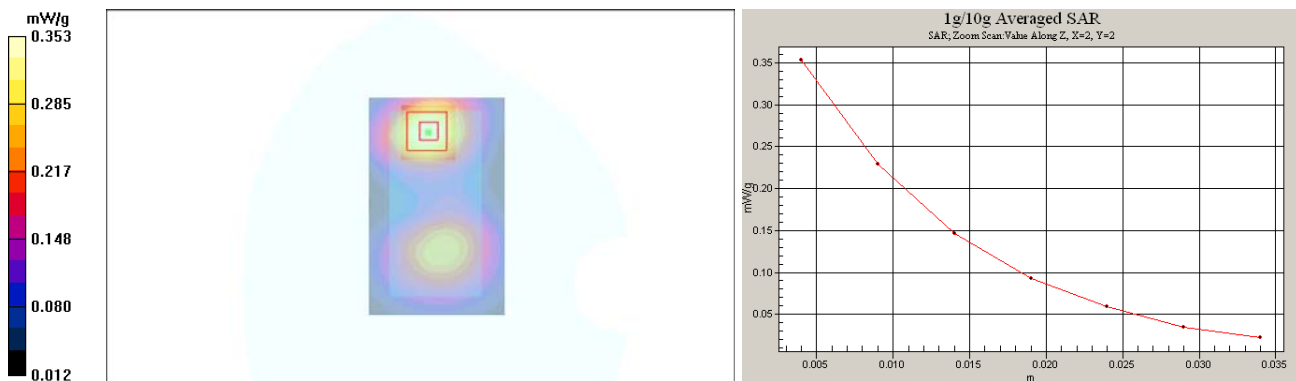
Peak SAR (extrapolated) = 0.531 W/kg

SAR(1 g) = 0.332 mW/g

SAR(10 g) = 0.204 mW/g

Power Drift = -0.049 dB

Maximum value of SAR (measured) = 0.353 mW/g



SAR Report

FCC_RM-491_06

Applicant: Nokia Corporation

Type: RM-491

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Date/Time: 2009-04-27 18:59:36

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647202/6

Communication System: WLAN2450

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: 21.4 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 2.02$ mho/m; $\epsilon_r = 50.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.24, 4.24, 4.24); Calibrated: 2008-04-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2008-04-30
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body – HW: 0503 - Middle - Slide Closed - BL-5F Sony - No Accessory - Display Facing Phantom/Area Scan

(51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.037 mW/g

Body – HW: 0503 - Middle - Slide Closed - BL-5F Sony - No Accessory - Display Facing Phantom/Zoom Scan

(5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 4.23 V/m

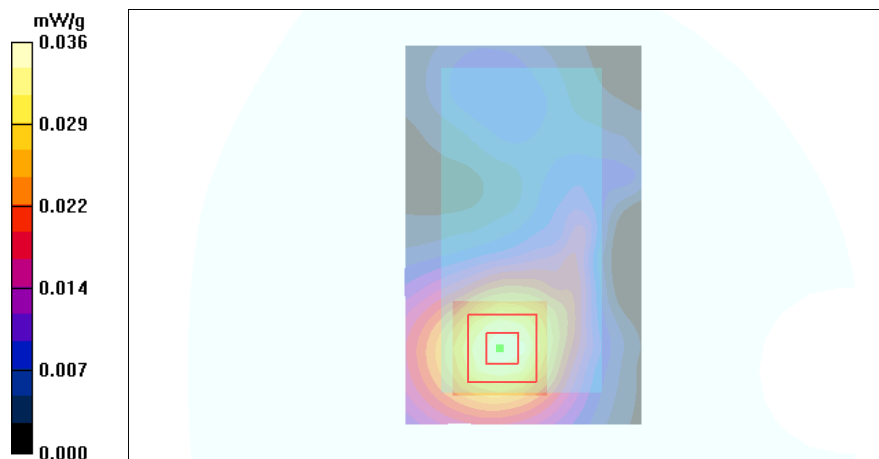
Peak SAR (extrapolated) = 0.056 W/kg

SAR(1 g) = 0.033 mW/g

SAR(10 g) = 0.019 mW/g

Power Drift = -0.448 dB

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



Date/Time: 2009-04-27 19:13:27

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647202/6

Communication System: WLAN2450

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: 21.4 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 2.02$ mho/m; $\epsilon_r = 50.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.24, 4.24, 4.24); Calibrated: 2008-04-23
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2008-04-30
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body – HW: 0503 - Middle - Slide Closed - BL-5F Sony - HS-48 - Display Facing Phantom/Area Scan (51x81x1):

Measurement grid: dx=15mm, dy=15mm

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

Body – HW: 0503 - Middle - Slide Closed - BL-5F Sony - HS-48 - Display Facing Phantom/Zoom Scan

(5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 3.83 V/m

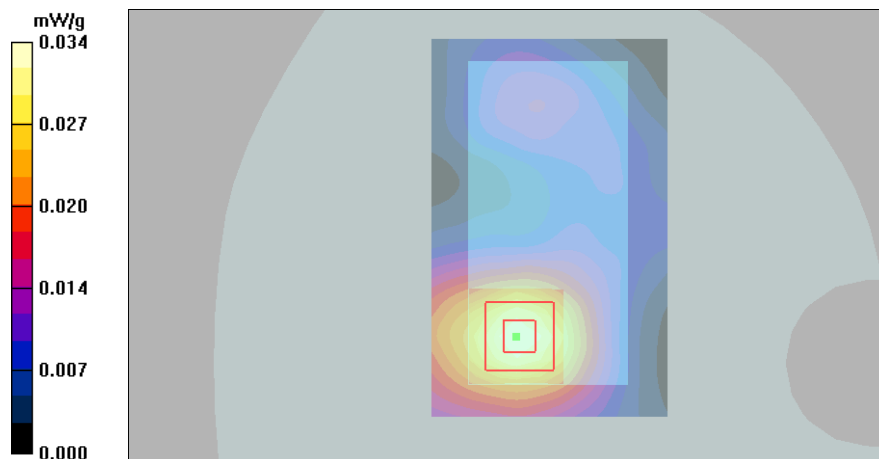
Peak SAR (extrapolated) = 0.053 W/kg

SAR(1 g) = 0.031 mW/g

SAR(10 g) = 0.018 mW/g

Power Drift = 0.036 dB

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



Date/Time: 2009-04-27 20:03:41

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647202/6

Communication System: WLAN2450

Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: 21.4 C

Medium parameters used: $f = 2462$ MHz; $\sigma = 2.04$ mho/m; $\epsilon_r = 50.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.24, 4.24, 4.24); Calibrated: 2008-04-23
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2008-04-30
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body – HW: 0503 - High - Slide Closed - BL-5F Sony - No accessory - Back Facing Phantom/Area Scan (51x81x1):

Measurement grid: dx=15mm, dy=15mm

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

Body – HW: 0503 – High - Slide Closed - BL-5F Sony - No accessory - Back Facing Phantom/Zoom Scan

(5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 6.14 V/m

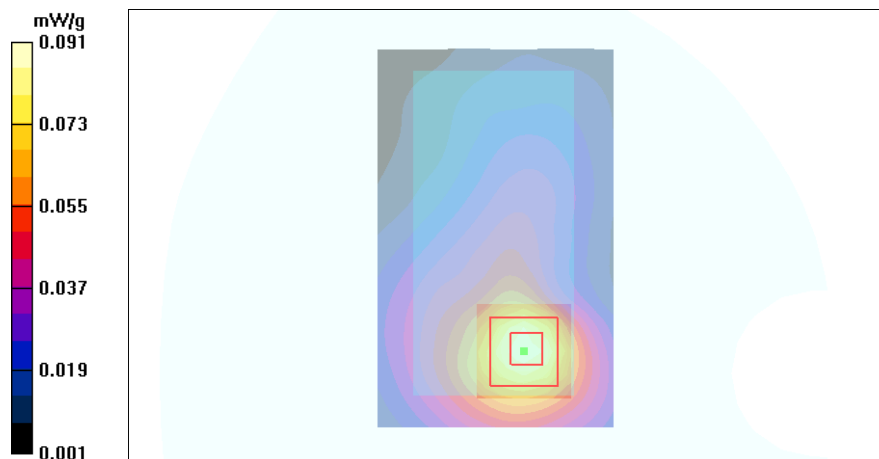
Peak SAR (extrapolated) = 0.147 W/kg

SAR(1 g) = 0.084 mW/g

SAR(10 g) = 0.047 mW/g

Power Drift = -0.038 dB

Maximum value of SAR (measured) = 0.091 mW/g



Date/Time: 2009-04-27 19:25:17

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647202/6

Communication System: WLAN2450

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: 21.4 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 2.02$ mho/m; $\epsilon_r = 50.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.24, 4.24, 4.24); Calibrated: 2008-04-23
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2008-04-30
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body – HW: 0503 - Middle - Slide Closed - BL-5F Sony - HS-48 - Back Facing Phantom/Area Scan (51x81x1):

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.052 mW/g

Body – HW: 0503 - Middle - Slide Closed - BL-5F Sony - HS-48 - Back Facing Phantom/Zoom Scan (5x5x7)/Cube

0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 4.55 V/m

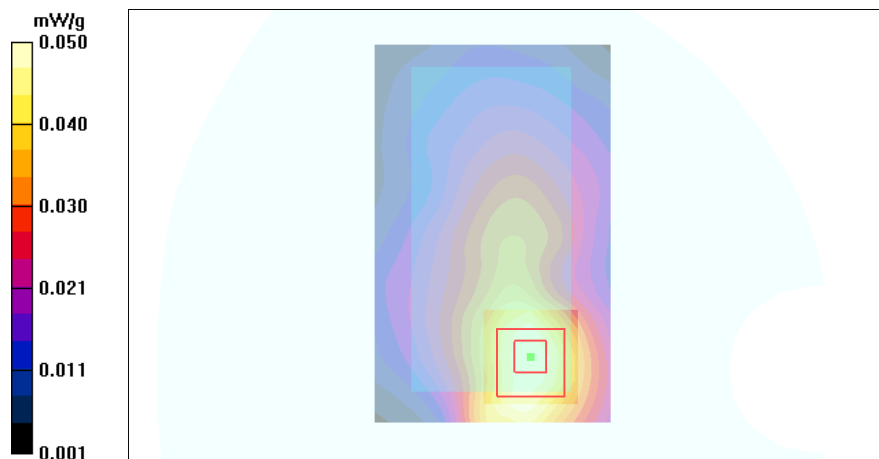
Peak SAR (extrapolated) = 0.079 W/kg

SAR(1 g) = 0.047 mW/g

SAR(10 g) = 0.028 mW/g

Power Drift = 0.161 dB

Maximum value of SAR (measured) = 0.050 mW/g



Date/Time: 2009-04-27 20:41:45

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647202/6

Communication System: WLAN2450

Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: 21.4 C

Medium parameters used: $f = 2462$ MHz; $\sigma = 2.04$ mho/m; $\epsilon_r = 50.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.24, 4.24, 4.24); Calibrated: 2008-04-23
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2008-04-30
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body – HW: 0503 - High - Slide Closed - BL-5F Matsushita - No accessory - Back Facing Phantom/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

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

Body – HW: 0503 - High - Slide Closed - BL-5F Matsushita - No accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 6.36 V/m

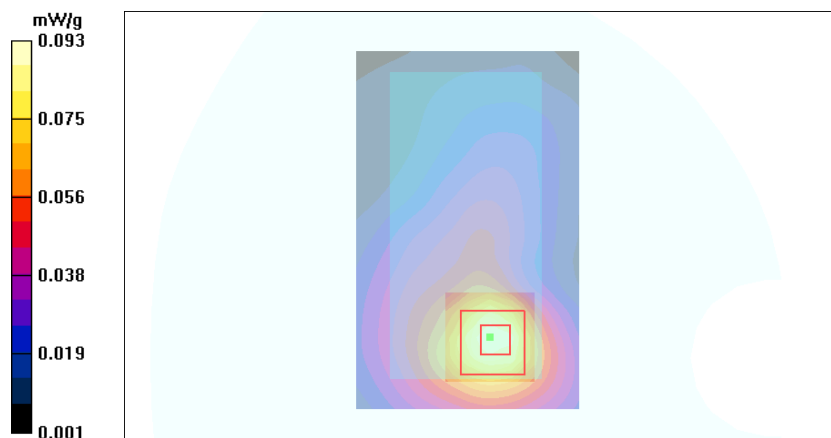
Peak SAR (extrapolated) = 0.150 W/kg

SAR(1 g) = 0.086 mW/g

SAR(10 g) = 0.049 mW/g

Power Drift = 0.145 dB

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



Date/Time: 2009-11-19 11:50:15

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/769008/9

Communication System: WLAN2450

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes: 20.6 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 2.03$ mho/m; $\epsilon_r = 52.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.17, 4.17, 4.17); Calibrated: 2009-05-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2009-05-15
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body – HW: 0706 - Middle - BL-5F Sony - Slide Closed - No Accessory - Display Facing Phantom/Area Scan

(51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.037 mW/g

Body – HW: 0706 - Middle - BL-5F Sony - Slide Closed - No Accessory - Display Facing Phantom/Zoom Scan

(5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 4.23 V/m

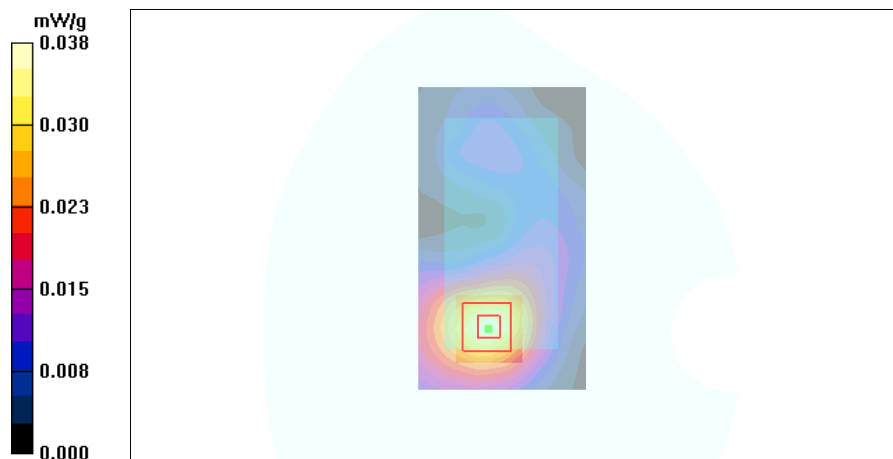
Peak SAR (extrapolated) = 0.061 W/kg

SAR(1 g) = 0.034 mW/g

SAR(10 g) = 0.020 mW/g

Power Drift = -0.251 dB

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



Date/Time: 2009-11-19 12:46:55

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/769008/9

Communication System: WLAN2450

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes: 20.6 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 2.03$ mho/m; $\epsilon_r = 52.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.17, 4.17, 4.17); Calibrated: 2009-05-25
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2009-05-15
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body – HW: 0706 - Middle - BL-5F Sony - Slide Closed - HS-48 - Display Facing Phantom/Area Scan (51x91x1):

Measurement grid: dx=15mm, dy=15mm

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

Body – HW: 0706 - Middle - BL-5F Sony - Slide Closed - HS-48 - Display Facing Phantom/Zoom Scan

(5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 4.65 V/m

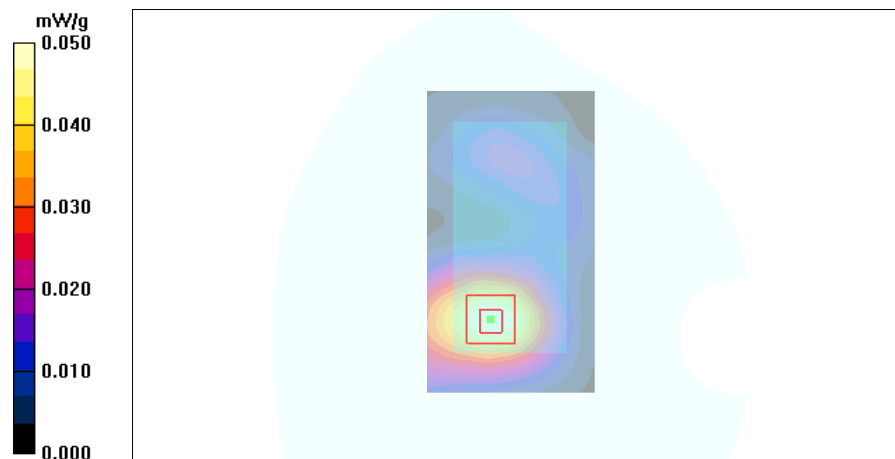
Peak SAR (extrapolated) = 0.080 W/kg

SAR(1 g) = 0.046 mW/g

SAR(10 g) = 0.027 mW/g

Power Drift = -0.028 dB

Maximum value of SAR (measured) = 0.050 mW/g



SAR Report

FCC_RM-491_06

Applicant: Nokia Corporation

Type: RM-491

Copyright © 2009 TCC Nokia

Date/Time: 2009-11-19 13:05:08

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/769008/9

Communication System: WLAN2450

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes: 20.6 C

Medium parameters used: $f = 2442$ MHz; $\sigma = 2.03$ mho/m; $\epsilon_r = 52.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.17, 4.17, 4.17); Calibrated: 2009-05-25
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2009-05-15
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body – HW: 0706 - Middle - BL-5F Sony - Slide Closed - No accessory - Back Facing Phantom/Area Scan

(51x91x1): Measurement grid: dx=15mm, dy=15mm

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

Body – HW: 0706 - Middle - BL-5F Sony - Slide Closed - No accessory - Back Facing Phantom/Zoom Scan

(5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 5.93 V/m

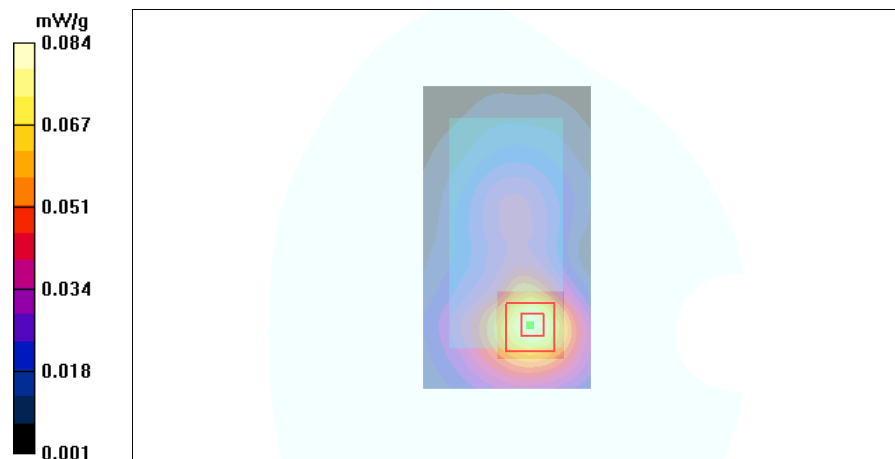
Peak SAR (extrapolated) = 0.139 W/kg

SAR(1 g) = 0.077 mW/g

SAR(10 g) = 0.043 mW/g

Power Drift = -0.235 dB

Maximum value of SAR (measured) = 0.084 mW/g



Date/Time: 2009-11-19 13:40:36

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/769008/9

Communication System: WLAN2450

Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes: 20.6 C

Medium parameters used: $f = 2462$ MHz; $\sigma = 2.05$ mho/m; $\epsilon_r = 52.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.17, 4.17, 4.17); Calibrated: 2009-05-25
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2009-05-15
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body – HW: 0706 - High - BL-5F Sony - Slide Closed - HS-48 - Back Facing Phantom/Area Scan (51x91x1):

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.123 mW/g

Body – HW: 0706 - High - BL-5F Sony - Slide Closed - HS-48 - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 6.65 V/m

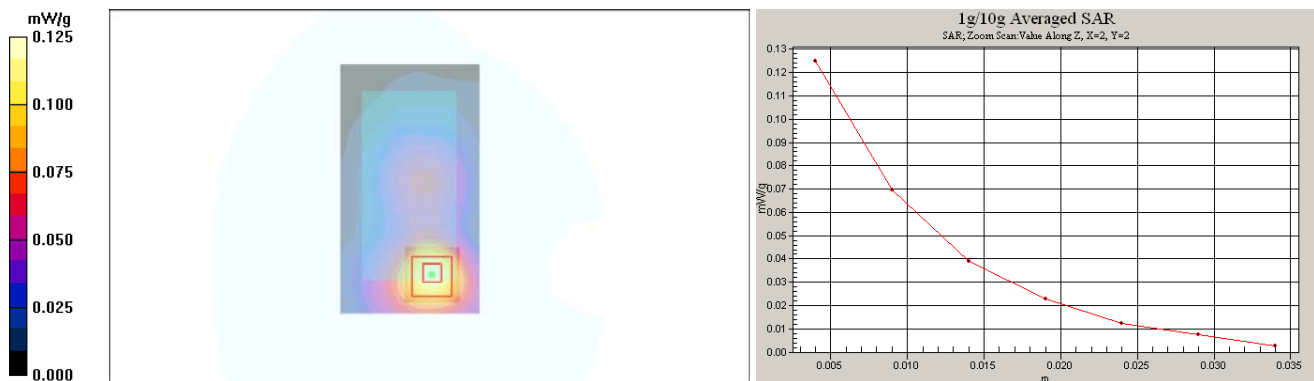
Peak SAR (extrapolated) = 0.209 W/kg

SAR(1 g) = 0.115 mW/g

SAR(10 g) = 0.064 mW/g

Power Drift = 0.099 dB

Maximum value of SAR (measured) = 0.125 mW/g



SAR Report

FCC_RM-491_06

Applicant: Nokia Corporation

Type: RM-491

Copyright © 2009 TCC Nokia

Date/Time: 2009-11-19 14:15:51

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/769008/9

Communication System: WLAN2450

Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes: 20.6 C

Medium parameters used: $f = 2462$ MHz; $\sigma = 2.05$ mho/m; $\epsilon_r = 52.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.17, 4.17, 4.17); Calibrated: 2009-05-25
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2009-05-15
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Body – HW: 0706 - High - BL-5F Matsushita - Slide Closed - HS-48 - Back Facing Phantom/Area Scan (51x91x1):

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.115 mW/g

Body – HW: 0706 - High - BL-5F Matsushita - Slide Closed - HS-48 - Back Facing Phantom/Zoom Scan

(5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 6.96 V/m

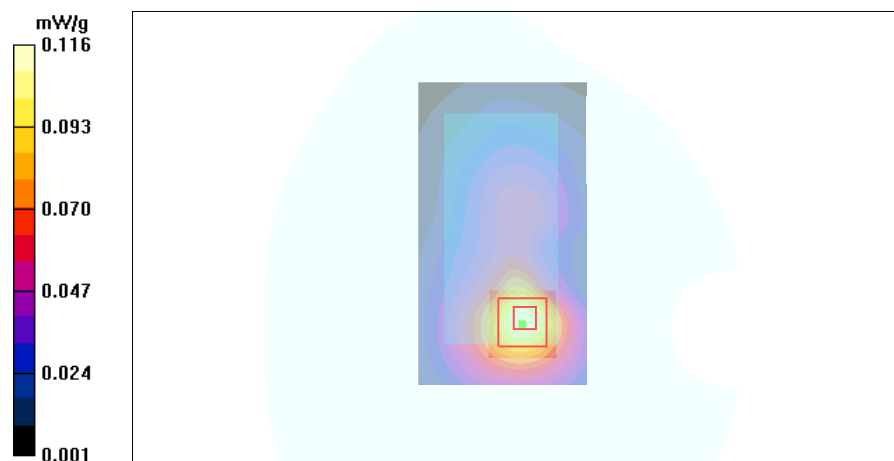
Peak SAR (extrapolated) = 0.193 W/kg

SAR(1 g) = 0.108 mW/g

SAR(10 g) = 0.060 mW/g

Power Drift = 0.049 dB

Maximum value of SAR (measured) = 0.116 mW/g



APPENDIX C: CONDUCTED AVERAGE POWER MEASUREMENTS FOR WCDMA AND HSUPA

Test Laboratory: TCC Nokia

Type: RM-491; Serial: 004401/10/647425/3, HW: 0503, SW: 021.001

C.1. WCDMA1900 Test results

Average power

Ch / f (MHz)	P [dBm]
9263 / 1852.6	20.46
9400 / 1880.0	20.62
9537 / 1907.4	20.61

C.2. HSUPA1900 Test results

Average power

Ch / f (MHz)	P [dBm]				
	Subtest mode 1	Subtest mode 2	Subtest mode 3	Subtest mode 4	Subtest mode 5
9263 / 1852.6	17.94	17.04	19.08	17.24	17.81
9400 / 1880.0	18.80	17.34	19.37	18.35	18.93
9537 / 1907.4	18.39	17.22	18.18	17.42	18.00

Note: In HSUPA operation, the output power is reduced relative to the tuning target power for WCDMA. This device runs two separate HSUPA power control routines: MPR and E-TFC MPR. In each Subtest mode, the routine with the higher power reduction dominates. As a result, the MPR for each of the Subtest modes is as follows:

Maximum Power Reduction (MPR)				
Subtest mode 1	Subtest mode 2	Subtest mode 3	Subtest mode 4	Subtest mode 5
1.5dB	2.0dB	1.0dB	2.0dB	1.5dB

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



Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client **Nokia Salo TCC**

Certificate No: **ES3-3131_Feb09**

CALIBRATION CERTIFICATE

Object	ES3DV3 - SN:3131
Calibration procedure(s)	QA CAL-01.v6 and QA CAL-23.v3 Calibration procedure for dosimetric E-field probes
Calibration date:	February 12, 2009
Condition of the calibrated item	In Tolerance

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

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

Calibration Equipment used (M&TE critical for calibration)

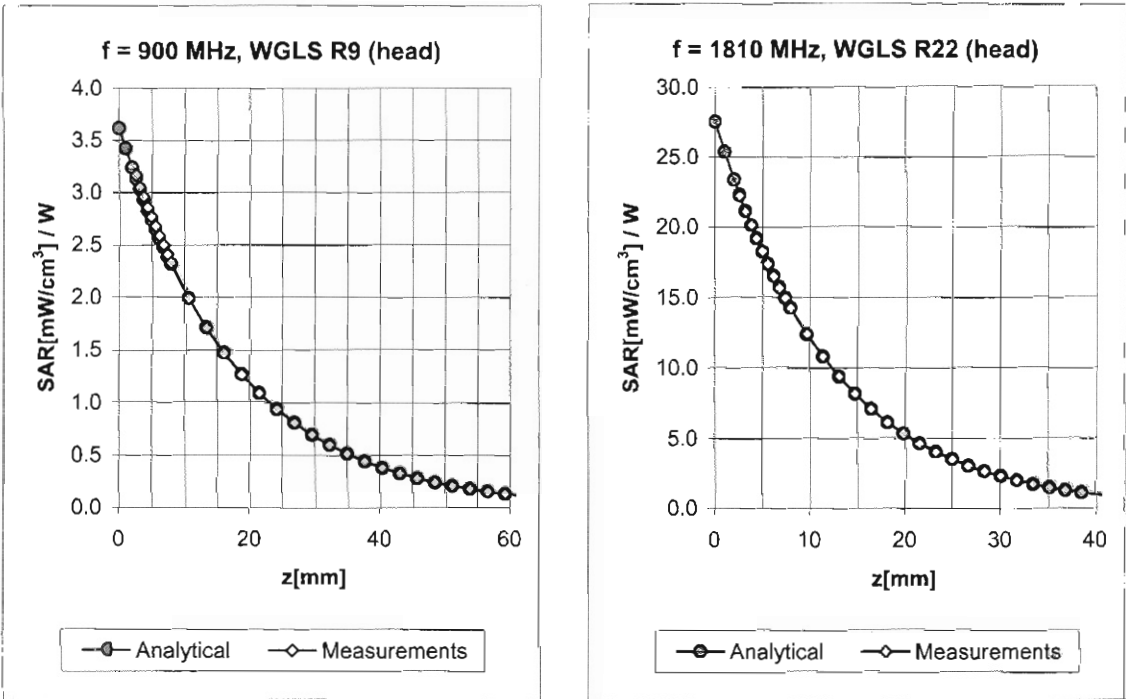
Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-08 (No. 217-00788)	Apr-09
Power sensor E4412A	MY41495277	1-Apr-08 (No. 217-00788)	Apr-09
Power sensor E4412A	MY41498087	1-Apr-08 (No. 217-00788)	Apr-09
Reference 3 dB Attenuator	SN: S5054 (3c)	1-Jul-08 (No. 217-00865)	Jul-09
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-08 (No. 217-00787)	Apr-09
Reference 30 dB Attenuator	SN: S5129 (30b)	1-Jul-08 (No. 217-00866)	Jul-09
Reference Probe ES3DV2	SN: 3013	2-Jan-09 (No. ES3-3013_Jan09)	Jan-10
DAE4	SN: 660	9-Sep-08 (No. DAE4-660_Sep08)	Sep-09
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-08)	In house check: Oct-09

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

Issued: February 12, 2009

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

Conversion Factor Assessment



f [MHz]	Validity [MHz] ^c	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.69	1.17	5.70 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.39	1.63	4.86 ± 11.0% (k=2)
1950	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.47	1.46	4.66 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.42	1.74	4.33 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.69	1.26	5.64 ± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.49	1.37	4.65 ± 11.0% (k=2)
1950	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.45	1.46	4.61 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.99	1.08	3.98 ± 11.0% (k=2)

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



Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **Nokia Salo TCC**

Certificate No: **ES3-3165_Apr08**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3165**

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

Calibration date: **April 23, 2008**

Condition of the calibrated item **In Tolerance**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-08 (No. 217-00788)	Apr-09
Power sensor E4412A	MY41495277	1-Apr-08 (No. 217-00788)	Apr-09
Power sensor E4412A	MY41498087	1-Apr-08 (No. 217-00788)	Apr-09
Reference 3 dB Attenuator	SN: S5054 (3c)	8-Aug-07 (No. 217-00719)	Aug-08
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-08 (No. 217-00787)	Apr-09
Reference 30 dB Attenuator	SN: S5129 (30b)	8-Aug-07 (No. 217-00720)	Aug-08
Reference Probe ES3DV2	SN: 3013	2-Jan-08 (No. ES3-3013_Jan08)	Jan-09
DAE4	SN: 660	3-Sep-07 (No. DAE4-660_Sep07)	Sep-08

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-07)	In house check: Oct-08

Calibrated by: **Katja Pokovic** Technical Manager

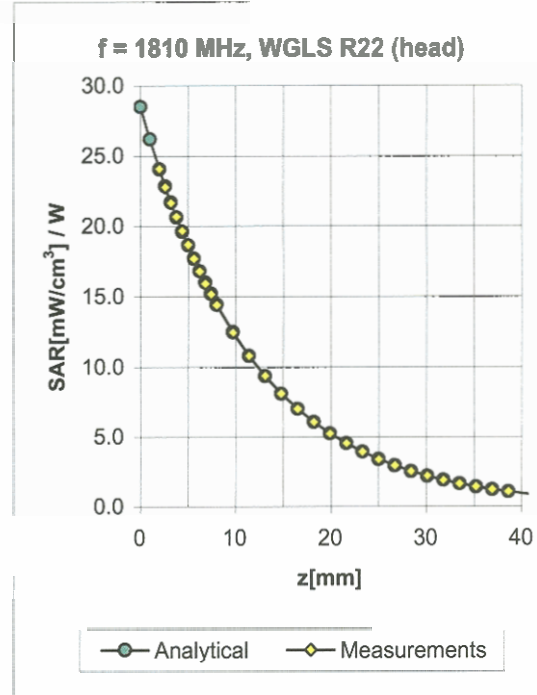
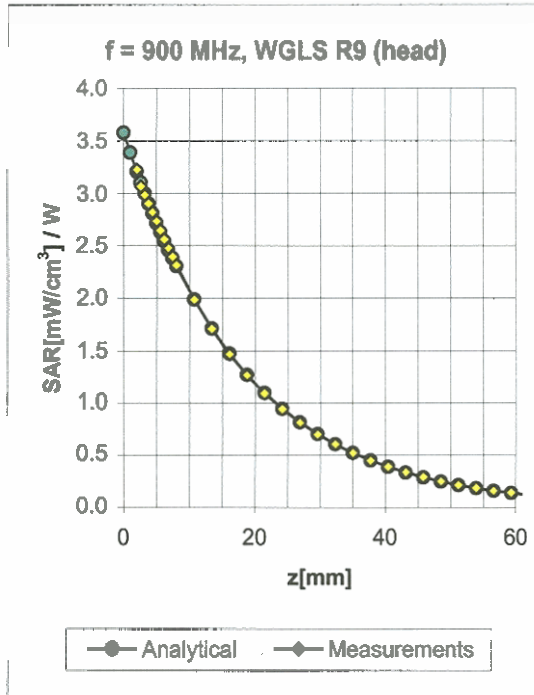
Approved by: **Niels Kuster** Quality Manager

Signature

Issued: April 23, 2008

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

Conversion Factor Assessment



f [MHz]	Validity [MHz] ^c	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.84	1.20	6.23 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.93	1.13	5.14 ± 11.0% (k=2)
1950	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.88	1.17	4.87 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.79	1.24	4.57 ± 11.0% (k=2)
2600	± 50 / ± 100	Head	39.0 ± 5%	1.96 ± 5%	0.73	1.30	4.49 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	1.00	1.14	5.75 ± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.97	1.12	5.23 ± 11.0% (k=2)
1950	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.79	1.29	4.96 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.63	1.50	4.24 ± 11.0% (k=2)
2600	± 50 / ± 100	Body	52.5 ± 5%	2.16 ± 5%	0.70	1.44	4.07 ± 11.0% (k=2)

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



Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **Nokia Salo TCC**

Certificate No: **ES3-3165_May09**

CALIBRATION CERTIFICATE

Object	ES3DV3 - SN:3165
Calibration procedure(s)	QA CAL-01.v6 and QA CAL-23.v3 Calibration procedure for dosimetric E-field probes
Calibration date:	May 25, 2009
Condition of the calibrated item	In Tolerance

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

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

Calibration Equipment used (M&TE critical for calibration)

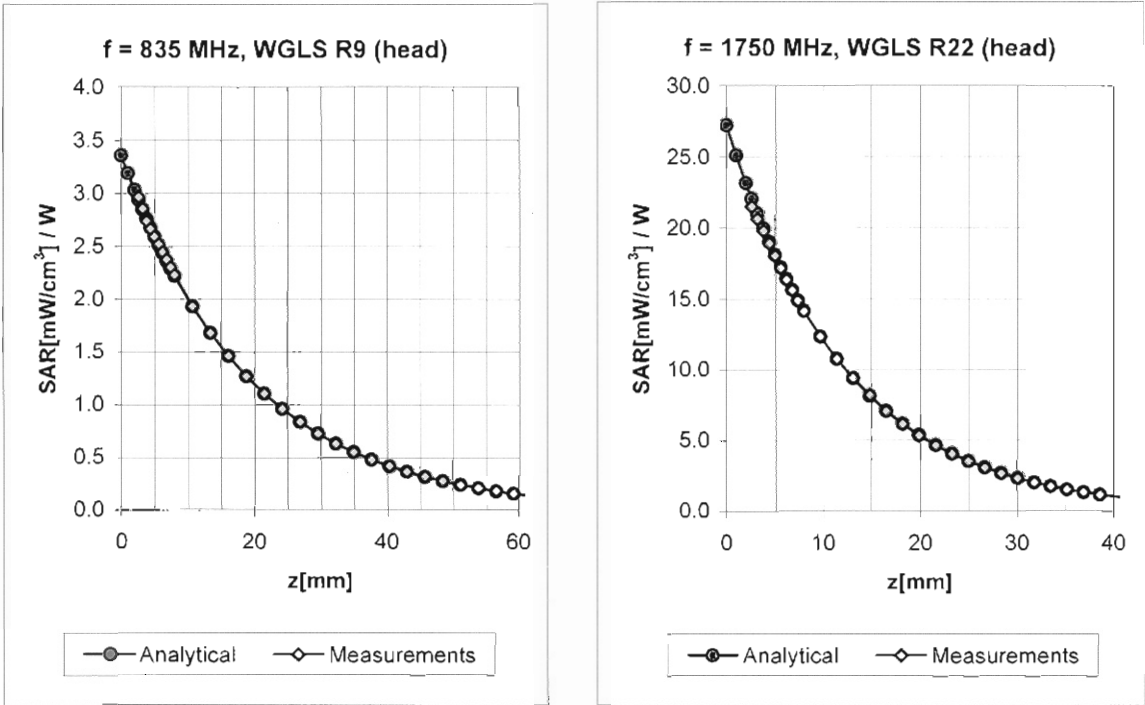
Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41495277	1-Apr-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41498087	1-Apr-09 (No. 217-01030)	Apr-10
Reference 3 dB Attenuator	SN: S5054 (3c)	31-Mar-09 (No. 217-01026)	Mar-10
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-09 (No. 217-01028)	Mar-10
Reference 30 dB Attenuator	SN: S5129 (30b)	31-Mar-09 (No. 217-01027)	Mar-10
Reference Probe ES3DV2	SN: 3013	2-Jan-09 (No. ES3-3013_Jan09)	Jan-10
DAE4	SN: 660	9-Sep-08 (No. DAE4-660_Sep08)	Sep-09
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-08)	In house check: Oct-09

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

Issued: May 25, 2009

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

Conversion Factor Assessment



f [MHz]	Validity [MHz] ^c	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF	Uncertainty
835	± 50 / ± 100	Head	41.5 ± 5%	0.90 ± 5%	0.45	1.64	5.98	± 11.0% (k=2)
1750	± 50 / ± 100	Head	40.1 ± 5%	1.37 ± 5%	0.65	1.29	5.17	± 11.0% (k=2)
1900	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.60	1.48	5.00	± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.80	1.34	4.49	± 11.0% (k=2)
835	± 50 / ± 100	Body	55.2 ± 5%	0.97 ± 5%	0.40	1.64	5.95	± 11.0% (k=2)
1750	± 50 / ± 100	Body	53.4 ± 5%	1.49 ± 5%	0.54	1.59	4.89	± 11.0% (k=2)
1900	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.39	2.01	4.60	± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.70	1.30	4.17	± 11.0% (k=2)

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

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



Accredited by the Swiss Federal Office of Metrology and Accreditation
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **Nokia Salo TCC**

Certificate No: **D835V2-480_May07**

CALIBRATION CERTIFICATE

Object **D835V2 - SN: 480**

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

Calibration date: **May 21, 2007**

Condition of the calibrated item **In Tolerance**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	03-Oct-06 (METAS, No. 217-00608)	Oct-07
Power sensor HP 8481A	US37292783	03-Oct-06 (METAS, No. 217-00608)	Oct-07
Reference 20 dB Attenuator	SN: 5086 (20g)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference 10 dB Attenuator	SN: 5047.2 (10r)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference Probe ET3DV6 (HF)	SN 1507	19-Oct-06 (SPEAG, No. ET3-1507_Oct06)	Oct-07
DAE4	SN 601	30-Jan-07 (SPEAG, No. DAE4-601_Jan07)	Jan-08
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-05)	In house check: Oct-07
RF generator Agilent E4421B	MY41000675	11-May-05 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Oct-06)	In house check: Oct-07

	Name	Function	Signature
Calibrated by:	Marcel Fehr	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 30, 2007

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

DASY4 Validation Report for Head TSL

Date/Time: 21.05.2007 15:29:18

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:480

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

Medium: HSL 900 MHz;

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.9 \text{ mho/m}$; $\epsilon_r = 41.6$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (HF); ConvF(6.09, 6.09, 6.09); Calibrated: 19.10.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.01.2007
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; ;
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Pin = 250 mW; d = 15 mm/Zoom Scan (7x7x7)/Cube 0:

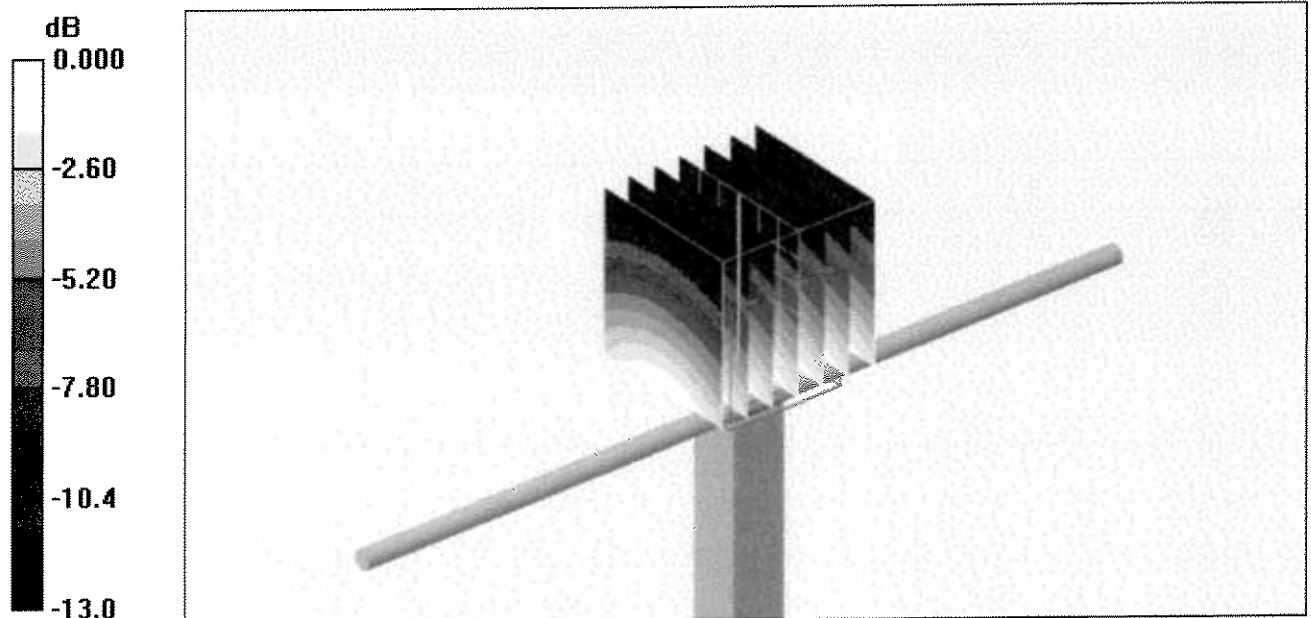
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 54.7 V/m; Power Drift = 0.003 dB

Peak SAR (extrapolated) = 3.29 W/kg

SAR(1 g) = 2.29 mW/g; SAR(10 g) = 1.5 mW/g

Maximum value of SAR (measured) = 2.47 mW/g



0 dB = 2.47mW/g

DASY4 Validation Report for Body TSL

Date/Time: 21.05.2007 12:35:17

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:480

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

Medium: MSL900;

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.98 \text{ mho/m}$; $\epsilon_r = 53$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (HF); ConvF(5.75, 5.75, 5.75); Calibrated: 19.10.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.01.2007
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; ;
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Pin = 250mW, d = 15mm/Zoom Scan (7x7x7)/Cube 0:

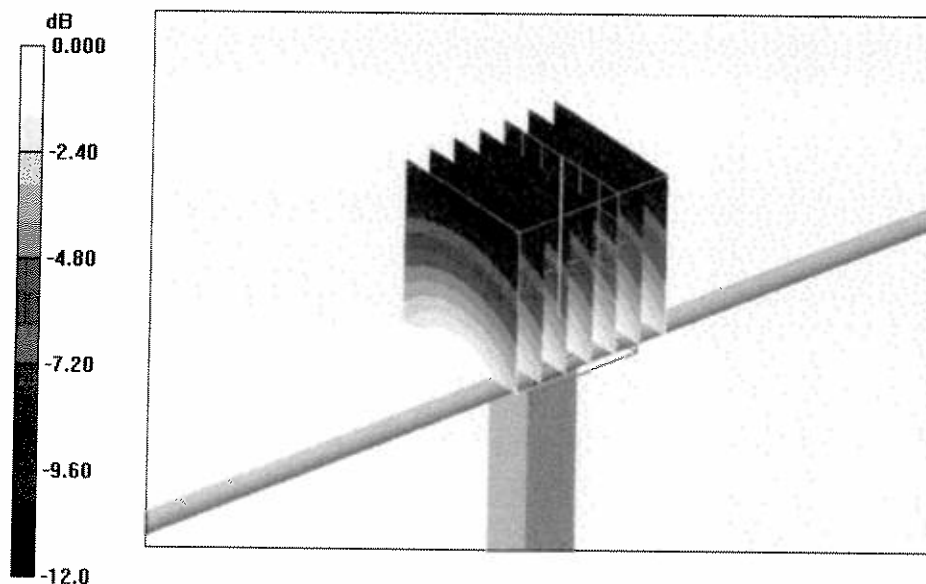
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 54.8 V/m; Power Drift = 0.013 dB

Peak SAR (extrapolated) = 3.45 W/kg

SAR(1 g) = 2.48 mW/g; SAR(10 g) = 1.65 mW/g

Maximum value of SAR (measured) = 2.69 mW/g



0 dB = 2.69mW/g



Accredited by the Swiss Accreditation Service (SAS)
 The Swiss Accreditation Service is one of the signatories to the EA
 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **Nokia Salo TCC**

Certificate No: **D1900V2-5d030_Jan08**

CALIBRATION CERTIFICATE

Object **D1900V2 - SN: 5d030**

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

Calibration date: **January 29, 2008**

Condition of the calibrated item **In Tolerance**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	04-Oct-07 (METAS, No. 217-00736)	Oct-08
Power sensor HP 8481A	US37292783	04-Oct-07 (METAS, No. 217-00736)	Oct-08
Reference 20 dB Attenuator	SN: 5086 (20g)	07-Aug-07 (METAS, No 217-00718)	Aug-08
Reference 10 dB Attenuator	SN: 5047.2 (10r)	07-Aug-07 (METAS, No 217-00718)	Aug-08
Reference Probe ET3DV6 (HF)	SN: 1507	26-Oct-07 (SPEAG, No. ET3-1507_Oct07)	Oct-08
DAE4	SN 601	3-Jan-08 (SPEAG, No. DAE4-601_Jan08)	Jan-09
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-07)	In house check: Oct-08
RF generator R&S SMT-06	100005	4-Aug-99 (SPEAG, in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Oct-07)	In house check: Oct-08

Calibrated by: **Mike Meili** **Laboratory Technician**

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

Issued: January 30, 2008

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DASY4 Validation Report for Head TSL

Date/Time: 29.01.2008 14:30:03

Test Laboratory: SPEAG, Zurich, Switzerland

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

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

Medium: HSL U10 BB;

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.46$ mho/m; $\epsilon_r = 38.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (HF); ConvF(4.86, 4.86, 4.86); Calibrated: 26.10.2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 03.01.2008
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:

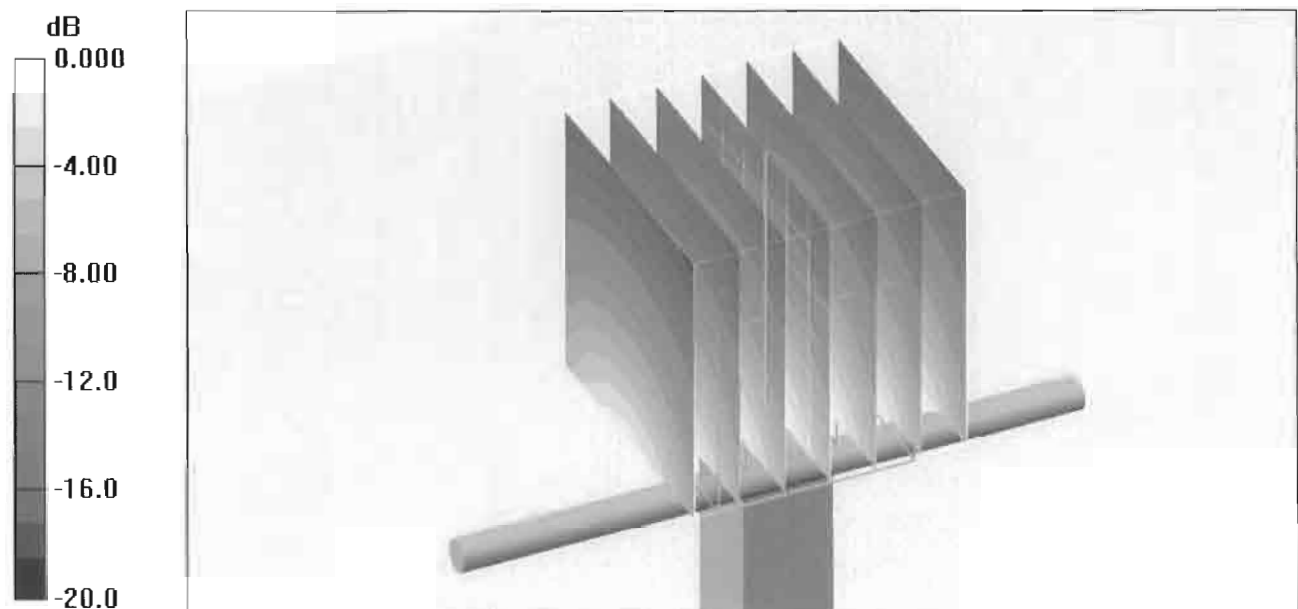
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 93.8 V/m; Power Drift = 0.031 dB

Peak SAR (extrapolated) = 18.0 W/kg

SAR(1 g) = 10.2 mW/g; SAR(10 g) = 5.3 mW/g

Maximum value of SAR (measured) = 11.5 mW/g



0 dB = 11.5mW/g

DASY4 Validation Report for Body TSL

Date/Time: 22.01.2008 14:15:36

Test Laboratory: SPEAG, Zurich, Switzerland

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

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

Medium: MSL U10 BB;

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 53.1$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (HF); ConvF(4.48, 4.48, 4.48); Calibrated: 26.10.2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 03.01.2008
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:

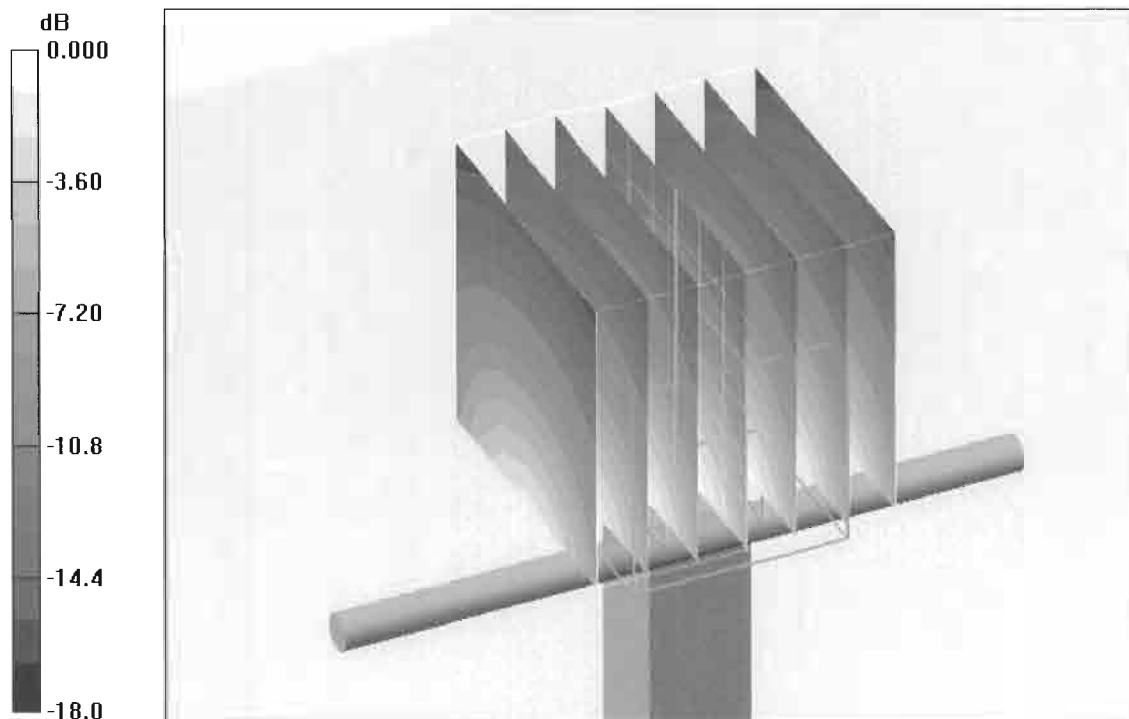
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 90.4 V/m; Power Drift = -0.023 dB

Peak SAR (extrapolated) = 16.6 W/kg

SAR(1 g) = 9.62 mW/g; SAR(10 g) = 5.1 mW/g

Maximum value of SAR (measured) = 10.9 mW/g



0 dB = 10.9mW/g



Accredited by the Swiss Accreditation Service (SAS)
 The Swiss Accreditation Service is one of the signatories to the EA
 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **Nokia Salo TCC**

Certificate No: **D2450V2-729_Jan08**

CALIBRATION CERTIFICATE

Object **D2450V2 - SN: 729**

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

Calibration date: **January 30, 2008**

Condition of the calibrated item **In Tolerance**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	04-Oct-07 (METAS, No. 217-00736)	Oct-08
Power sensor HP 8481A	US37292783	04-Oct-07 (METAS, No. 217-00736)	Oct-08
Reference 20 dB Attenuator	SN: 5086 (20g)	07-Aug-07 (METAS, No 217-00718)	Aug-08
Reference 10 dB Attenuator	SN: 5047.2 (10r)	07-Aug-07 (METAS, No 217-00718)	Aug-08
Reference Probe ES3DV2	SN: 3025	26-Oct-07 (SPEAG, No. ES3-3025_Oct07)	Oct-08
DAE4	SN 601	03-Jan-08 (SPEAG, No. DAE4-601_Jan08)	Jan-09

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-07)	In house check: Oct-08
RF generator R&S SMT-06	100005	4-Aug-99 (SPEAG, in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Oct-07)	In house check: Oct-08

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	

Approved by:	Katja Pokovic	Technical Manager
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Issued: January 31, 2008

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

DASY4 Validation Report for Head TSL

Date/Time: 30.01.2008 12:36:45

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN729

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

Medium: HSL U10 BB;

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.82$ mho/m; $\epsilon_r = 37.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV2 - SN3025 (HF); ConvF(4.41, 4.41, 4.41); Calibrated: 26.10.2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 03.01.2008
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; ;
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:

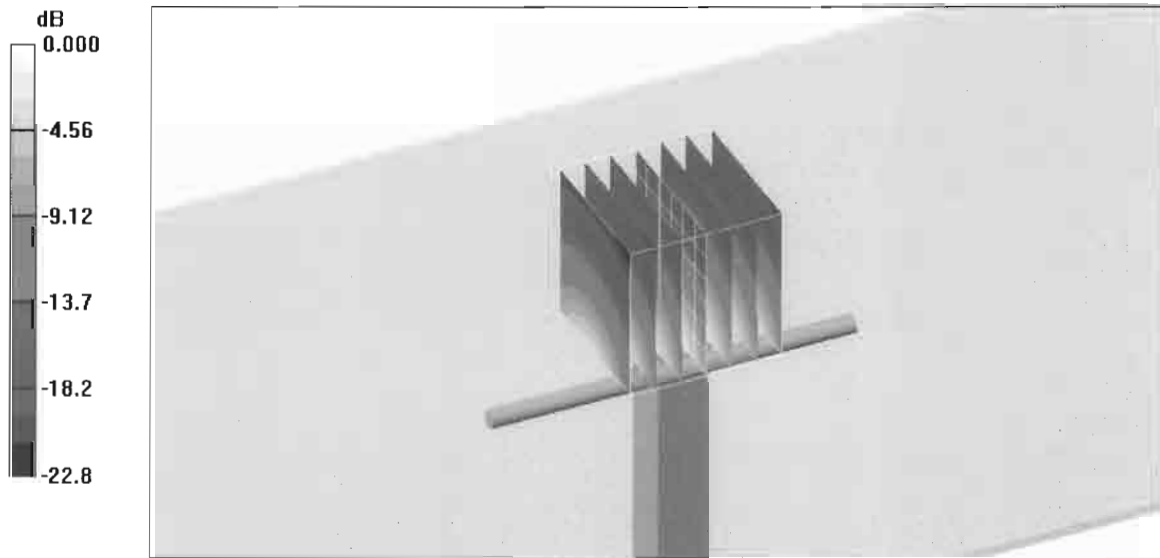
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 92.1 V/m; Power Drift = 0.058 dB

Peak SAR (extrapolated) = 30.7 W/kg

SAR(1 g) = 14.3 mW/g; SAR(10 g) = 6.57 mW/g

Maximum value of SAR (measured) = 15.4 mW/g



0 dB = 15.4mW/g

DASY4 Validation Report for Body TSL

Date/Time: 23.01.2008 12:53:20

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN729

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

Medium: MSL U10 BB;

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.99$ mho/m; $\epsilon_r = 52.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV2 - SN3025 (HF); ConvF(4.02, 4.02, 4.02); Calibrated: 26.10.2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 03.01.2008
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; ;
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:

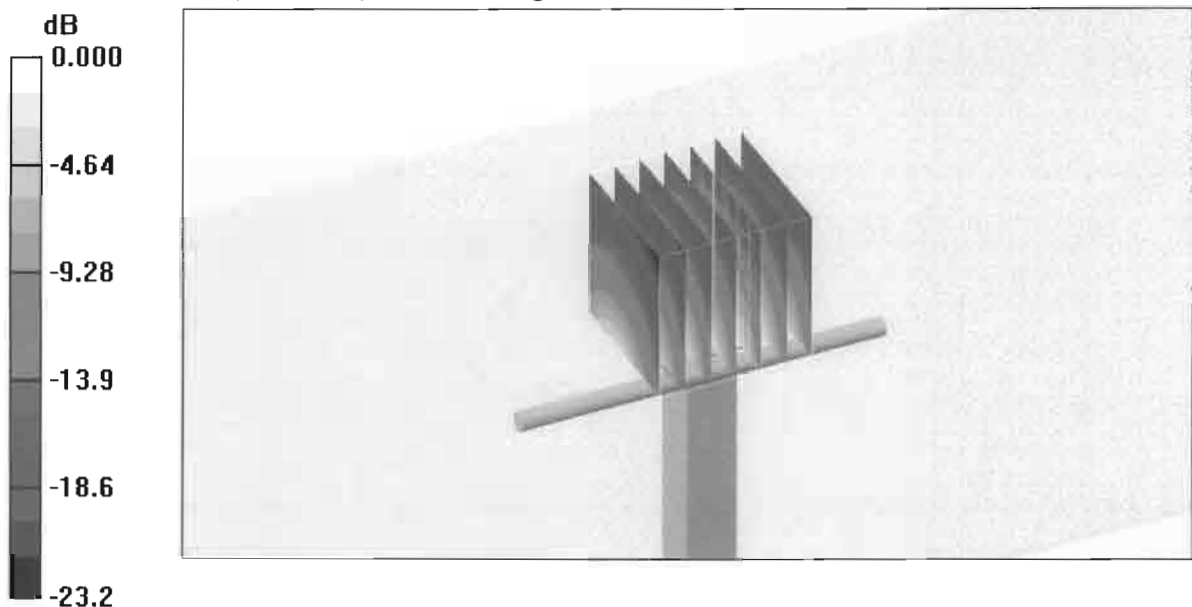
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 82.8 V/m; Power Drift = 0.091 dB

Peak SAR (extrapolated) = 28.8 W/kg

SAR(1 g) = 13.8 mW/g; SAR(10 g) = 6.33 mW/g

Maximum value of SAR (measured) = 15.6 mW/g



0 dB = 15.6mW/g