

SAR Compliance Test Report

Test report no.:	FCC_RM-923_03	Date of report:	2012-10-18
Template version:	19.3	Number of pages:	153
Testing laboratory:	TCC Nokia Beijing Laboratory Beijing Economic and Technological Development Area No.5 Donghuan Zhonglu Beijing PRC China 100176 Tel. +86 10 8711 8888 Fax. +86 10 8711 4550	Client:	Nokia Corporation Beijing Economic and Technological Development Area No.5 Donghuan Zhonglu Beijing PRC China 100176 Tel. +86 10 8711 8888 Fax. +86 10 8711 4550
Responsible test engineer:	Zhang Luwen	Product contact person:	Hu Helen
Measurements made by:	Zhang Luwen, Liu Xianchao, Liang Dong, Zou Ming		
Tested device:	RM-923		
FCC ID:	QTLRM-923	IC:	-
Supplement reports:	SAR_Photo_RM-923_04		
Testing has been carried out in accordance with:	47CFR §2.1093 Radiofrequency Radiation Exposure Evaluation: Portable Devices FCC OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01) Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields RSS-102 Evaluation Procedure for Mobile and Portable Radio Transmitters with Respect to Health Canada's Safety Code 6 for Exposure of Humans to Radio Frequency Fields IEEE 1528 - 2003 IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Technique		
Documentation:	The documentation of the testing performed on the tested devices is archived for 15 years at TCC Nokia.		
Test results:	The tested device complies with the requirements in respect of all parameters subject to the test. The test results and statements relate only to the items tested. The test report shall not be reproduced except in full, without written approval of the laboratory.		
Date and signatures:			
For the contents:			

CONTENTS

1. SUMMARY OF SAR TEST REPORT	4
1.1 TEST DETAILS.....	4
1.2 MAXIMUM RESULTS.....	4
1.2.1 Head Configuration.....	4
1.2.2 Body Worn Configuration	5
1.2.3 Wireless Router Configuration.....	5
1.2.4 Summary SAR data	6
1.2.5 Maximum Drift	6
1.2.6 Measurement Uncertainty	6
2. DESCRIPTION OF THE DEVICE UNDER TEST.....	7
2.1 DESCRIPTION OF THE ANTENNA	8
3. TEST CONDITIONS	10
3.1 TEMPERATURE AND HUMIDITY	10
3.2 TEST SIGNAL, FREQUENCIES AND OUTPUT POWER	10
3.3 TEST CASES AND TEST MINIMISATION	11
4. DESCRIPTION OF THE TEST EQUIPMENT	13
4.1 MEASUREMENT SYSTEM AND COMPONENTS	13
4.1.1 Isotropic E-field Probe Type ES3DV3	14
4.1.2 Isotropic E-field Probe Type EX3DV4.....	15
4.2 PHANTOMS	15
4.3 TISSUE SIMULANTS	15
4.3.1 Tissue Simulant Recipes	16
4.3.2 System Checking	16
4.3.3 Tissue Simulants used in the Measurements.....	19
5. DESCRIPTION OF THE TEST PROCEDURE	21
5.1 DEVICE HOLDER.....	21
5.2 TEST POSITIONS.....	21
5.2.1 Against Phantom Head.....	21
5.2.2 Body Worn Configuration	21
5.2.3 Wireless Router Configuration.....	22
5.3 SCAN PROCEDURES.....	22
5.4 SAR AVERAGING METHODS.....	22
6. MEASUREMENT UNCERTAINTY	23
7. RESULTS	24
7.1 THE MEASURED HEAD SAR VALUES FOR THE TEST DEVICE	24
7.2 THE MEASURED BODY SAR VALUES FOR THE TEST DEVICE.....	31
7.3 BODY SAR ASSESSMENT OF WIRELESS ROUTER MODE AT 10.0MM SEPARATION DISTANCE.....	36
APPENDIX A: SYSTEM CHECKING SCANS.....	43
APPENDIX B.1: HEAD MEASUREMENT SCANS.....	53

SAR Report

Type: RM-923

FCC_RM-923_03

Applicant: Nokia Corporation

Copyright © 2012 TCC Nokia

APPENDIX B.2: BODY-WORN MEASUREMENT SCANS.....	84
APPENDIX B.3: WIRELESS ROUTER MEASUREMENT SCANS	111
APPENDIX C: DIELECTRIC PARAMETERS OF THE TISSUE SIMULANTS.....	147
APPENDIX D: RELEVANT PAGES FROM PROBE CALIBRATION REPORT(S).....	149
APPENDIX E: RELEVANT PAGES FROM DIPOLE VALIDATION KIT REPORT(S)	150
APPENDIX F: CONDUCTED POWER MEASUREMENTS FOR GSM/GPRS BANDS.....	151
APPENDIX G: CONDUCTED POWER MEASUREMENTS FOR WCDMA BANDS	152
APPENDIX H: CONDUCTED POWER MEASUREMENTS FOR WLAN.....	153

1. SUMMARY OF SAR TEST REPORT

1.1 Test Details

Period of test	2012-10-17 to 2012-10-23
SN, HW and SW numbers of tested device	SN: 004402/47/159009/5, HW: 1001, SW: 1102.0000.8779.12418, DUT: 52880 SN: 004402/47/159005/3, HW: 1001, SW: 1102.0000.8779.12418, DUT: 52876 SN: 004402/47/159015/2, HW: 1001, SW: 1102.0000.8779.12418, DUT: 52877
Batteries used in testing	BP-3L LG, DUT: 52796, 52797, 52798, 52800, 52801 BP-3L Sony, DUT: 52803, 52802
Headsets used in testing	WH-902, DUT: 52878, 52879
Other accessories used in testing	-
State of sample	Prototype unit
Notes	-

1.2 Maximum Results

The maximum measured SAR values for Head configuration, Body Worn configuration and Wireless Router configuration are given in sections 1.2.1, 1.2.2 and 1.2.3 respectively. The device conforms to the requirements of the standard(s) when the maximum measured SAR value is less than or equal to the limit.

1.2.1 Head Configuration

Mode	Ch / f (MHz)	Conducted power	Position	Measured SAR value (1g avg)	Scaled* SAR value (1g avg)	SAR limit (1g avg)	Result
GSM850	251 / 848.8	31.96 dBm	Right, Cheek	0.651 W/kg	0.73 W/kg	1.6 W/kg	PASSED
WCDMA850	4233 / 846.6	22.80 dBm	Right, Cheek	0.603 W/kg	0.68 W/kg	1.6 W/kg	PASSED
2-slot GPRS1900	810 / 1909.8	26.99 dBm	Right, Cheek	0.733 W/kg	0.82 W/kg	1.6 W/kg	PASSED
WCDMA1900	9538 / 1907.6	22.15 dBm	Right, Cheek	0.689 W/kg	0.77 W/kg	1.6 W/kg	PASSED
WLAN2450	6 / 2437.0	14.74 dBm	Left, Cheek	0.493 W/kg	0.55 W/kg	1.6 W/kg	PASSED
GSM850 + WLAN2450	-	-	Right, Cheek	0.773 W/kg	0.87 W/kg	1.6 W/kg	PASSED
WCDMA850 + WLAN2450	-	-	Left, Cheek	0.603 W/kg	0.68 W/kg	1.6 W/kg	PASSED
2-slot GPRS1900 + WLAN2450	-	-	Right, Cheek	0.816 W/kg	0.91 W/kg	1.6 W/kg	PASSED
WCDMA1900 + WLAN2450	-	-	Left, Cheek	0.689 W/kg	0.77 W/kg	1.6 W/kg	PASSED

1.2.2 Body Worn Configuration

Mode	Ch / f (MHz)	Conducted power	Separation distance	Measured SAR value (1g avg)	Scaled* SAR value (1g avg)	SAR limit (1g avg)	Result
GSM850	251 / 848.8	31.96 dBm	1.5 cm	0.686 W/kg	0.77 W/kg	1.6 W/kg	PASSED
WCDMA850	4175 / 835.0	22.78 dBm	1.5 cm	0.614 W/kg	0.69 W/kg	1.6 W/kg	PASSED
2-slot GPRS1900	661 / 1880.0	27.04 dBm	1.5 cm	0.379 W/kg	0.42 W/kg	1.6 W/kg	PASSED
WCDMA1900	9538 / 1907.6	22.15 dBm	1.5 cm	0.495 W/kg	0.55 W/kg	1.6 W/kg	PASSED
WLAN2450	11 / 2462.0	14.73 dBm	1.5 cm	0.140 W/kg	0.16 W/kg	1.6 W/kg	PASSED
GSM850 + WLAN2450	-	-	1.5 cm	0.701 W/kg	0.79 W/kg	1.6 W/kg	PASSED
WCDMA850 + WLAN2450	-	-	1.5 cm	0.629 W/kg	0.70 W/kg	1.6 W/kg	PASSED
2-slot GPRS1900 + WLAN2450	-	-	1.5 cm	0.386 W/kg	0.43 W/kg	1.6 W/kg	PASSED
WCDMA1900 + WLAN2450	-	-	1.5 cm	0.504 W/kg	0.56 W/kg	1.6 W/kg	PASSED

1.2.3 Wireless Router Configuration

Mode	Ch / f (MHz)	Conducted power	Separation distance	Measured SAR value (1g avg)	Scaled* SAR value (1g avg)	SAR limit (1g avg)	Result
GSM850	251 / 848.8	31.96 dBm	10.0 mm	0.975 W/kg	1.09 W/kg	1.6 W/kg	PASSED
WCDMA850	4175 / 835.0	22.78 dBm	10.0 mm	0.872 W/kg	0.98 W/kg	1.6 W/kg	PASSED
2-slot GPRS1900	512 / 1850.2	26.95 dBm	10.0 mm	0.769 W/kg	0.86 W/kg	1.6 W/kg	PASSED
WCDMA1900	9262 / 1852.4	22.07 dBm	10.0 mm	0.839 W/kg	0.94 W/kg	1.6 W/kg	PASSED
WLAN2450	6 / 2437.0	14.74 dBm	10.0 mm	0.275 W/kg	0.31 W/kg	1.6 W/kg	PASSED
GSM850 + WLAN2450	-	-	10.0 mm	0.996 W/kg	1.12 W/kg	1.6 W/kg	PASSED
WCDMA850 + WLAN2450	-	-	10.0 mm	0.883 W/kg	0.99 W/kg	1.6 W/kg	PASSED
2-slot GPRS1900 + WLAN2450	-	-	10.0 mm	0.769 W/kg	0.86 W/kg	1.6 W/kg	PASSED
WCDMA1900 + WLAN2450	-	-	10.0 mm	0.844 W/kg	0.95 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.

1.2.4 Summary SAR data

	FCC-defined SAR values for the Grants of Equipment Authorization		
	PCE	DTS	NII
Maximum Head SAR values	0.82 W/kg	0.55 W/kg	N/A
{Max + Max} Simultaneous Head SAR value	1.18 W/kg†		
Maximum Body SAR values	0.77 W/kg	0.16 W/kg	N/A
{Max + Max} Simultaneous Body SAR value	0.91 W/kg††		
Maximum Product Specific (Wireless Router) SAR values	1.09 W/kg	0.31 W/kg	N/A
{Max + Max} Simultaneous Product Specific SAR value	1.40 W/kg†††		
Maximum Simultaneous SAR value (Wireless Router) SAR: GSM850+WLAN2450	1.40 W/kg		

PCE contains the highest results between all cellular modes (cellular, AWS and PCS bands)

DTS contains the highest results between WLAN 2.4GHz + RLAN 5725-5850MHz

NII contains the highest results between RLAN 5150-5250, 5250-5350 and 5470-5725

† From Section 7.1, the highest Max + Max Head SAR value is 1.050 W/kg for WCDMA850 + WLAN2450. When scaled up by 12%, this becomes 1.18 W/kg.

†† From Section 7.2, the highest Max + Max Body SAR value is 0.809 W/kg for GSM850 + WLAN2450. When scaled up by 12%, this becomes 0.91 W/kg.

††† From Section 7.3, the highest Max + Max Wireless Router SAR value is 1.250 W/kg for GSM850 + WLAN2450. When scaled up by 12%, this becomes 1.40 W/kg.

1.2.5 Maximum Drift

Maximum drift covered by 12% scaling up of the SAR values	Maximum drift during measurements
0.5dB	0.45dB

1.2.6 Measurement Uncertainty

Expanded Uncertainty (k=2) 95%	± 26.4%
--------------------------------	---------

2. DESCRIPTION OF THE DEVICE UNDER TEST

Device category	Portable
Exposure environment	General population / uncontrolled

Modes of Operation	Bands	Modulation Mode	Duty Cycle	Transmitter Frequency Range (MHz)
GSM	850 1900	GMSK	1/8	824 – 849 1850 – 1910
GPRS	850 1900	GMSK	1/8 to 4/8	824 – 849 1850 – 1910
EGPRS	850 1900	GMSK / 8PSK	1/8 to 4/8	824 – 849 1850 – 1910
WCDMA	850 (Band V) 1900 (Band II)		1	826 – 847 1852 – 1908
BT	2450	GFSK	1	2402 – 2480
WLAN b-mode	2450	Up to 11Mbps QPSK	1	2412 – 2462
WLAN g-mode	2450	Up to 54Mbps 64QAM	1	2412 – 2462
WLAN n-mode 20MHz	2450	Up to 72.2Mbps 64QAM	1	2412 – 2462

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

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

This is a BT Class 1 device; as its power tuning target is 6dBm (4mW), SAR testing was deemed unnecessary.

This device has Wireless Router "Hotspot" mode capability.

This device uses a single antenna for transmission of all the cellular and PCS bands; a separate single antenna is used for transmission of WLAN and BT. Simultaneous transmission of any singular cellular and PCS band is possible with either WLAN or BT in Head, Body-worn and Wireless Router usages(as illustrated in the table below). This device does not feature any diversity antenna functionality when transmitting.

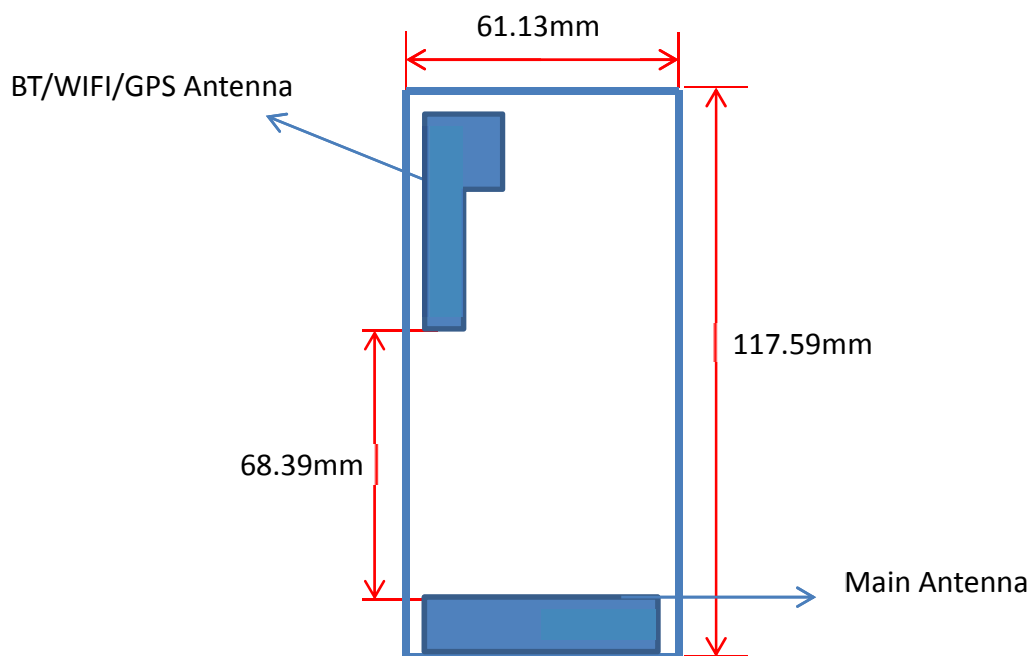
Simultaneous transmission capabilities in Head, Body-worn and Wireless Router uses

	WLAN2450	BT	WLAN2450+BT
GSM/GRPS/EGPRS850	Yes	Yes	No
WCDMA850	Yes	Yes	No
GSM/GRPS/EGPRS1900	Yes	Yes	No
WCDMA1900	Yes	Yes	No

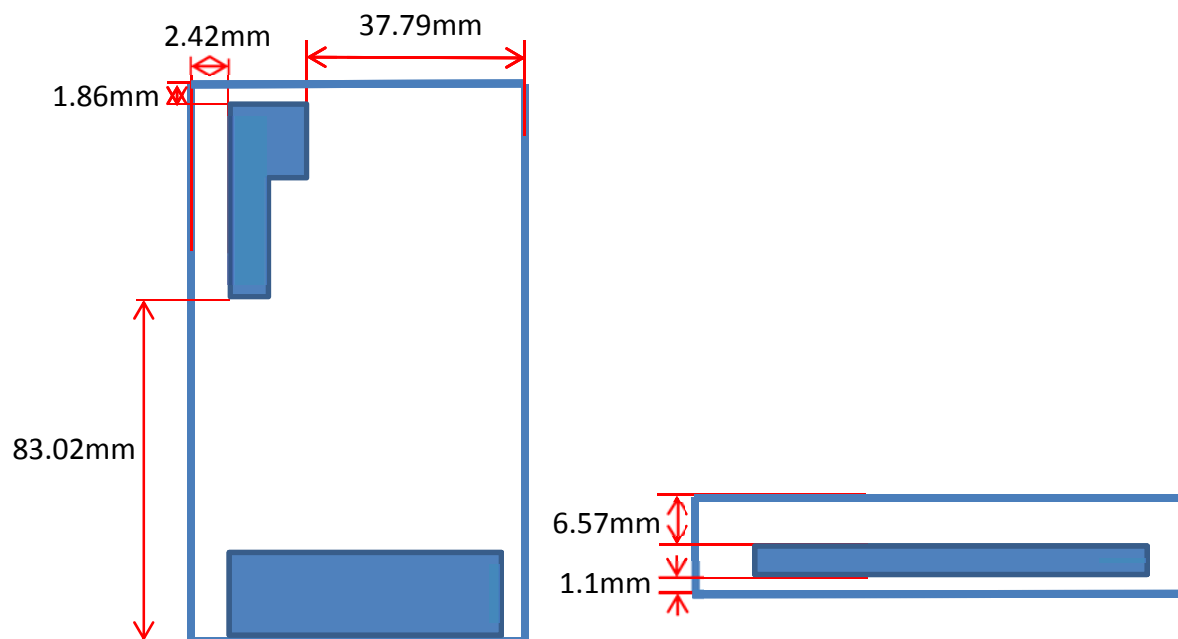
2.1 Description of the Antenna

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

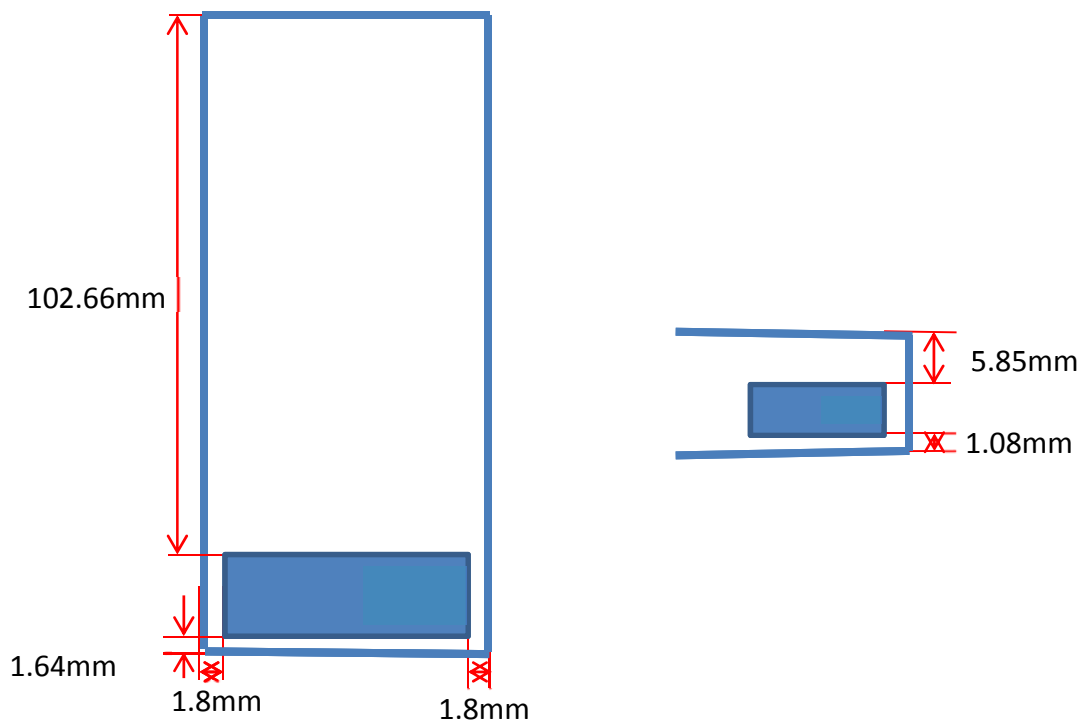
Phone Dimension and Distance Between Main antenna and BT/WIFI/GPS Antenna



Distance between Outside Edges of Device and BT/WIFI/GPS Antenna



Distance between Outside Edges of Device and Main Antenna



3. TEST CONDITIONS

3.1 Temperature and Humidity

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

3.2 Test Signal, Frequencies and Output Power

The device was put into operation by using a call tester 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.

This device was tested in all the available multi-slot GMSK GPRS modes; Dual Transfer Mode was not specifically tested as the average power in multi-slot GMSK GPRS mode is always greater than, or equal to, the average power in Dual Transfer Mode in Nokia devices.

The transmission mode of the device in all WCDMA tests was configured to 12.2kbps RMC with all TPC bits set as “1”. All WCDMA testing has been carried out in accordance with FCC KDB 941225: SAR Measurement Procedures for 3G Devices.

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

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

The transmission mode of the device in all WLAN b-mode tests was DSSS QPSK 1Mbps. This mode is the default test mode used in Nokia’s WLAN SAR testing and is within 0.06dB of the highest time-averaged output power of all the WLAN b, g and n modes in this device.

Appendices F, G and H list power tuning targets and measured power levels for GSM/GPRS, WCDMA and WLAN bands respectively.

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 DASY near-field scanning system manufactured by Schmid & Partner Engineering AG (SPEAG) in Switzerland. The SAR extrapolation algorithm used in all measurements was the 'advanced extrapolation' algorithm.

The following table lists calibration dates of SPEAG components:

Test Equipment	Serial Number	Calibration date	Calibration expiry
DAE 4	1324	2012-02	2013-02
DAE 4	1319	2012-02	2013-02
DAE 4	858	2012-03	2013-03
E-field Probe EX3DV4	3838	2012-02	2013-02
E-field Probe EX3DV4	3836	2012-02	2013-02
E-field Probe ES3DV3	3195	2012-03	2013-03
Dipole Validation Kit, D835V2	4d005	2012-03	2014-03
Dipole Validation Kit, D1900V2	547	2011-10	2013-10
Dipole Validation Kit, D2450V2	760	2011-03	2013-03
DASY4 software	Version 4.7	-	-

Additional test equipment used in testing:

Test Equipment	Model	Serial Number	Calibration date	Calibration expiry
Signal Generator	E4432B	US40052231	2012-04	2013-04
Signal Generator	SME06	829445	2012-04	2013-04
Call Tester	CMU200	110735	-	-
Call Tester	CMU200	835352/008	-	-
Amplifier	AR 5SIG4M3	302339	-	-
Amplifier	AR 5S1G4M1	306024	-	-
RF Network Analyzer	8753ES	My40002096	2012-04	2013-04
RF Network Analyzer	8753ES	US39170317	2012-04	2013-04
Dielectric Probe Kit	85070C	2577	-	-
Dielectric Probe Kit	85070C	653	-	-
Power Meter	Agilent E4419B	My41291520	2012-04	2013-04
Power Sensor	Agilent 8482A	US37295411	2012-04	2013-04
Power Meter	R&S NRP	101293	2012-04	2013-04
Power Sensor	R&S NRP-Z51	102842	2012-04	2013-04

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 D
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 Distance from probe tip to dipole centers: 2.0 mm

Application	General dosimetry up to 4 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms
--------------------	---

4.1.2 Isotropic E-field Probe Type EX3DV4

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

4.2 Phantoms

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

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

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

4.3 Tissue Simulants

Recommended values for the dielectric parameters of the tissue simulants are given in IEEE 1528 - 2003 and FCC Supplement C to OET Bulletin 65. All tests were carried out using simulants

whose dielectric parameters were within $\pm 5\%$ of the recommended values. All tests were carried out within 24 hours of measuring the dielectric parameters.

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

4.3.1 Tissue Simulant Recipes

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

800MHz band

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

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	2.32	41.5	0.89	
	$\pm 10\%$ window	2.09 – 2.55			
	IEEE1528 / IEC62209 Standard targets		41.5	0.90	
	2012-10-19	2.41	41.5	0.88	21.7
	2012-10-22	2.39	41.4	0.88	21.7
1900	Reference result	10.4	39.5	1.43	
	$\pm 10\%$ window	9.4 – 11.4			
	IEEE1528 / IEC62209 Standard targets		40.0	1.40	
	2012-10-18	10.1	39.0	1.45	22.0
	2012-10-23	9.98	39.4	1.46	21.7
2450	Reference result	13.3	38.7	1.72	
	$\pm 10\%$ window	12.0 – 14.6			
	IEEE1528 / IEC62209 Standard targets		39.2	1.80	
	2012-10-19	13.7	38.1	1.76	21.7

System checking, body tissue simulant

f [MHz]	Description	SAR [W/kg], 1g	Dielectric Parameters		Temp [°C]
			ϵ_r	σ [S/m]	
835	Reference result	2.42	55.0	1.00	
	± 10% window	2.18 – 2.66			
	FCC Supplement C / RSS-102 targets		55.2	0.97	
	2012-10-18	2.46	54.4	0.96	21.5
	2012-10-20	2.43	54.4	0.96	21.1
1900	Reference result	10.6	54.2	1.59	
	± 10% window	9.5 – 11.7			
	FCC Supplement C / RSS-102 targets		53.3	1.52	
	2012-10-19	9.96	52.2	1.54	21.5
	2012-10-22	9.92	52.0	1.53	21.3
2450	Reference result	13.3	51.7	1.93	
	± 10% window	12.0 – 14.6			
	FCC Supplement C / RSS-102 targets		52.7	1.95	
	2012-10-23	13.1	51.6	1.87	21.4

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

4.3.3 Tissue Simulants used in the Measurements

Head tissue simulant measurements

f [MHz]	Description	Dielectric Parameters		Temp [°C]
		ϵ_r	σ [S/m]	
835	Recommended value	41.5	0.90	
	$\pm 5\%$ window	39.4 – 43.6	0.86 – 0.95	
	2012-10-22	41.4	0.88	21.7
836	Recommended value	41.5	0.90	
	$\pm 5\%$ window	39.4 – 43.6	0.86 – 0.95	
	2012-10-19	41.5	0.88	21.7
1880	Recommended value	40.0	1.40	
	$\pm 5\%$ window	38.0 – 42.0	1.33 – 1.47	
	2012-10-18	39.1	1.44	22.0
	2012-10-23	39.4	1.44	21.7
2437	Recommended value	39.2	1.79	
	$\pm 5\%$ window	37.3 – 41.2	1.70 – 1.88	
	2012-10-19	38.1	1.74	21.7

Body tissue simulant measurements

f [MHz]	Description	Dielectric Parameters		Temp [°C]
		ϵ_r	σ [S/m]	
835	Recommended value	55.2	0.97	
	$\pm 5\%$ window	52.4 – 58.0	0.92 – 1.02	
	2012-10-18	54.4	0.96	21.5
836	Recommended value	55.2	0.97	
	$\pm 5\%$ window	52.4 – 58.0	0.92 – 1.02	
	2012-10-20	54.4	0.96	21.1
1880	Recommended value	53.3	1.52	
	$\pm 5\%$ window	50.6 – 56.0	1.44 – 1.60	
	2012-10-19	52.2	1.52	21.5
	2012-10-22	52.1	1.52	21.3
2437	Recommended value	52.7	1.94	
	$\pm 5\%$ window	50.1 – 55.3	1.84 – 2.04	
	2012-10-23	51.5	1.85	21.4

Dielectric parameter data for the band edges is given in Appendix C.

5. DESCRIPTION OF THE TEST PROCEDURE

5.1 Device Holder

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



Device holder supplied by SPEAG

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



Nokia spacer

5.2 Test Positions

5.2.1 Against Phantom Head

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

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

5.2.2 Body Worn Configuration

The device was placed in the SPEAG holder using the Nokia spacer and placed below the flat section of the phantom. The distance between the device and the phantom was kept at the separation distance indicated in Section 1.2.2 using a separate flat spacer that was removed

before the start of the measurements. The device was oriented with both sides facing the phantom to find the highest results.

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

5.2.3 Wireless Router Configuration

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

5.3 Scan Procedures

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

5.4 SAR Averaging Methods

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

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

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

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

6. MEASUREMENT UNCERTAINTY

Table 6.1 – Measurement uncertainty evaluation

Uncertainty Component	Section in IEEE 1528	Tol. (%)	Prob Dist	Div	C_i	$C_i \cdot U_i$ (%)	V_i
Measurement System							
Probe Calibration	E2.1	±6.55	N	1	1	±6.55	∞
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			±13.2	116
Coverage Factor for 95%			k=2				
Expanded Uncertainty						±26.4	

7. RESULTS

7.1 The measured Head SAR values for the test device

850MHz Head SAR results

Test results

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
GSM	Conducted Power		31.88 dBm	31.91 dBm	31.96 dBm
BP-3L LG	Left	Cheek	-	0.387	-
		Tilt	-	0.216	-
	Right	Cheek	0.337	0.416	0.608
		Tilt	-	0.221	-
2-slot GPRS	Conducted Power		-	28.35 dBm	-
BP-3L LG	Left	Cheek	-	0.329	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
3-slot GPRS	Conducted Power		-	26.44 dBm	-
BP-3L LG	Left	Cheek	-	0.321	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
4-slot GPRS	Conducted Power		-	25.26 dBm	-
BP-3L LG	Left	Cheek	-	0.333	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
1-slot 8PSK EGPRS	Conducted Power		-	-	27.26 dBm
BP-3L LG	Right	Cheek	-	-	0.197

(Table continues)

(Table continues)

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz
WCDMA	Conducted Power		22.87 dBm	22.78 dBm	22.80 dBm
BP-3L LG	Left	Cheek	-	0.557	-
		Tilt	-	0.322	-
	Right	Cheek	0.489	0.599	0.603
		Tilt	-	0.347	-
GSM BP-3L Sony	Right Cheek		0.331	0.406	0.601

850MHz Head SAR results

Scaled results①

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
GSM	Conducted Power		31.88 dBm	31.91 dBm	31.96 dBm
BP-3L LG	Left	Cheek	-	0.418	-
		Tilt	-	0.233	-
	Right	Cheek	0.367	0.449	0.651
		Tilt	-	0.239	-
2-slot GPRS	Conducted Power		-	28.35 dBm	-
BP-3L LG	Left	Cheek	-	0.405	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
3-slot GPRS	Conducted Power		-	26.44 dBm	-
BP-3L LG	Left	Cheek	-	0.404	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
4-slot GPRS	Conducted Power		-	25.26 dBm	-
BP-3L LG	Left	Cheek	-	0.420	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-

(Table continues)

(Table continues)

1-slot 8PSK EGPRS	Conducted Power	-	-	27.26 dBm
GSM BP-3L Sony	Right Cheek	0.361	0.438	0.643

① SAR values are scaled up in all test channels to allow for the difference between the measured power and the upper power tuning tolerance. The scaling factor is shown in below table.

Scaling factor (850)			
Slot configuration	Low channel	Mid channel	High channel
GSM 1-slot	1.09	1.08	1.07
GPRS 2-slot	-	1.23	-
GPRS 3-slot	-	1.26	-
GPRS 4-slot	-	1.26	-
EGPRS 1-slot	-	-	1.03

1900MHz Head SAR results Test results

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz
GSM	Conducted Power		-	29.09 dBm	-
BP-3L LG	Left	Cheek	-	0.316	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
2-slot GPRS	Conducted Power		26.95 dBm	27.04 dBm	26.99 dBm
BP-3L LG	Left	Cheek	-	0.383	-
		Tilt	-	0.391	-
	Right	Cheek	0.332	0.479	0.616
		Tilt	-	0.347	-
3-slot GPRS	Conducted Power		-	25.05 dBm	-
BP-3L LG	Left	Cheek	-	0.370	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
4-slot GPRS	Conducted Power		-	23.44 dBm	-
BP-3L LG	Left	Cheek	-	0.348	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
2-slot 8PSK EGPRS	Conducted Power		-	-	23.54 dBm
BP-3L LG	Right Cheek		-	-	0.280
Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz
WCDMA	Conducted Power		22.07 dBm	22.25 dBm	22.15 dBm
BP-3L LG	Left	Cheek	-	0.479	-
		Tilt	-	0.461	-
	Right	Cheek	0.489	0.556	0.689
		Tilt	-	0.402	-
2-slot GPRS BP-3L Sony	Right Cheek		0.312	0.449	0.577

1900MHz Head SAR results Scaled results②

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz
GSM	Conducted Power		-	29.09 dBm	-
BP-3L LG	Left	Cheek	-	0.367	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
2-slot GPRS	Conducted Power		26.95 dBm	27.04 dBm	26.99 dBm
BP-3L LG	Left	Cheek	-	0.452	-
		Tilt	-	0.461	-
	Right	Cheek	0.398	0.565	0.733
		Tilt	-	0.409	-
3-slot GPRS	Conducted Power		-	25.05 dBm	-
BP-3L LG	Left	Cheek	-	0.433	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
4-slot GPRS	Conducted Power		-	23.44 dBm	-
BP-3L LG	Left	Cheek	-	0.421	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
2-slot 8PSK EGPRS	Conducted Power		-	-	23.54 dBm
BP-3L LG	Right Cheek		-	-	0.330
2-slot GPRS BP-3L Sony	Right Cheek		0.374	0.530	0.687

② SAR values are scaled up in all test channels to allow for the difference between the measured power and the upper power tuning tolerance. The scaling factor is shown in below table.

Scaling factor (1900)			
Slot configuration	Low channel	Mid channel	High channel
GSM 1-slot	-	1.16	-
GPRS 2-slot	1.20	1.18	1.19
GPRS 3-slot	-	1.17	-
GPRS 4-slot	-	1.21	-
EGRPS 2-slot	-	-	1.18

2450MHz Head SAR results

Test results

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 1 2412.0 MHz	Ch 6 2437.0 MHz	Ch 11 2462.0 MHz
WLAN b-mode	Conducted Power		14.75 dBm	14.74 dBm	14.73 dBm
BP-3L LG	Left	Cheek	0.386	0.465	0.370
		Tilt	-	0.330	-
	Right	Cheek	-	0.246	-
		Tilt	-	0.202	-
BP-3L Sony	Left Cheek		0.422	0.462	0.422

2450MHz Head SAR results

Scaled results③

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 1 2412.0 MHz	Ch 6 2437.0 MHz	Ch 11 2462.0 MHz
WLAN b-mode	Conducted Power		14.75 dBm	14.74 dBm	14.73 dBm
BP-3L LG	Left	Cheek	0.409	0.493	0.392
		Tilt	-	0.350	-
	Right	Cheek	-	0.261	-
		Tilt	-	0.214	-
BP-3L Sony	Left Cheek		0.447	0.490	0.447

③ SAR values are scaled up in all test channels to allow for the difference between the measured power and the upper power tuning tolerance. For all test channels, the scaling factor is 1.06.

Simultaneous transmissions: Combined head SAR results –

Individual band Max results④

Test configuration	Max. 1g SAR results				
	WLAN	GSM 850	WCDMA 850	2-slot GPRS 1900	WCDMA 1900
Head: Left, Cheek	0.493	0.418	0.557	0.452	0.479
Head: Left, Tilt	0.350	0.233	0.322	0.461	0.461
Head: Right, Cheek	0.261	0.651	0.603	0.733	0.689
Head: Right, Tilt	0.214	0.239	0.347	0.409	0.402

**Simultaneous transmissions: Combined head SAR results –
Max + Max combined results^④**

Test configuration	Max. 1g SAR results			
	GSM 850 + WLAN	WCDMA 850 + WLAN	2-slot GPRS 1900 + WLAN	WCDMA 1900 + WLAN
Head: Left, Cheek	0.911	1.050	0.945	0.972
Head: Left, Tilt	0.583	0.672	0.811	0.811
Head: Right, Cheek	0.912	0.864	0.994	0.950
Head: Right, Tilt	0.453	0.561	0.623	0.616

④ SAR values are scaled up in WLAN, GSM850 and 2-slot GPRS1900 to allow for the difference between the measured power and the upper power tuning tolerance. For WLAN, the scaling factor is 1.06, for GSM850, the scaling factor is 1.08, for 2-slot GPRS1900, the scaling factor is 1.18.

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

**Simultaneous transmissions: Combined head SAR results –
SPEAG Combined Multiband algorithm results^⑤**

Test configuration	Max. 1g SAR results			
	GSM 850 + WLAN	WCDMA 850 + WLAN	2-slot GPRS 1900 + WLAN	WCDMA 1900 + WLAN
Head: Left, Cheek	-	0.572	-	0.539
Head: Left, Tilt	-	-	-	-
Head: Right, Cheek	0.773	-	0.816	-
Head: Right, Tilt	-	-	-	-

⑤ SAR values calculated using scaling function of the SPEAG Combined Multiband algorithm. WLAN values scaled by a factor of 1.06 before combining with cellular and PCS bands. GSM850 values scaled by a factor of 1.08 before combining with WLAN, 2-slot GPRS1900 values scaled by a factor of 1.18 before combining with WLAN.

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

7.2 The measured Body SAR values for the test device

850MHz Body SAR results

Test result

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
GSM		Conducted Power	31.88 dBm	31.91 dBm	31.96 dBm
BP-3L LG	Back facing phantom	Without headset	0.528	0.572	0.641
		Headset WH-902	-	0.424	-
	Display facing phantom	Without headset	-	0.385	-
		Headset WH-902	-	0.260	-
Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz
WCDMA		Conducted Power	22.87 dBm	22.78 dBm	22.80 dBm
BP-3L LG	Back facing phantom	Without headset	0.600	0.614	0.598
		Headset WH-902	-	0.539	-
	Display facing phantom	Without headset	-	0.494	-
		Headset WH-902	-	0.366	-
GSM BP-3L Sony	Back facing phantom	Without headset	0.532	0.562	0.627

850MHz Body SAR results

Scaled result^①

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
GSM		Conducted Power	31.88 dBm	31.91 dBm	31.96 dBm
BP-3L LG	Back facing phantom	Without headset	0.576	0.618	0.686
		Headset WH-902	-	0.458	-
	Display facing phantom	Without headset	-	0.416	-
		Headset WH-902	-	0.281	-
GSM BP-3L Sony	Back facing phantom	Without headset	0.580	0.607	0.671

① SAR values are scaled up in all test channels to allow for the difference between the measured power and the upper power tuning tolerance. The scaling factor is shown in below table.

Scaling factor (850)			
Slot configuration	Low channel	Mid channel	High channel
GSM 1-slot	1.09	1.08	1.07

1900MHz Body SAR results Test results

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz
2-slot GPRS		Conducted Power	26.95 dBm	27.04 dBm	26.99 dBm
BP-3L LG	Back facing phantom	Without headset	-	0.319	-
		Headset WH-902	0.295	0.321	0.317
	Display facing phantom	Without headset	-	0.273	-
		Headset WH-902	-	0.270	-
Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz
WCDMA		Conducted Power	22.07 dBm	22.25 dBm	22.15 dBm
BP-3L LG	Back facing phantom	Without headset	0.464	0.481	0.495
		Headset WH-902	-	0.459	-
	Display facing phantom	Without headset	-	0.405	-
		Headset WH-902	-	0.410	-
WCDMA BP-3L Sony	Back facing phantom	Without headset	0.413	0.438	0.486

1900MHz Body SAR results
Scaled results②

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz
2-slot GPRS		Conducted Power	26.95 dBm	27.04 dBm	26.99 dBm
BP-3L LG	Back facing phantom	Without headset	-	0.376	-
		Headset WH-902	0.354	0.379	0.377
	Display facing phantom	Without headset	-	0.322	-
		Headset WH-902	-	0.319	-

② SAR values are scaled up in all test channels to allow for the difference between the measured power and the upper power tuning tolerance. The scaling factor is shown in below table.

Scaling factor (1900)			
Slot configuration	Low channel	Mid channel	High channel
GPRS 2-slot	1.20	1.18	1.19

2450MHz Body SAR results
Test results

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 1 2412.0 MHz	Ch 6 2437.0 MHz	Ch 11 2462.0 MHz
WLAN b-mode		Conducted Power	14.75 dBm	14.74 dBm	14.73 dBm
BP-3L LG	Back facing phantom	Without headset	-	0.116	-
		Headset WH-902	0.125	0.128	0.132
	Display facing Phantom	Without headset	-	0.045	-
		Headset WH-902	-	0.039	-
BP-3L Sony	Back facing phantom	Headset WH-902	0.111	0.113	0.118

2450MHz Body SAR results

Scaled results^③

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 1 2412.0 MHz	Ch 6 2437.0 MHz	Ch 11 2462.0 MHz
WLAN b-mode		Conducted Power	14.75 dBm	14.74 dBm	14.73 dBm
BP-3L LG	Back facing phantom	Without headset	-	0.123	-
		Headset WH-902	0.133	0.136	0.140
	Display facing Phantom	Without headset	-	0.048	-
		Headset WH-902	-	0.041	-
BP-3L Sony	Back facing phantom	Headset WH-902	0.118	0.120	0.125

③ SAR values are scaled up in all test channels to allow for the difference between the measured power and the upper power tuning tolerance. For all test channels, the scaling factor is 1.06.

Simultaneous transmissions: Combined body SAR results –

Individual band Max results^④

Test configuration	Max. 1g SAR results				
	WLAN	GSM 850	WCDMA 850	2-slot GPRS 1900	WCDMA 1900
Body: Back facing phantom, Without Headset	0.123	0.686	0.614	0.376	0.495
Body: Back facing phantom, Headset WH-902	0.140	0.458	0.539	0.379	0.459
Body: Display facing phantom, Without Headset	0.048	0.416	0.494	0.322	0.405
Body: Display facing phantom, Headset WH-902	0.041	0.281	0.366	0.319	0.410

Simultaneous transmissions: Combined body SAR results – Max + Max combined results^④

Test configuration	Max. 1g SAR results			
	GSM 850 + WLAN	WCDMA 850 + WLAN	2-slot GPRS 1900 + WLAN	WCDMA 1900 + WLAN
Body: Back facing phantom, Without Headset	0.809	0.737	0.499	0.618
Body: Back facing phantom, Headset WH-902	0.598	0.679	0.519	0.599
Body: Display facing phantom, Without Headset	0.464	0.542	0.370	0.453
Body: Display facing phantom, Headset WH-902	0.322	0.407	0.360	0.451

④ SAR values are scaled up in WLAN, GSM850 and 2-slot GPRS1900 to allow for the difference between the measured power and the upper power tuning tolerance. For WLAN, the scaling factor is 1.06, for GSM850, the scaling factor is 1.08, for 2-slot GPRS1900, the scaling factor is 1.18.

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

Simultaneous transmissions: Combined body SAR results – SPEAG Combined Multiband algorithm results^⑤

Test configuration	Max. 1g SAR results			
	GSM 850 + WLAN	WCDMA 850 + WLAN	2-slot GPRS 1900 + WLAN	WCDMA 1900+ WLAN
Body: Back facing phantom, Without Headset	0.701	0.629	-	0.504
Body: Back facing phantom, Headset WH-902	-	-	0.386	-
Body: Display facing phantom, Without Headset	-	-	-	-
Body: Display facing phantom, Headset WH-902	-	-	-	-

⑤ SAR values calculated using scaling function of the SPEAG Combined Multiband algorithm. WLAN values scaled by a factor of 1.06 before combining with cellular and PCS bands. GSM850 values scaled by a factor of 1.08 before combining with WLAN, 2-slot GPRS1900 values scaled by a factor of 1.18 before combining with WLAN.

7.3 Body SAR assessment of Wireless Router mode at 10.0mm separation distance

850MHz Body SAR results

Test results

Mode	Device orientation	SAR, averaged over 1g (W/kg)		
		Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
GSM850	Conducted Power	31.88 dBm	31.91 dBm	31.96 dBm
BP-3L LG	Back facing phantom	0.740	0.813	0.911
	Display facing phantom	-	-	-
	Top edge facing phantom	-	0.019	-
	Bottom edge facing phantom	-	0.028	-
	Left edge facing phantom	-	0.406	-
	Right edge facing phantom	-	0.474	-
Mode	Device orientation	SAR, averaged over 1g (W/kg)		
		Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz
WCDMA	Conducted Power	22.87 dBm	22.78 dBm	22.80 dBm
BP-3L LG	Back facing phantom	0.804	0.872	0.814
	Display facing phantom	-	-	-
	Top edge facing phantom	-	0.021	-
	Bottom edge facing phantom	-	0.036	-
	Left edge facing phantom	-	0.511	-
	Right edge facing phantom	-	0.591	-
GSM BP-3L Sony	Back facing phantom	0.730	0.795	0.888

850MHz Body SAR results

Scaled results^①

Mode	Device orientation	SAR, averaged over 1g (W/kg)		
		Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
GSM850	Conducted Power	31.88 dBm	31.91 dBm	31.96 dBm
BP-3L LG	Back facing phantom	0.807	0.878	0.975
	Display facing phantom	-	-	-
	Top edge facing phantom	-	0.021	-
	Bottom edge facing phantom	-	0.030	-
	Left edge facing phantom	-	0.438	-
	Right edge facing phantom	-	0.512	-
GSM BP-3L Sony	Back facing phantom	0.796	0.859	0.950

① SAR values are scaled up in all test channels to allow for the difference between the measured power and the upper power tuning tolerance. The scaling factor is shown in below table.

Scaling factor (850)			
Slot configuration	Low channel	Mid channel	High channel
GSM 1-slot	1.09	1.08	1.07

1900MHz Body SAR results

Test results

Mode	Device orientation	SAR, averaged over 1g (W/kg)		
		Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz
2-slot GPRS1900	Conducted Power	26.95 dBm	27.04 dBm	26.99 dBm
BP-3L LG	Back facing phantom	0.641	0.640	0.603
	Display facing phantom	-	-	-
	Top edge facing phantom	-	0.050	-
	Bottom edge facing phantom	-	0.291	-
	Left edge facing phantom	-	0.203	-
	Right edge facing phantom	-	0.279	-
Mode	Device orientation	SAR, averaged over 1g (W/kg)		
		Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz
WCDMA	Conducted Power	22.07 dBm	22.25 dBm	22.15 dBm
BP-3L LG	Back facing phantom	0.839	0.759	0.830
	Display facing phantom	-	-	-
	Top edge facing phantom	-	0.050	-
	Bottom edge facing phantom	-	0.430	-
	Left edge facing phantom	-	0.246	-
	Right edge facing phantom	-	0.419	-
WCDMA BP-3L Sony	Back facing phantom	0.755	0.710	0.760

1900MHz Body SAR results
Scaled results②

Mode	Device orientation	SAR, averaged over 1g (W/kg)		
		Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz
2-slot GPRS1900	Conducted Power	26.95 dBm	27.04 dBm	26.99 dBm
BP-3L LG	Back facing phantom	0.769	0.755	0.718
	Display facing phantom	-	-	-
	Top edge facing phantom	-	0.059	-
	Bottom edge facing phantom	-	0.343	-
	Left edge facing phantom	-	0.240	-
	Right edge facing phantom	-	0.329	-

② SAR values are scaled up in all test channels to allow for the difference between the measured power and the upper power tuning tolerance. The scaling factor is shown in below table.

Scaling factor (1900)			
Slot configuration	Low channel	Mid channel	High channel
GPRS 2-slot	1.20	1.18	1.19

2450MHz Body SAR results
Test results

Mode	Device orientation	SAR, averaged over 1g (W/kg)		
		Ch 1 2412.0 MHz	Ch 6 2437.0 MHz	Ch 11 2462.0 MHz
WLAN b-mode	Conducted Power	14.75 dBm	14.74 dBm	14.73 dBm
BP-3L LG	Back facing phantom	0.243	0.259	0.254
	Display facing phantom	-	-	-
	Top edge facing phantom	-	0.080	-
	Bottom edge facing phantom	-	0.004	-
	Left edge facing phantom	-	0.031	-
	Right edge facing phantom	-	0.114	-
BP-3L Sony	Back facing phantom	0.219	0.225	0.231

2450MHz Body SAR results

Scaled results^③

Mode	Device orientation	SAR, averaged over 1g (W/kg)		
		Ch 1 2412.0 MHz	Ch 6 2437.0 MHz	Ch 11 2462.0 MHz
WLAN b-mode	Conducted Power	14.75 dBm	14.74 dBm	14.73 dBm
BP-3L LG	Back facing phantom	0.258	0.275	0.269
	Display facing phantom	-	-	-
	Top edge facing phantom	-	0.085	-
	Bottom edge facing phantom	-	0.004	-
	Left edge facing phantom	-	0.032	-
	Right edge facing phantom	-	0.121	-
BP-3L Sony	Back facing phantom	0.232	0.239	0.245

③ SAR values are scaled up in all test channels to allow for the difference between the measured power and the upper power tuning tolerance. For all test channels, the scaling factor is 1.06.

Simultaneous transmissions: Combined SAR results –

Individual band Max results^④

Test configuration	Max. 1g SAR results				
	WLAN	GSM 850	WCDMA 850	2-slot GPRS1900	WCDMA 1900
Back facing phantom	0.275	0.975	0.872	0.769	0.839
Display facing phantom	-	-	-	-	-
Top edge facing phantom	0.085	0.021	0.021	0.059	0.050
Bottom edge facing phantom	0.004	0.030	0.036	0.343	0.430
Left edge facing phantom	0.032	0.438	0.511	0.240	0.246
Right edge facing phantom	0.121	0.512	0.591	0.329	0.419

**Simultaneous transmissions: Combined SAR results –
Max + Max combined results^④**

Test configuration	Max. 1g SAR results			
	GSM 850 + WLAN	WCDMA 850 + WLAN	2-slot GPRS 1900 + WLAN	WCDMA 1900 + WLAN
Back facing phantom	1.250	1.147	1.044	1.114
Display facing phantom	-	-	-	-
Top edge facing phantom	0.106	0.106	0.144	0.135
Bottom edge facing phantom	0.034	0.040	0.347	0.434
Left edge facing phantom	0.470	0.543	0.272	0.278
Right edge facing phantom	0.633	0.712	0.450	0.540

④ SAR values are scaled up in WLAN, GSM850 and 2-slot GPRS1900 to allow for the difference between the measured power and the upper power tuning tolerance. For WLAN, the scaling factor is 1.06, for GSM850, the scaling factor is 1.08, for 2-slot GPRS1900, the scaling factor is 1.18.

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

**Simultaneous transmissions: Combined SAR results –
SPEAG Combined Multiband algorithm results^⑤**

Test configuration	Max. 1g SAR results			
	GSM 850 + WLAN	WCDMA 850 + WLAN	2-slot GPRS 1900 + WLAN	WCDMA 1900 + WLAN
Back facing phantom	0.996	0.883	0.680	0.844
Display facing phantom	-	-	-	-
Top edge facing phantom	-	-	-	-
Bottom edge facing phantom	-	-	-	-
Left edge facing phantom	-	-	-	-
Right edge facing phantom	-	-	-	-

⑤ SAR values calculated using scaling function of the SPEAG Combined Multiband algorithm. WLAN values scaled by a factor of 1.06 before combining with cellular and PCS bands. GSM850 values scaled by a factor of 1.08 before combining with WLAN, 2-slot GPRS1900 values scaled by a factor of 1.18 before combining with WLAN.

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

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

Plots of the Measurement scans are given in Appendix B.

APPENDIX A: SYSTEM CHECKING SCANS

Date/Time: 2012-10-19 9:38:58

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

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Head 835 SAM10; Medium Notes: Medium Temperature: $t = 21.7\text{ C}$

Medium parameters used: $f = 835\text{ MHz}$; $\sigma = 0.883\text{ mho/m}$; $\epsilon_r = 41.454$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(8.67, 8.67, 8.67); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM10; Type: SAM; Serial: TP - 1410
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

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

Maximum value of SAR (interpolated) = 2.58 mW/g

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

Reference Value = 54.051 V/m

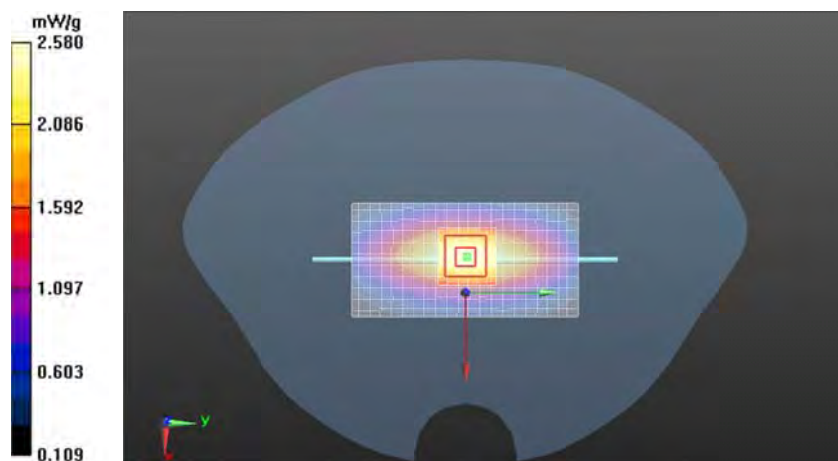
Peak SAR (extrapolated) = 3.639 mW/g

SAR(1 g) = 2.41 mW/g

SAR(10 g) = 1.57 mW/g

Power Drift = -0.03 dB

Maximum value of SAR (measured) = 2.59 mW/g



Date/Time: 2012-10-22 9:43:54

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

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Head 835 SAM10; Medium Notes: Medium Temperature: $t = 21.7\text{ C}$

Medium parameters used: $f = 835\text{ MHz}$; $\sigma = 0.882\text{ mho/m}$; $\epsilon_r = 41.399$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(8.67, 8.67, 8.67); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM10; Type: SAM; Serial: TP - 1410
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

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

Maximum value of SAR (interpolated) = 2.58 mW/g

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

Reference Value = 53.516 V/m

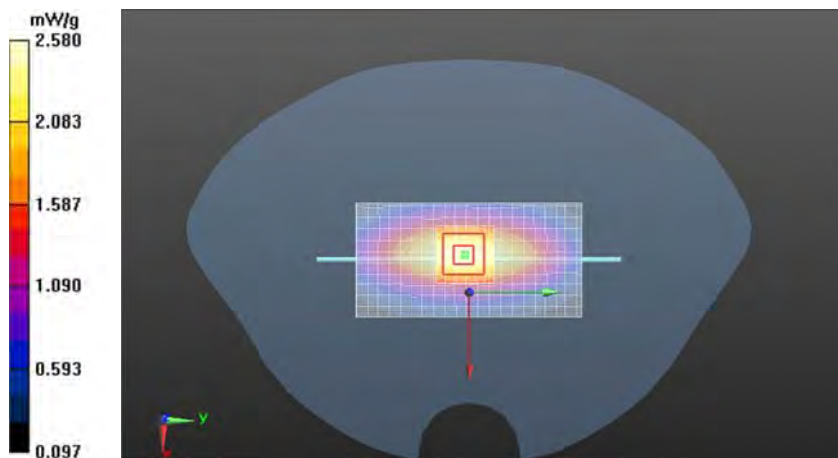
Peak SAR (extrapolated) = 3.604 mW/g

SAR(1 g) = 2.39 mW/g

SAR(10 g) = 1.57 mW/g

Power Drift = -0.01 dB

Maximum value of SAR (measured) = 2.58 mW/g



Date/Time: 2012-10-18 9:24:37

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

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

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

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.452$ mho/m; $\epsilon_r = 39.031$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(7.57, 7.57, 7.57); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM7; Type: SAM; Serial: TP - 1412
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

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

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

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

Reference Value = 88.221 V/m

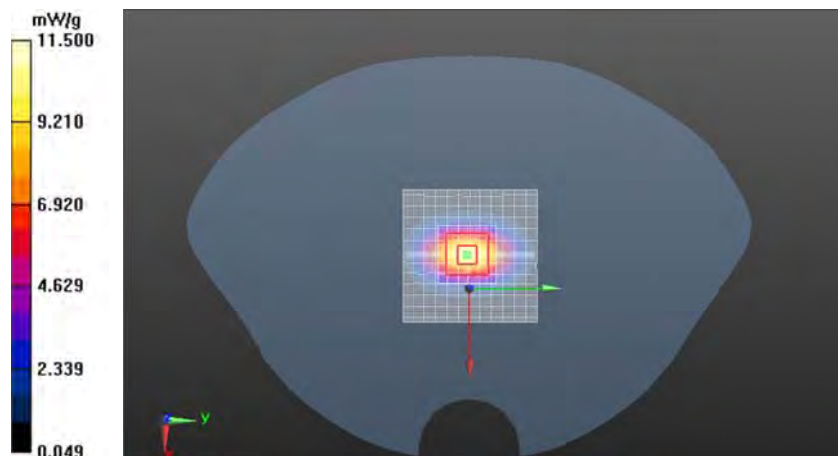
Peak SAR (extrapolated) = 19.160 mW/g

SAR(1 g) = 10.1 mW/g

SAR(10 g) = 5.18 mW/g

Power Drift = -0.04 dB

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



Date/Time: 2012-10-23 9:47:55

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

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: Head 1900 SAM7; Medium Notes: Medium Temperature: $t=21.7^{\circ}\text{C}$ SAM7

Medium parameters used: $f = 1900\text{ MHz}$; $\sigma = 1.455\text{ mho/m}$; $\epsilon_r = 39.421$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(7.57, 7.57, 7.57); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM7; Type: SAM; Serial: TP - 1412
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

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

Maximum value of SAR (interpolated) = 11.3 mW/g

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

Reference Value = 87.019 V/m

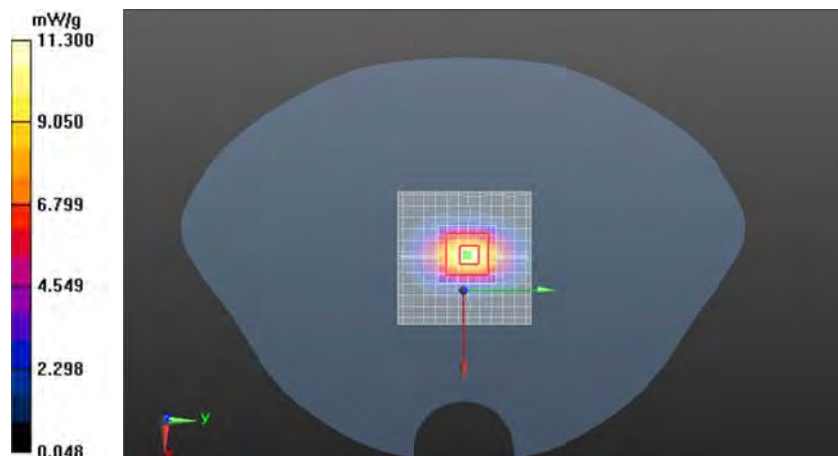
Peak SAR (extrapolated) = 18.806 mW/g

SAR(1 g) = 9.98 mW/g

SAR(10 g) = 5.15 mW/g

Power Drift = -0.02 dB

Maximum value of SAR (measured) = 11.3 mW/g



Date/Time: 2012-10-19 10:32:28

Test Laboratory: TCC Nokia

Type: D2450V2; Serial: D2450V2 - SN:760

Communication System: CW2450

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: Head 2450; Medium Notes: Medium Temperature: $t=21.7^{\circ}\text{C}$

Medium parameters used: $f = 2450\text{ MHz}$; $\sigma = 1.763\text{ mho/m}$; $\epsilon_r = 38.065$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF(4.45, 4.45, 4.45); Calibrated: 2012-03-12;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn858; Calibrated: 2012-03-02
- Phantom: SAM6; Type: SAM; Serial: TP - 1426
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

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

Maximum value of SAR (interpolated) = 15.9 mW/g

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

Reference Value = 81.102 V/m

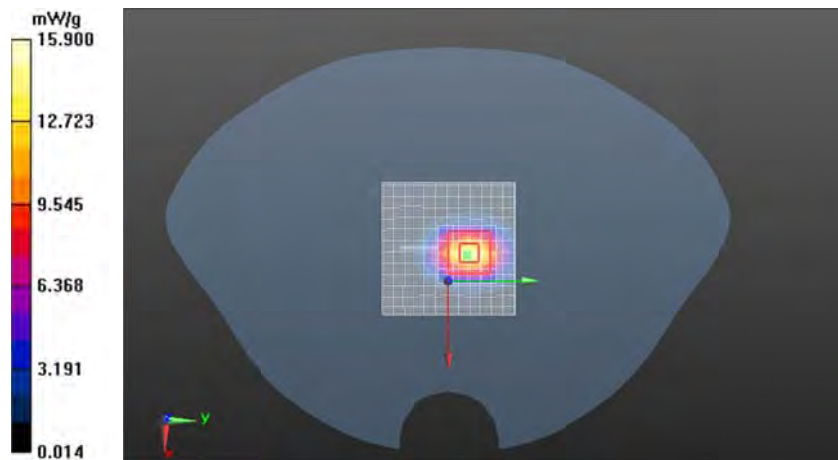
Peak SAR (extrapolated) = 28.416 mW/g

SAR(1 g) = 13.7 mW/g

SAR(10 g) = 6.34 mW/g

Power Drift = -0.01 dB

Maximum value of SAR (measured) = 15.7 mW/g



SAR Report

FCC_RM-923_03

Applicant: Nokia Corporation

Type: RM-923

Copyright © 2012 TCC Nokia

Date/Time: 2012-10-18 9:33:20

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

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Body 835; Medium Notes: Medium Temperature: $t = 21.5\text{ C}$

Medium parameters used: $f = 835\text{ MHz}$; $\sigma = 0.964\text{ mho/m}$; $\epsilon_r = 54.438$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

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

Maximum value of SAR (interpolated) = 2.65 mW/g

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

Reference Value = 52.837 V/m

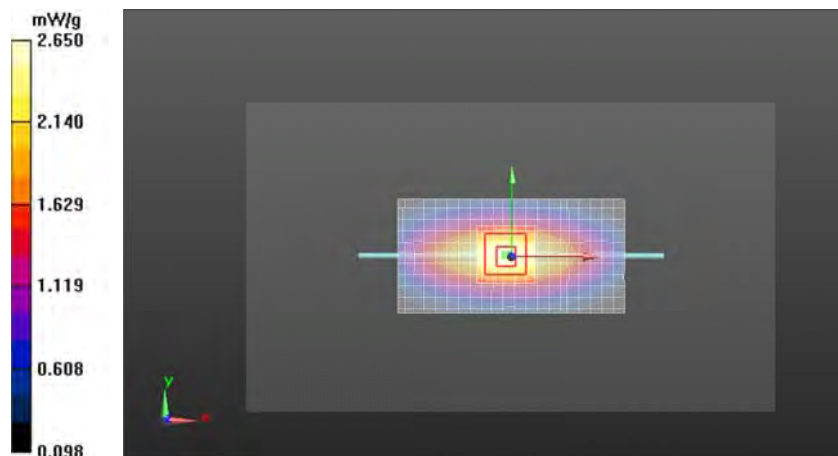
Peak SAR (extrapolated) = 3.658 mW/g

SAR(1 g) = 2.46 mW/g

SAR(10 g) = 1.62 mW/g

Power Drift = -0.07 dB

Maximum value of SAR (measured) = 2.65 mW/g



Date/Time: 2012-10-20 10:21:27

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

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Body 835; Medium Notes: Medium Temperature: $t = 21.1$ C

Medium parameters used: $f = 835$ MHz; $\sigma = 0.959$ mho/m; $\epsilon_r = 54.392$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

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

Maximum value of SAR (interpolated) = 2.61 mW/g

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

Reference Value = 52.197 V/m

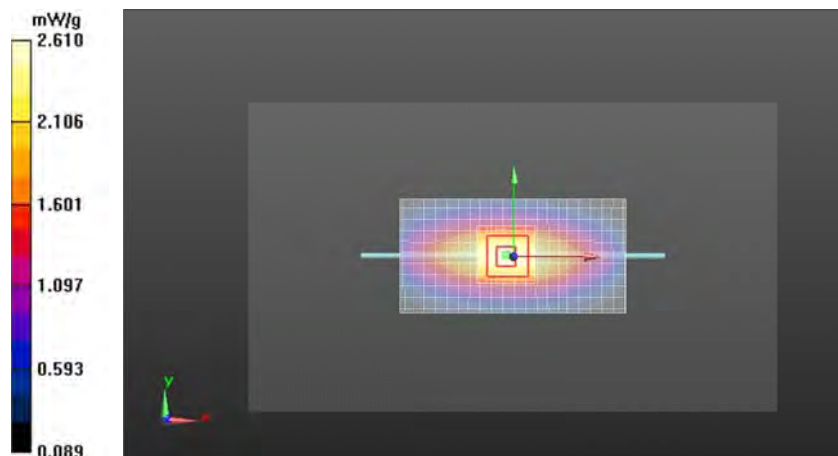
Peak SAR (extrapolated) = 3.611 mW/g

SAR(1 g) = 2.43 mW/g

SAR(10 g) = 1.6 mW/g

Power Drift = -0.00 dB

Maximum value of SAR (measured) = 2.61 mW/g



Date/Time: 2012-10-19 10:06:15

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

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: Body 1900; Medium Notes: Medium Temperature: t=21.5

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.544$ mho/m; $\epsilon_r = 52.218$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

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

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

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

Reference Value = 85.537 V/m

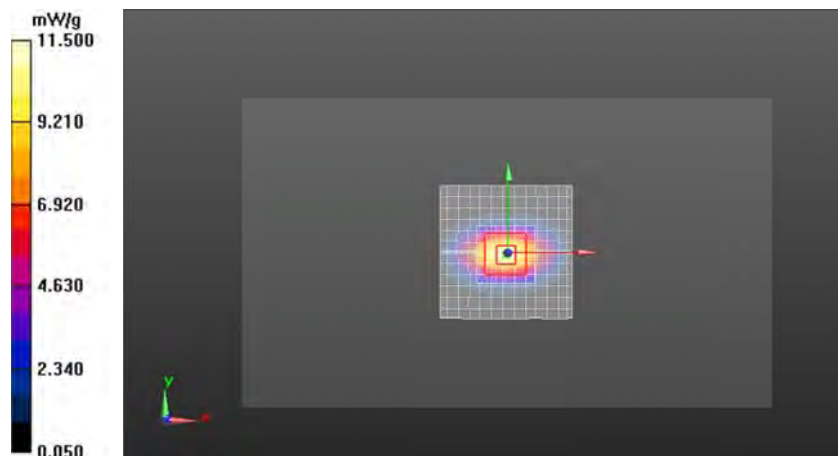
Peak SAR (extrapolated) = 18.227 mW/g

SAR(1 g) = 9.96 mW/g

SAR(10 g) = 5.2 mW/g

Power Drift = -0.04 dB

Maximum value of SAR (measured) = 11.3 mW/g



Date/Time: 2012-10-22 9:45:01

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

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: Body 1900; Medium Notes: Medium Temperature: t=21.3

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.532$ mho/m; $\epsilon_r = 52.046$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

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

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

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

Reference Value = 85.828 V/m

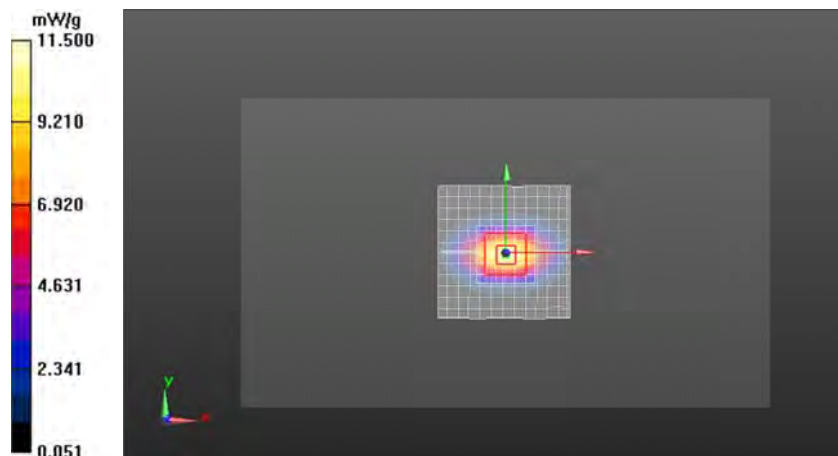
Peak SAR (extrapolated) = 18.103 mW/g

SAR(1 g) = 9.92 mW/g

SAR(10 g) = 5.18 mW/g

Power Drift = -0.03 dB

Maximum value of SAR (measured) = 11.2 mW/g



Date/Time: 2012-10-23 10:05:26

Test Laboratory: TCC Nokia

Type: D2450V2; Serial: D2450V2 - SN:760

Communication System: CW2450

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: t=21.4C

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.867$ mho/m; $\epsilon_r = 51.556$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF(4.31, 4.31, 4.31); Calibrated: 2012-03-12;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn858; Calibrated: 2012-03-02
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

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

Maximum value of SAR (interpolated) = 15.5 mW/g

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

Reference Value = 91.017 V/m

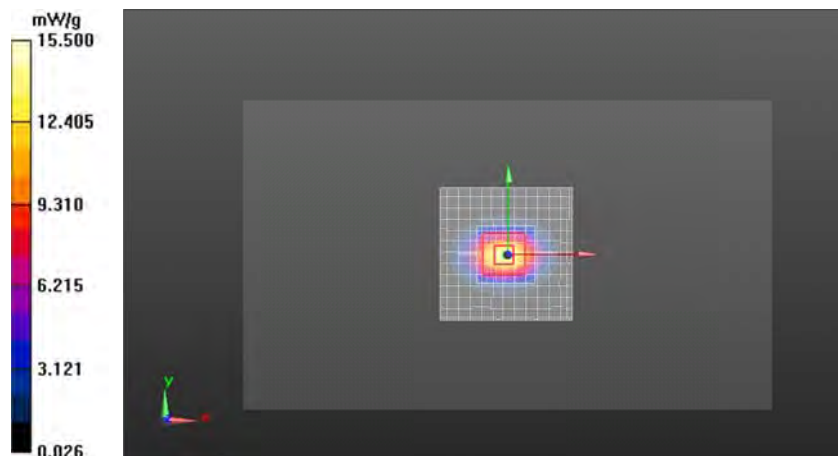
Peak SAR (extrapolated) = 27.009 mW/g

SAR(1 g) = 13.1 mW/g

SAR(10 g) = 6.16 mW/g

Power Drift = -0.03 dB

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



APPENDIX B.1: HEAD MEASUREMENT SCANS

Date/Time: 2012-10-19 10:10:40

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: Head 835 SAM10; Medium Notes: Medium Temperature: $t = 21.7\text{ C}$

Medium parameters used: $f = 837\text{ MHz}$; $\sigma = 0.884\text{ mho/m}$; $\epsilon_r = 41.43$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(8.67, 8.67, 8.67); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM10; Type: SAM; Serial: TP - 1410
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Cheek - Middle - BP-3L LG/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.410 mW/g

Cheek - Middle - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 4.674 V/m

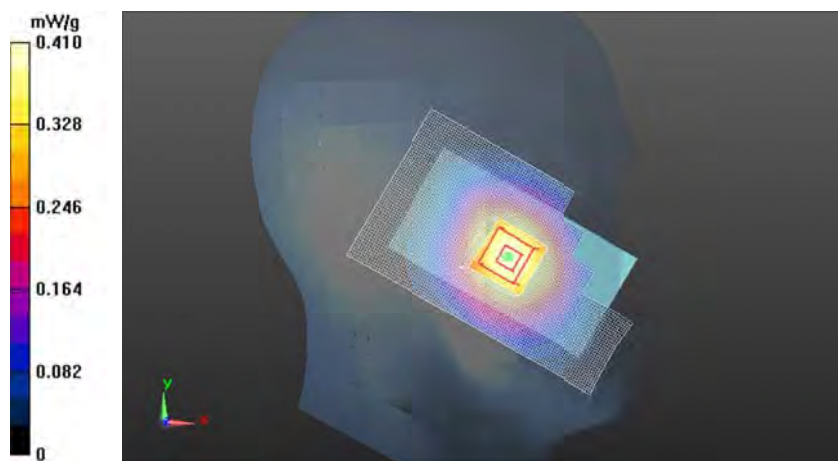
Peak SAR (extrapolated) = 0.481 mW/g

SAR(1 g) = 0.387 mW/g

SAR(10 g) = 0.289 mW/g

Power Drift = -0.41 dB

Maximum value of SAR (measured) = 0.411 mW/g



Date/Time: 2012-10-19 11:16:50

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: Head 835 SAM10; Medium Notes: Medium Temperature: $t = 21.7\text{ C}$

Medium parameters used: $f = 837\text{ MHz}$; $\sigma = 0.884\text{ mho/m}$; $\epsilon_r = 41.43$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(8.67, 8.67, 8.67); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM10; Type: SAM; Serial: TP - 1410
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Tilt - Middle - BP-3L LG/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Tilt - Middle - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 7.100 V/m

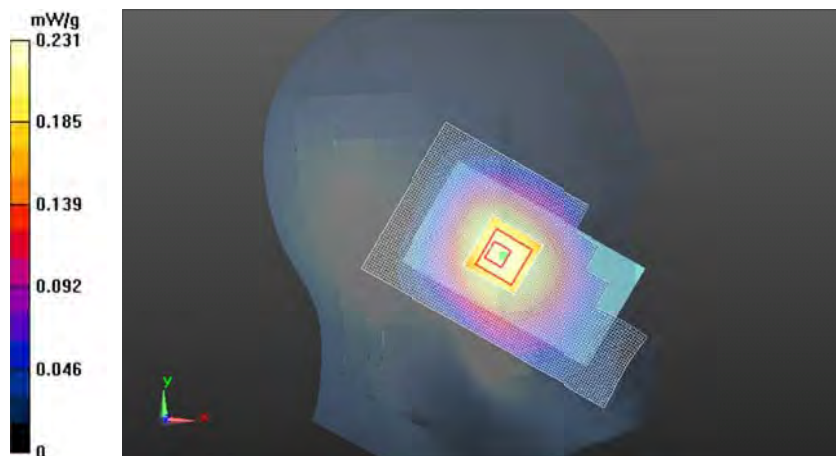
Peak SAR (extrapolated) = 0.269 mW/g

SAR(1 g) = 0.216 mW/g

SAR(10 g) = 0.164 mW/g

Power Drift = 0.27 dB

Maximum value of SAR (measured) = 0.224 mW/g



Date/Time: 2012-10-19 11:55:58

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: GSM850

Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: Head 835 SAM10; Medium Notes: Medium Temperature: $t = 21.7\text{ C}$

Medium parameters used: $f = 849\text{ MHz}$; $\sigma = 0.892\text{ mho/m}$; $\epsilon_r = 41.394$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Right Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(8.67, 8.67, 8.67); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM10; Type: SAM; Serial: TP - 1410
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Cheek - High - BP-3L LG/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.648 mW/g

Cheek - High - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 6.104 V/m

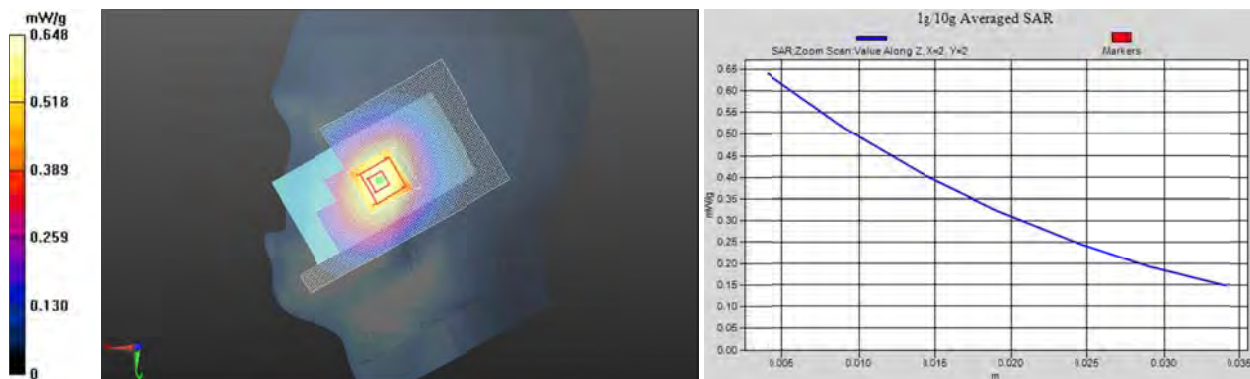
Peak SAR (extrapolated) = 0.757 mW/g

SAR(1 g) = 0.608 mW/g

SAR(10 g) = 0.457 mW/g

Power Drift = 0.07 dB

Maximum value of SAR (measured) = 0.641 mW/g



Date/Time: 2012-10-19 12:06:46

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: Head 835 SAM10; Medium Notes: Medium Temperature: $t = 21.7\text{ C}$

Medium parameters used: $f = 837\text{ MHz}$; $\sigma = 0.884\text{ mho/m}$; $\epsilon_r = 41.43$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Right Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(8.67, 8.67, 8.67); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM10; Type: SAM; Serial: TP - 1410
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Tilt - Middle - BP-3L LG/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Tilt - Middle - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 7.907 V/m

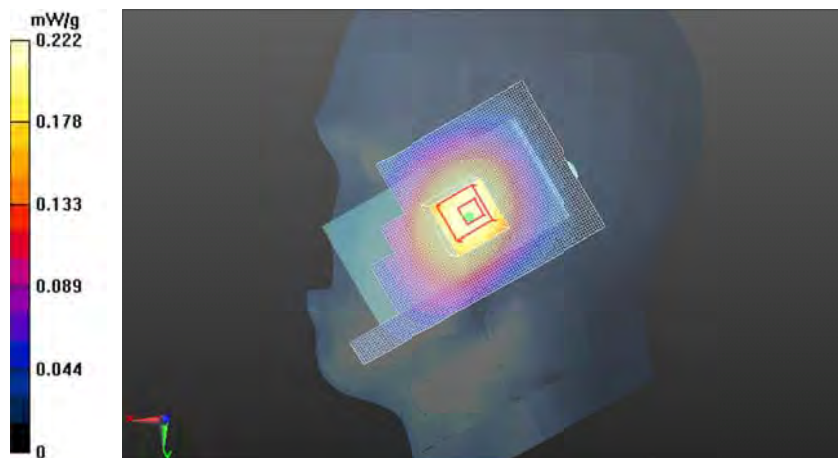
Peak SAR (extrapolated) = 0.277 mW/g

SAR(1 g) = 0.221 mW/g

SAR(10 g) = 0.165 mW/g

Power Drift = 0.09 dB

Maximum value of SAR (measured) = 0.233 mW/g



Date/Time: 2012-10-19 10:26:44

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: 2-slot GPRS850

Frequency: 836.6 MHz; Duty Cycle: 1:4.2

Medium: Head 835 SAM10; Medium Notes: Medium Temperature: $t = 21.7\text{ C}$

Medium parameters used: $f = 837\text{ MHz}$; $\sigma = 0.884\text{ mho/m}$; $\epsilon_r = 41.43$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(8.67, 8.67, 8.67); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM10; Type: SAM; Serial: TP - 1410
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Cheek - Middle - BP-3L LG/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.350 mW/g

Cheek - Middle - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 4.053 V/m

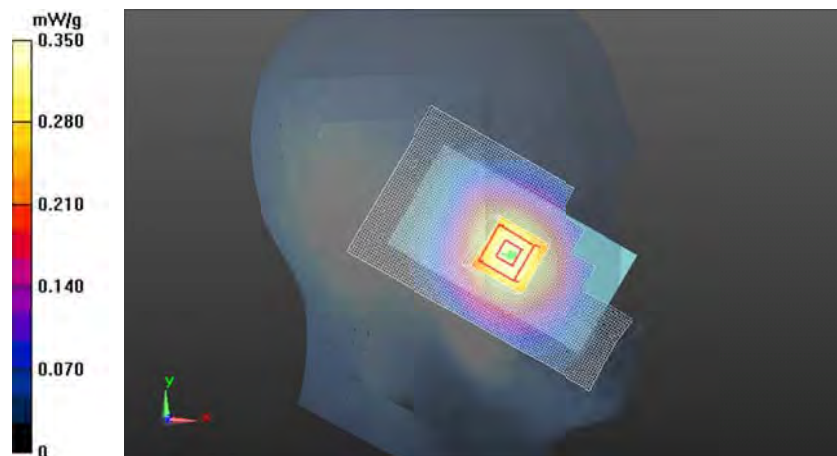
Peak SAR (extrapolated) = 0.406 mW/g

SAR(1 g) = 0.329 mW/g

SAR(10 g) = 0.246 mW/g

Power Drift = 0.11 dB

Maximum value of SAR (measured) = 0.347 mW/g



Date/Time: 2012-10-19 10:43:16

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: 3-slot GPRS850

Frequency: 836.6 MHz; Duty Cycle: 1:2.8

Medium: Head 835 SAM10; Medium Notes: Medium Temperature: $t = 21.7\text{ C}$

Medium parameters used: $f = 837\text{ MHz}$; $\sigma = 0.884\text{ mho/m}$; $\epsilon_r = 41.43$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(8.67, 8.67, 8.67); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM10; Type: SAM; Serial: TP - 1410
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Cheek - Middle - BP-3L LG/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Cheek - Middle - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 3.811 V/m

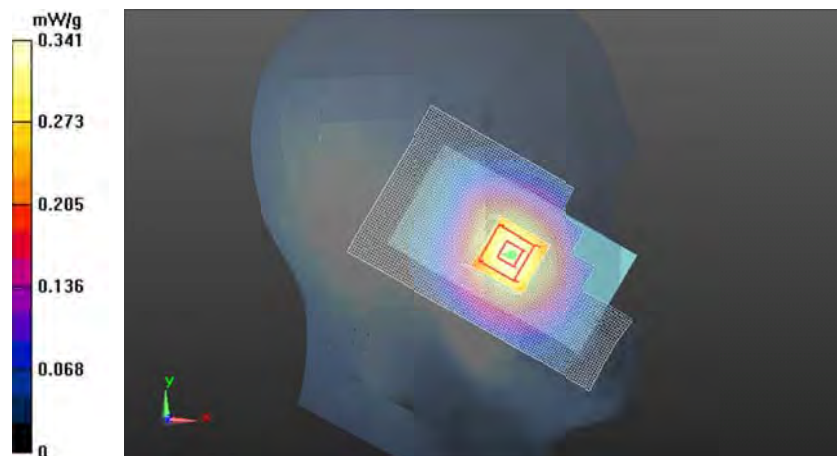
Peak SAR (extrapolated) = 0.395 mW/g

SAR(1 g) = 0.321 mW/g

SAR(10 g) = 0.240 mW/g

Power Drift = 0.30 dB

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



Date/Time: 2012-10-19 11:00:59

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: 4-slot GPRS850

Frequency: 836.6 MHz; Duty Cycle: 1:2.08

Medium: Head 835 SAM10; Medium Notes: Medium Temperature: $t = 21.7\text{ C}$

Medium parameters used: $f = 837\text{ MHz}$; $\sigma = 0.884\text{ mho/m}$; $\epsilon_r = 41.43$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(8.67, 8.67, 8.67); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM10; Type: SAM; Serial: TP - 1410
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Cheek - Middle - BP-3L LG/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Cheek - Middle - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 3.953 V/m

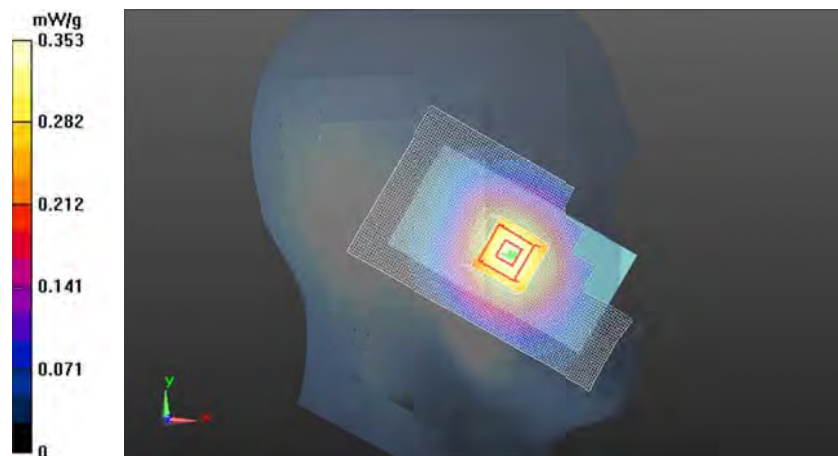
Peak SAR (extrapolated) = 0.414 mW/g

SAR(1 g) = 0.333 mW/g

SAR(10 g) = 0.249 mW/g

Power Drift = 0.36 dB

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



Date/Time: 2012-10-19 15:53:19

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: 1-slot 8PSK EGPRS850

Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: Head 835 SAM10; Medium Notes: Medium Temperature: $t = 21.7\text{ C}$

Medium parameters used: $f = 849\text{ MHz}$; $\sigma = 0.892\text{ mho/m}$; $\epsilon_r = 41.394$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Right Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(8.67, 8.67, 8.67); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM10; Type: SAM; Serial: TP - 1410
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Cheek - High - BP-3L LG/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.219 mW/g

Cheek - High - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 3.580 V/m

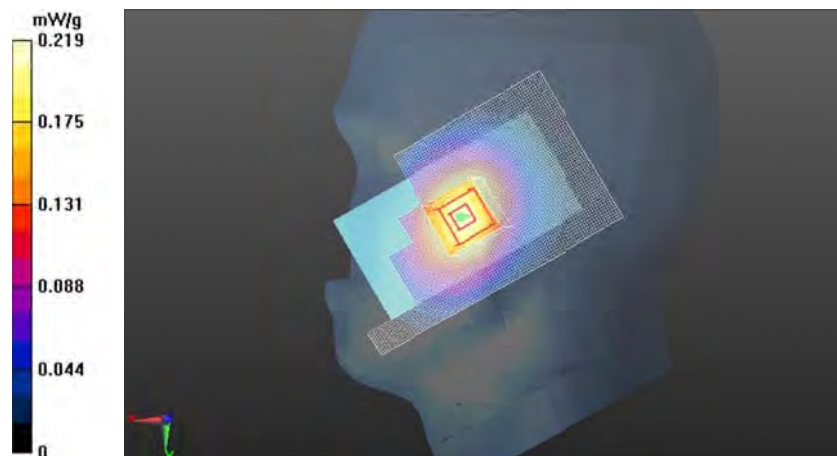
Peak SAR (extrapolated) = 0.242 mW/g

SAR(1 g) = 0.197 mW/g

SAR(10 g) = 0.145 mW/g

Power Drift = -0.38 dB

Maximum value of SAR (measured) = 0.214 mW/g



Date/Time: 2012-10-22 10:11:44

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Head 835 SAM10; Medium Notes: Medium Temperature: $t = 21.7\text{ C}$

Medium parameters used: $f = 835\text{ MHz}$; $\sigma = 0.882\text{ mho/m}$; $\epsilon_r = 41.399$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(8.67, 8.67, 8.67); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM10; Type: SAM; Serial: TP - 1410
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Cheek - Middle - BP-3L LG/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Cheek - Middle - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 5.832 V/m

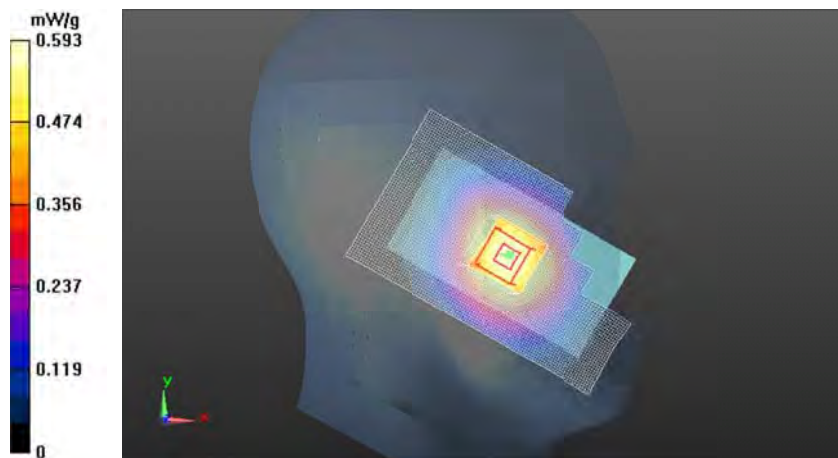
Peak SAR (extrapolated) = 0.694 mW/g

SAR(1 g) = 0.557 mW/g

SAR(10 g) = 0.416 mW/g

Power Drift = 0.09 dB

Maximum value of SAR (measured) = 0.591 mW/g



Date/Time: 2012-10-22 10:26:49

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Head 835 SAM10; Medium Notes: Medium Temperature: $t = 21.7\text{ C}$

Medium parameters used: $f = 835\text{ MHz}$; $\sigma = 0.882\text{ mho/m}$; $\epsilon_r = 41.399$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(8.67, 8.67, 8.67); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM10; Type: SAM; Serial: TP - 1410
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Tilt - Middle - BP-3L LG/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Tilt - Middle - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 9.642 V/m

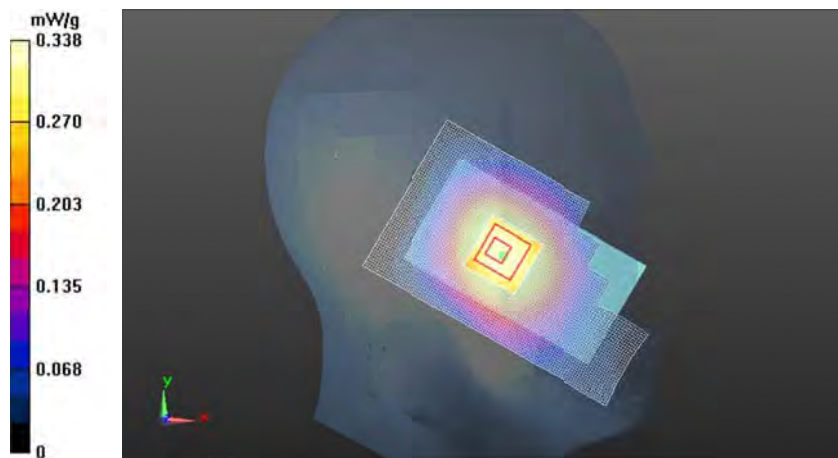
Peak SAR (extrapolated) = 0.407 mW/g

SAR(1 g) = 0.322 mW/g

SAR(10 g) = 0.242 mW/g

Power Drift = 0.02 dB

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



Date/Time: 2012-10-22 11:04:43

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: WCDMA850

Frequency: 846.6 MHz; Duty Cycle: 1:1

Medium: Head 835 SAM10; Medium Notes: Medium Temperature: $t = 21.7\text{ C}$

Medium parameters used: $f = 847\text{ MHz}$; $\sigma = 0.889\text{ mho/m}$; $\epsilon_r = 41.335$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Right Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(8.67, 8.67, 8.67); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM10; Type: SAM; Serial: TP - 1410
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Cheek - High - BP-3L LG/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.644 mW/g

Cheek - High - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 6.691 V/m

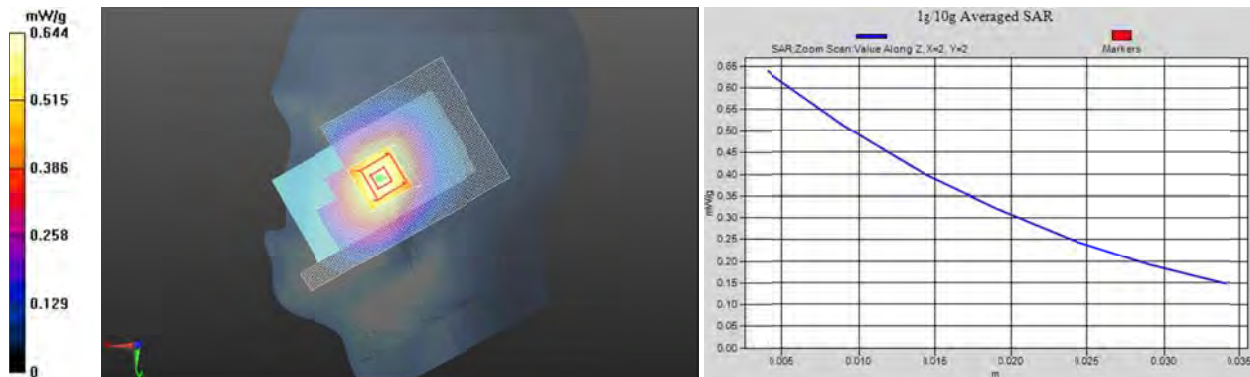
Peak SAR (extrapolated) = 0.749 mW/g

SAR(1 g) = 0.603 mW/g

SAR(10 g) = 0.451 mW/g

Power Drift = 0.15 dB

Maximum value of SAR (measured) = 0.638 mW/g



Date/Time: 2012-10-22 11:26:34

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Head 835 SAM10; Medium Notes: Medium Temperature: $t = 21.7\text{ C}$

Medium parameters used: $f = 835\text{ MHz}$; $\sigma = 0.882\text{ mho/m}$; $\epsilon_r = 41.399$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Right Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(8.67, 8.67, 8.67); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM10; Type: SAM; Serial: TP - 1410
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Tilt - Middle - BP-3L LG/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Tilt - Middle - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 10.669 V/m

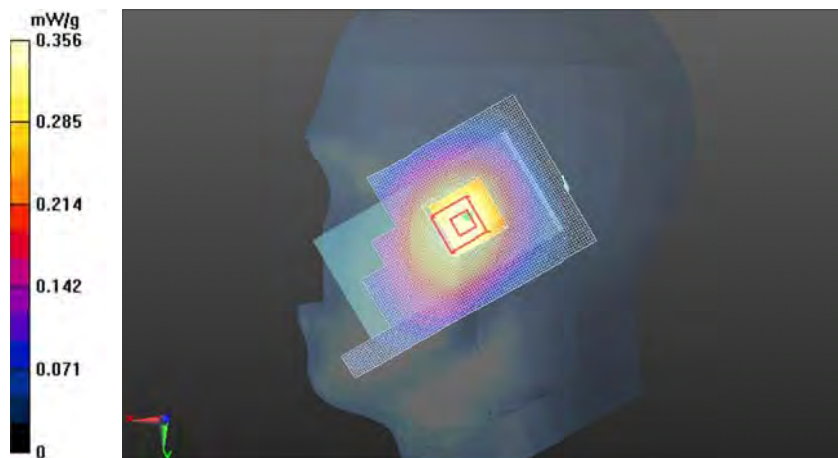
Peak SAR (extrapolated) = 0.438 mW/g

SAR(1 g) = 0.347 mW/g

SAR(10 g) = 0.263 mW/g

Power Drift = -0.04 dB

Maximum value of SAR (measured) = 0.362 mW/g



Date/Time: 2012-10-19 13:12:59

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: GSM850

Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: Head 835 SAM10; Medium Notes: Medium Temperature: $t = 21.7\text{ C}$

Medium parameters used: $f = 849\text{ MHz}$; $\sigma = 0.892\text{ mho/m}$; $\epsilon_r = 41.394$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Right Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(8.67, 8.67, 8.67); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM10; Type: SAM; Serial: TP - 1410
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Cheek - High - BP-3L Sony/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.632 mW/g

Cheek - High - BP-3L Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 6.429 V/m

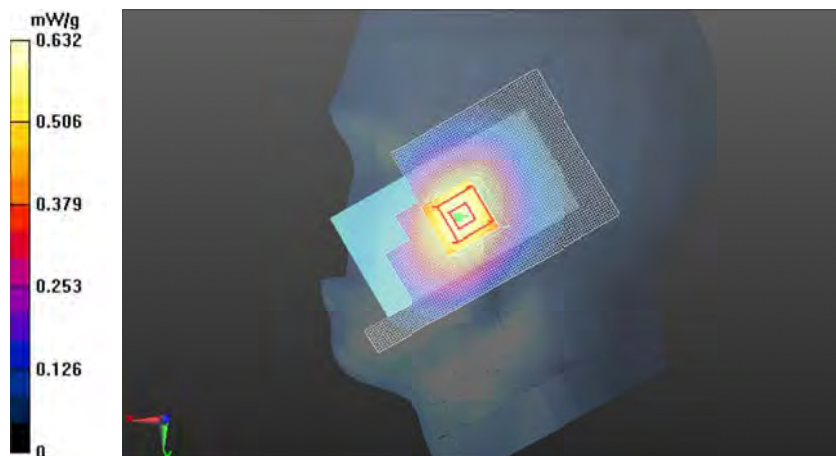
Peak SAR (extrapolated) = 0.740 mW/g

SAR(1 g) = 0.601 mW/g

SAR(10 g) = 0.451 mW/g

Power Drift = 0.11 dB

Maximum value of SAR (measured) = 0.635 mW/g



Date/Time: 2012-10-18 9:50:25

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: GSM1900

Frequency: 1880 MHz; Duty Cycle: 1:8.3

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

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.435$ mho/m; $\epsilon_r = 39.058$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(7.57, 7.57, 7.57); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM7; Type: SAM; Serial: TP - 1412
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Cheek - Middle - BP-3L LG/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.350 mW/g

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

Reference Value = 3.254 V/m

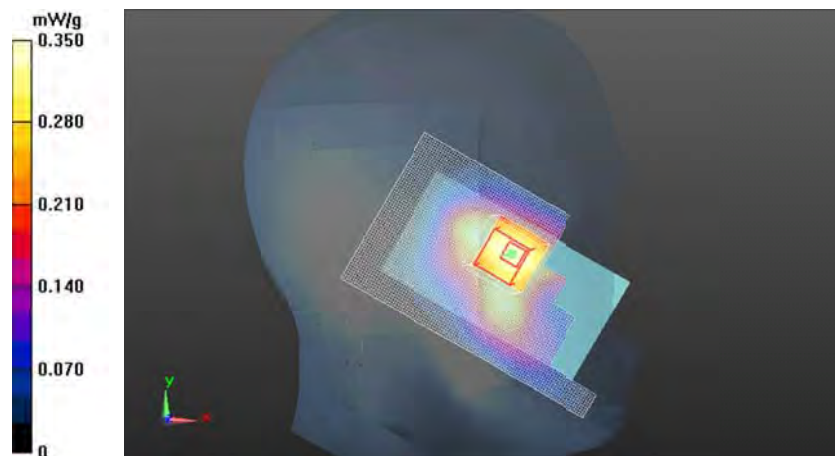
Peak SAR (extrapolated) = 0.479 mW/g

SAR(1 g) = 0.316 mW/g

SAR(10 g) = 0.207 mW/g

Power Drift = 0.19 dB

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



Date/Time: 2012-10-18 10:56:27

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

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

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.435$ mho/m; $\epsilon_r = 39.058$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(7.57, 7.57, 7.57); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM7; Type: SAM; Serial: TP - 1412
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Cheek - Middle - BP-3L LG 2/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.419 mW/g

Cheek - Middle - BP-3L LG 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 3.626 V/m

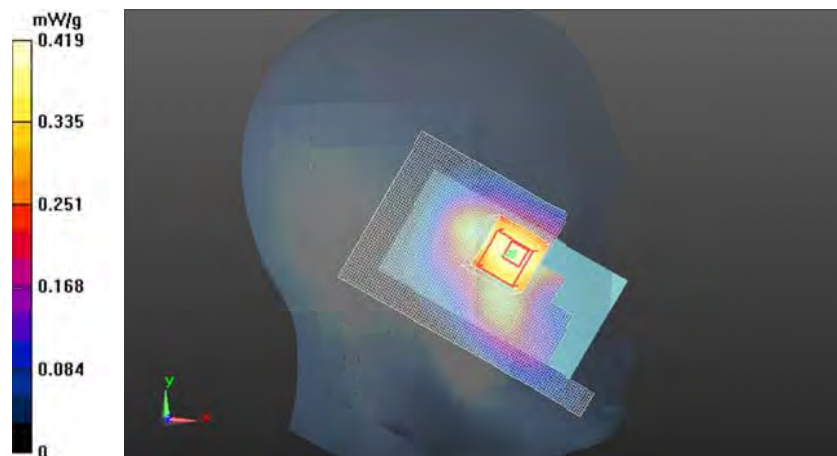
Peak SAR (extrapolated) = 0.579 mW/g

SAR(1 g) = 0.383 mW/g

SAR(10 g) = 0.249 mW/g

Power Drift = 0.45 dB

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



Date/Time: 2012-10-18 11:11:02

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

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

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.435$ mho/m; $\epsilon_r = 39.058$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(7.57, 7.57, 7.57); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM7; Type: SAM; Serial: TP - 1412
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Tilt - Middle - BP-3L LG/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.473 mW/g

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

Reference Value = 9.856 V/m

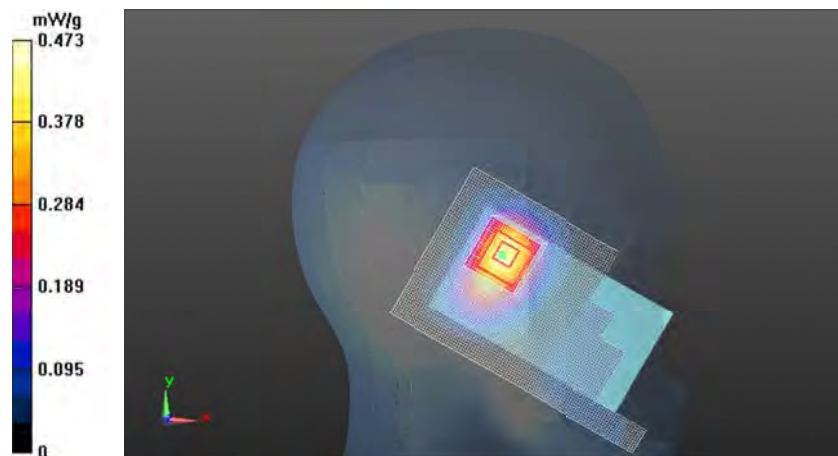
Peak SAR (extrapolated) = 0.589 mW/g

SAR(1 g) = 0.391 mW/g

SAR(10 g) = 0.242 mW/g

Power Drift = 0.14 dB

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



Date/Time: 2012-10-18 11:59:34

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: 2-slot GPRS1900

Frequency: 1909.8 MHz; Duty Cycle: 1:4.2

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

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.46$ mho/m; $\epsilon_r = 39.042$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(7.57, 7.57, 7.57); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM7; Type: SAM; Serial: TP - 1412
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Cheek - High - BP-3L LG/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.683 mW/g

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

Reference Value = 4.150 V/m

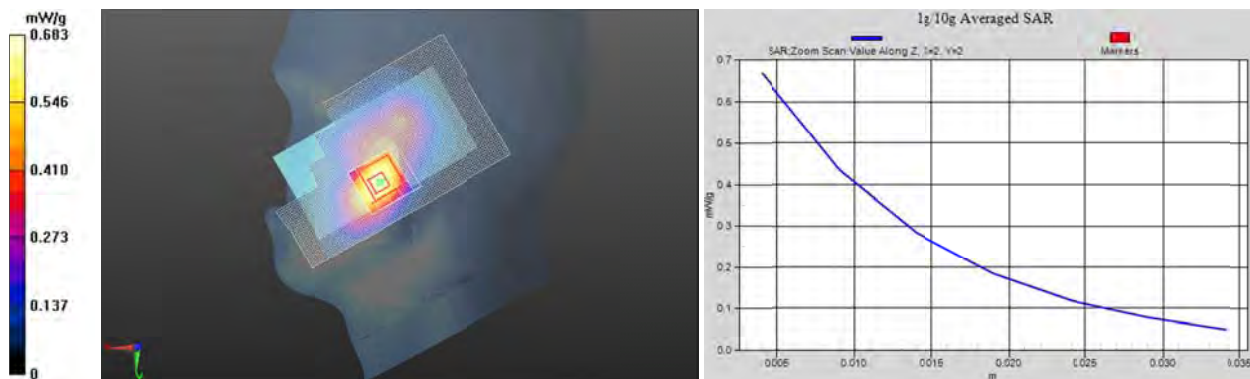
Peak SAR (extrapolated) = 0.964 mW/g

SAR(1 g) = 0.616 mW/g

SAR(10 g) = 0.374 mW/g

Power Drift = 0.45 dB

Maximum value of SAR (measured) = 0.669 mW/g



Date/Time: 2012-10-18 11:37:59

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

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

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.435$ mho/m; $\epsilon_r = 39.058$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(7.57, 7.57, 7.57); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM7; Type: SAM; Serial: TP - 1412
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Tilt - Middle BP-3L LG/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.413 mW/g

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

Reference Value = 9.541 V/m

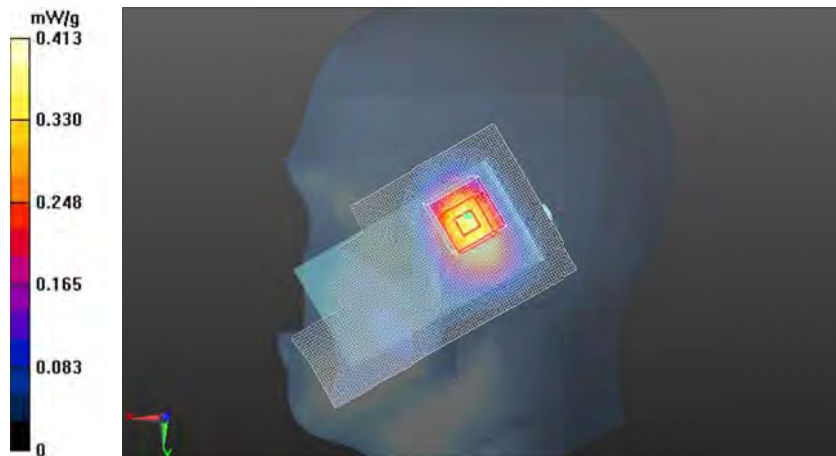
Peak SAR (extrapolated) = 0.511 mW/g

SAR(1 g) = 0.347 mW/g

SAR(10 g) = 0.221 mW/g

Power Drift = 0.01 dB

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



Date/Time: 2012-10-18 10:28:29

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: 3-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:2.8

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

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.435$ mho/m; $\epsilon_r = 39.058$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(7.57, 7.57, 7.57); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM7; Type: SAM; Serial: TP - 1412
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Cheek - Middle - BP-3L LG/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.405 mW/g

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

Reference Value = 4.970 V/m

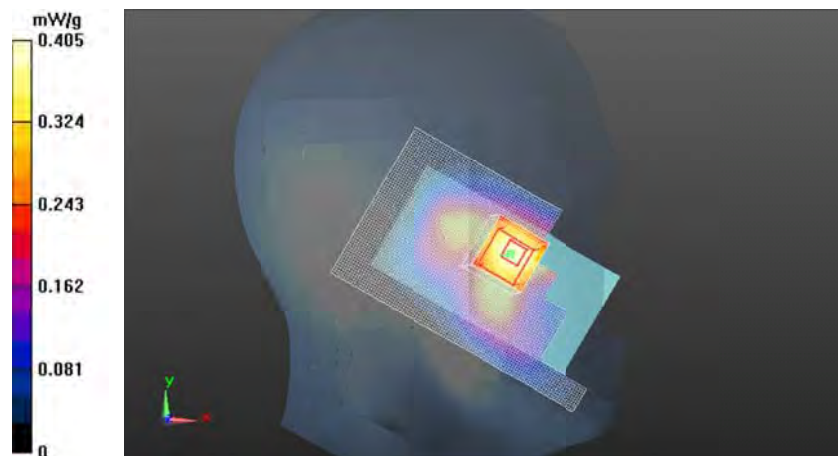
Peak SAR (extrapolated) = 0.555 mW/g

SAR(1 g) = 0.370 mW/g

SAR(10 g) = 0.236 mW/g

Power Drift = -0.00 dB

Maximum value of SAR (measured) = 0.395 mW/g



Date/Time: 2012-10-18 10:42:09

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: 4-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:2.08

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

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.435$ mho/m; $\epsilon_r = 39.058$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(7.57, 7.57, 7.57); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM7; Type: SAM; Serial: TP - 1412
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Cheek - Middle - BP-3L LG/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.377 mW/g

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

Reference Value = 4.709 V/m

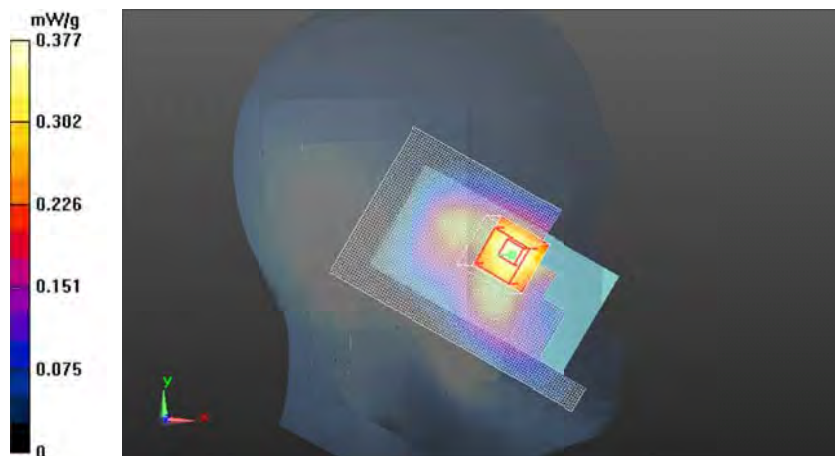
Peak SAR (extrapolated) = 0.523 mW/g

SAR(1 g) = 0.348 mW/g

SAR(10 g) = 0.222 mW/g

Power Drift = 0.21 dB

Maximum value of SAR (measured) = 0.373 mW/g



Date/Time: 2012-10-23 16:01:40

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: 2-slot 8PSK EGPRS1900

Frequency: 1909.8 MHz; Duty Cycle: 1:4.2

Medium: Head 1900 SAM7; Medium Notes: Medium Temperature: $t=21.7^{\circ}\text{C}$ SAM7

Medium parameters used: $f = 1910\text{ MHz}$; $\sigma = 1.462\text{ mho/m}$; $\epsilon_r = 39.407$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Right Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(7.57, 7.57, 7.57); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM7; Type: SAM; Serial: TP - 1412
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Cheek - High - BP-3L LG/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.305 mW/g

Cheek - High - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 2.777 V/m

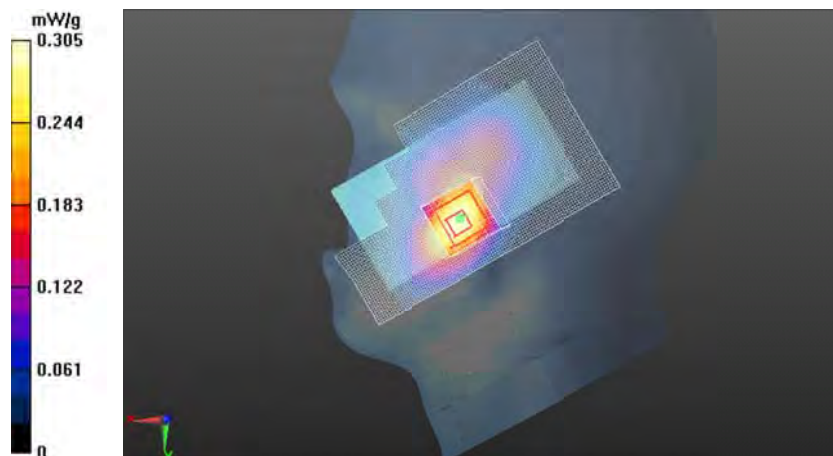
Peak SAR (extrapolated) = 0.437 mW/g

SAR(1 g) = 0.280 mW/g

SAR(10 g) = 0.170 mW/g

Power Drift = 0.06 dB

Maximum value of SAR (measured) = 0.302 mW/g



Date/Time: 2012-10-23 10:16:05

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: WCDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: Head 1900 SAM7; Medium Notes: Medium Temperature: $t=21.7^{\circ}\text{C}$ SAM7

Medium parameters used: $f = 1880\text{ MHz}$; $\sigma = 1.436\text{ mho/m}$; $\epsilon_r = 39.436$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(7.57, 7.57, 7.57); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM7; Type: SAM; Serial: TP - 1412
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Cheek - Middle - BP-3L LG/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Cheek - Middle - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 3.545 V/m

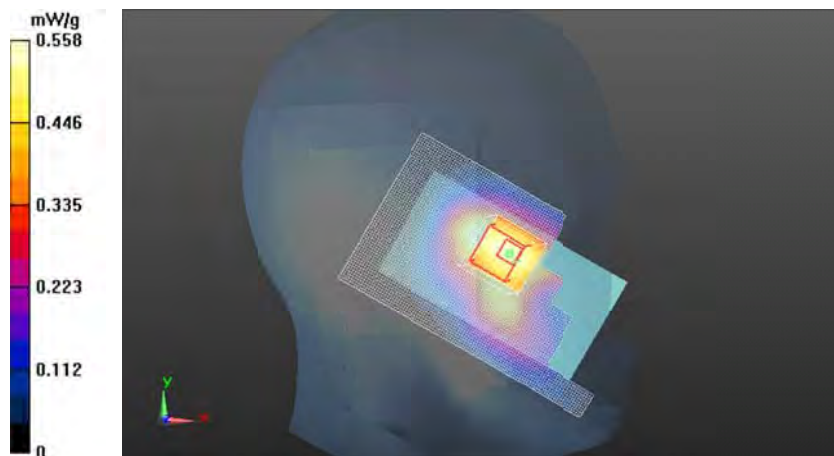
Peak SAR (extrapolated) = 0.717 mW/g

SAR(1 g) = 0.479 mW/g

SAR(10 g) = 0.319 mW/g

Power Drift = -0.31 dB

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



Date/Time: 2012-10-23 10:29:43

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: WCDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: Head 1900 SAM7; Medium Notes: Medium Temperature: $t=21.7^{\circ}\text{C}$ SAM7

Medium parameters used: $f = 1880\text{ MHz}$; $\sigma = 1.436\text{ mho/m}$; $\epsilon_r = 39.436$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(7.57, 7.57, 7.57); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM7; Type: SAM; Serial: TP - 1412
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Tilt - Middle - BP-3L LG/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Tilt - Middle - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 9.041 V/m

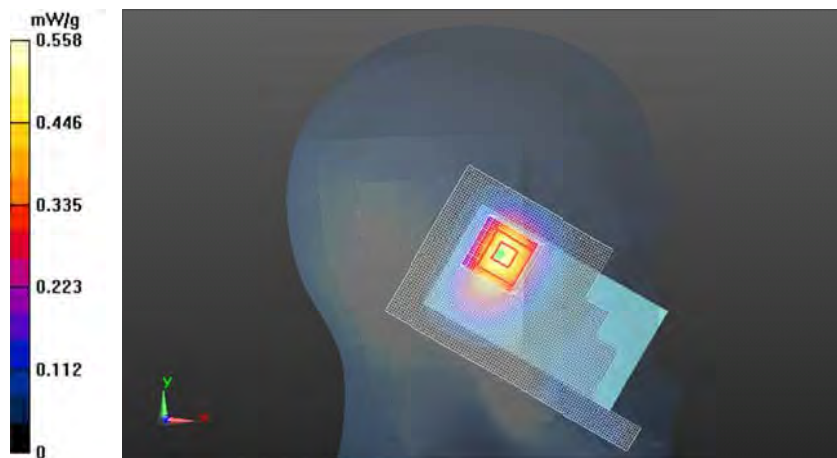
Peak SAR (extrapolated) = 0.688 mW/g

SAR(1 g) = 0.461 mW/g

SAR(10 g) = 0.287 mW/g

Power Drift = -0.03 dB

Maximum value of SAR (measured) = 0.496 mW/g



Date/Time: 2012-10-23 11:05:30

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: WCDMA1900

Frequency: 1907.6 MHz; Duty Cycle: 1:1

Medium: Head 1900 SAM7; Medium Notes: Medium Temperature: $t=21.7^{\circ}\text{C}$ SAM7

Medium parameters used: $f = 1908 \text{ MHz}$; $\sigma = 1.461 \text{ mho/m}$; $\epsilon_r = 39.408$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(7.57, 7.57, 7.57); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM7; Type: SAM; Serial: TP - 1412
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Cheek - High - BP-3L LG/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.765 mW/g

Cheek - High - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 5.106 V/m

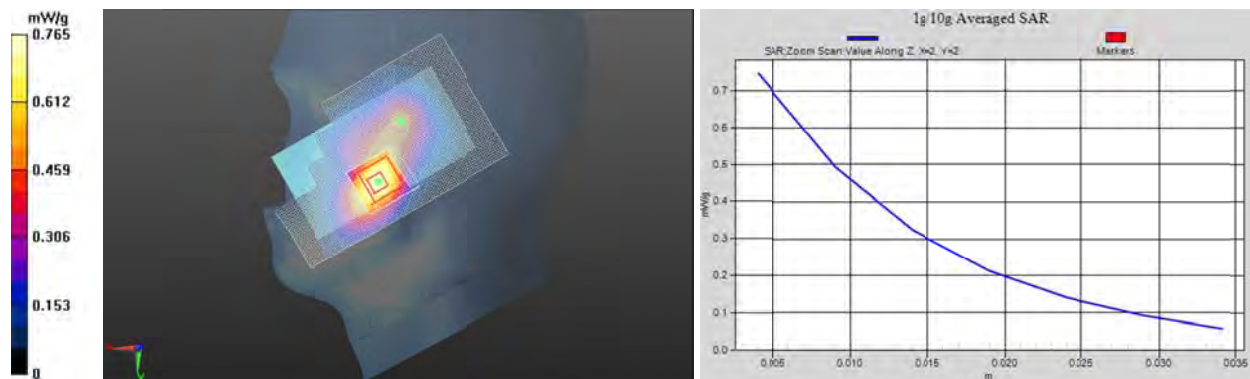
Peak SAR (extrapolated) = 1.064 mW/g

SAR(1 g) = 0.689 mW/g

SAR(10 g) = 0.424 mW/g

Power Drift = 0.14 dB

Maximum value of SAR (measured) = 0.747 mW/g



SAR Report

FCC_RM-923_03

Applicant: Nokia Corporation

Type: RM-923

Copyright © 2012 TCC Nokia

Date/Time: 2012-10-23 11:37:28

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: WCDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: Head 1900 SAM7; Medium Notes: Medium Temperature: $t=21.7^{\circ}\text{C}$ SAM7

Medium parameters used: $f = 1880\text{ MHz}$; $\sigma = 1.436\text{ mho/m}$; $\epsilon_r = 39.436$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Right Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(7.57, 7.57, 7.57); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM7; Type: SAM; Serial: TP - 1412
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Tilt - Middle - BP-3L LG/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.475 mW/g

Tilt - Middle - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 10.499 V/m

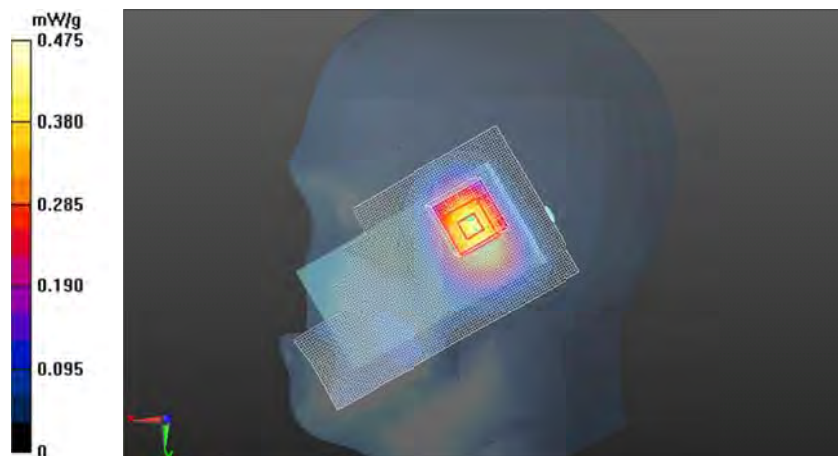
Peak SAR (extrapolated) = 0.587 mW/g

SAR(1 g) = 0.402 mW/g

SAR(10 g) = 0.257 mW/g

Power Drift = 0.10 dB

Maximum value of SAR (measured) = 0.427 mW/g



Date/Time: 2012-10-18 13:12:57

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: 2-slot GPRS1900

Frequency: 1909.8 MHz; Duty Cycle: 1:4.2

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

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.46$ mho/m; $\epsilon_r = 39.042$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY Configuration:

- Probe: EX3DV4 - SN3838
- ConvF(7.57, 7.57, 7.57); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
- Phantom: SAM7; Type: SAM; Serial: TP - 1412
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Cheek - High - BP-3L Sony/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.639 mW/g

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

Reference Value = 4.127 V/m

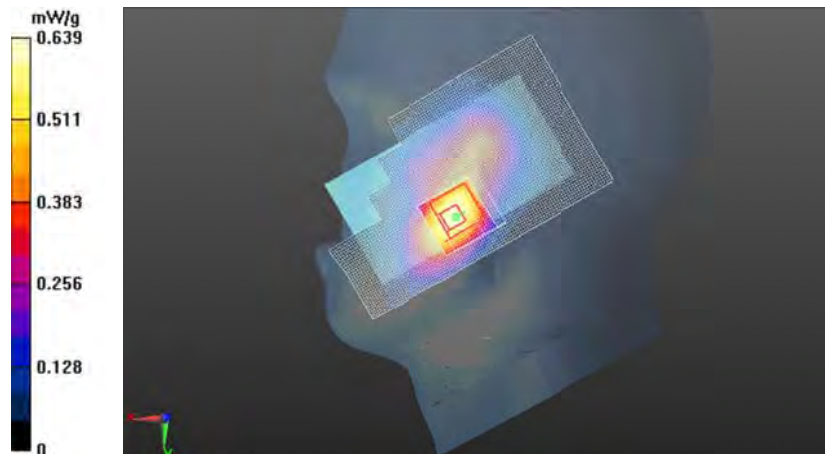
Peak SAR (extrapolated) = 0.906 mW/g

SAR(1 g) = 0.577 mW/g

SAR(10 g) = 0.353 mW/g

Power Drift = -0.06 dB

Maximum value of SAR (measured) = 0.621 mW/g



Date/Time: 2012-10-19 11:05:35

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode

Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: Head 2450; Medium Notes: Medium Temperature: $t=21.7^{\circ}\text{C}$

Medium parameters used: $f = 2437 \text{ MHz}$; $\sigma = 1.744 \text{ mho/m}$; $\epsilon_r = 38.111$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF(4.45, 4.45, 4.45); Calibrated: 2012-03-12;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn858; Calibrated: 2012-03-02
- Phantom: SAM6; Type: SAM; Serial: TP - 1426
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Cheek - Middle - BP-3L LG/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Cheek - Middle - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 5.948 V/m

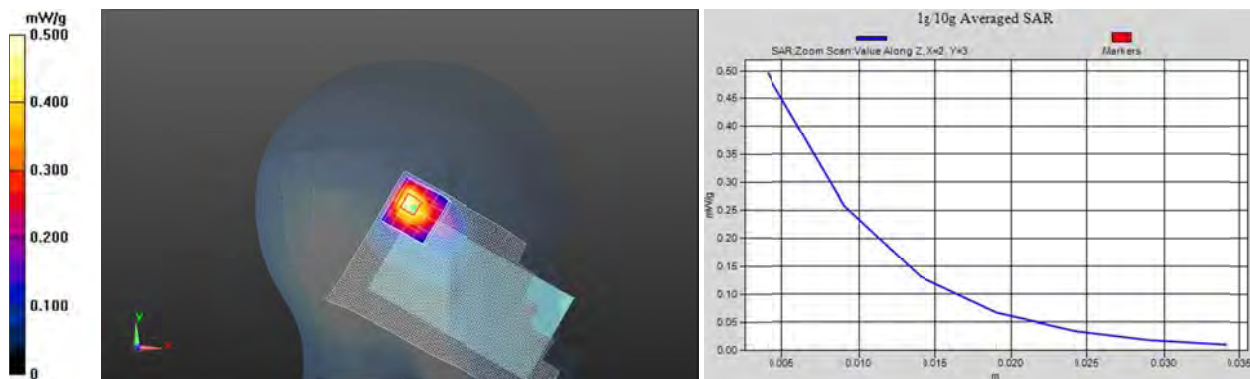
Peak SAR (extrapolated) = 0.965 mW/g

SAR(1 g) = 0.465 mW/g

SAR(10 g) = 0.224 mW/g

Power Drift = 0.23 dB

Maximum value of SAR (measured) = 0.495 mW/g



Date/Time: 2012-10-19 11:35:45

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode

Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: Head 2450; Medium Notes: Medium Temperature: t=21.7C

Medium parameters used: $f = 2437$ MHz; $\sigma = 1.744$ mho/m; $\epsilon_r = 38.111$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF(4.45, 4.45, 4.45); Calibrated: 2012-03-12;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn858; Calibrated: 2012-03-02
- Phantom: SAM6; Type: SAM; Serial: TP - 1426
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Tilt - Middle - BP-3L LG/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.343 mW/g

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

Reference Value = 7.342 V/m

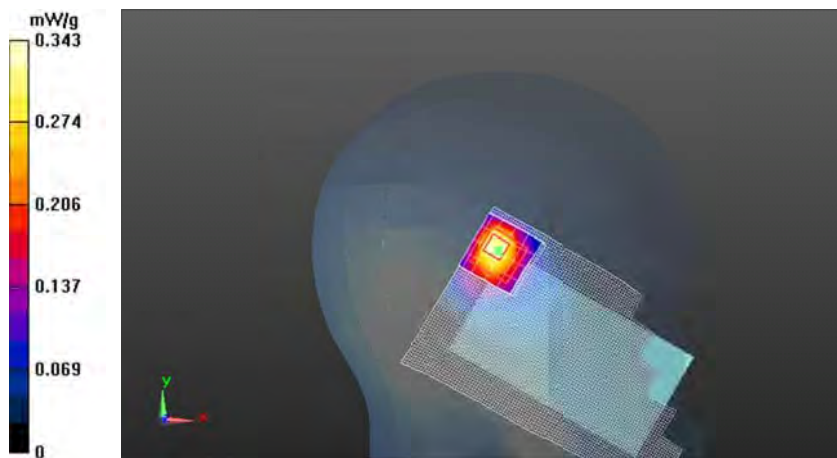
Peak SAR (extrapolated) = 0.714 mW/g

SAR(1 g) = 0.330 mW/g

SAR(10 g) = 0.156 mW/g

Power Drift = 0.20 dB

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



Date/Time: 2012-10-19 13:04:59

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode

Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: Head 2450; Medium Notes: Medium Temperature: $t=21.7^{\circ}\text{C}$

Medium parameters used: $f = 2437 \text{ MHz}$; $\sigma = 1.744 \text{ mho/m}$; $\epsilon_r = 38.111$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF(4.45, 4.45, 4.45); Calibrated: 2012-03-12;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn858; Calibrated: 2012-03-02
- Phantom: SAM6; Type: SAM; Serial: TP - 1426
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Cheek - Middle - BP-3L LG/Area Scan (61x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.273 mW/g

Cheek - Middle - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 3.796 V/m

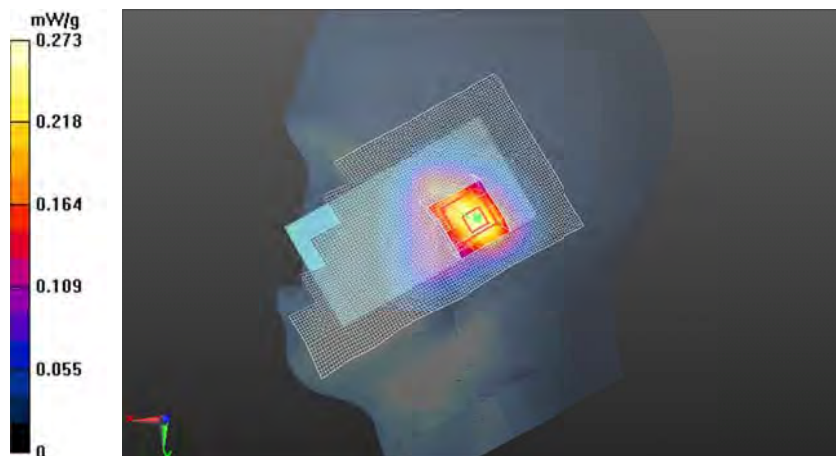
Peak SAR (extrapolated) = 0.444 mW/g

SAR(1 g) = 0.246 mW/g

SAR(10 g) = 0.133 mW/g

Power Drift = 0.28 dB

Maximum value of SAR (measured) = 0.262 mW/g



Date/Time: 2012-10-19 13:23:24

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode

Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: Head 2450; Medium Notes: Medium Temperature: t=21.7C

Medium parameters used: f = 2437 MHz; $\sigma = 1.744$ mho/m; $\epsilon_r = 38.111$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF(4.45, 4.45, 4.45); Calibrated: 2012-03-12;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn858; Calibrated: 2012-03-02
- Phantom: SAM6; Type: SAM; Serial: TP - 1426
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Tilt - Middle - BP-3L LG/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.230 mW/g

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

Reference Value = 4.235 V/m

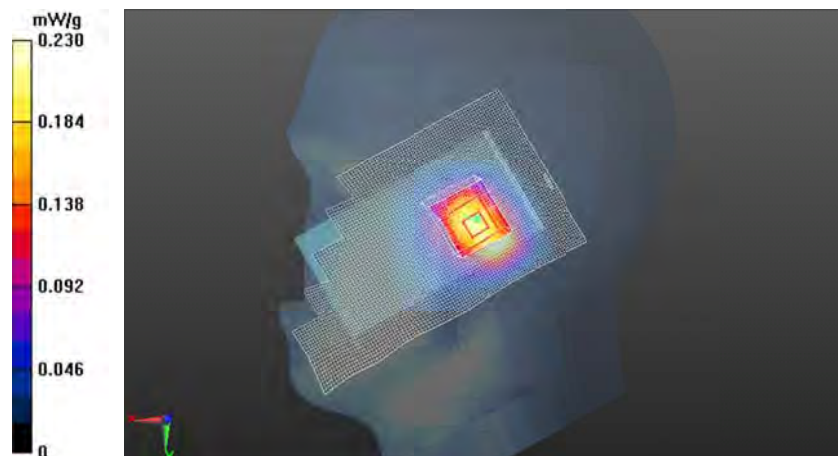
Peak SAR (extrapolated) = 0.362 mW/g

SAR(1 g) = 0.202 mW/g

SAR(10 g) = 0.111 mW/g

Power Drift = 0.01 dB

Maximum value of SAR (measured) = 0.219 mW/g



Date/Time: 2012-10-19 16:06:19

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode

Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: Head 2450; Medium Notes: Medium Temperature: t=21.7C

Medium parameters used: f = 2437 MHz; $\sigma = 1.744$ mho/m; $\epsilon_r = 38.111$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF(4.45, 4.45, 4.45); Calibrated: 2012-03-12;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn858; Calibrated: 2012-03-02
- Phantom: SAM6; Type: SAM; Serial: TP - 1426
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Cheek - Middle - BP-3L Sony/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.497 mW/g

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

Reference Value = 6.246 V/m

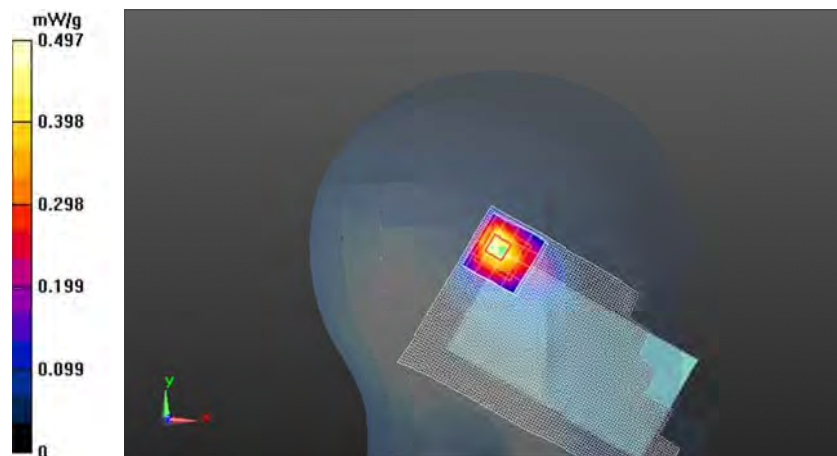
Peak SAR (extrapolated) = 0.970 mW/g

SAR(1 g) = 0.462 mW/g

SAR(10 g) = 0.221 mW/g

Power Drift = -0.09 dB

Maximum value of SAR (measured) = 0.498 mW/g



Date/Time: 2012-10-19 11:55:58 AM

DASY Configuration for Cheek - High - BP-3L LG/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3; PMF: 2.88097

Medium: Head 835 SAM10 Medium parameters used: $f = 849$ MHz; $\sigma = 0.892$ mho/m; $\epsilon_r = 41.394$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Probe: EX3DV4 - SN3838; ConvF(8.67, 8.67, 8.67); Calibrated: 2012-02-20;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
Phantom: SAM10; Type: SAM; Serial: TP - 1410
Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-19 1:04:59 PM

DASY Configuration for Cheek - Middle - BP-3L LG/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode; Frequency: 2437 MHz; Duty Cycle: 1:1; PMF: 1

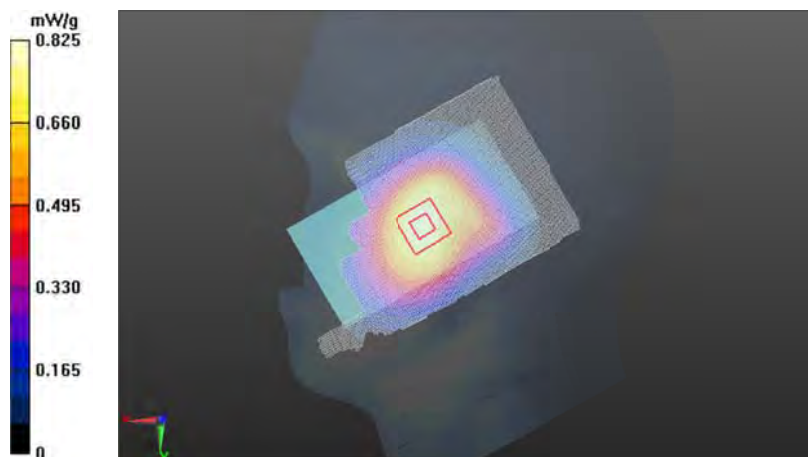
Medium: Head 2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.744$ mho/m; $\epsilon_r = 38.111$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Probe: ES3DV3 - SN3195; ConvF(4.45, 4.45, 4.45); Calibrated: 2012-03-12;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn858; Calibrated: 2012-03-02
Phantom: SAM6; Type: SAM; Serial: TP - 1426
Measurement SW: DASY4, Version 4.7 (80)

Fast SAR of Combined Scans: SAR(1 g) = 0.773 mW/g; SAR(10 g) = 0.521 mW/g

Maximum value of SAR (interpolated) = 0.825 mW/g



Note: WLAN result was scaled by a factor of 1.06 and GSM850 result was scaled by a factor of 1.08 before combining.

Date/Time: 2012-10-22 10:11:44 AM

DASY Configuration for Cheek - Middle - BP-3L LG/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: WCDMA850; Frequency: 835 MHz; Duty Cycle: 1:1; PMF: 1

Medium: Head 835 SAM10 Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.882 \text{ mho/m}$; $\epsilon_r = 41.399$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Probe: EX3DV4 - SN3838; ConvF(8.67, 8.67, 8.67); Calibrated: 2012-02-20;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1324; Calibrated: 2012-02-15

Phantom: SAM10; Type: SAM; Serial: TP - 1410

Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-19 11:05:35 AM

DASY Configuration for Cheek - Middle - BP-3L LG/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode; Frequency: 2437 MHz; Duty Cycle: 1:1; PMF: 1

Medium: Head 2450 Medium parameters used: $f = 2437 \text{ MHz}$; $\sigma = 1.744 \text{ mho/m}$; $\epsilon_r = 38.111$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Probe: ES3DV3 - SN3195; ConvF(4.45, 4.45, 4.45); Calibrated: 2012-03-12;

Sensor-Surface: 4mm (Mechanical Surface Detection)

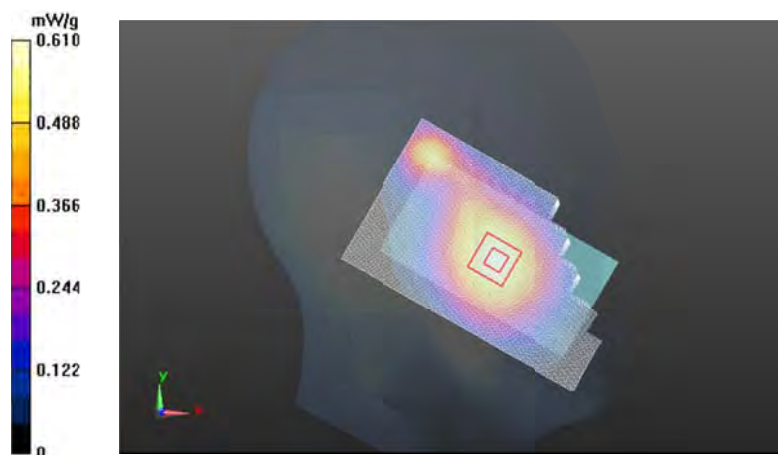
Electronics: DAE4 Sn858; Calibrated: 2012-03-02

Phantom: SAM6; Type: SAM; Serial: TP - 1426

Measurement SW: DASY4, Version 4.7 (80)

Fast SAR of Combined Scans: SAR(1 g) = 0.572 mW/g; SAR(10 g) = 0.394 mW/g

Maximum value of SAR (interpolated) = 0.610 mW/g



Note: WLAN result was scaled by a factor of 1.06 before combining with individual WCDMA850.

Date/Time: 2012-10-18 11:59:34 AM

DASY Configuration for Cheek - High - BP-3L LG/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: 2-slot GPRS1900; Frequency: 1909.8 MHz; Duty Cycle: 1:4.2; PMF: 2.04939

Medium: Head 1900 Medium parameters used: $f = 1910$ MHz; $\sigma = 1.46$ mho/m; $\epsilon_r = 39.042$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Probe: EX3DV4 - SN3838; ConvF(7.57, 7.57, 7.57); Calibrated: 2012-02-20;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
Phantom: SAM7; Type: SAM; Serial: TP - 1412
Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-19 1:04:59 PM

DASY Configuration for Cheek - Middle - BP-3L LG/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode; Frequency: 2437 MHz; Duty Cycle: 1:1; PMF: 1

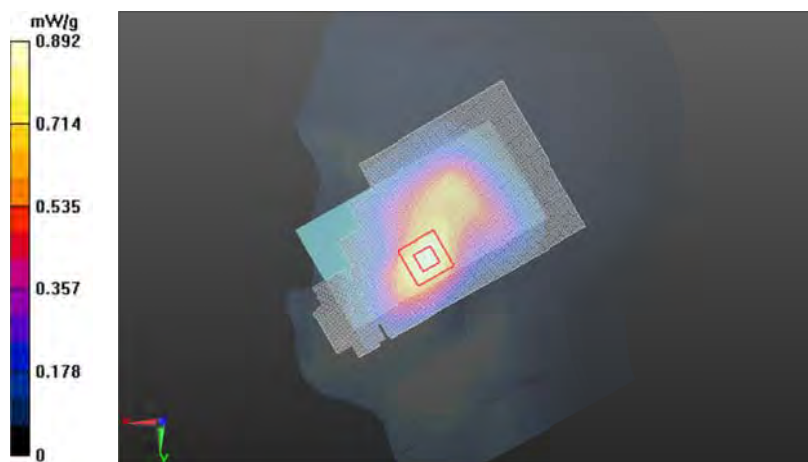
Medium: Head 2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.744$ mho/m; $\epsilon_r = 38.111$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Probe: ES3DV3 - SN3195; ConvF(4.45, 4.45, 4.45); Calibrated: 2012-03-12;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn858; Calibrated: 2012-03-02
Phantom: SAM6; Type: SAM; Serial: TP - 1426
Measurement SW: DASY4, Version 4.7 (80)

Fast SAR of Combined Scans: SAR(1 g) = 0.816 mW/g; SAR(10 g) = 0.470 mW/g

Maximum value of SAR (interpolated) = 0.892 mW/g



Note: WLAN result was scaled by a factor of 1.06 and 2-slot GPRS1900 result was scaled by a factor of 1.18 before combining.

Date/Time: 2012-10-23 10:16:05 AM

DASY Configuration for Cheek - Middle - BP-3L LG/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: WCDMA1900; Frequency: 1880 MHz; Duty Cycle: 1:1; PMF: 1

Medium: Head 1900 SAM7 Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.436 \text{ mho/m}$; $\epsilon_r = 39.436$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Probe: EX3DV4 - SN3838; ConvF(7.57, 7.57, 7.57); Calibrated: 2012-02-20;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1324; Calibrated: 2012-02-15
Phantom: SAM7; Type: SAM; Serial: TP - 1412
Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-19 11:05:35 AM

DASY Configuration for Cheek - Middle - BP-3L LG/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode; Frequency: 2437 MHz; Duty Cycle: 1:1; PMF: 1

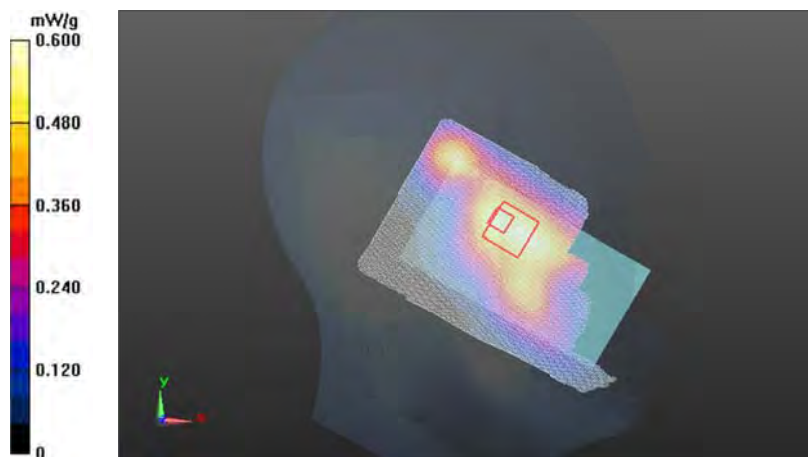
Medium: Head 2450 Medium parameters used: $f = 2437 \text{ MHz}$; $\sigma = 1.744 \text{ mho/m}$; $\epsilon_r = 38.111$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Probe: ES3DV3 - SN3195; ConvF(4.45, 4.45, 4.45); Calibrated: 2012-03-12;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn858; Calibrated: 2012-03-02
Phantom: SAM6; Type: SAM; Serial: TP - 1426
Measurement SW: DASY4, Version 4.7 (80)

Fast SAR of Combined Scans: SAR(1 g) = 0.539 mW/g; SAR(10 g) = 0.323 mW/g

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



Note: WLAN result was scaled by a factor of 1.06 before combining with individual WCDMA1900.

SAR Report

FCC_RM-923_03

Applicant: Nokia Corporation

Type: RM-923

Copyright © 2012 TCC Nokia

APPENDIX B.2: BODY-WORN MEASUREMENT SCANS

Date/Time: 2012-10-20 11:46:13

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: GSM850

Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: Body 835; Medium Notes: Medium Temperature: $t = 21.1$ C

Medium parameters used: $f = 849$ MHz; $\sigma = 0.973$ mho/m; $\epsilon_r = 54.251$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - High - No Accessory - Back Facing Phantom - BP-3L LG/Area Scan (101x61x1): Measurement grid:

$dx=15$ mm, $dy=15$ mm

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

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

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

Reference Value = 24.483 V/m

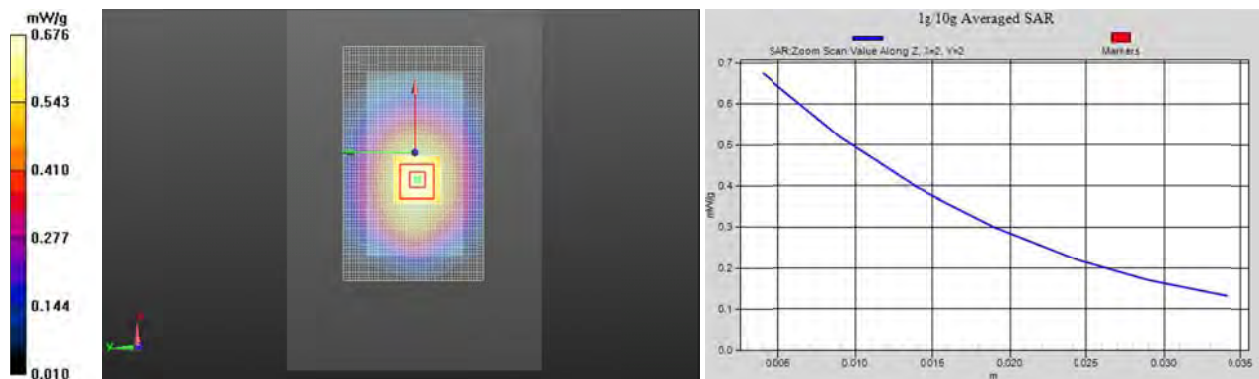
Peak SAR (extrapolated) = 0.825 mW/g

SAR(1 g) = 0.641 mW/g

SAR(10 g) = 0.472 mW/g

Power Drift = 0.01 dB

Maximum value of SAR (measured) = 0.675 mW/g



Date/Time: 2012-10-20 11:56:34

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: Body 835; Medium Notes: Medium Temperature: $t = 21.1\text{ C}$

Medium parameters used: $f = 837\text{ MHz}$; $\sigma = 0.96\text{ mho/m}$; $\epsilon_r = 54.348$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - WH-902 - Back Facing Phantom - BP-3L LG/Area Scan (101x61x1): Measurement grid:

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

Maximum value of SAR (interpolated) = 0.446 mW/g

Body - Middle - WH-902 - Back Facing Phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 18.574 V/m

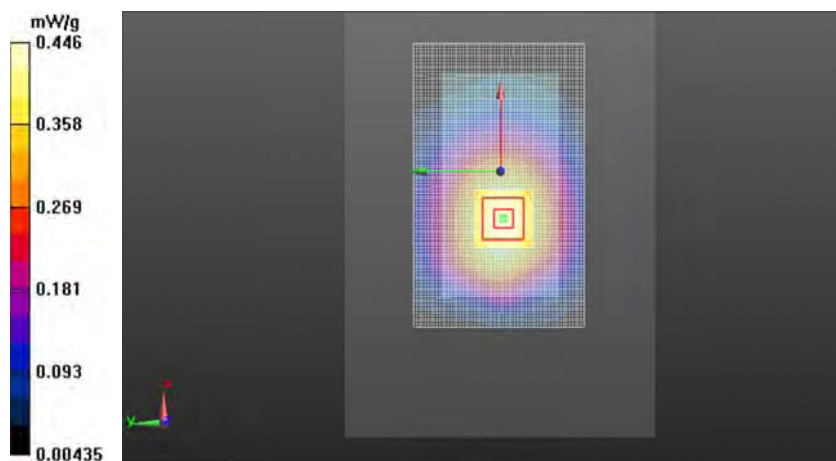
Peak SAR (extrapolated) = 0.551 mW/g

SAR(1 g) = 0.424 mW/g

SAR(10 g) = 0.311 mW/g

Power Drift = 0.03 dB

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



Date/Time: 2012-10-20 10:47:56

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: Body 835; Medium Notes: Medium Temperature: $t = 21.1\text{ C}$

Medium parameters used: $f = 837\text{ MHz}$; $\sigma = 0.96\text{ mho/m}$; $\epsilon_r = 54.348$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Display Facing Phantom - BP-3L LG/Area Scan (101x61x1): Measurement grid:

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

Maximum value of SAR (interpolated) = 0.398 mW/g

Body - Middle - No Accessory - Display Facing Phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement

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

Reference Value = 19.738 V/m

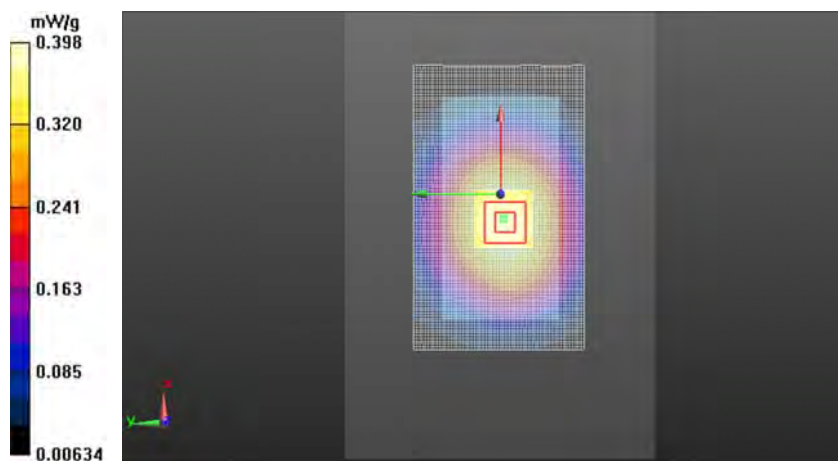
Peak SAR (extrapolated) = 0.489 mW/g

SAR(1 g) = 0.385 mW/g

SAR(10 g) = 0.288 mW/g

Power Drift = -0.03 dB

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



Date/Time: 2012-10-20 11:01:00

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: Body 835; Medium Notes: Medium Temperature: $t = 21.1$ C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 54.348$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - WH-902 - Display Facing Phantom - BP-3L LG/Area Scan (101x61x1): Measurement grid:

$dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 0.273 mW/g

Body - Middle - WH-902 - Display Facing Phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 15.289 V/m

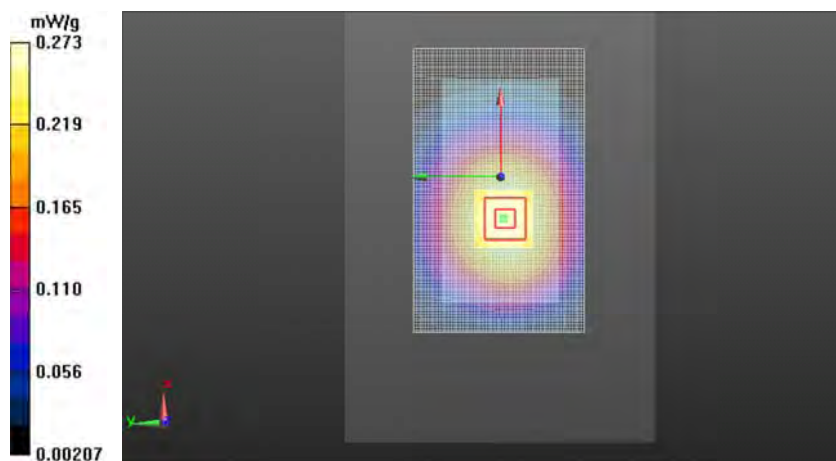
Peak SAR (extrapolated) = 0.329 mW/g

SAR(1 g) = 0.260 mW/g

SAR(10 g) = 0.195 mW/g

Power Drift = 0.01 dB

Maximum value of SAR (measured) = 0.274 mW/g



Date/Time: 2012-10-18 10:35:07

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Body 835; Medium Notes: Medium Temperature: $t = 21.5\text{ C}$

Medium parameters used: $f = 835\text{ MHz}$; $\sigma = 0.964\text{ mho/m}$; $\epsilon_r = 54.438$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Back Facing Phantom - BP-3L LG/Area Scan (101x61x1): Measurement grid:

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

Maximum value of SAR (interpolated) = 0.650 mW/g

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

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

Reference Value = 24.960 V/m

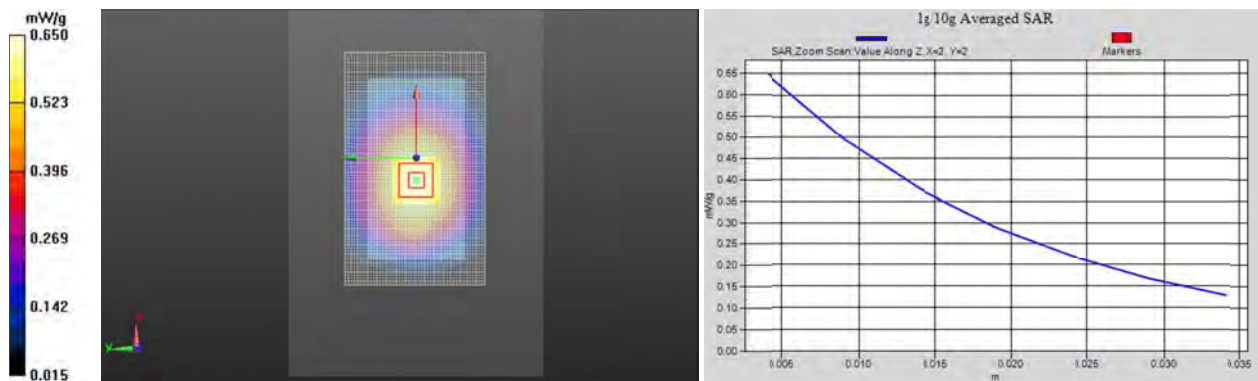
Peak SAR (extrapolated) = 0.792 mW/g

SAR(1 g) = 0.614 mW/g

SAR(10 g) = 0.453 mW/g

Power Drift = -0.07 dB

Maximum value of SAR (measured) = 0.649 mW/g



SAR Report

FCC_RM-923_03

Applicant: Nokia Corporation

Type: RM-923

Copyright © 2012 TCC Nokia

Date/Time: 2012-10-18 10:45:22

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Body 835; Medium Notes: Medium Temperature: $t = 21.5\text{ C}$

Medium parameters used: $f = 835\text{ MHz}$; $\sigma = 0.964\text{ mho/m}$; $\epsilon_r = 54.438$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - WH-902 - Back Facing Phantom - BP-3L LG/Area Scan (101x61x1): Measurement grid:

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

Maximum value of SAR (interpolated) = 0.567 mW/g

Body - Middle - WH-902 - Back Facing Phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 22.488 V/m

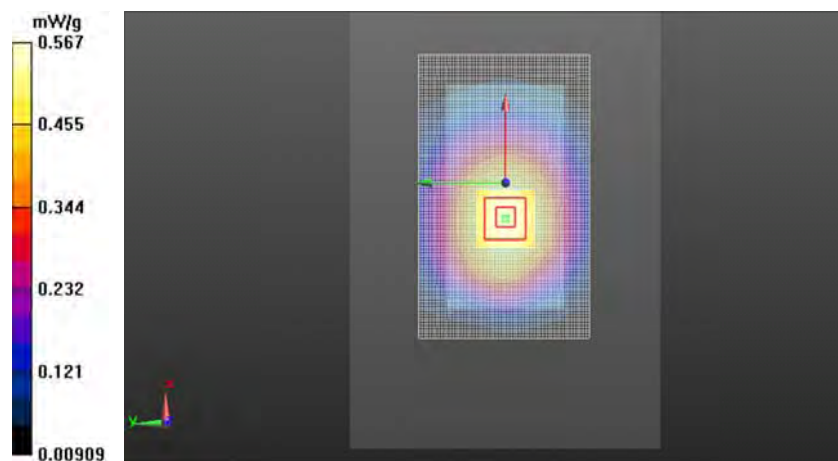
Peak SAR (extrapolated) = 0.699 mW/g

SAR(1 g) = 0.539 mW/g

SAR(10 g) = 0.397 mW/g

Power Drift = 0.03 dB

Maximum value of SAR (measured) = 0.569 mW/g



Date/Time: 2012-10-18 10:07:28

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Body 835; Medium Notes: Medium Temperature: $t = 21.5\text{ C}$

Medium parameters used: $f = 835\text{ MHz}$; $\sigma = 0.964\text{ mho/m}$; $\epsilon_r = 54.438$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Display Facing Phantom - BP-3L LG/Area Scan (101x61x1): Measurement grid:
 $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.519 mW/g

Body - Middle - No Accessory - Display Facing Phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 22.752 V/m

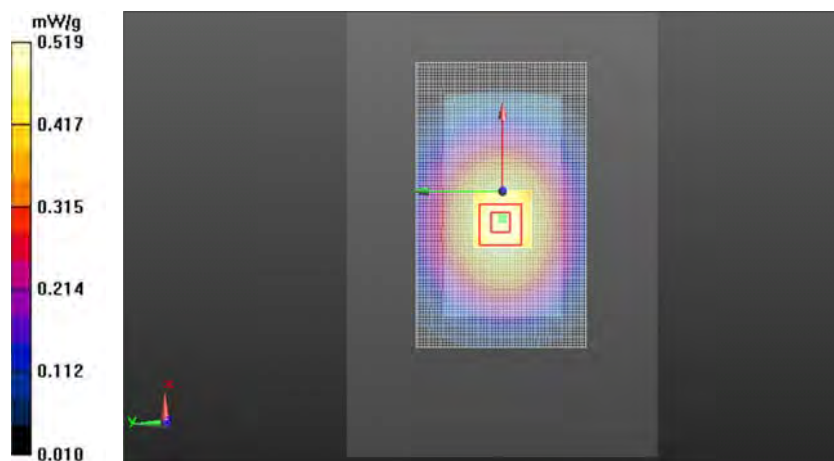
Peak SAR (extrapolated) = 0.622 mW/g

SAR(1 g) = 0.494 mW/g

SAR(10 g) = 0.370 mW/g

Power Drift = -0.26 dB

Maximum value of SAR (measured) = 0.531 mW/g



Date/Time: 2012-10-18 10:20:53

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Body 835; Medium Notes: Medium Temperature: $t = 21.5\text{ C}$

Medium parameters used: $f = 835\text{ MHz}$; $\sigma = 0.964\text{ mho/m}$; $\epsilon_r = 54.438$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - WH-902 - Display Facing Phantom - BP-3L LG/Area Scan (101x61x1): Measurement grid:

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

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

Body - Middle - WH-902 - Display Facing Phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 19.088 V/m

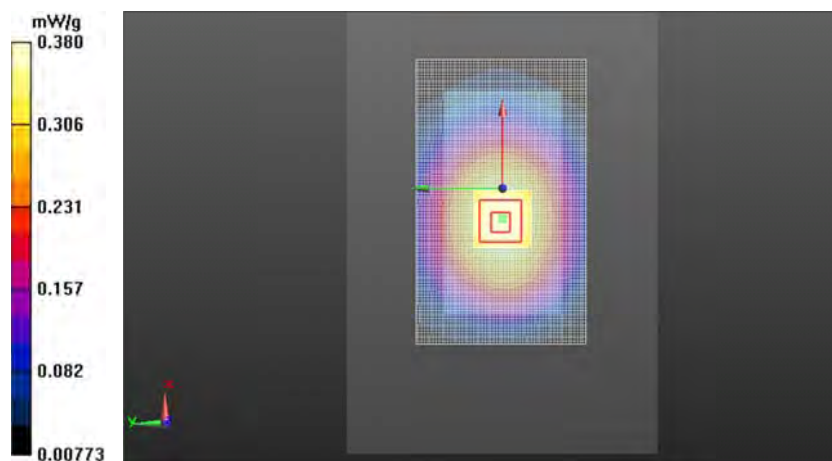
Peak SAR (extrapolated) = 0.466 mW/g

SAR(1 g) = 0.366 mW/g

SAR(10 g) = 0.274 mW/g

Power Drift = -0.02 dB

Maximum value of SAR (measured) = 0.385 mW/g



Date/Time: 2012-10-20 13:08:14

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: GSM850

Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: Body 835; Medium Notes: Medium Temperature: $t = 21.1\text{ C}$

Medium parameters used: $f = 849\text{ MHz}$; $\sigma = 0.973\text{ mho/m}$; $\epsilon_r = 54.251$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - High - No Accessory - Back Facing Phantom - BP-3L Sony/Area Scan (101x61x1): Measurement grid:

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

Maximum value of SAR (interpolated) = 0.659 mW/g

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

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

Reference Value = 24.378 V/m

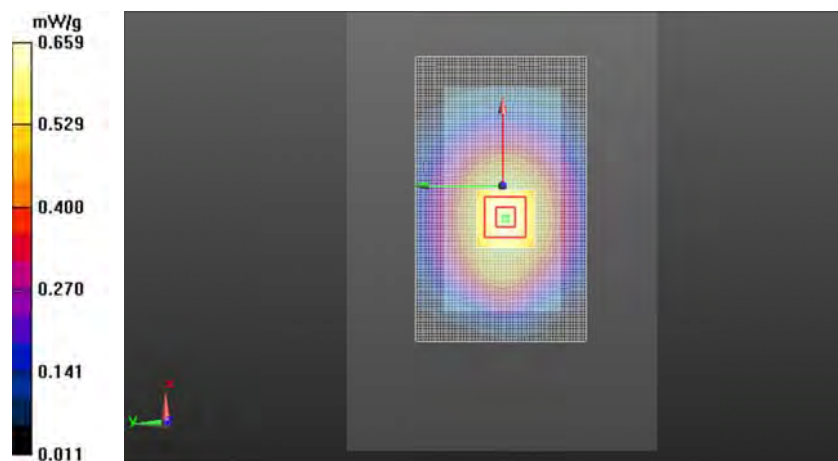
Peak SAR (extrapolated) = 0.817 mW/g

SAR(1 g) = 0.627 mW/g

SAR(10 g) = 0.460 mW/g

Power Drift = 0.01 dB

Maximum value of SAR (measured) = 0.661 mW/g



Date/Time: 2012-10-22 10:14:09

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: Body 1900; Medium Notes: Medium Temperature: t=21.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.515$ mho/m; $\epsilon_r = 52.114$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Back Facing Phantom - BP-3L LG/Area Scan (101x61x1): Measurement grid:

dx=15mm, dy=15mm

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

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

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

Reference Value = 5.633 V/m

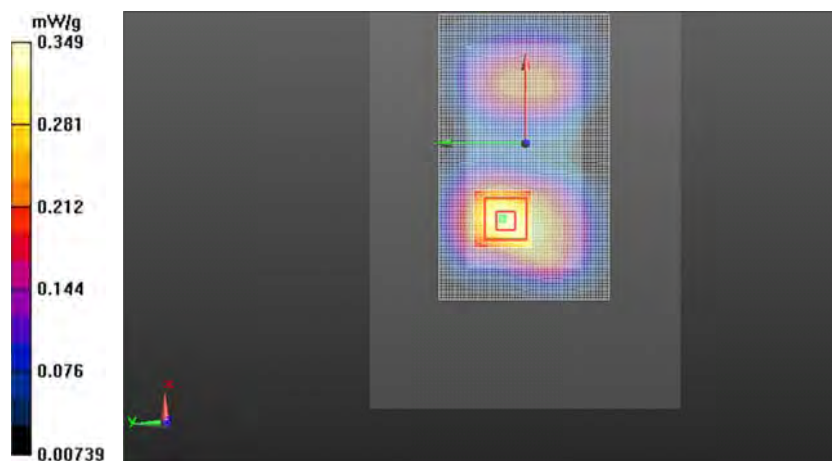
Peak SAR (extrapolated) = 0.516 mW/g

SAR(1 g) = 0.319 mW/g

SAR(10 g) = 0.198 mW/g

Power Drift = 0.02 dB

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



Date/Time: 2012-10-22 11:11:30

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: Body 1900; Medium Notes: Medium Temperature: t=21.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.515$ mho/m; $\epsilon_r = 52.114$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - WH-902 - Back Facing Phantom - BP-3L LG/Area Scan (101x61x1): Measurement grid:

dx=15mm, dy=15mm

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

Body - Middle - WH-902 - Back Facing Phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 7.105 V/m

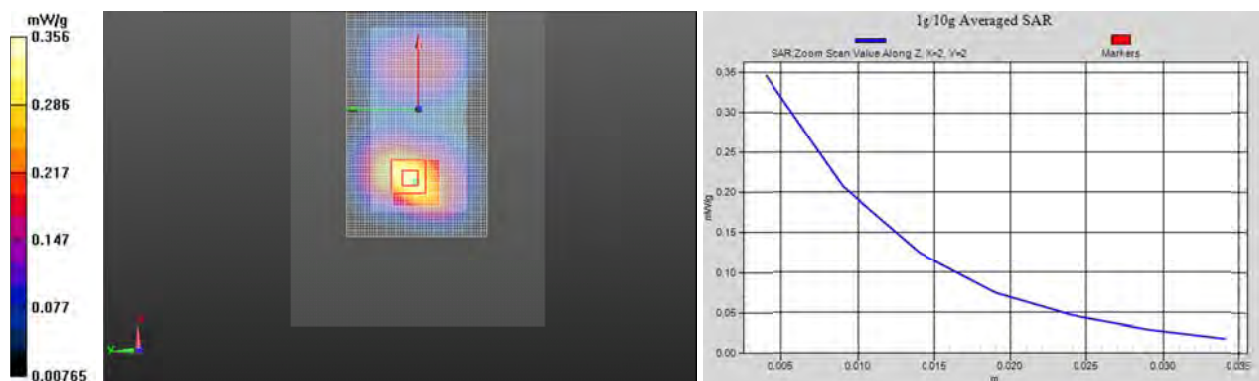
Peak SAR (extrapolated) = 0.536 mW/g

SAR(1 g) = 0.321 mW/g

SAR(10 g) = 0.193 mW/g

Power Drift = -0.16 dB

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



SAR Report

FCC_RM-923_03

Applicant: Nokia Corporation

Type: RM-923

Copyright © 2012 TCC Nokia

Date/Time: 2012-10-22 11:29:07

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: Body 1900; Medium Notes: Medium Temperature: $t=21.3$

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.515$ mho/m; $\epsilon_r = 52.114$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Display Facing Phantom - BP-3L LG/Area Scan (101x61x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 0.303 mW/g

Body - Middle - No Accessory - Display Facing Phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm

Reference Value = 6.332 V/m

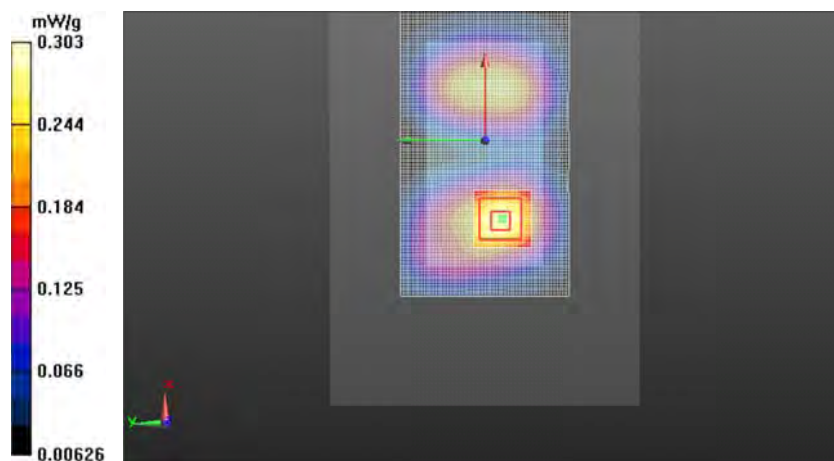
Peak SAR (extrapolated) = 0.422 mW/g

SAR(1 g) = 0.273 mW/g

SAR(10 g) = 0.169 mW/g

Power Drift = 0.09 dB

Maximum value of SAR (measured) = 0.294 mW/g



Date/Time: 2012-10-22 11:43:42

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: Body 1900; Medium Notes: Medium Temperature: t=21.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.515$ mho/m; $\epsilon_r = 52.114$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - WH-902 - Display Facing Phantom - BP-3L LG/Area Scan (101x61x1): Measurement grid:

dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.298 mW/g

Body - Middle - WH-902 - Display Facing Phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 7.590 V/m

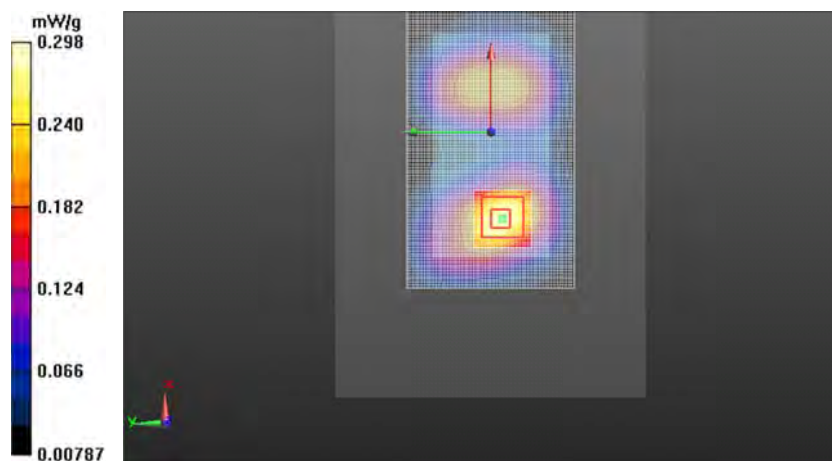
Peak SAR (extrapolated) = 0.430 mW/g

SAR(1 g) = 0.270 mW/g

SAR(10 g) = 0.165 mW/g

Power Drift = -0.04 dB

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



Date/Time: 2012-10-22 14:11:59

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: WCDMA1900

Frequency: 1907.6 MHz; Duty Cycle: 1:1

Medium: Body 1900; Medium Notes: Medium Temperature: t=21.3

Medium parameters used: $f = 1908$ MHz; $\sigma = 1.539$ mho/m; $\epsilon_r = 52.07$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - High - No Accessory - Back Facing Phantom - BP-3L LG/Area Scan (101x61x1): Measurement grid:

dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.545 mW/g

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

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

Reference Value = 7.589 V/m

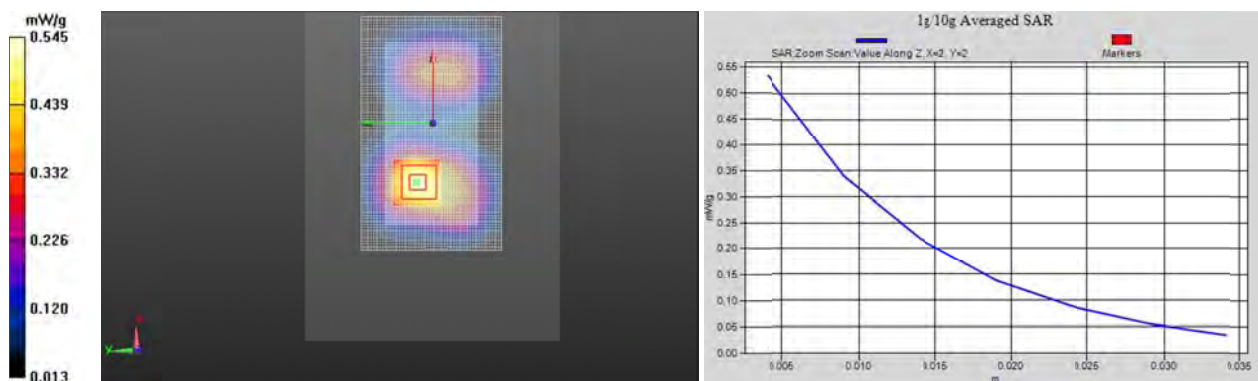
Peak SAR (extrapolated) = 0.770 mW/g

SAR(1 g) = 0.495 mW/g

SAR(10 g) = 0.309 mW/g

Power Drift = 0.03 dB

Maximum value of SAR (measured) = 0.533 mW/g



SAR Report

FCC_RM-923_03

Applicant: Nokia Corporation

Type: RM-923

Copyright © 2012 TCC Nokia

Date/Time: 2012-10-22 13:47:32

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: WCDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: Body 1900; Medium Notes: Medium Temperature: t=21.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.515$ mho/m; $\epsilon_r = 52.114$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - WH-902 - Back Facing Phantom - BP-3L LG/Area Scan (101x61x1): Measurement grid:

dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.504 mW/g

Body - Middle - WH-902 - Back Facing Phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 8.723 V/m

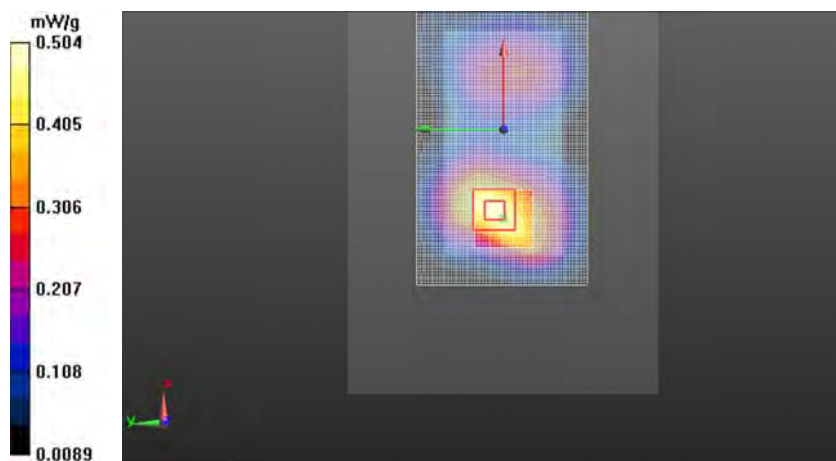
Peak SAR (extrapolated) = 0.761 mW/g

SAR(1 g) = 0.459 mW/g

SAR(10 g) = 0.280 mW/g

Power Drift = -0.01 dB

Maximum value of SAR (measured) = 0.492 mW/g



Date/Time: 2012-10-22 13:08:40

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: WCDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: Body 1900; Medium Notes: Medium Temperature: $t=21.3$

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.515$ mho/m; $\epsilon_r = 52.114$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Display Facing Phantom - BP-3L LG/Area Scan (101x61x1): Measurement grid:
dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.438 mW/g

Body - Middle - No Accessory - Display Facing Phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 7.134 V/m

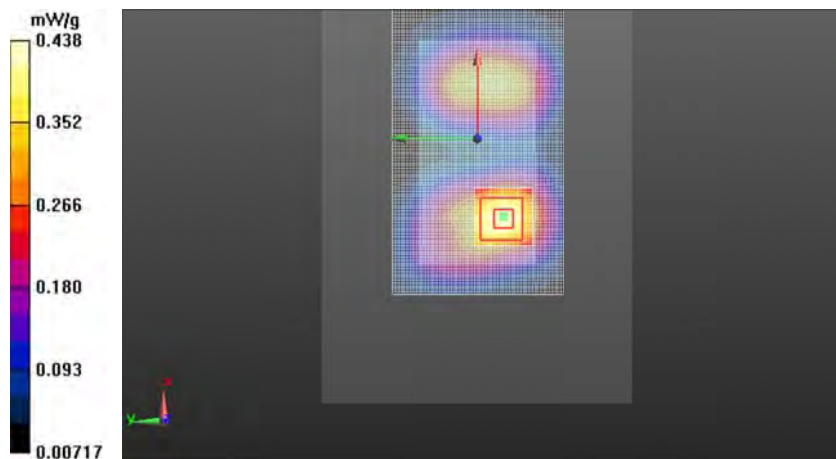
Peak SAR (extrapolated) = 0.632 mW/g

SAR(1 g) = 0.405 mW/g

SAR(10 g) = 0.250 mW/g

Power Drift = 0.03 dB

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



Date/Time: 2012-10-22 13:22:03

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: WCDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: Body 1900; Medium Notes: Medium Temperature: t=21.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.515$ mho/m; $\epsilon_r = 52.114$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - WH-902 - Display Facing Phantom - BP-3L LG/Area Scan (101x61x1): Measurement grid:

dx=15mm, dy=15mm

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

Body - Middle - WH-902 - Display Facing Phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 9.572 V/m

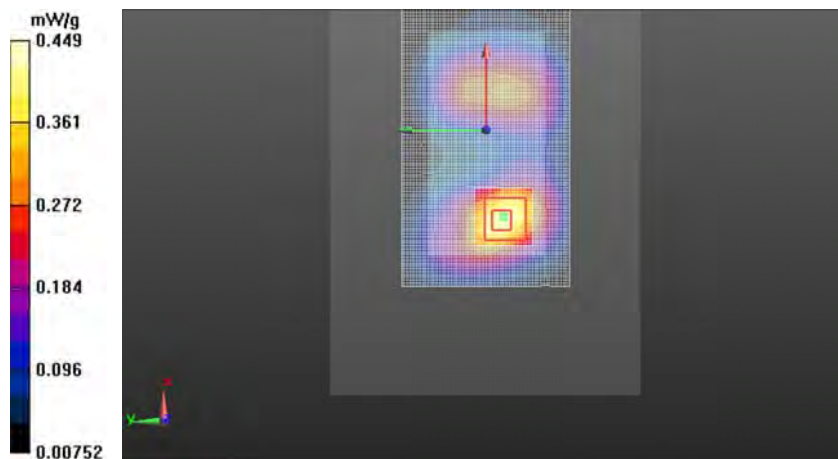
Peak SAR (extrapolated) = 0.663 mW/g

SAR(1 g) = 0.410 mW/g

SAR(10 g) = 0.247 mW/g

Power Drift = -0.05 dB

Maximum value of SAR (measured) = 0.442 mW/g



Date/Time: 2012-10-22 14:52:09

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: WCDMA1900

Frequency: 1907.6 MHz; Duty Cycle: 1:1

Medium: Body 1900; Medium Notes: Medium Temperature: t=21.3

Medium parameters used: $f = 1908$ MHz; $\sigma = 1.539$ mho/m; $\epsilon_r = 52.07$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - High - No Accessory - Back Facing Phantom - BP-3L Sony/Area Scan (101x61x1): Measurement grid:

dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.519 mW/g

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

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

Reference Value = 5.203 V/m

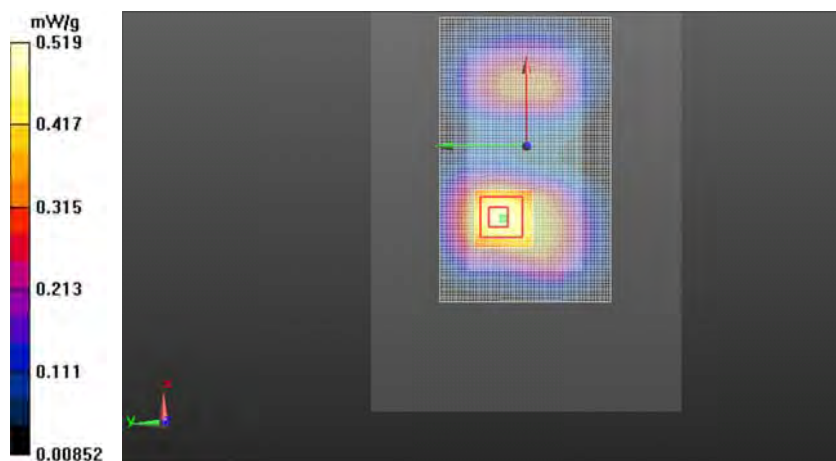
Peak SAR (extrapolated) = 0.760 mW/g

SAR(1 g) = 0.486 mW/g

SAR(10 g) = 0.302 mW/g

Power Drift = -0.13 dB

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



Date/Time: 2012-10-23 10:59:16

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode

Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: t=21.4C

Medium parameters used: $f = 2437$ MHz; $\sigma = 1.848$ mho/m; $\epsilon_r = 51.546$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF(4.31, 4.31, 4.31); Calibrated: 2012-03-12;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn858; Calibrated: 2012-03-02
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Back Facing Phantom - BP-3L LG/Area Scan (101x61x1): Measurement grid:

dx=15mm, dy=15mm

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

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

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

Reference Value = 3.376 V/m

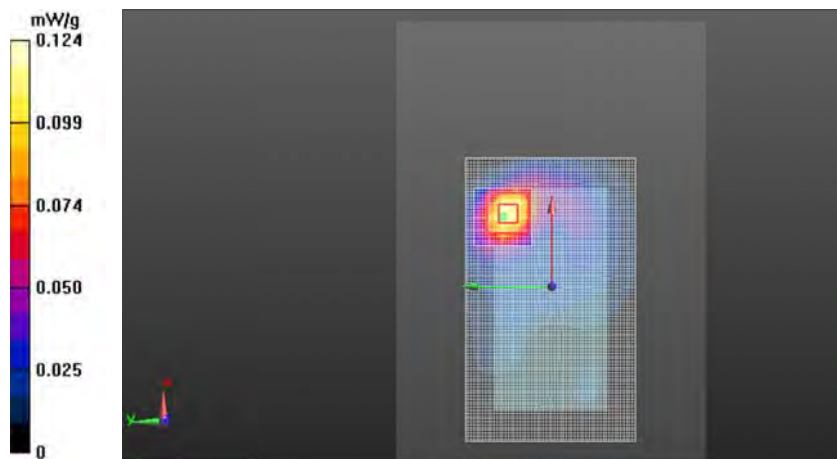
Peak SAR (extrapolated) = 0.230 mW/g

SAR(1 g) = 0.116 mW/g

SAR(10 g) = 0.056 mW/g

Power Drift = 0.35 dB

Maximum value of SAR (measured) = 0.126 mW/g



Date/Time: 2012-10-23 11:32:06

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode

Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: t=21.4C

Medium parameters used: $f = 2462$ MHz; $\sigma = 1.884$ mho/m; $\epsilon_r = 51.549$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF(4.31, 4.31, 4.31); Calibrated: 2012-03-12;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn858; Calibrated: 2012-03-02
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - High - WH-902 - Back Facing Phantom - BP-3L LG/Area Scan (101x61x1): Measurement grid: dx=15mm, dy=15mm

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

Body - High - WH-902 - Back Facing Phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 3.511 V/m

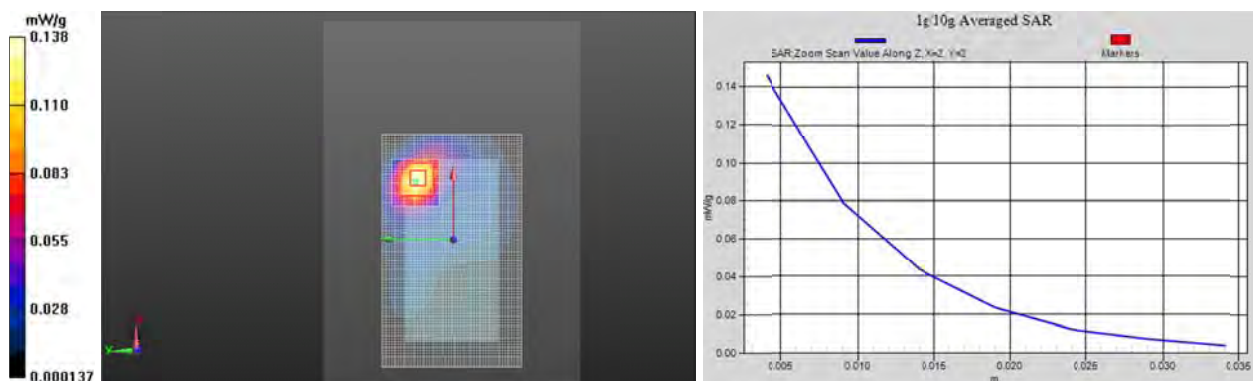
Peak SAR (extrapolated) = 0.261 mW/g

SAR(1 g) = 0.132 mW/g

SAR(10 g) = 0.064 mW/g

Power Drift = 0.15 dB

Maximum value of SAR (measured) = 0.146 mW/g



SAR Report

FCC_RM-923_03

Applicant: Nokia Corporation

Type: RM-923

Copyright © 2012 TCC Nokia

Date/Time: 2012-10-23 10:30:58

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode

Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: t=21.4C

Medium parameters used: f = 2437 MHz; σ = 1.848 mho/m; ϵ_r = 51.546; ρ = 1000 kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF(4.31, 4.31, 4.31); Calibrated: 2012-03-12;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn858; Calibrated: 2012-03-02
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Display Facing Phantom - BP-3L LG/Area Scan (101x61x1): Measurement grid:

dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.0454 mW/g

Body - Middle - No Accessory - Display Facing Phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement

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

Reference Value = 3.929 V/m

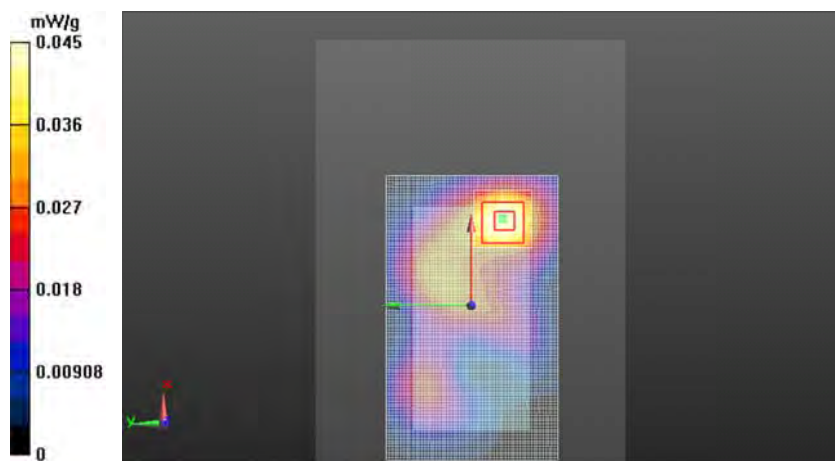
Peak SAR (extrapolated) = 0.084 mW/g

SAR(1 g) = 0.045 mW/g

SAR(10 g) = 0.025 mW/g

Power Drift = 0.42 dB

Maximum value of SAR (measured) = 0.0491 mW/g



Date/Time: 2012-10-23 10:44:30

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode

Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: t=21.4C

Medium parameters used: $f = 2437$ MHz; $\sigma = 1.848$ mho/m; $\epsilon_r = 51.546$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF(4.31, 4.31, 4.31); Calibrated: 2012-03-12;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn858; Calibrated: 2012-03-02
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - WH-902 - Display Facing Phantom - BP-3L LG/Area Scan (101x61x1): Measurement grid:

dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.0424 mW/g

Body - Middle - WH-902 - Display Facing Phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 3.684 V/m

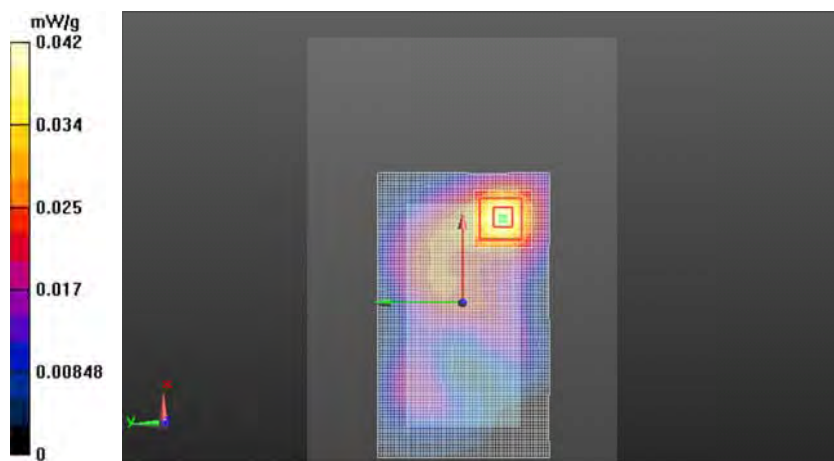
Peak SAR (extrapolated) = 0.073 mW/g

SAR(1 g) = 0.039 mW/g

SAR(10 g) = 0.021 mW/g

Power Drift = 0.05 dB

Maximum value of SAR (measured) = 0.0420 mW/g



Date/Time: 2012-10-23 16:06:21

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode

Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: t=21.4C

Medium parameters used: $f = 2462$ MHz; $\sigma = 1.884$ mho/m; $\epsilon_r = 51.549$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF(4.31, 4.31, 4.31); Calibrated: 2012-03-12;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn858; Calibrated: 2012-03-02
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - High - WH-902 - Back Facing Phantom - BP-3L Sony/Area Scan (101x61x1): Measurement grid:

dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.131 mW/g

Body - High - WH-902 - Back Facing Phantom - BP-3L Sony/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 3.358 V/m

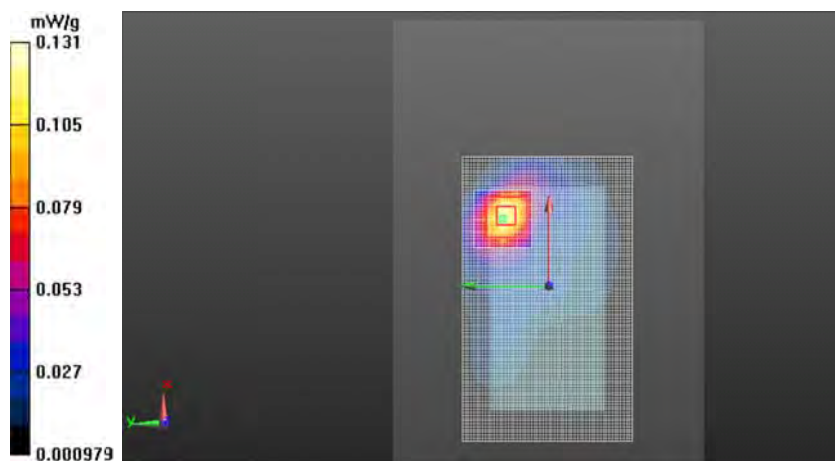
Peak SAR (extrapolated) = 0.232 mW/g

SAR(1 g) = 0.118 mW/g

SAR(10 g) = 0.058 mW/g

Power Drift = 0.30 dB

Maximum value of SAR (measured) = 0.131 mW/g



Date/Time: 2012-10-20 11:46:13 AM

DASY Configuration for Body - High - No Accessory - Back Facing Phantom - BP-3L LG/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3; PMF: 2.88097

Medium: Body 835 Medium parameters used: $f = 849$ MHz; $\sigma = 0.973$ mho/m; $\epsilon_r = 54.251$; $\rho = 1000$ kg/m³

Phantom section: Center Section

Probe: EX3DV4 - SN3836; ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;

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

Electronics: DAE4 Sn1319; Calibrated: 2012-02-15

Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130

Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-23 10:59:16 AM

DASY Configuration for Body - Middle - No Accessory - Back Facing Phantom - BP-3L LG/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode; Frequency: 2437 MHz; Duty Cycle: 1:1; PMF: 1

Medium: Body 2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.848$ mho/m; $\epsilon_r = 51.546$; $\rho = 1000$ kg/m³

Phantom section: Center Section

Probe: ES3DV3 - SN3195; ConvF(4.31, 4.31, 4.31); Calibrated: 2012-03-12;

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

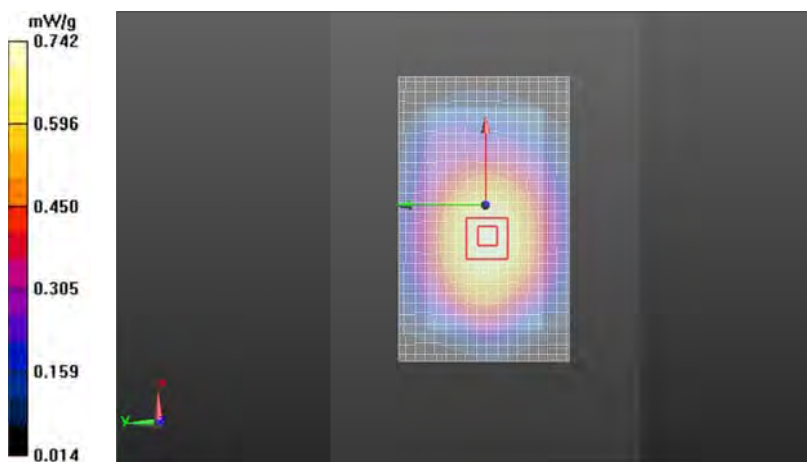
Electronics: DAE4 Sn858; Calibrated: 2012-03-02

Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130

Measurement SW: DASY4, Version 4.7 (80)

Fast SAR of Combined Scans: SAR(1 g) = 0.701 mW/g; SAR(10 g) = 0.495 mW/g

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



Note: WLAN result was scaled by a factor of 1.06 and GSM850 result was scaled by a factor of 1.08 before combining.

Date/Time: 2012-10-18 10:35:07 AM

DASY Configuration for Body - Middle - No Accessory - Back Facing Phantom - BP-3L LG/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: WCDMA850; Frequency: 835 MHz; Duty Cycle: 1:1; PMF: 1

Medium: Body 835 Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.964 \text{ mho/m}$; $\epsilon_r = 54.438$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Center Section

Probe: EX3DV4 - SN3836; ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;

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

Electronics: DAE4 Sn1319; Calibrated: 2012-02-15

Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130

Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-23 10:59:16 AM

DASY Configuration for Body - Middle - No Accessory - Back Facing Phantom - BP-3L LG/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode; Frequency: 2437 MHz; Duty Cycle: 1:1; PMF: 1

Medium: Body 2450 Medium parameters used: $f = 2437 \text{ MHz}$; $\sigma = 1.848 \text{ mho/m}$; $\epsilon_r = 51.546$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Center Section

Probe: ES3DV3 - SN3195; ConvF(4.31, 4.31, 4.31); Calibrated: 2012-03-12;

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

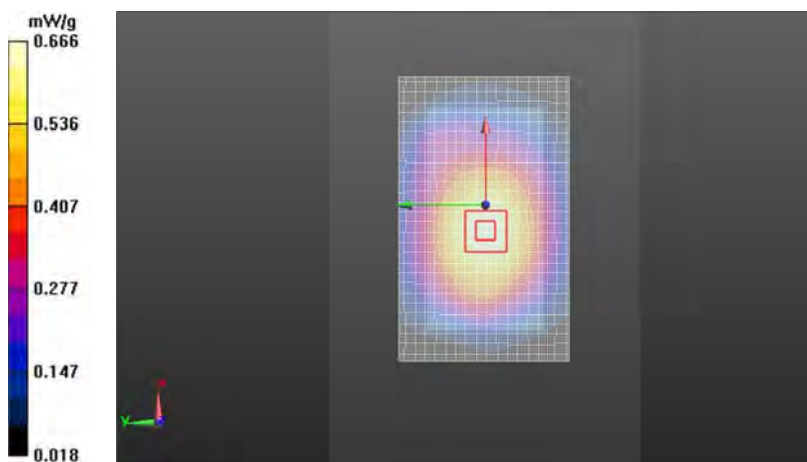
Electronics: DAE4 Sn858; Calibrated: 2012-03-02

Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130

Measurement SW: DASY4, Version 4.7 (80)

Fast SAR of Combined Scans: SAR(1 g) = 0.629 mW/g; SAR(10 g) = 0.445 mW/g

Maximum value of SAR (interpolated) = 0.666 mW/g



Note: WLAN result was scaled by a factor of 1.06 before combining with individual WCDMA850.

Date/Time: 2012-10-22 11:11:30 AM

DASY Configuration for Body - Middle - WH-902 - Back Facing Phantom - BP-3L LG/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: 2-slot GPRS1900; Frequency: 1880 MHz; Duty Cycle: 1:4.2; PMF: 2.04939

Medium: Body 1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.515$ mho/m; $\epsilon_r = 52.114$; $\rho = 1000$ kg/m³

Phantom section: Center Section

Probe: EX3DV4 - SN3836; ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1319; Calibrated: 2012-02-15

Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130

Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-23 11:32:06 AM

DASY Configuration for Body - High - WH-902 - Back Facing Phantom - BP-3L LG/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode; Frequency: 2462 MHz; Duty Cycle: 1:1; PMF: 1

Medium: Body 2450 Medium parameters used: $f = 2462$ MHz; $\sigma = 1.884$ mho/m; $\epsilon_r = 51.549$; $\rho = 1000$ kg/m³

Phantom section: Center Section

Probe: ES3DV3 - SN3195; ConvF(4.31, 4.31, 4.31); Calibrated: 2012-03-12;

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

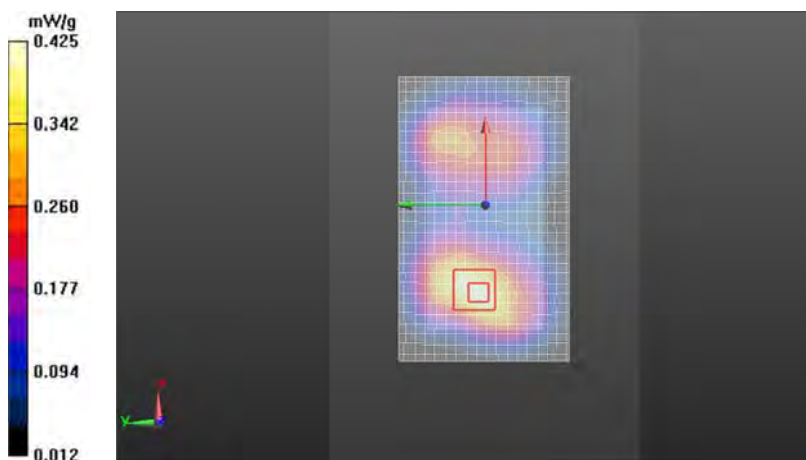
Electronics: DAE4 Sn858; Calibrated: 2012-03-02

Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130

Measurement SW: DASY4, Version 4.7 (80)

Fast SAR of Combined Scans: SAR(1 g) = 0.386 mW/g; SAR(10 g) = 0.230 mW/g

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



Note: WLAN result was scaled by a factor of 1.06 and 2-slot GPRS1900 result was scaled by a factor of 1.18 before combining.

Date/Time: 2012-10-22 2:11:59 PM

DASY Configuration for Body - High - No Accessory - Back Facing Phantom - BP-3L LG/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: WCDMA1900; Frequency: 1907.6 MHz; Duty Cycle: 1:1; PMF: 1

Medium: Body 1900 Medium parameters used: $f = 1908$ MHz; $\sigma = 1.539$ mho/m; $\epsilon_r = 52.07$; $\rho = 1000$ kg/m³

Phantom section: Center Section

Probe: EX3DV4 - SN3836; ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-23 10:59:16 AM

DASY Configuration for Body - Middle - No Accessory - Back Facing Phantom - BP-3L LG/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode; Frequency: 2437 MHz; Duty Cycle: 1:1; PMF: 1

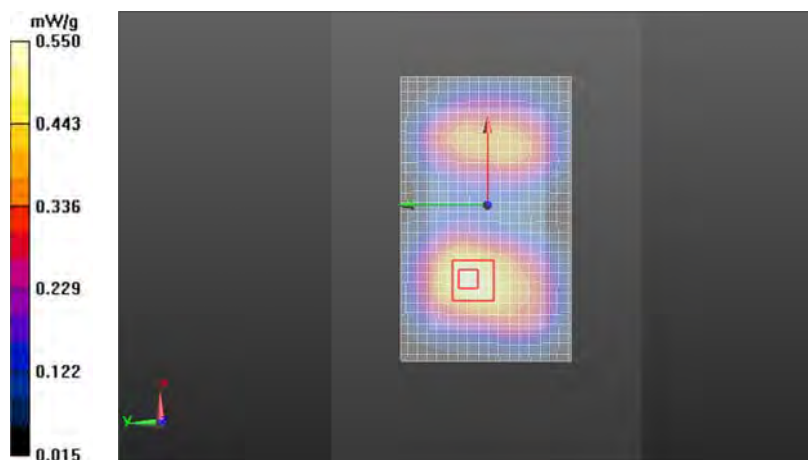
Medium: Body 2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.848$ mho/m; $\epsilon_r = 51.546$; $\rho = 1000$ kg/m³

Phantom section: Center Section

Probe: ES3DV3 - SN3195; ConvF(4.31, 4.31, 4.31); Calibrated: 2012-03-12;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn858; Calibrated: 2012-03-02
Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
Measurement SW: DASY4, Version 4.7 (80)

Fast SAR of Combined Scans: SAR(1 g) = 0.504 mW/g; SAR(10 g) = 0.304 mW/g

Maximum value of SAR (interpolated) = 0.550 mW/g



Note: WLAN result was scaled by a factor of 1.06 before combining with individual WCDMA1900.

APPENDIX B.3: WIRELESS ROUTER MEASUREMENT SCANS

Date/Time: 2012-10-20 12:28:45

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: GSM850

Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: Body 835; Medium Notes: Medium Temperature: $t = 21.1\text{ C}$

Medium parameters used: $f = 849\text{ MHz}$; $\sigma = 0.973\text{ mho/m}$; $\epsilon_r = 54.251$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - High - No Accessory - Spacer 10mm - Back facing phantom - BP-3L LG/Area Scan (101x61x1):

Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.967 mW/g

Body - High - No Accessory - Spacer 10mm - Back facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 28.777 V/m

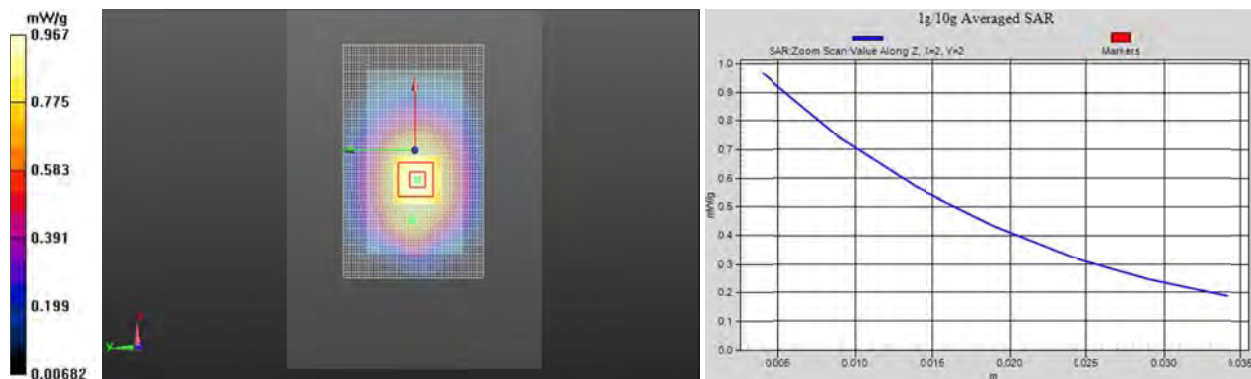
Peak SAR (extrapolated) = 1.162 mW/g

SAR(1 g) = 0.911 mW/g

SAR(10 g) = 0.670 mW/g

Power Drift = -0.03 dB

Maximum value of SAR (measured) = 0.967 mW/g



Date/Time: 2012-10-20 14:44:47

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: Body 835; Medium Notes: Medium Temperature: $t = 21.1\text{ C}$

Medium parameters used: $f = 837\text{ MHz}$; $\sigma = 0.96\text{ mho/m}$; $\epsilon_r = 54.348$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Spacer 10mm - Top facing phantom - BP-3L LG/Area Scan (61x31x1):

Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.0191 mW/g

Body - Middle - No Accessory - Spacer 10mm - Top facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 3.146 V/m

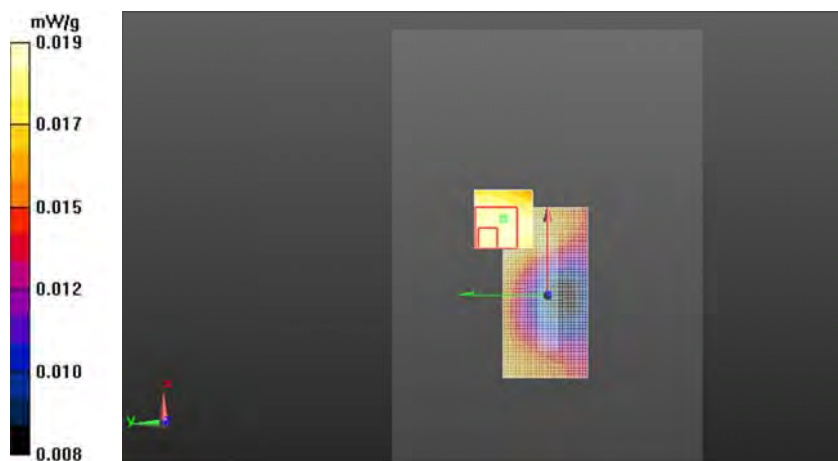
Peak SAR (extrapolated) = 0.026 mW/g

SAR(1 g) = 0.019 mW/g

SAR(10 g) = 0.014 mW/g

Power Drift = 0.05 dB

Maximum value of SAR (measured) = 0.0202 mW/g



Date/Time: 2012-10-20 15:00:57

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: Body 835; Medium Notes: Medium Temperature: $t = 21.1$ C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 54.348$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Spacer 10mm - Bottom facing phantom - BP-3L LG/Area Scan (61x31x1):

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

Maximum value of SAR (interpolated) = 0.0312 mW/g

Body - Middle - No Accessory - Spacer 10mm - Bottom facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 5.391 V/m

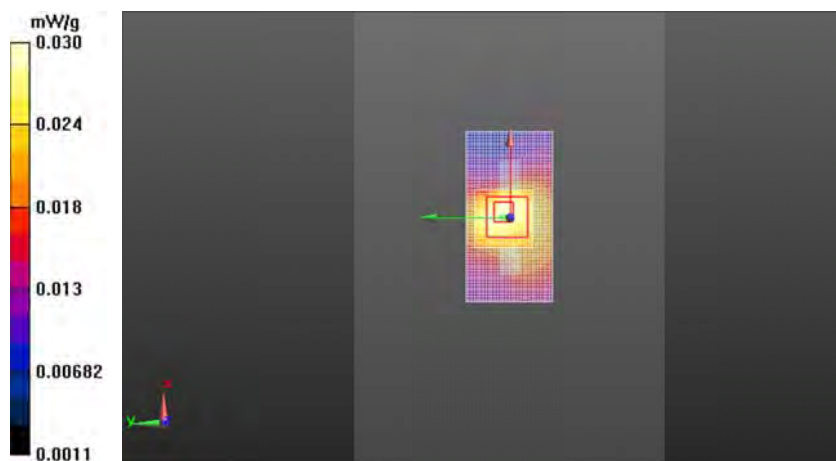
Peak SAR (extrapolated) = 0.048 mW/g

SAR(1 g) = 0.028 mW/g

SAR(10 g) = 0.018 mW/g

Power Drift = 0.08 dB

Maximum value of SAR (measured) = 0.0297 mW/g



Date/Time: 2012-10-20 14:21:49

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: Body 835; Medium Notes: Medium Temperature: $t = 21.1$ C

Medium parameters used: $f = 837$ MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 54.348$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Spacer 10mm - Left facing phantom - BP-3L LG/Area Scan (101x31x1):

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

Maximum value of SAR (interpolated) = 0.427 mW/g

Body - Middle - No Accessory - Spacer 10mm - Left facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 20.746 V/m

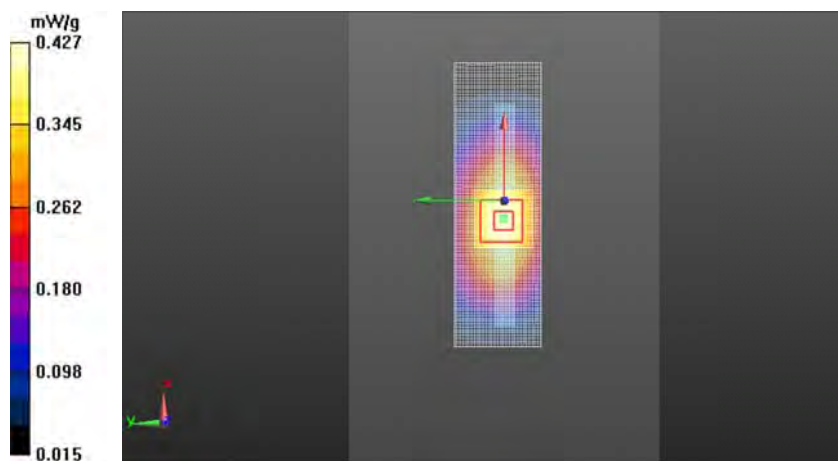
Peak SAR (extrapolated) = 0.566 mW/g

SAR(1 g) = 0.406 mW/g

SAR(10 g) = 0.280 mW/g

Power Drift = -0.02 dB

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



Date/Time: 2012-10-20 14:32:39

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: Body 835; Medium Notes: Medium Temperature: $t = 21.1\text{ C}$

Medium parameters used: $f = 837\text{ MHz}$; $\sigma = 0.96\text{ mho/m}$; $\epsilon_r = 54.348$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Spacer 10mm - Right facing phantom - BP-3L LG/Area Scan (101x31x1):

Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.499 mW/g

Body - Middle - No Accessory - Spacer 10mm - Right facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 22.210 V/m

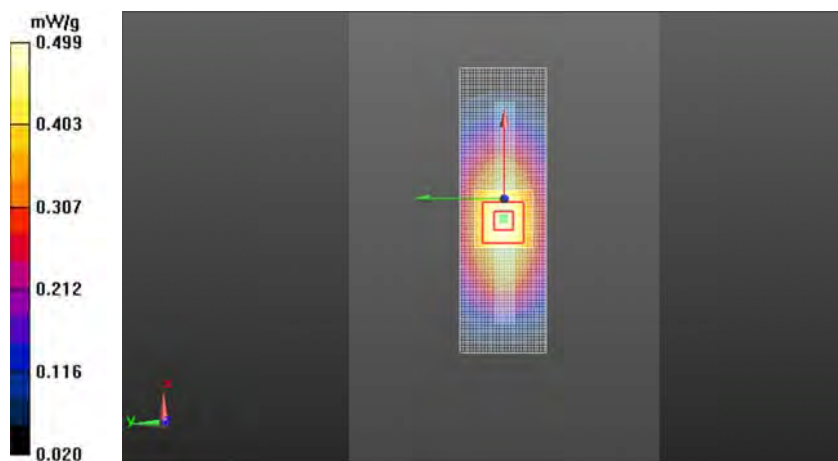
Peak SAR (extrapolated) = 0.662 mW/g

SAR(1 g) = 0.474 mW/g

SAR(10 g) = 0.328 mW/g

Power Drift = 0.01 dB

Maximum value of SAR (measured) = 0.509 mW/g



Date/Time: 2012-10-18 11:26:12

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Body 835; Medium Notes: Medium Temperature: $t = 21.5\text{ C}$

Medium parameters used: $f = 835\text{ MHz}$; $\sigma = 0.964\text{ mho/m}$; $\epsilon_r = 54.438$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Spacer 10mm - Back facing phantom - BP-3L LG/Area Scan (101x61x1):

Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.916 mW/g

Body - Middle - No Accessory - Spacer 10mm - Back facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 29.257 V/m

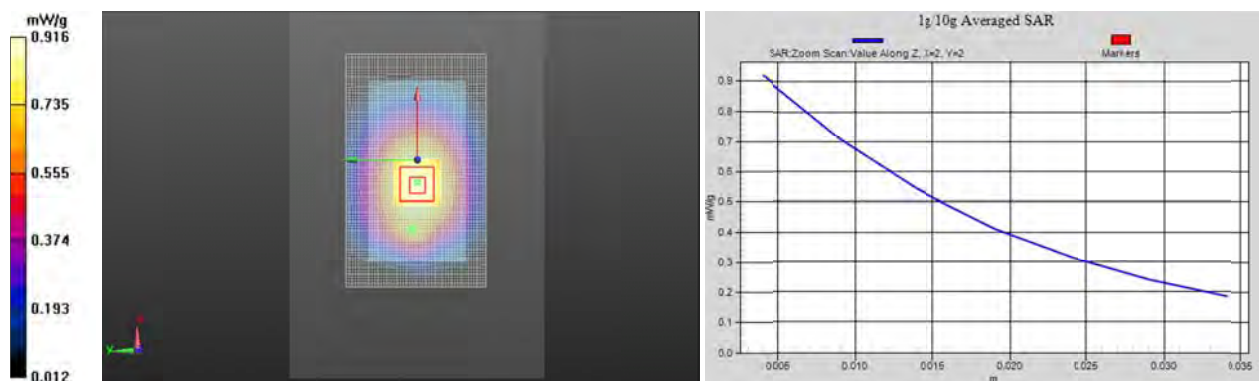
Peak SAR (extrapolated) = 1.122 mW/g

SAR(1 g) = 0.872 mW/g

SAR(10 g) = 0.644 mW/g

Power Drift = -0.02 dB

Maximum value of SAR (measured) = 0.919 mW/g



SAR Report

FCC_RM-923_03

Applicant: Nokia Corporation

Type: RM-923

Copyright © 2012 TCC Nokia

Date/Time: 2012-10-18 13:40:31

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Body 835; Medium Notes: Medium Temperature: $t = 21.5\text{ C}$

Medium parameters used: $f = 835\text{ MHz}$; $\sigma = 0.964\text{ mho/m}$; $\epsilon_r = 54.438$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Spacer 10mm - Top facing phantom - BP-3L LG/Area Scan (61x31x1):

Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.0216 mW/g

Body - Middle - No Accessory - Spacer 10mm - Top facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 3.170 V/m

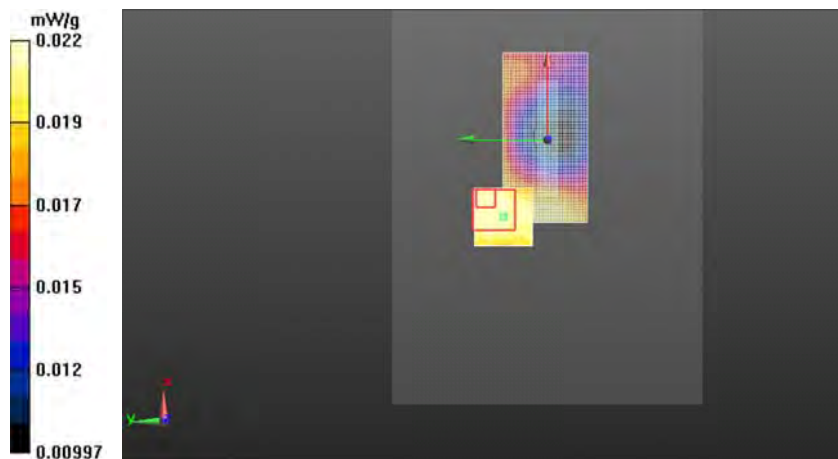
Peak SAR (extrapolated) = 0.028 mW/g

SAR(1 g) = 0.021 mW/g

SAR(10 g) = 0.016 mW/g

Power Drift = -0.06 dB

Maximum value of SAR (measured) = 0.0224 mW/g



Date/Time: 2012-10-18 13:53:01

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Body 835; Medium Notes: Medium Temperature: $t = 21.5\text{ C}$

Medium parameters used: $f = 835\text{ MHz}$; $\sigma = 0.964\text{ mho/m}$; $\epsilon_r = 54.438$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Spacer 10mm - Bottom facing phantom - BP-3L LG/Area Scan (61x31x1):

Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.0403 mW/g

Body - Middle - No Accessory - Spacer 10mm - Bottom facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 6.133 V/m

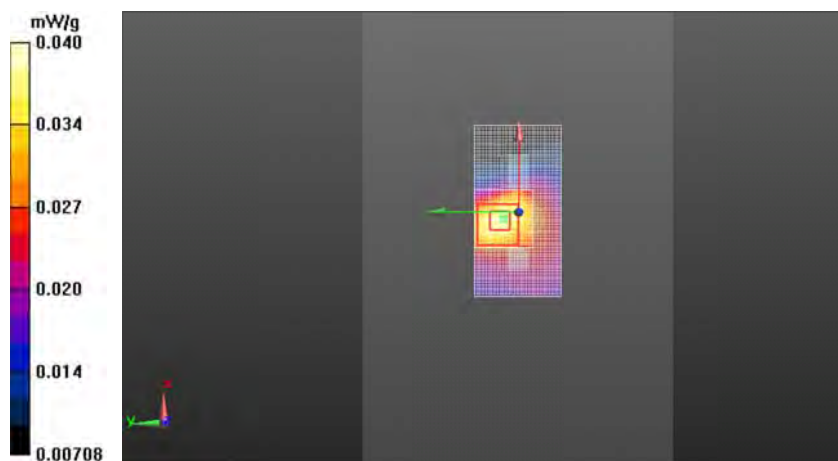
Peak SAR (extrapolated) = 0.058 mW/g

SAR(1 g) = 0.036 mW/g

SAR(10 g) = 0.023 mW/g

Power Drift = -0.09 dB

Maximum value of SAR (measured) = 0.0393 mW/g



Date/Time: 2012-10-18 11:52:03

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Body 835; Medium Notes: Medium Temperature: $t = 21.5\text{ C}$

Medium parameters used: $f = 835\text{ MHz}$; $\sigma = 0.964\text{ mho/m}$; $\epsilon_r = 54.438$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Spacer 10mm - Left facing phantom - BP-3L LG/Area Scan (101x31x1):

Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.546 mW/g

Body - Middle - No Accessory - Spacer 10mm - Left facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 23.237 V/m

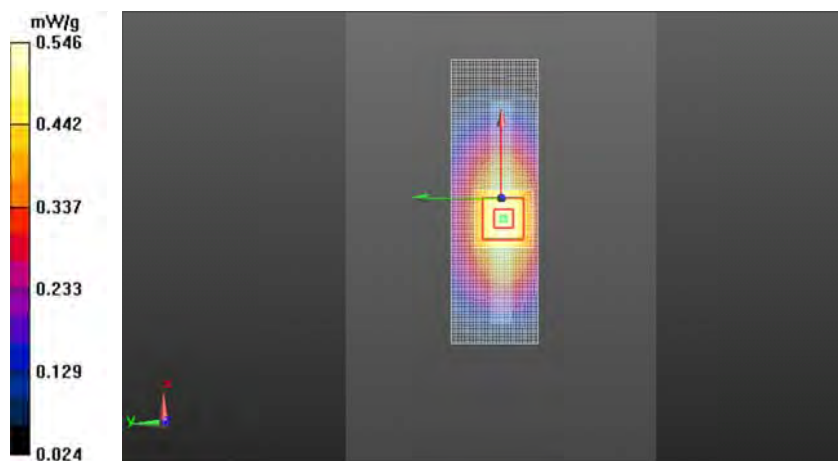
Peak SAR (extrapolated) = 0.717 mW/g

SAR(1 g) = 0.511 mW/g

SAR(10 g) = 0.353 mW/g

Power Drift = -0.02 dB

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



Date/Time: 2012-10-18 12:05:46

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: WCDMA850

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Body 835; Medium Notes: Medium Temperature: $t = 21.5\text{ C}$

Medium parameters used: $f = 835\text{ MHz}$; $\sigma = 0.964\text{ mho/m}$; $\epsilon_r = 54.438$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Spacer 10mm - Right facing phantom - BP-3L LG/Area Scan (101x31x1):

Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Body - Middle - No Accessory - Spacer 10mm - Right facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 24.854 V/m

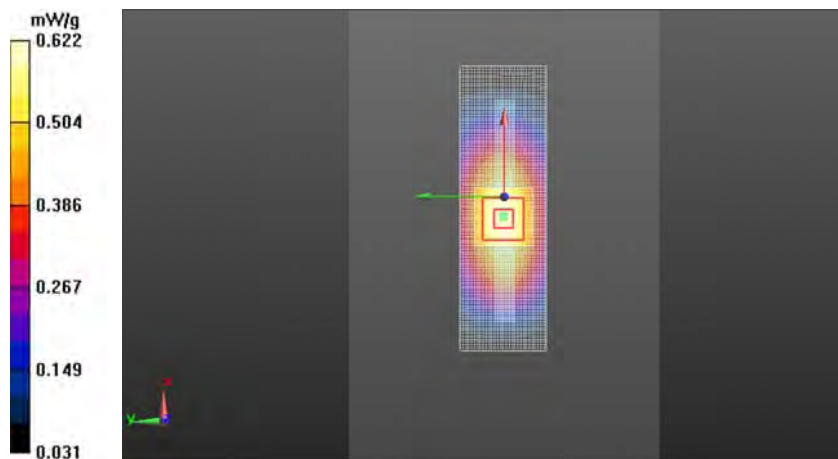
Peak SAR (extrapolated) = 0.827 mW/g

SAR(1 g) = 0.591 mW/g

SAR(10 g) = 0.408 mW/g

Power Drift = 0.01 dB

Maximum value of SAR (measured) = 0.632 mW/g



Date/Time: 2012-10-20 14:01:24

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: GSM850

Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium: Body 835; Medium Notes: Medium Temperature: $t = 21.1\text{ C}$

Medium parameters used: $f = 849\text{ MHz}$; $\sigma = 0.973\text{ mho/m}$; $\epsilon_r = 54.251$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - High - No Accessory - Spacer 10mm - Back facing phantom - BP-3L Sony/Area Scan (101x61x1):

Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.937 mW/g

Body - High - No Accessory - Spacer 10mm - Back facing phantom - BP-3L Sony/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 28.684 V/m

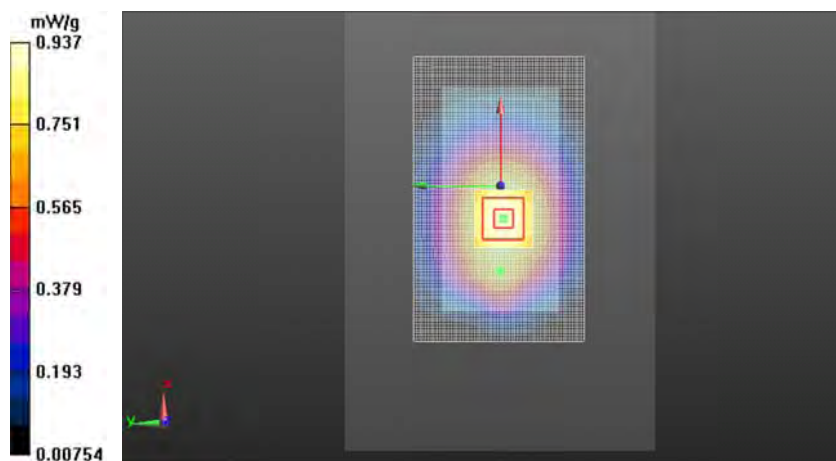
Peak SAR (extrapolated) = 1.134 mW/g

SAR(1 g) = 0.888 mW/g

SAR(10 g) = 0.653 mW/g

Power Drift = -0.04 dB

Maximum value of SAR (measured) = 0.937 mW/g



Date/Time: 2012-10-19 16:06:17

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: 2-slot GPRS1900

Frequency: 1850.2 MHz; Duty Cycle: 1:4.2

Medium: Body 1900; Medium Notes: Medium Temperature: t=21.5

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.505$ mho/m; $\epsilon_r = 52.386$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Low - No Accessory - Spacer 10mm - Back facing phantom - BP-3L LG/Area Scan (101x61x1):

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

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

Body - Low - No Accessory - Spacer 10mm - Back facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 4.922 V/m

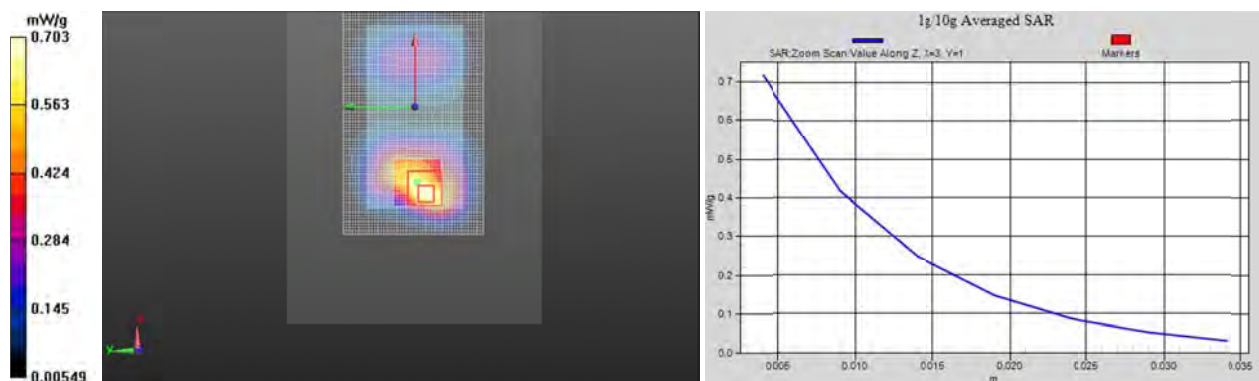
Peak SAR (extrapolated) = 1.178 mW/g

SAR(1 g) = 0.641 mW/g

SAR(10 g) = 0.352 mW/g

Power Drift = 0.40 dB

Maximum value of SAR (measured) = 0.716 mW/g



SAR Report

FCC_RM-923_03

Applicant: Nokia Corporation

Type: RM-923

Copyright © 2012 TCC Nokia

Date/Time: 2012-10-19 15:37:01

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: Body 1900; Medium Notes: Medium Temperature: t=21.5

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.524$ mho/m; $\epsilon_r = 52.244$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Spacer 10mm - Top facing phantom - BP-3L LG/Area Scan (61x31x1):

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

Maximum value of SAR (interpolated) = 0.0401 mW/g

Body - Middle - No Accessory - Spacer 10mm - Top facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 2.551 V/m

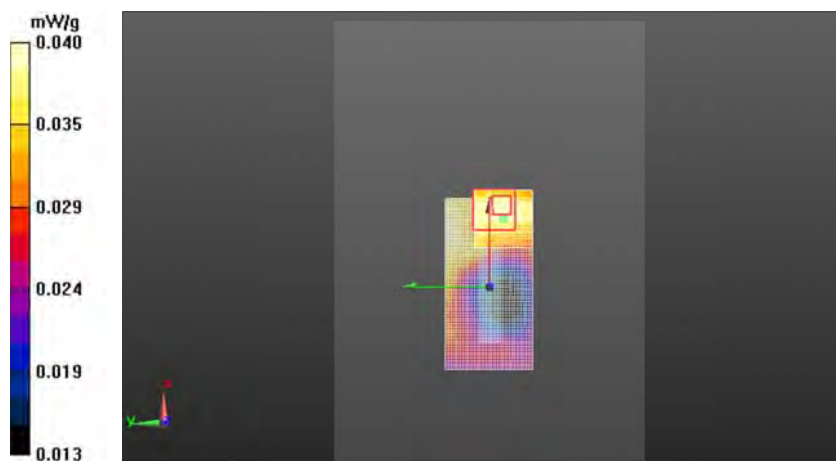
Peak SAR (extrapolated) = 0.233 mW/g

SAR(1 g) = 0.050 mW/g

SAR(10 g) = 0.018 mW/g

Power Drift = 0.47 dB

Maximum value of SAR (measured) = 0.0378 mW/g



Date/Time: 2012-10-19 15:52:46

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: Body 1900; Medium Notes: Medium Temperature: $t=21.5$

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.524$ mho/m; $\epsilon_r = 52.244$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Spacer 10mm - Bottom facing phantom - BP-3L LG/Area Scan (61x31x1):

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

Maximum value of SAR (interpolated) = 0.331 mW/g

Body - Middle - No Accessory - Spacer 10mm - Bottom facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 10.182 V/m

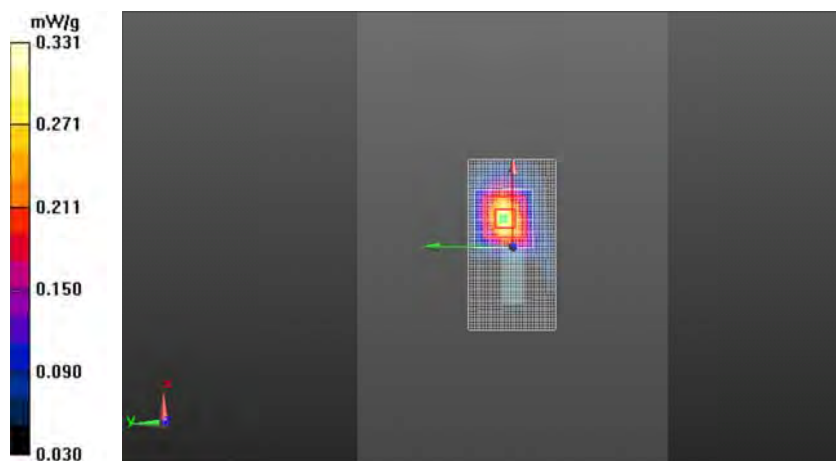
Peak SAR (extrapolated) = 0.512 mW/g

SAR(1 g) = 0.291 mW/g

SAR(10 g) = 0.149 mW/g

Power Drift = 0.13 dB

Maximum value of SAR (measured) = 0.332 mW/g



Date/Time: 2012-10-19 14:50:30

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: Body 1900; Medium Notes: Medium Temperature: t=21.5

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.524$ mho/m; $\epsilon_r = 52.244$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Spacer 10mm - Left facing phantom - BP-3L LG/Area Scan (101x31x1):

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

Maximum value of SAR (interpolated) = 0.230 mW/g

Body - Middle - No Accessory - Spacer 10mm - Left facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 6.203 V/m

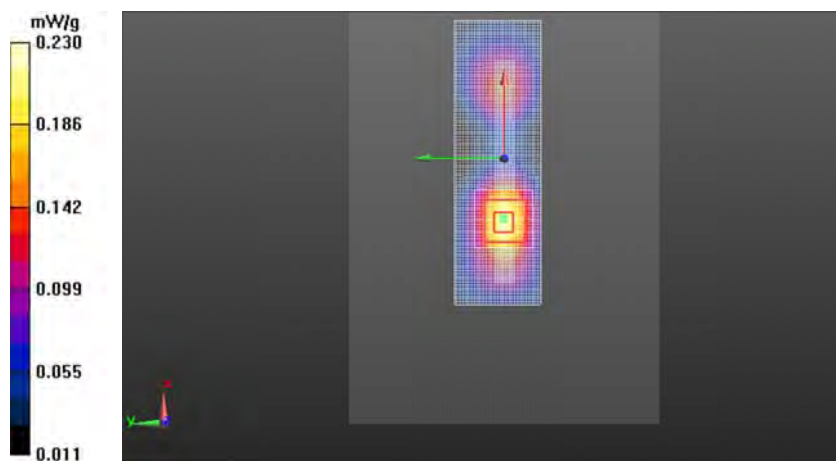
Peak SAR (extrapolated) = 0.333 mW/g

SAR(1 g) = 0.203 mW/g

SAR(10 g) = 0.118 mW/g

Power Drift = 0.10 dB

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



Date/Time: 2012-10-19 15:06:31

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: 2-slot GPRS1900

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: Body 1900; Medium Notes: Medium Temperature: t=21.5

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.524$ mho/m; $\epsilon_r = 52.244$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Spacer 10mm - Right facing phantom - BP-3L LG/Area Scan (101x31x1):

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

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

Body - Middle - No Accessory - Spacer 10mm - Right facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 7.827 V/m

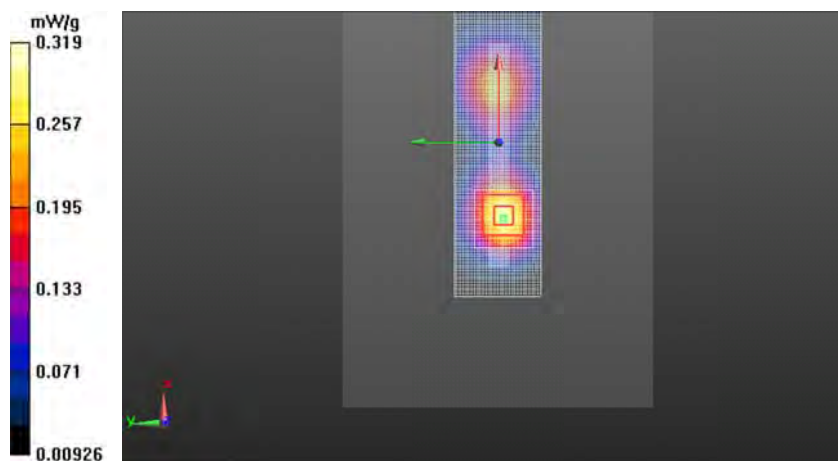
Peak SAR (extrapolated) = 0.448 mW/g

SAR(1 g) = 0.279 mW/g

SAR(10 g) = 0.161 mW/g

Power Drift = 0.24 dB

Maximum value of SAR (measured) = 0.310 mW/g



Date/Time: 2012-10-22 15:21:01

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: WCDMA1900

Frequency: 1852.4 MHz; Duty Cycle: 1:1

Medium: Body 1900; Medium Notes: Medium Temperature: t=21.3

Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.501$ mho/m; $\epsilon_r = 52.271$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Low - No Accessory - Spacer 10mm - Back facing phantom - BP-3L LG/Area Scan (101x61x1):

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

Maximum value of SAR (interpolated) = 0.939 mW/g

Body - Low - No Accessory - Spacer 10mm - Back facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 9.828 V/m

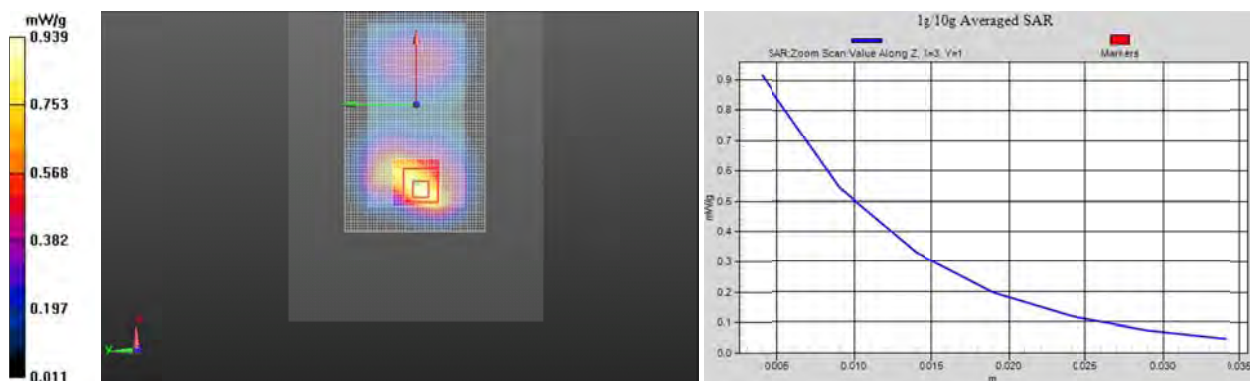
Peak SAR (extrapolated) = 1.517 mW/g

SAR(1 g) = 0.839 mW/g

SAR(10 g) = 0.469 mW/g

Power Drift = -0.00 dB

Maximum value of SAR (measured) = 0.914 mW/g



Date/Time: 2012-10-22 16:41:53

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: WCDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: Body 1900; Medium Notes: Medium Temperature: t=21.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.515$ mho/m; $\epsilon_r = 52.114$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Spacer 10mm - Top facing phantom - BP-3L LG/Area Scan (61x31x1):

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

Maximum value of SAR (interpolated) = 0.0557 mW/g

Body - Middle - No Accessory - Spacer 10mm - Top facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

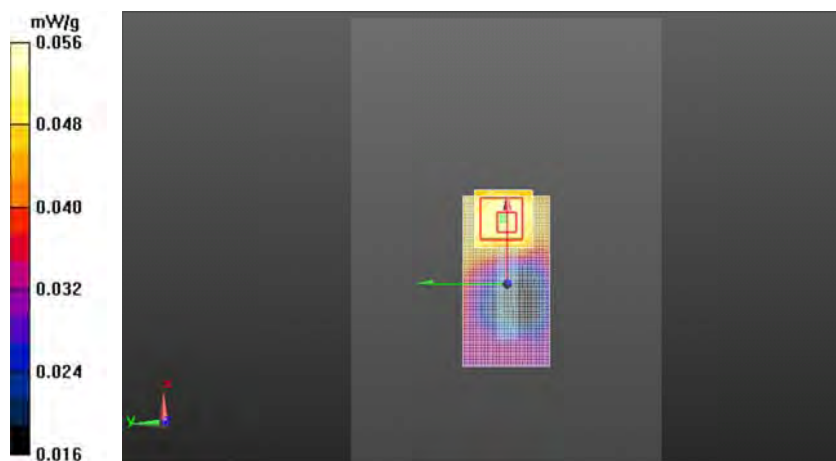
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 3.291 V/m

Peak SAR (extrapolated) = 0.078 mW/g

SAR(1 g) = 0.050 mW/g**SAR(10 g) = 0.033 mW/g****Power Drift = -0.28 dB**

Maximum value of SAR (measured) = 0.0533 mW/g



Date/Time: 2012-10-22 16:53:00

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: WCDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: Body 1900; Medium Notes: Medium Temperature: $t=21.3$

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.515$ mho/m; $\epsilon_r = 52.114$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Spacer 10mm - Bottom facing phantom - BP-3L LG/Area Scan (61x31x1):

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

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

Body - Middle - No Accessory - Spacer 10mm - Bottom facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 13.401 V/m

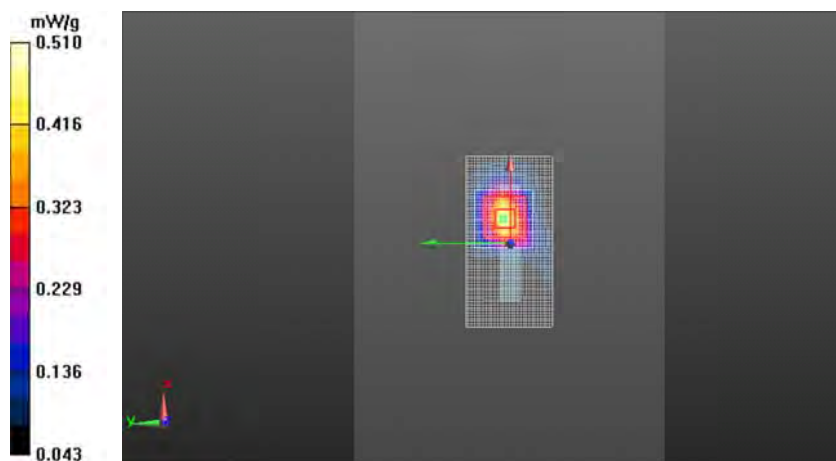
Peak SAR (extrapolated) = 0.765 mW/g

SAR(1 g) = 0.430 mW/g

SAR(10 g) = 0.217 mW/g

Power Drift = 0.02 dB

Maximum value of SAR (measured) = 0.497 mW/g



Date/Time: 2012-10-22 15:57:09

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: WCDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: Body 1900; Medium Notes: Medium Temperature: t=21.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.515$ mho/m; $\epsilon_r = 52.114$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Spacer 10mm - Left facing phantom - BP-3L LG/Area Scan (101x31x1):

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

Maximum value of SAR (interpolated) = 0.273 mW/g

Body - Middle - No Accessory - Spacer 10mm - Left facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 6.608 V/m

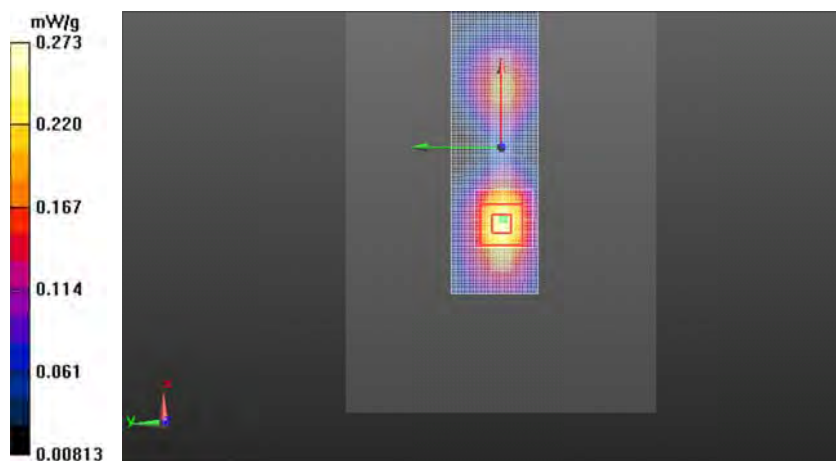
Peak SAR (extrapolated) = 0.406 mW/g

SAR(1 g) = 0.246 mW/g

SAR(10 g) = 0.143 mW/g

Power Drift = 0.03 dB

Maximum value of SAR (measured) = 0.269 mW/g



Date/Time: 2012-10-22 16:09:41

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: WCDMA1900

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: Body 1900; Medium Notes: Medium Temperature: t=21.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.515$ mho/m; $\epsilon_r = 52.114$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Spacer 10mm - Right facing phantom - BP-3L LG/Area Scan (101x31x1):

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

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

Body - Middle - No Accessory - Spacer 10mm - Right facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 9.894 V/m

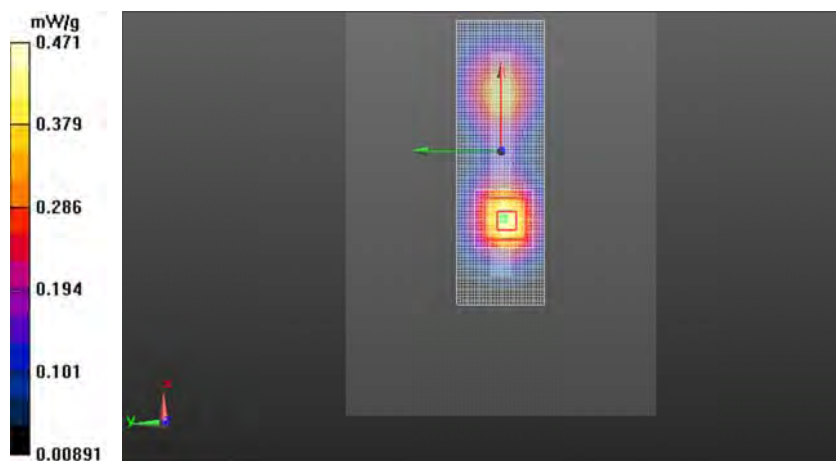
Peak SAR (extrapolated) = 0.692 mW/g

SAR(1 g) = 0.419 mW/g

SAR(10 g) = 0.240 mW/g

Power Drift = -0.02 dB

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



Date/Time: 2012-10-22 17:46:32

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: WCDMA1900

Frequency: 1907.6 MHz; Duty Cycle: 1:1

Medium: Body 1900; Medium Notes: Medium Temperature: t=21.3

Medium parameters used: $f = 1908$ MHz; $\sigma = 1.539$ mho/m; $\epsilon_r = 52.07$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - High - No Accessory - Spacer 10mm - Back facing phantom - BP-3L Sony/Area Scan (101x61x1):

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

Maximum value of SAR (interpolated) = 0.840 mW/g

Body - High - No Accessory - Spacer 10mm - Back facing phantom - BP-3L Sony/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 6.734 V/m

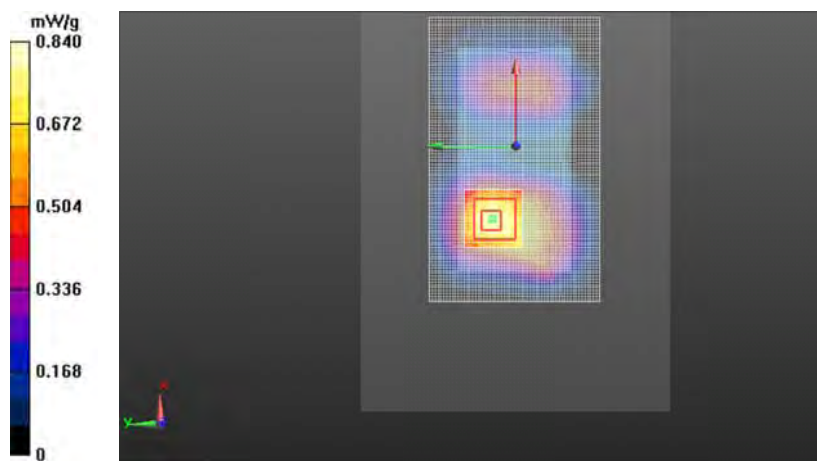
Peak SAR (extrapolated) = 1.185 mW/g

SAR(1 g) = 0.760 mW/g

SAR(10 g) = 0.468 mW/g

Power Drift = -0.01 dB

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



Date/Time: 2012-10-23 11:44:06

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode

Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: t=21.4C

Medium parameters used: $f = 2437$ MHz; $\sigma = 1.848$ mho/m; $\epsilon_r = 51.546$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF(4.31, 4.31, 4.31); Calibrated: 2012-03-12;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn858; Calibrated: 2012-03-02
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Spacer 10mm - Back facing phantom - BP-3L LG/Area Scan (101x61x1):

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

Maximum value of SAR (interpolated) = 0.259 mW/g

Body - Middle - No Accessory - Spacer 10mm - Back facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 4.448 V/m

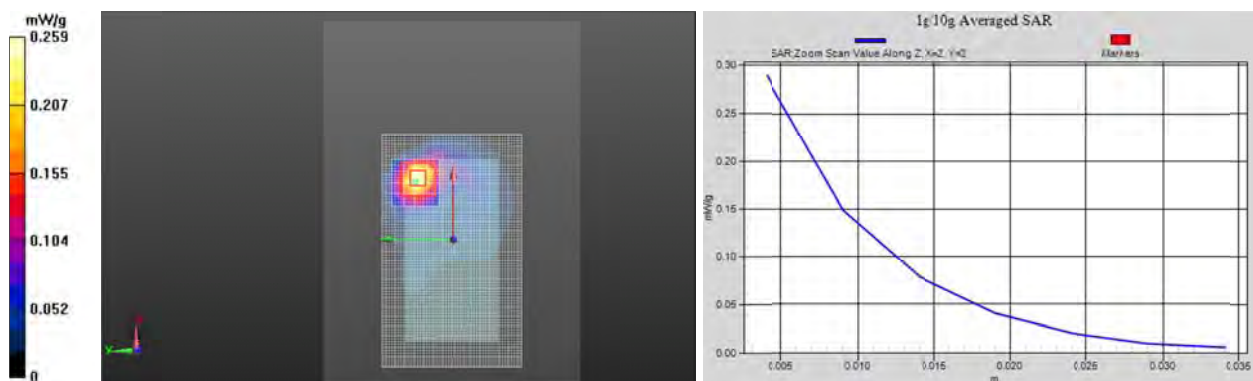
Peak SAR (extrapolated) = 0.567 mW/g

SAR(1 g) = 0.259 mW/g

SAR(10 g) = 0.113 mW/g

Power Drift = 0.13 dB

Maximum value of SAR (measured) = 0.289 mW/g



Date/Time: 2012-10-23 13:18:47

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode

Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: t=21.4C

Medium parameters used: f = 2437 MHz; σ = 1.848 mho/m; ϵ_r = 51.546; ρ = 1000 kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF(4.31, 4.31, 4.31); Calibrated: 2012-03-12;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn858; Calibrated: 2012-03-02
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Spacer 10mm - Top facing phantom - BP-3L LG/Area Scan (61x31x1):

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

Maximum value of SAR (interpolated) = 0.0936 mW/g

Body - Middle - No Accessory - Spacer 10mm - Top facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 6.936 V/m

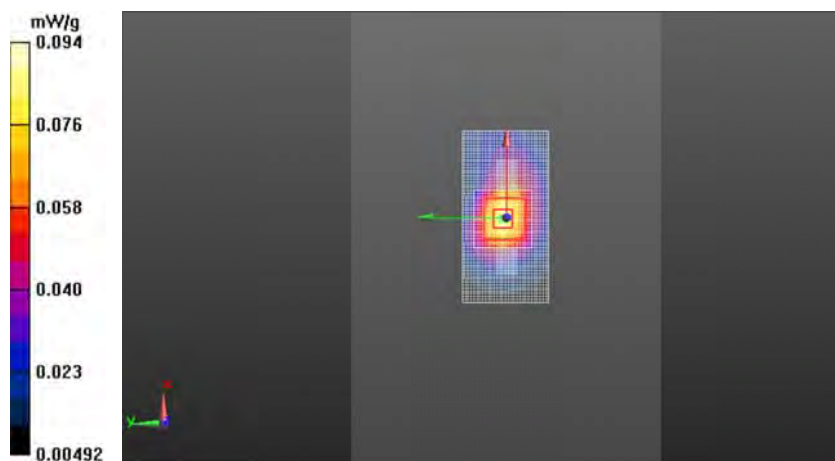
Peak SAR (extrapolated) = 0.149 mW/g

SAR(1 g) = 0.080 mW/g

SAR(10 g) = 0.043 mW/g

Power Drift = 0.01 dB

Maximum value of SAR (measured) = 0.0881 mW/g



Date/Time: 2012-10-23 13:35:28

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode

Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: t=21.4C

Medium parameters used: f = 2437 MHz; σ = 1.848 mho/m; ϵ_r = 51.546; ρ = 1000 kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF(4.31, 4.31, 4.31); Calibrated: 2012-03-12;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn858; Calibrated: 2012-03-02
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Spacer 10mm - Bottom facing phantom - BP-3L LG/Area Scan (61x31x1):

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

Maximum value of SAR (interpolated) = 0.00849 mW/g

Body - Middle - No Accessory - Spacer 10mm - Bottom facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 1.586 V/m

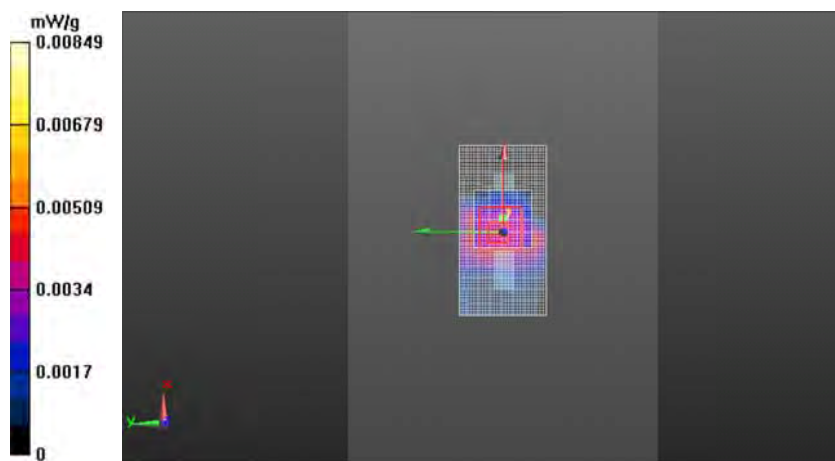
Peak SAR (extrapolated) = 0.00808 mW/g

SAR(1 g) = 0.00379 mW/g

SAR(10 g) = 0.00175 mW/g

Power Drift = -0.09 dB

Maximum value of SAR (measured) = 0.00423 mW/g



Date/Time: 2012-10-23 12:05:03

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode

Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: t=21.4C

Medium parameters used: $f = 2437$ MHz; $\sigma = 1.848$ mho/m; $\epsilon_r = 51.546$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF(4.31, 4.31, 4.31); Calibrated: 2012-03-12;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn858; Calibrated: 2012-03-02
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Spacer 10mm - Left facing phantom - BP-3L LG/Area Scan (101x31x1):

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

Maximum value of SAR (interpolated) = 0.0352 mW/g

Body - Middle - No Accessory - Spacer 10mm - Left facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 2.437 V/m

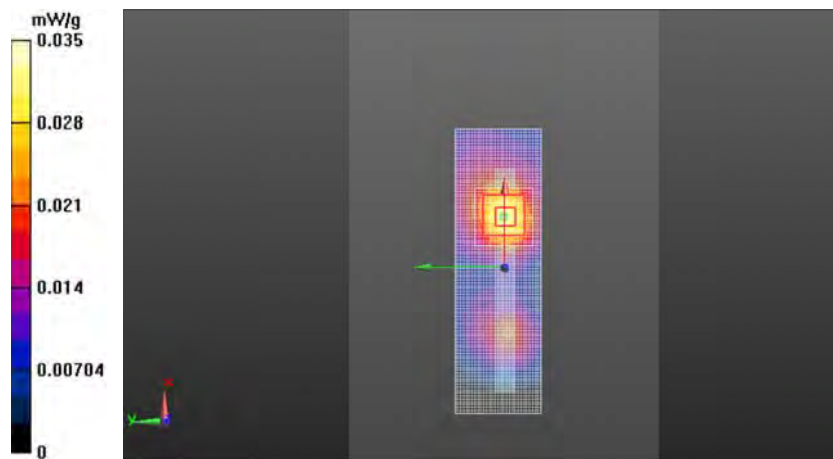
Peak SAR (extrapolated) = 0.058 mW/g

SAR(1 g) = 0.031 mW/g

SAR(10 g) = 0.016 mW/g

Power Drift = -0.06 dB

Maximum value of SAR (measured) = 0.0334 mW/g



Date/Time: 2012-10-23 13:05:36

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode

Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: t=21.4C

Medium parameters used: f = 2437 MHz; σ = 1.848 mho/m; ϵ_r = 51.546; ρ = 1000 kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF(4.31, 4.31, 4.31); Calibrated: 2012-03-12;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn858; Calibrated: 2012-03-02
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - Middle - No Accessory - Spacer 10mm - Right facing phantom - BP-3L LG/Area Scan (101x31x1):

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

Maximum value of SAR (interpolated) = 0.126 mW/g

Body - Middle - No Accessory - Spacer 10mm - Right facing phantom - BP-3L LG/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 3.610 V/m

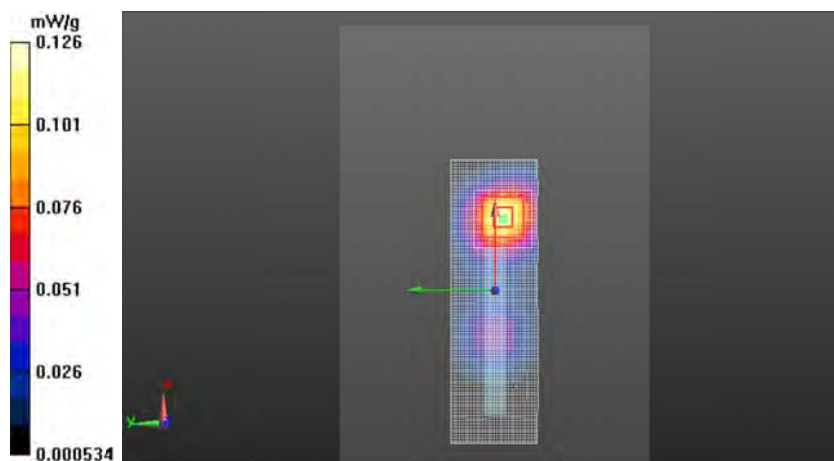
Peak SAR (extrapolated) = 0.219 mW/g

SAR(1 g) = 0.114 mW/g

SAR(10 g) = 0.059 mW/g

Power Drift = 0.30 dB

Maximum value of SAR (measured) = 0.126 mW/g



Date/Time: 2012-10-23 14:26:45

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode

Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: Body 2450; Medium Notes: Medium Temperature: t=21.4C

Medium parameters used: $f = 2462 \text{ MHz}$; $\sigma = 1.884 \text{ mho/m}$; $\epsilon_r = 51.549$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF(4.31, 4.31, 4.31); Calibrated: 2012-03-12;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn858; Calibrated: 2012-03-02
- Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.5 (6469)

Body - High - No Accessory - Spacer 10mm - Back facing phantom - BP-3L Sony/Area Scan (101x61x1):

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

Maximum value of SAR (interpolated) = 0.239 mW/g

Body - High - No Accessory - Spacer 10mm - Back facing phantom - BP-3L Sony/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 4.311 V/m

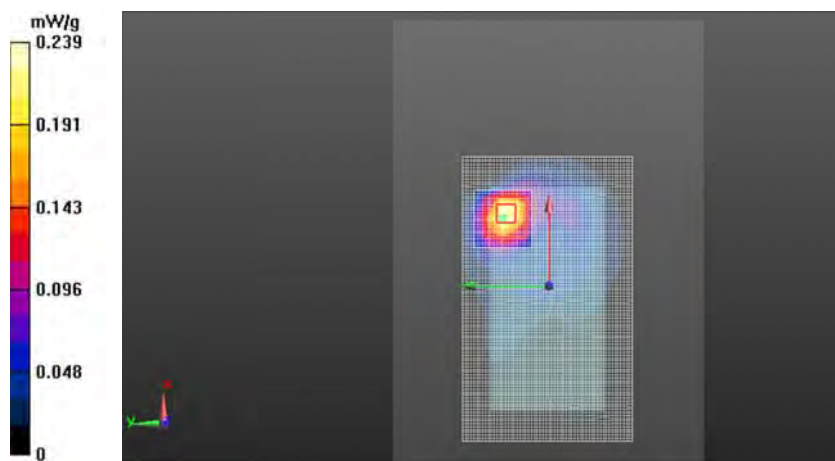
Peak SAR (extrapolated) = 0.507 mW/g

SAR(1 g) = 0.231 mW/g

SAR(10 g) = 0.102 mW/g

Power Drift = 0.36 dB

Maximum value of SAR (measured) = 0.260 mW/g



Date/Time: 2012-10-20 12:28:45 PM

DASY Configuration for Body – High - No Accessory - Spacer 10mm - Back facing phantom - BP-3L LG/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3; PMF: 2.88097

Medium: Body 835 Medium parameters used: $f = 849$ MHz; $\sigma = 0.973$ mho/m; $\epsilon_r = 54.251$; $\rho = 1000$ kg/m³

Phantom section: Center Section

Probe: EX3DV4 - SN3836; ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;

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

Electronics: DAE4 Sn1319; Calibrated: 2012-02-15

Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130

Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-23 11:44:06 AM

DASY Configuration for Body - Middle - No Accessory - Spacer 10mm - Back facing phantom - BP-3L LG/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode; Frequency: 2437 MHz; Duty Cycle: 1:1; PMF: 1

Medium: Body 2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.848$ mho/m; $\epsilon_r = 51.546$; $\rho = 1000$ kg/m³

Phantom section: Center Section

Probe: ES3DV3 - SN3195; ConvF(4.31, 4.31, 4.31); Calibrated: 2012-03-12;

Sensor-Surface: 4mm (Mechanical Surface Detection)

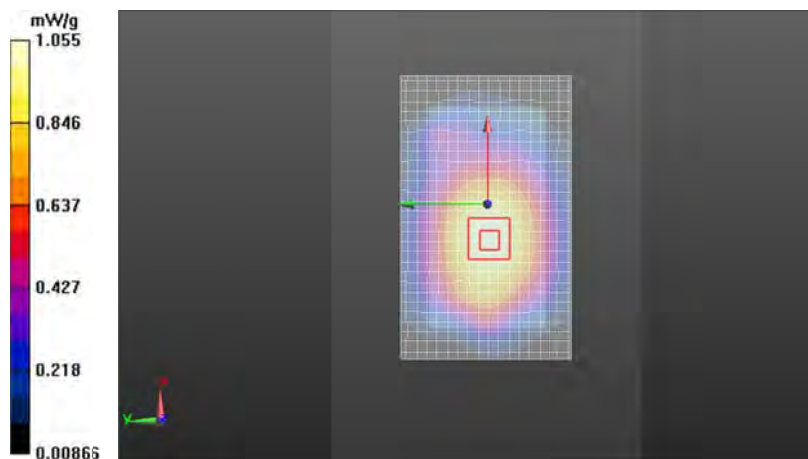
Electronics: DAE4 Sn858; Calibrated: 2012-03-02

Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130

Measurement SW: DASY4, Version 4.7 (80)

Fast SAR of Combined Scans: SAR(1 g) = 0.996 mW/g; SAR(10 g) = 0.703 mW/g

Maximum value of SAR (interpolated) = 1.06 mW/g



Note: WLAN result was scaled by a factor of 1.06 and GSM850 result was scaled by a factor of 1.08 before combining.

SAR Report

FCC_RM-923_03

Applicant: Nokia Corporation

Type: RM-923

Copyright © 2012 TCC Nokia

Date/Time: 2012-10-18 11:26:12 AM

DASY Configuration for Body - Middle - No Accessory - Spacer 10mm - Back facing phantom - BP-3L LG/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159005/3

Communication System: WCDMA850; Frequency: 835 MHz; Duty Cycle: 1:1; PMF: 1

Medium: Body 835 Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.964 \text{ mho/m}$; $\epsilon_r = 54.438$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Center Section

Probe: EX3DV4 - SN3836; ConvF(8.83, 8.83, 8.83); Calibrated: 2012-02-20;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1319; Calibrated: 2012-02-15

Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130

Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-23 11:44:06 AM

DASY Configuration for Body - Middle - No Accessory - Spacer 10mm - Back facing phantom - BP-3L LG/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode; Frequency: 2437 MHz; Duty Cycle: 1:1; PMF: 1

Medium: Body 2450 Medium parameters used: $f = 2437 \text{ MHz}$; $\sigma = 1.848 \text{ mho/m}$; $\epsilon_r = 51.546$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Center Section

Probe: ES3DV3 - SN3195; ConvF(4.31, 4.31, 4.31); Calibrated: 2012-03-12;

Sensor-Surface: 4mm (Mechanical Surface Detection)

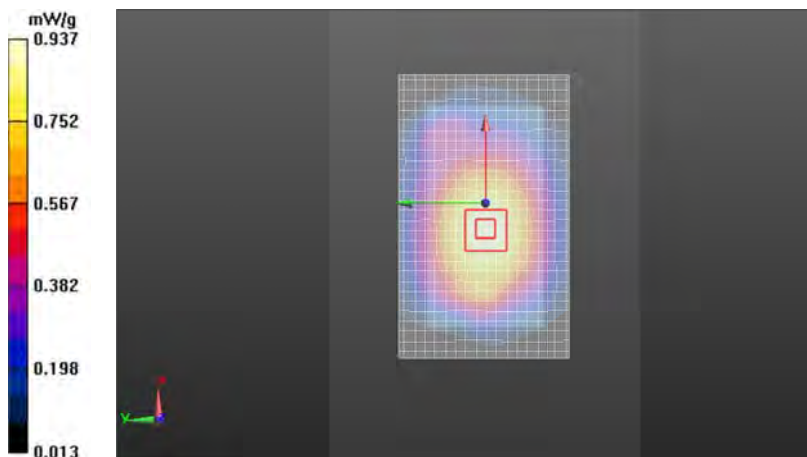
Electronics: DAE4 Sn858; Calibrated: 2012-03-02

Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130

Measurement SW: DASY4, Version 4.7 (80)

Fast SAR of Combined Scans: SAR(1 g) = 0.883 mW/g; SAR(10 g) = 0.624 mW/g

Maximum value of SAR (interpolated) = 0.937 mW/g



Note: WLAN result was scaled by a factor of 1.06 before combining with individual WCDMA850.

Date/Time: 2012-10-19 4:06:17 PM

DASY Configuration for Body - Low - No Accessory - Spacer 10mm - Back facing phantom - BP-3L LG/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159015/2

Communication System: 2-slot GPRS1900; Frequency: 1850.2 MHz; Duty Cycle: 1:4.2; PMF: 2.04939

Medium: Body 1900 Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.505$ mho/m; $\epsilon_r = 52.386$; $\rho = 1000$ kg/m³

Phantom section: Center Section

Probe: EX3DV4 - SN3836; ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1319; Calibrated: 2012-02-15
Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-23 11:44:06 AM

DASY Configuration for Body - Middle - No Accessory - Spacer 10mm - Back facing phantom - BP-3L LG/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode; Frequency: 2437 MHz; Duty Cycle: 1:1; PMF: 1

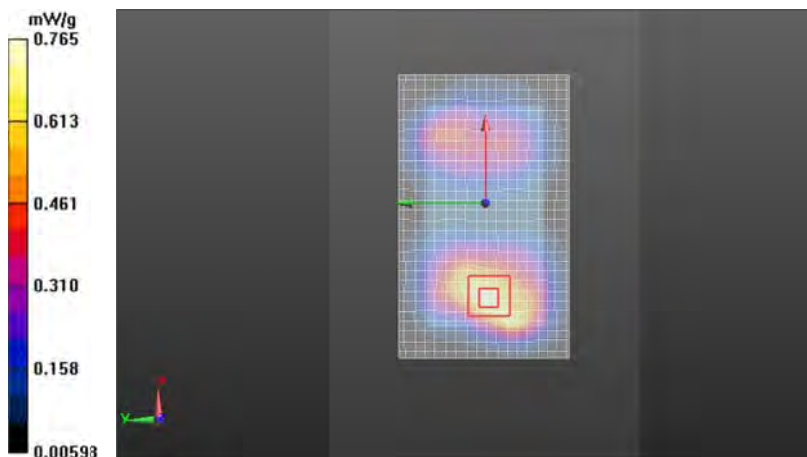
Medium: Body 2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.848$ mho/m; $\epsilon_r = 51.546$; $\rho = 1000$ kg/m³

Phantom section: Center Section

Probe: ES3DV3 - SN3195; ConvF(4.31, 4.31, 4.31); Calibrated: 2012-03-12;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn858; Calibrated: 2012-03-02
Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130
Measurement SW: DASY4, Version 4.7 (80)

Fast SAR of Combined Scans: SAR(1 g) = 0.680 mW/g; SAR(10 g) = 0.391 mW/g

Maximum value of SAR (interpolated) = 0.765 mW/g



Note: WLAN result was scaled by a factor of 1.06 and 2-slot GPRS1900 result was scaled by a factor of 1.18 before combining.

SAR Report

FCC_RM-923_03

Applicant: Nokia Corporation

Type: RM-923

Copyright © 2012 TCC Nokia

Date/Time: 2012-10-22 3:21:01 PM

DASY Configuration for Body - Low - No Accessory - Spacer 10mm - Back facing phantom - BP-3L LG/Area Scan:

Test Laboratory: The name of your organization

Type: RM-923; Serial: 004402/47/159015/2

Communication System: WCDMA1900; Frequency: 1852.4 MHz; Duty Cycle: 1:1; PMF: 1

Medium: Body 1900 Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.501$ mho/m; $\epsilon_r = 52.271$; $\rho = 1000$ kg/m³

Phantom section: Center Section

Probe: EX3DV4 - SN3836; ConvF(7.2, 7.2, 7.2); Calibrated: 2012-02-20;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1319; Calibrated: 2012-02-15

Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130

Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-23 11:44:06 AM

DASY Configuration for Body - Middle - No Accessory - Spacer 10mm - Back facing phantom - BP-3L LG/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-923; Serial: 004402/47/159009/5

Communication System: WLAN2450 b-mode; Frequency: 2437 MHz; Duty Cycle: 1:1; PMF: 1

Medium: Body 2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.848$ mho/m; $\epsilon_r = 51.546$; $\rho = 1000$ kg/m³

Phantom section: Center Section

Probe: ES3DV3 - SN3195; ConvF(4.31, 4.31, 4.31); Calibrated: 2012-03-12;

Sensor-Surface: 4mm (Mechanical Surface Detection)

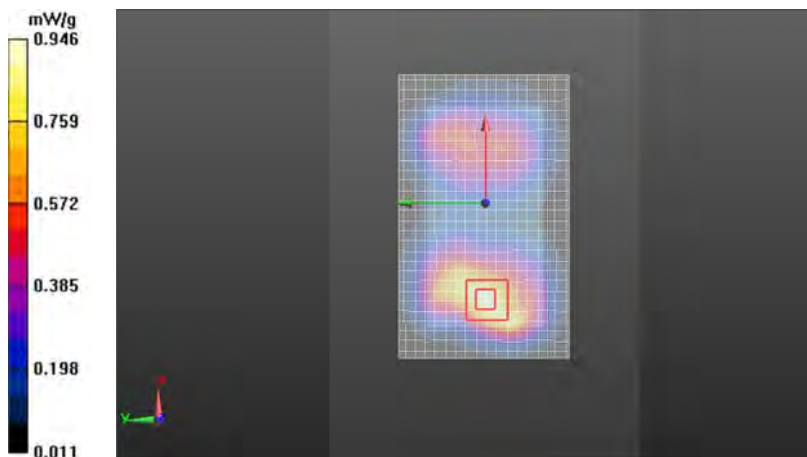
Electronics: DAE4 Sn858; Calibrated: 2012-03-02

Phantom: TFP3; Type: QD 000 P51 CA; Serial: 1130

Measurement SW: DASY4, Version 4.7 (80)

Fast SAR of Combined Scans: SAR(1 g) = 0.844 mW/g; SAR(10 g) = 0.485 mW/g

Maximum value of SAR (interpolated) = 0.946 mW/g



Note: WLAN result was scaled by a factor of 1.06 before combining with individual WCDMA1900.

SAR Report

FCC_RM-923_03

Applicant: Nokia Corporation

Type: RM-923

Copyright © 2012 TCC Nokia

APPENDIX C: DIELECTRIC PARAMETERS OF THE TISSUE SIMULANTS

Head tissue simulant dielectric parameters used in the measurements:

f (MHz)	Date	Dielectric Parameters					
		824.2MHz		837.0MHz		849.0MHz	
		ϵ_r	σ [S/m]	ϵ_r	σ [S/m]	ϵ_r	σ [S/m]
GSM/GPRS/ EGPRS850	2012-10-19	41.5	0.87	41.4	0.88	41.4	0.89
f (MHz)	Date	Dielectric Parameters					
		826.0MHz		835.0MHz		847.0MHz	
		ϵ_r	σ [S/m]	ϵ_r	σ [S/m]	ϵ_r	σ [S/m]
WCDMA850	2012-10-22	41.5	0.87	41.4	0.88	41.3	0.89
f (MHz)	Date	Dielectric Parameters					
		1850.0MHz		1880.0MHz		1910.0MHz	
		ϵ_r	σ [S/m]	ϵ_r	σ [S/m]	ϵ_r	σ [S/m]
GSM/GPRS/ EGPRS1900	2012-10-18	39.2	1.41	39.1	1.44	39.0	1.46
f (MHz)	Date	Dielectric Parameters					
		1852.4MHz		1880.0MHz		1908.0MHz	
		ϵ_r	σ [S/m]	ϵ_r	σ [S/m]	ϵ_r	σ [S/m]
WCDMA1900	2012-10-23	39.6	1.41	39.4	1.44	39.4	1.46
f (MHz)	Date	Dielectric Parameters					
		2412.0MHz		2442.0MHz		2462.0MHz	
		ϵ_r	σ [S/m]	ϵ_r	σ [S/m]	ϵ_r	σ [S/m]
WLAN2450	2012-10-19	38.2	1.71	38.1	1.74	38.0	1.78

Body tissue simulant dielectric parameters used in the measurements:

f (MHz)	Date	Dielectric Parameters					
		824.2MHz		837.0MHz		849.0MHz	
		ϵ_r	σ [S/m]	ϵ_r	σ [S/m]	ϵ_r	σ [S/m]
GSM/GPRS/ EGPRS850	2012-10-20	54.5	0.95	54.3	0.96	54.3	0.97
f (MHz)	Date	Dielectric Parameters					
		826.0MHz		835.0MHz		847.0MHz	
		ϵ_r	σ [S/m]	ϵ_r	σ [S/m]	ϵ_r	σ [S/m]
WCDMA850	2012-10-18	54.6	0.95	54.4	0.96	54.3	0.97
f (MHz)	Date	Dielectric Parameters					
		1850.0MHz		1880.0MHz		1910.0MHz	
		ϵ_r	σ [S/m]	ϵ_r	σ [S/m]	ϵ_r	σ [S/m]
GSM/GPRS/ EGPRS1900	2012-10-19	52.4	1.50	52.2	1.52	52.2	1.55
	2012-10-22	52.3	1.50	52.1	1.52	52.1	1.54
f (MHz)	Date	Dielectric Parameters					
		1852.4MHz		1880.0MHz		1908.0MHz	
		ϵ_r	σ [S/m]	ϵ_r	σ [S/m]	ϵ_r	σ [S/m]
WCDMA1900	2012-10-22	52.3	1.50	52.1	1.52	52.1	1.54
f (MHz)	Date	Dielectric Parameters					
		2412.0MHz		2442.0MHz		2462.0MHz	
		ϵ_r	σ [S/m]	ϵ_r	σ [S/m]	ϵ_r	σ [S/m]
WLAN2450	2012-10-23	51.5	1.80	51.5	1.85	51.5	1.88

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 Beijing TCC**

Certificate No: **EX3-3838_Feb12**

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3838**

Calibration procedure(s) **QA CAL-01.v8, QA CAL-23.v4, QA CAL-25.v4**
Calibration procedure for dosimetric E-field probes

Calibration date: **February 20, 2012**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41498087	31-Mar-11 (No. 217-01372)	Apr-12
Reference 3 dB Attenuator	SN: S5054 (3c)	29-Mar-11 (No. 217-01369)	Apr-12
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Reference 30 dB Attenuator	SN: S5129 (30b)	29-Mar-11 (No. 217-01370)	Apr-12
Reference Probe ES3DV2	SN: 3013	29-Dec-11 (No. ES3-3013_Dec11)	Dec-12
DAE4	SN: 654	3-May-11 (No. DAE4-654_May11)	May-12
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-11)	In house check: Apr-13
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	
			Issued: February 21, 2012
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3838

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.37	0.60	0.53	± 10.1 %
DCP (mV) ^B	105.4	99.8	99.8	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc ^E (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	102.8	±1.9 %
			Y	0.00	0.00	1.00	97.2	
			Z	0.00	0.00	1.00	87.7	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^A The uncertainties of NormX,Y,Z do not affect the E²-field uncertainty inside TSL (see Pages 5 and 6).

^B Numerical linearization parameter: uncertainty not required.

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3838

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
835	41.5	0.90	8.67	8.67	8.67	0.53	0.72	± 12.0 %
1750	40.1	1.37	7.81	7.81	7.81	0.57	0.72	± 12.0 %
1900	40.0	1.40	7.57	7.57	7.57	0.62	0.69	± 12.0 %

^C Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

^F At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3838

Calibration Parameter Determined in Body Tissue Simulating Media

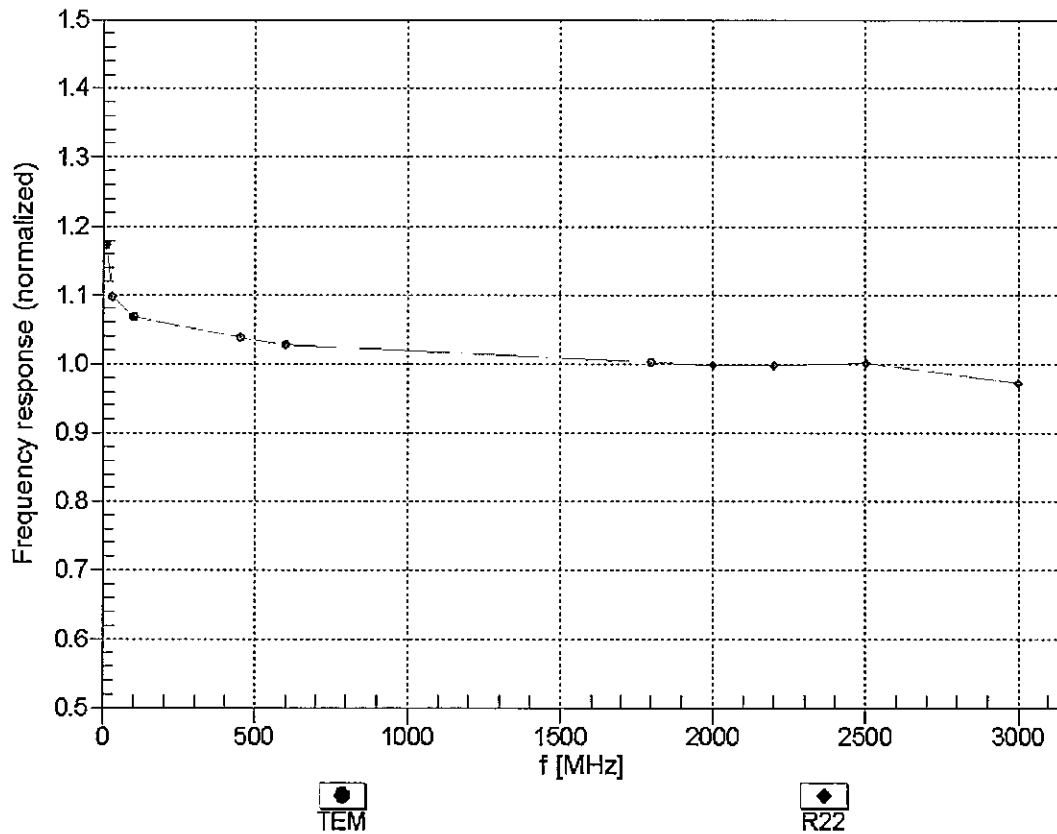
f (MHz) ^c	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
835	55.2	0.97	8.86	8.86	8.86	0.52	0.76	± 12.0 %
1750	53.4	1.49	7.72	7.72	7.72	0.49	0.86	± 12.0 %
1900	53.3	1.52	7.35	7.35	7.35	0.30	1.08	± 12.0 %

^c Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

^F At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

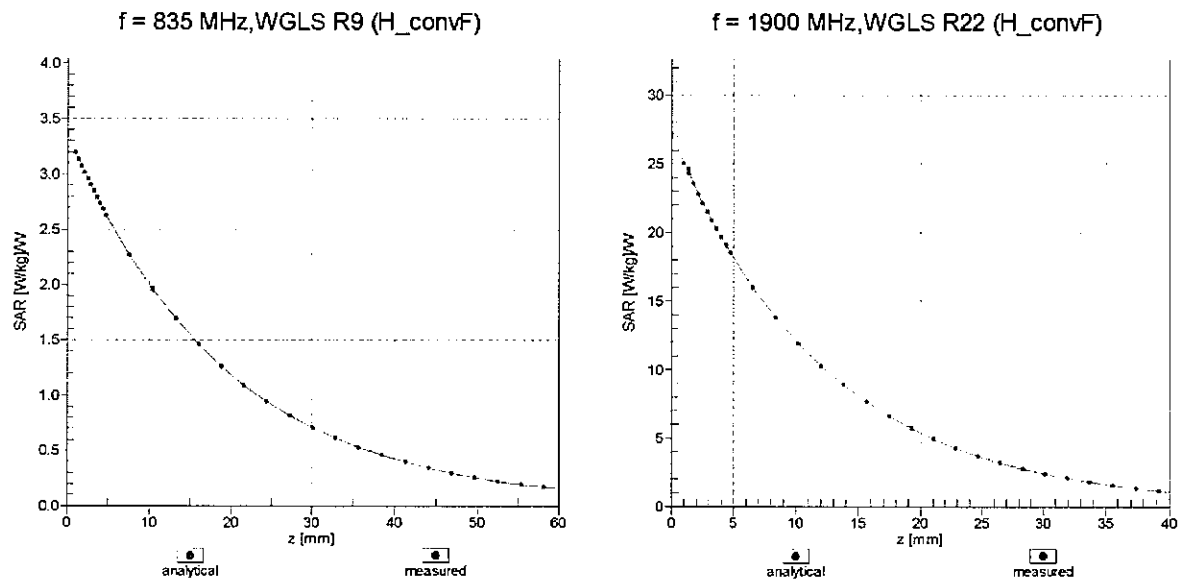
Frequency Response of E-Field

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



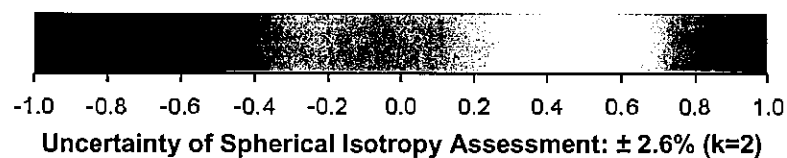
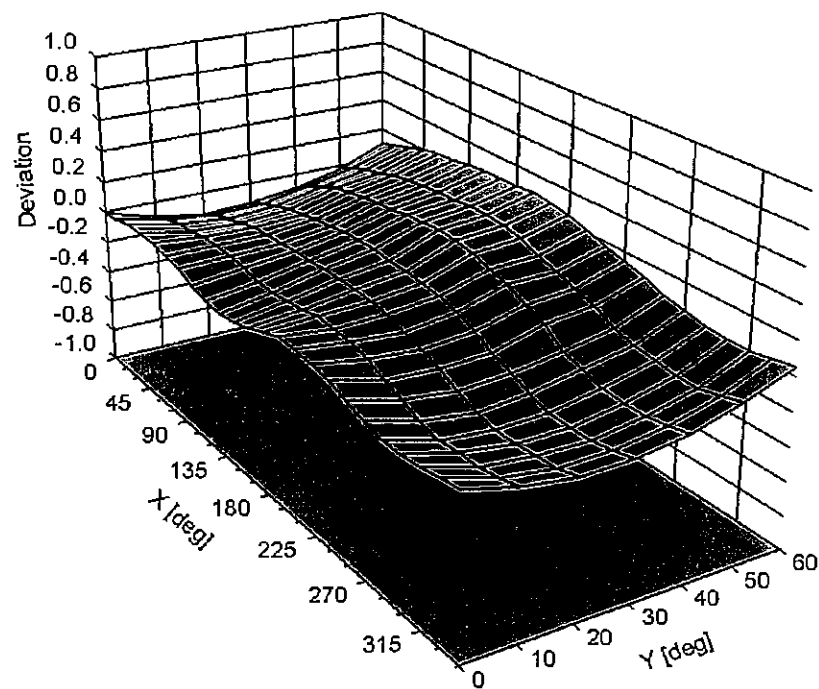
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, θ), $f = 900 \text{ MHz}$





Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 108**

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

Client **Nokia Beijing TCC**

Certificate No: **EX3-3836_Feb12**

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3836**

Calibration procedure(s) **QA CAL-01.v8, QA CAL-23.v4, QA CAL-25.v4**
Calibration procedure for dosimetric E-field probes

Calibration date: **February 20, 2012**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41498087	31-Mar-11 (No. 217-01372)	Apr-12
Reference 3 dB Attenuator	SN: S5054 (3c)	29-Mar-11 (No. 217-01369)	Apr-12
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Reference 30 dB Attenuator	SN: S5129 (30b)	29-Mar-11 (No. 217-01370)	Apr-12
Reference Probe ES3DV2	SN: 3013	29-Dec-11 (No. ES3-3013_Dec11)	Dec-12
DAE4	SN: 654	3-May-11 (No. DAE4-654_May11)	May-12
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-11)	In house check: Apr-13
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	
Issued: February 21, 2012			
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3836

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.40	0.47	0.45	$\pm 10.1 \%$
DCP (mV) ^B	89.1	99.3	95.9	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc ^E (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	101.5	$\pm 3.0 \%$
			Y	0.00	0.00	1.00	111.8	
			Z	0.00	0.00	1.00	105.9	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^A The uncertainties of NormX,Y,Z do not affect the E^2 -field uncertainty inside TSL (see Pages 5 and 6).

^B Numerical linearization parameter: uncertainty not required.

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3836

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
835	41.5	0.90	8.54	8.54	8.54	0.67	0.68	± 12.0 %
1750	40.1	1.37	7.92	7.92	7.92	0.38	0.91	± 12.0 %
1900	40.0	1.40	7.66	7.66	7.66	0.74	0.66	± 12.0 %

^C Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

^F At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3836

Calibration Parameter Determined in Body Tissue Simulating Media

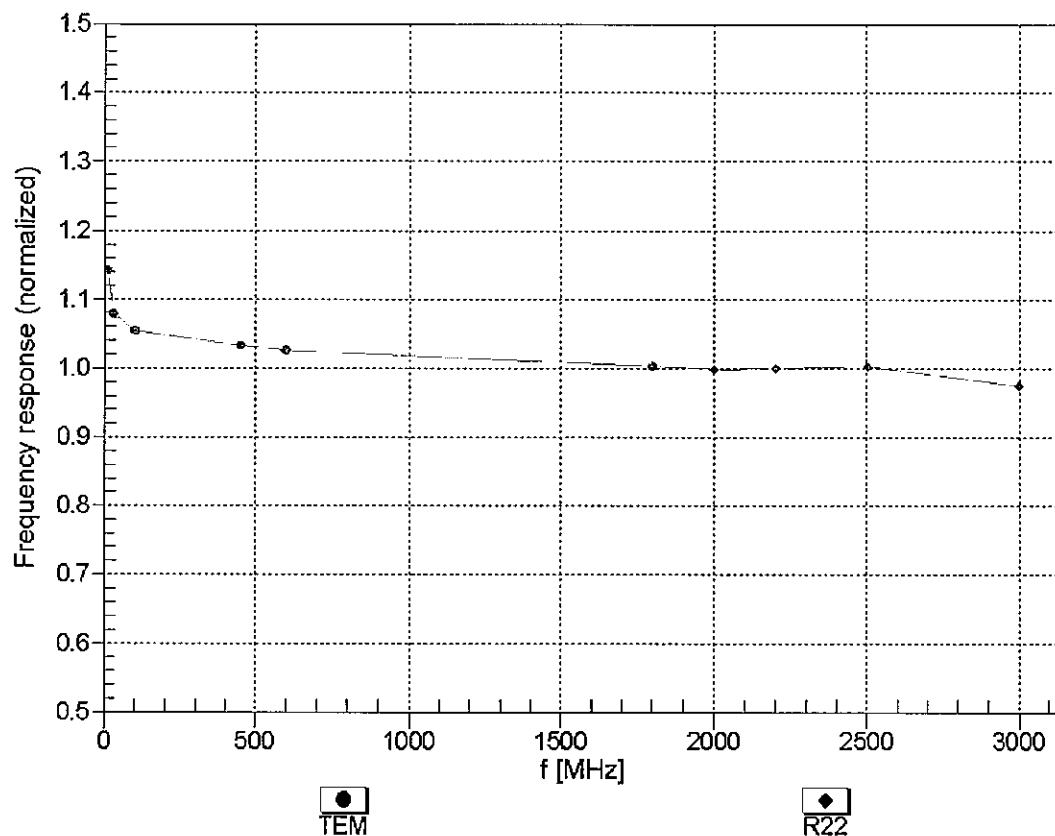
f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
835	55.2	0.97	8.83	8.83	8.83	0.80	0.65	± 12.0 %
1750	53.4	1.49	7.64	7.64	7.64	0.49	0.81	± 12.0 %
1900	53.3	1.52	7.20	7.20	7.20	0.42	0.82	± 12.0 %

^C Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

^F At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

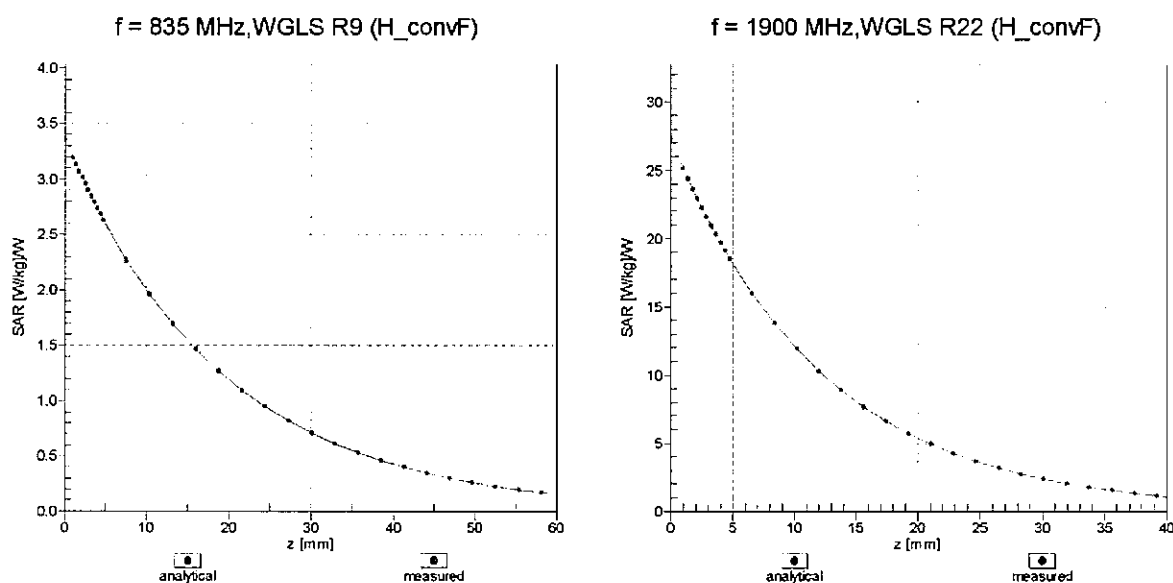
Frequency Response of E-Field

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



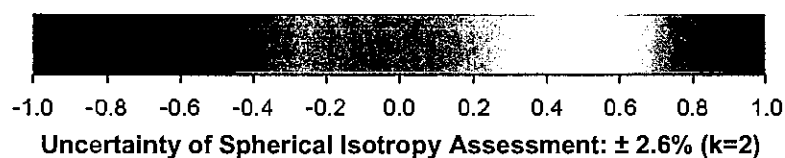
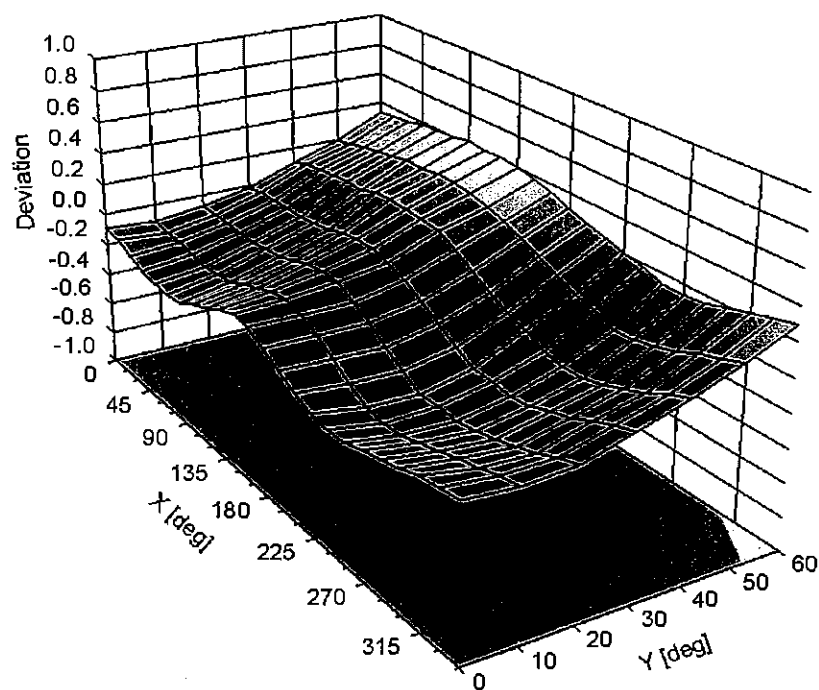
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, θ), $f = 900 \text{ MHz}$





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

Accreditation No.: **SCS 108**

Client **Nokia Beijing TCC**

Certificate No: **ES3-3195_Mar12**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3195**

Calibration procedure(s) **QA CAL-01.v8, QA CAL-23.v4, QA CAL-25.v4**
Calibration procedure for dosimetric E-field probes

Calibration date: **March 12, 2012**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41498087	31-Mar-11 (No. 217-01372)	Apr-12
Reference 3 dB Attenuator	SN: S5054 (3c)	29-Mar-11 (No. 217-01369)	Apr-12
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Reference 30 dB Attenuator	SN: S5129 (30b)	29-Mar-11 (No. 217-01370)	Apr-12
Reference Probe ES3DV2	SN: 3013	29-Dec-11 (No. ES3-3013_Dec11)	Dec-12
DAE4	SN: 654	3-May-11 (No. DAE4-654_May11)	May-12
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-11)	In house check: Apr-13
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	
			Issued: March 13, 2012
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3195

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	1.41	1.18	1.42	± 10.1 %
DCP (mV) ^B	102.1	100.5	98.9	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc ^E (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	119.4	±2.7 %
			Y	0.00	0.00	1.00	111.8	
			Z	0.00	0.00	1.00	88.3	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^A The uncertainties of NormX,Y,Z do not affect the E²-field uncertainty inside TSL (see Pages 5 and 6).

^B Numerical linearization parameter: uncertainty not required.

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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3195

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
835	41.5	0.90	6.13	6.13	6.13	0.48	1.55	± 12.0 %
1750	40.1	1.37	5.32	5.32	5.32	0.63	1.36	± 12.0 %
1900	40.0	1.40	5.14	5.14	5.14	0.80	1.19	± 12.0 %
1950	40.0	1.40	4.94	4.94	4.94	0.70	1.29	± 12.0 %
2450	39.2	1.80	4.45	4.45	4.45	0.64	1.46	± 12.0 %

^C Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

^F At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3195

Calibration Parameter Determined in Body Tissue Simulating Media

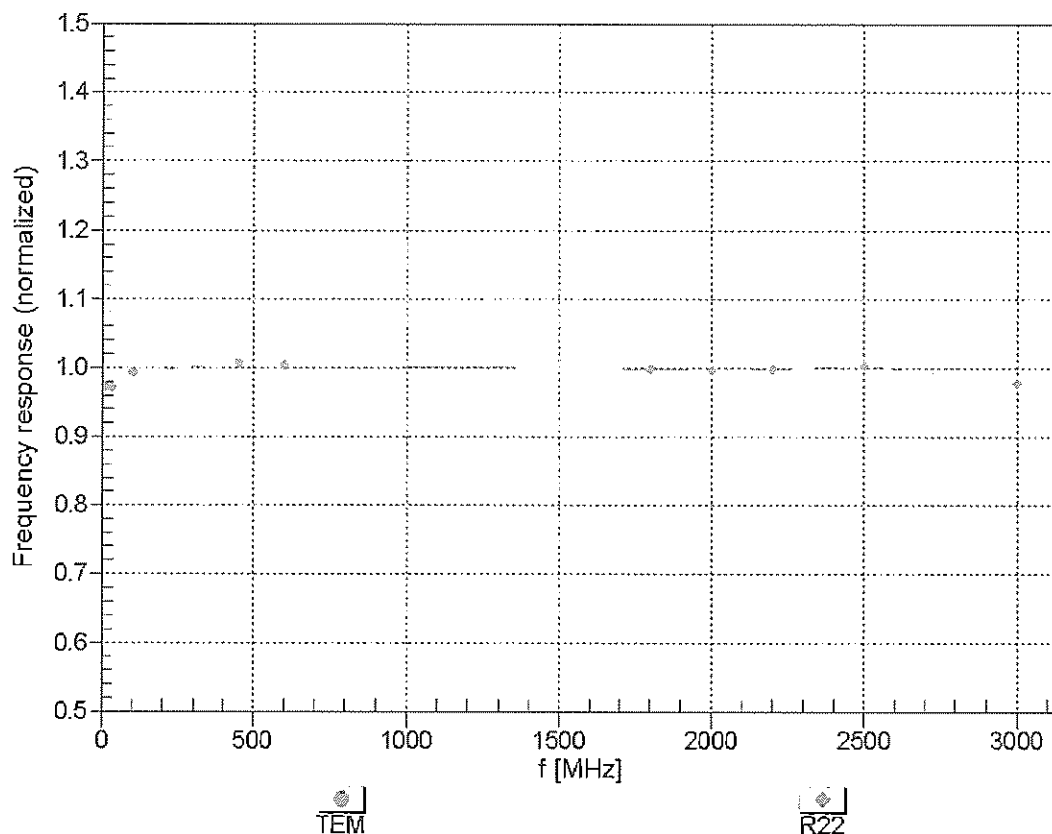
f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
835	55.2	0.97	6.16	6.16	6.16	0.80	1.16	± 12.0 %
1750	53.4	1.49	4.93	4.93	4.93	0.73	1.29	± 12.0 %
1900	53.3	1.52	4.72	4.72	4.72	0.74	1.28	± 12.0 %
1950	53.3	1.52	4.84	4.84	4.84	0.45	1.70	± 12.0 %
2450	52.7	1.95	4.31	4.31	4.31	0.74	1.14	± 12.0 %

^C Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

^F At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

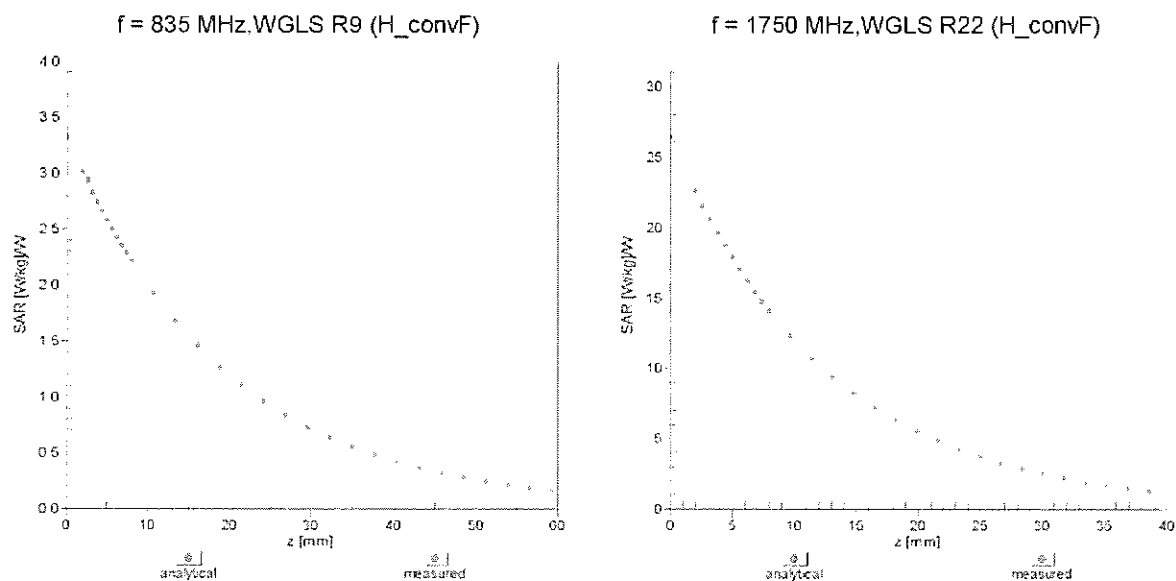
Frequency Response of E-Field

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



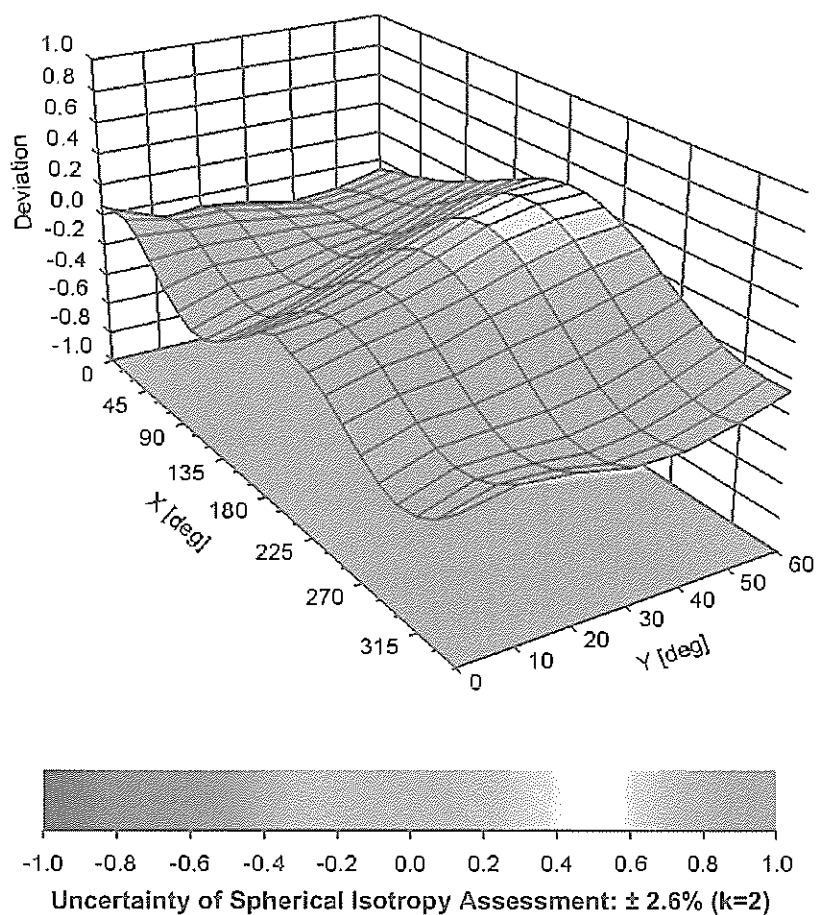
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, θ), $f = 900 \text{ MHz}$



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



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

Accreditation No.: **SCS 108**

Client **Nokia Beijing TCC**

Certificate No: **D835V2-4d005_Mar12**

CALIBRATION CERTIFICATE

Object **D835V2 - SN: 4d005**

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

Calibration date: **March 06, 2012**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	05-Oct-11 (No. 217-01451)	Oct-12
Power sensor HP 8481A	US37292783	05-Oct-11 (No. 217-01451)	Oct-12
Reference 20 dB Attenuator	SN: 5086 (20g)	29-Mar-11 (No. 217-01368)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Israe El-Naouq	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: March 6, 2012

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

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.7 Ω - 3.4 j Ω
Return Loss	- 27.5 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.8 Ω - 5.1 j Ω
Return Loss	- 24.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.394 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	July 11, 2003

DASY5 Validation Report for Head TSL

Date: 06.03.2012

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: CW; Frequency: 835 MHz

Medium parameters used: $f = 835$ MHz; $\sigma = 0.89$ mho/m; $\epsilon_r = 41.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.07, 6.07, 6.07); Calibrated: 30.12.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

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

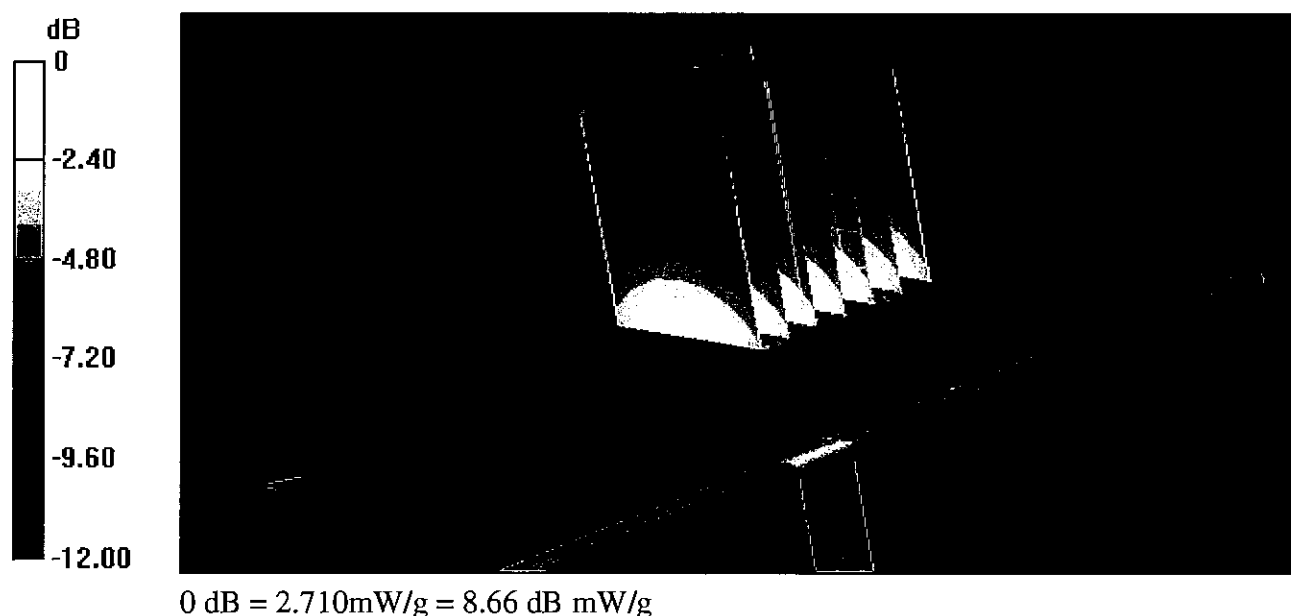
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 57.103 V/m; Power Drift = -0.03 dB

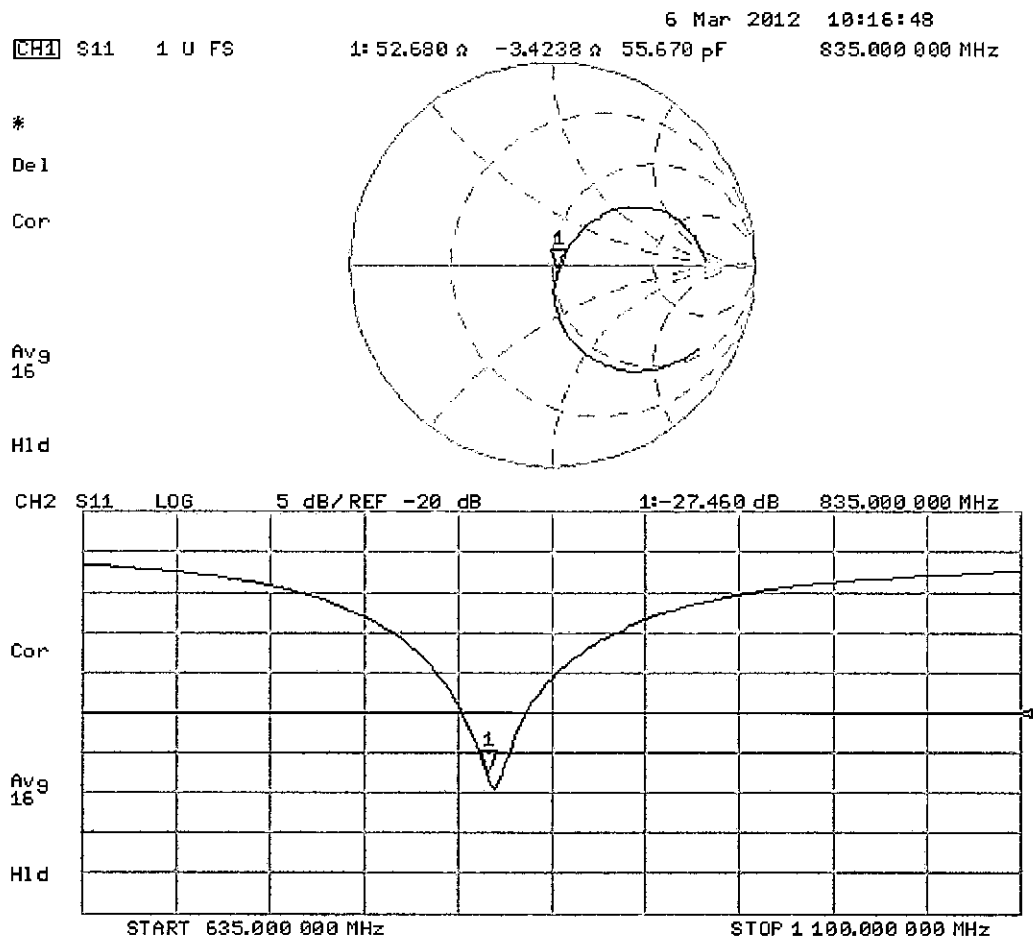
Peak SAR (extrapolated) = 3.4310

SAR(1 g) = 2.32 mW/g; SAR(10 g) = 1.52 mW/g

Maximum value of SAR (measured) = 2.709 mW/g



Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 05.03.2012

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: CW; Frequency: 835 MHz

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 1 \text{ mho/m}$; $\epsilon_r = 55$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.02, 6.02, 6.02); Calibrated: 30.12.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

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

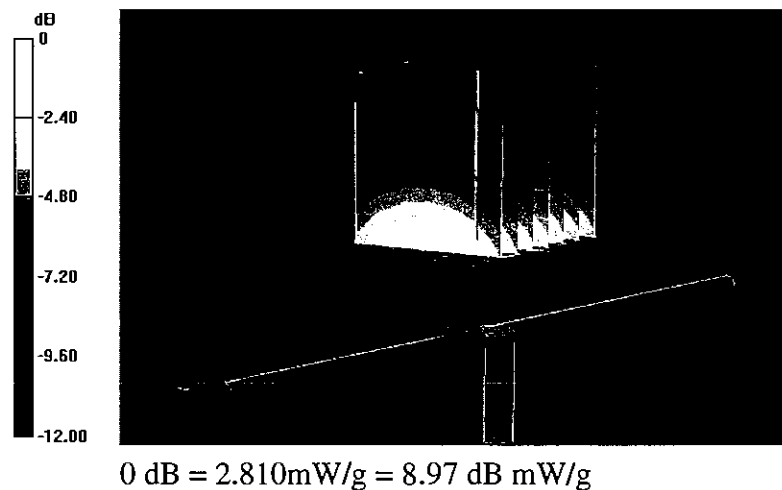
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 55.011 V/m; Power Drift = 0.0071 dB

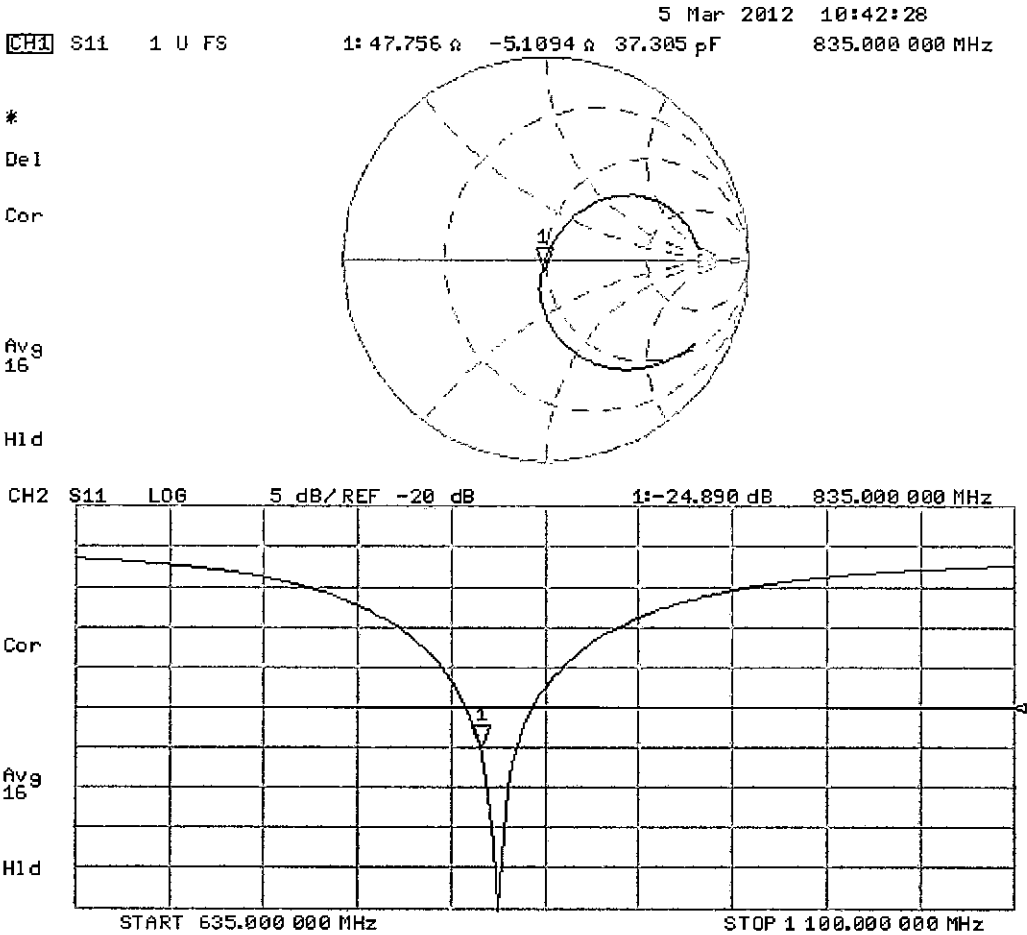
Peak SAR (extrapolated) = 3.4950

SAR(1 g) = 2.42 mW/g; SAR(10 g) = 1.59 mW/g

Maximum value of SAR (measured) = 2.812 mW/g



Impedance Measurement Plot for Body TSL



Dipole D835V2 – SN: 4d005 Antenna Parameters

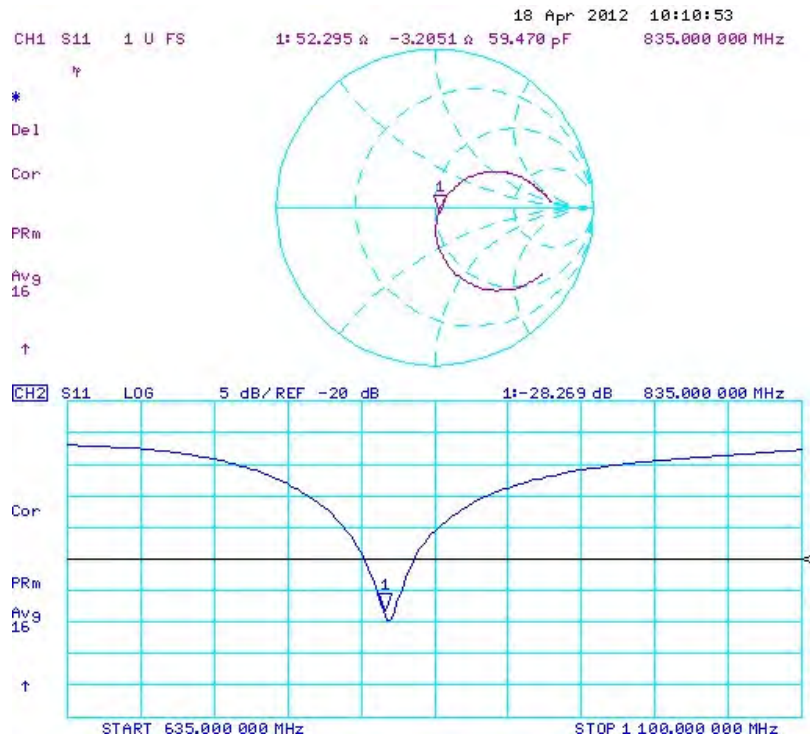
Antenna Parameters with Head TSL

	Calibration certificate	Annual measurement 2012-03-15
Impedance, transformed to feed point	52.7 Ω - 3.4 j Ω	52.3 Ω - 3.2 j Ω
Return loss	- 27.5 dB	- 28.3 dB

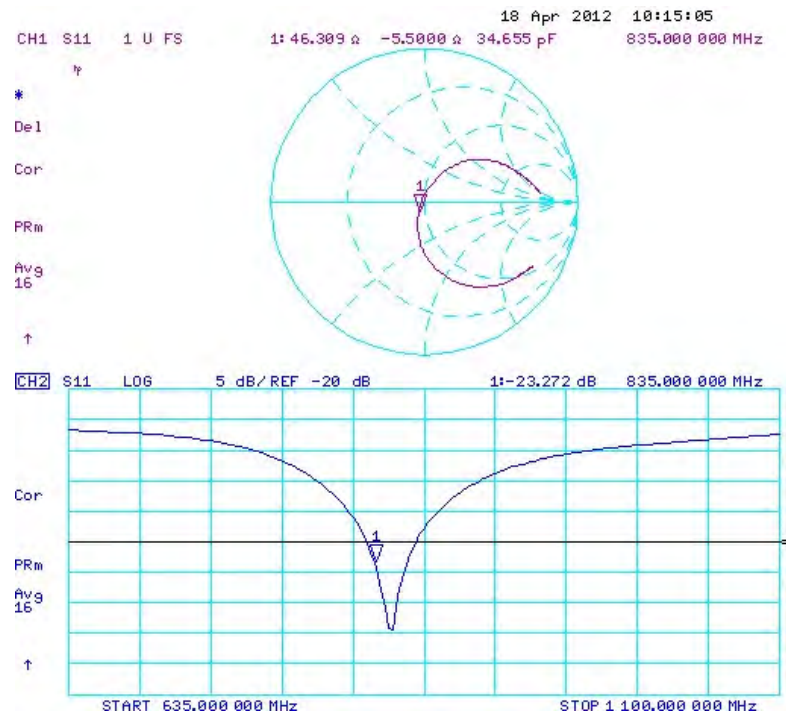
Antenna Parameters with Body TSL

	Calibration certificate	Annual measurement 2012-03-15
Impedance, transformed to feed point	47.8 Ω - 5.1 j Ω	46.3 Ω - 5.5 j Ω
Return loss	- 24.9 dB	- 23.3 dB

Impedance Measurement plot for Head TSL 835



Impedance Measurement plot for Body TSL 835





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

Accreditation No.: **SCS 108**

Client **Nokia Beijing TCC**

Certificate No: **D1900V2-547_Oct11**

CALIBRATION CERTIFICATE

Object **D1900V2 - SN: 547**

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

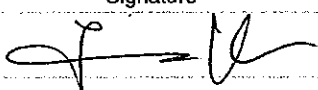
Calibration date: **October 20, 2011**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	05-Oct-11 (No. 217-01451)	Oct-12
Power sensor HP 8481A	US37292783	05-Oct-11 (No. 217-01451)	Oct-12
Reference 20 dB Attenuator	SN: 5086 (20g)	29-Mar-11 (No. 217-01368)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	29-Apr-11 (No. ES3-3205_Apr11)	Apr-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

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

Issued: October 20, 2011

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

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$50.5 \Omega + 4.3 j\Omega$
Return Loss	- 27.4 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	$46.8 \Omega + 3.5 j\Omega$
Return Loss	- 26.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.191 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Design Modification by End User

The dipole has been modified with Teflon Rings (TR) placed within identified markings close to the end of each dipole arm. Calibration has been performed with TR attached to the dipole.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	November 15, 2001

DASY5 Validation Report for Head TSL

Date: 20.10.2011

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.43$ mho/m; $\epsilon_r = 39.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.01, 5.01, 5.01); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

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

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

Reference Value = 99.072 V/m; Power Drift = 0.04 dB

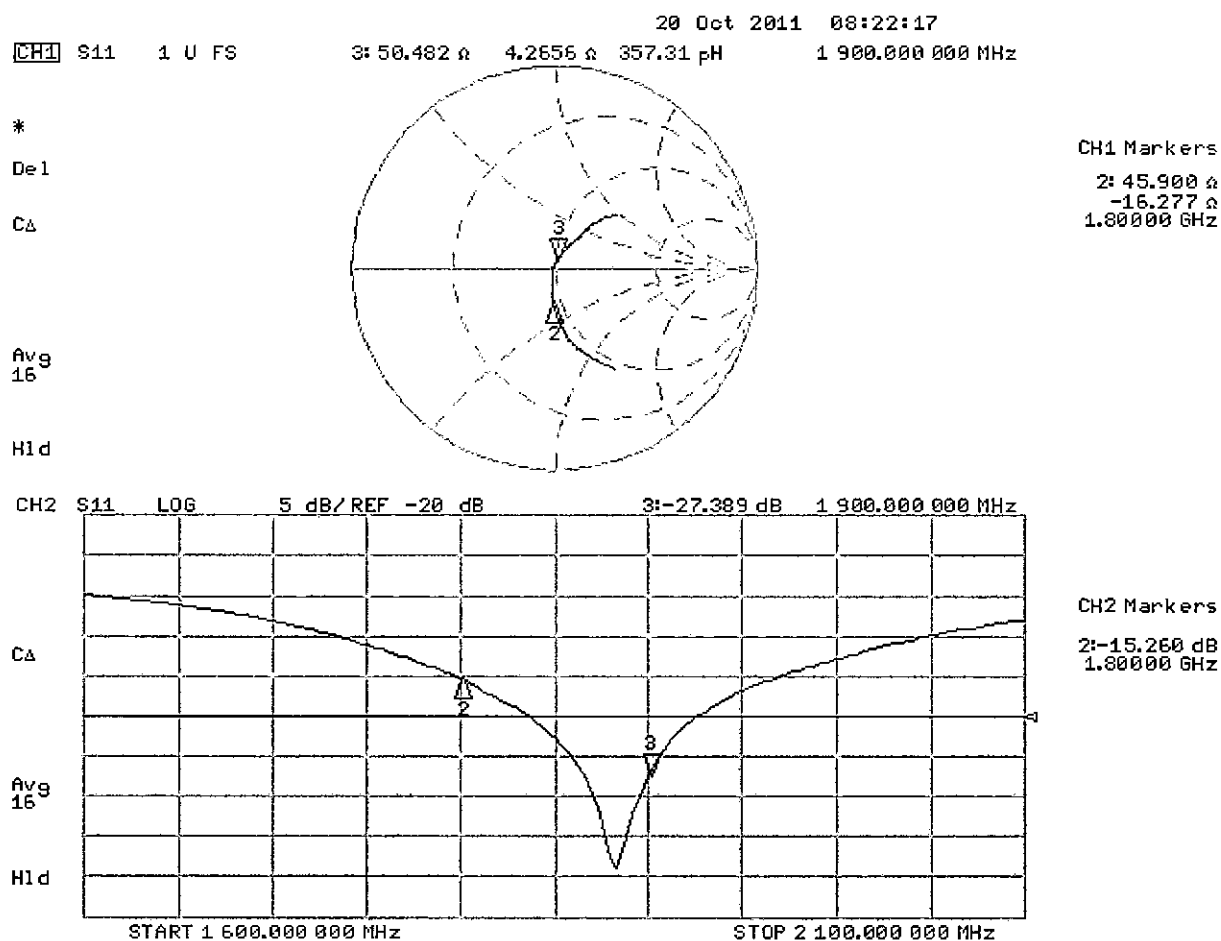
Peak SAR (extrapolated) = 19.037 W/kg

SAR(1 g) = 10.4 mW/g; SAR(10 g) = 5.4 mW/g

Maximum value of SAR (measured) = 13.012 mW/g



Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 18.10.2011

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.59$ mho/m; $\epsilon_r = 54.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.62, 4.62, 4.62); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

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

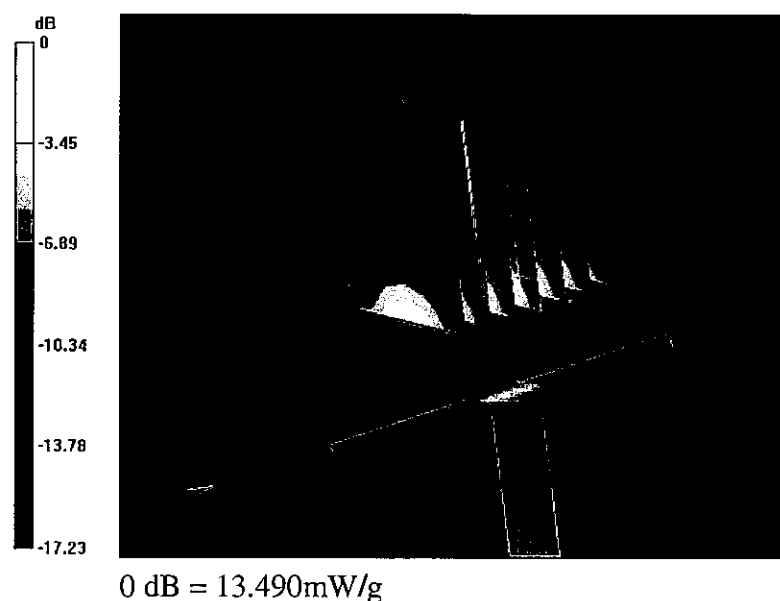
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 95.823 V/m; Power Drift = 0.0092 dB

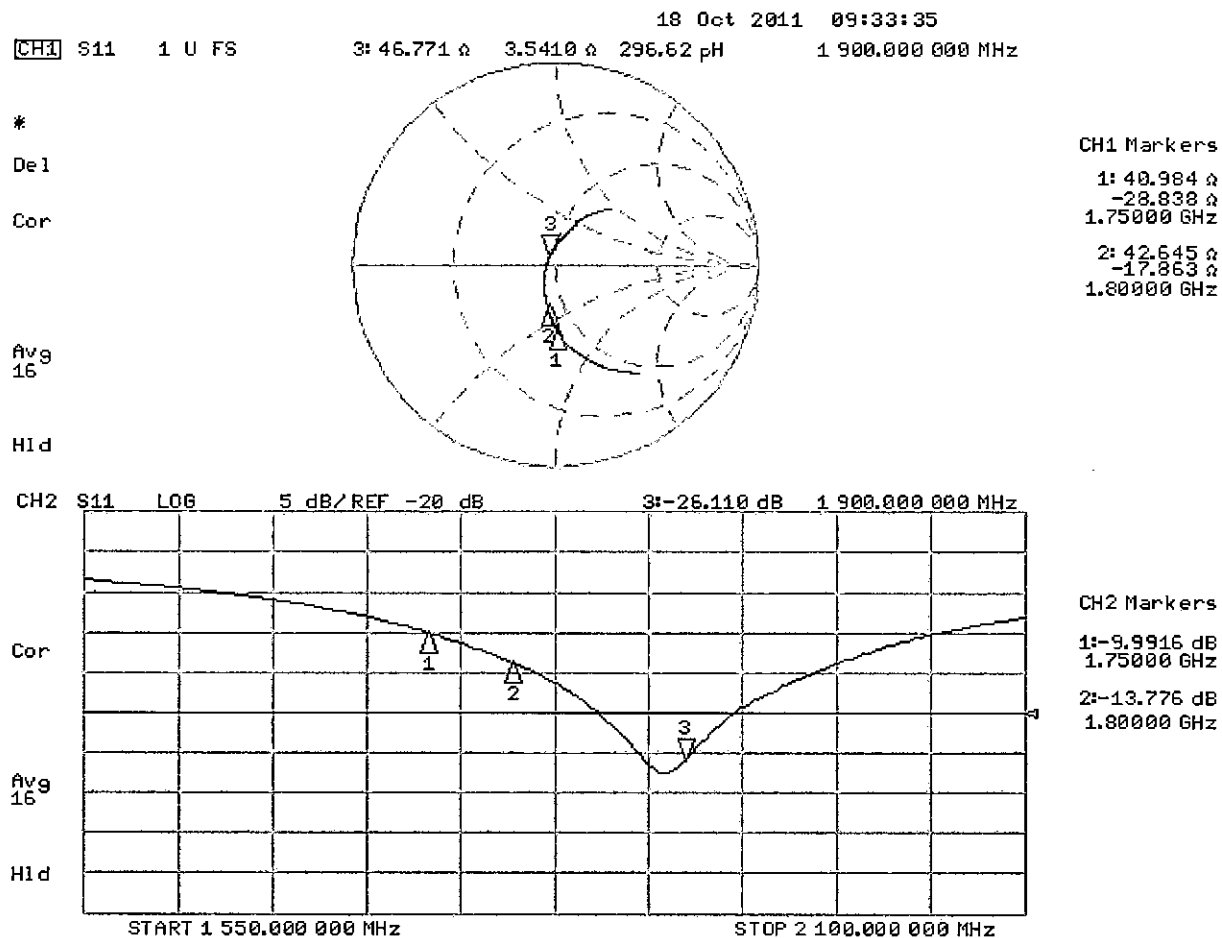
Peak SAR (extrapolated) = 18.788 W/kg

SAR(1 g) = 10.6 mW/g; SAR(10 g) = 5.5 mW/g

Maximum value of SAR (measured) = 13.491 mW/g



Impedance Measurement Plot for Body TSL



Dipole D1900V2 – SN: 547 Antenna Parameters

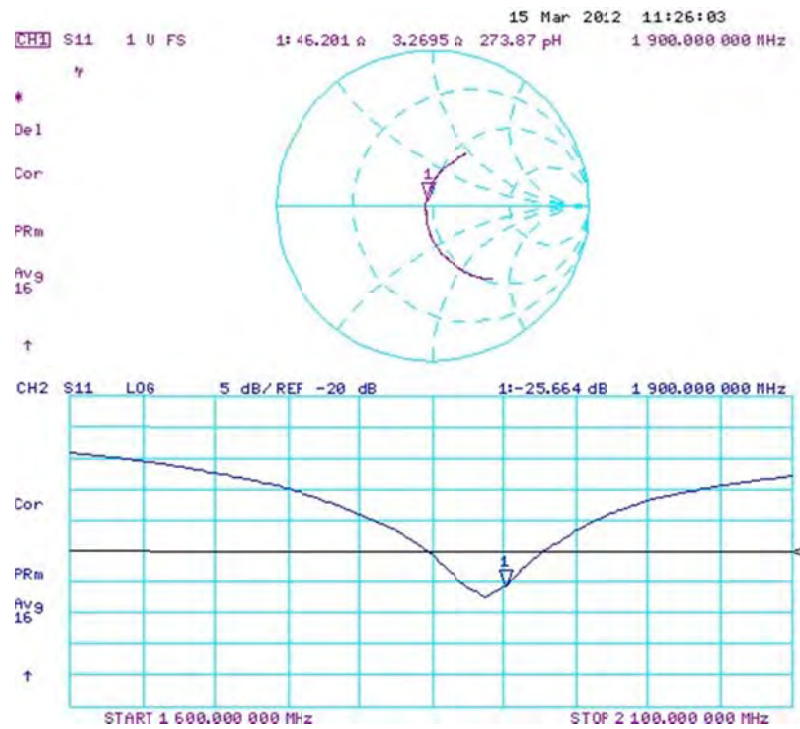
Antenna Parameters with Head TSL

	Calibration certificate	Annual measurement 2012-03-15
Impedance, transformed to feed point	$50.5 \Omega + 4.3 j\Omega$	$46.2 \Omega + 3.3 j\Omega$
Return loss	- 27.4 dB	- 25.7 dB

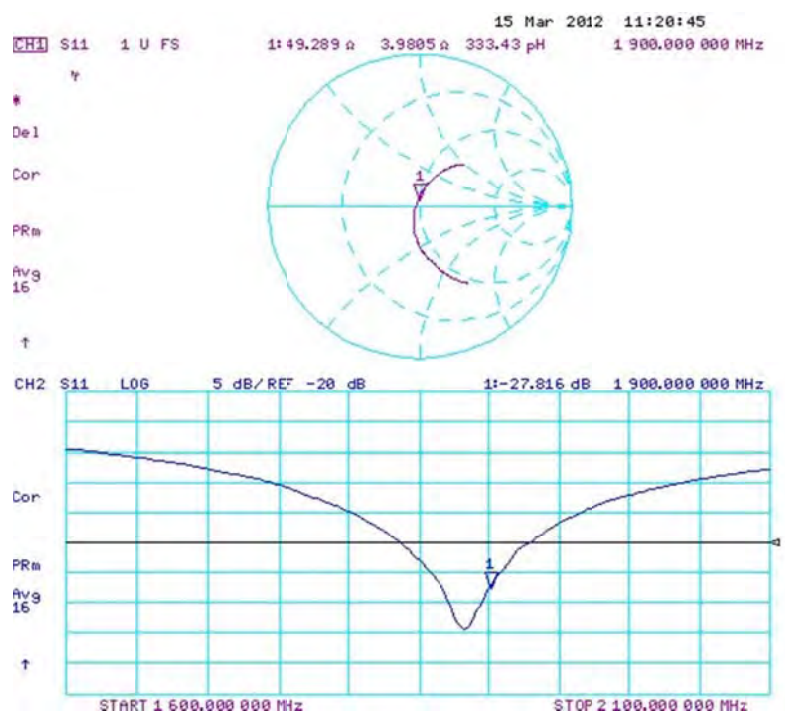
Antenna Parameters with Body TSL

	Calibration certificate	Annual measurement 2012-03-15
Impedance, transformed to feed point	$46.8 \Omega + 3.5 j\Omega$	$49.2 \Omega + 4.0 j\Omega$
Return loss	- 26.1 dB	- 27.8 dB

Impedance Measurement plot for Head TSL 1900



Impedance Measurement plot for Body TSL 1900





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

Accreditation No.: **SCS 108**

Client **Nokia Beijing TCC**

Certificate No: **D2450V2-760_Mar11**

CALIBRATION CERTIFICATE

Object **D2450V2 - SN: 760**

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

Calibration date: **March 17, 2011**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-10 (No. 217-01266)	Oct-11
Power sensor HP 8481A	US37292783	06-Oct-10 (No. 217-01266)	Oct-11
Reference 20 dB Attenuator	SN: 5086 (20g)	30-Mar-10 (No. 217-01158)	Mar-11
Type-N mismatch combination	SN: 5047.2 / 06327	30-Mar-10 (No. 217-01162)	Mar-11
Reference Probe ES3DV3	SN: 3205	30-Apr-10 (No. ES3-3205_Apr10)	Apr-11
DAE4	SN: 601	10-Jun-10 (No. DAE4-601_Jun10)	Jun-11
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

Calibrated by: **Dimce Iliev** **Laboratory Technician** **Signature**

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

Issued: March 17, 2011

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

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$55.3 \Omega + 2.7 j\Omega$
Return Loss	- 25.0 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	$50.3 \Omega + 5.6 j\Omega$
Return Loss	- 25.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.159 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	April 22, 2004

DASY5 Validation Report for Head TSL

Date/Time: 17.03.2011 12:48:58

Test Laboratory: SPEAG, Zurich, Switzerland

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

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

Medium: HSL U12 BB

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

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.53, 4.53, 4.53); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY52, V52.6.2 Build (424)
- Postprocessing SW: SEMCAD X, V14.4.4 Build (2829)

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

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

Peak SAR (extrapolated) = 27.253 W/kg

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

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

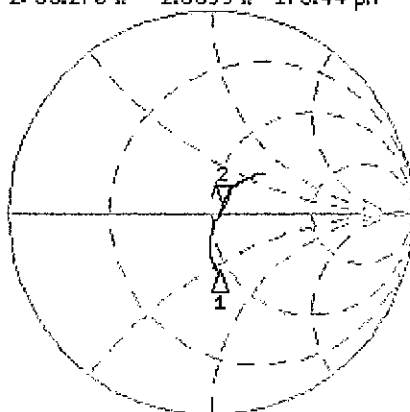


Impedance Measurement Plot for Head TSL

17 Mar 2011 10:49:39
 CH1 S11 1 U FS 2: 55.270 Ω 2.6699 Ω 173.44 μ H 2 450.000 000 MHz

*
 Del
 CA

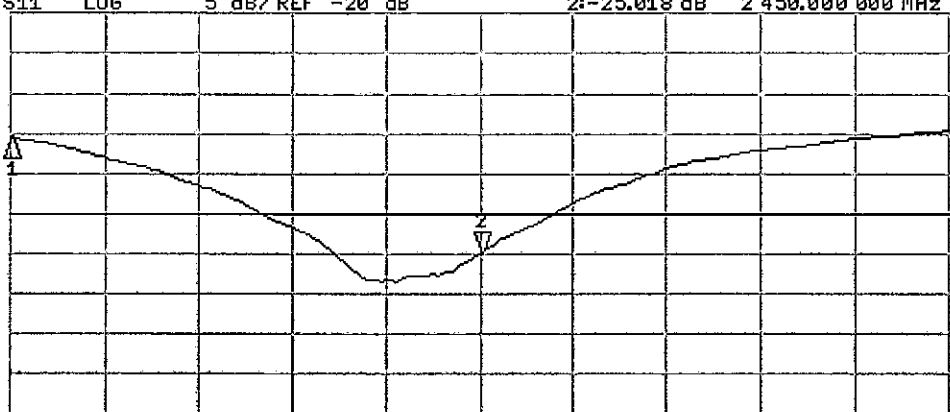
Avg
 16



CH1 Markers
 1: 45.100 Ω
 -29.139 Ω
 2.25000 GHz

CH2 S11 LOG 5 dB/REF -20 dB 2: -25.018 dB 2 450.000 000 MHz

CA
 Avg
 16



CH2 Markers
 1: -10.543 dB
 2.25000 GHz

START 2 250.000 000 MHz

STOP 2 650.000 000 MHz

DASY5 Validation Report for Body TSL

Date/Time: 08.03.2011 14:08:11

Test Laboratory: SPEAG, Zurich, Switzerland

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

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

Medium: MSL U12 BB

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

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.31, 4.31, 4.31); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY52, V52.6.2 Build (424)
- Postprocessing SW: SEMCAD X, V14.4.4 Build (2829)

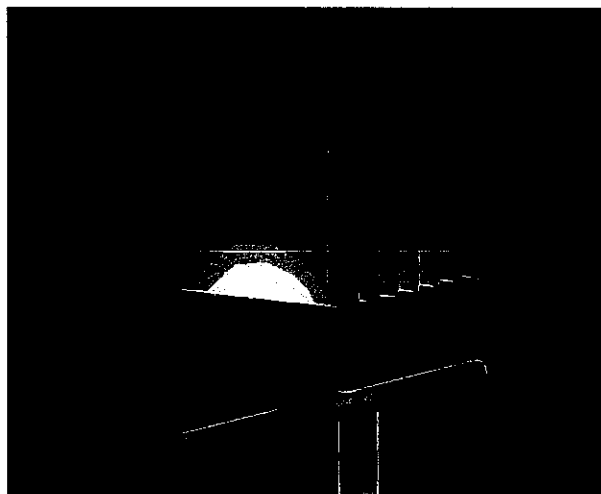
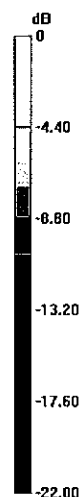
Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

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

Peak SAR (extrapolated) = 27.853 W/kg

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

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



0 dB = 17.440mW/g

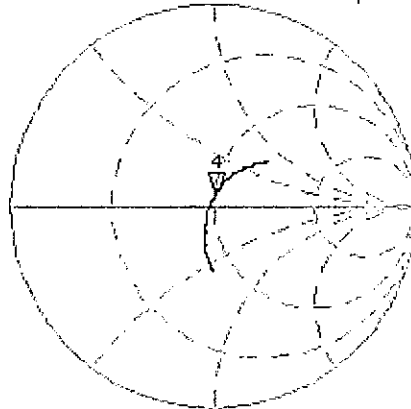
Impedance Measurement Plot for Body TSL

8 Mar 2011 10:20:36
 CH1 S11 1 U FS 4: 50.318 Ω 5.6465 Ω 366.80 pH 2 450.000 000 MHz

*
 De1
 C Δ

Avg
 15

↑

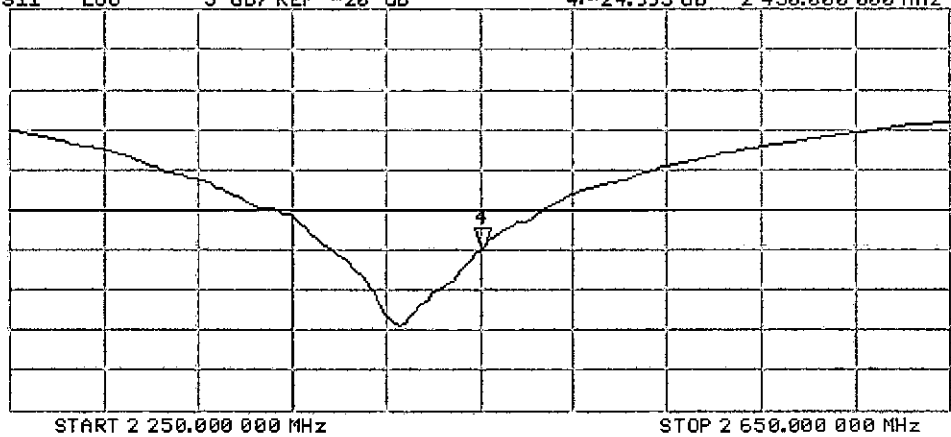


CH2 S11 LOG 5 dB/REF -20 dB 4:-24.993 dB 2 450.000 000 MHz

C Δ

Avg
 15

↑



Dipole D2450V2 – SN: 760 Antenna Parameters

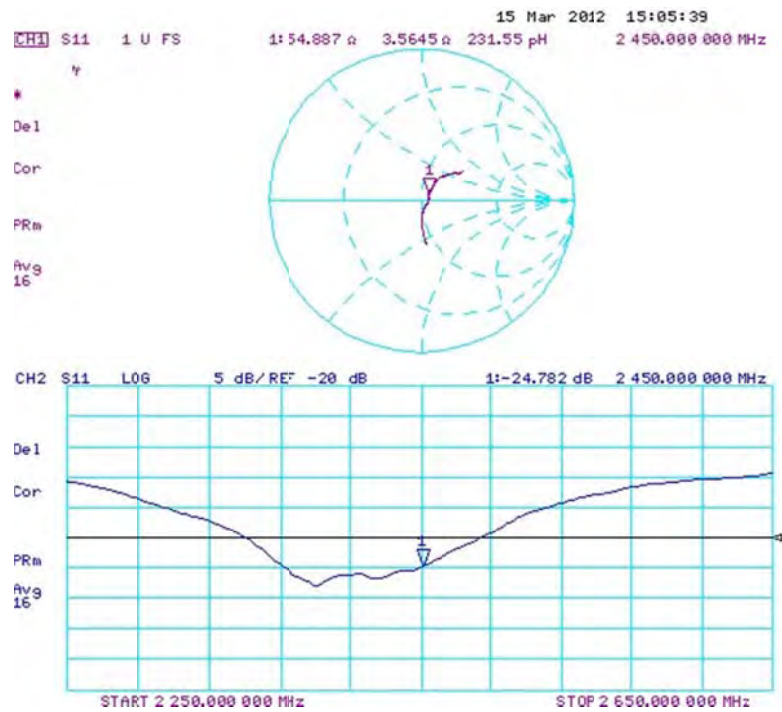
Antenna Parameters with Head TSL

	Calibration certificate	Annual measurement 2012-03-15
Impedance, transformed to feed point	55.3 Ω + 2.7 j Ω	54.9 Ω + 3.6 j Ω
Return loss	- 25.0 dB	- 24.8 dB

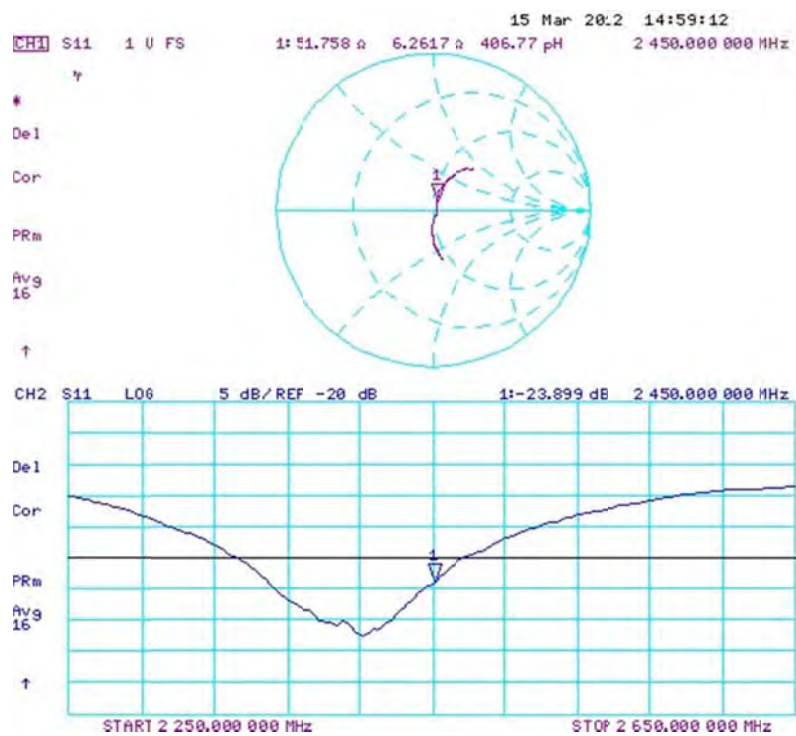
Antenna Parameters with Body TSL

	Calibration certificate	Annual measurement 2012-03-15
Impedance, transformed to feed point	50.3 Ω + 5.6 j Ω	51.8 Ω + 6.3 j Ω
Return loss	- 25.0 dB	- 23.9 dB

Impedance Measurement plot for Head TSL 2450



Impedance Measurement plot for Body TSL 2450



APPENDIX F: CONDUCTED POWER MEASUREMENTS FOR GSM/GPRS BANDS

F.1 Power Tuning Targets

GSM/GPRS Tuning Target	GSM 1-slot	GPRS 2-slot	GPRS 3-slot	GPRS 4-slot	EGPRS 1-slot	EGPRS 2-slot	EGPRS 3-slot	EGPRS 4-slot
850	32.0dBm	29.0dBm	27.2dBm	26.0dBm	27.0dBm	24.0dBm	22.2dBm	21.0dBm
1900	29.5dBm	27.5dBm	25.5dBm	24.0dBm	26.0dBm	24.0dBm	22.0dBm	21.0dBm

F.2 Conducted Power measurements

Type: RM-923; Serial number: 004402/47/159005/3 used for GSM/GPRS 850 for SAR Head, Body-worn and Wireless Router measurements.

GSM 850			
Slot configuration	Low channel	Mid channel	High channel
GSM 1-slot	31.88	31.91	31.96
GPRS 2-slot	28.33	28.35	28.36
GPRS 3-slot	26.43	26.44	26.47
GPRS 4-slot	25.36	25.26	25.31
EGPRS 1-slot	27.14	27.13	27.26
EGPRS 2-slot	24.59	24.57	24.64
EGPRS 3-slot	22.80	22.86	22.79
EGPRS 4-slot	21.55	21.55	21.55

Type: RM-923; Serial number: 004402/47/159015/2 used for GSM/GPRS 1900 for SAR Head, Body-worn and Wireless Router measurements.

GSM 1900			
Slot configuration	Low channel	Mid channel	High channel
GSM 1-slot	28.98	29.09	29.06
GPRS 2-slot	26.95	27.04	26.99
GPRS 3-slot	24.96	25.05	24.99
GPRS 4-slot	23.35	23.44	23.62
EGPRS 1-slot	25.48	25.65	25.71
EGPRS 2-slot	23.48	23.44	23.54
EGPRS 3-slot	21.49	21.57	21.62
EGPRS 4-slot	20.43	20.54	20.55

APPENDIX G: CONDUCTED POWER MEASUREMENTS FOR WCDMA BANDS

G.1 Power Tuning Targets

Tuning Targets			
Mode	Low channel	Mid channel	High channel
WCDMA 850	-	22.5	-
WCDMA 1900	-	22.0	-

G.2 Conducted Power measurements

Type: RM-923; Serial number: 004402/47/159005/3 used for WCDMA 850 for SAR Head, Body-worn and Wireless Router measurements.

WCDMA 850(Band 5)			
Mode	Low channel	Mid channel	High channel
WCDMA	22.87	22.78	22.80

Type: RM-923; Serial number: 004402/47/159015/2 used for WCDMA 1900 for SAR Head, Body-worn and Wireless Router measurements.

WCDMA 1900(Band 2)			
Mode	Low channel	Mid channel	High channel
WCDMA	22.07	22.25	22.15

APPENDIX H: CONDUCTED POWER MEASUREMENTS FOR WLAN

H.1 Power Tuning Targets

Tuning Targets			
Mode	Low channel	Mid channel	High channel
WLAN DSSS 1 Mbps	-	13.5	-

H.2 Conducted Power measurements

Type: RM-923; Serial number: 004402/47/159009/5 used for WLAN for SAR Head, Body-worn and Wireless Router measurements.

WLAN 2.4 GHz					
Modulation mode	Ch 1	Ch 2	Ch 6	Ch 10	Ch 11
b-mode WLAN DSSS 1 Mbps	14.75	-	14.74	-	14.73
b-mode WLAN DSSS 2 Mbps	14.67	-	14.72	-	14.71
b-mode WLAN DSSS 5.5 Mbps	14.73	-	14.80	-	14.81
b-mode WLAN DSSS 11 Mbps	14.66	-	14.72	-	14.71
g-mode WLAN OFDM 6 Mbps	12.43	-	12.09	-	11.93
g-mode WLAN OFDM 9 Mbps	12.37	-	12.02	-	11.88
g-mode WLAN OFDM 12 Mbps	12.36	-	11.99	-	11.86
g-mode WLAN OFDM 18 Mbps	12.22	-	11.95	-	11.79
g-mode WLAN OFDM 24 Mbps	12.02	-	11.63	-	11.46
g-mode WLAN OFDM 36 Mbps	11.86	-	11.44	-	11.28
g-mode WLAN OFDM 48 Mbps	11.33	-	11.32	-	11.16
g-mode WLAN OFDM 54 Mbps	11.28	-	11.30	-	11.13
n-mode MCS 0: OFDM 6.5 / 7.25 Mbps	9.34	-	9.39	-	9.27
n-mode MCS 1: OFDM 13.0 / 14.4 Mbps	9.27	-	9.26	-	9.23
n-mode MCS 2: OFDM 19.5 / 21.7 Mbps	9.20	-	9.20	-	9.18
n-mode MCS 3: OFDM 26.0 / 28.9 Mbps	9.33	-	9.30	-	8.77
n-mode MCS 4: OFDM 39.0 / 43.3 Mbps	9.25	-	9.22	-	8.68
n-mode MCS 5: OFDM 52.0 / 57.8 Mbps	9.17	-	9.10	-	8.56
n-mode MCS 6: OFDM 58.5 / 65.0 Mbps	9.13	-	9.13	-	8.51
n-mode MCS 7: OFDM 65.0 / 72.2 Mbps	9.07	-	9.01	-	8.48