TCC

Nokia

FINAS Finnish Accreditation Service T117 (EN ISO/IEC 17025)

SAR Compliance Test Report

Test report no.:	FCC_RM-1045_03	**Date of report:**	2014-05-07
Template version:	19.6	**Number of pages:**	90
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Tested device:	RM-1045		
FCC ID:	PYARM-1045	**IC:**	-
Supplement reports:	SAR_Photo-RM-1045_04		
Testing has been carried out in accordance with:	**47CFR §2.1093** Radiofrequency Radiation Exposure Evaluation: Portable Devices **FCC published RF exposure KDB procedures** **RSS-102, Issue 4** 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 - 2013** 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:

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1. SUMMARY OF SAR TEST REPORT

1.1 Test Details

Period of test	2014-04-14 to 2014-04-30
SN, HW and SW numbers of tested device	SN: 004402/47/763795/7, HW: 1004, SW: 02061.00037.14145.00001, DUT: 18195 SN: 004402/47/763794/0, HW: 1004, SW: 02061.00037.14145.00001, DUT: 18194 SN: 004402/47/860032/7, HW: 1004, SW: 02061.00037.14145.00001, DUT: 18205 SN: 004402/47/860067/3, HW: 1004, SW: 02061.00037.14145.00001, DUT: 18203 SN: 004402/47/860069/9, HW: 1004, SW: 02061.00037.14145.00001, DUT: 18202 SN: 004402/47/860089/7, HW: 1004, SW: 02061.00037.14145.00001, DUT: 18201 SN: 004402/47/860070/7, HW: 1004, SW: 02061.00037.14145.00001, DUT: 18199 SN: 004402/47/860085/5, HW: 1004, SW: 02061.00037.14145.00001, DUT: 18206 SN: 004402/47/860943/5, HW: 1006, SW: 02061.00046.14163.45000, DUT: 18233 SN: 004402/47/862077/0, HW: 1006, SW: 02061.00046.14163.45000, DUT: 18234
Batteries used in testing	-
Headsets used in testing	WH-208, DUT: 17254, 17255, 17317, 17320
Other accessories used in testing	-
State of sample	Prototype unit
Notes	-

1.2 Maximum Results

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

1.2.1 Head Configuration

Mode	Ch / *f*(MHz)	Conducted power	Position	Measured SAR value (1g avg)	Reported* SAR value (1g avg)	SAR limit (1g avg)	Result	Plot #
3-slot GPRS850	128 / 824.2	28.6 dBm	Left, Cheek	0.757 W/kg	**0.85 W/kg**	1.6 W/kg	PASSED	1
WCDMA850 (Band 5)	4175 / 835.0	23.9 dBm	Left, Cheek	0.774 W/kg	**0.77 W/kg**	1.6 W/kg	PASSED	2
3-slot GPRS1900	512 / 1850.2	26.2 dBm	Left, Cheek	0.353 W/kg	**0.37 W/kg**	1.6 W/kg	PASSED	3
WCDMA1900 (Band2)	9262 / 1852.4	23.8 dBm	Left, Cheek	0.553 W/kg	**0.57 W/kg**	1.6 W/kg	PASSED	4
LTE2500 (Band 7)	21350 / 2560.0	23.2 dBm	Right, Cheek	0.475 W/kg	**0.50 W/kg**	1.6 W/kg	PASSED	5
WLAN2450	11 / 2462.0	17.6 dBm	Left, Tilt	0.684 W/kg	**0.84 W/kg**	1.6 W/kg	PASSED	6
WLAN5000	44 / 5220.0	15.6 dBm	Left, Cheek	0.243 W/kg	**0.30 W/kg**	1.6 W/kg	PASSED	7
3-slot GPRS850 + WLAN2450	-	-	Left, Cheek	0.757 W/kg	**0.85 W/kg**	1.6 W/kg	PASSED	-
WCDMA850 (Band 5) + WLAN2450	-	-	Left, Cheek	0.774 W/kg	**0.77 W/kg**	1.6 W/kg	PASSED	-
3-slot GPRS1900 + WLAN2450	-	-	Left, Cheek	0.684 W/kg	**0.84 W/kg**	1.6 W/kg	PASSED	-
WCDMA1900 + WLAN2450	-	-	Left, Cheek	0.684 W/kg	**0.84 W/kg**	1.6 W/kg	PASSED	-
LTE2500 (Band 7) + WLAN2450	-	-	Left, Tilt	0.741 W/kg	**0.90 W/kg**	1.6 W/kg	PASSED	-
3-slot GPRS850 + WLAN5000	-	-	Left, Cheek	0.757 W/kg	**0.85 W/kg**	1.6 W/kg	PASSED	-
WCDMA850 (Band 5) + WLAN5000	-	-	Left, Cheek	0.774 W/kg	**0.77 W/kg**	1.6 W/kg	PASSED	-
3-slot GPRS1900 + WLAN5000	-	-	Left, Cheek	0.353 W/kg	**0.37 W/kg**	1.6 W/kg	PASSED	-
WCDMA1900 + WLAN5000	-	-	Left, Cheek	0.553 W/kg	**0.57 W/kg**	1.6 W/kg	PASSED	-
LTE2500 (Band 7) + WLAN5000	-	-	Right, Cheek	0.475 W/kg	**0.50 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)	Reported* SAR value (1g avg)	SAR limit (1g avg)	Result	Plot #
3-slot GPRS850	128 / 824.2	28.6 dBm	1.5 cm	0.495 W/kg	**0.56 W/kg**	1.6 W/kg	PASSED	8
WCDMA850 (Band 5)	4175 / 835.0	23.9 dBm	1.5 cm	0.473 W/kg	**0.47 W/kg**	1.6 W/kg	PASSED	9
3-slot GPRS1900	512 / 1850.2	26.2 dBm	1.5 cm	0.315 W/kg	**0.33 W/kg**	1.6 W/kg	PASSED	10
WCDMA1900 (Band2)	9400 / 1880.0	23.9 dBm	1.5 cm	0.501 W/kg	**0.50 W/kg**	1.6 W/kg	PASSED	11
LTE2500 (Band 7)	21350 / 2560.0	23.2 dBm	1.5 cm	0.382 W/kg	**0.40 W/kg**	1.6 W/kg	PASSED	12
WLAN2450	6 / 2437.0	17.5 dBm	1.5 cm	0.065 W/kg	**0.08 W/kg**	1.6 W/kg	PASSED	13
WLAN5000	36 / 5180.0	15.4 dBm	1.5 cm	0.291 W/kg	**0.38 W/kg**	1.6 W/kg	PASSED	14
3-slot GPRS850 + WLAN2450	-	-	1.5 cm	0.495 W/kg	**0.56 W/kg**	1.6 W/kg	PASSED	-
WCDMA850 (Band 5) + WLAN2450	-	-	1.5 cm	0.473 W/kg	**0.47 W/kg**	1.6 W/kg	PASSED	-
3-slot GPRS1900 + WLAN2450	-	-	1.5 cm	0.315 W/kg	**0.33 W/kg**	1.6 W/kg	PASSED	-
WCDMA1900 + WLAN2450	-	-	1.5 cm	0.501 W/kg	**0.50 W/kg**	1.6 W/kg	PASSED	-
LTE2500 (Band 7) + WLAN2450	-	-	1.5 cm	0.382 W/kg	**0.40 W/kg**	1.6 W/kg	PASSED	-
2-slot GPRS850 + WLAN5000	-	-	1.5 cm	0.495W/kg	**0.56 W/kg**	1.6 W/kg	PASSED	-
WCDMA850 (Band 5) + WLAN5000	-	-	1.5 cm	0.473 W/kg	**0.47 W/kg**	1.6 W/kg	PASSED	-
3-slot GPRS1900 + WLAN5000	-	-	1.5 cm	0.318 W/kg	**0.40 W/kg**	1.6 W/kg	PASSED	-
WCDMA1900 + WLAN5000	-	-	1.5 cm	0.501 W/kg	**0.50 W/kg**	1.6 W/kg	PASSED	-
LTE2500 (Band 7) + WLAN5000	-	-	1.5 cm	0.382 W/kg	**0.40 W/kg**	1.6 W/kg	PASSED	-

1.2.3 Wireless Router Configuration

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

Mode	Ch / *f*(MHz)	Conducted power	Separation distance	Measured SAR value (1g avg)	Reported* SAR value (1g avg)	SAR limit (1g avg)	Result	Plot #
3-slot GPRS850	128/ 824.2	28.6 dBm	10.0 mm	0.699 W/kg	**0.78 W/kg**	1.6 W/kg	PASSED	15
WCDMA850 (Band 5)	4132 / 826.4	23.8 dBm	10.0 mm	0.654 W/kg	**0.67 W/kg**	1.6 W/kg	PASSED	16
3-slot GPRS1900	512 / 1850.2	26.2 dBm	10.0 mm	0.773 W/kg	**0.81 W/kg**	1.6 W/kg	PASSED	17
WCDMA1900 (Band2)	9538 / 1907.6	22.3 dBm	10.0 mm	0.959 W/kg	**0.98 W/kg**	1.6 W/kg	PASSED	18
LTE2500 (Band 7)	20850 / 2510.0	23.1 dBm	10.0 mm	0.890 W/kg	**0.95 W/kg**	1.6 W/kg	PASSED	19
WLAN2450	6 / 2437.0	17.5 dBm	10.0 mm	0.131 W/kg	**0.17 W/kg**	1.6 W/kg	PASSED	20
3-slot GPRS850 + WLAN2450	-	-	10.0 mm	0.712 W/kg	**0.80 W/kg**	1.6 W/kg	PASSED	-
WCDMA850 (Band 5) + WLAN2450	-	-	10.0 mm	0.669 W/kg	**0.68 W/kg**	1.6 W/kg	PASSED	-
3-slot GPRS1900 + WLAN2450	-	-	10.0 mm	0.773 W/kg	**0.81 W/kg**	1.6 W/kg	PASSED	-
WCDMA1900 + WLAN2450	-	-	10.0 mm	0.959 W/kg	**0.98 W/kg**	1.6 W/kg	PASSED	-
LTE2500 (Band 7) + WLAN2450	-	-	10.0 mm	0.890 W/kg	**0.95 W/kg**	1.6 W/kg	PASSED	-

* Reported SAR values are scaled to, or measured at, upper limit of power tuning tolerance.

1.2.4 Summary SAR data

	FCC-defined SAR values for the Grants of Equipment Authorization		
	PCE	DTS	NII
Maximum Head SAR values	0.85 W/kg	0.84 W/kg	0.30 W/Kg
{Max + Max} Simultaneous Head SAR value	1.49 W/kg		
Maximum Body SAR values	0.56 W/kg	0.12 W/kg	0.38 W/Kg
{Max + Max} Simultaneous Body SAR value	0.862 W/kg		
Maximum Product Specific (Wireless Router) SAR values	0.98 W/kg	0.17W/kg	-
{Max + Max} Simultaneous Product Specific SAR value	0.995 W/kg		
Maximum Simultaneous SAR value **Head, Left Cheek: 3-slot GPRS1900 + WLAN2450**	1.49 W/kg		

Note:

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

1.2.5 Maximum Drift

Maximum drift covered by 5% scaling up of the SAR values	Maximum drift during measurements
0.2dB	0.18dB

1.2.6 Measurement Uncertainty

Expanded Uncertainty (k=2) 95%	± 29.8%

2. DESCRIPTION OF THE DEVICE UNDER TEST

Device category	Portable
Exposure environment	General population / uncontrolled

Modes of Operation	Bands	Modulation Mode	Duty Cycle	Transmitter Frequency Range (MHz)	Power Tuning Target (dBm)				Upper Limit of Power Tuning Tolerance (dBm)			
					1-slot	2-slot	3-slot	4-slot	1-slot	2-slot	3-slot	4-slot
GSM / GPRS	850	GMSK	1/8 to 4/8	824 – 849	32.5	30.6	28.7	27.6	32.9	31.0	29.1	28.0
	1900			1850 – 1910	30.0	27.6	26.0	24.6	30.4	28.0	26.4	25.0
EGPRS	850	GMSK	1/8 to 4/8	824 – 849	26.5	25.6	24.8	23.8	26.9	26.0	25.2	24.2
	1900			1850 – 1910	25.5	24.5	24.0	22.2	25.9	24.9	24.4	24.6
WCDMA	850 (Band 5)		1	826 – 847	23.5				23.9			
WCDMA	1900 (Band 2)		1	1852 – 1908	23.5				23.9			
HSUPA	850 (Band 5)		1	826 – 847	See Appendix D for details							
HSUPA	1900 (Band 2)		1	1852 – 1908	See Appendix D for details							
LTE	2500 (Band 7)	QPSK / 16QAM		2510 - 2560	23.0				23.4			
BT	2450	GFSK	1	2402 – 2480	9.0				10.5			
					Ch 1	Ch 2-10	Ch 11		Ch 1	Ch 2-10	Ch 11	
WLAN b-mode*	2450	BPSK / QPSK	1	2412 – 2462	17.0	17.0	17.0		18.5	18.5	18.5	
WLAN g-mode*	2450	up to 16QAM	1	2412 – 2462	14.5	16.5	16.5		16.0	18.0	18.0	
WLAN n-mode 20MHz*	2450	up to 16QAM	1	2412 – 2462	14.5	16.0	16.0		16.0	17.5	17.5	
					Ch 36	Ch 40 -161	Ch 165		Ch 36	Ch 40 -161	Ch 165	
WLAN a-mode*	5000	up to 64QAM	1	5150 – 5825	15.0	15.0	15.0		16.5	16.5	16.5	
WLAN n-mode 20MHz*	5000	up to 64QAM	1	5150 – 5825	15.0	15.0	15.0		16.5	16.5	16.5	
WLAN ac-mode 20MHz*	5000	up to 256QAM	1	5150 – 5825	14.5	14.5	14.5		16.0	16.0	16.0	

(Table continues)

(Table continues)

Modes of Operation	Bands	Modulation Mode	Duty Cycle	Transmitter Frequency Range (MHz)	Power Tuning Target (dBm)			Upper Limit of Power Tuning Tolerance (dBm)		
					Ch 38	Ch 42 -134	Ch 138	Ch 38	Ch 42 -134	Ch 138
WLAN n-mode 40MHz*	5000	up to 64QAM	1	5150 – 5825	15	15	15	16.5	16.5	16.5
WLAN ac-mode 40MHz*	5000	up to 256QAM	1	5150 – 5825	15	15	15	16.5	16.5	16.5
					Ch 42	Ch 58	Ch 106	Ch 42	Ch 58	Ch 106
WLAN ac-mode 80MHz*	5000	up to 256QAM	1	5180 - 5805	13	13	13	14.5	14.5	14.5

* See Appendix J for details

Outside of USA, the transmitter of the device is capable of operating also in GSM/GPRS/EGPRS900, GSM/GPRS/EGPRS1800, WCDMA800 (Band 8), WCDMA2100 (Band 1), LTE850 (Band 20), LTE900 (Band 8), LTE1800 (Band 3) and LTE2100 (Band 1) 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 WCDMA HSUPA device, but SAR tests for HSUPA mode have not been performed as no HSUPA Sub-test mode has an average power > 0.25dB above the basic WCDMA 12.2kbps RMC mode. Appendix D of this report gives a summary of the measured WCDMA and HSUPA average powers and details of the HSUPA MPRscheme. Additionally, Appendix I lists target and measured conducted powers for WCDMA bands.

This is an LTE device LTE bands and Channel Bandwidths are given in the table below.

Band	Channel Bandwidth MHz					
	20	15	10	5	3	1.4
LTE2500 (Band 7)	x	x	x	x		

This is a BT Class 1 device and its power tuning target upper limit is 10.5dBm. WLAN2450 power tuning target upper limit is 18.5dBm. Since WLAN2450 and BT use same frequency and antenna, WLAN2450 power is 8.0dB higher, and they cannot transmit simultaneously, the WLAN2450 standalone SAR is conservative estimation of BT SAR. As WLAN2450 SAR result is below limit, also BT SAR can be deemed to comply without further analysis or standalone measurements. Also WLAN2450+cellular bands combined SAR results can be regarded as conservative estimation of BT+cellular combined SARs. As WLAN2450+cellular combined SAR result are below limit, also BT+cellular combined SAR can be deemed to comply without further analysis and estimations required in KDB 447498 for simultaneous transmission exclusion.

This device uses two antennas for transmission of cellular bands; and a separate single antenna is used for WLAN. The cellular antennas do not transmit at the same time. All antennas are fully and separately SAR tested for individual transmission. Simultaneous transmissions with WLAN2450 and WLAN5000 are assessed separately for both cellular antennas.

	Tx Antennas	
	Antenna 1	Antenna 2
GSM/GPRS/EGPRS850	✓	✓
GSM/GPRS/EGPRS1900	✓	✓
WCDMA850 (Band 5)	✓	-
WCDMA1900 (Band 2)	✓	-
LTE2500 (Band 7)	-	✓

Simultaneous transmission of any singular cellular and PCS band is possible with WLAN in Head, Body-worn and Wireless router use according to the tables below.

Simultaneous transmission capabilities in Head and Body-worn use		
	WLAN2450	WLAN5000
GSM/GPRS/EGPRS850	✓	✓
WCDMA850	✓	✓
GSM/GPRS/EGPRS1900	✓	✓
WCDMA1900	✓	✓
LTE2500	✓	✓
Simultaneous transmission capabilities in Wireless Router use		
	WLAN2450	WLAN5000
GSM/GPRS/EGPRS850	✓	-
WCDMA850	✓	-
GSM/GPRS/EGPRS1900	✓	-
WCDMA1900	✓	-
LTE2500	✓	-

2.1 Power reductions in Wireless Router configurations

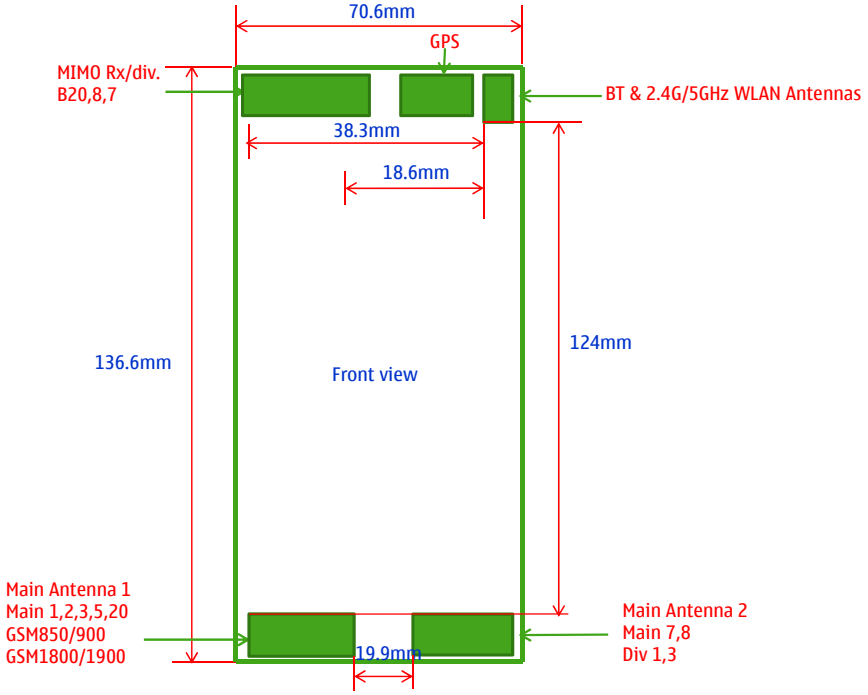
The following table details the power reductions active in Wireless Router mode:

Band	Power reduction in WR mode	Target tuning power in WR mode		
GPRS/EGPRS850	0 dB	1-slot GPRS: 32.5 dBm 2-slot GPRS: 30.6 dBm 3-slot GPRS: 28.7 dBm 4-slot GPRS: 27.6 dBm		
WCDMA850	0 dB	23.5 dBm		
GPRS/EGPRS1900	0 dB	1-slot GPRS: 30.0 dBm 2-slot GPRS: 27.6 dBm 3-slot GPRS: 26.0 dBm 4-slot GPRS: 24.6 dBm		
WCDMA1900	1.5 dB	22.0 dBm		
LTE2500	0 dB	23.0 dBm		
WLAN2450 b-mode (BPSK 1 Mbps)	0 dB	Ch 1: 17.0 dBm	Ch 6: 17.0 dBm	Ch 11: 17.0 dBm
WLAN2450 g-mode (BPSK 6 Mbps)	0 dB	Ch 1: 14.5 dBm	Ch 6: 16.5 dBm	Ch 11: 16.5 dBm
WLAN2450 n-mode 20MHz (BPSK 6.5/7.25 Mbps)	0 dB	Ch 1: 14.5 dBm	Ch 6: 16.0 dBm	Ch 11: 16.0 dBm
WLAN5000 a-mode (BPSK 6 Mbps)	N/A	N/A		
WLAN5000 n-mode 20MHz (BPSK 6.5 Mbps)	N/A	N/A		
WLAN5000 n-mode 40MHz (BPSK 13.5/15.0 Mbps)	N/A	N/A		
WLAN5000 ac-mode 20MHz (BPSK 6.5/7.2 Mbps)	N/A	N/A		
WLAN5000 ac-mode 40MHz (BPSK 13.5/15.0 Mbps)	N/A	N/A		
WLAN5000 ac-mode 80MHz (BPSK 29.3/32.5 Mbps)	N/A	N/A		

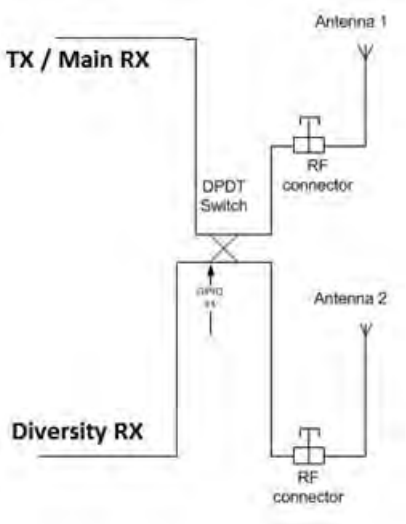
2.2 Description of the Antenna

The device has 2 separate internal antennas for cellular, AWS and PCS use and and one internal antenna for WLAN use. The cellular antenna 'Main antenna 1' is located at the near left bottom underneath the back cover and cellular antenna 'Main antenna 2' is located at the near right bottom underneath the back cover. The WLAN antenna is located at the top right corner underneath the back cover.

Phone Outside Dimension and Distance Between radiators for Main Antennas, BT/WIFI



Schematics showing Tx and Rx circuitry, antenna switch, conducted ports and 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/WLAN5000 where control software was used. Communication between the device and the call tester was established by air link.

The conducted output power of the device was measured by a separate test laboratory on the same units as used for SAR testing. The results are given in the appendixes G-J of this report.

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

In all operating bands the measurements were performed on lowest, middle and highest channels, and/or on all required test channels as defined in Published FCC KDB Procedures.

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 number of Tx slots in all GSM/GPRS mode tests was based on tuning target/conducted power data, see Appendix H. The number of slots with highest or equal highest time-average power was tested.

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.

The standard transmission mode of the device in all WLAN b-mode tests was DSSS QPSK 1Mbps. The standard transmission mode of the device in all WLAN a-mode tests was OFDM 6 Mbps; WLAN ac-mode BPSK 29.3 / 32.5 Mbps was additionally used for. The standard transmission modes used have maximum time-averaged output powers within 0.25dB of the highest time-averaged output power of all the WLAN a, b, g, n and ac modulation modes in this device as illustrated by the tables in Appendix J. All WLAN testing has been carried out in accordance with FCC KDB 248227: SAR Measurement Procedures for 802.11 a/b/g Transmitters.

LTE band has been tested according to the guidance given in KDB941225 D05 SAR for LTE Devices v02r02. MPR values as stipulated in Table 6.2.3_1 of 3GPP TS 36.101 (presented below) have been incorporated into the device; these MPR values are dependent on the modulation, Channel Bandwidth and Resource Block allocations as shown:

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3

Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

No additional MPR settings have been incorporated into the design of the device and therefore no A-MPR settings have been active during its testing.

Here is a summary list of the KDB documents used in the reported testing:

KDB 941225 D05 SAR for LTE Devices v02r02
KDB 941225 D01 SAR Measurement Procedures for 3G Devices
KDB 248227 SAR Measurement Procedures for 802.11 a/b/g Transmitters
KDB 648474 D04 SAR Handsets Multi Xmiter and Ant v01
KDB 941225 D06 v01 Hot Spot SAR
KDB 447498 D01 General RF Exposure Guidance v05
KDB 690783 D01 SAR Listings on Grants
KDB 865664 D01 SAR Measurements 100MHz to 6GHz v01
KDB 865664 D02 SAR Reporting v01

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
DAE4	793	2013-06	2014-06
DAE4	538	2013-11	2014-11
DAE4	728	2013-11	2014-11
DAE4	1302	2013-11	2014-11
E-field Probe ES3DV3	3194	2013-11	2014-11
E-field Probe ES3DV3	3131	2013-06	2014-06
E-field Probe EX3DV4	3892	2013-11	2014-11
E-field Probe EX3DV4	3960	2013-12	2014-12
Dipole Validation Kit, D835V2	480	2012-12	2014-12
Dipole Validation Kit, D1900V2	5d013	2012-12	2014-12
Dipole Validation Kit, D2450V2	749	2012-12	2014-12
Dipole Validation Kit, D2600V2	1056	2012-11	2014-11
Dipole Validation Kit, D5GHzV2	1048	2012-12	2014-12
DASY5 software	Version 52.8	-	-

Additional test equipment used in testing:

Test Equipment	Model	Serial Number	Calibration date	Calibration expiry
Signal Generator	E4438C	MY42080610	2013-08	2014-08
Signal Generator	SML03	101264	2013-08	2014-08
Signal Generator	SMB100A	105735	2013-08	2014-08
Signal Generator	E4436B	US39260114	2013-08	2014-08
Amplifier	5S1G4M3	302338	-	-
Amplifier	ZHL-42-SMA	NO72095-5	-	-
Amplifier	5S4G11	312661	-	-
Amplifier	5S1G4	25583	-	-
Power Meter	NRVS	838624/032	2013-08	2014-08
Power Meter	NRVD	840023/028	2013-08	2014-08
Power Meter	NRP	100714	2013-08	2014-08
Power Meter	NRVZ	849305/029	2013-08	2014-08
Power Sensor	NRV-Z32	100067	2013-08	2014-08
Power Sensor	NRV-Z32	849745/018	2013-08	2014-08
Power Sensor	NRP-Z92	100085	2013-08	2014-08
Power Sensor	NRV-Z32	825600/002	2013-08	2014-08
Call Tester	CMU 200	103293	-	-
Call Tester	CMU 200	101111	-	-
Call Tester	CMU 200	104983	-	-
Call Tester	CMU 200	103294	-	-
Call Tester	MT8820C	6200883095	-	-
Call Tester	CMW 500	110565	-	-
Call Tester	CMW 500	110556	-	-
Network Analyzer	ENA E5071C	MY46213166	2013-08	2014-08
Dielectric Probe Kit	DAK-3.5	1042	-	-

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 E
Frequency	10 MHz to 4 GHz (dosimetry); Linearity: ± 0.2 dB (30 MHz to 4 GHz)
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.3 dB in HSL (rotation normal to probe axis)
Dynamic Range	5 µW/g to > 100 mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 330 mm Tip length: 20 mm Body diameter: 12 mm Tip diameter: 3.9 mm Distance from probe tip to dipole centers: 2.0 mm
Application	General dosimetry up to 4 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms

4.1.2 Isotropic E-field Probe Type EX3DV4

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

4.2 Phantoms

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

The phantom used for all Body SAR tests i.e. for both system checks and device testing, was a flat phantom also manufactured by SPEAG this phantom conform to the requirements of FCC published RF Exposure KDB Procedures.

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 and FCC published RF Exposure KDB Procedures. All tests were carried out using simulants whose dielectric parameters were within ± 5% of the recommended values. All tests were carried out within 24 hours of measuring the dielectric parameters.

The depth of the tissue simulant was at least 15.0 cm for all system check and device tests, measured from the ear reference point in the case of the SAM phantom and from the inner surface of the flat phantom.

4.3.1 Tissue Simulant Recipes

The following recipes were used for Head and Body tissue simulants:

800MHz band

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

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

5000MHz band †

Ingredient	Head (% by weight)	Body (% by weight)
Water	50-65	60-80
Oil	10-30	-
Emulsifiers, Esters, Inhibitors	8-25	20-40
Sodium salt	0-1.5	0-1.5

† Recipe is proprietary to SPEAG. The proportions of the constituents have not been disclosed.

4.4 System validation and System checking

4.4.1 System validation status

Probe Calibration Point f / MHz	Test System	DASY SW	Dipole Type / SN	Probe Type / SN	Calibrated signal type(s)	DAE unit Type / SN	Validation done	
							Head tissue simulant	Body tissue simulant
835	TCC Salo / SAR-2	V52.8	D835V2 / 480	ES3DV4 / 3194	CW	DAE4 / 538	2014-02	2013-12
1900	TCC Salo / SAR-1	V52.8	D1900V2 / 5d013	ES3DV3 / 3131	CW	DAE4 / 793	2013-07	2013-07
2450	TCC Salo / SAR-4	V52.8	D2450V2 / 749	EX3DV4 / 3960	CW	DAE4 / 1302	2014 -01	2014 -01
2600	TCC Salo / SAR-4	V52.8	D2600V2 / 1056	EX3DV4 / 3960	CW	DAE4 / 1302	2014-02	2014-02
5200	TCC Salo / SAR-3	V52.8	D5GHzV2 / 1048	EX3DV4 / 3892	CW	DAE4 / 728	2014 -01	2014 -01
5300	TCC Salo / SAR-3	V52.8	D5GHzV2 / 1048	EX3DV4 / 3892	CW	DAE4 / 728	2014 -01	2014 -01
5500	TCC Salo / SAR-3	V52.8	D5GHzV2 / 1048	EX3DV4 / 3892	CW	DAE4 / 728	2014 -01	2014 -01
5600	TCC Salo / SAR-3	V52.8	D5GHzV2 / 1048	EX3DV4 / 3892	CW	DAE4 / 728	2014 -01	2014 -01
5800	TCC Salo / SAR-3	V52.8	D5GHzV2 / 1048	EX3DV4 / 3892	CW	DAE4 / 728	2014 -01	2014 -01

4.4.2 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 (except in the case of the 5000MHz dipole for which 100mW was supplied), which was placed under the flat section of the twin SAM phantom for head system checking, and under the flat phantom for body system checking. The system checking results (dielectric parameters and SAR values) are given in the table below.

System checking, head tissue simulant

f [MHz]	Description	SAR 1g [W/kg]	Estimated SAR 1g [W/kg]	Estimated SAR 1g Deviation	Scaled 1W SAR 1g [W/kg]	Dielectric Parameters*		SAR 1g Deviation from target	Dielectric Parameters Deviation from target		Temp	Plot #
				dSAR [%]		ε_r	σ [S/m]	dSAR [%]	$d\varepsilon_r$ [%]	$d\sigma$ [%]	[°C]	
	Tolerances			±3%				±10 %	±5 %	±5 %		
	Reference result SN:480	-	-	-	9.40	41.5	0.90	TCC Salo/SAR-2 ES3DV3 SN:3194 Head 835MHz				
835	2014-04-15	2.31	2.37	2.60	9.24	40.1	0.90	-1.70	-3.37	0.00	22.2	1
	2014-04-25	2.37	2.42	2.11	9.48	40.3	0.93	0.85	-2.89	3.33	22.1	-
	2014-04-28	2.37	2.43	2.53	9.48	40.5	0.93	0.85	-2.41	3.33	22.2	-
	2014-04-29	2.34	2.39	2.14	9.36	40.5	0.93	-0.43	-2.41	3.33	22.2	-
	Reference result SN:5d013	-	-	-	40.6	40.0	1.40	TCC Salo/SAR-1 ES3DV3 SN:3131 Head 1900MHz				
1900	2014-04-15	9.27	9.33	0.65	37.08	38.8	1.37	-8.67	-3.00	-2.14	21.5	2
	Reference result SN:749	-	-	-	53.9	39.2	1.80	TCC Salo/SAR-4 EX3DV4 SN:3960 Head 2450MHz				
2450	2014-04-14	13.50	13.50	0.00	54.00	38.6	1.77	0.19	-1.53	-1.67	21.1	3
	Reference result SN:1056	-	-	-	57.8	39.0	1.96	TCC Salo/SAR-4 EX3DV4 SN:3960 Head 2600MHz				
2600	2014-04-15	14.60	14.80	1.37	58.40	37.6	1.96	1.04	-3.59	0.00	20.4	-
	2014-04-17	14.20	14.50	2.11	56.80	39.0	1.93	-1.73	0.00	-1.53	21.7	4
	Reference result SN:1048	-	-	-	79.7	36.0	4.66	TCC Salo/SAR-3 EX3DV4 SN:3892 Head 5200MHz				
5200	2014-04-14	7.42	-	-	74.20	36.4	4.53	-7.13	1.11	-2.79	21.7	5
	Reference result SN:1048	-	-	-	82.6	35.9	4.76	TCC Salo/SAR-3 EX3DV4 SN: 3892 Head 5300MHz				
5300	2014-04-14	7.89	-	-	78.90	36.3	4.63	-4.48	1.11	-2.73	21.7	6
	Reference result SN:1048	-	-	-	82.2	35.6	4.96	TCC Salo/SAR-3 EX3DV4 SN: 3892 Head 5500MHz				
5500	2014-04-15	7.71	-	-	77.10	35.6	4.82	-6.20	0.00	-2.82	21.0	7
	Reference result SN:1048	-	-	-	83.1	35.5	5.07	TCC Salo/SAR-3 EX3DV4 SN: 3892 Head 5600MHz				
5600	2014-04-15	8.38	-	-	83.80	35.5	4.93	0.84	0.00	-2.76	21.0	8
	Reference result SN:1048	-	-	-	78.4	35.3	5.27	TCC Salo/SAR-3 EX3DV4 SN: 3892 Head 5800MHz				
5800	2014-04-15	7.40	-	-	74.00	35.2	5.15	-5.61	-0.28	-2.28	21.0	-
	2014-04-16	7.37	-	-	73.70	35.2	5.13	-5.99	-0.28	-2.66	21.3	9

* Dielectric parameter reference data taken from IEEE1528/IEC62209

System checking, body tissue simulant

f [MHz]	Description	SAR 1g [W/kg]	Estimated SAR 1g [W/kg]	Estimated SAR 1g Deviation	Scaled 1W SAR 1g [W/kg]	Dielectric Parameters*		SAR 1g Deviation from target	Dielectric Parameters Deviation from target		Temp	Plot #
				dSAR [%]		ε_r	σ [S/m]	dSAR [%]	$d\varepsilon_r$ [%]	$d\sigma$ [%]	[°C]	
	Tolerances			±3%				±10 %	±5 %	±5 %		
835	Reference result SN:480	-	-	-	9.51	55.2	0.97	TCC Salo/SAR-2 ES3DV3 SN:3194 Body 835MHz				
	2014-04-20	2.33	2.36	1.29	9.32	53.6	0.98	-2.00	-2.90	1.03	21.6	-
	2014-04-21	2.33	2.35	0.86	9.32	53.7	0.98	-2.00	-2.72	1.03	21.4	-
	2014-04-22	2.30	2.35	2.17	9.20	53.5	0.98	-3.26	-3.08	1.03	21.5	10
	2014-04-29	2.32	2.34	0.86	9.28	53.9	0.98	-2.42	-2.36	1.03	21.8	-
1900	Reference result SN: 5d013	-	-	-	41.0	53.3	1.52	TCC Salo/SAR-1 ES3DV3 SN:3131 Body 1900MHz				
	2014-04-17	9.48	9.46	-0.21	37.92	52.2	1.51	-7.51	-2.06	-0.66	21.0	11
	2014-04-19	9.95	9.94	-0.10	39.80	52.0	1.52	-2.93	-2.44	0.00	20.8	-
2450	Reference result SN: 749	-	-	-	51.5	52.7	1.95	TCC Salo/SAR-4 ES3DV3 SN:3960 Body 2450MHz				
	2014-04-15	12.30	12.20	-0.81	49.20	51.6	1.90	-4.47	-2.09	-2.56	21.4	12
2600	Reference result SN: 1056	-	-	-	55.6	52.5	2.16	TCC Salo/SAR-4 ES3DV3 SN:3960 Body 2450MHz				
	2014-04-16	13.80	13.90	0.72	55.20	51.1	2.09	-0.72	-2.67	-3.24	21.6	13
5200	Reference result SN:1048	-	-	-	71.4	49.0	5.30	TCC Salo/SAR-3 EX3DV4 SN: 3892 Body 5200MHz				
	2014-04-16	7.66	-	-	76.60	47.3	5.39	7.28	-3.47	1.70	22.8	14
5300	Reference result SN:1048	-	-	-	73.9	48.9	5.42	TCC Salo/SAR-3 EX3DV4 SN: 3892 Body 5300MHz				
	2014-04-16	8.12	-	-	81.20	47.2	5.52	9.88	-3.48	1.85	22.8	15
5500	Reference result SN:1048	-	-	-	75.6	48.6	5.65	TCC Salo/SAR-3 EX3DV4 SN: 3892 Body 5500MHz				
	2014-04-17	7.60	-	-	76.00	46.9	5.81	0.53	-3.50	3.36	21.2	16
5600	Reference result SN:1048	-	-	-	76.7	48.5	5.77	TCC Salo/SAR-3 EX3DV4 SN: 3892 Body 5600MHz				
	2014-04-17	8.21	-	-	82.10	46.7	5.94	7.04	-3.71	2.95	21.2	17
5800	Reference result SN:1048	-	-	-	71.7	48.2	6.00	TCC Salo/SAR-3 EX3DV4 SN: 3892 Body 5800MHz				
	2014-04-17	7.04	-	-	70.40	46.4	6.21	-2.09	-3.73	3.50	21.2	18

* Dielectric parameter reference data taken from FCC Published RF Exposure KDB Procedures

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

4.5 Tissue Simulants used in the Measurements

Head tissue simulant measurements

f [MHz]	Description	Dielectric Parameters		Dielectric Parameters Deviation from recommended value		Temp [°C]
		ε_r	σ [S/m]	$d\varepsilon_r$ [%]	$d\sigma$ [%]	
	Tolerances			±5 %	±5 %	
835	Recommended value	41.5	0.90			
	2014-04-15	40.1	0.90	-3.37	0.00	22.2
	2014-04-29	40.5	0.93	-2.41	3.33	22.2
836	Recommended value	41.5	0.90			
	2014-04-15	40.1	0.91	-3.37	1.11	22.2
	2014-04-25	40.3	0.93	-2.89	3.33	22.1
	2014-04-28	40.5	0.93	-2.41	3.33	22.2
1880	Recommended value	40.0	1.40			
	2014-04-15	38.9	1.35	-2.75	-3.57	21.5
2437	Recommended value	39.2	1.79			
	2014-04-14	38.7	1.76	-1.28	-1.68	21.1
2535	Recommended value	39.1	1.89			
	2014-04-15	37.8	1.89	-3.32	0.00	20.4
	2014-04-17	39.2	1.86	0.26	-1.59	21.7
5210	Recommended value	36.0	4.67			
	2014-04-14	36.4	4.54	1.11	-2.78	21.7
5290	Recommended value	35.9	4.75			
	2014-04-14	36.4	4.54	1.11	-2.78	21.7
5520	Recommended value	35.6	4.99			
	2014-04-15	35.6	4.84	0.00	-3.0	21.0
5620	Recommended value	35.5	5.09			
	2014-04-15	35.5	4.94	0.00	-2.8	21.0
5760	Recommended value	35.3	5.23			
	2014-04-15	35.3	5.09	0.00	-2.7	21.0
	2014-04-16	36.0	4.53	0.00	-3.00	21.3

Body tissue simulant measurements

f [MHz]	Description	Dielectric Parameters		Dielectric Parameters Deviation from Recommended value		Temp [°C]
		ε_r	σ [S/m]	$d\varepsilon_r$ [%]	$d\sigma$ [%]	
	Tolerances			±5 %	±5 %	
835	Recommended value	55.2	0.97			
	2014-04-21	53.7	0.98	-2.72	1.03	21.4
	2014-04-22	53.5	0.98	-3.08	1.03	21.5
	2014-04-29	53.9	0.98	-2.36	1.03	21.8
836	Recommended value	55.2	0.97			
	2014-04-20	53.6	0.98	-2.90	1.03	21.6
	2014-04-21	53.7	0.98	-2.72	1.03	21.4
	2014-04-22	53.5	0.98	-3.08	1.03	21.5
	2014-04-29	53.9	0.98	-2.36	1.03	21.8
1880	Recommended value	53.3	1.52			
	2014-04-17	52.3	1.48	-1.88	-2.63	21.0
	2014-04-19	52.0	1.50	-2.44	-1.32	20.8
2437	Recommended value	52.7	1.94			
	2014-04-15	51.6	1.88	-2.09	-3.09	21.4
2535	Recommended value	52.6	2.07			
	2014-04-16	51.3	2.01	-2.47	-2.90	21.6
5210	Recommended value	49.0	5.31			
	2014-04-16	47.3	5.41	-3.47	1.88	22.8
5290	Recommended value	48.9	5.40			
	2014-04-16	47.2	5.50	-3.48	1.85	22.8
5520	Recommended value	48.6	5.67			
	2014-04-17	46.9	5.84	-3.50	3.00	21.2
5620	Recommended value	4.84	5.79			
	2014-04-17	46.7	5.97	-3.50	3.10	21.2
5760	Recommended value	48.3	5.95			
	2014-04-17	46.5	6.17	-3.70	3.70	21.2

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 "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 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 and, in sequence, the back, display and each of the 4 edges was positioned 10.0mm away from the flat phantom. The spacer was removed before the start of the measurements.

5.3 Scan Procedures

First, area scans were used for determination of the field distribution. Next, a zoom scan, a minimum of 5x5x7 points covering a volume of at least 30x30x30mm, was performed around the highest E-field value to determine the averaged SAR value. Drift was determined by measuring the same point at the start of the area scan and again at the end of the zoom scan. Fast SAR is measured according to the KDB 447498 D01 General RF Exposure Guidance v05r01.

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 for 1g Full SAR in 0.3-6GHz range

Uncertainty Component	Section in IEEE 1528	Tol. (%)	Prob Dist	Div	c_i	$c_i . u_i$ (%)	v_i
Measurement System							
Probe Calibration	E2.1	±6.6	N	1	1	±6.6	∞
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	±2.0	R	√3	1	±1.2	∞
Linearity	E2.4	±4.7	R	√3	1	±2.7	∞
System Detection Limits	E2.5	±1.0	R	√3	1	±0.6	∞
Modulation response	E2.5	±2.4	R	√3	1	±1.4	
Readout Electronics	E2.6	±0.3	N	1	1	±0.3	∞
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	±0.8	R	√3	1	±0.5	∞
Probe Positioning with respect to Phantom Shell	E6.3	±6.7	R	√3	1	±3.9	∞
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	E5	±4.0	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	±3.6	N	1	1	±3.6	5
Output Power Variation - SAR drift measurement	E2.9	±5.0	R	√3	1	±2.9	∞
Phantom and Tissue Parameters							
Phantom Uncertainty (shape and thickness tolerances)	E3.1	±6.6	R	√3	1	±3.8	∞
SAR correction	E3.2	±1.9	R	√3	1	±1.1	∞
Conductivity Target - tolerance	E3.4	±5.0	R	√3	0.6	±1.8	∞
Conductivity - measurement uncertainty	E3.3	±5.5	N	1	0.6	±3.5	5
Permittivity Target - tolerance	E3.4	±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			**±14.0**	198
Coverage Factor for 95%			**k=2**				
Expanded Uncertainty						**±28.2**	

Table 6.2 – Measurement uncertainty evaluation for 1g Fast SAR in 0.3-6GHz range

Relative DASY5 Uncertainty Budget for Fast SAR Tests According to IEEE 1528/2011 and IEC 62209-1/2011 (0.3-6 GHz range)						
Uncertainty Component	**Tol. (%)**	**Prob Dist.**	**Div.**	c_i	$c_i \cdot u_i$ (%)	v_i
Measurement System						
Probe Calibration	±6.6	N	1	0		
Axial Isotropy	±4.7	R	√3	$(1-c_p)^{1/2}$	±1.9	∞
Hemispherical Isotropy	±9.6	R	√3	$(c_p)^{1/2}$	±3.9	∞
Boundary Effect	±2.0	R	√3	1	±1.2	∞
Linearity	±4.7	R	√3	1	±2.7	∞
System Detection Limits	±1.0	R	√3	1	±0.6	∞
Modulation Response	±2.4	R	√3	1	±1.4	∞
Readout Electronics	±0.3	N	1	0		
Response Time	±0.8	R	√3	0		
Integration Time	±2.6	R	√3	1	±1.5	∞
RF Ambient Conditions - Noise	±3.0	R	√3	1	±1.7	∞
RF Ambient Conditions - Reflections	±3.0	R	√3	0		
Probe Positioner Mechanical Tolerance	±0.8	R	√3	1	±0.5	∞
Probe Positioning with respect to Phantom Shell	±6.7	R	√3	1	±3.9	∞
Spatial x-y Resolution	±10.0	R	√3	1	±5.8	∞
Fast SAR z Approximation	±14.0	R	√3	1	±8.1	∞
Test sample Related						
Test Sample Positioning	±6.0	N	1	1	±6.0	12
Device Holder Uncertainty	±3.6	N	1	1	±3.6	5
Output Power Variation - SAR drift measurement	±5.0	R	√3	1	±2.9	∞
Power Scaling	±0	R	√3	0		
Phantom and Setup						
Phantom Uncertainty (shape and thickness tolerances)	±6.6	R	√3	1	±3.8	∞
SAR correction	±1.9	R	√3	0		
Conductivity Target - tolerance	±1.9	R	√3	0		
Conductivity - measurement uncertainty	±5.0	R	√3	0		
Permittivity Target - tolerance	±5.5	N	1	0		
Permittivity - measurement uncertainty	±5.0	R	√3	0		
Combined Standard Uncertainty		RSS			**±14.9**	748
Coverage Factor for 95%		**k=2**				
Expanded Uncertainty					**±29.8**	

7. RESULTS

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

850MHz Band Head SAR results / Antenna 1

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz	Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz		
1-slot GPRS HW 1004	Tuning Target + Tolerance [dBm]		32.9			Scaling factor*				
	Conducted Slot Average Power [dBm]		32.5	32.8	32.7	0.4	0.1	0.2	dB	
	Time-averaged power [dBm]		23.5	23.8	23.7	1.10	1.02	1.05	Lin	
			No testing required for this slot configuration.							
2-slot GPRS HW 1004	Tuning Target + Tolerance [dBm]		31.0			Scaling factor*				
	Conducted Slot Average Power [dBm]		30.4	30.5	30.3	0.6	0.5	0.7	dB	
	Time-averaged power [dBm]		24.4	24.5	24.3	1.15	1.12	1.17	Lin	
			No testing required for this slot configuration.							
3-slot GPRS HW 1004	Tuning Target + Tolerance [dBm]		29.1			Scaling factor*				
	Conducted Slot Average Power [dBm]		28.6	28.9	28.5	0.5	0.2	0.6	dB	
	Time-averaged power [dBm]		24.3	24.6	24.2	1.12	1.05	1.15	Lin	
	Left Cheek	Estimated SAR	0.733	0.596	0.455	0.822	0.624	0.522	0.02	1
		Full SAR	0.757	-	-	**0.849**	-	-		
	Left Tilt	Estimated SAR	-	0.143	-	-	0.150	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	-	0.280	-	-	0.293	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Tilt	Estimated SAR	-	0.112	-	-	0.117	-	-	-
		Full SAR	-	-	-	-	-	-		
4-slot GPRS HW 1004	Tuning Target + Tolerance [dBm]		28.0			Scaling factor*				
	Conducted Slot Average Power [dBm]		27.3	27.5	27.2	0.7	0.5	0.8	dB	
	Time-averaged power [dBm]		24.3	24.5	24.2	1.17	1.12	1.20	Lin	
			No testing required for this slot configuration.							

(850MHz Head SAR Table / Antenna 1 continues)

(850MHz Head SAR Table / Antenna 1 continues)

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz	Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz		
1-slot 8PSK EGPRS HW 1004	Tuning Target + Tolerance [dBm]		26.9			Scaling factor*				
	Conducted Slot Average Power [dBm]		26.3	26.1	26.0	0.6	0.8	0.9	dB	
	Time-averaged power [dBm]		17.3	17.1	17.0	1.15	1.20	1.23	Lin	
			No testing required for this slot configuration.							
2-slot 8PSK EGPRS HW 1004	Tuning Target + Tolerance [dBm]		26.0			Scaling factor*				
	Conducted Slot Average Power [dBm]		25.7	25.5	25.3	0.3	0.5	0.7	dB	
	Time-averaged power [dBm]		19.7	19.5	19.3	1.07	1.12	1.17	Lin	
			No testing required for this slot configuration.							
3-slot 8PSK EGPRS HW 1004	Tuning Target + Tolerance [dBm]		25.2			Scaling factor*				
	Conducted Slot Average Power [dBm]		24.8	24.5	24.3	0.4	0.7	0.9	dB	
	Time-averaged power [dBm]		20.5	20.2	20.0	1.10	1.17	1.23	Lin	
			No testing required for this slot configuration.							
4-slot 8PSK EGPRS HW 1004	Tuning Target + Tolerance [dBm]		24.2			Scaling factor*				
	Conducted Slot Average Power [dBm]		23.7	23.5	23.4	0.5	0.7	0.8	dB	
	Time-averaged power [dBm]		20.7	20.5	20.4	1.12	1.17	1.20	Lin	
	Left Cheek	Estimated SAR	0.310	-	-	0.348	-	-	0.01	-
		Full SAR	0.321	-	-	0.360	-	-		

(850MHz Head SAR Table / Antenna 1 continues)

(850MHz Head SAR Table / Antenna 1 continues)

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz	Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz		
1-slot GPRS HW 1006	Tuning Target + Tolerance [dBm]		32.9			Scaling factor*				
	Conducted Slot Average Power [dBm]		32.9	32.9	32.8	0.0	0.0	0.1	dB	
	Time-averaged power [dBm]		23.9	23.9	23.8	1.00	1.00	1.02	Lin	
			No testing required for this slot configuration.							
2-slot GPRS HW 1006	Tuning Target + Tolerance [dBm]		31.0			Scaling factor*				
	Conducted Slot Average Power [dBm]		31.0	30.9	30.6	0.0	0.1	0.4	dB	
	Time-averaged power [dBm]		25.0	24.9	24.6	1.00	1.02	1.10	Lin	
	Left Cheek	Estimated SAR	0.735	0.564	0.421	0.735	0.577	0.462	0.02	-
		Full SAR	0.757	-	-	0.757	-	-		
3-slot GPRS HW 1006	Tuning Target + Tolerance [dBm]		29.1			Scaling factor*				
	Conducted Slot Average Power [dBm]		29.0	29.1	28.9	0.1	0.0	0.2	dB	
	Time-averaged power [dBm]		24.7	24.8	24.6	1.02	1.00	1.05	Lin	
			No testing required for this slot configuration.							
4-slot GPRS HW 1006	Tuning Target + Tolerance [dBm]		28.0			Scaling factor*				
	Conducted Slot Average Power [dBm]		27.7	27.9	27.6	0.3	0.1	0.4	dB	
	Time-averaged power [dBm]		24.7	24.9	24.6	1.07	1.02	1.10	Lin	
			No testing required for this slot configuration.							

(850MHz Head SAR Table / Antenna 1 continues)

(850MHz Head SAR Table / Antenna 1 continues)

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz	Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz		
1-slot 8PSK EGPRS HW 1006	Tuning Target + Tolerance [dBm]		26.9			Scaling factor*				
	Conducted Slot Average Power [dBm]		26.6	26.3	26.1	0.3	0.6	0.8	dB	
	Time-averaged power [dBm]		17.6	17.3	17.1	1.07	1.15	1.20	Lin	
			No testing required for this slot configuration.							
2-slot 8PSK EGPRS HW 1006	Tuning Target + Tolerance [dBm]		26.0			Scaling factor*				
	Conducted Slot Average Power [dBm]		26.0	25.7	25.5	0.0	0.3	0.5	dB	
	Time-averaged power [dBm]		20.0	19.7	19.5	1.00	1.07	1.12	Lin	
			No testing required for this slot configuration.							
3-slot 8PSK EGPRS HW 1006	Tuning Target + Tolerance [dBm]		25.2			Scaling factor*				
	Conducted Slot Average Power [dBm]		25.0	24.7	24.5	0.2	0.5	0.7	dB	
	Time-averaged power [dBm]		20.7	20.4	20.2	1.05	1.12	1.17	Lin	
			No testing required for this slot configuration.							
4-slot 8PSK EGPRS HW 1006	Tuning Target + Tolerance [dBm]		24.2			Scaling factor*				
	Conducted Slot Average Power [dBm]		24.0	23.8	23.6	0.2	0.4	0.6	dB	
	Time-averaged power [dBm]		21.0	20.8	20.6	1.05	1.10	1.15	Lin	
			No testing required for this slot configuration.							

850MHz Band Head SAR results / Antenna 2

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz	Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz		
1-slot GPRS HW 1004	Tuning Target + Tolerance [dBm]		32.9			Scaling factor*				
	Conducted Slot Average Power [dBm]		32.4	32.7	32.6	0.5	0.2	0.3	dB	
	Time-averaged power [dBm]		23.4	23.7	23.6	1.12	1.05	1.07	Lin	
			No testing required for this slot configuration.							
2-slot GPRS HW 1004	Tuning Target + Tolerance [dBm]		31.0			Scaling factor*				
	Conducted Slot Average Power [dBm]		30.3	30.4	30.2	0.7	0.6	0.8	dB	
	Time-averaged power [dBm]		24.3	24.4	24.2	1.17	1.15	1.20	Lin	
			No testing required for this slot configuration.							
3-slot GPRS HW 1004	Tuning Target + Tolerance [dBm]		29.1			Scaling factor*				
	Conducted Slot Average Power [dBm]		28.5	28.8	28.4	0.6	0.3	0.7	dB	
	Time-averaged power [dBm]		24.2	24.5	24.1	1.15	1.07	1.17	Lin	
	Left Cheek	Estimated SAR	-	0.169	-	-	0.181	-	-	-
		Full SAR	-	-	-	-	-	-		
	Left Tilt	Estimated SAR	-	0.054	-	-	0.058	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	0.166	0.197	0.221	0.191	0.211	0.260	0.00	-
		Full SAR	-	-	0.224	-	-	0.263		
	Right Tilt	Estimated SAR	-	0.060	-	-	0.064	-	-	-
		Full SAR	-	-	-	-	-	-		
4-slot GPRS HW 1004	Tuning Target + Tolerance [dBm]		28.0			Scaling factor*				
	Conducted Slot Average Power [dBm]		27.2	27.4	27.1	0.8	0.6	0.9	dB	
	Time-averaged power [dBm]		24.2	24.4	24.1	1.20	1.15	1.23	Lin	
			No testing required for this slot configuration.							

(850MHz Head SAR Table / Antenna 2 continues)

(850MHz Head SAR Table / Antenna 2 continues)

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz	Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz		
1-slot 8PSK EGPRS HW 1004	Tuning Target + Tolerance [dBm]		26.9			Scaling factor*				
	Conducted Slot Average Power [dBm]		26.2	26.0	25.9	0.7	0.9	1.0	dB	
	Time-averaged power [dBm]		17.2	17.0	16.9	1.17	1.23	1.26	Lin	
			No testing required for this slot configuration.							
2-slot 8PSK EGPRS HW 1004	Tuning Target + Tolerance [dBm]		26.0			Scaling factor*				
	Conducted Slot Average Power [dBm]		25.6	25.4	25.2	0.4	0.6	0.8	dB	
	Time-averaged power [dBm]		19.6	19.4	19.2	1.10	1.15	1.20	Lin	
			No testing required for this slot configuration.							
3-slot 8PSK EGPRS HW 1004	Tuning Target + Tolerance [dBm]		25.2			Scaling factor*				
	Conducted Slot Average Power [dBm]		24.7	24.4	24.2	0.5	0.8	1.0	dB	
	Time-averaged power [dBm]		20.4	20.1	19.9	1.12	1.20	1.26	Lin	
			No testing required for this slot configuration.							
4-slot 8PSK EGPRS HW 1004	Tuning Target + Tolerance [dBm]		24.2			Scaling factor*				
	Conducted Slot Average Power [dBm]		23.6	23.4	23.3	0.6	0.8	0.9	dB	
	Time-averaged power [dBm]		20.6	20.4	20.3	1.15	1.20	1.23	Lin	
			-	-	0.086	-	-	0.106	0.03	-
			-	-	0.060	-	-	0.074		

(850MHz Head SAR Table / Antenna 2 continues)

(850MHz Head SAR Table / Antenna 2 continues)

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz	Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz		
1-slot GPRS HW 1006	Tuning Target + Tolerance [dBm]		32.9			Scaling factor*				
	Conducted Slot Average Power [dBm]		32.8	32.8	32.7	0.1	0.1	0.3	dB	
	Time-averaged power [dBm]		23.7	23.7	23.6	1.04	1.04	1.06	Lin	
			No testing required for this slot configuration.							
2-slot GPRS HW 1006	Tuning Target + Tolerance [dBm]		31.0			Scaling factor*				
	Conducted Slot Average Power [dBm]		30.9	30.8	30.5	0.1	0.3	0.5	dB	
	Time-averaged power [dBm]		24.8	24.7	24.4	1.04	1.06	1.14	Lin	
	Left Cheek	Estimated SAR	0.120	0.128	0.152	0.124	0.136	0.173	0.00	-
		Full SAR	-	-	0.150	-	-	0.170		
	Left Tilt	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	0.125	0.120	0.137	0.129	0.127	0.155	-	-
		Full SAR	-	-	-	-	-	-		
	Right Tilt	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-		
3-slot GPRS HW 1006	Tuning Target + Tolerance [dBm]		29.1			Scaling factor*				
	Conducted Slot Average Power [dBm]		28.9	29.0	28.8	0.3	0.1	0.4	dB	
	Time-averaged power [dBm]		24.6	24.7	24.5	1.06	1.04	1.08	Lin	
			No testing required for this slot configuration.							
4-slot GPRS HW 1006	Tuning Target + Tolerance [dBm]		28.0			Scaling factor*				
	Conducted Slot Average Power [dBm]		27.6	27.8	27.5	0.4	0.3	0.5	dB	
	Time-averaged power [dBm]		24.5	24.7	24.4	1.11	1.06	1.14	Lin	
			No testing required for this slot configuration.							

(850MHz Head SAR Table / Antenna 2 continues)

(850MHz Head SAR Table / Antenna 2 continues)

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz	Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz		
1-slot 8PSK EGPRS HW 1004	Tuning Target + Tolerance [dBm]		26.9			Scaling factor*				
	Conducted Slot Average Power [dBm]		26.5	26.2	26.0	0.4	0.7	0.9	dB	
	Time-averaged power [dBm]		17.4	17.1	16.9	1.11	1.19	1.24	Lin	
			No testing required for this slot configuration.							
2-slot 8PSK EGPRS HW 1004	Tuning Target + Tolerance [dBm]		26.0			Scaling factor*				
	Conducted Slot Average Power [dBm]		25.9	25.6	25.4	0.1	0.4	0.6	dB	
	Time-averaged power [dBm]		19.8	19.5	19.3	1.04	1.11	1.16	Lin	
			No testing required for this slot configuration.							
3-slot 8PSK EGPRS HW 1004	Tuning Target + Tolerance [dBm]		25.2			Scaling factor*				
	Conducted Slot Average Power [dBm]		24.9	24.6	24.4	0.3	0.6	0.8	dB	
	Time-averaged power [dBm]		20.6	20.3	20.1	1.08	1.16	1.22	Lin	
			No testing required for this slot configuration.							
4-slot 8PSK EGPRS HW 1004	Tuning Target + Tolerance [dBm]		24.2			Scaling factor*				
	Conducted Slot Average Power [dBm]		23.9	23.7	23.5	0.3	0.5	0.7	dB	
	Time-averaged power [dBm]		20.8	20.6	20.4	1.08	1.14	1.19	Lin	
			No testing required for this slot configuration.							

WCDMA850 (Band 5) Head SAR results / Antenna 1

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz	Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz		
WCDMA HW 1004	Tuning Target + Tolerance [dBm]		23.9			Scaling factor*				
	Conducted Power [dBm]		23.9	23.9	23.8	0.0	0.0	0.1	dB	
	Time-averaged power [dBm]		23.9	23.9	23.8	1.00	1.00	1.02	Lin	
	Left Cheek	Estimated SAR	0.606	0.581	0.542	0.606	0.581	0.555	0.00	-
		Full SAR	0.603	-	-	0.603	-	-		
	Left Tilt	Estimated SAR	-	0.148	-	-	0.148	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	-	0.292	-	-	0.292	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Tilt	Estimated SAR	-	0.112	-	-	0.112	-	-	-
		Full SAR	-	-	-	-	-	-		
WCDMA HW1006	Tuning Target + Tolerance [dBm]		23.9			Scaling factor*				
	Conducted Power [dBm]		23.8	23.9	23.9	0.1	0.0	0.0	dB	
	Time-averaged power [dBm]		23.8	23.9	23.9	1.02	1.00	1.00	Lin	
	Left Cheek	Estimated SAR	0.722	0.777	0.747	0.739	0.777	0.747	0.00	2
		Full SAR	-	0.774	-	-	**0.774**	-		
	Left Tilt	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Tilt	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-		

1900MHz Band Head SAR results / Antenna 1

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz	Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz		
1-slot GPRS HW 1004	Tuning Target + Tolerance [dBm]		30.4			Scaling factor*				
	Conducted Slot Average Power [dBm]		30.0	30.4	30.1	0.4	0.0	0.3	dB	
	Time-averaged power [dBm]		21.0	21.4	21.1	1.10	1.00	1.07	Lin	
			No testing required for this slot configuration.							
2-slot GPRS HW 1004	Tuning Target + Tolerance [dBm]		28.0			Scaling factor*				
	Conducted Slot Average Power [dBm]		28.0	28.0	28.0	0.0	0.0	0.0	dB	
	Time-averaged power [dBm]		22.0	22.0	22.0	1.00	1.00	1.00	Lin	
			No testing required for this slot configuration.							
3-slot GPRS HW 1004	Tuning Target + Tolerance [dBm]		26.4			Scaling factor*				
	Conducted Slot Average Power [dBm]		26.2	26.4	26.3	0.2	0.0	0.1	dB	
	Time-averaged power [dBm]		21.9	22.1	22.0	1.05	1.00	1.02	Lin	
	Left Cheek	Estimated SAR	0.303	0.250	0.204	0.317	0.250	0.209	0.05	3
		Full SAR	0.353	-	-	**0.370**	-	-		
	Left Tilt	Estimated SAR	-	0.071	-	-	0.071	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	-	0.116	-	-	0.116	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Tilt	Estimated SAR	-	0.055	-	-	0.055	-	-	-
		Full SAR	-	-	-	-	-	-		

(1900MHz Head SAR Table / Antenna 1 continues)

(1900MHz Head SAR Table / Antenna 1 continues)

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz	Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz		
4-slot GPRS HW 1004	Tuning Target + Tolerance [dBm]		25.0			Scaling factor*				
	Conducted Slot Average Power [dBm]		24.9	25.0	25.0	0.1	0.0	0.0	dB	
	Time-averaged power [dBm]		21.9	22.0	22.0	1.02	1.00	1.00	Lin	
			No testing required for this slot configuration.							
1-slot 8PSK EGPRS HW 1004	Tuning Target + Tolerance [dBm]		25.9			Scaling factor*				
	Conducted Slot Average Power [dBm]		25.4	25.4	25.2	0.5	0.5	0.7	dB	
	Time-averaged power [dBm]		16.4	16.4	16.2	1.12	1.12	1.17	Lin	
			No testing required for this slot configuration.							
2-slot 8PSK EGPRS HW 1004	Tuning Target + Tolerance [dBm]		24.9			Scaling factor*				
	Conducted Slot Average Power [dBm]		24.7	24.8	24.6	0.2	0.1	0.3	dB	
	Time-averaged power [dBm]		18.7	18.8	18.6	1.05	1.02	1.07	Lin	
			No testing required for this slot configuration.							
3-slot 8PSK EGPRS HW 1004	Tuning Target + Tolerance [dBm]		24.4			Scaling factor*				
	Conducted Slot Average Power [dBm]		24.0	24.1	23.9	0.4	0.3	0.5	dB	
	Time-averaged power [dBm]		19.7	19.8	19.6	1.10	1.07	1.12	Lin	
	Left Cheek	Estimated SAR	0.195	-	-	0.214	-	-	0.03	-
		Full SAR	0.222	-	-	0.243	-	-		
4-slot 8PSK EGPRS HW 1004	Tuning Target + Tolerance [dBm]		22.6			Scaling factor*				
	Conducted Slot Average Power [dBm]		22.3	22.3	22.2	0.3	0.3	0.4	dB	
	Time-averaged power [dBm]		19.3	19.3	19.2	1.07	1.07	1.10	Lin	
			No testing required for this slot configuration.							

1900MHz Band Head SAR results / Antenna 2

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz	Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz		
1-slot GPRS HW 1004	Tuning Target + Tolerance [dBm]		30.4			Scaling factor*				
	Conducted Slot Average Power [dBm]		29.9	30.3	30.0	0.5	0.1	0.4	dB	
	Time-averaged power [dBm]		20.9	21.3	21.0	1.12	1.02	1.10	Lin	
			No testing required for this slot configuration.							
2-slot GPRS HW 1004	Tuning Target + Tolerance [dBm]		28.0			Scaling factor*				
	Conducted Slot Average Power [dBm]		27.9	27.9	27.9	0.1	0.1	0.1	dB	
	Time-averaged power [dBm]		21.9	21.9	21.9	1.02	1.02	1.02	Lin	
			No testing required for this slot configuration.							
3-slot GPRS HW 1004	Tuning Target + Tolerance [dBm]		26.4			Scaling factor*				
	Conducted Slot Average Power [dBm]		26.1	26.3	26.2	0.3	0.1	0.2	dB	
	Time-averaged power [dBm]		21.8	22.0	21.9	1.07	1.02	1.05	Lin	
	Left Cheek	Estimated SAR	-	0.119	-	-	0.122	-	-	-
		Full SAR	-	-	-	-	-	-		
	Left Tilt	Estimated SAR	-	0.045	-	-	0.046	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	0.158	0.142	0.128	0.169	0.145	0.134	0.00	-
		Full SAR	0.155	-	-	**0.166**	-	-		
	Right Tilt	Estimated SAR	-	0.042	-	-	0.043	-	-	-
		Full SAR	-	-	-	-	-	-		

(1900MHz Head SAR Table / Antenna 2 continues)

(1900MHz Head SAR Table / Antenna 2 continues)

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz	Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz		
4-slot GPRS HW 1004	Tuning Target + Tolerance [dBm]		24.6			Scaling factor*				
	Conducted Slot Average Power [dBm]		24.8	24.9	24.9	0.0	0.0	0.0	dB	
	Time-averaged power [dBm]		21.8	21.9	21.9	1.00	1.00	1.00	Lin	
			No testing required for this slot configuration.							
1-slot 8PSK EGPRS HW 1004	Tuning Target + Tolerance [dBm]		25.9			Scaling factor*				
	Conducted Slot Average Power [dBm]		25.3	25.3	25.1	0.6	0.6	0.8	dB	
	Time-averaged power [dBm]		16.3	16.3	16.1	1.15	1.15	1.20	Lin	
			No testing required for this slot configuration.							
2-slot 8PSK EGPRS HW 1004	Tuning Target + Tolerance [dBm]		24.9			Scaling factor*				
	Conducted Slot Average Power [dBm]		24.6	24.7	24.5	0.3	0.2	0.4	dB	
	Time-averaged power [dBm]		18.6	18.7	18.5	1.07	1.05	1.10	Lin	
			No testing required for this slot configuration.							
3-slot 8PSK EGPRS HW 1004	Tuning Target + Tolerance [dBm]		24.4			Scaling factor*				
	Conducted Slot Average Power [dBm]		23.9	24.0	23.8	0.5	0.4	0.6	dB	
	Time-averaged power [dBm]		19.6	19.7	19.5	1.12	1.10	1.15	Lin	
	Right Cheek	Estimated SAR	0.095	-	-	0.107	-	-	0.00	-
		Full SAR	0.096	-	-	0.107	-	-		
4-slot 8PSK EGPRS HW 1004	Tuning Target + Tolerance [dBm]		22.6			Scaling factor*				
	Conducted Slot Average Power [dBm]		22.2	22.2	22.1	0.4	0.4	0.5	dB	
	Time-averaged power [dBm]		19.2	19.2	19.1	1.10	1.10	1.12	Lin	
			No testing required for this slot configuration.							

WCDMA1900 (Band 2) Head SAR results / Antenna 1

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz	Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz		
WCDMA HW 1004	Tuning Target + Tolerance [dBm]		23.9			Scaling factor*				
	Conducted Power [dBm]		23.8	23.9	23.9	0.1	0.0	0.0	dB	
	Time-averaged power [dBm]		23.8	23.9	23.9	1.02	1.00	1.00	Lin	
	Left Cheek	Estimated SAR	0.484	0.454	0.411	0.495	0.454	0.411	0.07	4
		Full SAR	0.553	-	-	**0.566**	-	-		
	Left Tilt	Estimated SAR	-	0.131	-	-	0.131	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	-	0.238	-	-	0.238	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Tilt	Estimated SAR	-	0.112	-	-	0.112	-	-	-
		Full SAR	-	-	-	-	-	-		

LTE2500 (Band 7) Head SAR results / Antenna 2

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 20850	Ch 21100	Ch 21350	Ch 20850	Ch 21100	Ch 21350		
			2510.0 MHz	2535.0 MHz	2560.0 MHz	2510.0 MHz	2535.0 MHz	2560.0 MHz	[W/kg]	
20MHz Ch BW 1RB 0% offset HW 1004	Tuning Target + Tolerance [dBm]		23.4			Scaling factor*				
	Conducted Power [dBm]		23.0	23.0	23.2	0.4	0.4	0.2	dB	
	Time-averaged Power [dBm]		23.0	23.0	23.2	1.10	1.10	1.05	Lin	
	Left Cheek	Estimated SAR	-	-	0.250	-	-	0.262	-	-
		Full SAR	-	-	-	-	-	-		
	Left Tilt	Estimated SAR	-	-	0.177	-	-	0.185	-	-
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	-	-	0.433	-	-	0.453	0.04	5
		Full SAR	-	-	0.475	-	-	**0.497**		
	Right Tilt	Estimated SAR	-	-	0.090	-	-	0.094	-	-
		Full SAR	-	-	-	-	-	-		

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 20850	Ch 21100	Ch 21350	Ch 20850	Ch 21100	Ch 21350		
			2510.0 MHz	2535 MHz	2560.0 MHz	2510.0 MHz	2535 MHz	2560.0 MHz	[W/kg]	
20MHz Ch BW 1RB 50% offset HW 1004	Tuning Target + Tolerance [dBm]		23.4			Scaling factor*				
	Conducted Power [dBm]		23.1	23.1	23.1	0.3	0.3	0.3	dB	
	Time-averaged Power [dBm]		23.1	23.1	23.1	1.07	1.07	1.07	Lin	
			No testing required for this CBW/RB/RB offset configuration according to KDB 941225 D05 SAR for LTE Devices v02r02							

(LTE2500 Head SAR Table continues)

(LTE2500 Head SAR Table continues)

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 20850	Ch 21100	Ch 21350	Ch 20850	Ch 21100	Ch 21350		
			2510.0 MHz	2535 MHz	2560.0 MHz	2510.0 MHz	2535 MHz	2560.0 MHz	[W/kg]	
20MHz Ch BW 1RB 100% offset HW 1004	Tuning Target + Tolerance [dBm]		23.4			Scaling factor*				
	Conducted Power [dBm]		23.1	23.1	23.1	0.3	0.3	0.3	dB	
	Time-averaged Power [dBm]		23.1	23.1	23.1	1.07	1.07	1.07	Lin	
			No testing required for this CBW/RB/RB offset configuration according to KDB 941225 D05 SAR for LTE Devices v02r02							
Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 20850	Ch 21100	Ch 21350	Ch 20850	Ch 21100	Ch 21350		
			2510.0 MHz	2535 MHz	2560.0 MHz	2510.0 MHz	2535 MHz	2560.0 MHz	[W/kg]	
20MHz Ch BW 50% RB 0% offset HW 1004	Tuning Target + Tolerance [dBm]		22.4			Scaling factor*				
	Conducted Power [dBm]		21.8	21.8	21.9	0.6	0.6	0.5	dB	
	Time-averaged Power [dBm]		21.8	21.8	21.9	1.15	1.15	1.12	Lin	
			No testing required for this CBW/RB/RB offset configuration according to KDB 941225 D05 SAR for LTE Devices v02r02							
Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 20850	Ch 21100	Ch 21350	Ch 20850	Ch 21100	Ch 21350		
			2510.0 MHz	2535 MHz	2560.0 MHz	2510.0 MHz	2535 MHz	2560.0 MHz	[W/kg]	
20MHz Ch BW 50% RB 50% offset HW 1004	Tuning Target + Tolerance [dBm]		22.4			Scaling factor*				
	Conducted Power [dBm]		21.8	21.8	21.9	0.6	0.6	0.5	dB	
	Time-averaged Power [dBm]		21.8	21.8	21.9	1.15	1.15	1.12	Lin	
			No testing required for this CBW/RB/RB offset configuration according to KDB 941225 D05 SAR for LTE Devices v02r02							

(LTE2500 Head SAR Table continues)

(LTE2500 Head SAR Table continues)

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 20850	Ch 21100	Ch 21350	Ch 20850	Ch 21100	Ch 21350		
			2510.0 MHz	2535 MHz	2560.0 MHz	2510.0 MHz	2535 MHz	2560.0 MHz	[W/kg]	
20MHz Ch BW 50% RB 100% offset HW 1004	Tuning Target + Tolerance [dBm]		22.4			Scaling factor*				
	Conducted Power [dBm]		21.9	21.8	21.9	0.5	0.6	0.5	dB	
	Time-averaged Power [dBm]		21.9	21.8	21.9	1.12	1.15	1.12	Lin	
	Left Cheek	Estimated SAR	-	-	0.172	-	-	0.193	-	-
		Full SAR	-	-	-	-	-	-		
	Left Tilt	Estimated SAR	-	-	0.119	-	-	0.134	-	-
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	-	-	0.292	-	-	0.328	-	-
		Full SAR	-	-	-	-	-	-		
	Right Tilt	Estimated SAR	-	-	0.069	-	-	0.077	-	-
		Full SAR	-	-	-	-	-	-		
Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 20850	Ch 21100	Ch 21350	Ch 20850	Ch 21100	Ch 21350		
			2510.0 MHz	2535 MHz	2560.0 MHz	2510.0 MHz	2535 MHz	2560.0 MHz	[W/kg]	
20MHz Ch BW 100%RB HW 1004	Tuning Target + Tolerance [dBm]		22.4			Scaling factor*				
	Conducted Power [dBm]		21.9	21.8	21.9	0.5	0.6	0.5	dB	
	Time-averaged Power [dBm]		21.9	21.8	21.9	1.12	1.15	1.12	Lin	
			No testing required for this CBW/RB/RB offset configuration according to KDB 941225 D05 SAR for LTE Devices v02r02							

2450MHz Head SAR results

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 1 2412.0 MHz	Ch 6 2437.0 MHz	Ch 11 2462.0 MHz	Ch 1 2412.0 MHz	Ch 6 2437.0 MHz	Ch 11 2462.0 MHz		
WLAN b-mode DSSS 1Mbps HW 1004	Tuning Target + Tolerance [dBm]		18.5			Scaling factor*				
	Conducted Power [dBm]		17.4	17.5	17.6	1.1	1.0	0.9	dB	
	Time-averaged power [dBm]		17.4	17.5	17.6	1.29	1.26	1.23	Lin	
	Left Cheek	Estimated SAR	-	0.512	-	-	0.645	-	-	-
		Full SAR	-	-	-	-	-	-		
	Left Tilt	Estimated SAR	0.598	0.628	0.660	0.770	0.791	0.812	0.02	6
		Full SAR	-	-	0.684	-	-	**0.842**		
	Right Cheek	Estimated SAR	-	0.274	-	-	0.345	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Tilt	Estimated SAR	-	0.294	-	-	0.370	-	-	-
		Full SAR	-	-	-	-	-	-		

5000MHz Head SAR results
5150–5250 MHz and 5250–5350 MHz

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]				Reported* 1g SAR [W/kg]				Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 36 5180.0 MHz	Ch 44 5220.0 MHz	Ch 52 5260.0 MHz	Ch 64 5320.0 MHz	Ch 36 5180.0 MHz	Ch 44 5220.0 MHz	Ch 52 5260.0 MHz	Ch 64 5320.0 MHz		
WLAN a-mode OFDM 6 Mbps HW 1004	Tuning Target + Tolerance [dBm]		16.5				Scaling factor*					
	Conducted Power [dBm]		15.4	15.6	15.5	15.5	1.1	0.9	1.0	1.0	dB	
	Time-averaged power [dBm]		15.4	15.6	15.5	15.5	1.29	1.23	1.26	1.26	Lin	
	Left Cheek	Estimated SAR	-	-	-	-	-	-	-	-	-	7
		Full SAR	0.232	0.243	0.216	0.193	0.299	**0.299**	0.272	0.243		
	Left Tilt	Estimated SAR	-	-	-	-	-	-	-	-	-	-
		Full SAR	-	0.185	0.165	-	-	0.228	0.208	-		
	Right Cheek	Estimated SAR	-	-	-	-	-	-	-	-	-	-
		Full SAR	-	0.110	0.073	-	-	0.135	0.092	-		
	Right Tilt	Estimated SAR	-	-	-	-	-	-	-	-	-	-
		Full SAR	-	0.090	0.082	-	-	0.110	0.103	-		
Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]				Reported* 1g SAR [W/kg]				Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 42 5210.0 MHz		Ch 58 5290.0 MHz		Ch 42 5210.0 MHz		Ch 58 5290.0 MHz			
WLAN ac-mode BPSK 29.3 / 32.5 Mbps HW 1004	Tuning Target + Tolerance [dBm]		14.5				Scaling factor*					
	Conducted Power [dBm]		13.9		14.0		0.6	14.5	0.5	14.5	dB	
	Time-averaged power [dBm]		13.9	0.0	14.0	0.0	1.15	28.18	1.12	28.18	Lin	
	Worst case check Left Cheek	Estimated SAR	-	-	-	-	-	-	-	-	-	-
		Full SAR	0.145	-	-	-	0.166	-	-	-		

5000MHz Head SAR results
5470–5725 MHz

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]				Reported* 1g SAR [W/kg]				Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 104 5520.0 MHz	Ch 116 5580.0 MHz	Ch 120 5600.0 MHz	Ch 132 5660.0 MHz	Ch 104 5520.0 MHz	Ch 116 5580.0 MHz	Ch 120 5600.0 MHz	Ch 132 5660.0 MHz		
WLAN a-mode OFDM 6 Mbps HW 1004	Tuning Target + Tolerance [dBm]		16.5				Scaling factor*					
	Conducted Power [dBm]		15.7	15.7	15.6	16.4	0.8	0.8	0.9	0.1	dB	
	Time-averaged power [dBm]		15.7	15.7	15.6	16.4	1.20	1.20	1.23	1.02	Lin	
	Left Cheek	Estimated SAR	-	-	-	-	-	-	-	-	-	-
		Full SAR	0.175	0.174	0.168	0.180	0.210	0.209	0.207	0.184		
	Left Tilt	Estimated SAR	-	-	-	-	-	-	-	-	-	-
		Full SAR	0.168	-	-	-	0.202	-	-	-		
	Right Cheek	Estimated SAR	-	-	-	-	-	-	-	-	-	-
		Full SAR	0.057	-	-	-	0.068	-	-	-		
	Right Tilt	Estimated SAR	-	-	-	-	-	-	-	-	-	-
		Full SAR	0.054	-	-	-	0.065	-	-	-		

5000MHz Head SAR results
5725–5850 MHz

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 149 5745.0 MHz	Ch 157 5785.0 MHz	Ch 161 5805.0 MHz	Ch 149 5745.0 MHz	Ch 157 5785.0 MHz	Ch 161 5805.0 MHz		
WLAN a-mode OFDM 6 Mbps HW 1004	Tuning Target + Tolerance [dBm]		16.5			Scaling factor*				
	Conducted Power [dBm]		15.8	15.7	15.6	0.7	0.8	0.9	dB	
	Time-averaged power [dBm]		15.8	15.7	15.6	1.17	1.20	1.23	Lin	
	Left Cheek	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	0.191	0.191	0.206	0.224	0.230	0.253		
	Left Tilt	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	0.161	-	-	0.198		
	Right Cheek	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	0.067	-	-	0.082		
	Right Tilt	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	0.055	-	-	0.068		

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

Test configuration	Max. Reported* 1g SAR results						
			Antenna 1				
	WLAN 2450	WLAN 5000	3-slot GPRS 850	WCDMA 850	3-slot GPRS 1900	WCDMA 1900	LTE 2500
Head: Left, Cheek	0.645	0.299	0.849	0.774	0.370	0.566	-
Head: Left, Tilt	0.842	0.228	0.150	0.148	0.071	0.131	-
Head: Right, Cheek	0.345	0.135	0.293	0.292	0.116	0.238	-
Head: Right, Tilt	0.370	0.110	0.117	0.112	0.055	0.112	-

Test configuration	Max. Reported* 1g SAR results						
			Antenna 2				
	WLAN 2450	WLAN 5000	3-slot GPRS 850	WCDMA 850	3-slot GPRS 1900	WCDMA 1900	LTE 2500
Head: Left, Cheek	0.645	0.299	0.181	-	0.122	-	0.262
Head: Left, Tilt	0.842	0.228	0.058	-	0.046	-	0.185
Head: Right, Cheek	0.345	0.135	0.263	-	0.166	-	0.497
Head: Right, Tilt	0.370	0.110	0.064	-	0.043	-	0.094

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

Test configuration	Antenna 1 + WLAN				
	Max. Reported* 1g SAR results				
	3-slot GPRS850 + WLAN2450	WCDMA850 + WLAN2450	3-slot GPRS1900 + WLAN2450	WCDMA 1900 + WLAN2450	LTE2500 +WLAN2450
Head: Left, Cheek	**1.49**	**1.42**	**1.02**	**1.21**	-
Head: Left, Tilt	0.992	0.990	0.913	0.973	-
Head: Right, Cheek	0.638	0.637	0.461	0.583	-
Head: Right, Tilt	0.487	0.482	0.425	0.482	-
	3-slot GPRS850 + WLAN5000	WCDMA850 + WLAN5000	3-slot GPRS1900 + WLAN5000	WCDMA1900 + WLAN5000	LTE2500 + WLAN5000
Head: Left, Cheek	**1.15**	**1.07**	**0.670**	**0.870**	-
Head: Left, Tilt	0.378	0.376	0.299	0.359	-
Head: Right, Cheek	0.428	0.427	0.251	0.373	-
Head: Right, Tilt	0.227	0.222	0.165	0.222	-

Test configuration	Antenna 2 + WLAN				
	Max. Reported* 1g SAR results				
	3-slot GPRS850 + WLAN2450	WCDMA850 + WLAN2450	3-slot GPRS1900 + WLAN2450	WCDMA1900 + WLAN2450	LTE2500 +WLAN2450
Head: Left, Cheek	0.826	-	0.767	-	0.907
Head: Left, Tilt	0.900	-	0.888	-	**1.03**
Head: Right, Cheek	0.608	-	0.511	-	0.842
Head: Right, Tilt	0.434	-	0.413	-	0.464
	3-slot GPRS850 + WLAN5000	WCDMA850 + WLAN5000	3-slot GPRS1900 + WLAN5000	WCDMA1900 + WLAN5000	LTE2500 + WLAN5000
Head: Left, Cheek	0.480	-	0.421	-	0.561
Head: Left, Tilt	0.286	-	0.274	-	0.413
Head: Right, Cheek	0.398	-	0.301	-	**0.632**
Head: Right, Tilt	0.174	-	0.153	-	0.204

Note: Simultaneous Transmission Procedures as described in KDB648474 are not required for this product.

7.1.1 Combined Head SAR data

The Combined SAR data given in the tables below has been voluntarily calculated and should be ignored for FCC certification.

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 or WLAN5000 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

Test configuration	Antenna 1 + WLAN				
	Max. Reported* 1g SAR results				
	3-slot GPRS850 + WLAN2450	WCDMA850 + WLAN2450	3-slot GPRS1900 + WLAN2450	WCDMA1900 + WLAN2450	LTE2500 +WLAN2450
Head: Left, Cheek	0.810	0.766	0.663	0.671	-
Head: Left, Tilt	-	-	-	-	-
Head: Right, Cheek	-	-	-	-	-
Head: Right, Tilt	-	-	-	-	-
	3-slot GPRS850 + WLAN5000	WCDMA850 + WLAN5000	3-slot GPRS1900 + WLAN5000	WCDMA1900 + WLAN5000	LTE2500 + WLAN5000
Head: Left, Cheek	0.805	0.758	0.307	0.482	-
Head: Left, Tilt	-	-	-	-	-
Head: Right, Cheek	-	-	-	-	-
Head: Right, Tilt	-	-	-	-	-

Test configuration	Antenna 2 + WLAN				
	Max. Reported* 1g SAR results				
	3-slot GPRS850 + WLAN2450	WCDMA850 + WLAN2450	3-slot GPRS1900 + WLAN2450	WCDMA1900 + WLAN2450	LTE2500 +WLAN2450
Head: Left, Cheek	-	-	-	-	-
Head: Left, Tilt	-	-	-	-	**0.897**
Head: Right, Cheek	-	-	-	-	-
Head: Right, Tilt	-	-	-	-	-
	3-slot GPRS850 + WLAN5000	**WCDMA850 + WLAN5000**	**3-slot GPRS1900 + WLAN5000**	**WCDMA1900 + WLAN5000**	**LTE2500 + WLAN5000**
Head: Left, Cheek	-	-	-	-	-
Head: Left, Tilt	-	-	-	-	-
Head: Right, Cheek	-	-	-	-	**0.478**
Head: Right, Tilt	-	-	-	-	-

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 or WLAN5000 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:
* Reported SAR values are scaled to, or measured at, upper limit of power tuning tolerance.

Highest result within individual zoom scan or individual expanded zoom scan results is given in Section 1.2 for each transmitter. Highest result within contributing individual zoom scan, individual expanded zoom scan, Speag combined algorithm or combined expanded zoom scan results are given in Section for each simultaneous transmitter combination.

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

850MHz Band Body SAR results / Antenna 1

Mode	Device orientation		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
				Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz	Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz		
3-slot GPRS HW 1004	Tuning Target + Tolerance [dBm]			29.1			Scaling factor*				
	Conducted Slot Average Power [dBm]			28.6	28.9	28.5	0.5	0.2	0.6	dB	
	Time-averaged power [dBm]			24.3	24.6	24.2	1.12	1.05	1.15	Lin	
	Back facing phantom	Without headset	Estimated SAR	-	0.330	-	-	0.346	-	-	-
			Full SAR	-	-	-	-	-	-		
		Headset WH-208	Estimated SAR	-	0.321	-	-	0.336	-	-	-
			Full SAR	-	-	-	-	-	-		
	Display facing phantom	Without headset	Estimated SAR	0.482	0.375	0.299	0.541	0.393	0.343	0.01	8
			Full SAR	0.495	-	-	**0.555**	-	-		
		Headset WH-208	Estimated SAR	-	0.351	-	-	0.368	-	-	-
			Full SAR	-	-	-	-	-	-		
2-slot GPRS HW 1006	Tuning Target + Tolerance [dBm]			31.0			Scaling factor*				
	Conducted Slot Average Power [dBm]			31.0	30.9	30.6	0.0	0.1	0.4	dB	
	Time-averaged power [dBm]			25.0	24.9	24.6	1.00	1.02	1.10	Lin	
	Back facing phantom	Without headset	Estimated SAR	-	-	-	-	-	-	-	-
			Full SAR	-	-	-	-	-	-		
		Headset WH-208	Estimated SAR	0.388	0.265	0.185	0.388	0.271	0.203	-	-
			Full SAR	-	-	-	-	-	-		
	Display facing phantom	Without headset	Estimated SAR	0.432	0.300	0.220	0.432	0.307	0.241	0.02	-
			Full SAR	0.451	-	-	0.451	-	-		
		Headset WH-208	Estimated SAR	-	-	-	-	-	-	-	-
			Full SAR	-	-	-	-	-	-		

850MHz Band Body SAR results / Antenna 2

Mode	Device orientation		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
				Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz	Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz		
3-slot GPRS HW 1004	Tuning Target + Tolerance [dBm]			29.1			Scaling factor*				
	Conducted Slot Average Power [dBm]			28.5	28.8	28.4	0.6	0.3	0.7	dB	
	Time-averaged power [dBm]			24.2	24.5	24.1	1.15	1.07	1.17	Lin	
	Back facing phantom	Without headset	Estimated SAR	-	0.210	-	-	0.225	-	-	-
			Full SAR	-	-	-	-	-	-		
		Headset WH-208	Estimated SAR	-	0.232	-	-	0.249	-	-	-
			Full SAR	-	-	-	-	-	-		
	Display facing phantom	Without headset	Estimated SAR	0.220	0.251	0.267	0.253	0.269	0.314	0.01	-
			Full SAR	-	-	0.278	-	-	0.327		
		Headset WH-208	Estimated SAR	-	0.219	-	-	0.235	-	-	-
			Full SAR	-	-	-	-	-	-		
2-slot GPRS HW 1006	Tuning Target + Tolerance [dBm]			31.0			Scaling factor*				
	Conducted Slot Average Power [dBm]			30.9	30.8	30.5	0.1	0.3	0.5	dB	
	Time-averaged power [dBm]			24.8	24.7	24.4	1.04	1.06	1.14	Lin	
	Back facing phantom	Without headset	Estimated SAR	-	-	-	-	-	-	-	-
			Full SAR	-	-	-	-	-	-		
		Headset WH-208	Estimated SAR	0.164	0.186	0.209	0.170	0.197	0.237	0.01	-
			Full SAR			0.217	-	-	0.246		
	Display facing phantom	Without headset	Estimated SAR	0.163	0.176	0.206	0.169	0.186	0.234	-	-
			Full SAR	-	-	-	-	-	-		
		Headset WH-208	Estimated SAR	-	-	-	-	-	-	-	-
			Full SAR	-	-	-	-	-	-		

WCDMA850 (Band 5) Body SAR results / Antenna 1

Mode	Device orientation		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
				Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz	Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz		
WCDMA HW 1004	Tuning Target + Tolerance [dBm]			23.9			Scaling factor*				
	Conducted Power [dBm]			23.9	23.9	23.8	0.0	0.0	0.1	dB	
	Time-averaged power [dBm]			23.9	23.9	23.8	1.00	1.00	1.02	Lin	
	Back facing phantom	Without headset	Estimated SAR	-	0.331	-	-	0.331	-	-	-
			Full SAR	-	-	-	-	-	-		
		Headset WH-208	Estimated SAR	-	0.321	-	-	0.321	-	-	-
			Full SAR	-	-	-	-	-	-		
	Display facing phantom	Without headset	Estimated SAR	0.380	0.365	0.336	0.380	0.365	0.344	0.01	-
			Full SAR	0.390	-	-	0.390	-	-		
		Headset WH-208	Estimated SAR	-	0.360	-	-	0.360	-	-	-
			Full SAR	-	-	-	-	-	-		
WCDMA HW 1006	Tuning Target + Tolerance [dBm]			23.9			Scaling factor*				
	Conducted Power [dBm]			23.8	23.9	23.9	0.1	0.0	0.0	dB	
	Time-averaged power [dBm]			23.8	23.9	23.9	1.02	1.00	1.00	Lin	
	Back facing phantom	Without headset	Estimated SAR	-	-	-	-	-	-	-	-
			Full SAR	-	-	-	-	-	-		
		Headset WH-208	Estimated SAR	0.376	0.377	0.347	0.385	0.377	0.347	-	-
			Full SAR	-	-	-	-	-	-		
	Display facing phantom	Without headset	Estimated SAR	0.444	0.456	0.417	0.454	0.456	0.417	0.02	9
			Full SAR	-	0.473	-	-	**0.473**	-		
		Headset WH-208	Estimated SAR	-	-	-	-	-	-	-	-
			Full SAR	-	-	-	-	-	-		

1900MHz Band Body SAR results / Antenna 1

Mode	Device orientation		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
				Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz	Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz		
3-slot GPRS HW 1004	Tuning Target + Tolerance [dBm]			26.4			Scaling factor*				
	Conducted Slot Average Power [dBm]			26.2	26.4	26.3	0.2	0.0	0.1	dB	
	Time-averaged power [dBm]			21.9	22.1	22.0	1.05	1.00	1.02	Lin	
	Back facing phantom	Without headset	Estimated SAR	-	0.228	-	-	0.228	-	-	-
			Full SAR	-	-	-	-	-	-		
		Headset WH-208	Estimated SAR	-	0.238	-	-	0.238	-	-	-
			Full SAR	-	-	-	-	-	-		
	Display facing phantom	Without headset	Estimated SAR	0.291	0.254	0.209	0.305	0.254	0.214	0.02	10
			Full SAR	0.315	-	-	**0.330**	-	-		
		Headset WH-208	Estimated SAR	-	0.251	-	-	0.251	-	-	-
			Full SAR	-	-	-	-	-	-		

1900MHz Band Body SAR results / Antenna 2

Mode	Device orientation		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
				Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz	Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz		
3-slot GPRS HW 1004	Tuning Target + Tolerance [dBm]			26.4			Scaling factor*				
	Conducted Slot Average Power [dBm]			26.1	26.3	26.2	0.3	0.1	0.2	dB	
	Time-averaged power [dBm]			21.8	22.0	21.9	1.07	1.02	1.05	Lin	
	Back facing phantom	Without headset	Estimated SAR	-	0.166	-	-	0.170	-	-	-
			Full SAR	-		-	-	-	-		
		Headset WH-208	Estimated SAR	-	0.171	-	-	0.175	-	-	-
			Full SAR	-		-	-	-	-		
	Display facing phantom	Without headset	Estimated SAR	0.239	0.224	0.195	0.256	0.228	0.204	0.01	-
			Full SAR	0.247	-	-	0.265	-	-		
		Headset WH-208	Estimated SAR	-	0.224	-	-	0.229	-	-	-
			Full SAR	-	-	-	-	-	-		

WCDMA1900 (Band 2) Body SAR results / Antenna 1

Mode	Device orientation		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
				Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz	Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz		
WCDMA HW 1004	Tuning Target + Tolerance [dBm]			23.9			Scaling factor*				
	Conducted Power [dBm]			23.8	23.9	23.9	0.1	0.0	0.0	dB	
	Time-averaged power [dBm]			23.8	23.9	23.9	1.02	1.00	1.00	Lin	
	Back facing phantom	Without headset	Estimated SAR	0.446	0.465	0.427	0.456	0.465	0.427	0.04	11
			Full SAR	-	0.501	-	-	**0.501**	-		
		Headset WH-208	Estimated SAR	-	0.456	-	-	0.456	-	-	-
			Full SAR	-	-	-	-	-	-		
	Display facing phantom	Without headset	Estimated SAR	-	0.457	-	-	0.457	-	-	-
			Full SAR	-	-	-	-	-	-		
		Headset WH-208	Estimated SAR	-	0.452	-	-	0.452	-	-	-
			Full SAR	-	-	-	-	-	-		

LTE2500 (Band 7) Body SAR results / Antenna2

Mode	Test configuration		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
				Ch 20850 2510.0 MHz	Ch 21100 2535 MHz	Ch 21350 2560.0 MHz	Ch 20850 2510.0 MHz	Ch 21100 2535 MHz	Ch 21350 2560.0 MHz	[W/kg]	
20MHz Ch BW 1RB 0% offset HW 1004	Tuning Target + Tolerance [dBm]			23.4			Scaling factor*				
	Conducted Power [dBm]			23.0	23.0	23.2	0.4	0.4	0.2	dB	
	Time-averaged power [dBm]			23.0	23.0	23.2	1.10	1.10	1.05	Lin	
	Back facing phantom	Without headset	Estimated SAR	-	-	0.283	-	-	0.296	-	-
			Full SAR	-	-	-	-	-	-		
		Headset WH-208	Estimated SAR	-	-	0.294	-	-	0.308	-	-
			Full SAR	-	-	-	-	-	-		
	Display facing phantom	Without headset	Estimated SAR	-	-	0.384	-	-	0.402	0.00	12
			Full SAR	-	-	0.382	-	-	**0.400**		
		Headset WH-208	Estimated SAR	-	-	0.373	-	-	0.391	-	-
			Full SAR	-	-	-	-	-	-		

Mode	Test configuration	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 20850 2510.0 MHz	Ch 21100 2535 MHz	Ch 21350 2560.0 MHz	Ch 20850 2510.0 MHz	Ch 21100 2535 MHz	Ch 21350 2560.0 MHz	[W/kg]	
20MHz Ch BW 1RB 50% offset HW 1004	Tuning Target + Tolerance [dBm]		23.4			Scaling factor*				
	Conducted Power [dBm]		23.1	23.1	23.1	0.3	0.3	0.3	dB	
	Time-averaged power [dBm]		23.1	23.1	23.1	1.07	1.07	1.07	Lin	
			No testing required for this CBW/RB/RB offset configuration according to KDB 941225 D05 SAR for LTE Devices v02r02							

(LTE2500 Body SAR Table / Antenna 2 continues)

(LTE2500 Body SAR Table / Antenna 2 continues)

Mode	Test configuration	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 20850	Ch 21100	Ch 21350	Ch 20850	Ch 21100	Ch 21350		
			2510.0 MHz	2535 MHz	2560.0 MHz	2510.0 MHz	2535 MHz	2560.0 MHz	[W/kg]	
20MHz Ch BW 1RB 100% offset HW 1004	Tuning Target + Tolerance [dBm]		23.4			Scaling factor*				
	Conducted Power [dBm]		23.1	23.1	23.1	0.3	0.3	0.3	dB	
	Time-averaged power [dBm]		23.1	23.1	23.1	1.07	1.07	1.07	Lin	
			No testing required for this CBW/RB/RB offset configuration according to KDB 941225 D05 SAR for LTE Devices v02r02							

Mode	Test configuration	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 20850	Ch 21100	Ch 21350	Ch 20850	Ch 21100	0.00		
			2510.0 MHz	2535 MHz	2560.0 MHz	2510.0 MHz	2535 MHz	0.00	[W/kg]	
20MHz Ch BW 50% RB 0% offset HW 1004	Tuning Target + Tolerance [dBm]		22.4			Scaling factor*				
	Conducted Power [dBm]		21.8	21.8	21.9	0.6	0.6	0.5	dB	
	Time-averaged power [dBm]		21.8	21.8	21.9	1.15	1.15	1.12	Lin	
			No testing required for this CBW/RB/RB offset configuration according to KDB 941225 D05 SAR for LTE Devices v02r02							

Mode	Test configuration	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 20850	Ch 21100	Ch 21350	Ch 20850	Ch 21100	Ch 21350		
			2510.0 MHz	2535 MHz	2560.0 MHz	2510.0 MHz	2535 MHz	2560.0 MHz	[W/kg]	
20MHz Ch BW 50% RB 50% offset HW 1004	Tuning Target + Tolerance [dBm]		22.4			Scaling factor*				
	Conducted Power [dBm]		21.8	21.8	21.9	0.6	0.6	0.5	dB	
	Time-averaged power [dBm]		21.8	21.8	21.9	1.15	1.15	1.12	Lin	
			No testing required for this CBW/RB/RB offset configuration according to KDB 941225 D05 SAR for LTE Devices v02r02							

(LTE2500 Body SAR Table / Antenna 2 continues)

(LTE2500 Body SAR Table / Antenna 2 continues)

Mode	Test configuration		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
				Ch 20850 2510.0 MHz	Ch 21100 2535 MHz	Ch 21350 2560.0 MHz	Ch 20850 2510.0 MHz	Ch 21100 2535 MHz	Ch 21350 2560.0 MHz		
20MHz Ch BW 50% RB 100% offset HW 1004	Tuning Target + Tolerance [dBm]			22.4			Scaling factor*				
	Conducted Power [dBm]			21.9	21.8	21.9	0.5	0.6	0.5	dB	
	Time-averaged power [dBm]			21.9	21.8	21.9	1.12	1.15	1.12	Lin	
	Back facing phantom	Without headset	Estimated SAR	-	-	0.231	-	-	0.259	-	-
			Full SAR	-	-	-	-	-	-		
		Headset WH-208	Estimated SAR	-	-	0.231	-	-	0.259	-	-
			Full SAR	-	-	-	-	-	-		
	Display facing phantom	Without headset	Estimated SAR	-	-	0.272	-	-	0.305	-	-
			Full SAR	-	-	-	-	-	-		
		Headset WH-208	Estimated SAR	-	-	0.270	-	-	0.303	-	-
			Full SAR	-	-	-	-	-	-		

Mode	Test configuration	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 20850 2510.0 MHz	Ch 21100 2535 MHz	Ch 21350 2560.0 MHz	Ch 20850 2510.0 MHz	Ch 21100 2535 MHz	Ch 21350 2560.0 MHz		
20MHz Ch BW 100%RB HW 1004	Tuning Target + Tolerance [dBm]		22.4			Scaling factor*				
	Conducted Power [dBm]		21.9	21.8	21.9	0.5	0.6	0.5	dB	
	Time-averaged power [dBm]		21.9	21.8	21.9	1.12	1.15	1.12	Lin	
			No testing required for this CBW/RB/RB offset configuration according to KDB 941225 D05 SAR for LTE Devices v02r02							

2450MHz Body SAR results

Mode	Device orientation		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
				Ch 1 2412.0 MHz	Ch 6 2437.0 MHz	Ch 11 2462.0 MHz	Ch 1 2412.0 MHz	Ch 6 2437.0 MHz	Ch 11 2462.0 MHz		
WLAN b-mode BPSK 1 Mbps HW 1004	Tuning Target + Tolerance [dBm]			18.5			Scaling factor*				
	Conducted Power [dBm]			17.4	17.5	17.6	1.1	1.0	0.9	dB	
	Time-averaged power [dBm]			17.4	17.5	17.6	1.29	1.26	1.23	Lin	
	Back facing phantom	Without headset	Estimated SAR	-	0.033	-	-	0.042	-	-	-
			Full SAR	-	-	-	-	-	-		
		Headset WH-208	Estimated SAR	-	0.036	-	-	0.046	-	-	-
			Full SAR	-	-	-	-	-	-		
	Display facing phantom	Without headset	Estimated SAR	-	0.055	-	-	0.069	-	-	-
			Full SAR	-	-	-	-	-	-		
		Headset WH-208	Estimated SAR	0.062	0.069	0.059	0.079	0.086	0.073	0.00	13
			Full SAR	-	0.065	-	-	**0.081**	-		

5000MHz Body SAR results
5150–5250 MHz and 5250–5350 MHz

Mode	Test configurtion		SAR measurement	Measured 1g SAR [W/kg]				Reported* 1g SAR [W/kg]				Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
				Ch 36 5180.0 MHz	Ch 44 5220.0 MHz	Ch 52 5260.0 MHz	Ch 64 5320.0 MHz	Ch 36 5180.0 MHz	Ch 44 5220.0 MHz	Ch 52 5260.0 MHz	Ch 64 5320.0 MHz		
WLAN a-mode BPSK 6 Mbps HW 1004	Tuning Target + Tolerance [dBm]			16.5				Scaling factor*					
	Conducted Power [dBm]			15.4	15.6	15.5	15.5	1.1	0.9	1.0	1.0	dB	
	Time-averaged power [dBm]			15.4	15.6	15.5	15.5	1.29	1.23	1.26	1.26	Lin	
	Back facing phantom	Without headset	Estimated SAR	-	-	-	-	-	-	-	-	-	-
			Full SAR	0.280	0.245	0.201	0.138	0.361	0.301	0.253	0.174		
		Headset WH-208	Estimated SAR	-	-	-	-	-	-	-	-	-	14
			Full SAR	0.291	-	0.209	-	**0.375**	-	0.263	-		
	Display facing phantom	Without headset	Estimated SAR	-	-	-	-	-	-	-	-	-	-
			Full SAR	0.019	-	0.040	-	0.025	-	0.051	-		
		Headset WH-208	Estimated SAR	-	-	-	-	-	-	-	-	-	-
			Full SAR	0.026	-	0.033	-	0.034	-	0.041	-		

Mode	Test configurtion		SAR measurement	Measured 1g SAR [W/kg]				Reported* 1g SAR [W/kg]				Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
				Ch 42 5210.0 MHz		Ch 58 5290.0 MHz		Ch 42 5210.0 MHz		Ch 58 5290.0 MHz			
WLAN ac-mode BPSK 29.3 / 32.5 Mbps HW 1004	Tuning Target + Tolerance [dBm]			14.5				Scaling factor*					
	Conducted Power [dBm]			13.9		14.0		0.6		0.5		dB	
	Time-averaged power [dBm]			13.9		14.0		1.15		1.12		Lin	
	Back facing phantom with Headset WH-208		Estimated SAR	-	-	-	-	-	-	-	-	-	-
			Full SAR	0.169	-	-	-	0.194	-	-	-		

5000MHz Body SAR results
5470–5725 MHz

Mode	Test configurtion		SAR measurement	Measured 1g SAR [W/kg]				Reported* 1g SAR [W/kg]				Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
				Ch 104 5520.0 MHz	Ch 116 5580.0 MHz	Ch 120 5600.0 MHz	Ch 132 5660.0 MHz	Ch 104 5520.0 MHz	Ch 116 5580.0 MHz	Ch 120 5600.0 MHz	Ch 132 5660.0 MHz		
WLAN a-mode BPSK 6 Mbps HW 1004	Tuning Target + Tolerance [dBm]			16.5				Scaling factor*					
	Conducted Power [dBm]			15.7	15.7	15.6	16.4	0.8	0.8	0.9	0.1	dB	
	Time-averaged power [dBm]			15.7	15.7	15.6	16.4	1.20	1.20	1.23	1.02	Lin	
	Back facing phantom	Without headset	Estimated SAR	-	-	-	-	-	-	-	-	-	-
			Full SAR	0.096	0.095	0.085	0.080	0.115	0.114	0.105	0.081		
		Headset WH-208	Estimated SAR	-	-	-	-	-	-	-	-	-	-
			Full SAR	0.098	-	-	-	0.117	-	-	-		
	Display facing phantom	Without headset	Estimated SAR	-	-	-	-	-	-	-	-	-	-
			Full SAR	0.016	-	-	-	0.019	-	-	-		
		Headset WH-208	Estimated SAR	-	-	-	-	-	-	-	-	-	-
			Full SAR	0.015	-	-	-	0.019	-	-	-		

5000MHz Body SAR results
5725–5850 MHz

Mode	Device orientation		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
				Ch 149 5745.0 MHz	Ch 157 5785.0 MHz	Ch 161 5805.0 MHz	Ch 149 5745. 0 MHz	Ch 157 5785.0 MHz	Ch 161 5805.0 MHz		
WLAN a-mode BPSK 6 Mbps HW 1004	Tuning Target + Tolerance [dBm]			16.5			Scaling factor*				
	Conducted Power [dBm]			15.8	15.7	15.6	0.7	0.8	0.9	dB	
	Time-averaged power [dBm]			15.8	15.7	15.6	1.17	1.20	1.23	Lin	
	Back facing phantom	Without headset	Estimated SAR	-	-	-	-	-	-	-	-
			Full SAR	0.090	0.100	0.097	0.106	0.120	0.119		
		Headset WH-208	Estimated SAR	-	-	-	-	-	-	-	-
			Full SAR	-	0.088	-	-	0.106	-		
	Display facing phantom	Without headset	Estimated SAR	-	-	-	-	-	-	-	-
			Full SAR	-	0.013	-	-	0.016	-		
		Headset WH-208	Estimated SAR	-	-	-	-	-	-	-	-
			Full SAR	-	0.013	-	-	0.015	-		

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

Test configuration	Max. Reported* 1g SAR results						
		Antenna 1					
	WLAN 2450	WLAN 5000	GPRS 850	WCDMA 850	3-slot GPRS 1900	WCDMA 1900	LTE 2500
Body: Back facing phantom, Without Headset	0.042	0.361	0.346	0.331	0.228	0.501	-
Body: Back facing phantom, Headset WH-208	0.046	0.375	0.388	0.385	0.238	0.456	-
Body: Display facing phantom, Without Headset	0.069	0.051	0.555	0.473	0.330	0.457	-
Body: Display facing phantom, Headset WH-208	0.081	0.041	0.368	0.360	0.251	0.452	-

Test configuration	Max. Reported* 1g SAR results						
		Antenna 2					
	WLAN 2450	WLAN 5000	3-slot GPRS 850	WCDMA 850	3-slot GPRS 1900	WCDMA 1900	LTE 2500
Body: Back facing phantom, Without Headset	0.042	0.361	0.225	-	0.170	-	0.296
Body: Back facing phantom, Headset WH-208	0.046	0.375	0.249	-	0.175	-	0.308
Body: Display facing phantom, Without Headset	0.069	0.051	0.327	-	0.265	-	0.400
Body: Display facing phantom, Headset WH-208	0.081	0.041	0.235	-	0.229	-	0.391

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

Test configuration	Antenna 1 + WLAN				
	Max. Reported* 1g SAR results				
	GPRS850 + WLAN2450	WCDMA850 + WLAN2450	3-slot GPRS1900 + WLAN2450	WCDMA1900 + WLAN2450	LTE2500 +WLAN2450
Body: Back facing phantom, Without Headset	0.388	0.373	0.270	**0.543**	-
Body: Back facing phantom, Headset WH-208	0.434	0.431	0.284	0.502	-
Body: Display facing phantom, Without Headset	**0.624**	**0.542**	**0.399**	0.526	-
Body: Display facing phantom, Headset WH-208	0.449	0.441	0.332	0.533	-
	GPRS850 + WLAN5000	WCDMA850 + WLAN5000	3-slot GPRS 1900 + WLAN5000	WCDMA1900 + WLAN5000	LTE2500 + WLAN5000
Body: Back facing phantom, Without Headset	0.707	0.692	0.589	**0.862**	-
Body: Back facing phantom, Headset WH-208	**0.730**	**0.760**	**0.613**	0.831	-
Body: Display facing phantom, Without Headset	0.606	0.524	0.381	0.508	-
Body: Display facing phantom, Headset WH-208	0.409	0.401	0.292	0.493	-

Test configuration	Antenna 2 + WLAN				
	Max. Reported* 1g SAR results				
	3-slot GPRS850 + WLAN2450	WCDMA850 + WLAN2450	3-slot GPRS1900 + WLAN2450	WCDMA1900 + WLAN2450	LTE2500 +WLAN2450
Body: Back facing phantom, Without Headset	0.267	-	0.212	-	0.338
Body: Back facing phantom, Headset WH-208	0.295	-	0.221	-	0.354
Body: Display facing phantom, Without Headset	0.396	-	0.334	-	0.469
Body: Display facing phantom, Headset WH-208	0.316	-	0.310	-	**0.472**
	3-slot GPRS850 + WLAN5000	WCDMA850 + WLAN5000	3-slot GPRS1900 + WLAN5000	WCDMA1900 + WLAN5000	LTE2500 + WLAN5000
Body: Back facing phantom, Without Headset	0.586	-	0.531	-	0.657
Body: Back facing phantom, Headset WH-208	0.624	-	0.550	-	**0.683**
Body: Display facing phantom, Without Headset	0.378	-	0.316	-	0.451
Body: Display facing phantom, Headset WH-208	0.276	-	0.270	-	0.432

Note: Simultaneous Transmission Procedures as described in KDB648474 are not required for this product.

7.2.1 Combined Body SAR data

The Combined SAR data given in the tables below has been voluntarily calculated and should be ignored for FCC certification.

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 or WLAN5000 and the cellular bands point-by-point and c) calculates the combined average SAR values.

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

Test configuration	Antenna 1 + WLAN				
	Max. Reported* 1g SAR results				
	3-slot GPRS850 + WLAN2450	WCDMA850 + WLAN2450	3-slot GPRS1900 + WLAN2450	WCDMA1900 + WLAN2450	LTE2500 +WLAN2450
Body: Back facing phantom, Without Headset	-	-	-	**0.466**	-
Body: Back facing phantom, Headset WH-208	-	-	-	-	-
Body: Display facing phantom, Without Headset	**0.542**	**0.457**	**0.309**	-	-
Body: Display facing phantom, Headset WH-208	-	-	-	-	-
	2-slot GPRS850 + WLAN5000	**WCDMA850 + WLAN5000**	**3-slot GPRS1900 + WLAN5000**	**WCDMA1900 + WLAN5000**	**LTE2500 + WLAN5000**
Body: Back facing phantom, Without Headset	-	-	-	**0.467**	-
Body: Back facing phantom, Headset WH-208	**0.390**	**0.390**	**0.398**	-	-
Body: Display facing phantom, Without Headset	-	-	-	-	-
Body: Display facing phantom, Headset WH-208	-	-	-	-	-

Test configuration	Antenna 2 + WLAN				
	Max. Reported* 1g SAR results				
	3-slot GPRS850 + WLAN2450	WCDMA850 + WLAN2450	3-slot GPRS1900 + WLAN2450	WCDMA1900 + WLAN2450	LTE2500 +WLAN2450
Body: Back facing phantom, Without Headset	-	-	-	-	-
Body: Back facing phantom, Headset WH-208	-	-	-	-	-
Body: Display facing phantom, Without Headset	-	-	-	-	-
Body: Display facing phantom, Headset WH-208	-	-	-	-	0.399
	3-slot GPRS850 + WLAN5000	WCDMA850 + WLAN5000	3-slot GPRS1900 + WLAN5000	WCDMA1900 + WLAN5000	LTE2500 + WLAN5000
Body: Back facing phantom, Without Headset	-	-	-	-	-
Body: Back facing phantom, Headset WH-208	-	-	-	-	0.403
Body: Display facing phantom, Without Headset	-	-	-	-	-
Body: Display facing phantom, Headset WH-208	-	-	-	-	-

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 or WLAN5000 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.

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

850MHz Band Wireless Router SAR results / Antenna 1

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz	Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz		
3-slot GPRS HW1004	Tuning Target + Tolerance [dBm]		29.1			Scaling factor*				
	Conducted Slot Average Power [dBm]		28.6	28.9	28.5	0.5	0.2	0.6	dB	
	Time-averaged power [dBm]		24.3	24.6	24.2	1.12	1.05	1.15	Lin	
	Back facing phantom	Estimated SAR		0.485	-	-	0.508	-	-	-
		Full SAR	-	-	-	-	-	-		
	Display facing phantom	Estimated SAR		0.527	-	-	0.552	-	-	-
		Full SAR	-	-	-	-	-	-		
	Top edge facing phantom	Estimated SAR		0.014	-	-	0.014	-	-	-
		Full SAR	-	-	-	-	-	-		
	Bottom edge facing phantom	Estimated SAR		0.231	-	-	0.242	-	-	-
		Full SAR	-	-	-	-	-	-		
	Left edge facing phantom	Estimated SAR	0.707	0.561	0.485	0.793	0.587	0.557	0.01	15
		Full SAR	0.699			**0.784**	-	-		
	Right edge facing phantom	Estimated SAR		0.130	-	-	0.136	-	-	-
		Full SAR	-	-	-	-	-	-		
2-slot GPRS HW1006	Tuning Target + Tolerance [dBm]		31.0			Scaling factor*				
	Conducted Slot Average Power [dBm]		31.0	30.9	30.6	0.0	0.1	0.4	dB	
	Time-averaged power [dBm]		25.0	24.9	24.6	1.00	1.02	1.10	Lin	
	Left edge facing phantom	Estimated SAR	0.726	0.571	0.452	0.726	0.584	0.496	0.02	-
		Full SAR	0.708	-	-	0.708	-	-		

850MHz Band Wireless Router SAR results / Antenna 2

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz	Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz		
3-slot GPRS HW1004	Tuning Target + Tolerance [dBm]		29.1			Scaling factor*				
	Conducted Slot Average Power [dBm]		28.5	28.8	28.4	0.6	0.3	0.7	dB	
	Time-averaged power [dBm]		24.2	24.5	24.1	1.15	1.07	1.17	Lin	
	Back facing phantom	Estimated SAR	-	0.392	-	-	0.420	-	-	-
		Full SAR	-	-	-	-	-	-		
	Display facing phantom	Estimated SAR	0.387	0.407	0.428	0.444	0.436	0.503	0.00	-
		Full SAR	-	-	0.432	-	-	0.508		
	Top edge facing phantom	Estimated SAR	-	0.012	-	-	0.013	-	-	-
		Full SAR	-	-	-	-	-	-		
	Bottom edge facing phantom	Estimated SAR	-	0.249	-	-	0.267	-	-	-
		Full SAR	-	-	-	-	-	-		
	Left edge facing phantom	Estimated SAR	-	0.050	-	-	0.054	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right edge facing phantom	Estimated SAR	-	0.267	-	-	0.286	-	-	-
		Full SAR	-	-	-	-	-	-		
2-slot GPRS HW1006	Tuning Target + Tolerance [dBm]		31.0			Scaling factor*				
	Conducted Slot Average Power [dBm]		30.9	30.8	30.5	0.1	0.3	0.5	dB	
	Time-averaged power [dBm]		24.8	24.7	24.4	1.04	1.06	1.14	Lin	
	Display facing phantom	Estimated SAR	0.305	0.335	0.377	0.316	0.355	0.428	0.01	-
		Full SAR	-	-	0.384	-	-	0.436		

WCDMA850 (Band 5) / Antenna 1

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz	Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz		
WCDMA HW1004	Tuning Target + Tolerance [dBm]		23.9			Scaling factor*				
	Conducted Power [dBm]		23.9	23.9	23.8	0.0	0.0	0.1	dB	
	Time-averaged power [dBm]		23.9	23.9	23.8	1.00	1.00	1.02	Lin	
	Back facing phantom	Estimated SAR	-	0.500	-	-	0.500	-	-	-
		Full SAR	-	-	-	-	-	-		
	Display facing phantom	Estimated SAR	-	0.510	-	-	0.510	-	-	-
		Full SAR	-	-	-	-	-	-		
	Top edge facing phantom	Estimated SAR	-	0.018	-	-	0.018	-	-	-
		Full SAR	-	-	-	-	-	-		
	Bottom edge facing phantom	Estimated SAR	-	0.251	-	-	0.251	-	-	-
		Full SAR	-	-	-	-	-	-		
	Left edge facing phantom	Estimated SAR	0.643	0.620	0.557	0.643	0.620	0.557	0.01	-
		Full SAR	0.629	-	-	0.629	-	-		
	Right edge facing phantom	Estimated SAR	-	0.144	-	-	0.144	-	-	-
		Full SAR	-	-	-	-	-	-		
WCDMA HW1006	Tuning Target + Tolerance [dBm]		23.9			Scaling factor*				
	Conducted Power [dBm]		23.8	23.9	23.9	0.1	0.0	0.0	dB	
	Time-averaged power [dBm]		23.8	23.9	23.9	1.02	1.00	1.00	Lin	
	Left edge facing phantom	Estimated SAR	0.663	0.657	0.623	0.678	0.657	0.623	0.01	16
		Full SAR	0.654	-	-	**0.669**	-	-		

1900MHz Band Wireless Router SAR results / Antenna 1

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz	Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz		
3-slot GPRS HW1004	Tuning Target + Tolerance [dBm]		26.4			Scaling factor*				
	Conducted Slot Average Power [dBm]		26.2	26.4	26.3	0.2	0.0	0.1	dB	
	Time-averaged power [dBm]		21.9	22.1	22.0	1.05	1.00	1.02	Lin	
	Back facing phantom	Estimated SAR	-	0.474	-	-	0.474	-	-	-
		Full SAR	-	-	-	-	-	-		
	Display facing phantom	Estimated SAR	-	0.611	-	-	0.611	-	-	-
		Full SAR	-	-	-	-	-	-		
	Top edge facing phantom	Estimated SAR	-	0.012	-	-	0.012	-	-	-
		Full SAR	-	-	-	-	-	-		
	Bottom edge facing phantom	Estimated SAR	0.740	0.711	0.665	0.775	0.711	0.680	0.03	17
		Full SAR	0.773	-	-	**0.809**	-	-		
	Left edge facing phantom	Estimated SAR	-	0.284	-	-	0.284	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right edge facing phantom	Estimated SAR	-	0.078	-	-	0.078	-	-	-
		Full SAR	-	-	-	-	-	-		

1900MHz Band Wireless Router SAR results / Antenna 2

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz	Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz		
3-slot GPRS HW1004	Tuning Target + Tolerance [dBm]		26.4			Scaling factor*				
	Conducted Slot Average Power [dBm]		26.1	26.3	26.2	0.3	0.1	0.2	dB	
	Time-averaged power [dBm]		21.8	22.0	21.9	1.07	1.02	1.05	Lin	
	Back facing phantom	Estimated SAR	-	0.282	-	-	0.289	-	-	-
		Full SAR	-	-	-	-	-	-		
	Display facing phantom	Estimated SAR	0.440	0.409	0.346	0.471	0.419	0.362	0.02	-
		Full SAR	0.460	-	-	0.493	-	-		
	Top edge facing phantom	Estimated SAR	-	0.011	-	-	0.011	-	-	-
		Full SAR	-	-	-	-	-	-		
	Bottom edge facing phantom	Estimated SAR	-	0.312	-	-	0.319	-	-	-
		Full SAR	-	-	-	-	-	-		
	Left edge facing phantom	Estimated SAR	-	0.047	-	-	0.049	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right edge facing phantom	Estimated SAR	-	0.122	-	-	0.125	-	-	-
		Full SAR	-	-	-	-	-	-		

WCDMA1900 (Band 2) Wireless Router SAR results / Antenna 1

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz	Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz		
WCDMA HW1004	Tuning Target + Tolerance [dBm]		22.4			Scaling factor*				
	Conducted Power [dBm]		22.3	22.4	22.3	0.1	0.0	0.1	dB	
	Time-averaged power [dBm]		22.3	22.4	22.3	1.02	1.00	1.02	Lin	
	Back facing phantom	Estimated SAR	-	0.593	-	-	0.593	-	0.05	-
		Full SAR	-	0.643	-	-	0.643	-		
	Display facing phantom	Estimated SAR	0.749	0.731	0.688	0.766	0.731	0.704	0.12	-
		Full SAR	0.855	0.848	0.781	0.875	0.848	0.799		
	Top edge facing phantom	Estimated SAR	-	0.018	-	-	0.018	-	-	-
		Full SAR	-	-	-	-	-	-		
	Bottom edge facing phantom	Estimated SAR	0.899	0.937	0.933	0.920	0.937	0.955	0.03	18
		Full SAR	-	-	0.959	-	-	**0.981**		
	Left edge facing phantom	Estimated SAR		0.348	-	-	0.348	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right edge facing phantom	Estimated SAR		0.098	-	-	0.098	-	-	-
		Full SAR	-	-	-	-	-	-		
	Repeated SAR Bottom edge facing phantom	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	0.944	-	-	0.966		

LTE2500 (Band 7) Wireless Router SAR results / Antenna 2

Mode	Test configuration	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 20850 2510.0 MHz	Ch 21100 2535.0 MHz	Ch 21350 2560.0 MHz	Ch 20850 2510.0 MHz	Ch 21100 2535.0 MHz	Ch 21350 2560.0 MHz		
20MHz Ch BW 1RB 0% offset HW1004	Tuning Target + Tolerance [dBm]		23.4			Scaling factor*				
	Conducted Power [dBm]		23.0	23.0	23.2	0.4	0.4	0.2	dB	
	Time-averaged power [dBm]		23.0	23.0	23.2	1.10	1.10	1.05	Lin	
	Back facing phantom	Estimated SAR	-	-	0.589	-	-	0.617	0.03	-
		Full SAR	-	-	0.617	-	-	0.646		
	Display facing phantom	Estimated SAR	-	-	0.761	-	-	0.797	0.03	-
		Full SAR	-	-	0.787	-	-	0.824		
	Top edge facing phantom	Estimated SAR	-	-	0.029	-	-	0.030	-	-
		Full SAR	-	-	-	-	-	-		
	Bottom edge facing phantom	Estimated SAR	-	-	0.864	-	-	0.905	-	-
		Full SAR	-	-	-	-	-	-		
	Left edge facing phantom	Estimated SAR	-	-	0.078	-	-	0.081	-	-
		Full SAR	-	-	-	-	-	-		
	Right edge facing phantom	Estimated SAR	-	-	0.258	-	-	0.270	-	-
		Full SAR	-	-	-	-	-	-		

(LTE2500 Body SAR Table / Antenna 2 continues)

(LTE2500 Body SAR Table / Antenna 2 continues)

Mode	Test configuration	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 20850 2510.0 MHz	Ch 21100 2535.0 MHz	Ch 21350 2560.0 MHz	Ch 20850 2510.0 MHz	Ch 21100 2535.0 MHz	Ch 21350 2560.0 MHz		
20MHz Ch BW 1RB 50% offset HW1004	Tuning Target + Tolerance [dBm]		23.4			Scaling factor*				
	Conducted Power [dBm]		23.1	23.1	23.1	0.3	0.3	0.3	dB	
	Time-averaged power [dBm]		23.1	23.1	23.1	1.07	1.07	1.07	Lin	
	Back facing phantom	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-		
	Display facing phantom	Estimated SAR	0.767	0.741	-	0.822	0.794	-	0.02	-
		Full SAR	0.787	-	-	0.843	-	-		
	Top edge facing phantom	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-		
	Bottom edge facing phantom	Estimated SAR	0.891	0.875	-	0.955	0.938	-	0.00	19
		Full SAR	0.890	-	-	**0.954**	-	-		
	Left edge facing phantom	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right edge facing phantom	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-		
	Repeated SAR Bottom edge facing phantom	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	0.823	-	-	0.882	-	-		

(LTE2500 Body SAR Table / Antenna 2 continues)

(LTE2500 Body SAR Table / Antenna 2 continues)

Mode	Test configuration	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 20850 2510.0 MHz	Ch 21100 2535.0 MHz	Ch 21350 2560.0 MHz	Ch 20850 2510.0 MHz	Ch 21100 2535.0 MHz	Ch 21350 2560.0 MHz	[W/kg]	
20MHz Ch BW 1RB 100% offset HW1004	Tuning Target + Tolerance [dBm]		23.4			Scaling factor*				
	Conducted Power [dBm]		23.1	23.1	23.1	0.3	0.3	0.3	dB	
	Time-averaged power [dBm]		23.1	23.1	23.1	1.07	1.07	1.07	Lin	
			No testing required for this CBW/RB/RB offset configuration according to KDB 941225 D05 SAR for LTE Devices v02r02							
Mode	Test configuration	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 20850 2510.0 MHz	Ch 21100 2535.0 MHz	Ch 21350 2560.0 MHz	Ch 20850 2510.0 MHz	Ch 21100 2535.0 MHz	Ch 21350 2560.0 MHz	[W/kg]	
20MHz Ch BW 50% RB 0% offset HW1004	Tuning Target + Tolerance [dBm]		22.4			Scaling factor*				
	Conducted Power [dBm]		21.8	21.8	21.9	0.6	0.6	0.5	dB	
	Time-averaged power [dBm]		21.8	21.8	21.9	1.15	1.15	1.12	Lin	
			No testing required for this CBW/RB/RB offset configuration according to KDB 941225 D05 SAR for LTE Devices v02r02							
Mode	Test configuration	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 20850 2510.0 MHz	Ch 21100 2535.0 MHz	Ch 21350 2560.0 MHz	Ch 20850 2510.0 MHz	Ch 21100 2535.0 MHz	Ch 21350 2560.0 MHz	[W/kg]	
20MHz Ch BW 50% RB 50% offset HW1004	Tuning Target + Tolerance [dBm]		22.4			Scaling factor*				
	Conducted Power [dBm]		21.8	21.8	21.9	0.6	0.6	0.5	dB	
	Time-averaged power [dBm]		21.8	21.8	21.9	1.15	1.15	1.12	Lin	
			No testing required for this CBW/RB/RB offset configuration according to KDB 941225 D05 SAR for LTE Devices v02r02							

(LTE2500 Body SAR Table / Antenna 2 continues)

(LTE2500 Body SAR Table / Antenna 2 continues)

Mode	Test configuration	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 20850 2510.0 MHz	Ch 21100 2535.0 MHz	Ch 21350 2560.0 MHz	Ch 20850 2510.0 MHz	Ch 21100 2535.0 MHz	Ch 21350 2560.0 MHz		
20MHz Ch BW 50% RB 100% offset HW1004	Tuning Target + Tolerance [dBm]		22.4			Scaling factor*				
	Conducted Power [dBm]		21.9	21.8	21.9	0.5	0.6	0.5	dB	
	Time-averaged power [dBm]		21.9	21.8	21.9	1.12	1.15	1.12	Lin	
	Back facing phantom	Estimated SAR	-	-	0.448	-	-	0.503	-	-
		Full SAR	-	-	-	-	-	-		
	Display facing phantom	Estimated SAR	-	-	0.554	-	-	0.622	-	-
		Full SAR	-	-	-	-	-	-		
	Top edge facing phantom	Estimated SAR	-	-	0.021	-	-	0.023	-	-
		Full SAR	-	-	-	-	-	-		
	Bottom edge facing phantom	Estimated SAR	-	-	0.590	-	-	0.662	-	-
		Full SAR	-	-	-	-	-	-		
	Left edge facing phantom	Estimated SAR	-	-	0.053	-	-	0.059	-	-
		Full SAR	-	-	-	-	-	-		
	Right edge facing phantom	Estimated SAR	-	-	0.189	-	-	0.212	-	-
		Full SAR	-	-	-	-	-	-		

(LTE2500 Body SAR Table / Antenna 2 continues)

(LTE2500 Body SAR Table / Antenna 2 continues)

Mode	Test configuration	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 20850 2510.0 MHz	Ch 21100 2535.0 MHz	Ch 21350 2560.0 MHz	Ch 20850 2510.0 MHz	Ch 21100 2535.0 MHz	Ch 21350 2560.0 MHz		
20MHz Ch BW 100%RB HW1004	Tuning Target + Tolerance [dBm]		22.4			Scaling factor*				
	Conducted Power [dBm]		21.9	21.8	21.9	0.5	0.6	0.5	dB	
	Time-averaged power [dBm]		21.9	21.8	21.9	1.12	1.15	1.12	Lin	
	Back facing phantom	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-		
	Display facing phantom	Estimated SAR	0.579	-	-	0.650	-	-	-	-
		Full SAR	-	-	-	-	-	-		
	Top edge facing phantom	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-		
	Bottom edge facing phantom	Estimated SAR	0.644	-	-	0.723	-	-	-	-
		Full SAR	-	-	-	-	-	-		
	Left edge facing phantom	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right edge facing phantom	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-		

2450MHz Wireless Router SAR results

Mode	Test configuration	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 1 2412.0 MHz	Ch 6 2437.0 MHz	Ch 11 2462.0 MHz	Ch 1 2412.0 MHz	Ch 6 2437.0 MHz	Ch 11 2462.0 MHz		
WLAN b-mode BPSK 1 Mbps HW1004	Tuning Target + Tolerance [dBm]		18.5			Scaling factor*				
	Conducted Power [dBm]		17.4	17.5	17.6	1.1	1.0	0.9	dB	
	Time-averaged power [dBm]		17.4	17.5	17.6	1.29	1.26	1.23	Lin	
	Back facing phantom	Estimated SAR	-	0.086	-	-	0.109	-	-	-
		Full SAR	-	-	-	-	-	-		
	Display facing phantom	Estimated SAR	-	0.095	-	-	0.120	-	-	-
		Full SAR	-	-	-	-	-	-		
	Top edge facing phantom	Estimated SAR	0.125	0.134	0.132	0.161	0.169	0.162	0.00	20
		Full SAR	-	0.131		-	**0.165**	-		
	Bottom edge facing phantom	Estimated SAR	-	0.000	-	-	0.001	-	-	-
		Full SAR	-	-	-	-	-	-		
	Left edge facing phantom	Estimated SAR	-	0.016	-	-	0.020	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right edge facing phantom	Estimated SAR	-	0.038	-	-	0.047	-	-	-
		Full SAR	-	-	-	-	-	-		

Simultaneous transmissions: Combined SAR results – Individual band Max results

Test configuration	Max. Reported* 1g SAR results					
		Antenna 1				
	WLAN 2450	3-slot GPRS850	WCDMA 850	3-slot GPRS1900	WCDMA 1900	LTE 2500
Back facing phantom	0.109	0.508	0.500	0.474	0.645	-
Display facing phantom	0.120	0.552	0.510	0.611	0.875	-
Top edge facing phantom	0.165	0.014	0.018	0.012	0.018	-
Bottom edge facing phantom	0.001	0.242	0.251	0.809	0.981	-
Left edge facing phantom	0.020	0.784	0.669	0.284	0.348	-
Right edge facing phantom	0.047	0.136	0.144	0.078	0.098	-

Test configuration	Max. Reported* 1g SAR results					
		Antenna 2				
	WLAN 2450	3-slot GPRS850	WCDMA 850	3-slot GPRS1900	WCDMA 1900	LTE 2500
Back facing phantom	0.109	0.420	-	0.289	-	0.646
Display facing phantom	0.120	0.508	-	0.493	-	0.843
Top edge facing phantom	0.165	0.013	-	0.011	-	0.030
Bottom edge facing phantom	0.001	0.267	-	0.319	-	0.954
Left edge facing phantom	0.020	0.054	-	0.049	-	0.081
Right edge facing phantom	0.047	0.286	-	0.125	-	0.270

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

Test configuration	Antenna 1				
	Max. Reported* 1g SAR results				
	3-slot GPRS850 + WLAN2450	WCDMA850 + WLAN2450	3-slot GPRS1900 + WLAN2450	WCDMA1900 + WLAN2450	LTE2500 +WLAN2450
Back facing phantom	0.617	0.609	0.583	0.754	-
Display facing phantom	0.672	0.630	0.731	**0.995**	-
Top edge facing phantom	0.179	0.183	0.177	0.183	-
Bottom edge facing phantom	0.243	0.252	**0.810**	0.982	-
Left edge facing phantom	**0.804**	**0.689**	0.304	0.368	-
Right edge facing phantom	0.183	0.191	0.125	0.145	-

Test configuration	Antenna 2				
	Max. Reported* 1g SAR results				
	3-slot GPRS850 + WLAN2450	WCDMA850 + WLAN2450	3-slot GPRS1900 + WLAN2450	WCDMA1900 + WLAN2450	LTE2500 +WLAN2450
Back facing phantom	0.529	-	0.398	-	0.755
Display facing phantom	0.628	-	0.613	-	**0.963**
Top edge facing phantom	0.178	-	0.176	-	0.195
Bottom edge facing phantom	0.268	-	0.320	-	0.955
Left edge facing phantom	0.074	-	0.069	-	0.101
Right edge facing phantom	0.333	-	0.172	-	0.317

Note: Simultaneous Transmission Procedures as described in KDB648474 are not required for this product.

7.3.1 Combined Body SAR data

The Combined SAR data given in the tables below has been voluntarily calculated and should be ignored for FCC certification.

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

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

Test configuration	Antenna 1 + WLAN				
	Max. Reported* 1g SAR results				
	3-slot GPRS850 + WLAN2450	WCDMA850 + WLAN2450	3-slot GPRS1900 + WLAN2450	WCDMA1900 + WLAN2450	LTE2500 +WLAN2450
Back facing phantom	-	-	-	-	-
Display facing phantom	-	-	-	**0.768**	-
Top edge facing phantom	-	-	-	-	-
Bottom edge facing phantom	-	-	**0.781**	-	-
Left edge facing phantom	**0.799**	**0.684**	-	-	-
Right edge facing phantom	-	-	-	-	-

Test configuration	Antenna 2 + WLAN				
	Max. Reported* 1g SAR results				
	3-slot GPRS850 + WLAN2450	WCDMA850 + WLAN2450	3-slot GPRS1900 + WLAN2450	WCDMA1900 + WLAN2450	LTE2500 +WLAN2450
Back facing phantom	-	-	-	-	-
Display facing phantom	-	-	-	-	**0.824**
Top edge facing phantom	-	-	-	-	-
Bottom edge facing phantom	-	-	-	-	-
Left edge facing phantom	-	-	-	-	-
Right edge facing phantom	-	-	-	-	-

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 or WLAN5000 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

Plot #1

Date/Time: 2014-04-15 06:48:08

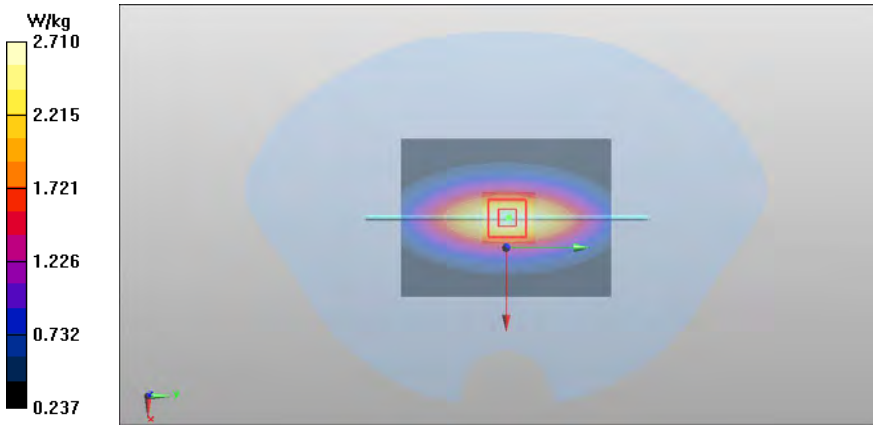
Test Laboratory: TCC Nokia
Type: D835V2; Serial: D835V2 - SN:480

Communication System: CW835
Frequency: 835 MHz; Duty Cycle: 1:1
Medium: HSL835; Medium Notes: t= 22.2 C
Medium parameters used: f = 835 MHz; σ = 0.906 S/m; ε_r = 40.083; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(6.12, 6.12, 6.12); Calibrated: 2013-11-14;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2013-11-19
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.10 (7164)

d=15mm, Pin=250mW/Area Scan (61x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 53.622 V/m
Fast SAR: SAR(1 g) = 2.37 W/kg
Fast SAR(10 g) = 1.6 W/kg
Maximum value of SAR (interpolated) = 2.72 W/kg

d=15mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 53.622 V/m
Peak SAR (extrapolated) = 3.41 W/kg
SAR(1 g) = 2.31 W/kg
SAR(10 g) = 1.51 W/kg
Power Drift = -0.05 dB
Maximum value of SAR (measured) = 2.71 W/kg



Plot #2

Date/Time: 2014-04-15 06:47:29

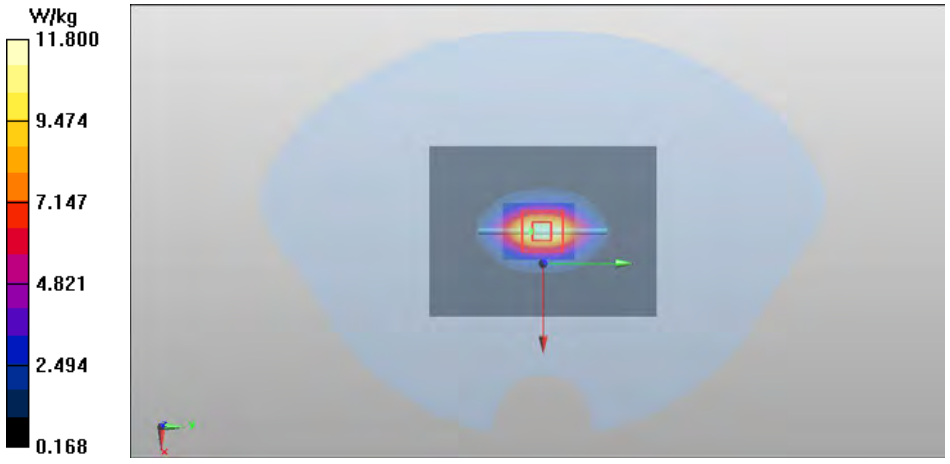
Test Laboratory: TCC Nokia
Type: D1900V2; Serial: D1900V2 - SN:5d013

Communication System: CW1900
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: HSL1900; Medium Notes: t= 21.5 C
Medium parameters used: f = 1900 MHz; σ = 1.374 S/m; ε_r = 38.846; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: ES3DV3 - SN3131
- ConvF(4.98, 4.98, 4.98); Calibrated: 2013-06-18;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2013-06-10
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

d=10mm, Pin=250mW/Area Scan (61x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 87.917 V/m
Fast SAR: SAR(1 g) = 9.33 W/kg
Fast SAR(10 g) = 4.79 W/kg
Maximum value of SAR (interpolated) = 11.8 W/kg

d=10mm, Pin=250mW/Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 87.917 V/m
Peak SAR (extrapolated) = 16.7 W/kg
SAR(1 g) = 9.27 W/kg
SAR(10 g) = 4.84 W/kg
Power Drift = 0.10 dB
Maximum value of SAR (measured) = 11.8 W/kg



Plot #3

Date/Time: 2014-04-14 15:11:35

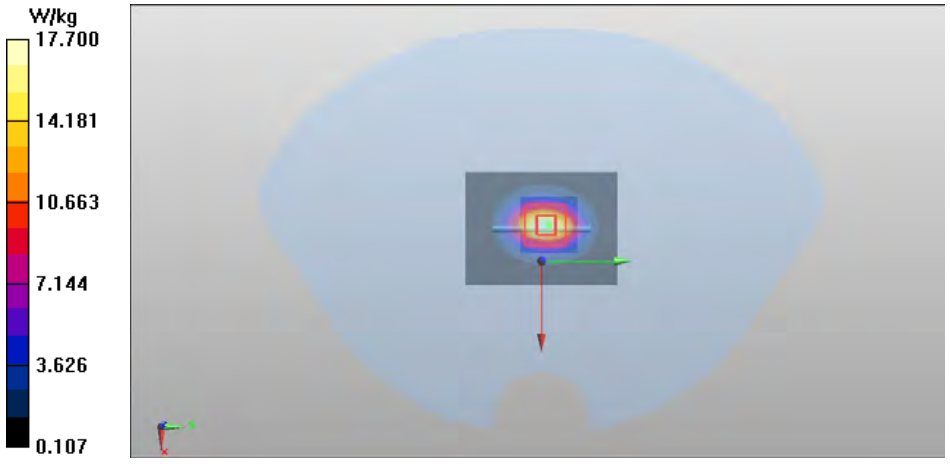
Test Laboratory: TCC Nokia
Type: D2450V2; Serial: D2450V2 - SN:749

Communication System: CW2450
Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: HSL2450; Medium Notes: t= 21.1 C
Medium parameters used: f = 2450 MHz; σ = 1.776 S/m; ε_r = 38.613; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3960
- ConvF(7.39, 7.39, 7.39); Calibrated: 2013-12-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2013-11-08
- Phantom: #4 SAM, SAR4 ; Type: QD000P40CD; Serial:
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

d=10mm, Pin=250mW/Area Scan (61x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 90.983 V/m
Fast SAR: SAR(1 g) = 13.5 W/kg
Fast SAR(10 g) = 5.94 W/kg
Maximum value of SAR (interpolated) = 18.2 W/kg

d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 90.983 V/m
Peak SAR (extrapolated) = 27.9 W/kg
SAR(1 g) = 13.5 W/kg
SAR(10 g) = 6.24 W/kg
Power Drift = 0.05 dB
Maximum value of SAR (measured) = 17.7 W/kg



Plot #4

Date/Time: 2014-04-17 10:38:19

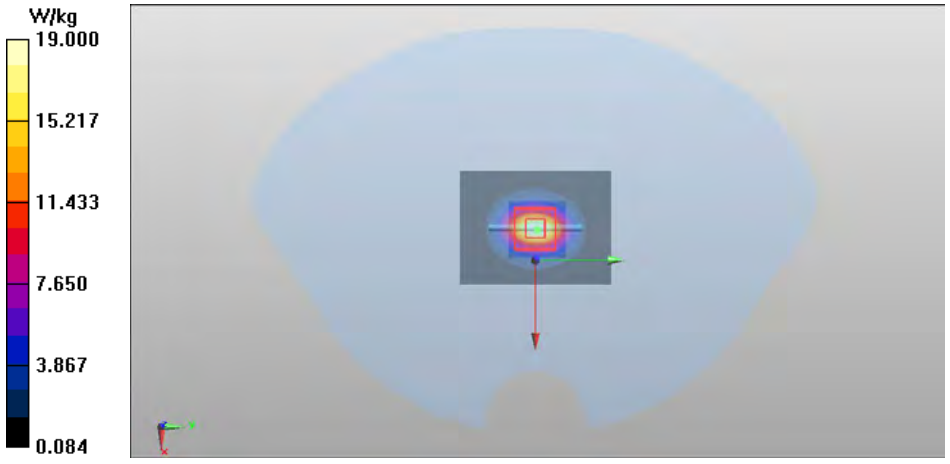
Test Laboratory: TCC Nokia
Type: D2600V2; Serial: D2600V2 - SN:1056

Communication System: CW2600
Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: HSL 2450 - 2600; Medium Notes: t= 21.6 C
Medium parameters used: f = 2600 MHz; σ = 1.937 S/m; ε_r = 39.044; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3960
- ConvF(7.33, 7.33, 7.33); Calibrated: 2013-12-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2013-11-08
- Phantom: #4 SAM, SAR4 ; Type: QD000P40CD; Serial: TP:xxxx
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

d=10mm, Pin=250mW/Area Scan (61x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 92.269 V/m
Fast SAR: SAR(1 g) = 14.5 W/kg
Fast SAR(10 g) = 6.45 W/kg
Maximum value of SAR (interpolated) = 19.2 W/kg

d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 92.269 V/m
Peak SAR (extrapolated) = 30.8 W/kg
SAR(1 g) = 14.2 W/kg
SAR(10 g) = 6.27 W/kg
Power Drift = -0.01 dB
Maximum value of SAR (measured) = 19.0 W/kg



Plot #5

Date/Time: 2014-04-14 14:17:31

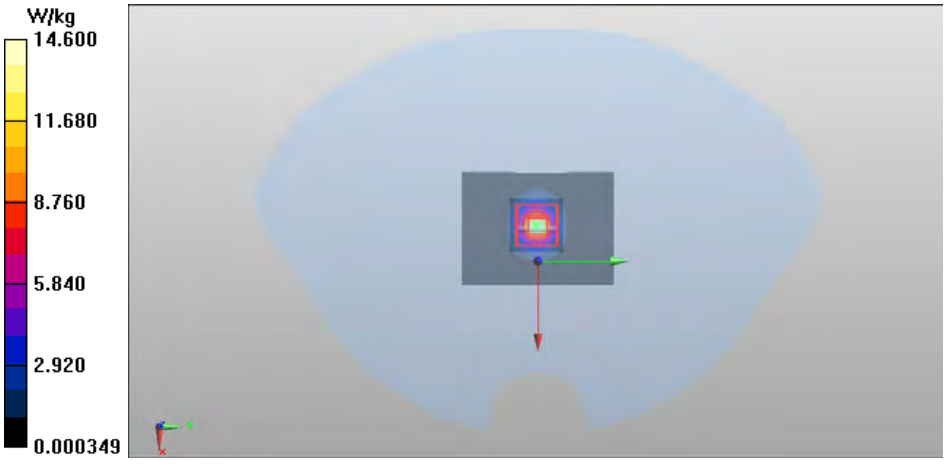
Test Laboratory: TCC Nokia
Type: D5GHzV2; Serial: D5GHzV2 - SN: 1048

Communication System: CW5200
Frequency: 5200 MHz; Duty Cycle: 1:1
Medium: HSL5000; Medium Notes: t= 21.7 C
Medium parameters used: f = 5200 MHz; σ = 4.537 S/m; ε_r = 36.401; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3892
- ConvF(5.29, 5.29, 5.29); Calibrated: 2013-11-15;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2013-11-11
- Phantom: SAM2; Type: SAM; Serial: TP-1570
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

d=10mm, Pin=100mW 5200/Area Scan (61x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 60.915 V/m
Fast SAR: SAR(1 g) = 7.01 W/kg
Fast SAR(10 g) = 1.94 W/kg
Maximum value of SAR (interpolated) = 15.4 W/kg

d=10mm, Pin=100mW 5200/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 60.915 V/m
Peak SAR (extrapolated) = 30.4 W/kg
SAR(1 g) = 7.42 W/kg
SAR(10 g) = 2.1 W/kg
Power Drift = -0.05 dB
Maximum value of SAR (measured) = 14.6 W/kg



Plot #6

Date/Time: 2014-04-14 15:02:25

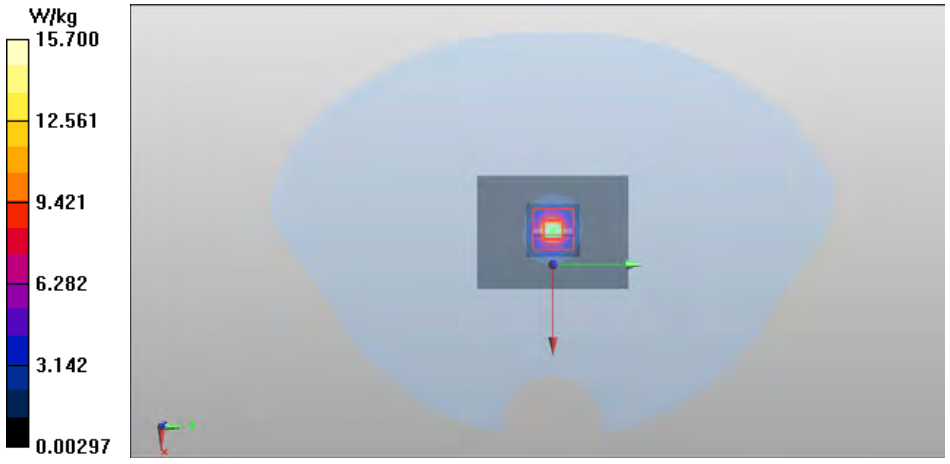
Test Laboratory: TCC Nokia
Type: D5GHzV2; Serial: D5GHzV2 - SN: 1048

Communication System: CW5300
Frequency: 5300 MHz; Duty Cycle: 1:1
Medium: HSL5000; Medium Notes: t= 21.7 C
Medium parameters used: f = 5300 MHz; σ = 4.633 S/m; ε_r = 36.254; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3892
- ConvF(4.96, 4.96, 4.96); Calibrated: 2013-11-15;
- Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2013-11-11
- Phantom: SAM2; Type: SAM; Serial: TP-1570
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

d=10mm, Pin=100mW 5300/Area Scan (61x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 61.926 V/m
Fast SAR: SAR(1 g) = 7.34 W/kg
Fast SAR(10 g) = 2.01 W/kg
Maximum value of SAR (interpolated) = 16.3 W/kg

d=10mm, Pin=100mW 5300/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 61.926 V/m
Peak SAR (extrapolated) = 33.2 W/kg
SAR(1 g) = 7.89 W/kg
SAR(10 g) = 2.22 W/kg
Power Drift = 0.01 dB
Maximum value of SAR (measured) = 15.7 W/kg



Plot #7

Date/Time: 2014-04-15 08:46:08

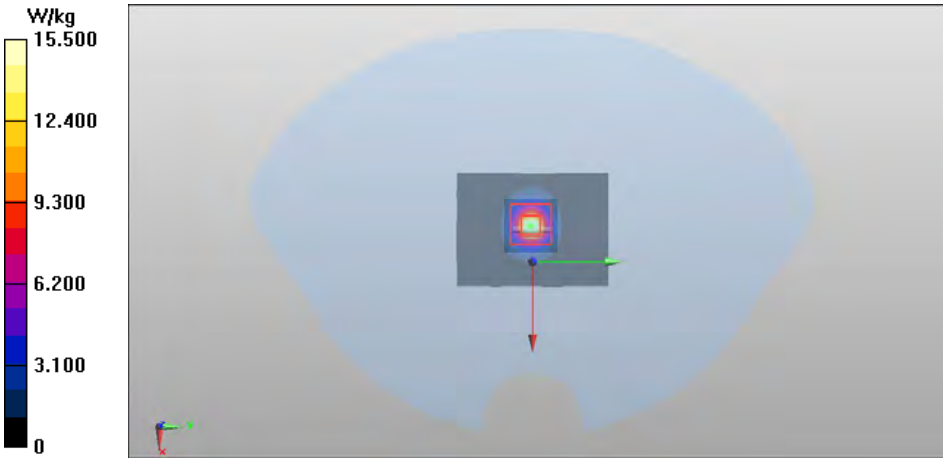
Test Laboratory: TCC Nokia
Type: D5GHzV2; Serial: D5GHzV2 - SN: 1048

Communication System: CW5500
Frequency: 5500 MHz; Duty Cycle: 1:1
Medium: HSL5000; Medium Notes: t= 21.0 C
Medium parameters used: f = 5500 MHz; σ = 4.828 S/m; ε_r = 35.646; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3892
- ConvF(4.84, 4.84, 4.84); Calibrated: 2013-11-15;
- Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2013-11-11
- Phantom: SAM2; Type: SAM; Serial: TP-1570
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

d=10mm, Pin=100mW 5500/Area Scan (61x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 58.876 V/m
Fast SAR: SAR(1 g) = 7.75 W/kg
Fast SAR(10 g) = 2.16 W/kg
Maximum value of SAR (interpolated) = 17.4 W/kg

d=10mm, Pin=100mW 5500/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 58.876 V/m
Peak SAR (extrapolated) = 33.8 W/kg
SAR(1 g) = 7.71 W/kg
SAR(10 g) = 2.16 W/kg
Power Drift = 0.03 dB
Maximum value of SAR (measured) = 15.5 W/kg



Plot #8

Date/Time: 2014-04-15 09:12:49

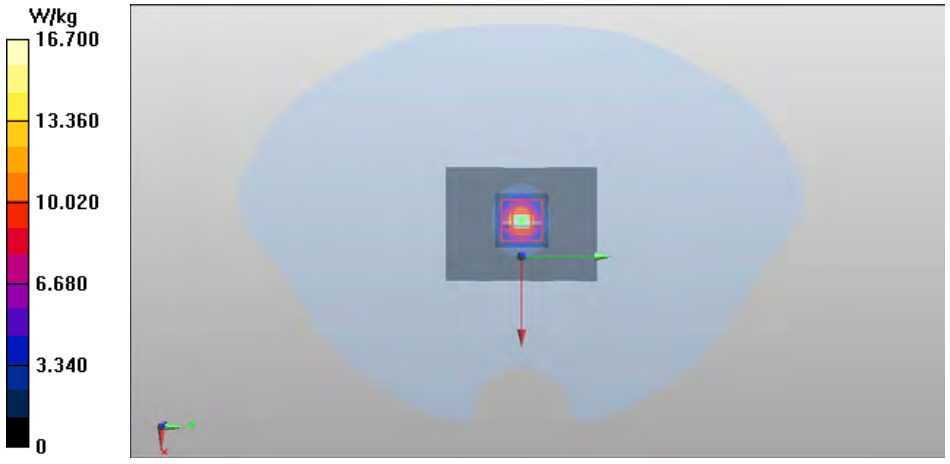
Test Laboratory: TCC Nokia
Type: D5GHzV2; Serial: D5GHzV2 - SN: 1048

Communication System: CW5600
Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: HSL5000; Medium Notes: t= 21.0 C
Medium parameters used: f = 5600 MHz; σ = 4.941 S/m; ε_r = 35.511; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3892
- ConvF(4.66, 4.66, 4.66); Calibrated: 2013-11-15;
- Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2013-11-11
- Phantom: SAM2; Type: SAM; Serial: TP-1570
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

d=10mm, Pin=100mW 5600/Area Scan (61x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 62.335 V/m
Fast SAR: SAR(1 g) = 8.32 W/kg
Fast SAR(10 g) = 2.28 W/kg
Maximum value of SAR (interpolated) = 18.6 W/kg

d=10mm, Pin=100mW 5600/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 62.335 V/m
Peak SAR (extrapolated) = 38.2 W/kg
SAR(1 g) = 8.38 W/kg
SAR(10 g) = 2.3 W/kg
Power Drift = 0.00 dB
Maximum value of SAR (measured) = 16.7 W/kg



Plot #9

Date/Time: 2014-04-16 06:41:26

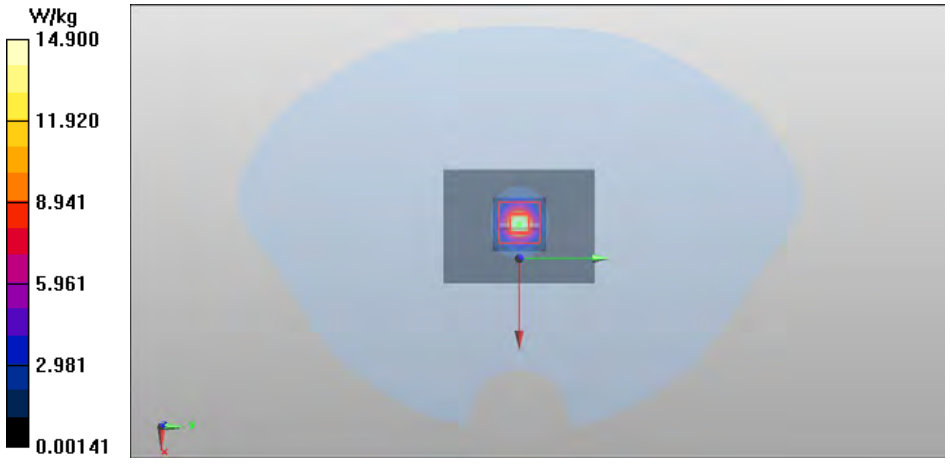
Test Laboratory: TCC Nokia
Type: D5GHzV2; Serial: D5GHzV2 - SN: 1048

Communication System: CW5800
Frequency: 5800 MHz; Duty Cycle: 1:1
Medium: HSL5000; Medium Notes: t= 21.3 C
Medium parameters used: f = 5800 MHz; σ = 5.135 S/m; ε_r = 35.203; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3892
- ConvF(4.6, 4.6, 4.6); Calibrated: 2013-11-15;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2013-11-11
- Phantom: SAM2; Type: SAM; Serial: TP-1570
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

d=10mm, Pin=100mW 5800/Area Scan (61x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 58.188 V/m
Fast SAR: SAR(1 g) = 6.74 W/kg
Fast SAR(10 g) = 1.83 W/kg
Maximum value of SAR (interpolated) = 15.4 W/kg

d=10mm, Pin=100mW 5800/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 58.188 V/m
Peak SAR (extrapolated) = 34.2 W/kg
SAR(1 g) = 7.37 W/kg
SAR(10 g) = 2.03 W/kg
Power Drift = 0.01 dB
Maximum value of SAR (measured) = 14.9 W/kg



Plot #10

Date/Time: 2014-04-22 07:33:34

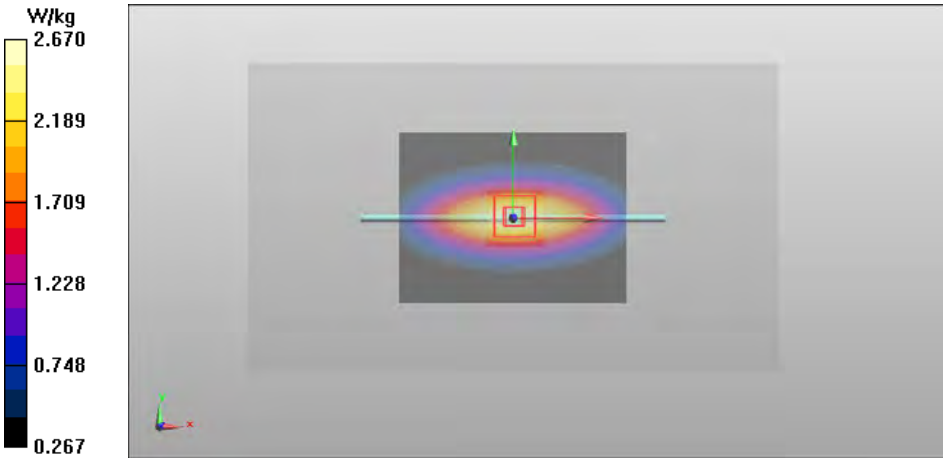
Test Laboratory: TCC Nokia
Type: D835V2; Serial: D835V2 - SN:480

Communication System: CW835
Frequency: 835 MHz; Duty Cycle: 1:1
Medium: BSL850; Medium Notes: t= 21.5 C
Medium parameters used: f = 835 MHz; σ = 0.978 S/m; ε_r = 53.476; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(6.05, 6.05, 6.05); Calibrated: 2013-11-14;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2013-11-19
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.10 (7164)

d=15mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 51.412 V/m
Fast SAR: SAR(1 g) = 2.35 W/kg
Fast SAR(10 g) = 1.57 W/kg
Maximum value of SAR (interpolated) = 2.70 W/kg

d=15mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 51.412 V/m
Peak SAR (extrapolated) = 3.30 W/kg
SAR(1 g) = 2.3 W/kg
SAR(10 g) = 1.52 W/kg
Power Drift = -0.02 dB
Maximum value of SAR (measured) = 2.67 W/kg



Plot #11

Date/Time: 2014-04-17 12:51:28

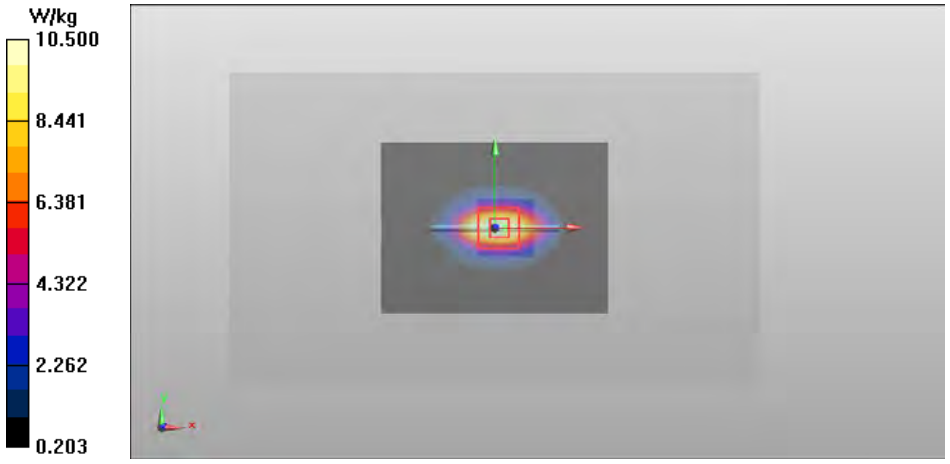
Test Laboratory: TCC Nokia
Type: D1900V2; Serial: D1900V2 - SN:5d013

Communication System: CW1900
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: BSL1900; Medium Notes: t= 21,9 C
Medium parameters used: f = 1900 MHz; σ = 1.507 S/m; ε_r = 52.221; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3131
- ConvF(4.62, 4.62, 4.62); Calibrated: 2013-06-18;
- Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2013-06-10
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial:
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

d=10mm, Pin=250mW/d=10mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 86.724 V/m
Fast SAR: SAR(1 g) = 9.46 W/kg
Fast SAR(10 g) = 4.73 W/kg
Maximum value of SAR (interpolated) = 12.3 W/kg

d=10mm, Pin=250mW/d=10mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 86.724 V/m
Peak SAR (extrapolated) = 16.2 W/kg
SAR(1 g) = 9.48 W/kg
SAR(10 g) = 5.02 W/kg
Power Drift = 0.02 dB
Maximum value of SAR (measured) = 10.5 W/kg



Plot #12

Date/Time: 2014-04-15 13:59:40

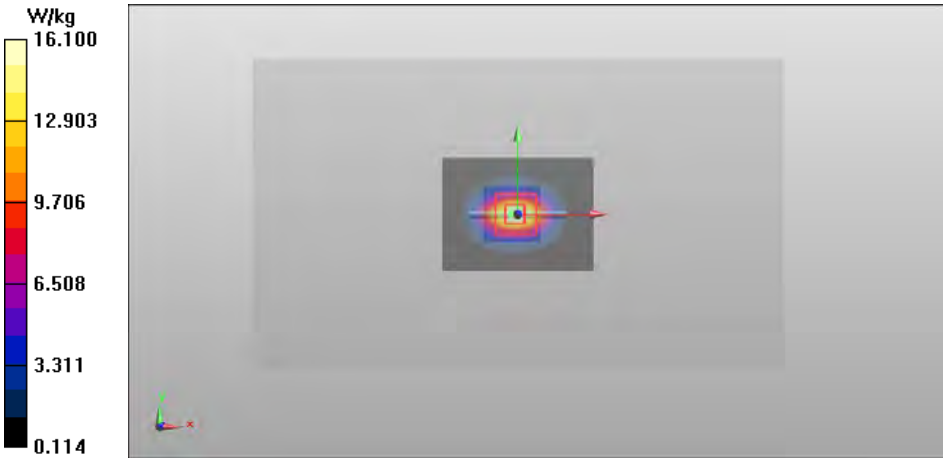
Test Laboratory: TCC Nokia
Type: D2450V2; Serial: D2450V2 - SN:749

Communication System: CW2450
Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: BSL 2450 - 2600; Medium Notes: t= 21.4 C
Medium parameters used: f = 2450 MHz; σ = 1.903 S/m; ε_r = 51.592; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3960
- ConvF(7.44, 7.44, 7.44); Calibrated: 2013-12-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2013-11-08
- Phantom: #2 Triple, SAR4; Type: QD 000 P51 CA; Serial:
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

d=10mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 85.879 V/m
Fast SAR: SAR(1 g) = 12.2 W/kg
Fast SAR(10 g) = 5.28 W/kg
Maximum value of SAR (interpolated) = 16.4 W/kg

d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 85.879 V/m
Peak SAR (extrapolated) = 24.9 W/kg
SAR(1 g) = 12.3 W/kg
SAR(10 g) = 5.75 W/kg
Power Drift = 0.02 dB
Maximum value of SAR (measured) = 16.1 W/kg



Plot #13

Date/Time: 2014-04-16 09:55:18

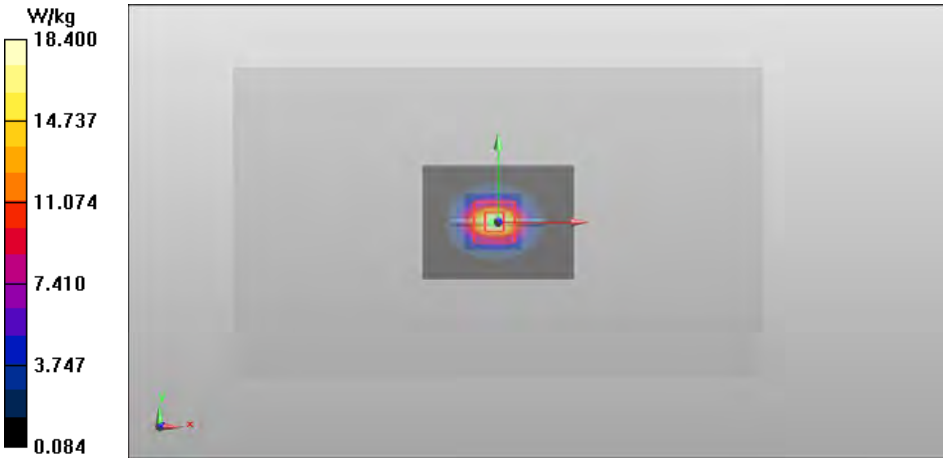
Test Laboratory: TCC Nokia
Type: D2600V2; Serial: D2600V2 - SN:1056

Communication System: CW2600
Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: BSL2450-2600; Medium Notes: t= 21.6 C
Medium parameters used: f = 2600 MHz; σ = 2.095 S/m; ε_r = 51.137; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3960
- ConvF(7.14, 7.14, 7.14); Calibrated: 2013-12-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2013-11-08
- Phantom: #2 Triple, SAR4; Type: QD 000 P51 CA; Serial:
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

d=10mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 86.745 V/m
Fast SAR: SAR(1 g) = 13.9 W/kg
Fast SAR(10 g) = 6.08 W/kg
Maximum value of SAR (interpolated) = 18.8 W/kg

d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 86.745 V/m
Peak SAR (extrapolated) = 29.3 W/kg
SAR(1 g) = 13.8 W/kg
SAR(10 g) = 6.15 W/kg
Power Drift = 0.04 dB
Maximum value of SAR (measured) = 18.4 W/kg



Plot #14

Date/Time: 2014-04-16 15:09:52

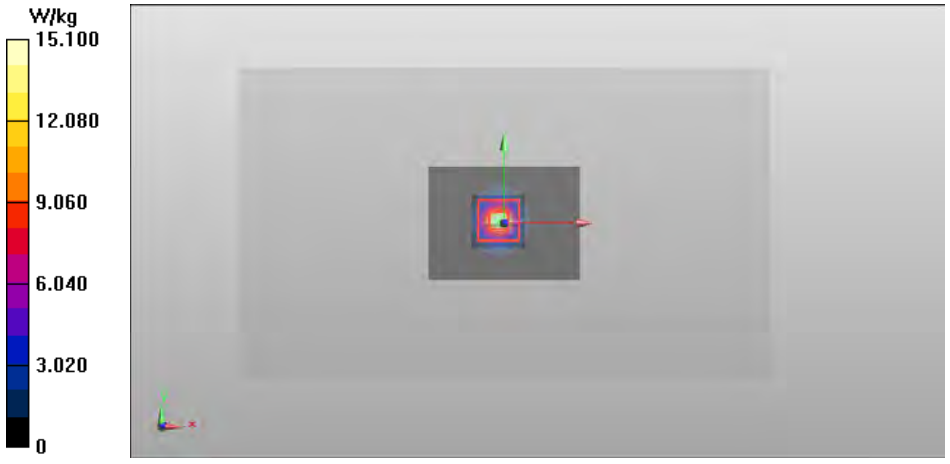
Test Laboratory: TCC Nokia
Type: D5GHzV2; Serial: D5GHzV2 - SN: 1048

Communication System: CW5200
Frequency: 5200 MHz; Duty Cycle: 1:1
Medium: BSL 5000; Medium Notes: t= 22,8 C
Medium parameters used: f = 5200 MHz; σ = 5.399 S/m; ε_r = 47.348; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3892
- ConvF(4.34, 4.34, 4.34); Calibrated: 2013-11-15;
- Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2013-11-11
- Phantom: 1. Triple Flat Phantom 5.1C; Type: QD 000 P51 CA; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

d=10mm, Pin=100mW /Area Scan (81x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 56.096 V/m
Fast SAR: SAR(1 g) = 7.26 W/kg
Fast SAR(10 g) = 1.98 W/kg
Maximum value of SAR (interpolated) = 16.4 W/kg

d=10mm, Pin=100mW /Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 56.096 V/m
Peak SAR (extrapolated) = 31.0 W/kg
SAR(1 g) = 7.66 W/kg
SAR(10 g) = 2.14 W/kg
Power Drift = 0.03 dB
Maximum value of SAR (measured) = 15.1 W/kg



Plot #15

Date/Time: 2014-04-16 15:36:58

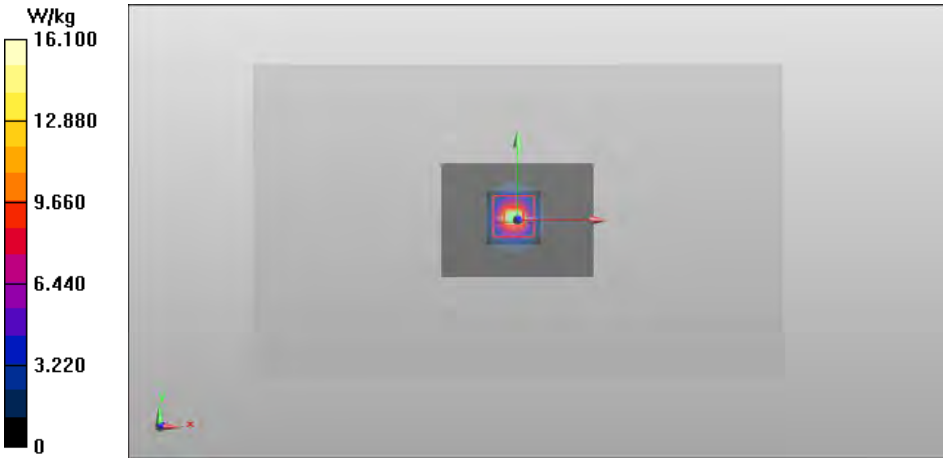
Test Laboratory: TCC Nokia
Type: D5GHzV2; Serial: D5GHzV2 - SN: 1048

Communication System: CW5300
Frequency: 5300 MHz; Duty Cycle: 1:1
Medium: BSL 5000; Medium Notes: t= 22,8 C
Medium parameters used: f = 5300 MHz; σ = 5.528 S/m; ε_r = 47.176; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3892
- ConvF(4.15, 4.15, 4.15); Calibrated: 2013-11-15;
- Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2013-11-11
- Phantom: 1. Triple Flat Phantom 5.1C; Type: QD 000 P51 CA; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

d=10mm, Pin=100mW /Area Scan (81x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 58.625 V/m
Fast SAR: SAR(1 g) = 7.56 W/kg
Fast SAR(10 g) = 2.04 W/kg
Maximum value of SAR (interpolated) = 17.0 W/kg

d=10mm, Pin=100mW /Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 58.625 V/m
Peak SAR (extrapolated) = 34.3 W/kg
SAR(1 g) = 8.12 W/kg
SAR(10 g) = 2.24 W/kg
Power Drift = 0.03 dB
Maximum value of SAR (measured) = 16.1 W/kg



Plot #16

Date/Time: 2014-04-17 07:43:38

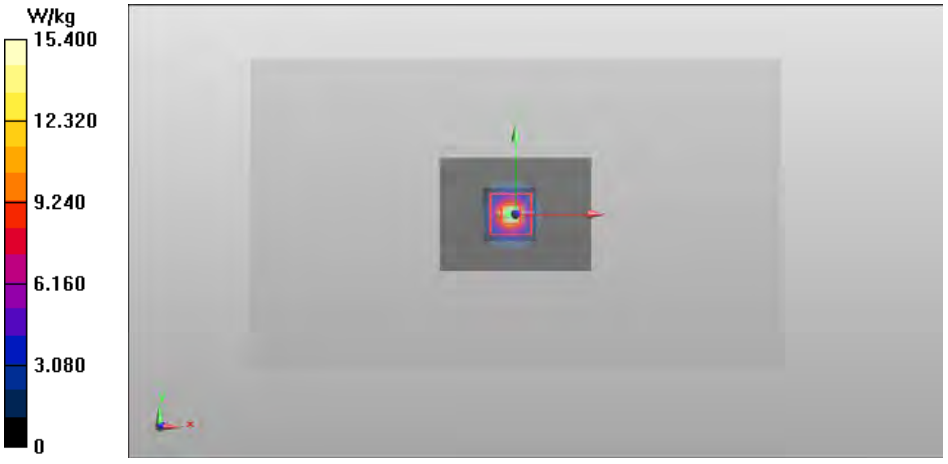
Test Laboratory: TCC Nokia
Type: D5GHzV2; Serial: D5GHzV2 - SN: 1048

Communication System: CW5500
Frequency: 5500 MHz; Duty Cycle: 1:1
Medium: BSL 5000; Medium Notes: t= 21.2 C
Medium parameters used: f = 5500 MHz; σ = 5.812 S/m; ε_r = 46.886; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3892
- ConvF(4.12, 4.12, 4.12); Calibrated: 2013-11-15;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2013-11-11
- Phantom: 1. Triple Flat Phantom 5.1C; Type: QD 000 P51 CA; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

d=10mm, Pin=100mW/Area Scan (81x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 55.459 V/m
Fast SAR: SAR(1 g) = 7.41 W/kg
Fast SAR(10 g) = 1.98 W/kg
Maximum value of SAR (interpolated) = 17.0 W/kg

d=10mm, Pin=100mW/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 55.459 V/m
Peak SAR (extrapolated) = 32.7 W/kg
SAR(1 g) = 7.6 W/kg
SAR(10 g) = 2.1 W/kg
Power Drift = 0.13 dB
Maximum value of SAR (measured) = 15.4 W/kg



Plot #17

Date/Time: 2014-04-17 08:46:12

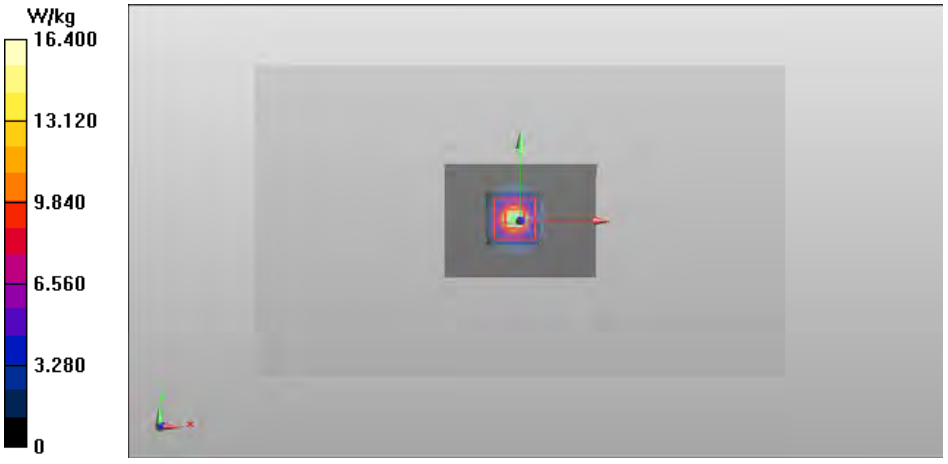
Test Laboratory: TCC Nokia
Type: D5GHzV2; Serial: D5GHzV2 - SN: 1048

Communication System: CW5600
Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: BSL 5000; Medium Notes: t= 21.2 C
Medium parameters used: f = 5600 MHz; σ = 5.946 S/m; ε_r = 46.708; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3892
- ConvF(4, 4, 4); Calibrated: 2013-11-15;
- Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2013-11-11
- Phantom: 1. Triple Flat Phantom 5.1C; Type: QD 000 P51 CA; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

d=10mm, Pin=100mW/Area Scan (81x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 54.565 V/m
Fast SAR: SAR(1 g) = 8.38 W/kg
Fast SAR(10 g) = 2.22 W/kg
Maximum value of SAR (interpolated) = 19.5 W/kg

d=10mm, Pin=100mW/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 54.565 V/m
Peak SAR (extrapolated) = 37.1 W/kg
SAR(1 g) = 8.21 W/kg
SAR(10 g) = 2.26 W/kg
Power Drift = 0.01 dB
Maximum value of SAR (measured) = 16.4 W/kg



Plot #18

Date/Time: 2014-04-17 15:07:05

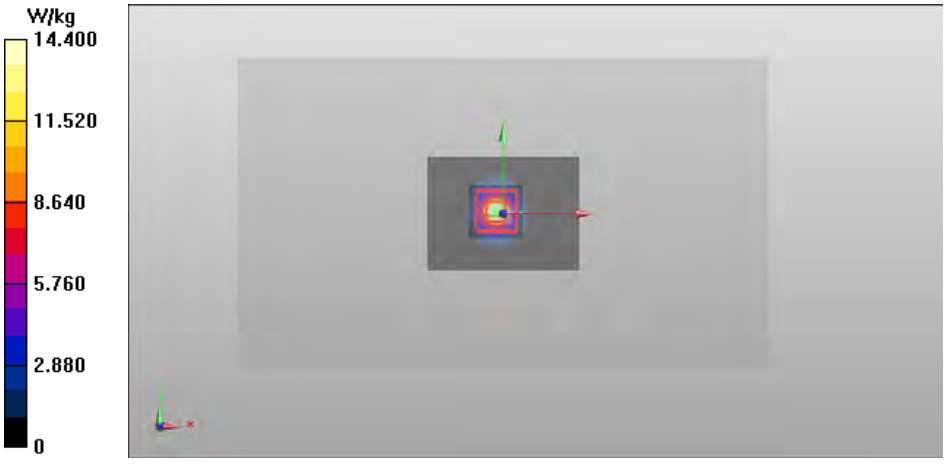
Test Laboratory: TCC Nokia
Type: D5GHzV2; Serial: D5GHzV2 - SN: 1048

Communication System: CW5800
Frequency: 5800 MHz; Duty Cycle: 1:1
Medium: BSL 5000; Medium Notes: t= 21.2 C
Medium parameters used: f = 5800 MHz; σ = 6.219 S/m; ε_r = 46.401; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3892
- ConvF(4.02, 4.02, 4.02); Calibrated: 2013-11-15;
- Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2013-11-11
- Phantom: 1. Triple Flat Phantom 5.1C; Type: QD 000 P51 CA; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

d=10mm, Pin=100mW/Area Scan (81x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 49.596 V/m
Fast SAR: SAR(1 g) = 7.51 W/kg
Fast SAR(10 g) = 1.99 W/kg
Maximum value of SAR (interpolated) = 17.8 W/kg

d=10mm, Pin=100mW/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 49.596 V/m
Peak SAR (extrapolated) = 31.3 W/kg
SAR(1 g) = 7.04 W/kg
SAR(10 g) = 1.94 W/kg
Power Drift = -0.01 dB
Maximum value of SAR (measured) = 14.4 W/kg



APPENDIX B: MEASUREMENT SCANS

Plot #1

Date/Time: 2014-04-15 09:12:35

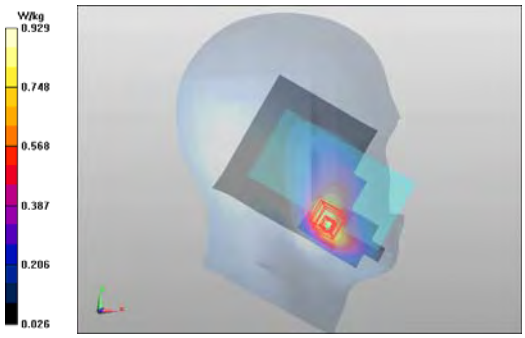
Test Laboratory: TCC Nokia
Type: RM-1045; Serial: 004402/47/860070/7

Communication System: 3-slot GPRS850
Frequency: 824.2 MHz; Duty Cycle: 1:2.80027
Medium: HSL835; Medium Notes: t= 22.2 C
Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.899 S/m; ε_r = 40.155; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(6.12, 6.12, 6.12); Calibrated: 2013-11-14;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2013-11-19
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.10 (7164)

3-slot GPRS850 - Left/Cheek - Low - Antenna 1/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 30.713 V/m
Fast SAR: SAR(1 g) = 0.733 W/kg
Fast SAR(10 g) = 0.493 W/kg
Maximum value of SAR (interpolated) = 0.840 W/kg

3-slot GPRS850 - Left/Cheek - Low - Antenna 1/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 30.146 V/m
Peak SAR (extrapolated) = 1.32 W/kg
SAR(1 g) = 0.757 W/kg
SAR(10 g) = 0.458 W/kg
Power Drift = 0.05 dB
Maximum value of SAR (measured) = 0.929 W/kg



Plot #2

Date/Time: 2014-04-29 06:09:13

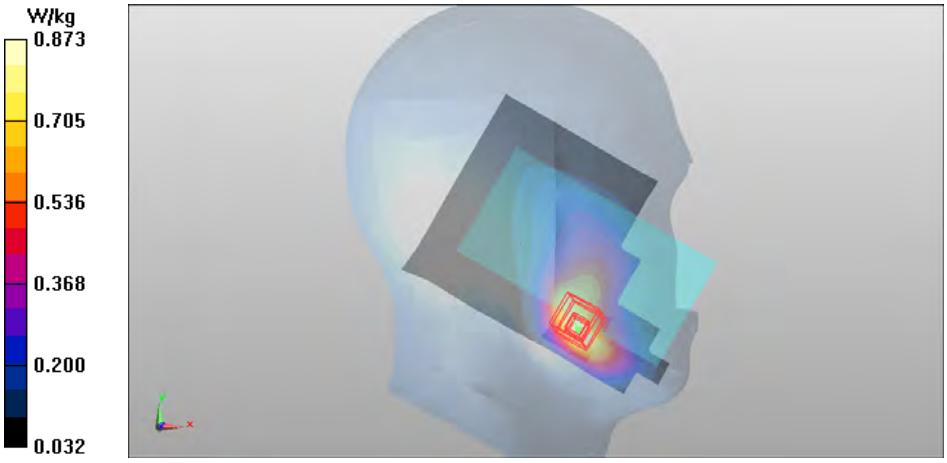
Test Laboratory: TCC Nokia
Type: RM-1045; Serial: 004402/47/860943/5

Communication System: WCDMA850 (Band 5)
Frequency: 835 MHz; Duty Cycle: 1:1
Medium: HSL835; Medium Notes: t= 22.2 C
Medium parameters used: f = 835 MHz; σ = 0.934 S/m; ε_r = 40.454; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(6.12, 6.12, 6.12); Calibrated: 2013-11-14;
- Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2013-11-19
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.10 (7164)

WCDMA850 - Left/Cheek - Middle - Antenna 1/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 31.083 V/m
Fast SAR: SAR(1 g) = 0.777 W/kg
Fast SAR(10 g) = 0.505 W/kg
Maximum value of SAR (interpolated) = 0.918 W/kg

WCDMA850 - Left/Cheek - Middle - Antenna 1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 31.471 V/m
Peak SAR (extrapolated) = 1.33 W/kg
SAR(1 g) = 0.774 W/kg
SAR(10 g) = 0.465 W/kg
Power Drift = 0.10 dB
Maximum value of SAR (measured) = 0.873 W/kg



Plot #3

Date/Time: 2014-04-15 08:43:12

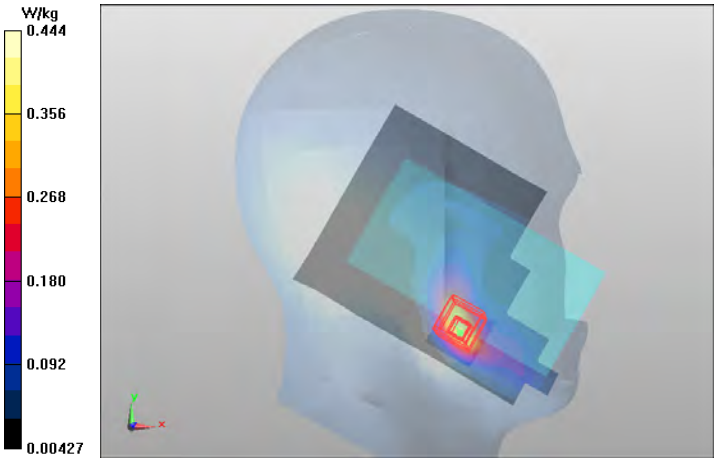
Test Laboratory: TCC Nokia
Type: RM-1045; Serial: 004402/47/860089/7

Communication System: 3-slot GPRS1900
Frequency: 1850.2 MHz; Duty Cycle: 1:2.80027
Medium: HSL1900; Medium Notes: t= 21.5 C
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.328 S/m; ε_r = 39.005; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: ES3DV3 - SN3131
- ConvF(4.98, 4.98, 4.98); Calibrated: 2013-06-18;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2013-06-10
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

3-slot GPRS1900 - Left/Cheek - Low - Antenna 1/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 16.887 V/m
Fast SAR: SAR(1 g) = 0.303 W/kg
Fast SAR(10 g) = 0.168 W/kg
Maximum value of SAR (interpolated) = 0.387 W/kg

3-slot GPRS1900 - Left/Cheek - Low - Antenna 1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 16.859 V/m
Peak SAR (extrapolated) = 0.602 W/kg
SAR(1 g) = 0.353 W/kg
SAR(10 g) = 0.193 W/kg
Power Drift = 0.04 dB
Maximum value of SAR (measured) = 0.444 W/kg



Plot #4

Date/Time: 2014-04-15 15:52:22

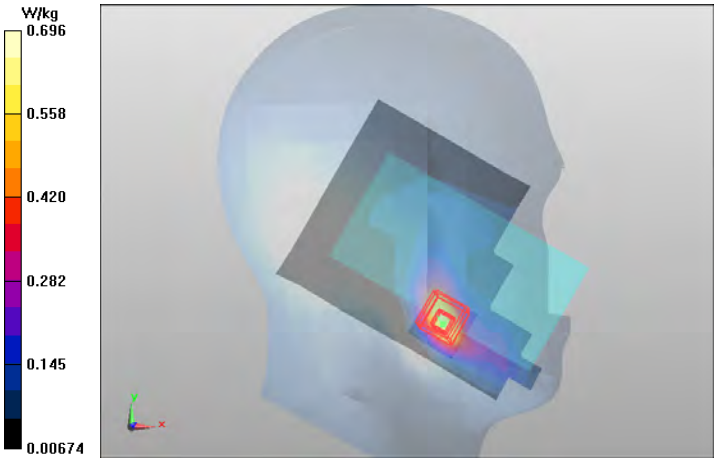
Test Laboratory: TCC Nokia
Type: RM-1045; Serial: 004402/47/860067/3

Communication System: WCDMA1900 (Band 2)
Frequency: 1852.4 MHz; Duty Cycle: 1:1
Medium: HSL1900; Medium Notes: t= 21.5 C
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.33 S/m; ε_r = 38.999; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: ES3DV3 - SN3131
- ConvF(4.98, 4.98, 4.98); Calibrated: 2013-06-18;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2013-06-10
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

WCDMA1900 (Band 2) - Left/Cheek - Low - Antenna 1/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 21.105 V/m
Fast SAR: SAR(1 g) = 0.484 W/kg
Fast SAR(10 g) = 0.270 W/kg
Maximum value of SAR (interpolated) = 0.615 W/kg

WCDMA1900 (Band 2) - Left/Cheek - Low - Antenna 1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 21.262 V/m
Peak SAR (extrapolated) = 0.928 W/kg
SAR(1 g) = 0.553 W/kg
SAR(10 g) = 0.305 W/kg
Power Drift = -0.03 dB
Maximum value of SAR (measured) = 0.696 W/kg



Plot #5

Date/Time: 2014-04-15 11:49:50

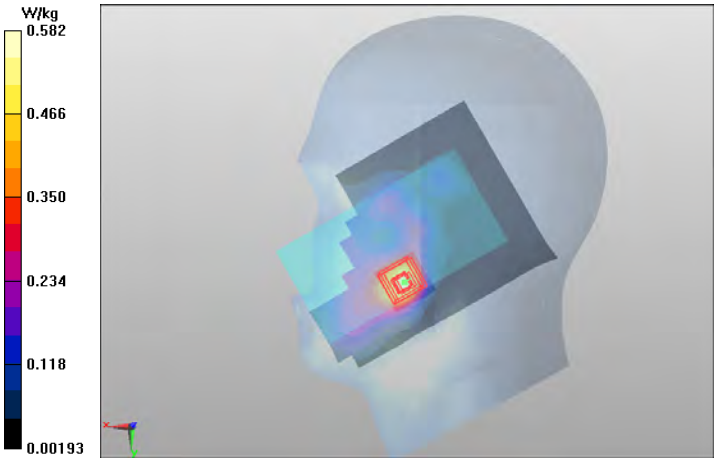
Test Laboratory: TCC Nokia
Type: RM-1045; Serial: 004402/47/860032/7

Communication System: LTE2500 (Band 7)
Frequency: 2560 MHz; Duty Cycle: 1:1
Medium: HSL 2450 - 2600; Medium Notes: t= 20.4 C
Medium parameters used: f = 2560 MHz; σ = 1.921 S/m; ε_r = 37.723; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:
- Probe: EX3DV4 - SN3960
- ConvF(7.33, 7.33, 7.33); Calibrated: 2013-12-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2013-11-08
- Phantom: #4 SAM, SAR4 ; Type: QD000P40CD;
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

LTE2500 (Band 7) - Right/Cheek - High - QPSK - 20MHz - 1RB - 0% offset - Antenna 2/Area Scan (121x181x1):
Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 13.285 V/m
Fast SAR: SAR(1 g) = 0.433 W/kg
Fast SAR(10 g) = 0.228 W/kg
Maximum value of SAR (interpolated) = 0.567 W/kg

LTE2500 (Band 7) - Right/Cheek - High - QPSK - 20MHz - 1RB - 0% offset - Antenna 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.567 V/m
Peak SAR (extrapolated) = 0.826 W/kg
SAR(1 g) = 0.475 W/kg
SAR(10 g) = 0.256 W/kg
Power Drift = -0.03 dB
Maximum value of SAR (measured) = 0.582 W/kg



Plot #6

Date/Time: 2014-04-14 19:22:27

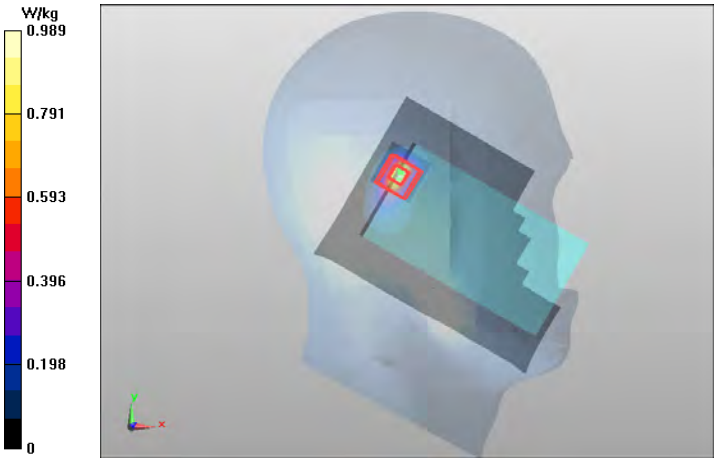
Test Laboratory: TCC Nokia
Type: RM-1045; Serial: 004402/47/763794/0

Communication System: WLAN2450
Frequency: 2462 MHz; Duty Cycle: 1:1
Medium: HSL2450; Medium Notes: t= 21.1 C
Medium parameters used: f = 2462 MHz; σ = 1.788 S/m; ε_r = 38.567; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: EX3DV4 - SN3960
- ConvF(7.39, 7.39, 7.39); Calibrated: 2013-12-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2013-11-08
- Phantom: #4 SAM, SAR4 ; Type: QD000P40CD;
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

WLAN2450 b-mode - Left/Tilt - Channel 11 - BPSK 1Mbps/Area Scan (121x181x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 23.417 V/m
Fast SAR: SAR(1 g) = 0.660 W/kg
Fast SAR(10 g) = 0.250 W/kg
Maximum value of SAR (interpolated) = 0.997 W/kg

WLAN2450 b-mode - Left/Tilt - Channel 11 - BPSK 1Mbps/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 23.237 V/m
Peak SAR (extrapolated) = 1.77 W/kg
SAR(1 g) = 0.684 W/kg
SAR(10 g) = 0.259 W/kg
Power Drift = 0.05 dB
Maximum value of SAR (measured) = 0.989 W/kg



Plot #7

Date/Time: 2014-04-14 16:52:21

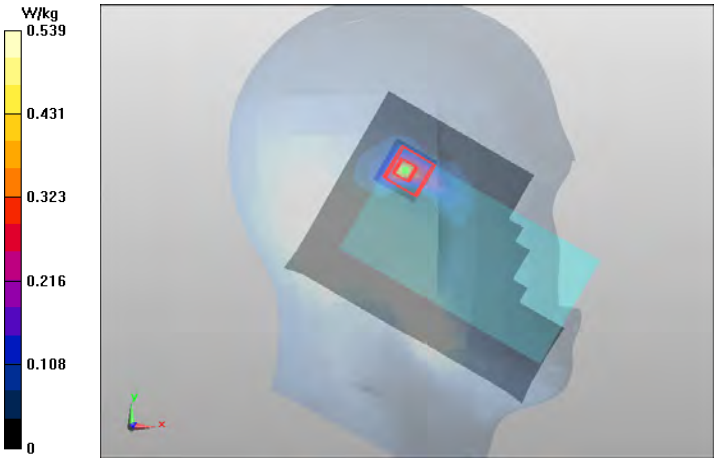
Test Laboratory: TCC Nokia
Type: RM-1045; Serial: 004402/47/763795/7

Communication System: WLAN5000
Frequency: 5220 MHz; Duty Cycle: 1:1
Medium: HSL5000; Medium Notes: t= 21.7 C
Medium parameters used: f = 5220 MHz; σ = 4.557 S/m; ε_r = 36.391; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: EX3DV4 - SN3892
- ConvF(5.29, 5.29, 5.29); Calibrated: 2013-11-15;
- Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2013-11-11
- Phantom: SAM2; Type: SAM; Serial: TP-1570
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

WLAN5000 a-mode - Left/Cheek - Channel 44 - BPSK 6 Mbps/Area Scan (121x181x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 9.391 V/m
Fast SAR: SAR(1 g) = 0.204 W/kg
Fast SAR(10 g) = 0.063 W/kg
Maximum value of SAR (interpolated) = 0.467 W/kg

WLAN5000 a-mode - Left/Cheek - Channel 44 - BPSK 6 Mbps/Zoom Scan 3 (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 10.326 V/m
Peak SAR (extrapolated) = 1.11 W/kg
SAR(1 g) = 0.243 W/kg
SAR(10 g) = 0.068 W/kg
Power Drift = -0.08 dB
Maximum value of SAR (measured) = 0.539 W/kg



Plot #8

Date/Time: 2014-04-20 14:42:43

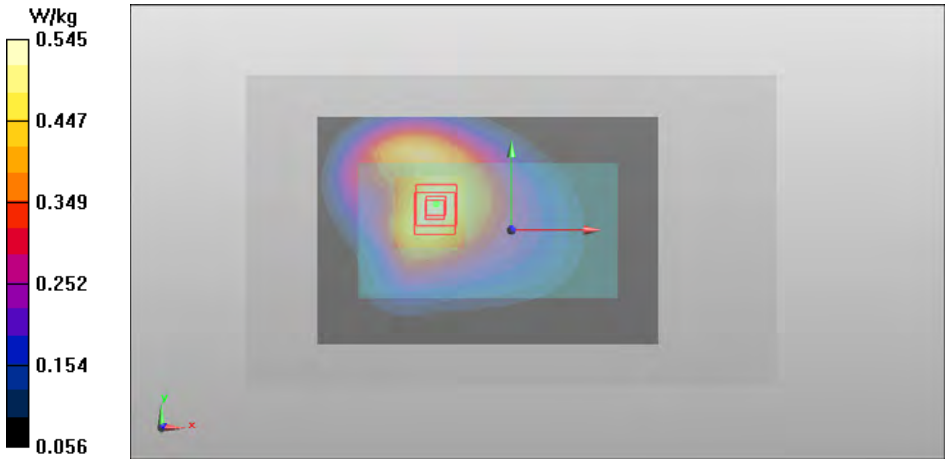
Test Laboratory: TCC Nokia
Type: RM-1045; Serial: 004402/47/860070/7

Communication System: 3-slot GPRS850
Frequency: 824.2 MHz; Duty Cycle: 1:2.80027
Medium: BSL850; Medium Notes: t= 21.6 C
Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.975 S/m; ε_r = 53.628; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(6.05, 6.05, 6.05); Calibrated: 2013-11-14;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2013-11-19
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA;
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.10 (7164)

3-slot GPRS850/Body - Low - Spacer 15mm - No accessory - Display Facing Phantom - Antenna 1/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 21.920 V/m
Fast SAR: SAR(1 g) = 0.482 W/kg
Fast SAR(10 g) = 0.341 W/kg
Maximum value of SAR (interpolated) = 0.545 W/kg

3-slot GPRS850/Body - Low - Spacer 15mm - No accessory - Display Facing Phantom - Antenna 1/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 21.920 V/m
Peak SAR (extrapolated) = 0.609 W/kg
SAR(1 g) = 0.495 W/kg
SAR(10 g) = 0.372 W/kg
Power Drift = -0.18 dB
Maximum value of SAR (measured) = 0.545 W/kg



Plot #9

Date/Time: 2014-04-29 14:02:11

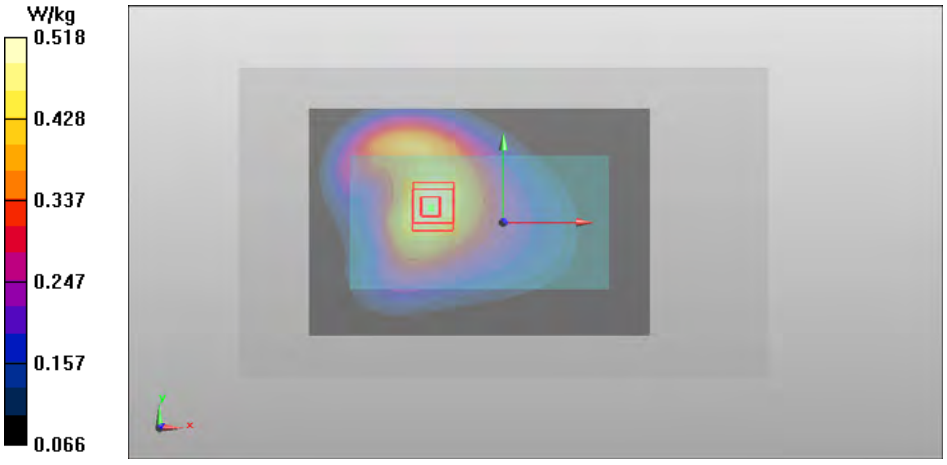
Test Laboratory: TCC Nokia
Type: RM-1045; Serial: 004402/47/860943/5

Communication System: WCDMA850 (Band 5)
Frequency: 835 MHz; Duty Cycle: 1:1
Medium: BSL850; Medium Notes: t= 21.8 C
Medium parameters used: f = 835 MHz; σ = 0.98 S/m; ε_r = 53.947; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(6.05, 6.05, 6.05); Calibrated: 2013-11-14;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2013-11-19
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA;
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.10 (7164)

WCDMA850 (Band 5)/Body - Middle - Spacer 15mm - No Headset - Display Facing Phantom - Antenna 1/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 20.676 V/m
Fast SAR: SAR(1 g) = 0.456 W/kg
Fast SAR(10 g) = 0.323 W/kg
Maximum value of SAR (interpolated) = 0.517 W/kg

WCDMA850 (Band 5)/Body - Middle - Spacer 15mm - No Headset - Display Facing Phantom - Antenna 1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 23.628 V/m
Peak SAR (extrapolated) = 0.577 W/kg
SAR(1 g) = 0.473 W/kg
SAR(10 g) = 0.356 W/kg
Power Drift = -0.05 dB
Maximum value of SAR (measured) = 0.518 W/kg



Plot #10

Date/Time: 2014-04-17 14:24:35

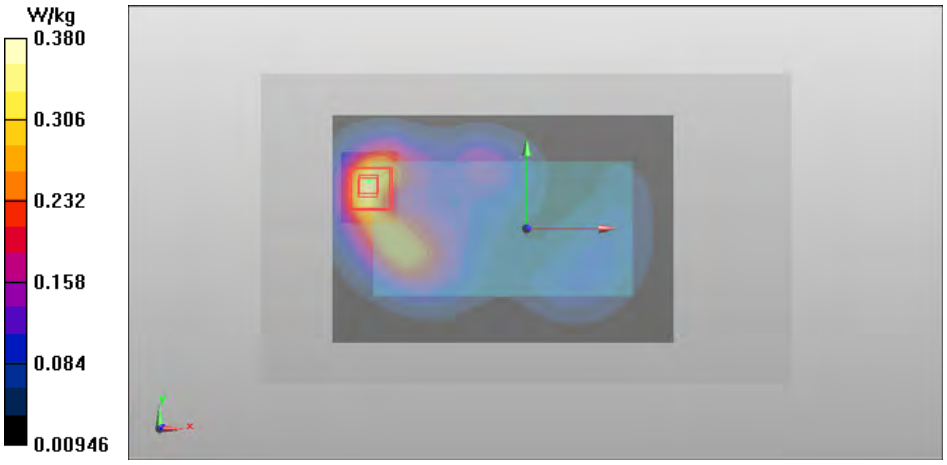
Test Laboratory: TCC Nokia
Type: RM-1045; Serial: 004402/47/860089/7

Communication System: 3-slot GPRS1900
Frequency: 1850.2 MHz; Duty Cycle: 1:2.80027
Medium: BSL1900; Medium Notes: t= 21,9 C
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.456 S/m; ε_r = 52.297; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3131
- ConvF(4.62, 4.62, 4.62); Calibrated: 2013-06-18;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2013-06-10
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA;
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

3-slot GPRS1900/Body - Low - Spacer 15mm - No Headset - Display Facing Phantom - Antenna 1/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 15.515 V/m
Fast SAR: SAR(1 g) = 0.291 W/kg
Fast SAR(10 g) = 0.166 W/kg
Maximum value of SAR (interpolated) = 0.367 W/kg

3-slot GPRS1900/Body - Low - Spacer 15mm - No Headset - Display Facing Phantom - Antenna 1/Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 15.515 V/m
Peak SAR (extrapolated) = 0.494 W/kg
SAR(1 g) = 0.315 W/kg
SAR(10 g) = 0.182 W/kg
Power Drift = -0.03 dB
Maximum value of SAR (measured) = 0.380 W/kg



Plot #11

Date/Time: 2014-04-17 20:44:19

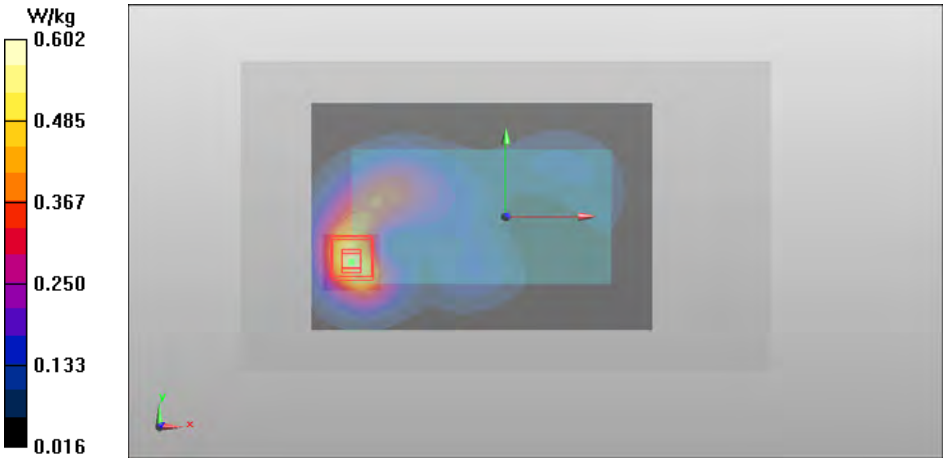
Test Laboratory: TCC Nokia
Type: RM-1045; Serial: 004402/47/860067/3

Communication System: WCDMA1900 (Band 2)
Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: BSL1900; Medium Notes: t= 21,9 C
Medium parameters used: f = 1880 MHz; σ = 1.486 S/m; ε_r = 52.255; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3131
- ConvF(4.62, 4.62, 4.62); Calibrated: 2013-06-18;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2013-06-10
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA;
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

WCDMA1900 (Band 2)/Body - Middle - Spacer 15mm - No Headset - Back Facing Phantom - Antenna 1/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 19.736 V/m
Fast SAR: SAR(1 g) = 0.465 W/kg
Fast SAR(10 g) = 0.265 W/kg
Maximum value of SAR (interpolated) = 0.583 W/kg

WCDMA1900 (Band 2)/Body - Middle - Spacer 15mm - No Headset - Back Facing Phantom - Antenna 1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 19.031 V/m
Peak SAR (extrapolated) = 0.766 W/kg
SAR(1 g) = 0.501 W/kg
SAR(10 g) = 0.292 W/kg
Power Drift = 0.02 dB
Maximum value of SAR (measured) = 0.602 W/kg



Plot #12

Date/Time: 2014-04-16 12:31:06

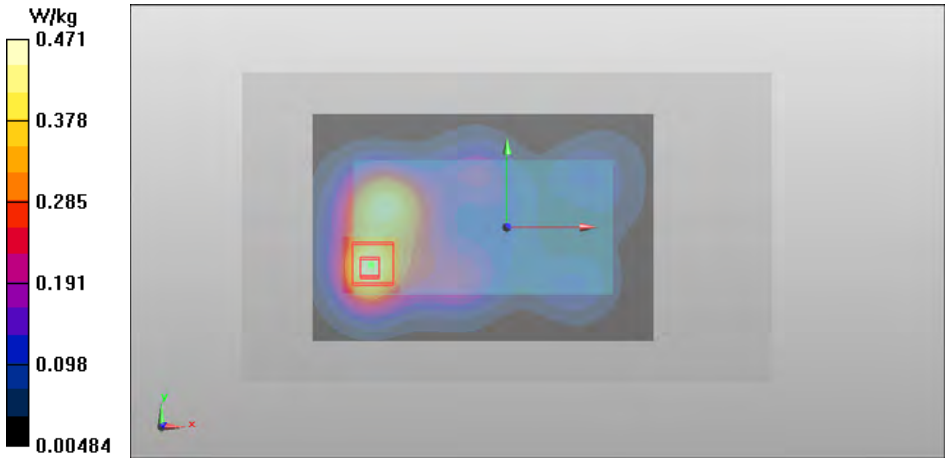
Test Laboratory: TCC Nokia
Type: RM-1045; Serial: 004402/47/860032/7

Communication System: LTE2500 (Band 7)
Frequency: 2560 MHz; Duty Cycle: 1:1
Medium: BSL2450-2600; Medium Notes: t= 21.6 C
Medium parameters used: f = 2560 MHz; σ = 2.047 S/m; ε_r = 51.205; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3960
- ConvF(7.14, 7.14, 7.14); Calibrated: 2013-12-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2013-11-08
- Phantom: #2 Triple, SAR4; Type: QD 000 P51 CA
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

LTE2500 (Band 7)/Body - High - QPSK - 20MHz - 1RB - 0% offset – Spacer 15mm - No Headset - Display Facing Phantom - Antenna 2/Area Scan (121x181x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 13.506 V/m
Fast SAR: SAR(1 g) = 0.384 W/kg
Fast SAR(10 g) = 0.207 W/kg
Maximum value of SAR (interpolated) = 0.485 W/kg

LTE2500 (Band 7)/Body - High - QPSK - 20MHz - 1RB - 0% offset - Spacer 15mm - No Headset - Display Facing Phantom - Antenna 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.425 V/m
Peak SAR (extrapolated) = 0.697 W/kg
SAR(1 g) = 0.382 W/kg
SAR(10 g) = 0.208 W/kg
Power Drift = 0.05 dB
Maximum value of SAR (measured) = 0.471 W/kg



Plot #13

Date/Time: 2014-04-15 15:40:59

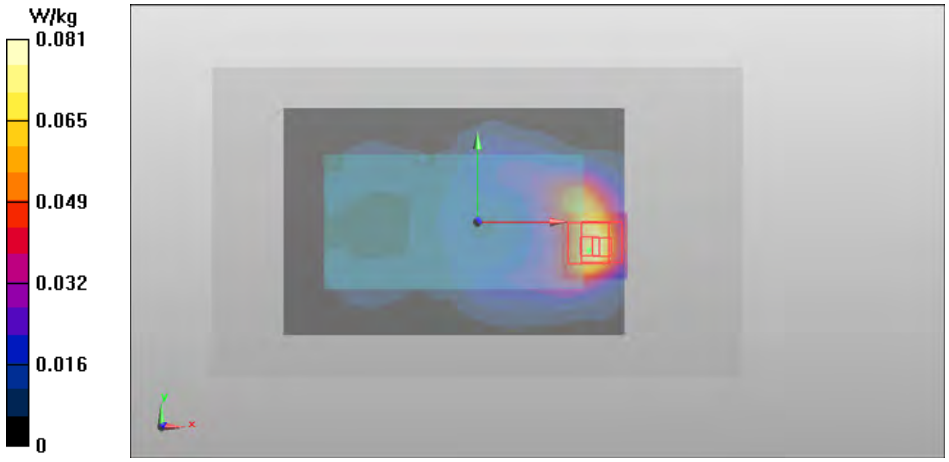
Test Laboratory: TCC Nokia
Type: RM-1045; Serial: 004402/47/763794/0

Communication System: WLAN2450
Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: BSL 2450 - 2600; Medium Notes: t= 21.4 C
Medium parameters used: f = 2437 MHz; σ = 1.887 S/m; ε_r = 51.63; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3960
- ConvF(7.44, 7.44, 7.44); Calibrated: 2013-12-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2013-11-08
- Phantom: #2 Triple, SAR4; Type: QD 000 P51 CA
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

WLAN2450 b-mode/Body - Channel 6 - BPSK 1 Mbps - Spacer 15mm - WH-208 - Display Facing Phantom/Area Scan (121x181x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 4.195 V/m
Fast SAR: SAR(1 g) = 0.069 W/kg
Fast SAR(10 g) = 0.034 W/kg
Maximum value of SAR (interpolated) = 0.0890 W/kg

WLAN2450 b-mode/Body - Channel 6 - BPSK 1 Mbps - Spacer 15mm - WH-208 - Display Facing Phantom/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.921 V/m
Peak SAR (extrapolated) = 0.120 W/kg
SAR(1 g) = 0.065 W/kg
SAR(10 g) = 0.033 W/kg
Power Drift = 0.03 dB
Maximum value of SAR (measured) = 0.0810 W/kg



Plot #14

Date/Time: 2014-04-16 18:37:40

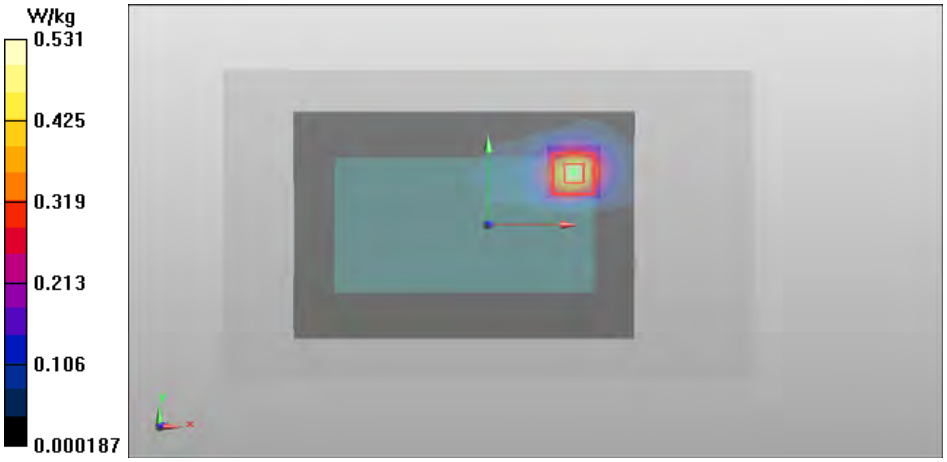
Test Laboratory: TCC Nokia
Type: RM-1045; Serial: 004402/47/763795/7

Communication System: WLAN5000
Frequency: 5180 MHz; Duty Cycle: 1:1
Medium: BSL 5000; Medium Notes: t= 22,8 C
Medium parameters used: f = 5180 MHz; σ = 5.369 S/m; ε_r = 47.385; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3892
- ConvF(4.34, 4.34, 4.34); Calibrated: 2013-11-15;
- Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2013-11-11
- Phantom: 1. Triple Flat Phantom 5.1C; Type: QD 000 P51 CA
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

WLAN5000/Body - Channel 36 - BPSK 6 Mbps - Spacer 15mm - WH-208 - Back Facing Phantom/Area Scan (121x181x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Fast SAR: SAR(1 g) = 0.277 W/kg
Fast SAR(10 g) = 0.107 W/kg
Maximum value of SAR (interpolated) = 0.521 W/kg

WLAN5000/Body - Channel 36 - BPSK 6 Mbps - Spacer 15mm - WH-208 - Back Facing Phantom/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 10.199 V/m
Peak SAR (extrapolated) = 1.04 W/kg
SAR(1 g) = 0.291 W/kg
SAR(10 g) = 0.110 W/kg
Power Drift = 0.09 dB
Maximum value of SAR (measured) = 0.531 W/kg



Plot #15

Date/Time: 2014-04-21 10:26:10

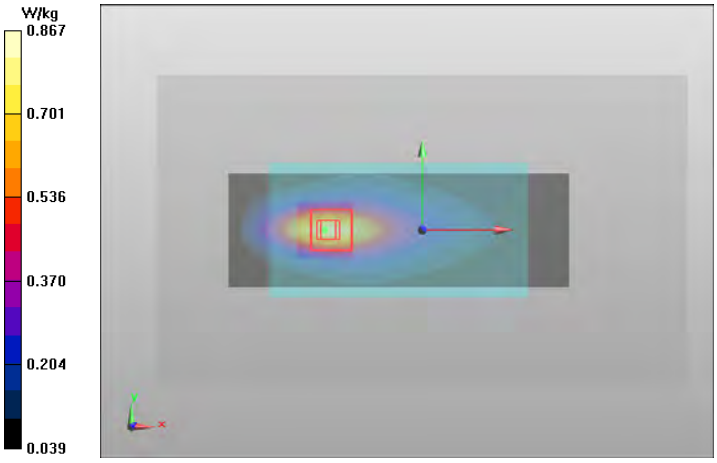
Test Laboratory: TCC Nokia
Type: RM-1045; Serial: 004402/47/860070/7

Communication System: 3-slot GPRS850
Frequency: 824.2 MHz; Duty Cycle: 1:2.80027
Medium: BSL850; Medium Notes: t= 21.4 C
Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.975 S/m; ε_r = 53.749; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(6.05, 6.05, 6.05); Calibrated: 2013-11-14;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2013-11-19
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.10 (7164)

3-slot GPRS850 /Body - Low - Spacer 10mm - No Headset - Left Edge Facing Phantom - Antenna 1/Area Scan (41x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 30.378 V/m
Fast SAR: SAR(1 g) = 0.707 W/kg
Fast SAR(10 g) = 0.428 W/kg
Maximum value of SAR (interpolated) = 0.865 W/kg

3-slot GPRS850/Body - Low - Spacer 10mm - No Headset - Left Edge Facing Phantom - Antenna 1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 30.378 V/m
Peak SAR (extrapolated) = 1.21 W/kg
SAR(1 g) = 0.699 W/kg
SAR(10 g) = 0.399 W/kg
Power Drift = 0.04 dB
Maximum value of SAR (measured) = 0.867 W/kg



Plot #16

Date/Time: 2014-04-29 14:52:29

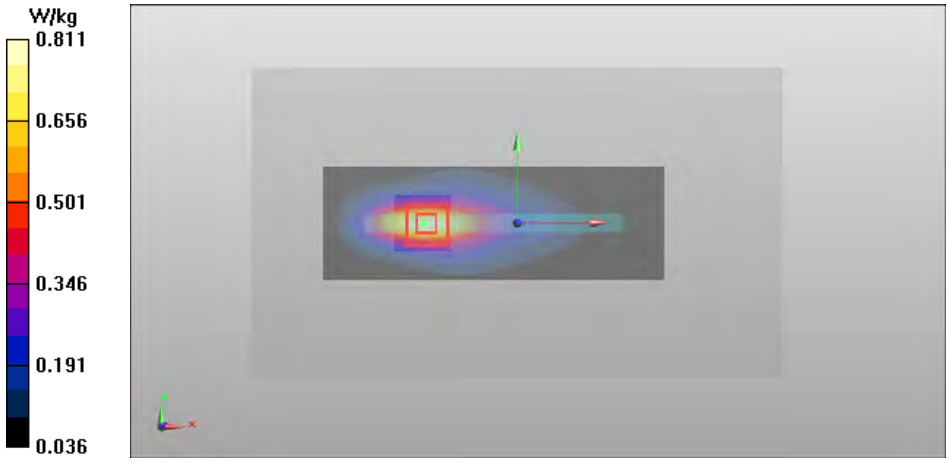
Test Laboratory: TCC Nokia
Type: RM-1045; Serial: 004402/47/860943/5

Communication System: WCDMA850 (Band 5)
Frequency: 826.4 MHz; Duty Cycle: 1:1
Medium: BSL850; Medium Notes: t= 21.8 C
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.974 S/m; ε_r = 53.989; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(6.05, 6.05, 6.05); Calibrated: 2013-11-14;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2013-11-19
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA;
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.10 (7164)

WCDMA850 (Band 5)/Body - Low - Spacer 10mm - No Headset - Left Edge Facing Phantom - Antenna 1/Area Scan (41x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 29.549 V/m
Fast SAR: SAR(1 g) = 0.663 W/kg
Fast SAR(10 g) = 0.396 W/kg
Maximum value of SAR (interpolated) = 0.815 W/kg

WCDMA850 (Band 5)/Body - Low - Spacer 10mm - No Headset - Left Edge Facing Phantom - Antenna 1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 29.408 V/m
Peak SAR (extrapolated) = 1.13 W/kg
SAR(1 g) = 0.654 W/kg
SAR(10 g) = 0.371 W/kg
Power Drift = -0.04 dB
Maximum value of SAR (measured) = 0.811 W/kg



Plot #17

Date/Time: 2014-04-17 17:48:54

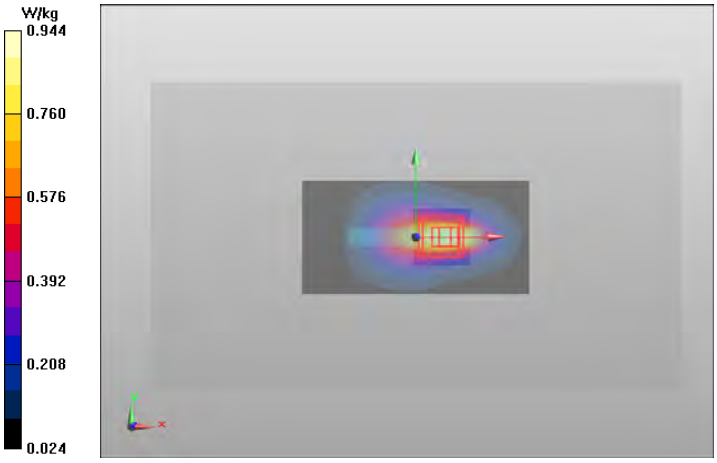
Test Laboratory: TCC Nokia
Type: RM-1045; Serial: 004402/47/860089/7

Communication System: 3-slot GPRS1900
Frequency: 1850.2 MHz; Duty Cycle: 1:2.80027
Medium: BSL1900; Medium Notes: t= 21,9 C
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.456 S/m; ε_r = 52.297; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3131
- ConvF(4.62, 4.62, 4.62); Calibrated: 2013-06-18;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2013-06-10
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA;
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

3-slot GPRS1900/Body - Low - Spacer 10mm - No Headset - Bottom Edge Facing Phantom - Antenna 1/Area Scan (41x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 27.061 V/m
Fast SAR: SAR(1 g) = 0.740 W/kg
Fast SAR(10 g) = 0.375 W/kg
Maximum value of SAR (interpolated) = 0.967 W/kg

3-slot GPRS1900/Body - Low - Spacer 10mm - No Headset - Bottom Edge Facing Phantom - Antenna 1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 27.189 V/m
Peak SAR (extrapolated) = 1.26 W/kg
SAR(1 g) = 0.773 W/kg
SAR(10 g) = 0.421 W/kg
Power Drift = -0.05 dB
Maximum value of SAR (measured) = 0.944 W/kg



Plot #18

Date/Time: 2014-04-19 14:36:23

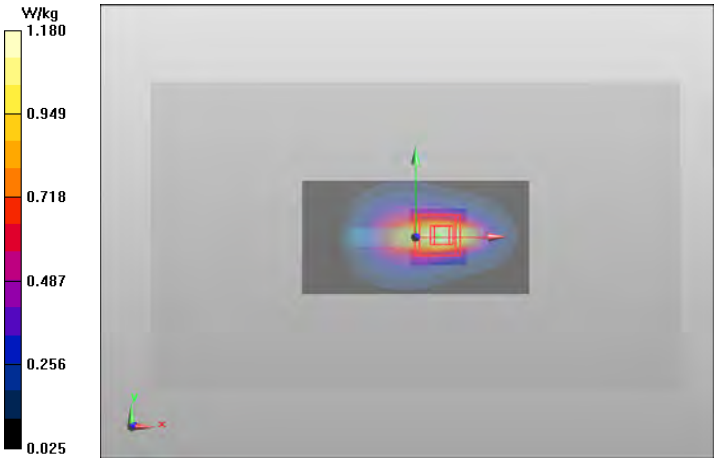
Test Laboratory: TCC Nokia
Type: RM-1045; Serial: 004402/47/860085/5

Communication System: WCDMA1900 (Band 2)
Frequency: 1907.6 MHz; Duty Cycle: 1:1
Medium: BSL1900; Medium Notes: t= 20.8 C
Medium parameters used: f = 1908 MHz; σ = 1.525 S/m; ε_r = 51.971; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3131
- ConvF(4.62, 4.62, 4.62); Calibrated: 2013-06-18;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2013-06-10
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA;
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

WCDMA1900 (Band 2)/Body - High - Spacer 10mm - No Headset - Bottom Edge Facing Phantom - Antenna 1/Area Scan (41x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 29.662 V/m
Fast SAR: SAR(1 g) = 0.933 W/kg
Fast SAR(10 g) = 0.467 W/kg
Maximum value of SAR (interpolated) = 1.23 W/kg

WCDMA1900 (Band 2)/Body - High - Spacer 10mm - No Headset - Bottom Edge Facing Phantom - Antenna 1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 29.612 V/m
Peak SAR (extrapolated) = 1.59 W/kg
SAR(1 g) = 0.959 W/kg
SAR(10 g) = 0.520 W/kg
Power Drift = 0.01 dB
Maximum value of SAR (measured) = 1.18 W/kg



Plot #19

Date/Time: 2014-04-16 18:48:42

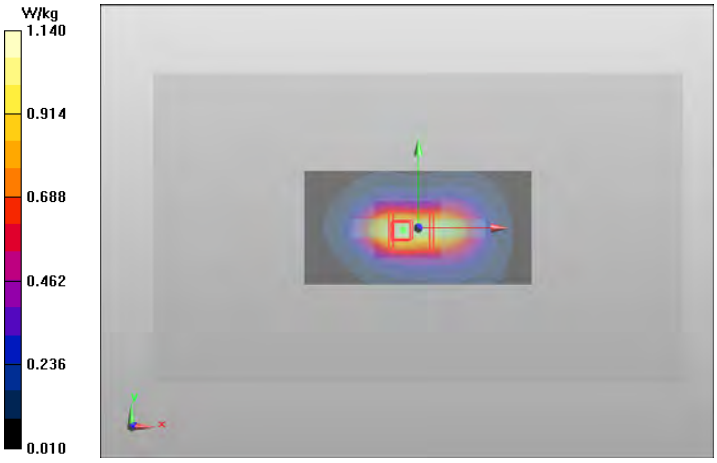
Test Laboratory: TCC Nokia
Type: RM-1045; Serial: 004402/47/860032/7

Communication System: LTE2500 (Band 7)
Frequency: 2510 MHz; Duty Cycle: 1:1
Medium: BSL2450-2600; Medium Notes: t= 21.6 C
Medium parameters used: f = 2510 MHz; σ = 1.983 S/m; ε_r = 51.379; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3960
- ConvF(7.14, 7.14, 7.14); Calibrated: 2013-12-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2013-11-08
- Phantom: #2 Triple, SAR4; Type: QD 000 P51 CA
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

LTE2500 (Band 7)/Body - Low - QPSK - 20MHz - 1RB - 50% offset - Spacer 10mm - No Headset - Bottom Edge Facing Phantom - Antenna 2/Area Scan (61x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 23.485 V/m
Fast SAR: SAR(1 g) = 0.891 W/kg
Fast SAR(10 g) = 0.460 W/kg
Maximum value of SAR (interpolated) = 1.14 W/kg

LTE2500 (Band 7)/Body - Low - QPSK - 20MHz - 1RB - 50% offset - Spacer 10mm - No Headset - Bottom Edge Facing Phantom - Antenna 2/Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 23.485 V/m
Peak SAR (extrapolated) = 1.75 W/kg
SAR(1 g) = 0.890 W/kg
SAR(10 g) = 0.465 W/kg
Power Drift = -0.01 dB
Maximum value of SAR (measured) = 1.14 W/kg



Plot #20

Date/Time: 2014-04-15 18:58:23

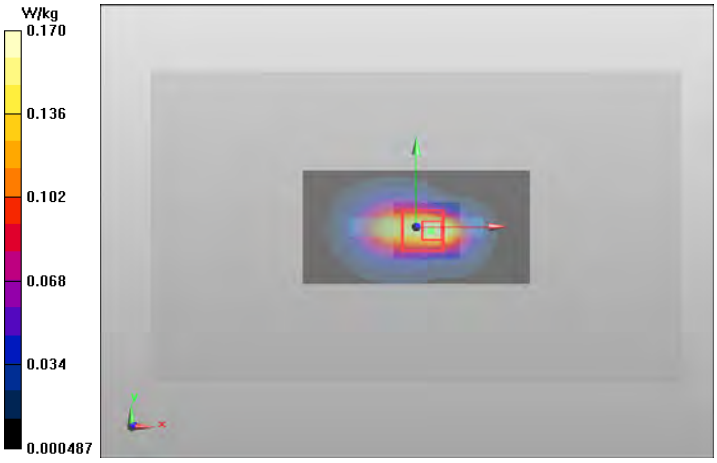
Test Laboratory: TCC Nokia
Type: RM-1045; Serial: 004402/47/763794/0

Communication System: WLAN2450
Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: BSL 2450 - 2600; Medium Notes: t= 21.4 C
Medium parameters used: f = 2437 MHz; σ = 1.887 S/m; ε_r = 51.63; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3960
- ConvF(7.44, 7.44, 7.44); Calibrated: 2013-12-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2013-11-08
- Phantom: #2 Triple, SAR4; Type: QD 000 P51 CA
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.10 (7164)

WLAN2450 b-mode/Body - Channel 6 - BPSK 1 Mbps - Spacer 10mm - No Headset - Top Edge Facing Phantom/Area Scan (61x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 9.106 V/m
Fast SAR: SAR(1 g) = 0.134 W/kg
Fast SAR(10 g) = 0.063 W/kg
Maximum value of SAR (interpolated) = 0.183 W/kg

WLAN2450 b-mode/Body - Channel 6 - BPSK 1 Mbps - Spacer 10mm - No Headset - Top Edge Facing Phantom/Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.885 V/m
Peak SAR (extrapolated) = 0.254 W/kg
SAR(1 g) = 0.131 W/kg
SAR(10 g) = 0.065 W/kg
Power Drift = 0.05 dB
Maximum value of SAR (measured) = 0.170 W/kg



APPENDIX C: DIELECTRIC PARAMETERS OF THE TISSUE SIMULANTS

Head tissue simulant dielectric parameters used in the measurements:

f (MHz)	Date	Dielectric Parameters					
		Ch 4132 826.4 MHz		Ch 4175 835.0 MHz		Ch 4233 846.6 MHz	
		ε_r	σ [S/m]	ε_r	σ [S/m]	ε_r	σ [S/m]
835	2014-04-15	40.1	0.90	40.1	0.90	40.0	0.91
	2014-04-29	40.5	0.93	40.5	0.93	40.4	0.94
f (MHz)	Date	Dielectric Parameters					
		Ch 128 824.2 MHz		Ch 190 836.6 MHz		Ch 251 848.8 MHz	
		ε_r	σ [S/m]	ε_r	σ [S/m]	ε_r	σ [S/m]
836	2014-04-15	40.2	0.90	40.1	0.91	40.0	0.91
	2014-04-25	40.4	0.92	40.3	0.93	40.2	0.94
	2014-04-28	53.1	0.98	53.1	0.98	53.0	0.99
f (MHz)	Date	Dielectric Parameters					
		Ch 512 1850.2 MHz		Ch 661 1880.0 MHz		Ch 810 1909.8 MHz	
		ε_r	σ [S/m]	ε_r	σ [S/m]	ε_r	σ [S/m]
1880	2014-04-15	39.0	1.33	38.9	1.35	38.8	1.38
f (MHz)	Date	Dielectric Parameters					
		Ch 9262 1852.4 MHz		Ch 9400 1880.0 MHz		Ch 9538 1907.6 MHz	
		ε_r	σ [S/m]	ε_r	σ [S/m]	ε_r	σ [S/m]
1880	2014-04-15	39.0	1.33	38.9	1.35	38.8	1.38
f (MHz)	Date	Dielectric Parameters					
		Ch 1 2412.0 MHz		Ch 6 2437.0 MHz		Ch 11 2462.0 MHz	
		ε_r	σ [S/m]	ε_r	σ [S/m]	ε_r	σ [S/m]
2437	2014-04-14	38.7	1.73	38.7	1.76	38.6	1.79
f (MHz)	Date	Dielectric Parameters					
		Ch 20850 2510.0 MHz		Ch 21100 2535.0 MHz		Ch 21350 2560.0 MHz	
		ε_r	σ [S/m]	ε_r	σ [S/m]	ε_r	σ [S/m]
2535	2014-04-15	37.9	1.86	37.8	1.89	37.7	1.92
	2014-04-17	39.3	1.83	39.2	1.86	39.2	1.89

Head tissue simulant dielectric parameters used in the measurements 5180 – 5805 MHz:

f (MHz)	Date	Dielectric Parameters									
		Ch 36 5180.0 MHz		5210.0 MHz		Ch 44 5220.0 MHz		-		-	
		εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]
5210	2014-04-14	36.4	4.51	36.4	4.54	36.4	4.55	-	-	-	-
f (MHz)	Date	Dielectric Parameters									
		Ch 52 5260.0 MHz		5290.0 MHz		Ch 64 5320.0 MHz		-		-	
		εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]
5290	2014-04-14	36.3	4.59	36.3	4.61	36.2	4.65	-	-	-	-
f (MHz)	Date	Dielectric Parameters									
		Ch 104 5520.0 MHz		Ch 116 5580.0 MHz		Ch 120 5600.0 MHz		5620.0 MHz		Ch 132 5660.0 MHz	
		εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]	εr	εr	εr	σ [S/m]
5520 5620	2014-04-15	35.6	4.84	35.5	4.92	35.5	4.93	35.5	4.95	35.4	5.01
f (MHz)	Date	Dielectric Parameters									
		Ch 149 5745.0 MHz		5760.0 MHz		Ch 157 5785.0 MHz		Ch 161 5805.0 MHz		-	
		εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]
5760	2014-04-15	35.3	5.08	35.3	5.10	35.2	5.13	35.2	5.15	-	-
	2014-04-16	35.3	5.07	35.3	5.09	35.2	5.11	35.2	5.14	-	-

Body tissue simulant dielectric parameters used in the measurements:

f (MHz)	Date	Dielectric Parameters					
		Ch 4132 826.4 MHz		Ch 4175 835.0 MHz		Ch 4233 846.6 MHz	
		εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]
835	2014-04-21	53.7	0.97	53.7	0.98	53.6	0.99
	2014-04-22	53.5	0.97	53.5	0.98	53.4	0.98
	2014-04-29	54.0	0.97	53.9	0.98	53.9	0.99
f (MHz)	Date	Dielectric Parameters					
		Ch 128 824.2 MHz		Ch 190 836.6 MHz		Ch 251 848.8 MHz	
		εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]
836	2014-04-20	53.6	0.97	53.6	0.98	53.5	0.99
	2014-04-21	53.7	0.97	53.7	0.98	53.6	0.99
	2014-04-22	53.5	0.97	53.5	0.98	53.4	0.99
	2014-04-29	54.0	0.97	53.9	0.98	53.9	0.99
f (MHz)	Date	Dielectric Parameters					
		Ch 512 1850.2 MHz		Ch 661 1880.0 MHz		Ch 810 1909.8 MHz	
		εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]
1880	2014-04-17	52.3	1.45	52.3	1.48	52.2	1.51
f (MHz)	Date	Dielectric Parameters					
		Ch 9262 1852.4 MHz		Ch 9400 1880.0 MHz		Ch 9538 1907.6 MHz	
		εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]
1880	2014-04-17	52.3	1.46	52.3	1.48	52.2	1.51
	2014-04-19	52.1	1.47	52.0	1.50	52.0	1.52
f (MHz)	Date	Dielectric Parameters					
		Ch 1 2412.0 MHz		Ch 6 2437.0 MHz		Ch 11 2462.0 MHz	
		εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]
2437	2014-04-15	51.7	1.86	51.6	1.88	51.6	1.91
f (MHz)	Date	Dielectric Parameters					
		Ch 20850 2510.0 MHz		Ch 21100 2535.0 MHz		Ch 21350 2560.0 MHz	
		εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]
2535	2014-04-16	51.4	1.98	51.3	2.01	51.2	2.04

Body tissue simulant dielectric parameters used in the measurements 5180 – 5805 MHz:

f (MHz)	Date	Dielectric Parameters									
		Ch 36 5180.0 MHz		5210.0 MHz		Ch 44 5220.0 MHz		-		-	
		εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]
5210	2014-04-16	47.4	5.37	47.3	5.41	47.3	5.42	-	-	-	-
f (MHz)	Date	Dielectric Parameters									
		Ch 52 5260.0 MHz		5290.0 MHz		Ch 64 5320.0 MHz		-		-	
		εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]
5290	2014-04-16	47.3	5.47	47.2	5.50	47.1	5.55	-	-	-	-
f (MHz)	Date	Dielectric Parameters									
		Ch 104 5520.0 MHz		Ch 116 5580.0 MHz		Ch 120 5600.0 MHz		5620.0 MHz		Ch 132 5660.0 MHz	
		εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]	εr	εr	εr	σ [S/m]
5520 5620	2014-04-17	46.9	5.83	46.7	5.91	46.7	5.94	46.7	5.97	46.6	6.04
f (MHz)	Date	Dielectric Parameters									
		Ch 149 5745.0 MHz		5760.0 MHz		Ch 157 5785.0 MHz		Ch 161 5805.0 MHz		-	
		εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]	εr	σ [S/m]
5760	2014-04-17	46.5	6.14	46.5	6.17	46.4	6.19	46.4	6.22	-	-

APPENDIX D: CONDUCTED AVERAGE POWER MEASUREMENTS FOR WCDMA AND HSUPA

Type: RM-1045; Serial: 004402/47/860069/9, HW: 1004, SW: 02061.00037.14145.00001

D.1. WCDMA850 (Band 5) Test results

Average power

Ch / *f*(MHz)	P [dBm]
4132	23.9
4175	23.9
4233	23.8

D.2. HSUPA850 Test results

Average power

Ch / *f* (MHz)	P [dBm]				
	Subtest mode 1	Subtest mode 2	Subtest mode 3	Subtest mode 4	Subtest mode 5
4132	22.6	21.2	20.8	21.3	22.6
4175	22.0	21.6	21.2	22.3	22.7
4233	22.0	21.6	21.3	22.1	22.6

Note: In HSUPA operation, the output power is reduced relative to the tuning target power for WCDMA. This device runs two separate HSUPA power control routines: MPR, and additional 1dB reduction to ensure PA linearity. As a result, the MPR for each of the Subtest modes is as follows:

Maximum Power Reduction (MPR)				
Subtest mode 1	Subtest mode 2	Subtest mode 3	Subtest mode 4	Subtest mode 5
1.0dB	3.0dB	2.0dB	3.0dB	1.0dB

D.3. WCDMA850 (Band 5) Test results

Average power

Ch / *f*(MHz)	P [dBm]
4132	23.8
4175	23.9
4233	23.9

D.4. HSUPA850 Test results

Average power

Ch / *f* (MHz)	P [dBm]				
	Subtest mode 1	Subtest mode 2	Subtest mode 3	Subtest mode 4	Subtest mode 5
4132	22.1	21.5	21.8	22.3	22.8
4175	22.3	21.8	21.5	22.4	22.8
4233	22.3	21.9	21.5	22.3	22.8

Note: In HSUPA operation, the output power is reduced relative to the tuning target power for WCDMA. This device runs two separate HSUPA power control routines: MPR, and additional 1dB reduction to ensure PA linearity. As a result, the MPR for each of the Subtest modes is as follows:

Maximum Power Reduction (MPR)				
Subtest mode 1	Subtest mode 2	Subtest mode 3	Subtest mode 4	Subtest mode 5
1.0dB	3.0dB	2.0dB	3.0dB	1.0dB

Type: RM-1045; Serial: 004402/47/860067/3, HW: 1004, SW: 02061.00037.14145.00001

D.5. WCDMA1900 (Band 2) Test results

Average power

Ch / *f*(MHz)	P [dBm]
9262	23.8
9400	23.9
9538	23.9

D.6. HSUPA1900 Test results

Average power

Ch / *f* (MHz)	P [dBm]				
	Subtest mode 1	Subtest mode 2	Subtest mode 3	Subtest mode 4	Subtest mode 5
9262	22.6	21.6	21.2	22.2	22.7
9400	22.3	21.9	21.5	22.4	22.9
9538	22.3	21.8	21.3	22.4	22.9

Note: In HSUPA operation, the output power is reduced relative to the tuning target power for WCDMA. This device runs two separate HSUPA power control routines: MPR, and additional 1dB reduction to ensure PA linearity. As a result, the MPR for each of the Subtest modes is as follows:

Maximum Power Reduction (MPR)				
Subtest mode 1	Subtest mode 2	Subtest mode 3	Subtest mode 4	Subtest mode 5
1.0dB	3.0dB	2.0dB	3.0dB	1.0dB

APPENDIX E: RELEVANT PAGES FROM PROBE CALIBRATION REPORTS

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

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

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

Accreditation No.: SCS 108

Client Nokia Salo TCC

Certificate No: ES3-3131_Jun13

CALIBRATION CERTIFICATE

Object: ES3DV3 - SN:3131

Calibration procedure(s): QA CAL-01.v8, QA CAL-23.v4, QA CAL-25.v4
Calibration procedure for dosimetric E-field probes

Calibration date: June 18, 2013

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	04-Apr-13 (No. 217-01733)	Apr-14
Power sensor E4412A	MY41498087	04-Apr-13 (No. 217-01733)	Apr-14
Reference 3 dB Attenuator	SN: S5054 (3c)	04-Apr-13 (No. 217-01737)	Apr-14
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-13 (No. 217-01735)	Apr-14
Reference 30 dB Attenuator	SN: S5129 (30b)	04-Apr-13 (No. 217-01738)	Apr-14
Reference Probe ES3DV2	SN: 3013	28-Dec-12 (No. ES3-3013_Dec12)	Dec-13
DAE4	SN: 660	31-Jan-13 (No. DAE4-660_Jan13)	Jan-14
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-13)	In house check: Apr-15
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

	Name	Function	Signature
Calibrated by:	Israe El-Naouq	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: June 18, 2013

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

S Schweizerischer Kalibrierdienst
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S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS) **Accreditation No.: SCS 108**

The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z: A, B, C, D* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Probe ES3DV3

SN:3131

Manufactured: February 6, 2007
Calibrated: June 18, 2013

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3131

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	1.32	1.31	1.26	± 10.1 %
DCP (mV)[B]	101.0	101.8	102.6	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	167.0	±2.7 %
		Y	0.0	0.0	1.0		164.9	
		Z	0.0	0.0	1.0		163.7	

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 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: ES3DV3 - SN:3131

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	41.9	0.89	6.23	6.23	6.23	0.31	1.83	± 12.0 %
835	41.5	0.90	5.96	5.96	5.96	0.26	1.99	± 12.0 %
1750	40.1	1.37	5.17	5.17	5.17	0.49	1.47	± 12.0 %
1900	40.0	1.40	4.98	4.98	4.98	0.67	1.27	± 12.0 %
2450	39.2	1.80	4.33	4.33	4.33	0.80	1.14	± 12.0 %
2600	39.0	1.96	4.21	4.21	4.21	0.80	1.09	± 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:3131

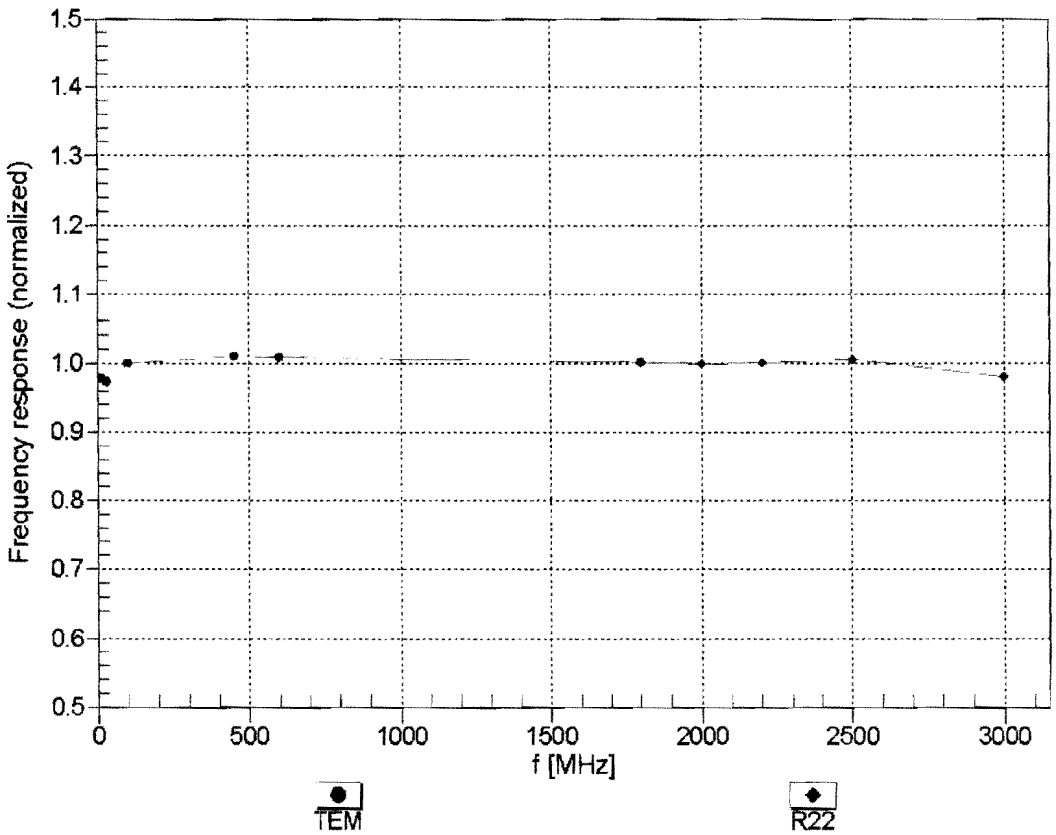
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	55.5	0.96	6.10	6.10	6.10	0.30	1.90	± 12.0 %
835	55.2	0.97	6.03	6.03	6.03	0.39	1.68	± 12.0 %
1750	53.4	1.49	4.87	4.87	4.87	0.31	2.53	± 12.0 %
1900	53.3	1.52	4.62	4.62	4.62	0.28	2.70	± 12.0 %
2450	52.7	1.95	4.27	4.27	4.27	0.68	1.20	± 12.0 %
2600	52.5	2.16	4.17	4.17	4.17	0.50	1.10	± 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

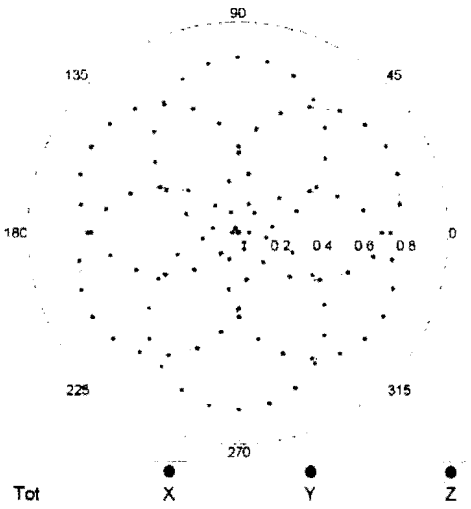
(TEM-Cell:ifi110 EXX, Waveguide: R22)



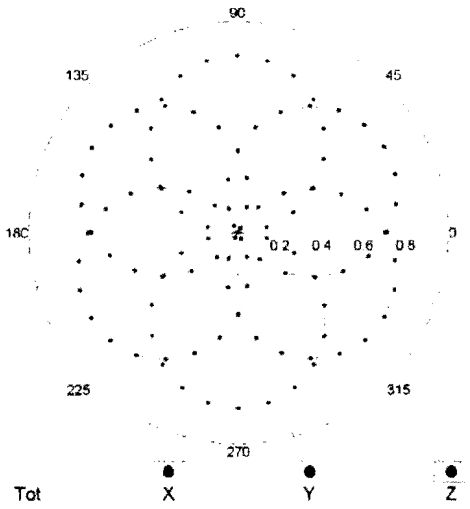
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

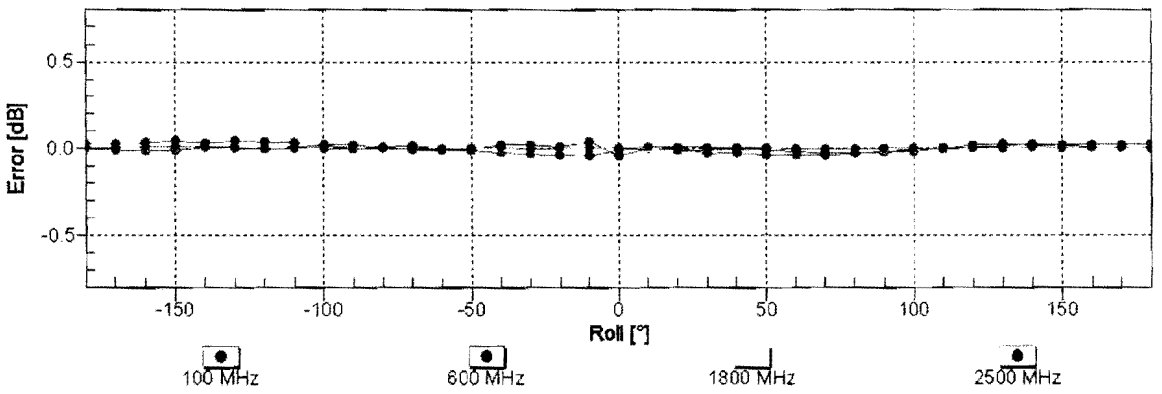
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



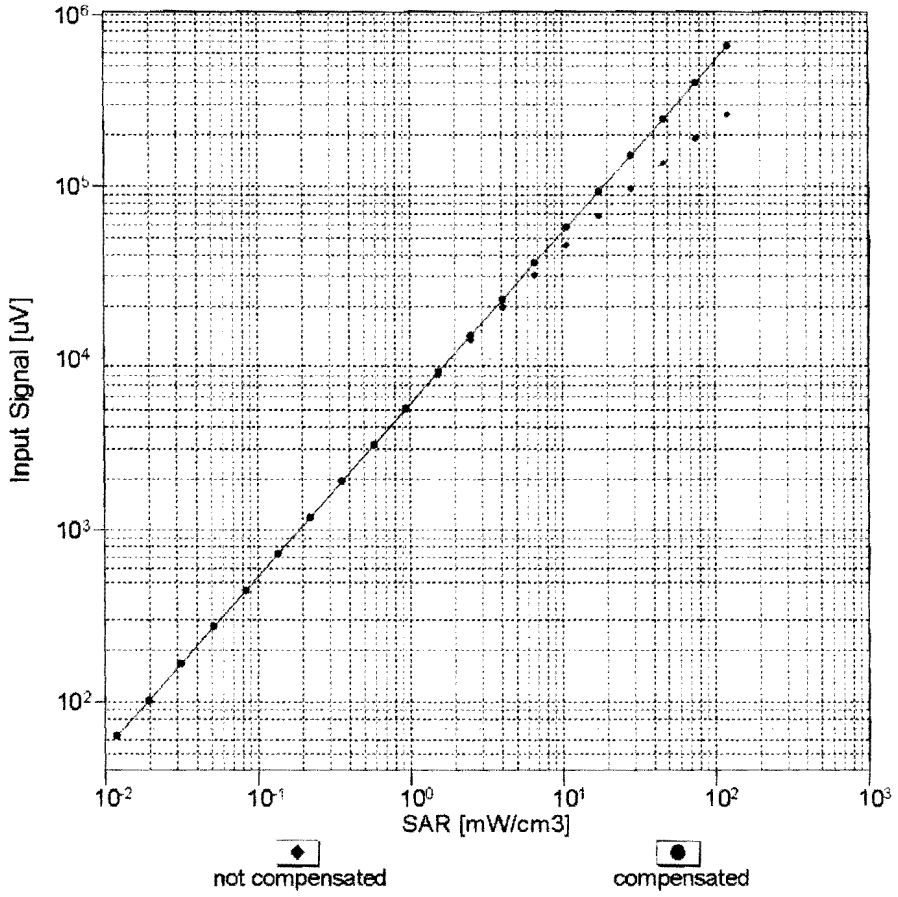
f=1800 MHz,R22

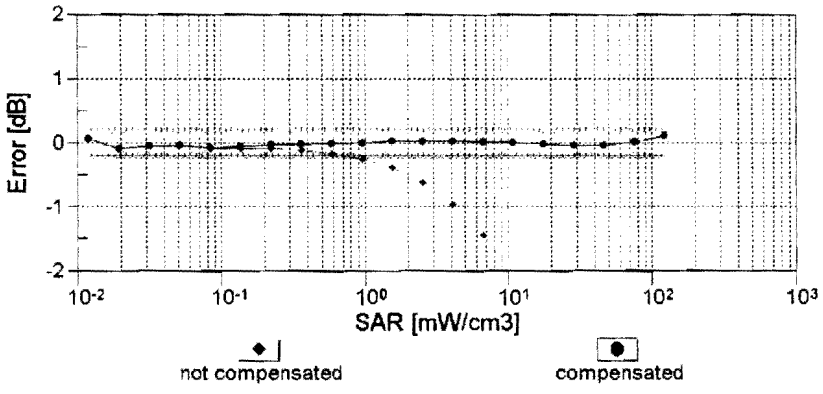




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})
(TEM cell , f = 900 MHz)

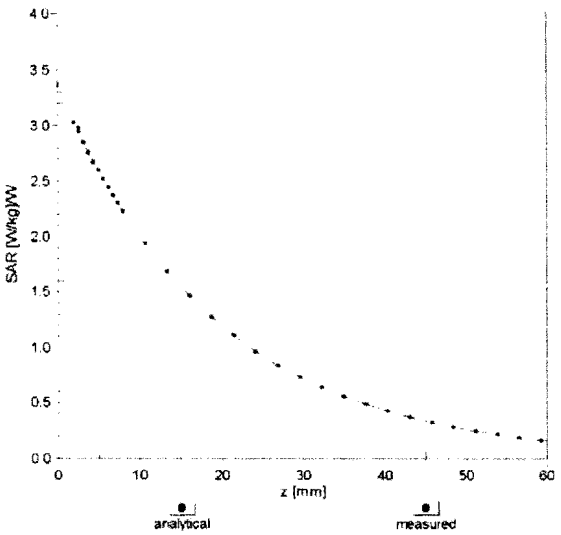




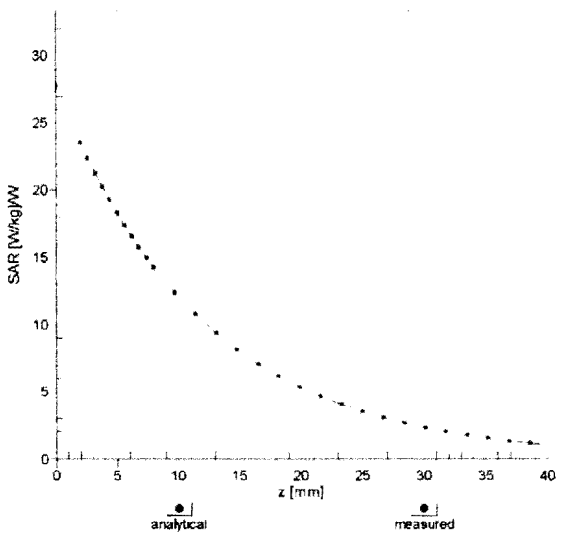
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

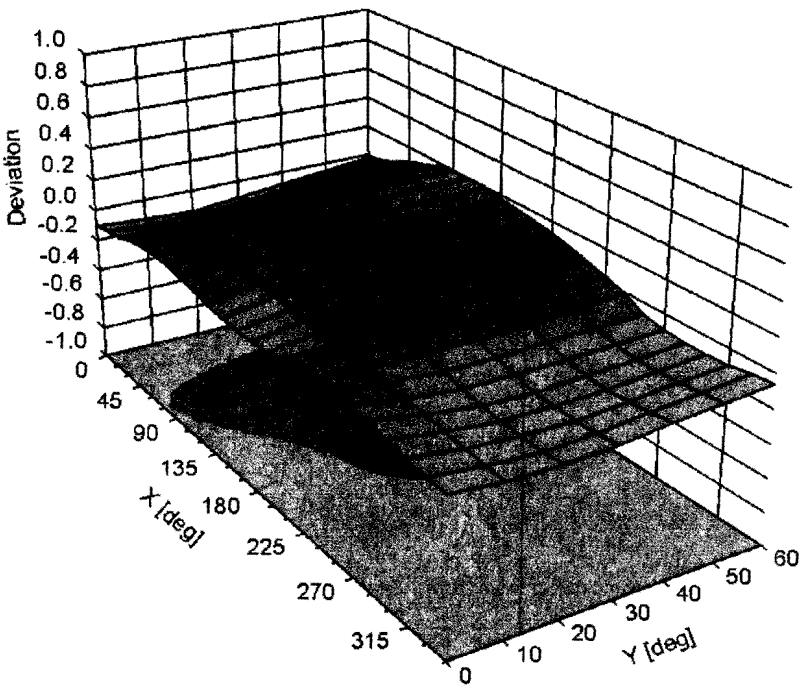


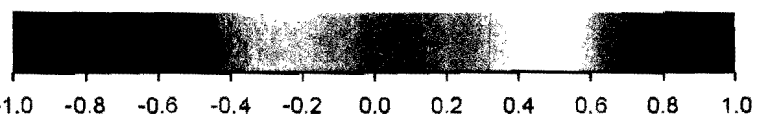
f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz





Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3131

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-39.9
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	4 mm
Probe Tip to Sensor X Calibration Point	2 mm
Probe Tip to Sensor Y Calibration Point	2 mm
Probe Tip to Sensor Z Calibration Point	2 mm
Recommended Measurement Distance from Surface	3 mm

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Swiss Calibration Service

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

Accreditation No.: SCS 108

Client **Nokia Salo TCC**

Certificate No: **ES3-3194_Nov13**

CALIBRATION CERTIFICATE

Object ES3DV3 - SN:3194

Calibration procedure(s) QA CAL-01.v9, QA CAL-23.v5, QA CAL-25.v6
Calibration procedure for dosimetric E-field probes

Calibration date: November 14, 2013

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	04-Apr-13 (No. 217-01733)	Apr-14
Power sensor E4412A	MY41498087	04-Apr-13 (No. 217-01733)	Apr-14
Reference 3 dB Attenuator	SN: S5054 (3c)	04-Apr-13 (No. 217-01737)	Apr-14
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-13 (No. 217-01735)	Apr-14
Reference 30 dB Attenuator	SN: S5129 (30b)	04-Apr-13 (No. 217-01738)	Apr-14
Reference Probe ES3DV2	SN: 3013	28-Dec-12 (No. ES3-3013_Dec12)	Dec-13
DAE4	SN: 660	4-Sep-13 (No. DAE4-660_Sep13)	Sep-14
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-13)	In house check: Apr-15
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-13)	In house check: Oct-14

	Name	Function	Signature
Calibrated by:	Israe El-Naouq	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: November 15, 2013

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3194

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 [G]	Depth [G] (mm)	Unct. (k=2)
835	41.5	0.90	6.12	6.12	6.12	0.28	2.07	± 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.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3194

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 [G]	Depth [G] (mm)	Unct. (k=2)
835	55.2	0.97	6.05	6.05	6.05	0.69	1.30	± 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.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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Swiss Calibration Service

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

Accreditation No.: SCS 108

Client **Nokia Salo TCC**

Certificate No: EX3-3960_Dec13

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3960

Calibration procedure(s): QA CAL-01.v9, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6
Calibration procedure for dosimetric E-field probes

Calibration date: December 10, 2013

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	04-Apr-13 (No. 217-01733)	Apr-14
Power sensor E4412A	MY41498087	04-Apr-13 (No. 217-01733)	Apr-14
Reference 3 dB Attenuator	SN: S5054 (3c)	04-Apr-13 (No. 217-01737)	Apr-14
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-13 (No. 217-01735)	Apr-14
Reference 30 dB Attenuator	SN: S5129 (30b)	04-Apr-13 (No. 217-01738)	Apr-14
Reference Probe ES3DV2	SN: 3013	28-Dec-12 (No. ES3-3013_Dec12)	Dec-13
DAE4	SN: 660	4-Sep-13 (No. DAE4-660_Sep13)	Sep-14
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-13)	In house check: Apr-15
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-13)	In house check: Oct-14

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: December 11, 2013

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3960

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 [G]	Depth [G] (mm)	Unct. (k=2)
750	41.9	0.89	10.78	10.78	10.78	0.47	0.86	± 12.0 %
835	41.5	0.90	10.45	10.45	10.45	0.41	0.86	± 12.0 %
1750	40.1	1.37	8.49	8.49	8.49	0.57	0.67	± 12.0 %
1900	40.0	1.40	8.23	8.23	8.23	0.62	0.64	± 12.0 %
2450	39.2	1.80	7.39	7.39	7.39	0.38	0.83	± 12.0 %
2600	39.0	1.96	7.33	7.33	7.33	0.39	0.84	± 12.0 %
5200	36.0	4.66	5.27	5.27	5.27	0.35	1.80	± 13.1 %
5300	35.9	4.76	5.07	5.07	5.07	0.35	1.80	± 13.1 %
5500	35.6	4.96	4.99	4.99	4.99	0.35	1.80	± 13.1 %
5600	35.5	5.07	4.80	4.80	4.80	0.35	1.80	± 13.1 %
5800	35.3	5.27	4.80	4.80	4.80	0.40	1.80	± 13.1 %

[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.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3960

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 [G]	Depth [G] (mm)	Unct. (k=2)
750	55.5	0.96	10.24	10.24	10.24	0.43	0.86	± 12.0 %
835	55.2	0.97	10.08	10.08	10.08	0.34	1.00	± 12.0 %
1750	53.4	1.49	8.33	8.33	8.33	0.52	0.72	± 12.0 %
1900	53.3	1.52	7.88	7.88	7.88	0.62	0.64	± 12.0 %
2450	52.7	1.95	7.44	7.44	7.44	0.62	0.50	± 12.0 %
2600	52.5	2.16	7.14	7.14	7.14	0.59	0.50	± 12.0 %
5200	49.0	5.30	4.60	4.60	4.60	0.45	1.90	± 13.1 %
5300	48.9	5.42	4.33	4.33	4.33	0.50	1.90	± 13.1 %
5500	48.6	5.65	4.12	4.12	4.12	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.97	3.97	3.97	0.50	1.90	± 13.1 %
5800	48.2	6.00	4.14	4.14	4.14	0.55	1.90	± 13.1 %

[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.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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Swiss Calibration Service

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

Accreditation No.: **SCS 108**

Client **Nokia Salo TCC**

Certificate No: **EX3-3892_Nov13**

CALIBRATION CERTIFICATE

Object EX3DV4 - SN:3892

Calibration procedure(s) QA CAL-01.v9, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6
Calibration procedure for dosimetric E-field probes

Calibration date: November 15, 2013

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	04-Apr-13 (No. 217-01733)	Apr-14
Power sensor E4412A	MY41498087	04-Apr-13 (No. 217-01733)	Apr-14
Reference 3 dB Attenuator	SN: S5054 (3c)	04-Apr-13 (No. 217-01737)	Apr-14
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-13 (No. 217-01735)	Apr-14
Reference 30 dB Attenuator	SN: S5129 (30b)	04-Apr-13 (No. 217-01738)	Apr-14
Reference Probe ES3DV2	SN: 3013	28-Dec-12 (No. ES3-3013_Dec12)	Dec-13
DAE4	SN: 660	4-Sep-13 (No. DAE4-660_Sep13)	Sep-14
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-13)	In house check: Apr-15
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-13)	In house check: Oct-14

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: November 16, 2013

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3892

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 [G]	Depth [G] (mm)	Unct. (k=2)
750	41.9	0.89	10.15	10.15	10.15	0.80	0.61	± 12.0 %
835	41.5	0.90	9.75	9.75	9.75	0.37	0.88	± 12.0 %
1750	40.1	1.37	8.43	8.43	8.43	0.49	0.82	± 12.0 %
1900	40.0	1.40	8.18	8.18	8.18	0.48	0.84	± 12.0 %
2450	39.2	1.80	7.40	7.40	7.40	0.43	0.87	± 12.0 %
2600	39.0	1.96	7.23	7.23	7.23	0.39	0.95	± 12.0 %
5200	36.0	4.66	5.29	5.29	5.29	0.35	1.80	± 13.1 %
5300	35.9	4.76	4.96	4.96	4.96	0.35	1.80	± 13.1 %
5500	35.6	4.96	4.84	4.84	4.84	0.35	1.80	± 13.1 %
5600	35.5	5.07	4.66	4.66	4.66	0.35	1.80	± 13.1 %
5800	35.3	5.27	4.60	4.60	4.60	0.40	1.80	± 13.1 %

[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.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3892

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 [G]	Depth [G] (mm)	Unct. (k=2)
750	55.5	0.96	9.74	9.74	9.74	0.32	0.99	± 12.0 %
835	55.2	0.97	9.65	9.65	9.65	0.45	0.87	± 12.0 %
1750	53.4	1.49	7.86	7.86	7.86	0.39	0.87	± 12.0 %
1900	53.3	1.52	7.69	7.69	7.69	0.42	0.84	± 12.0 %
2450	52.7	1.95	7.27	7.27	7.27	0.75	0.56	± 12.0 %
2600	52.5	2.16	7.13	7.13	7.13	0.70	0.50	± 12.0 %
5200	49.0	5.30	4.34	4.34	4.34	0.45	1.90	± 13.1 %
5300	48.9	5.42	4.15	4.15	4.15	0.45	1.90	± 13.1 %
5500	48.6	5.65	4.12	4.12	4.12	0.45	1.90	± 13.1 %
5600	48.5	5.77	4.00	4.00	4.00	0.40	1.90	± 13.1 %
5800	48.2	6.00	4.02	4.02	4.02	0.50	1.90	± 13.1 %

[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.

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