

SAR Compliance Test Report

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Testing laboratory:	TCC Nokia Salo Laboratory P.O.Box 86 Joensuunkatu 7H / Kiila 1B FIN-24101 SALO, FINLAND Tel. +358 (0) 7180 08000 Fax. +358 (0) 7180 45220	Client:	Nokia Corporation P.O. Box 86 Joensuunkatu 7 FIN-24101 SALO, FINLAND Tel. +358 (0) 7180 08000 Fax. +358 (0) 7180 44277
Responsible test engineer:	Juha-Matti Varjonen	Product contact person:	Tia Melava
Measurements made by:	Nina Koskinen, Teuvo Miettinen, Jani Tuomela, Juha-Matti Varjonen		
Tested device:	RM-824		
FCC ID:	PYARM-824	IC:	661V-RM824
Supplement reports:	FCC_RM-824_03, SAR_Photo_RM-824_09		
Testing has been carried out in accordance with:	47CFR §2.1093 Radiofrequency Radiation Exposure Evaluation: Portable Devices FCC OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01) Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields RSS-102 Evaluation Procedure for Mobile and Portable Radio Transmitters with Respect to Health Canada's Safety Code 6 for Exposure of Humans to Radio Frequency Fields IEEE 1528 - 2003 IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Technique		
Documentation:	The documentation of the testing performed on the tested devices is archived for 15 years at TCC Nokia.		
Test results:	The tested device complies with the requirements in respect of all parameters subject to the test. The test results and statements relate only to the items tested. The test report shall not be reproduced except in full, without written approval of the laboratory.		

Date and signatures:

For the contents:

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1. SUMMARY OF SAR TEST REPORT

1.1 Test Details

Period of test	2012-10-08 to 2012-10-18
SN, HW and SW numbers of tested device	SN: 353670/05/001185/0, HW: 2224, SW: 1232.20.1238.0, DUT: 16705 SN: 353670/05/001126/4, HW: 2224, SW: 1232.20.1238.0, DUT: 16704
Batteries used in testing	BP-5T, DUT: 16490, 16491, 16492, 16493, 16494, 16495, 16504, 16505, 16506, 16507, 16520
Headsets used in testing	-
Other accessories used in testing	Cover CC-3058 Standard/default back cover Cover CC-3401 Optional Wireless Charging back cover
State of sample	Prototype unit
Notes	-

1.1.1 Supplement reports referenced on the front cover of this report

FCC_RM-824_03: SAR data for LTE700 (Band 17), LTE1700/2100 (Band 4), GSM/GPRS/EGPRS850, GSM/GPRS/EGPRS1900, WCDMA1700/2100, 2.4GHz and 5GHz WLAN have been taken from this report; 2 samples were used in the reported testing. FCC Grant was issued on 15th October 2012.

1.2 Maximum Results

The maximum measured SAR values for Head configuration and Body Worn configuration and Wireless Router (“Hotspot”) 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)	Scaled* SAR value (1g avg)	SAR limit (1g avg)	Result
LTE700**	23780 / 709.0	23.30 dBm	Left, Cheek	0.231 W/kg	0.26 W/kg	1.6 W/kg	PASSED
2-slot GPRS850**	251 / 848.8	32.30 dBm	Left, Cheek	0.568 W/kg	0.64 W/kg	1.6 W/kg	PASSED
WCDMA850	4233 / 846.6	23.41 dBm	Left, Cheek	0.340 W/kg	0.38 W/kg	1.6 W/kg	PASSED
LTE850	20525 / 836.5	22.46 dBm	Left, Cheek	0.293 W/kg	0.33 W/kg	1.6 W/kg	PASSED
WCDMA1700/2100**	1513 / 1752.6	23.20 dBm	Left, Cheek	0.705 W/kg	0.79 W/kg	1.6 W/kg	PASSED
LTE 1700/2100**	20175 / 1732.5	23.31 dBm	Left, Cheek	0.578 W/kg	0.65 W/kg	1.6 W/kg	PASSED
2-slot GPRS1900**	661 / 1880.0	30.10 dBm	Left, Cheek	0.970 W/kg	1.09 W/kg	1.6 W/kg	PASSED
WCDMA1900	9262 / 1852.4	23.78 dBm	Left, Cheek	0.933 W/kg	1.04 W/kg	1.6 W/kg	PASSED
LTE1900	19100 / 1900.0	23.81 dBm	Left, Cheek	1.17 W/kg	1.31 W/kg	1.6 W/kg	PASSED
WLAN2450**	6 / 2437.0	16.22 dBm	Left, Cheek	0.668 W/kg	0.75 W/kg	1.6 W/kg	PASSED
WLAN5000**	64 / 5320.0	12.85 dBm	Left, Cheek	0.845 W/kg	0.95 W/kg	1.6 W/kg	PASSED
LTE700 + WLAN2450**	-	-	Left, Cheek	0.706 W/kg	0.79 W/kg	1.6 W/kg	PASSED
2-slot GPRS850 + WLAN2450**	-	-	Left, Cheek	0.747 W/kg	0.84 W/kg	1.6 W/kg	PASSED
WCDMA850 + WLAN2450	-	-	Left, Cheek	0.713 W/kg	0.80 W/kg	1.6 W/kg	PASSED
LTE850 + WLAN2450	-	-	Left, Cheek	0.708 W/kg	0.79 W/kg	1.6 W/kg	PASSED
WCDMA1700/2100 + WLAN2450**	-	-	Left, Cheek	0.780 W/kg	0.87 W/kg	1.6 W/kg	PASSED
LTE 1700/2100 + WLAN2450**	-	-	Left, Cheek	0.770 W/kg	0.86 W/kg	1.6 W/kg	PASSED
2-slot GPRS1900 + WLAN2450**	-	-	Left, Cheek	1.05 W/kg	1.18 W/kg	1.6 W/kg	PASSED
WCDMA1900 + WLAN2450	-	-	Left, Cheek	0.996 W/kg	1.12 W/kg	1.6 W/kg	PASSED
LTE1900 + WLAN2450	-	-	Left, Cheek	1.22 W/kg	1.37 W/kg	1.6 W/kg	PASSED
LTE700 + WLAN5000**	-	-	Left, Cheek	0.845 W/kg	0.95 W/kg	1.6 W/kg	PASSED
2-slot GPRS850 + WLAN5000**	-	-	Left, Cheek	0.845 W/kg	0.95 W/kg	1.6 W/kg	PASSED
WCDMA850 + WLAN5000	-	-	Left, Cheek	0.845 W/kg	0.95 W/kg	1.6 W/kg	PASSED
LTE850 + WLAN5000	-	-	Left, Cheek	0.845 W/kg	0.95 W/kg	1.6 W/kg	PASSED
WCDMA1700/2100 + WLAN5000**	-	-	Left, Cheek	0.845 W/kg	0.95 W/kg	1.6 W/kg	PASSED

(Table continues)

(Table continues)

LTE 1700/2100 + WLAN5000**	-	-	Left, Cheek	0.845 W/kg	0.95 W/kg	1.6 W/kg	PASSED
2-slot GPRS1900 + WLAN5000**	-	-	Left, Cheek	1.01 W/kg	1.13 W/kg	1.6 W/kg	PASSED
WCDMA1900 + WLAN5000	-	-	Left, Cheek	0.957 W/kg	1.07 W/kg	1.6 W/kg	PASSED
LTE1900 + WLAN5000	-	-	Left, Cheek	1.18 W/kg	1.32 W/kg	1.6 W/kg	PASSED

1.2.2 Body Worn Configuration

Mode	Ch / f(MHz)	Conducted power	Separation distance	Measured SAR value (1g avg)	Scaled* SAR value (1g avg)	SAR limit (1g avg)	Result
LTE700**	23790 / 710.0	23.05 dBm	1.5 cm	0.230 W/kg	0.26 W/kg	1.6 W/kg	PASSED
2-slot GPRS850**	251 / 848.8	32.30 dBm	1.5 cm	0.606 W/kg	0.68 W/kg	1.6 W/kg	PASSED
WCDMA850	4233 / 846.6	23.41 dBm	1.5 cm	0.378 W/kg	0.42 W/kg	1.6 W/kg	PASSED
LTE850	20600 / 844.0	22.54 dBm	1.5 cm	0.332 W/kg	0.37 W/kg	1.6 W/kg	PASSED
WCDMA1700/2100**	1412 / 1732.4	23.20 dBm	1.5 cm	0.371 W/kg	0.42 W/kg	1.6 W/kg	PASSED
LTE 1700/2100**	20175 / 1732.5	23.45 dBm	1.5 cm	0.435 W/kg	0.49 W/kg	1.6 W/kg	PASSED
2-slot GPRS1900**	661 / 1880.0	30.10 dBm	1.5 cm	0.537 W/kg	0.60 W/kg	1.6 W/kg	PASSED
WCDMA1900	9262 / 1852.4	23.78 dBm	1.5 cm	0.521 W/kg	0.58 W/kg	1.6 W/kg	PASSED
LTE1900	18700 / 1860.0	23.88 dBm	1.5 cm	0.581 W/kg	0.65 W/kg	1.6 W/kg	PASSED
WLAN2450**	6 / 2437.0	16.22 dBm	1.5 cm	0.070 W/kg	0.08 W/kg	1.6 W/kg	PASSED
WLAN5000**	44 / 5220.0	13.06 dBm	1.5 cm	0.196 W/kg	0.22 W/kg	1.6 W/kg	PASSED
LTE700 + WLAN2450**	-	-	1.5 cm	0.237 W/kg	0.27 W/kg	1.6 W/kg	PASSED
2-slot GPRS850 + WLAN2450**	-	-	1.5 cm	0.634 W/kg	0.71 W/kg	1.6 W/kg	PASSED
WCDMA850 + WLAN2450	-	-	1.5 cm	0.401 W/kg	0.45 W/kg	1.6 W/kg	PASSED
LTE850 + WLAN2450	-	-	1.5 cm	0.363 W/kg	0.41 W/kg	1.6 W/kg	PASSED
WCDMA1700/2100 + WLAN2450**	-	-	1.5 cm	0.385 W/kg	0.43 W/kg	1.6 W/kg	PASSED
LTE 1700/2100 + WLAN2450**	-	-	1.5 cm	0.456 W/kg	0.51 W/kg	1.6 W/kg	PASSED
2-slot GPRS1900 + WLAN2450**	-	-	1.5 cm	0.553 W/kg	0.62 W/kg	1.6 W/kg	PASSED
WCDMA1900 + WLAN2450	-	-	1.5 cm	0.533 W/kg	0.60 W/kg	1.6 W/kg	PASSED
LTE1900 + WLAN2450	-	-	1.5 cm	0.581 W/kg	0.65 W/kg	1.6 W/kg	PASSED

(Table continues)

(Table continues)

LTE700 + WLAN5000**	-	-	1.5 cm	0.230 W/kg	0.26 W/kg	1.6 W/kg	PASSED
2-slot GPRS850 + WLAN5000**	-	-	1.5 cm	0.606 W/kg	0.68 W/kg	1.6 W/kg	PASSED
WCDMA850 + WLAN5000	-	-	1.5 cm	0.378 W/kg	0.42 W/kg	1.6 W/kg	PASSED
LTE850 + WLAN5000	-	-	1.5 cm	0.332 W/kg	0.37 W/kg	1.6 W/kg	PASSED
WCDMA1700/2100 + WLAN5000**	-	-	1.5 cm	0.371 W/kg	0.42 W/kg	1.6 W/kg	PASSED
LTE 1700/2100 + WLAN5000**	-	-	1.5 cm	0.435 W/kg	0.49 W/kg	1.6 W/kg	PASSED
2-slot GPRS1900 + WLAN5000**	-	-	1.5 cm	0.537 W/kg	0.60 W/kg	1.6 W/kg	PASSED
WCDMA1900 + WLAN5000	-	-	1.5 cm	0.521 W/kg	0.58 W/kg	1.6 W/kg	PASSED
LTE1900 + WLAN5000	-	-	1.5 cm	0.581 W/kg	0.65 W/kg	1.6 W/kg	PASSED

1.2.3 Wireless Router Configuration

Mode	Ch / f(MHz)	Conducted power	Separation distance	Measured SAR value (1g avg)	Scaled* SAR value (1g avg)	SAR limit (1g avg)	Result
LTE700**	23800 / 711.0	23.02 dBm	10.0 mm	0.327 W/kg	0.37 W/kg	1.6 W/kg	PASSED
2-slot GPRS850**	251 / 848.8	32.30 dBm	10.0 mm	0.770 W/kg	0.86 W/kg	1.6 W/kg	PASSED
WCDMA850	4233 / 846.6	23.41 dBm	10.0 mm	0.484 W/kg	0.54 W/kg	1.6 W/kg	PASSED
LTE850	20450 / 829.0	22.87 dBm	10.0 mm	0.408 W/kg	0.46 W/kg	1.6 W/kg	PASSED
WCDMA1700/2100**	1513 / 1752.6	23.20 dBm	10.0 mm	0.720 W/kg	0.81 W/kg	1.6 W/kg	PASSED
LTE 1700/2100**	20175 / 1732.5	23.45 dBm	10.0 mm	0.781 W/kg	0.87 W/kg	1.6 W/kg	PASSED
2-slot GPRS1900**	810 / 1909.8	29.99 dBm	10.0 mm	1.22 W/kg	1.37 W/kg	1.6 W/kg	PASSED
WCDMA1900	9262 / 1852.4	23.78 dBm	10.0 mm	0.873 W/kg	0.98 W/kg	1.6 W/kg	PASSED
LTE1900	19100 / 1900.0	23.81 dBm	10.0 mm	0.972 W/kg	1.09 W/kg	1.6 W/kg	PASSED
WLAN2450**	6 / 2437.0	16.22 dBm	10.0 mm	0.128 W/kg	0.14 W/kg	1.6 W/kg	PASSED
LTE700 + WLAN2450**	-	-	10.0 mm	0.356 W/kg	0.40 W/kg	1.6 W/kg	PASSED
2-slot GPRS850 + WLAN2450**	-	-	10.0 mm	0.820 W/kg	0.92 W/kg	1.6 W/kg	PASSED
WCDMA850 + WLAN2450	-	-	10.0 mm	0.547 W/kg	0.61 W/kg	1.6 W/kg	PASSED
LTE850 + WLAN2450	-	-	10.0 mm	0.458 W/kg	0.51 W/kg	1.6 W/kg	PASSED

(Table continues)

(Table continues)

WCDMA1700/2100 + WLAN2450**	-	-	10.0 mm	0.779 W/kg	0.87 W/kg	1.6 W/kg	PASSED
LTE 1700/2100 + WLAN2450**	-	-	10.0 mm	0.821 W/kg	0.92 W/kg	1.6 W/kg	PASSED
2-slot GPRS1900 + WLAN2450**	-	-	10.0 mm	1.26 W/kg	1.41 W/kg	1.6 W/kg	PASSED
WCDMA1900 + WLAN2450	-	-	10.0 mm	0.882 W/kg	0.99 W/kg	1.6 W/kg	PASSED
LTE1900 + WLAN2450	-	-	10.0 mm	0.989 W/kg	1.11 W/kg	1.6 W/kg	PASSED

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

**SAR data taken from FCC_RM-824_03.

1.2.4 Summary SAR data

	FCC-defined SAR values for the Grants of Equipment Authorization		
	PCE	DTS	NII
Maximum Head SAR values	1.31 W/kg	0.75 W/kg	0.95 W/Kg
{Max + Max} Simultaneous Head SAR value	1.59 W/kg †		
Maximum Body SAR values	0.68 W/kg	0.08 W/kg	0.22 W/Kg
{Max + Max} Simultaneous Body SAR value	0.83 W/kg		
Maximum Product Specific (Wireless Router) SAR values	1.37 W/kg	0.14 W/kg	N/A
{Max + Max} Simultaneous Product Specific SAR value	1.37 W/kg		
Maximum Simultaneous SAR value Head SAR: LTE1700/2100+WLAN5000	1.59 W/kg ††		

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

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

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

† From Section 7.1:

The highest {Max + Max} Simultaneous Head SAR value is 2.015W/kg for LTE1900+WLAN5000 Left Cheek test configuration which, when scaled up by 12%, becomes 2.257W/kg i.e. > 1.6W/kg. However, as the separation distance between the SAR peaks is 8.01 cm, the Antenna Pair SAR to Peak Separation Ratio is $2.257/8.01 = 0.28$ i.e. < 0.3, hence Simultaneous Transmission Procedures as described in KDB648474 are not required.

The second {Max + Max} Simultaneous Head SAR value is 1.838W/kg for LTE1900+WLAN2450 Left Cheek test configuration which, when scaled up by 12%, becomes 2.059W/kg i.e. > 1.6W/kg. However, as the separation distance between the SAR peaks is 7.02 cm, the Antenna Pair SAR to Peak Separation Ratio is $2.059/7.02 = 0.29$ i.e. < 0.3, hence Simultaneous Transmission Procedures as described in KDB648474 are not required.

The third highest {Max + Max} Simultaneous Head SAR value is 1.815W/kg for 2-slot GPRS1900+WLAN5000 Left Cheek test configuration which, when scaled up by 12%, becomes 2.033W/kg i.e. > 1.6W/kg. However, as the separation distance between the SAR peaks is 8.28 cm, the Antenna Pair SAR to Peak Separation Ratio is $2.033/8.28 = 0.25$ i.e. < 0.3, hence Simultaneous Transmission Procedures as described in KDB648474 are not required.

The fourth highest {Max + Max} Simultaneous Head SAR value is 1.778W/kg for WCDMA1900+WLAN5000 Left Cheek test configuration which, when scaled up by 12%, becomes 1.991W/kg i.e. > 1.6W/kg. However, as the separation distance between the SAR peaks is 8.01 cm, the Antenna Pair SAR to Peak Separation Ratio is $1.991/8.01 = 0.25$ i.e. < 0.3, hence Simultaneous Transmission Procedures as described in KDB648474 are not required.

The fifth {Max + Max} Simultaneous Head SAR value is 1.638W/kg for 2-slot GPRS1900+WLAN2450 Left Cheek test configuration which, when scaled up by 12%, becomes 1.835W/kg i.e. > 1.6W/kg. However, as the separation distance between the SAR peaks is 7.42 cm, the Antenna Pair SAR to Peak Separation Ratio is $1.835/7.42 = 0.25$ i.e. < 0.3, hence Simultaneous Transmission Procedures as described in KDB648474 are not required.

The sixth {Max + Max} Simultaneous Head SAR value is 1.601W/kg for WCDMA1900+WLAN2450 Left Cheek test configuration which, when scaled up by 12%, becomes 1.793W/kg i.e. > 1.6W/kg. However, as the separation distance between the SAR peaks is 7.02 cm, the Antenna Pair SAR to Peak Separation Ratio is $1.793/7.02 = 0.26$ i.e. < 0.3, hence Simultaneous Transmission Procedures as described in KDB648474 are not required.

The seventh {Max + Max} Simultaneous Head SAR value is 1.550W/kg for WCDMA1700/2100+WLAN5000 Left Cheek test configuration which, when scaled up by 12%, becomes 1.736W/kg i.e. > 1.6W/kg. However, as the separation distance between the SAR peaks is 8.09 cm, the Antenna Pair SAR to Peak Separation Ratio is $1.736/8.09 = 0.21$ i.e. < 0.3, hence Simultaneous Transmission Procedures as described in KDB648474 are not required.

The eighth {Max + Max} Simultaneous Head SAR value is 1.423W/kg for LTE1700/2100+WLAN5000 Left Cheek test configuration which, when scaled up by 12%, becomes 1.59W/kg.

Consequently the value quoted here is 1.59W/kg.

†† From the † note above and from Section 7:

The highest {Max + Max} Simultaneous Head SAR value is 1.423W/kg for LTE1700/2100+WLAN5000 Left Cheek test configuration which, when scaled up by 12%, becomes 1.59W/kg.

The highest {Max + Max} Simultaneous Body-worn SAR value is 0.743W/kg for 2-slot GPRS850+WLAN5000, which, when scaled up by 12%, becomes 0.83W/kg.

The highest {Max + Max} Simultaneous Wireless Router SAR value is 1.225/kg for 2-slot GPRS1900+WLAN2450 which, when scaled up by 12%, becomes 1.37W/kg.

Consequently, the value quoted here is 1.59W/kg.

1.2.5 Maximum Drift

Maximum drift covered by 12% scaling up of the SAR values	Maximum drift during measurements
0.5dB	0.48 dB

1.2.6 Measurement Uncertainty

Expanded Uncertainty (k=2) 95%	± 26.4%
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2. DESCRIPTION OF THE DEVICE UNDER TEST

Device category	Portable
Exposure environment	General population / uncontrolled

Modes of Operation	Bands	Modulation Mode	Duty Cycle	Transmitter Frequency Range (MHz)
GSM	850 1900	GMSK	1/8	824 – 849 1850 – 1910
GPRS	850 1900	GMSK	1/8 to 2/8	824 – 849 1850 – 1910
EGPRS	850 1900	GMSK / 8PSK	1/8 to 2/8	824 – 849 1850 – 1910
WCDMA	850 (Band V) 1700/2100 (Band IV) 1900 (Band II)		1	826 – 847 1712 - 1753 1852 – 1908
HSUPA	850 (Band V) 1700/2100 (Band IV) 1900 (Band II)		1	826 – 847 1712 - 1753 1852 – 1908
LTE	700 (Band 17) 850 (Band 5) 1700/2100 (Band 4) 1900 (Band 2)	QPSK / 16QAM		704 – 716 824 – 849 1710 – 1755 1850 – 1910
BT	2450	GFSK	1	2402 – 2480
WLAN b-mode	2450	Up to 11Mbps QPSK	1	2412 – 2462
WLAN g-mode	2450	Up to 54Mbps 64QAM	1	2412 – 2462
WLAN n-mode 20MHz	2450	Up to 72.2Mbps 64QAM	1	2412 – 2462
WLAN n-mode 40MHz	2450	Up to 150Mbps 64QAM	1	2412 – 2462
WLAN a-mode 20MHz	5000	Up to 54Mbps 64QAM	1	5150 – 5825
WLAN n-mode 20MHz	5000	Up to 72.2Mbps 64QAM	1	5150 – 5825
WLAN n-mode 40MHz	5000	Up to 150Mbps 64QAM	1	5150 – 5825

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

This is an LTE Category 3 device; it contains four LTE bands, namely LTE bands 700, 850, 1700/2100 and 1900. In LTE700(Band 17), the device possesses Channel Bandwidths of 10MHz and 5MHz; in LTE850(Band 5), the device possesses Channel Bandwidths of 10MHz, 5MHz, 3MHz and 1.4MHz; in LTE1700/2100 (Band 4) and in LTE1900(Band 2) Channel Bandwidths of 20MHz, 15MHz, 10MHz, 5MHz, 3MHz and 1.4MHz are available.

This device uses a single antenna for transmission of all the cellular, AWS and PCS bands; a separate single antenna is used for transmission of WLAN and BT. Simultaneous transmission of any singular cellular, AWS and PCS band is possible with either WLAN or BT in Head and Body-worn use.

Simultaneous transmission capabilities in Head and Body-worn use		
	WLAN2450	WLAN5000
LTE700	✓	✓
GSM/GPRS/EGPRS850	✓	✓
WCDMA850	✓	✓
LTE850	✓	✓
WCDMA1700/2100	✓	✓
LTE1700/2100	✓	✓
GSM/GPRS/EGPRS1900	✓	✓
WCDMA1900	✓	✓
LTE1900	✓	✓

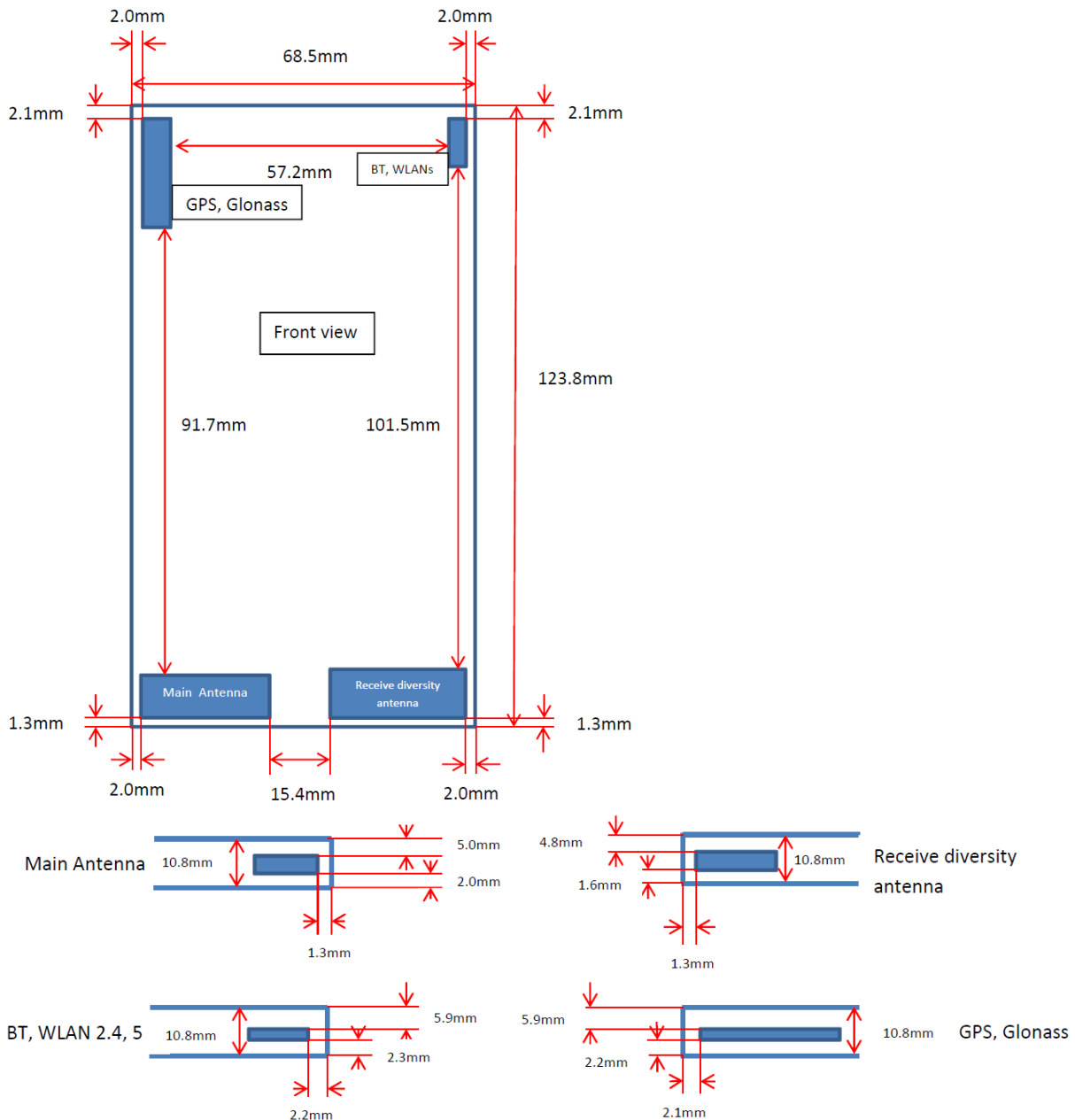
This device has Wireless Router “Hotspot” mode capability. Simultaneous transmission of any singular cellular, AWS and PCS band is possible with WLAN2450 or BT in Wireless Router mode. Wireless Router mode capability is not available with WLAN5000.

Simultaneous transmission capabilities in Wireless Router use		
	WLAN2450	WLAN5000
LTE700	✓	X
GSM/GPRS/EGPRS850	✓	X
WCDMA850	✓	X
LTE850	✓	X
WCDMA1700/2100	✓	X
LTE1700/2100	✓	X
GSM/GPRS/EGPRS1900	✓	X
WCDMA1900	✓	X
LTE1900	✓	X

This device has no power reductions in any of the usage modes and does not feature any diversity antenna functionality when transmitting.

2.1 Description of the Antenna

The device has internal antennas for both cellular/AWS/PCS and WLAN/BT use. The cellular AWS/PCS antenna is located at the bottom underneath the back cover. The WLAN/BT antenna is located at the top underneath the back cover. The device dimensions, antenna locations and antenna interdistances are illustrated below.



3. TEST CONDITIONS

3.1 Temperature and Humidity

Ambient temperature (°C):	20.2 – 21.7
Ambient humidity (RH %):	36 - 43

3.2 Test Signal, Frequencies and Output Power

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

A CMW500 call tester was used to configure the test device for transmitting all the LTE bands; in each band, the Uplink Power Control was set to 'Max Power'. Additional Spectrum Emission was set to 'NS_01' to disable A-MPR.

A CMU200 call tester was used for all the GSM/GPRS/EGPRS and WCDMA bands; in the case of GSM/GPRS/EGPRS the MS signal was always set to maximum power, whereas for WCDMA the UE uplink signal was configured to 12.2kbps RMC with all TPC bit set to 1.

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

All WCDMA testing has been carried out in accordance with FCC KDB 941225: SAR Measurement Procedures for 3G Devices.

LTE bands have been tested according to the guidance given in KDB941225 D05 SAR for LTE Devices v01. 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

Although A-MPR will be supported by the final production device, for all the reported testing A-MPR was deactivated in the test samples.

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

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 Appendices F-G of this report.

LTE SAR testing has been carried out in accordance with KDB941225 D05 SAR for LTE Devices v01. In addition to the requirements of KDB941225, the following test modulations have voluntarily been measured in both LTE bands:

QPSK, 1RB allocation, 50% offset
QPSK, 100% RB allocation
16QAM, 1RB allocation, 50% offset
16QAM, 100% RB allocation

The number of test cases reported in this document has been minimised based on the earlier testing in FCC_RM-824_03. Some of the SAR results given in this report are taken from the same earlier test report FCC_RM-824_03.

3.3 Test Cases and Test Minimisation

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

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

For example, when SAR testing multi-slot GSM/GPRS/EGPRS modes, it is an inefficient use of test resources to fully SAR test every test configuration in each of the different modes as these modes have a fixed power relationship between them that is the same, irrespective of the test configuration. In the case of multi-slot GSM/GPRS modes, a single comparative SAR test - using the same test channel and test configuration - is made in each of the n-slot modes; the mode with the highest measured SAR value is then subjected to full SAR testing in all test configurations. These comparative SAR tests (same frequency, same test configuration) are

regarded as extremely accurate as they are relative tests in which the tested device changes neither its frequency nor its position between tests. For different modes that operate in the same band and use the same antenna e.g. GSM/GPRS850 and WCDMA850, full SAR testing is carried out in the GSM/GPRS850 mode but WCDMA850 testing is limited to 3 channel testing in the maximum SAR test configuration for GSM/GPRS850.

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

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

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

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

4. DESCRIPTION OF THE TEST EQUIPMENT

4.1 Measurement System and Components

The measurements were performed using an automated 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	538	2012-08	2013-08
DAE4	1316	2012-02	2013-02
E-field Probe ES3DV3	3165	2012-02	2013-02
E-field Probe EX3DV4	3835	2012-02	2013-02
Dipole Validation Kit, D835V2	462	2011-09	2013-09
Dipole Validation Kit, D1900V2	5d030	2012-02	2014-02
DASY4 software	Version 4.7	-	-
DASY5 software	Version 52.6	-	-
DASY5 software	Version 52.8	-	-

Additional test equipment used in testing:

Test Equipment	Model	Serial Number	Calibration date	Calibration expiry
Signal Generator	E4438C	MY42080610	2012-08	2013-08
Signal Generator	SML03	101264	2012-08	2013-08
Amplifier	5S1G4M3	302338	-	-
Amplifier	ZHL-42-SMA	N072095-5	-	-
Power Meter	NRVS	838624/032	2012-08	2013-08
Power Meter	NRVD	840023/028	2012-08	2013-08
Power Sensor	NRV-Z32	100067	2012-08	2013-08
Power Sensor	NRV-Z32	849745/018	2012-08	2013-08
Call Tester	CMU 200	103293	-	-
Call Tester	CMU 200	101111	-	-
Call Tester	MT8820C	6200883095	-	-
Call Tester	CMW 500	110565	-	-
Network Analyzer	ENA E5071C	MY46213166	2012-08	2013-08
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 D
Frequency	10 MHz to 4 GHz (dosimetry); Linearity: ± 0.2 dB (30 MHz to 4 GHz)
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.3 dB in HSL (rotation normal to probe axis)
Dynamic Range	5 μ W/g to > 100 mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 330 mm Tip length: 20 mm Body diameter: 12 mm Tip diameter: 3.9 mm
Application	Distance from probe tip to dipole centers: 2.0 mm General dosimetry up to 4 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms

4.1.2 Isotropic E-field Probe Type EX3DV4

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

4.2 Phantoms

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

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

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

4.3 Tissue Simulants

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

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

4.3.1 Tissue Simulant Recipes

The following 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

4.3.2 System Checking

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

System checking, head tissue simulant

f [MHz]	Description	SAR [W/kg], 1g	Dielectric Parameters		Temp [°C]
			ϵ_r	σ [S/m]	
835	Reference result	2.33	41.1	0.89	
	± 10% window	2.10 – 2.56			
	IEEE1528 / IEC62209 Standard targets		41.5	0.90	
	2012-10-09	2.34	39.9	0.91	21.0
	2012-10-11	2.32	39.7	0.90	21.0
	2012-10-17	2.39	40.6	0.92	21.0
1900	Reference result	9.79	40.4	1.40	
	± 10% window	8.81 - 10.77			
	IEEE1528 / IEC62209 Standard targets		40.0	1.40	
	2012-10-08	9.49	38.5	1.36	21.0
	2012-10-16	9.42	39.0	1.36	21.0
	2012-10-17	9.52	39.3	1.39	21.0

System checking, body tissue simulant

f [MHz]	Description	SAR [W/kg], 1g	Dielectric Parameters		Temp [°C]
			ϵ_r	σ [S/m]	
835	Reference result	2.45	53.5	1.00	
	± 10% window	2.20 – 2.70			
	IEEE1528 / IEC62209 Standard targets		55.2	0.97	
	2012-10-09	2.41	53.0	1.01	21.0
	2012-10-17	2.41	53.4	1.01	21.0
1900	Reference result	9.87	53.0	1.56	
	± 10% window	8.88 – 10.86			
	IEEE1528 / IEC62209 Standard targets		53.3	1.52	
	2012-10-09	10.4	51.0	1.52	21.0
	2012-10-10	10.4	50.9	1.52	21.0
	2012-10-15	10.3	50.9	1.52	21.0
	2012-10-17	10.4	52.1	1.51	21.0
	2012-10-18	10.6	51.9	1.51	21.0

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

4.3.3 Tissue Simulants used in the Measurements

Head tissue simulant measurements

f [MHz]	Description	Dielectric Parameters		Temp [°C]
		ϵ_r	σ [S/m]	
835	Recommended value	41.5	0.90	
	$\pm 5\%$ window	39.4 – 43.6	0.86 – 0.95	
	2012-10-11	39.7	0.90	21.0
836	Recommended value	41.5	0.90	
	$\pm 5\%$ window	39.4 – 43.6	0.86 – 0.95	
	2012-10-09	39.9	0.91	21.0
	2012-10-17	40.6	0.92	21.0
1880	Recommended value	40.0	1.40	
	$\pm 5\%$ window	38.0 – 42.0	1.33 – 1.47	
	2012-10-08	38.5	1.34	21.0
	2012-10-16	39.1	1.34	21.0
	2012-10-17	39.4	1.37	21.0

Body tissue simulant measurements

f [MHz]	Description	Dielectric Parameters		Temp [°C]
		ϵ_r	σ [S/m]	
835	Recommended value	55.2	0.97	
	$\pm 5\%$ window	52.4 – 58.0	0.92 – 1.02	
	2012-10-09	53.0	1.01	21.0
836	Recommended value	55.2	0.97	
	$\pm 5\%$ window	52.4 – 58.0	0.92 – 1.02	
	2012-10-09	53.0	1.00	21.0
	2012-10-17	53.4	1.01	21.0
1880	Recommended value	53.3	1.52	
	$\pm 5\%$ window	50.6 – 56.0	1.44 – 1.60	
	2012-10-09	51.1	1.50	21.0
	2012-10-10	51.0	1.50	21.0
	2012-10-15	51.1	1.50	21.0
	2012-10-17	52.1	1.49	21.0
	2012-10-18	51.9	1.49	21.0

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

5. DESCRIPTION OF THE TEST PROCEDURE

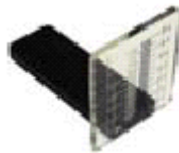
5.1 Device Holder

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” position on the left hand side of the phantom.

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

5.2.2 Body Worn Configuration

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

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

5.2.3 Wireless Router Configuration

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

5.3 Scan Procedures

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

5.4 SAR Averaging Methods

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

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

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

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

6. MEASUREMENT UNCERTAINTY

Table 6.1 – Measurement uncertainty evaluation

Uncertainty Component	Section in IEEE 1528	Tol. (%)	Prob Dist	Div	C_i	$C_i \cdot U_i$ (%)	V_i
Measurement System							
Probe Calibration	E2.1	± 6.55	N	1	1	± 6.55	∞
Axial Isotropy	E2.2	± 4.7	R	$\sqrt{3}$	$(1-c_p)^{1/2}$	± 1.9	∞
Hemispherical Isotropy	E2.2	± 9.6	R	$\sqrt{3}$	$(c_p)^{1/2}$	± 3.9	∞
Boundary Effect	E2.3	± 1.0	R	$\sqrt{3}$	1	± 0.6	∞
Linearity	E2.4	± 4.7	R	$\sqrt{3}$	1	± 2.7	∞
System Detection Limits	E2.5	± 1.0	R	$\sqrt{3}$	1	± 0.6	∞
Readout Electronics	E2.6	± 1.0	N	1	1	± 1.0	∞
Response Time	E2.7	± 0.8	R	$\sqrt{3}$	1	± 0.5	∞
Integration Time	E2.8	± 2.6	R	$\sqrt{3}$	1	± 1.5	∞
RF Ambient Conditions - Noise	E6.1	± 3.0	R	$\sqrt{3}$	1	± 1.7	∞
RF Ambient Conditions - Reflections	E6.1	± 3.0	R	$\sqrt{3}$	1	± 1.7	∞
Probe Positioner Mechanical Tolerance	E6.2	± 0.4	R	$\sqrt{3}$	1	± 0.2	∞
Probe Positioning with respect to Phantom Shell	E6.3	± 2.9	R	$\sqrt{3}$	1	± 1.7	∞
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	E5	± 3.9	R	$\sqrt{3}$	1	± 2.3	∞
Test sample Related							
Test Sample Positioning	E4.2	± 6.0	N	1	1	± 6.0	11
Device Holder Uncertainty	E4.1	± 5.0	N	1	1	± 5.0	7
Output Power Variation - SAR drift measurement	6.6.3	± 0.0	R	$\sqrt{3}$	1	± 0.0	∞
Phantom and Tissue Parameters							
Phantom Uncertainty (shape and thickness tolerances)	E3.1	± 4.0	R	$\sqrt{3}$	1	± 2.3	∞
Conductivity Target - tolerance	E3.2	± 5.0	R	$\sqrt{3}$	0.64	± 1.8	∞
Conductivity - measurement uncertainty	E3.3	± 5.5	N	1	0.64	± 3.5	5
Permittivity Target - tolerance	E3.2	± 5.0	R	$\sqrt{3}$	0.6	± 1.7	∞
Permittivity - measurement uncertainty	E3.3	± 2.9	N	1	0.6	± 1.7	5
Combined Standard Uncertainty			RSS			± 13.2	116
Coverage Factor for 95%			k=2				
Expanded Uncertainty						± 26.4	

7. RESULTS

7.1 The measured Head SAR values for the test device

LTE700 (Band17) Head SAR results**

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 23780 709.0 MHz	Ch 23790 710.0 MHz	Ch 23800 711.0 MHz
QPSK	Conducted Average Power		-	21.99 dBm	-
10MHz Ch BW 100% RB CC-3058	Left	Cheek	-	0.159	-
		Tilt	-	0.078	-
	Right	Cheek	-	0.109	-
		Tilt	-	0.064	-
QPSK	Conducted Average Power		-	22.31 dBm	-
10MHz Ch BW 50% RB 50% offset CC-3058	Left	Cheek	-	0.177	-
		Tilt	-	0.088	-
	Right	Cheek	-	0.121	-
		Tilt	-	0.073	-
QPSK	Conducted Average Power		-	23.11 dBm	-
10MHz Ch BW 1 RB 50% offset CC-3058	Left	Cheek	-	0.223	-
		Tilt	-	0.111	-
	Right	Cheek	-	0.154	-
		Tilt	-	0.091	-
QPSK	Conducted Average Power		-	22.96 dBm	-
10MHz Ch BW 1 RB 100% offset CC-3058	Left	Cheek	-	0.177	-
		Tilt	-	0.089	-
	Right	Cheek	-	0.122	-
		Tilt	-	0.073	-
QPSK	Conducted Average Power		23.30 dBm	23.05 dBm	23.02 dBm
10MHz Ch BW 1 RB 0% offset CC-3058	Left	Cheek	0.231	0.226	0.228
		Tilt	-	0.119	-
	Right	Cheek	-	0.159	-
		Tilt	-	0.090	-
16QAM	Conducted Average Power		-	21.03 dBm	-
10MHz Ch BW 100% RB CC-3058	Left	Cheek	-	0.131	-
		Tilt	-	0.068	-
	Right	Cheek	-	0.087	-
		Tilt	-	0.055	-

(Table continues)

(Table continues)

16QAM	Conducted Average Power		-	21.56 dBm	-
10MHz Ch BW 50% RB 50% offset CC-3058	Left	Cheek	-	0.150	-
		Tilt	-	0.078	-
	Right	Cheek	-	0.100	-
		Tilt	-	0.063	-
16QAM	Conducted Average Power		-	22.33 dBm	-
10MHz Ch BW 1 RB 50% offset CC-3058	Left	Cheek	-	0.177	-
		Tilt	-	0.072	-
	Right	Cheek	-	0.121	-
		Tilt	-	0.075	-
16QAM	Conducted Average Power		-	22.23 dBm	-
10MHz Ch BW 1 RB 100% offset CC-3058	Left	Cheek	-	0.137	-
		Tilt	-	0.071	-
	Right	Cheek	-	0.092	-
		Tilt	-	0.058	-
16QAM	Conducted Average Power		-	22.33 dBm	-
10MHz Ch BW 1 RB 0% offset CC-3058	Left	Cheek	-	0.176	-
		Tilt	-	0.084	-
	Right	Cheek	-	0.122	-
		Tilt	-	0.074	-
QPSK 10MHz Ch BW 1 RB 0% offset CC-3401	Left Cheek		0.197	0.217	0.222

5MHz Channel Bandwidth has a maximum time-averaged output power < 0.5dB above the maximum time-averaged output power in 10MHz Channel Bandwidth. Therefore, according to KDB 941225 D05 SAR for LTE Devices v01, no SAR testing was required for the 5MHz Channel Bandwidth as no SAR value for 10MHz Channel Bandwidth exceeded 1.45W/kg.

850MHz Head SAR results

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
GSM**	Conducted Average Power		-	32.20 dBm	-
CC-3058	Left	Cheek	-	0.264	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
2-slot GPRS**	Conducted Average Power		31.96 dBm	32.19 dBm	32.30 dBm
CC-3058	Left	Cheek	0.461	0.489	0.568
		Tilt	-	0.305	-
	Right	Cheek	-	0.417	-
		Tilt	-	0.304	-
2-slot 8PSK EGPRS**	Conducted Average Power		-	-	27.16 dBm
CC-3058	Left	Cheek	-	-	0.177
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz
WCDMA	Maximum Output Power		23.50 dBm	23.49 dBm	23.41 dBm
CC-3058	Left	Cheek	0.298	0.329	0.340
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
2-slot GPRS** CC-3401	Left Cheek		0.409	0.465	0.491

LTE850 (Band5) Head SAR results

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 20450 829.0 MHz	Ch 20525 836.5 MHz	Ch 20600 844.0 MHz
QPSK	Conducted Average Power		-	21.82 dBm	-
10MHz Ch BW 100% RB CC-3058	Left	Cheek	-	0.230	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
QPSK	Conducted Average Power		22.07 dBm	-	-
10MHz Ch BW 50% RB 50% offset CC-3058	Left	Cheek	0.236	-	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
QPSK	Conducted Average Power		22.87 dBm	-	-
10MHz Ch BW 1 RB 50% offset CC-3058	Left	Cheek	0.276	-	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
QPSK	Conducted Average Power		22.58 dBm	22.54 dBm	22.23 dBm
10MHz Ch BW 1 RB 100% offset CC-3058	Left	Cheek	0.287	0.245	0.271
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
QPSK	Conducted Average Power		22.79 dBm	22.46 dBm	22.44 dBm
10MHz Ch BW 1 RB 0% offset CC-3058	Left	Cheek	0.243	0.293	0.242
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
16QAM	Conducted Average Power		-	20.85 dBm	-
10MHz Ch BW 100% RB CC-3058	Left	Cheek	-	0.224	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-

(Table continues)

(Table continues)

16QAM	Conducted Average Power		20.98 dBm	-	-
10MHz Ch BW 50% RB 50% offset CC-3058	Left	Cheek	0.185	-	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
16QAM	Conducted Average Power		21.96 dBm	-	-
10MHz Ch BW 1 RB 50% offset CC-3058	Left	Cheek	0.199	-	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
16QAM	Conducted Average Power		-	22.00 dBm	-
10MHz Ch BW 1 RB 100% offset CC-3058	Left	Cheek	-	0.191	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
16QAM	Conducted Average Power		-	21.93 dBm	-
10MHz Ch BW 1 RB 0% offset CC-3058	Left	Cheek	-	0.233	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-

Each of the available smaller Channel Bandwidths (1.4, 3.0 and 5.0MHz) has a maximum time-averaged output power < 0.5dB above the maximum time-averaged output power in 10MHz Channel Bandwidth. Therefore, according to KDB 941225 D05 SAR for LTE Devices v01, no SAR testing was required in any of the smaller Channel Bandwidths as no SAR value for 10MHz Channel Bandwidth exceeded 1.45W/kg.

1700/2100 Head SAR results**

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 1312 1712.4 MHz	Ch 1412 1732.4 MHz	Ch 1513 1752.6 MHz
WCDMA	Maximum Output Power		23.10 dBm	23.20 dBm	23.20 dBm
CC-3058	Left	Cheek	0.498	0.585	0.705
		Tilt	-	0.202	-
	Right	Cheek	-	0.336	-
		Tilt	-	0.236	-
WCDMA CC-3401	Left Cheek		0.488	0.623	0.678

LTE1700/2100 (Band4) Head SAR results**

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 20050 1720.0 MHz	Ch 20175 1732.5 MHz	Ch 20300 1745.0 MHz
QPSK	Conducted Average Power		-	22.48 dBm	-
20MHz Ch BW 100% RB CC-3058	Left	Cheek	-	0.476	-
		Tilt	-	0.175	-
	Right	Cheek	-	0.264	-
		Tilt	-	0.188	-
QPSK	Conducted Average Power		-	22.50 dBm	-
20MHz Ch BW 50% RB 50% offset CC-3058	Left	Cheek	-	0.477	-
		Tilt	-	0.179	-
	Right	Cheek	-	0.263	-
		Tilt	-	0.191	-
QPSK	Conducted Average Power		23.44 dBm	23.31 dBm	23.19 dBm
20MHz Ch BW 1 RB 50% offset CC-3058	Left	Cheek	0.477	0.576	0.480
		Tilt		0.199	-
	Right	Cheek	-	0.311	-
		Tilt	-	0.232	-
QPSK	Conducted Average Power		-	22.86 dBm	-
20MHz Ch BW 1 RB 100% offset CC-3058	Left	Cheek	-	0.562	-
		Tilt	-	0.190	-
	Right	Cheek	-	0.303	-
		Tilt	-	0.217	-
QPSK	Conducted Average Power		-	23.45 dBm	-
20MHz Ch BW 1 RB 0% offset CC-3058	Left	Cheek	-	0.550	-
		Tilt	-	0.203	-
	Right	Cheek	-	0.309	-
		Tilt	-	0.242	-
16QAM	Conducted Average Power		-	21.53 dBm	-
20MHz Ch BW 100% RB CC-3058	Left	Cheek	-	0.363	-
		Tilt	-	0.132	-
	Right	Cheek	-	0.207	-
		Tilt	-	0.153	-

(Table continues)

(Table continues)

16QAM	Conducted Average Power		-	21.55 dBm	-
20MHz Ch BW 50% RB 50% offset CC-3058	Left	Cheek	-	0.365	-
		Tilt	-	0.131	-
	Right	Cheek	-	0.218	-
		Tilt	-	0.154	-
16QAM	Conducted Average Power		-	22.65 dBm	-
20MHz Ch BW 1 RB 50% offset CC-3058	Left	Cheek	-	0.467	-
		Tilt	-	0.160	-
	Right	Cheek	-	0.254	-
		Tilt	-	0.176	-
16QAM	Conducted Average Power		-	22.51 dBm	-
20MHz Ch BW 1 RB 100% offset CC-3058	Left	Cheek	-	0.448	-
		Tilt	-	0.163	-
	Right	Cheek	-	0.251	-
		Tilt	-	0.171	-
16QAM	Conducted Average Power		-	22.34 dBm	-
20MHz Ch BW 1 RB 0% offset CC-3058	Left	Cheek	-	0.448	-
		Tilt	-	0.172	-
	Right	Cheek	-	0.245	-
		Tilt	-	0.181	-
QPSK 20MHz Ch BW 1 RB 50% offset CC-3401	Left Cheek		0.499	0.578	0.540

Each of the available smaller Channel Bandwidths (1.4, 3.0, 5.0, 10.0 and 15.0MHz) has a maximum time-averaged output power < 0.5dB above the maximum time-averaged output power in 20MHz Channel Bandwidth. Therefore, according to KDB 941225 D05 SAR for LTE Devices v01, no SAR testing was required in any of the smaller Channel Bandwidths as no SAR value for 10MHz Channel Bandwidth exceeded 1.45W/kg.

1900MHz Head SAR results

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz
GSM**	Conducted Average Power		-	30.14 dBm	-
CC-3058	Left	Cheek	-	0.530	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
2-slot GPRS**	Conducted Average Power		30.01 dBm	30.10 dBm	29.99 dBm
CC-3058	Left	Cheek	0.942	0.943	0.943
		Tilt	-	0.338	-
	Right	Cheek	-	0.655	-
		Tilt	-	0.368	-
2-slot 8PSK EGPRS**	Conducted Average Power		-	26.38 dBm	-
CC-3058	Left	Cheek	-	0.458	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz
WCDMA	Maximum Output Power		23.78 dBm	23.79 dBm	23.59 dBm
CC-3401	Left	Cheek	0.933	0.877	0.919
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
2-slot GPRS** CC-3401	Left Cheek		0.959	0.970	0.919

LTE1900 (Band2) Head SAR results

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 18700 1860.0 MHz	Ch 18900 1880.0 MHz	Ch 19100 1900.0 MHz
QPSK	Conducted Average Power		23.09 dBm	22.57 dBm	22.8 dBm
20MHz Ch BW 100% RB CC-3401	Left	Cheek	0.793	0.778	0.775
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
QPSK	Conducted Average Power		23.06 dBm	22.49 dBm	22.67 dBm
20MHz Ch BW 50% RB 50% offset CC-3401	Left	Cheek	0.791	0.776	0.714
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
QPSK	Conducted Average Power		23.88 dBm	23.00 dBm	23.23 dBm
20MHz Ch BW 1 RB 50% offset CC-3401	Left	Cheek	0.955	0.888	0.835
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
QPSK	Conducted Average Power		23.05 dBm	22.99 dBm	23.81 dBm
20MHz Ch BW 1 RB 100% offset CC-3401	Left	Cheek	0.819	0.998	1.17
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
QPSK	Conducted Average Power		23.09 dBm	22.96 dBm	22.91 dBm
20MHz Ch BW 1 RB 0% offset CC-3401	Left	Cheek	0.935	0.793	0.973
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
16QAM	Conducted Average Power		22.05 dBm	-	-
20MHz Ch BW 100% RB CC-3401	Left	Cheek	0.696	-	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-

(Table continues)

(Table continues)

16QAM	Conducted Average Power		22.09 dBm	-	-
20MHz Ch BW 50% RB 50% offset CC-3401	Left	Cheek	0.708	-	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
16QAM	Conducted Average Power		23.13 dBm	22.38 dBm	22.74 dBm
20MHz Ch BW 1 RB 50% offset CC-3401	Left	Cheek	0.799	0.736	0.707
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
16QAM	Conducted Average Power		22.31 dBm	22.45 dBm	23.15 dBm
20MHz Ch BW 1 RB 100% offset CC-3401	Left	Cheek	0.614	0.802	0.878
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-
16QAM	Conducted Average Power		22.45 dBm	-	-
20MHz Ch BW 1 RB 0% offset CC-3401	Left	Cheek	0.764	-	-
		Tilt	-	-	-
	Right	Cheek	-	-	-
		Tilt	-	-	-

Each of the available smaller Channel Bandwidths (1.4, 3.0, 5.0, 10.0 and 15.0MHz) has a maximum time-averaged output power < 0.5dB above the maximum time-averaged output power in 20MHz Channel Bandwidth. Therefore, according to KDB 941225 D05 SAR for LTE Devices v01, no SAR testing was required in any of the smaller Channel Bandwidths as no SAR value for 20MHz Channel Bandwidth exceeded 1.45W/kg.

2450MHz Head SAR results**

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 1 2412.0 MHz	Ch 6 2437.0 MHz	Ch 11 2462.0 MHz
WLAN b-mode	Maximum Output Power		15.60 dBm	16.22 dBm	15.54 dBm
DSSS 11Mbps CC-3058	Left	Cheek	0.506	0.668	0.540
		Tilt	-	0.451	-
	Right	Cheek	-	0.340	-
		Tilt	-	0.338	-
WLAN b-mode DSSS 11Mbps CC-3401	Left Cheek		0.445	0.592	0.509

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

Mode	Test configuration		SAR, averaged over 1g (W/kg)			
			Ch 36 5180.0 MHz	Ch 44 5220.0 MHz	Ch 52 5260.0 MHz	Ch 64 5320.0 MHz
WLAN a-mode	Maximum Output Power		13.22 dBm	13.06 dBm	13.01 dBm	12.85 dBm
OFDM 9 Mbps CC-3058	Left	Cheek	0.732	0.754	0.837	0.845
		Tilt	-	0.532	-	0.578
	Right	Cheek	-	0.335	-	0.358
		Tilt	-	0.299	-	0.316
WLAN a-mode OFDM 9 Mbps CC-3401	Left Cheek		-	0.746	-	0.772

5000MHz Head SAR results
5470–5725 MHz**

Mode	Test configuration		SAR, averaged over 1g (W/kg)			
			Ch 108 5540.0 MHz	Ch 112 5560.0 MHz	Ch 120 5600.0 MHz	Ch 136 5680.0 MHz
WLAN a-mode	Maximum Output Power		13.02 dBm	12.89 dBm	12.86 dBm	12.78 dBm
OFDM 9 Mbps CC-3058	Left	Cheek	0.422	0.370	0.259	0.136
		Tilt	0.338	-	-	-
	Right	Cheek	0.226	-	-	-
		Tilt	0.189	-	-	-
WLAN a-mode OFDM 9 Mbps CC-3401	Left Cheek		0.344	-	-	-

5000MHz Head SAR results
5725–5850 MHz**

Mode	Test configuration		SAR, averaged over 1g (W/kg)		
			Ch 153 5765.0 MHz	Ch 157 5785.0 MHz	Ch 165 5825.0 MHz
WLAN a-mode	Maximum Output Power		12.72 dBm	12.77 dBm	12.64 dBm
OFDM 9 Mbps CC-3058	Left	Cheek	0.096	0.082	0.089
		Tilt	0.079	-	-
	Right	Cheek	0.047	-	-
		Tilt	0.037	-	-
WLAN a-mode OFDM 9 Mbps CC-3401	Left Cheek		0.082	-	-

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

Test configuration	Max. 1g SAR results										
	WLAN 2450**	WLAN 5000**	LTE 700**	2-slot GPRS850**	WCDMA 850	LTE 850	WCDMA 1700/2100**	LTE 1700/2100**	2-slot GPRS 1900**	WCDMA 1900	LTE 1900
Head: Left, Cheek	0.668	0.845	0.231	0.568	0.340	0.293	0.705	0.578	0.970	0.933	1.17
Head: Left, Tilt	0.451	0.578	0.119	0.305	-	-	0.202	0.203	0.338	-	-
Head: Right, Cheek	0.340	0.358	0.159	0.417	-	-	0.336	0.311	0.655	-	-
Head: Right, Tilt	0.338	0.316	0.091	0.304	-	-	0.236	0.242	0.368	-	-

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

Test configuration	Max. 1g SAR results								
	LTE 700 + WLAN 2450**	2-slot GPRS850 + WLAN 2450**	WCDMA 850 + WLAN 2450	LTE 850 + WLAN 2450	WCDMA 1700/ 2100 + WLAN 2450**	LTE 1700/ 2100 + WLAN 2450**	2-slot GPRS 1900 + WLAN 2450**	WCDMA 1900 + WLAN 2450	LTE 1900 + WLAN 2450
Head: Left, Cheek	0.899	1.236	1.008	0.961	1.373	1.246	1.638	1.601	1.838
Head: Left, Tilt	0.570	0.756	-	-	0.653	0.654	0.789	-	-
Head: Right, Cheek	0.499	0.757	-	-	0.676	0.651	0.995	-	-
Head: Right, Tilt	0.429	0.642	-	-	0.574	0.580	0.706	-	-
Test configuration	Max. 1g SAR results								
	LTE 700 + WLAN 5000**	2-slot GPRS850 + WLAN 5000**	WCDMA 850 + WLAN 5000	LTE 850 + WLAN 5000	WCDMA 1700/ 2100 + WLAN 5000**	LTE 1700/ 2100 + WLAN 5000**	2-slot GPRS 1900 + WLAN 5000**	WCDMA 1900 + WLAN 5000	LTE 1900 + WLAN 5000
Head: Left, Cheek	1.076	1.413	1.185	1.138	1.550	1.423	1.815	1.778	2.015
Head: Left, Tilt	0.697	0.883	-	-	0.780	0.781	0.916	-	-
Head: Right, Cheek	0.517	0.775	-	-	0.694	0.669	1.013	-	-
Head: Right, Tilt	0.407	0.620	-	-	0.552	0.558	0.684	-	-

The 2-slot GPRS1900+WLAN2450 Simultaneous Head SAR value for Left Cheek test configuration is 1.638W/kg which, when scaled up by 12%, becomes 1.835W/kg i.e. > 1.6W/kg. However, as the separation distance between the SAR peaks is 7.42 cm, the Antenna Pair SAR to Peak Separation Ratio is $1.835/7.42 = 0.25$ i.e. < 0.3, hence Simultaneous Transmission Procedures as described in KDB648474 are not required.

The WCDMA1900+WLAN2450 Simultaneous Head SAR value for Left Cheek test configuration is 1.601W/kg which, when scaled up by 12%, becomes 1.793W/kg i.e. > 1.6W/kg. However, as the separation distance between the SAR peaks is 7.02 cm, the Antenna Pair SAR to Peak Separation Ratio is $1.793/7.02 = 0.26$ i.e. < 0.3, hence Simultaneous Transmission Procedures as described in KDB648474 are not required.

The LTE1900+WLAN2450 Simultaneous Head SAR value for Left Cheek test configuration is 1.838W/kg which, when scaled up by 12%, becomes 2.059W/kg i.e. > 1.6W/kg. However, as the separation distance between the SAR peaks is 7.02 cm, the Antenna Pair SAR to Peak Separation Ratio is $2.059/7.02 = 0.29$ i.e. < 0.3, hence Simultaneous Transmission Procedures as described in KDB648474 are not required.

The WCDMA1700/2100+WLAN5000 Simultaneous Head SAR value for Left Cheek test configuration is 1.550W/kg which, when scaled up by 12%, becomes 1.736W/kg i.e. > 1.6W/kg. However, as the separation distance between the SAR peaks is 8.09 cm, the Antenna Pair SAR to Peak Separation Ratio is $1.736/8.09 = 0.21$ i.e. < 0.3, hence Simultaneous Transmission Procedures as described in KDB648474 are not required.

The 2-slot GPRS1900+WLAN5000 Simultaneous Head SAR value for Left Cheek test configuration is 1.815W/kg which, when scaled up by 12%, becomes 2.033W/kg i.e. > 1.6W/kg. However, as the separation distance between the SAR peaks is 8.28 cm, the Antenna Pair SAR to Peak Separation Ratio is $2.033/8.28 = 0.25$ i.e. < 0.3, hence Simultaneous Transmission Procedures as described in KDB648474 are not required.

The WCDMA1900+WLAN5000 Simultaneous Head SAR value for Left Cheek test configuration is 1.778W/kg which, when scaled up by 12%, becomes 1.991W/kg i.e. > 1.6W/kg. However, as the separation distance between the SAR peaks is 8.01 cm, the Antenna Pair SAR to Peak Separation Ratio is $1.991/8.01 = 0.25$ i.e. < 0.3, hence Simultaneous Transmission Procedures as described in KDB648474 are not required.

The LTE1900+WLAN5000 Simultaneous Head SAR value for Left Cheek test configuration is 2.015W/kg which, when scaled up by 12%, becomes 2.257W/kg i.e. > 1.6W/kg. However, as the separation distance between the SAR peaks is 8.01 cm, the Antenna Pair SAR to Peak Separation Ratio is $2.257/8.01 = 0.28$ i.e. < 0.3, hence Simultaneous Transmission Procedures as described in KDB648474 are not required.

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	Max. 1g SAR results								
	LTE 700 + WLAN 2450**	2-slot GPRS850 + WLAN 2450**	WCDMA 850 + WLAN 2450	LTE 850 + WLAN 2450	WCDMA 1700/ 2100 + WLAN 2450**	LTE 1700/ 2100 + WLAN 2450**	2-slot GPRS 1900 + WLAN 2450**	WCDMA 1900 + WLAN 2450	LTE 1900 + WLAN 2450
Head: Left, Cheek	0.706	0.747	0.713	0.708	0.780	0.770	1.05	0.996	1.22
Head: Left, Tilt	-	-	-	-	-	-	-	-	-
Head: Right, Cheek	-	-	-	-	-	-	-	-	-
Head: Right, Tilt	-	-	-	-	-	-	-	-	-
Test configuration	Max. 1g SAR results								
	LTE 700 + WLAN 5000**	2-slot GPRS850 + WLAN 5000**	WCDMA 850 + WLAN 5000	LTE 850 + WLAN 5000	WCDMA 1700/ 2100 + WLAN 5000**	LTE 1700/ 2100 + WLAN 5000**	2-slot GPRS 1900 + WLAN 5000**	WCDMA 1900 + WLAN 5000	LTE 1900 + WLAN 5000
Head: Left, Cheek	0.818	0.828	0.802	0.798	0.827	0.816	1.01	0.957	1.18
Head: Left, Tilt	-	-	-	-	-	-	-	-	-
Head: Right, Cheek	-	-	-	-	-	-	-	-	-
Head: Right, Tilt	-	-	-	-	-	-	-	-	-

**SAR data taken from FCC_RM-824_03.

Some of the Combined SAR values in the above table are less than the maximum SAR values for the contributing cellular or WLAN 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 or WLAN 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.1.

7.2 The measured Body SAR values for the test device

LTE700 (Band17) Body SAR results**

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 23780 709.0 MHz	Ch 23790 710.0 MHz	Ch 23800 711.0 MHz
QPSK	Conducted Average Power		-	21.99 dBm	-
10MHz Ch BW 100% RB CC-3058	Back facing phantom	Without headset	-	0.154	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
QPSK	Conducted Average Power		-	22.31 dBm	-
10MHz Ch BW 50% RB 50% offset CC-3058	Back facing phantom	Without headset	-	0.170	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
QPSK	Conducted Average Power		-	23.11 dBm	-
10MHz Ch BW 1RB 50% offset CC-3058	Back facing phantom	Without headset	-	0.210	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
QPSK	Conducted Average Power		-	22.96 dBm	-
10MHz Ch BW 1RB 100% offset CC-3058	Back facing phantom	Without headset	-	0.172	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
QPSK	Conducted Average Power		23.30 dBm	23.05 dBm	23.02 dBm
10MHz Ch BW 1RB 0% offset CC-3058	Back facing phantom	Without headset	0.222	0.230	0.224
		Headset WH-208	-	0.195	-
	Display facing phantom	Without headset	-	0.172	-
		Headset WH-208	-	0.149	-

(Table continues)

(Table continues)

16QAM	Conducted Average Power		-	21.03 dBm	-
10MHz Ch BW 100% RB CC-3058	Back facing phantom	Without headset	-	0.126	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
16QAM	Conducted Average Power		-	21.56 dBm	-
10MHz Ch BW 50% RB 50% offset CC-3058	Back facing phantom	Without headset	-	0.144	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
16QAM	Conducted Average Power		-	22.33 dBm	-
10MHz Ch BW 1RB 50% offset CC-3058	Back facing phantom	Without headset	-	0.168	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
16QAM	Conducted Average Power		-	22.23 dBm	-
10MHz Ch BW 1RB 100% offset CC-3058	Back facing phantom	Without headset	-	0.130	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
16QAM	Conducted Average Power		-	22.33 dBm	-
10MHz Ch BW 1RB 0% offset CC-3058	Back facing phantom	Without headset	-	0.168	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
QPSK 10MHz Ch BW 1RB 0% offset CC-3401	Back facing Phantom, Without headset		0.175	0.179	0.207

850MHz Body SAR results

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
2-slot GPRS**		Conducted Average Power	31.96 dBm	32.19 dBm	32.30 dBm
CC-3058	Back facing phantom	Without headset	0.522	0.548	0.606
		Headset WH-208	-	0.399	-
	Display facing phantom	Without headset	-	0.437	-
		Headset WH-208	-	0.374	-
Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz
WCDMA		Maximum Output Power	23.50 dBm	23.49 dBm	23.41 dBm
CC-3058	Back facing phantom	Without headset	0.344	0.358	0.378
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
2-slot GPRS** CC-3401	Back facing Phantom, Without headset		0.402	0.439	0.471

LTE850 (Band5) Body SAR results

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 20450 829.0 MHz	Ch 20525 836.5 MHz	Ch 20600 844.0 MHz
QPSK	Conducted Average Power		-	21.82 dBm	-
10MHz Ch BW 100% RB CC-3058	Back facing phantom	Without headset	-	0.251	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
QPSK	Conducted Average Power		22.07 dBm	-	-
10MHz Ch BW 50% RB 50% offset CC-3058	Back facing phantom	Without headset	0.263	-	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
QPSK	Conducted Average Power		22.87 dBm	22.52 dBm	22.54 dBm
10MHz Ch BW 1RB 50% offset CC-3058	Back facing phantom	Without headset	0.311	0.298	0.332
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
QPSK	Conducted Average Power		22.58 dBm	-	-
10MHz Ch BW 1RB 100% offset CC-3058	Back facing phantom	Without headset	0.299	-	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
QPSK	Conducted Average Power		22.79 dBm	22.46 dBm	22.44 dBm
10MHz Ch BW 1RB 0% offset CC-3058	Back facing phantom	Without headset	0.281	0.311	0.271
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
16QAM	Conducted Average Power		-	20.85 dBm	-
10MHz Ch BW 100% RB CC-3058	Back facing phantom	Without headset	-	0.203	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-

(Table continues)

(Table continues)

16QAM	Conducted Average Power		20.98 dBm	-	-
10MHz Ch BW 50% RB 50% offset CC-3058	Back facing phantom	Without headset	0.215	-	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
16QAM	Conducted Average Power		21.96 dBm	-	-
10MHz Ch BW 1RB 50% offset CC-3058	Back facing phantom	Without headset	0.232	-	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
16QAM	Conducted Average Power		-	22.00 dBm	-
10MHz Ch BW 1RB 100% offset CC-3058	Back facing phantom	Without headset	-	0.219	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
16QAM	Conducted Average Power		-	21.93 dBm	-
10MHz Ch BW 1RB 0% offset CC-3058	Back facing phantom	Without headset	-	0.256	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-

1700/2100 Body SAR results**

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 1312 1712.4 MHz	Ch 1412 1732.4 MHz	Ch 1513 1752.6 MHz
WCDMA		Maximum Output Power	23.10 dBm	23.20 dBm	23.20 dBm
CC-3058	Back facing phantom	Without headset	-	0.359	-
		Headset WH-208	0.332	0.371	0.351
	Display facing phantom	Without headset	-	0.369	-
		Headset WH-208	-	0.298	-
WCDMA CC-3401	Back facing Phantom, Headset WH-208		0.290	0.339	0.325

LTE1700/2100 (Band4) Body SAR results**

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 20050 1720.0 MHz	Ch 20175 1732.5 MHz	Ch 20300 1745.0 MHz
QPSK	Conducted Average Power		-	22.48 dBm	-
20MHz Ch BW 100% RB CC-3058	Back facing phantom	Without headset	-	0.315	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
QPSK	Conducted Average Power		-	22.50 dBm	-
20MHz Ch BW 50% RB 50% offset CC-3058	Back facing phantom	Without headset	-	0.322	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
QPSK	Conducted Average Power		-	23.31 dBm	-
20MHz Ch BW 1 RB 50% offset CC-3058	Back facing phantom	Without headset	-	0.390	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
QPSK	Conducted Average Power		-	22.86 dBm	-
20MHz Ch BW 1 RB 100% offset CC-3058	Back facing phantom	Without headset	-	0.344	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
QPSK	Conducted Average Power		23.53 dBm	23.45 dBm	23.10 dBm
20MHz Ch BW 1 RB 0% offset CC-3058	Back facing phantom	Without headset	0.306	0.435	0.364
		Headset WH-208	-	0.429	-
	Display facing phantom	Without headset	-	0.381	-
		Headset WH-208	-	0.321	-

(Table continues)

(Table continues)

16QAM	Conducted Average Power		-	21.53 dBm	-
20MHz Ch BW 100% RB CC-3058	Back facing phantom	Without headset	-	0.265	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
16QAM	Conducted Average Power		-	21.55 dBm	-
20MHz Ch BW 50% RB 50% offset CC-3058	Back facing phantom	Without headset	-	0.270	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
16QAM	Conducted Average Power		-	22.65 dBm	-
20MHz Ch BW 1 RB 50% offset CC-3058	Back facing phantom	Without headset	-	0.318	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
16QAM	Conducted Average Power		-	22.51 dBm	-
20MHz Ch BW 1 RB 100% offset CC-3058	Back facing phantom	Without headset	-	0.275	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
16QAM	Conducted Average Power		-	22.34 dBm	-
20MHz Ch BW 1 RB 0% offset CC-3058	Back facing phantom	Without headset	-	0.335	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
QPSK 20MHz Ch BW 1 RB 0% offset CC-3401	Back facing Phantom, Without headset		0.223	0.301	0.269

1900MHz Body SAR results

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz
2-slot GPRS**	Conducted Average Power		30.01 dBm	30.10 dBm	29.99 dBm
CC-3058	Back facing phantom	Without headset	-	0.430	-
		Headset WH-208	-	0.488	-
	Display facing phantom	Without headset	0.501	0.537	0.490
		Headset WH-208	-	0.491	-
Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz
WCDMA	Maximum Output Power		23.78 dBm	23.79 dBm	23.59 dBm
CC-3401	Back facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	0.521	0.455	0.421
		Headset WH-208	-	-	-
2-slot GPRS** CC-3401	Display facing phantom, Without headset		0.520	0.484	0.465

LTE1900 (Band2) Body SAR results

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 18700 1860.0 MHz	Ch 18900 1880.0 MHz	Ch 19100 1900.0 MHz
QPSK	Conducted Average Power		23.09 dBm	-	-
20MHz Ch BW 100% RB CC-3058	Back facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	0.492	-	-
		Headset WH-208	-	-	-
QPSK	Conducted Average Power		23.06 dBm	-	-
20MHz Ch BW 50% RB 50% offset CC-3058	Back facing phantom	Without headset	-		-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	0.482	-	-
		Headset WH-208	-	-	-
QPSK	Conducted Average Power		23.88 dBm	23.00 dBm	23.23 dBm
20MHz Ch BW 1RB 50% offset CC-3058	Back facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	0.581	0.488	0.485
		Headset WH-208	-	-	-
QPSK	Conducted Average Power		23.05 dBm	22.99 dBm	23.81 dBm
20MHz Ch BW 1RB 100% offset CC-3058	Back facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	0.404	0.474	0.556
		Headset WH-208	-	-	-
QPSK	Conducted Average Power		23.09 dBm	-	-
20MHz Ch BW 1RB 0% offset CC-3058	Back facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	0.548	-	-
		Headset WH-208	-	-	-
16QAM	Conducted Average Power		22.05 dBm	-	-
20MHz Ch BW 100% RB CC-3058	Back facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
	Display facing phantom	Without headset	0.400	-	-
		Headset WH-208	-	-	-

(Table continues)

(Table continues)

16QAM	Conducted Average Power		22.09 dBm	-	-
20MHz Ch BW 50% RB 50% offset CC-3058	Back facing phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
	Display facing Phantom	Without headset	0.399	-	-
		Headset WH-208	-	-	-
16QAM	Conducted Average Power		-	-	22.74 dBm
20MHz Ch BW 1RB 50% offset CC-3058	Back facing Phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
	Display facing Phantom	Without headset	-	-	0.380
		Headset WH-208	-	-	-
16QAM	Conducted Average Power		-	-	23.15 dBm
20MHz Ch BW 1RB 100% offset CC-3058	Back facing Phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
	Display facing Phantom	Without headset	-	-	0.444
		Headset WH-208	-	-	-
16QAM	Conducted Average Power		22.45 dBm	-	-
20MHz Ch BW 1RB 0% offset CC-3058	Back facing Phantom	Without headset	-	-	-
		Headset WH-208	-	-	-
	Display facing Phantom	Without headset	0.446	-	-
		Headset WH-208	-	-	-

2450MHz Body SAR results**

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 1 2412.0 MHz	Ch 6 2437.0 MHz	Ch 11 2462.0 MHz
WLAN b-mode	Maximum Output Power		15.60 dBm	16.22 dBm	15.54 dBm
DSSS 11Mbps CC-3058	Back facing phantom	Without headset	-	0.051	-
		Headset WH-208	-	0.038	-
	Display facing phantom	Without headset	0.054	0.070	0.054
		Headset WH-208	-	0.039	-
WLAN b-mode DSSS 11Mbps CC-3401	Display facing phantom, Without headset		0.039	0.058	0.045

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

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)			
			Ch 36 5180.0 MHz	Ch 44 5220.0 MHz	Ch 52 5260.0 MHz	Ch 64 5320.0 MHz
WLAN a-mode	Maximum Output Power		13.22 dBm	13.06 dBm	13.01 dBm	12.85 dBm
OFDM 9 Mbps CC-3058	Back facing phantom	Without headset	0.097	0.117	0.128	0.137
		Headset WH-208	-	0.139	-	0.165
	Display facing phantom	Without headset	-	0.083	-	0.092
		Headset WH-208	-	0.052	-	0.061
WLAN a-mode OFDM 9 Mbps CC-3401	Back facing phantom, Headset WH-208		-	0.196	-	0.151

5000MHz Body SAR results
5470–5725 MHz**

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)			
			Ch 108 5540.0 MHz	Ch 112 5560.0 MHz	Ch 120 5600.0 MHz	Ch 136 5680.0 MHz
WLAN a-mode	Maximum Output Power		13.02 dBm	12.89 dBm	12.86 dBm	12.78 dBm
OFDM 9 Mbps CC-3058	Back facing phantom	Without headset	0.120	0.108	0.078	0.040
		Headset WH-208	0.119	-	-	-
	Display facing phantom	Without headset	0.059	-	-	-
		Headset WH-208	0.036	-	-	-
WLAN a-mode OFDM 9 Mbps CC-3401	Back facing phantom, Without headset		0.119	-	-	-

5000MHz Body SAR results
5725–5850 MHz**

Mode	Device orientation	Test configuration	SAR, averaged over 1g (W/kg)		
			Ch 153 5765.0 MHz	Ch 157 5785.0 MHz	Ch 165 5825.0 MHz
WLAN a-mode	Maximum Output Power		12.72 dBm	12.77 dBm	12.64 dBm
OFDM 9 Mbps CC-3058	Back facing phantom	Without headset	0.022	0.024	0.025
		Headset WH-208	-	-	0.025
	Display facing phantom	Without headset	-	-	0.010
		Headset WH-208	-	-	0.009
WLAN a-mode OFDM 9 Mbps CC-3401	Back facing phantom, Without headset		-	-	0.026

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

Test configuration	Max. 1g SAR results										
	WLAN 2450**	WLAN 5000**	LTE 700**	2-slot GPRS850**	WCDMA 850	LTE 850	WCDMA 1700/2100**	LTE 1700/2100**	2-slot GPRS 1900**	WCDMA 1900	LTE 1900
Body: Back facing phantom, Without Headset	0.051	0.137	0.230	0.606	0.378	0.332	0.359	0.435	0.430	-	-
Body: Back facing phantom, Headset WH-208	0.038	0.196	0.195	0.399	-	-	0.371	0.429	0.488	-	-
Body: Display facing phantom, Without Headset	0.070	0.092	0.172	0.437	-	-	0.369	0.381	0.537	0.521	0.581
Body: Display facing phantom, Headset WH-208	0.039	0.061	0.149	0.374	-	-	0.298	0.321	0.491	-	-

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

Test configuration	Max. 1g SAR results								
	LTE 700 + WLAN 2450**	2-slot GPRS850 + WLAN 2450**	WCDMA 850 + WLAN 2450	LTE 850 + WLAN 2450	WCDMA 1700/ 2100 + WLAN 2450**	LTE 1700/ 2100 + WLAN 2450**	2-slot GPRS 1900 + WLAN 2450**	WCDMA 1900 + WLAN 2450	LTE 1900 + WLAN 2450
Body: Back facing phantom, Without Headset	0.281	0.657	0.429	0.383	0.410	0.486	0.481	-	-
Body: Back facing phantom, Headset WH-208	0.233	0.437	-	-	0.409	0.467	0.526	-	-
Body: Display facing phantom, Without Headset	0.242	0.507	-	-	0.439	0.451	0.607	0.591	0.651
Body: Display facing phantom, Headset WH-208	0.188	0.413	-	-	0.337	0.360	0.530	-	-
Test configuration	Max. 1g SAR results								
	LTE 700 + WLAN 5000**	2-slot GPRS850 + WLAN 5000**	WCDMA 850 + WLAN 5000	LTE 850 + WLAN 5000	WCDMA 1700/ 2100 + WLAN 5000**	LTE 1700/ 2100 + WLAN 5000**	2-slot GPRS 1900 + WLAN 5000**	WCDMA 1900 + WLAN 5000	LTE 1900 + WLAN 5000
Body: Back facing phantom, Without Headset	0.367	0.743	0.515	0.469	0.496	0.572	0.567	-	-
Body: Back facing phantom, Headset WH-208	0.391	0.595	-	-	0.567	0.625	0.684	-	-
Body: Display facing phantom, Without Headset	0.264	0.529	-	-	0.461	0.473	0.629	0.613	0.673
Body: Display facing phantom, Headset WH-208	0.210	0.435	-	-	0.359	0.382	0.552	-	-

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	Max. 1g SAR results								
	LTE 700 + WLAN 2450**	2-slot GPRS850 + WLAN 2450**	WCDMA 850 + WLAN 2450	LTE 850 + WLAN 2450	WCDMA 1700/ 2100 + WLAN 2450**	LTE 1700/ 2100 + WLAN 2450**	2-slot GPRS 1900 + WLAN 2450**	WCDMA 1900 + WLAN 2450	LTE 1900 + WLAN 2450
Body: Back facing phantom, Without Headset	0.237	0.634	0.401	0.363	-	0.456	-	-	-
Body: Back facing phantom, Headset WH-208	-	-	-	-	-	-	-	-	-
Body: Display facing phantom, Without Headset	-	-	-	-	0.385	-	0.553	0.533	0.577
Body: Display facing phantom, Headset WH-208	-	-	-	-	-	-	-	-	-
Test configuration	Max. 1g SAR results								
	LTE 700 + WLAN 5000**	2-slot GPRS850 + WLAN 5000**	WCDMA 850 + WLAN 5000	LTE 850 + WLAN 5000	WCDMA 1700/ 2100 + WLAN 5000**	LTE 1700/ 2100 + WLAN 5000**	2-slot GPRS 1900 + WLAN 5000**	WCDMA 1900 + WLAN 5000	LTE 1900 + WLAN 5000
Body: Back facing phantom, Without Headset	-	0.601	0.367	0.330	-	-	-	-	-
Body: Back facing phantom, Headset WH-208	0.201	-	-	-	0.371	0.435	0.485	-	-
Body: Display facing phantom, Without Headset	-	-	-	-	-	-	-	0.499	0.548
Body: Display facing phantom, Headset WH-208	-	-	-	-	-	-	-	-	-

**SAR data taken from FCC_RM-824_03.

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 or WLAN 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.2.

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

LTE700 (Band17) Wireless Router SAR results**

Mode	Device orientation	SAR, averaged over 1g (W/kg)		
		Ch 23780 709.0 MHz	Ch 23790 710.0 MHz	Ch 23800 711.0 MHz
QPSK	Conducted Average Power	-	21.99 dBm	-
10MHz Ch BW 100% RB CC-3058	Back facing phantom	-	0.222	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
QPSK	Conducted Average Power	-	22.31 dBm	-
10MHz Ch BW 50% RB 50% offset CC-3058	Back facing phantom	-	0.245	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
QPSK	Conducted Average Power	-	23.11 dBm	-
10MHz Ch BW 1RB 50% offset CC-3058	Back facing phantom	-	0.303	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-

(Table continues)

(Table continues)

QPSK	Conducted Average Power	-	22.96 dBm	-
10MHz Ch BW 1RB 100% offset CC-3058	Back facing phantom	-	0.257	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
QPSK	Conducted Average Power	23.30 dBm	23.05 dBm	23.02 dBm
10MHz Ch BW 1RB 0% offset CC-3058	Back facing phantom	0.323	0.319	0.327
	Display facing phantom	-	0.239	-
	Top edge facing phantom	-	0.015	-
	Bottom edge facing phantom	-	0.162	-
	Left edge facing phantom	-	0.213	-
	Right edge facing phantom	-	0.059	-
16QAM	Conducted Average Power	-	21.03 dBm	-
10MHz Ch BW 100% RB CC-3058	Back facing phantom	-	0.175	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
16QAM	Conducted Average Power	-	21.56 dBm	-
10MHz Ch BW 50% RB 50% offset CC-3058	Back facing phantom	-	0.197	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-

(Table continues)

(Table continues)

16QAM	Conducted Average Power	-	22.33 dBm	-
10MHz Ch BW 1RB 50% offset CC-3058	Back facing phantom	-	0.233	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
16QAM	Conducted Average Power	-	22.23 dBm	-
10MHz Ch BW 1RB 100% offset CC-3058	Back facing phantom	-	0.214	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
16QAM	Conducted Average Power	-	22.33 dBm	-
10MHz Ch BW 1RB 0% offset CC-3058	Back facing phantom	-	0.267	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
QPSK 10MHz Ch BW 1RB 0% offset CC-3401	Back facing phantom	0.271	0.274	0.287

850MHz Wireless Router SAR results

Mode	Device orientation	SAR, averaged over 1g (W/kg)		
		Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
2-slot GPRS**	Conducted Average Power	31.96 dBm	32.19 dBm	32.30 dBm
CC-3058	Back facing phantom	0.654	0.720	0.770
	Display facing phantom	-	0.487	-
	Top edge facing phantom	-	0.038	-
	Bottom edge facing phantom	-	0.278	-
	Left edge facing phantom	-	0.619	-
	Right edge facing phantom	-	0.271	-
Mode	Device orientation	Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz
WCDMA	Maximum Output Power	23.50 dBm	23.49 dBm	23.41 dBm
CC-3058	Back facing phantom	0.445	0.467	0.484
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
2-slot GPRS** CC-3401	Back facing phantom	0.530	0.577	0.626

LTE850 (Band5) Wireless Router SAR results

Mode	Device orientation	SAR, averaged over 1g (W/kg)		
		Ch 20450 829.0 MHz	Ch 20525 836.5 MHz	Ch 20600 844.0 MHz
QPSK	Conducted Average Power	-	21.82 dBm	-
10MHz Ch BW 100% RB CC-3058	Back facing phantom	-	0.331	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
QPSK	Conducted Average Power	22.07 dBm	-	-
10MHz Ch BW 50% RB 50% offset CC-3058	Back facing phantom	0.346	-	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
QPSK	Conducted Average Power	22.87 dBm	22.52 dBm	22.54 dBm
10MHz Ch BW 1RB 50% offset CC-3058	Back facing phantom	0.408	0.388	0.403
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-

(Table continues)

(Table continues)

QPSK	Conducted Average Power	22.58 dBm	-	-
10MHz Ch BW 1RB 100% offset CC-3058	Back facing phantom	0.387	-	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
QPSK	Conducted Average Power	22.79 dBm	22.46 dBm	22.44 dBm
10MHz Ch BW 1RB 0% offset CC-3058	Back facing phantom	0.367	0.372	0.311
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
16QAM	Conducted Average Power	-	20.85 dBm	-
10MHz Ch BW 100% RB CC-3058	Back facing phantom	-	0.259	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
16QAM	Conducted Average Power	20.98 dBm	-	-
10MHz Ch BW 50% RB 50% offset CC-3058	Back facing phantom	0.277	-	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-

(Table continues)

(Table continues)

16QAM	Conducted Average Power	21.96 dBm	-	-
10MHz Ch BW 1RB 50% offset CC-3058	Back facing phantom	0.310	-	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
16QAM	Conducted Average Power	-	22.00 dBm	-
10MHz Ch BW 1RB 100% offset CC-3058	Back facing phantom	-	0.324	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
16QAM	Conducted Average Power	-	21.93 dBm	-
10MHz Ch BW 1RB 0% offset CC-3058	Back facing phantom	-	0.344	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-

1700/2100 Wireless Router SAR results**

Mode	Device orientation	SAR, averaged over 1g (W/kg)		
		Ch 1312 1712.4 MHz	Ch 1412 1732.4 MHz	Ch 1513 1752.6 MHz
WCDMA	Maximum Output Power	23.10 dBm	23.20 dBm	23.20 dBm
CC-3058	Back facing phantom	0.685	0.604	0.720
	Display facing phantom	-	0.586	-
	Top edge facing phantom	-	0.050	-
	Bottom edge facing phantom	-	0.599	-
	Left edge facing phantom	-	0.339	-
	Right edge facing phantom	-	0.054	-
WCDMA CC-3401	Back facing Phantom	0.590	0.516	0.508

LTE1700/2100 (Band4) Wireless Router SAR results**

Mode	Device orientation	SAR, averaged over 1g (W/kg)		
		Ch 20050 1720.0 MHz	Ch 20175 1732.5 MHz	Ch 20300 1745.0 MHz
QPSK	Conducted Average Power	-	22.48 dBm	-
20MHz Ch BW 100% RB CC-3058	Back facing phantom	-	0.614	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
QPSK	Conducted Average Power	-	22.50 dBm	-
20MHz Ch BW 50% RB 50% offset CC-3058	Back facing phantom	-	0.620	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
QPSK	Conducted Average Power	-	23.31 dBm	-
20MHz Ch BW 1RB 50% offset CC-3058	Back facing phantom	-	0.748	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-

(Table continues)

(Table continues)

QPSK	Conducted Average Power	-	22.86 dBm	-
20MHz Ch BW 1RB 100% offset CC-3058	Back facing phantom	-	0.669	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
QPSK	Conducted Average Power	23.53 dBm	23.45 dBm	23.10 dBm
20MHz Ch BW 1RB 0% offset CC-3058	Back facing phantom	0.543	0.781	0.681
	Display facing phantom	-	0.625	-
	Top edge facing phantom	-	0.053	-
	Bottom edge facing phantom	-	0.604	-
	Left edge facing phantom	-	0.334	-
	Right edge facing phantom	-	0.069	-
16QAM	Conducted Average Power	-	23.45 dBm	-
20MHz Ch BW 100% RB CC-3058	Back facing phantom	-	0.468	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
16QAM	Conducted Average Power	-	21.55 dBm	-
20MHz Ch BW 50% RB 50% offset CC-3058	Back facing phantom	-	0.480	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-

(Table continues)

(Table continues)

16QAM	Conducted Average Power	-	22.65 dBm	-
20MHz Ch BW 1RB 50% offset CC-3058	Back facing phantom	-	0.555	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
16QAM	Conducted Average Power	-	22.51 dBm	-
20MHz Ch BW 1RB 100% offset CC-3058	Back facing phantom	-	0.494	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
16QAM	Conducted Average Power	-	22.34 dBm	-
20MHz Ch BW 1RB 0% offset CC-3058	Back facing phantom	-	0.585	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
QPSK 20MHz Ch BW 1RB 0% offset CC-3401	Back facing phantom	0.466	0.598	0.587

1900MHz Wireless Router SAR results

Mode	Device orientation	SAR, averaged over 1g (W/kg)		
		Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz
2-slot GPRS**	Conducted Average Power	30.01 dBm	30.10 dBm	29.99 dBm
CC-3058	Back facing phantom	0.975	0.957	0.968
	Display facing phantom	0.926	0.881	0.863
	Top edge facing phantom	-	0.057	-
	Bottom edge facing phantom	1.18	1.20	1.22
	Left edge facing phantom	-	0.415	-
	Right edge facing phantom	-	0.104	-
Mode	Device orientation	SAR, averaged over 1g (W/kg)		
		Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz
WCDMA	Maximum Output Power	23.78 dBm	23.79 dBm	23.59 dBm
CC-3058	Back facing phantom	-	-	-
	Display facing phantom	0.873	0.822	0.739
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
2-slot GPRS** CC-3401	Bottom edge facing phantom	1.11	0.999	0.901

LTE1900 (Band2) Wireless Router SAR results

Mode	Device orientation	SAR, averaged over 1g (W/kg)		
		Ch 18700 1860.0 MHz	Ch 18900 1880.0 MHz	Ch 19100 1900.0 MHz
QPSK	Conducted Average Power	23.09 dBm	-	-
20MHz Ch BW 100% RB CC-3058	Back facing phantom	0.778	-	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
QPSK	Conducted Average Power	23.06 dBm	-	-
20MHz Ch BW 50% RB 50% offset CC-3058	Back facing phantom	0.759	-	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
QPSK	Conducted Average Power	23.88 dBm	23.00 dBm	23.23 dBm
20MHz Ch BW 1RB 50% offset CC-3058	Back facing phantom	0.910	0.708	0.747
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-

(Table continues)

(Table continues)

QPSK	Conducted Average Power	23.05 dBm	22.99 dBm	23.81 dBm
20MHz Ch BW 1RB 100% offset CC-3058	Back facing phantom	0.717	0.886	0.972
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
QPSK	Conducted Average Power	23.09 dBm	22.96 dBm	22.91 dBm
20MHz Ch BW 1RB 0% offset CC-3058	Back facing phantom	0.809	0.664	0.716
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
16QAM	Conducted Average Power	22.05 dBm	-	-
20MHz Ch BW 100% RB CC-3058	Back facing phantom	0.727	-	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
16QAM	Conducted Average Power	22.09 dBm	-	-
20MHz Ch BW 50% RB 50% offset CC-3058	Back facing phantom	0.728	-	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-

(Table continues)

(Table continues)

16QAM	Conducted Average Power	-	-	22.74 dBm
20MHz Ch BW 1RB 50% offset CC-3058	Back facing phantom	-	-	0.698
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
16QAM	Conducted Average Power	22.31 dBm	22.45 dBm	23.15 dBm
20MHz Ch BW 1RB 100% offset CC-3058	Back facing phantom	0.614	0.749	0.835
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-
16QAM	Conducted Average Power	22.45 dBm	-	-
20MHz Ch BW 1RB 0% offset CC-3058	Back facing phantom	0.763	-	-
	Display facing phantom	-	-	-
	Top edge facing phantom	-	-	-
	Bottom edge facing phantom	-	-	-
	Left edge facing phantom	-	-	-
	Right edge facing phantom	-	-	-

2450MHz Wireless Router SAR results**

Mode	Device orientation	SAR, averaged over 1g (W/kg)		
		Ch 1 2412.0 MHz	Ch 6 2437.0 MHz	Ch 11 2462.0 MHz
WLAN b-mode	Maximum Output Power	15.60 dBm	16.22 dBm	15.54 dBm
DSSS 11Mbps CC-3058	Back facing phantom	0.089	0.128	0.094
	Display facing phantom	-	0.122	-
	Top edge facing phantom	-	0.117	-
	Bottom edge facing phantom	-	0.005	-
	Left edge facing phantom	-	0.038	-
	Right edge facing phantom	-	0.096	-
WLAN b-mode DSSS 11Mbps CC-3401	Back facing phantom	0.060	0.089	0.070

**Simultaneous transmissions: Combined Wireless Router SAR results –
Individual band Max results**

Test configuration	Max. 1g SAR results									
	WLAN 2450**	LTE 700**	2-slot GPRS850**	WCDMA 850	LTE 850	WCDMA 1700/ 2100**	LTE 1700/ 2100**	2-slot GPRS 1900**	WCDMA 1900	LTE 1900
WR: Back facing phantom	0.128	0.327	0.770	0.484	0.408	0.720	0.781	0.975	-	0.972
WR: Display facing phantom	0.122	0.239	0.487	-	-	0.586	0.625	0.926	0.873	-
WR: Top edge facing phantom	0.117	0.015	0.038	-	-	0.050	0.053	0.057	-	-
WR: Bottom edge facing phantom	0.005	0.162	0.278	-	-	0.599	0.604	1.22	-	-
WR: Left edge facing phantom	0.038	0.213	0.619	-	-	0.339	0.334	0.415	-	-
WR: Right edge facing phantom	0.096	0.059	0.271	-	-	0.054	0.069	0.104	-	-

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

Test configuration	Max. 1g SAR results								
	LTE 700 + WLAN 2450**	2-slot GPRS850 + WLAN 2450**	WCDMA 850 + WLAN 2450	LTE 850 + WLAN 2450	WCDMA 1700/ 2100 + WLAN 2450**	LTE 1700/ 2100 + WLAN 2450**	2-slot GPRS 1900 + WLAN 2450**	WCDMA 1900 + WLAN 2450	LTE 1900 + WLAN 2450
WR: Back facing phantom	0.455	0.898	0.612	0.536	0.848	0.909	1.103	-	1.100
WR: Display facing phantom	0.361	0.609	-	-	0.708	0.747	1.048	0.995	-
WR: Top edge facing phantom	0.132	0.155	-	-	0.167	0.170	0.174	-	-
WR: Bottom edge facing phantom	0.167	0.283	-	-	0.604	0.609	1.225	-	-
WR: Left edge facing phantom	0.251	0.657	-	-	0.377	0.372	0.453	-	-
WR: Right edge facing phantom	0.155	0.367	-	-	0.150	0.165	0.200	-	-

The following table gives a more accurate assessment of the SAR values for simultaneous transmission. These values have been calculated using the SPEAG Combined Multiband algorithm, which is based on area scans. It a) converts the 2D area scans into 3D volume scans by assuming frequency-dependent decay characteristics for the E-field, b) sums the SAR values for WLAN2450 and the cellular bands point-by-point and c) calculates the combined average SAR values. It is these values that are presented in the Summary table in Section 1.2.3.

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

Test configuration	Max. 1g SAR results								
	LTE 700 + WLAN 2450**	2-slot GPRS850 + WLAN 2450**	WCDMA 850 + WLAN 2450	LTE 850 + WLAN 2450	WCDMA 1700/ 2100 + WLAN 2450**	LTE 1700/ 2100 + WLAN 2450**	2-slot GPRS 1900 + WLAN 2450**	WCDMA 1900 + WLAN 2450	LTE 1900 + WLAN 2450
WR: Back facing phantom	0.356	0.820	0.547	0.458	0.779	0.821	-	-	0.989
WR: Display facing phantom	-	-	-	-	-	-	-	0.882	-
WR: Top edge facing phantom	-	-	-	-	-	-	-	-	-
WR: Bottom edge facing phantom	-	-	-	-	-	-	1.26	-	-
WR: Left edge facing phantom	-	-	-	-	-	-	-	-	-
WR: Right edge facing phantom	-	-	-	-	-	-	-	-	-

**SAR data taken from FCC_RM-824_03.

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

Plots of the Measurement scans are given in Appendix B.3.

APPENDIX A: SYSTEM CHECKING SCANS

Date/Time: 2012-10-09 15:55:07

Test Laboratory: TCC Nokia

Type: D835V2; Serial: D835V2 - SN:462

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 21.8

Medium parameters used: f = 835 MHz; σ = 0.913 mho/m; ϵ_r = 39.881; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.88, 5.88, 5.88); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

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

Maximum value of SAR (interpolated) = 2.55 W/kg

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

Reference Value = 53.479 V/m

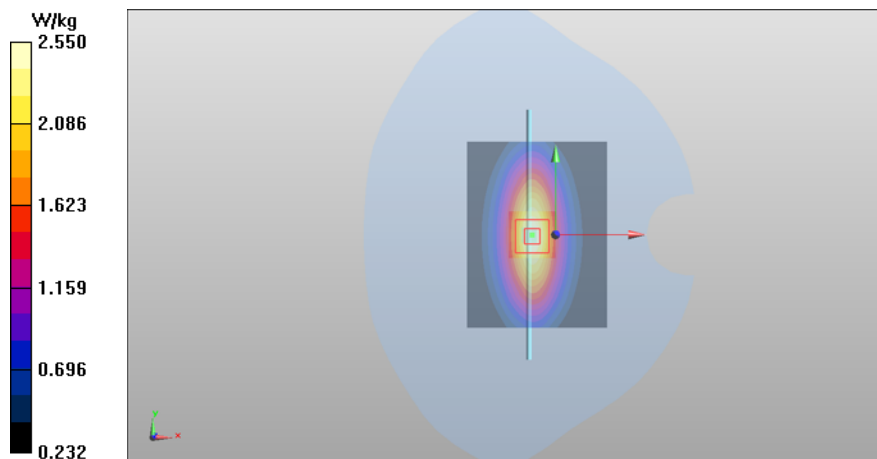
Peak SAR (extrapolated) = 3.435 mW/g

SAR(1 g) = 2.34 mW/g

SAR(10 g) = 1.53 mW/g

Power Drift = 0.00 dB

Maximum value of SAR (measured) = 2.55 W/kg



Date/Time: 2012-10-11 09:25:29

Test Laboratory: TCC Nokia

Type: D835V2; Serial: D835V2 - SN:462

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 21.6

Medium parameters used: f = 835 MHz; σ = 0.897 mho/m; ϵ_r = 39.731; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.88, 5.88, 5.88); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

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

Maximum value of SAR (interpolated) = 2.50 W/kg

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

Reference Value = 54.066 V/m

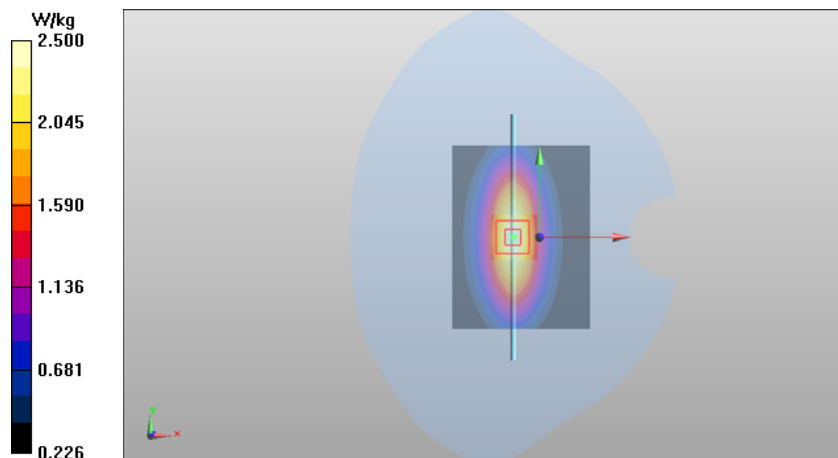
Peak SAR (extrapolated) = 3.391 mW/g

SAR(1 g) = 2.32 mW/g

SAR(10 g) = 1.52 mW/g

Power Drift = -0.03 dB

Maximum value of SAR (measured) = 2.50 W/kg



Date/Time: 2012-10-17 06:30:02

Test Laboratory: TCC Nokia

Type: D835V2; Serial: D835V2 - SN:462

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 21.4

Medium parameters used: f = 835 MHz; σ = 0.917 mho/m; ϵ_r = 40.585; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.88, 5.88, 5.88); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.6.6 (6824)

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

Maximum value of SAR (interpolated) = 2.56 W/kg

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

Reference Value = 54.180 V/m

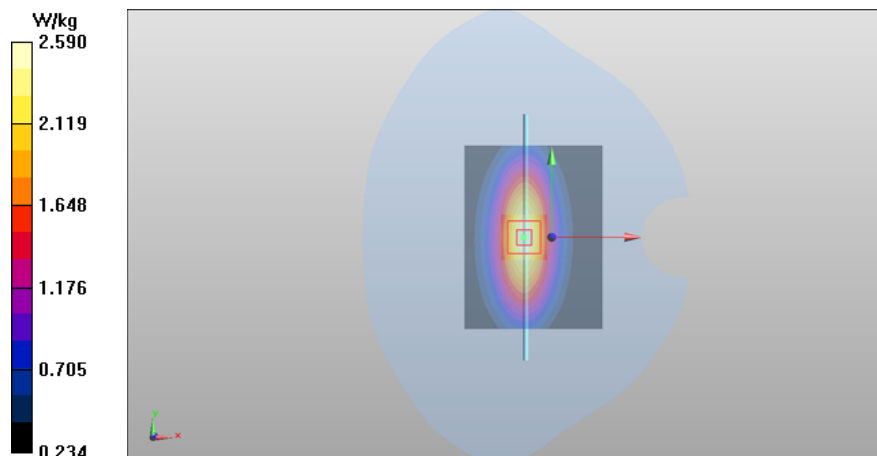
Peak SAR (extrapolated) = 3.515 mW/g

SAR(1 g) = 2.39 mW/g

SAR(10 g) = 1.56 mW/g

Power Drift = -0.06 dB

Maximum value of SAR (measured) = 2.59 W/kg



Date/Time: 2012-10-08 09:26:48

Test Laboratory: TCC Nokia

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

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 = 1.36 mho/m; ϵ_r = 38.454; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(7.55, 7.55, 7.55); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

d=10mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 11.4 W/kg

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

Reference Value = 86.198 V/m

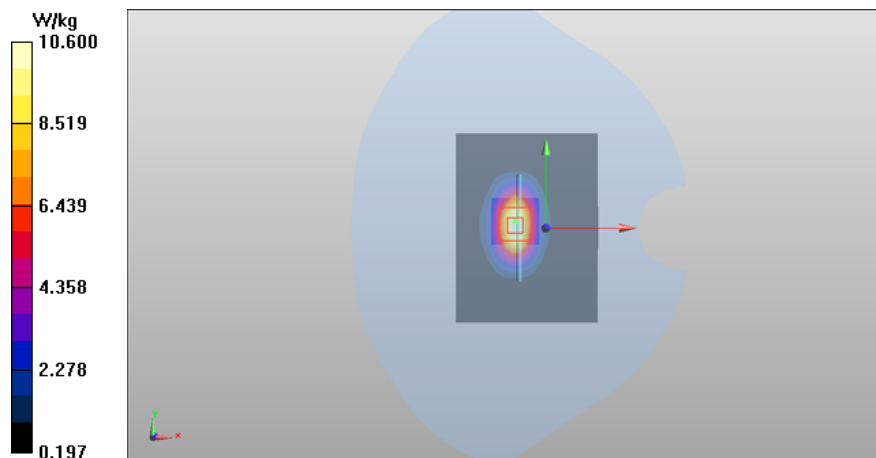
Peak SAR (extrapolated) = 17.703 mW/g

SAR(1 g) = 9.49 mW/g

SAR(10 g) = 4.97 mW/g

Power Drift = 0.03 dB

Maximum value of SAR (measured) = 10.6 W/kg



Date/Time: 2012-10-16 08:54:44

Test Laboratory: TCC Nokia

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

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: t= 21.3C

Medium parameters used: f = 1900 MHz; σ = 1.363 mho/m; ϵ_r = 39.017; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(7.55, 7.55, 7.55); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

d=10mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 11.4 W/kg

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

Reference Value = 84.997 V/m

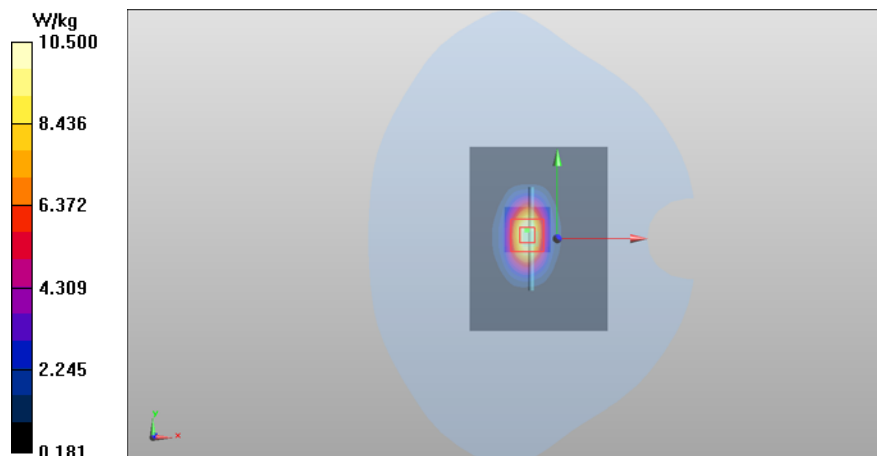
Peak SAR (extrapolated) = 17.505 mW/g

SAR(1 g) = 9.42 mW/g

SAR(10 g) = 4.92 mW/g

Power Drift = 0.07 dB

Maximum value of SAR (measured) = 10.5 W/kg



Date/Time: 2012-10-17 06:15:39

Test Laboratory: TCC Nokia
Type: D1900V2; Serial: D1900V2 - SN:5d030

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: t= 21.3C

Medium parameters used: f = 1900 MHz; σ = 1.39 mho/m; ϵ_r = 39.295; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(7.55, 7.55, 7.55); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

d=10mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 11.2 W/kg

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

Reference Value = 84.797 V/m

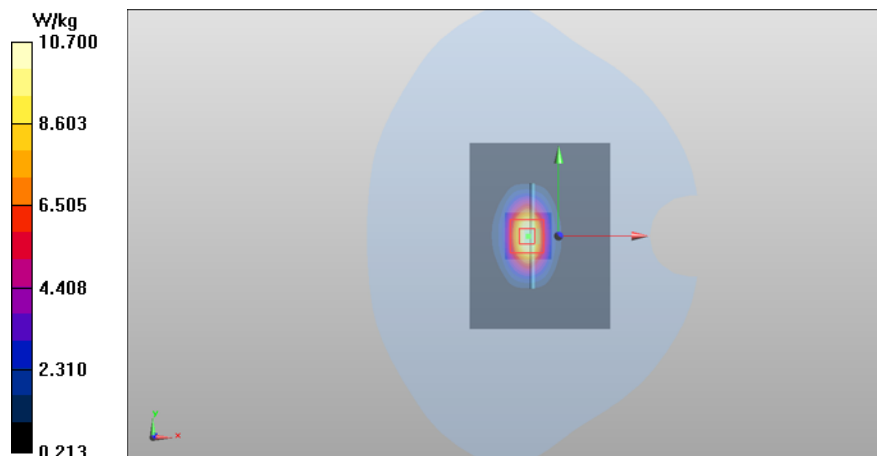
Peak SAR (extrapolated) = 17.821 mW/g

SAR(1 g) = 9.52 mW/g

SAR(10 g) = 4.95 mW/g

Power Drift = 0.02 dB

Maximum value of SAR (measured) = 10.7 W/kg



Date/Time: 2012-10-09 08:00:41

Test Laboratory: TCC Nokia

Type: D835V2; Serial: D835V2 - SN:462

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.5

Medium parameters used: f = 835 MHz; σ = 1.005 mho/m; ϵ_r = 53.022; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.6.6 (6824)

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

Maximum value of SAR (interpolated) = 2.59 W/kg

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

Reference Value = 51.523 V/m

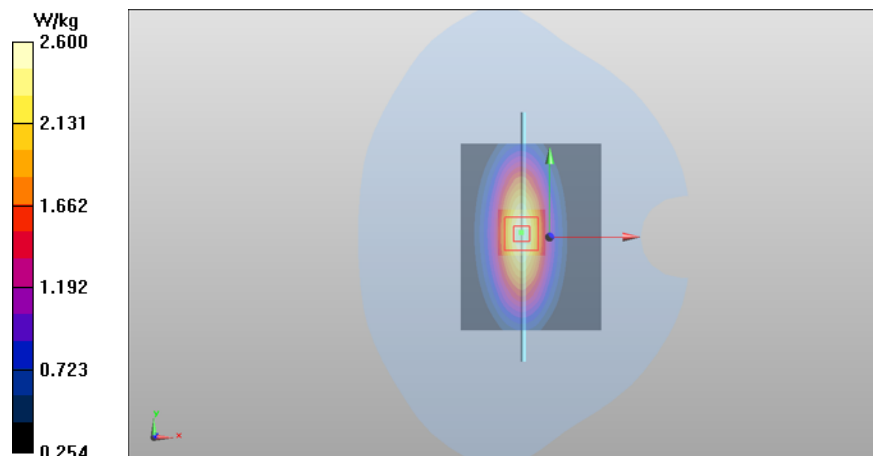
Peak SAR (extrapolated) = 3.542 mW/g

SAR(1 g) = 2.41 mW/g

SAR(10 g) = 1.59 mW/g

Power Drift = -0.02 dB

Maximum value of SAR (measured) = 2.60 W/kg



Date/Time: 2012-10-17 13:01:02

Test Laboratory: TCC Nokia

Type: D835V2; Serial: D835V2 - SN:462

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.8

Medium parameters used: f = 835 MHz; σ = 1.006 mho/m; ϵ_r = 53.39; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.6 (6824)

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

Maximum value of SAR (interpolated) = 2.58 W/kg

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

Reference Value = 51.702 V/m

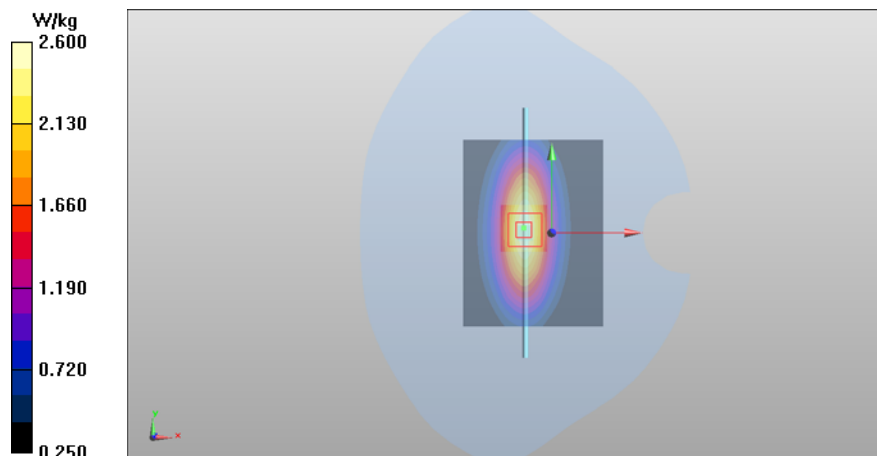
Peak SAR (extrapolated) = 3.552 mW/g

SAR(1 g) = 2.41 mW/g

SAR(10 g) = 1.58 mW/g

Power Drift = -0.04 dB

Maximum value of SAR (measured) = 2.60 W/kg



Date/Time: 2012-10-09 07:49:50

Test Laboratory: TCC Nokia

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

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: $t = 20.7\text{ C}$

Medium parameters used: $f = 1900\text{ MHz}$; $\sigma = 1.524\text{ mho/m}$; $\epsilon_r = 51.028$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

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

Maximum value of SAR (interpolated) = 12.5 W/kg

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

Reference Value = 87.295 V/m

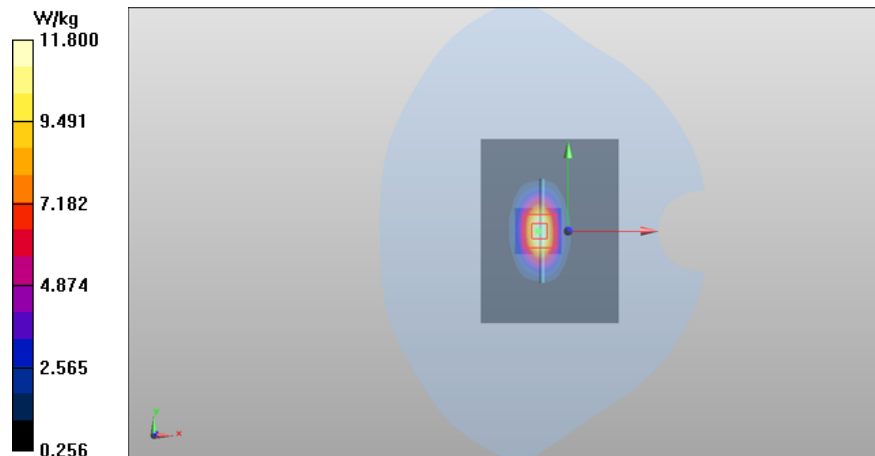
Peak SAR (extrapolated) = 18.959 mW/g

SAR(1 g) = 10.4 mW/g

SAR(10 g) = 5.45 mW/g

Power Drift = 0.06 dB

Maximum value of SAR (measured) = 11.8 W/kg



Date/Time: 2012-10-10 13:38:24

Test Laboratory: TCC Nokia

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

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: $t = 21.2\text{ }^{\circ}\text{C}$

Medium parameters used: $f = 1900\text{ MHz}$; $\sigma = 1.519\text{ mho/m}$; $\epsilon_r = 50.897$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

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

Maximum value of SAR (interpolated) = 12.9 W/kg

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

Reference Value = 84.939 V/m

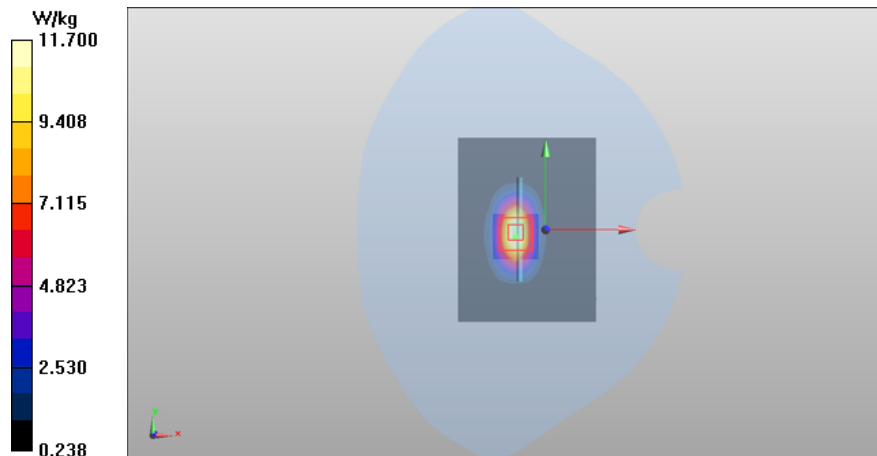
Peak SAR (extrapolated) = 18.746 mW/g

SAR(1 g) = 10.4 mW/g

SAR(10 g) = 5.44 mW/g

Power Drift = 0.07 dB

Maximum value of SAR (measured) = 11.7 W/kg



Date/Time: 2012-10-15 06:49:41

Test Laboratory: TCC Nokia

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

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: t= 20.8C

Medium parameters used: f = 1900 MHz; σ = 1.522 mho/m; ϵ_r = 50.891; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

d=10mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 12.6 W/kg

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

Reference Value = 86.658 V/m

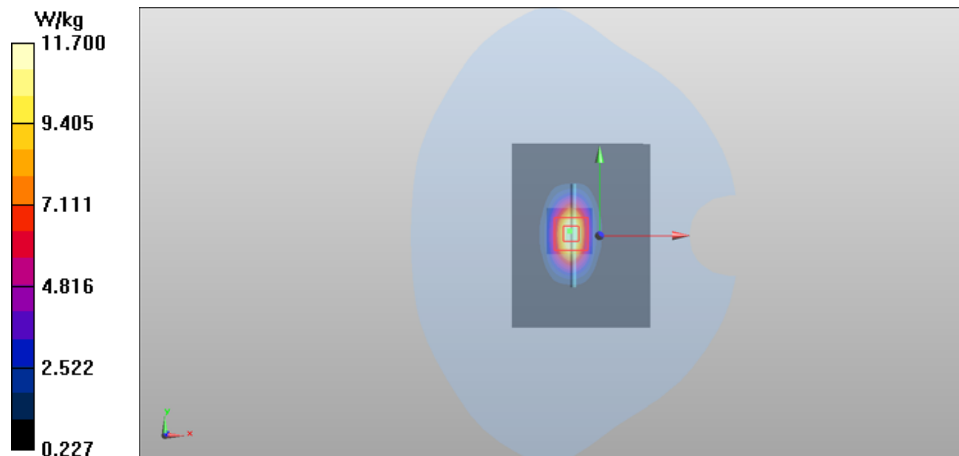
Peak SAR (extrapolated) = 18.890 mW/g

SAR(1 g) = 10.3 mW/g

SAR(10 g) = 5.4 mW/g

Power Drift = 0.03 dB

Maximum value of SAR (measured) = 11.7 W/kg



Date/Time: 2012-10-17 12:01:16

Test Laboratory: TCC Nokia

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

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: t= 21.3C

Medium parameters used: f = 1900 MHz; σ = 1.509 mho/m; ϵ_r = 52.061; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

d=10mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 12.9 W/kg

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

Reference Value = 85.730 V/m

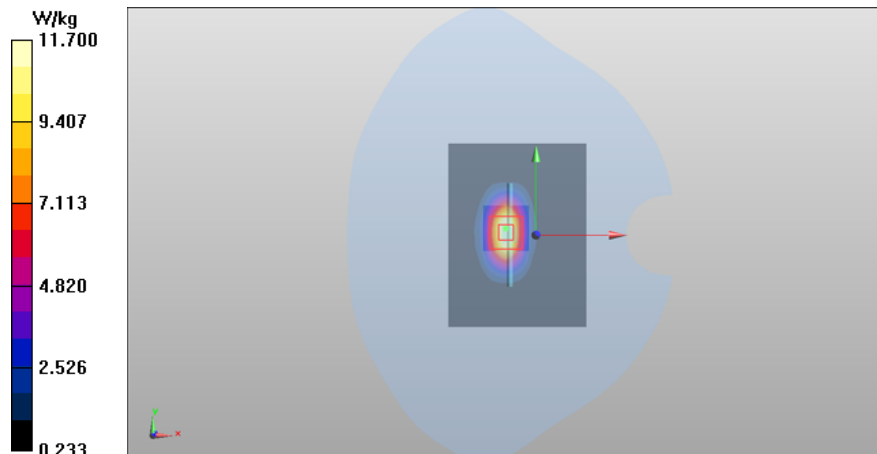
Peak SAR (extrapolated) = 18.740 mW/g

SAR(1 g) = 10.4 mW/g

SAR(10 g) = 5.43 mW/g

Power Drift = -0.02 dB

Maximum value of SAR (measured) = 11.7 W/kg



Date/Time: 2012-10-18 08:35:01

Test Laboratory: TCC Nokia
Type: D1900V2; Serial: D1900V2 - SN:5d030

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: t= 21.1C

Medium parameters used: f = 1900 MHz; σ = 1.511 mho/m; ϵ_r = 51.879; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

d=10mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 13.0 W/kg

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

Reference Value = 88.188 V/m

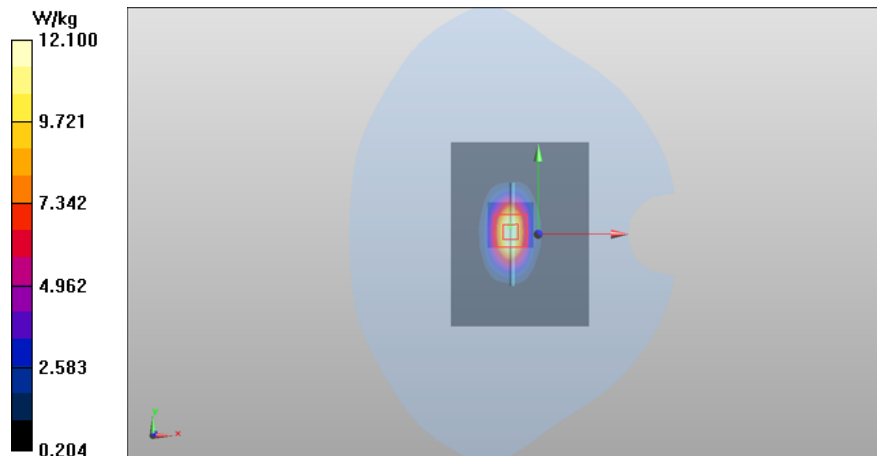
Peak SAR (extrapolated) = 19.321 mW/g

SAR(1 g) = 10.6 mW/g

SAR(10 g) = 5.52 mW/g

Power Drift = 0.01 dB

Maximum value of SAR (measured) = 12.1 W/kg



APPENDIX B.1: HEAD MEASUREMENT SCANS

Date/Time: 2012-10-11 10:33:10

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: WCDMA850

Frequency: 846.6 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 21.6

Medium parameters used: f = 847 MHz; $\sigma = 0.904$ mho/m; $\epsilon_r = 39.66$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.88, 5.88, 5.88); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.6.6 (6824)

WCDMA - Left/Cheek - High/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.375 W/kg

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

Reference Value = 19.976 V/m

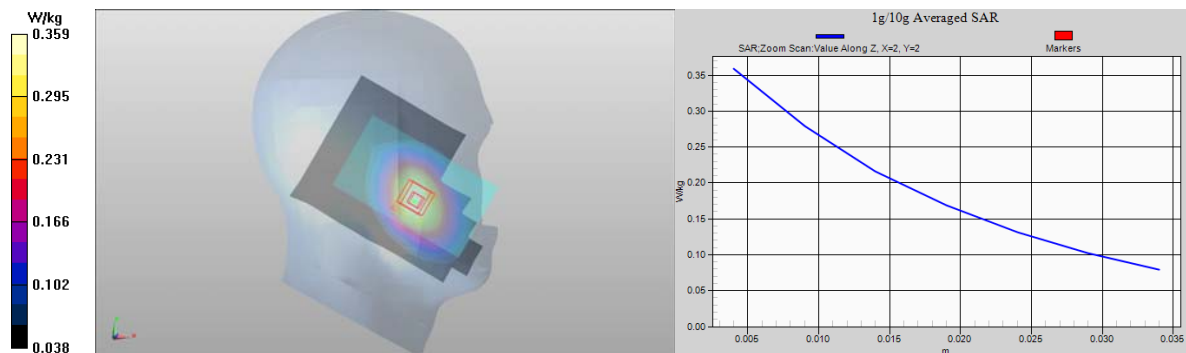
Peak SAR (extrapolated) = 0.433 mW/g

SAR(1 g) = 0.340 mW/g

SAR(10 g) = 0.252 mW/g

Power Drift = 0.03 dB

Maximum value of SAR (measured) = 0.359 W/kg



Date/Time: 2012-10-17 07:39:46

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band5)

Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 21.4

Medium parameters used (interpolated): $f = 836.5$ MHz; $\sigma = 0.918$ mho/m; $\epsilon_r = 40.571$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.88, 5.88, 5.88); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.6.6 (6824)

LTE - Left/Cheek - Middle - QPSK - 10MHz - 100% RB/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.250 W/kg

LTE - Left/Cheek - Middle - QPSK - 10MHz - 100% RB/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 3.789 V/m

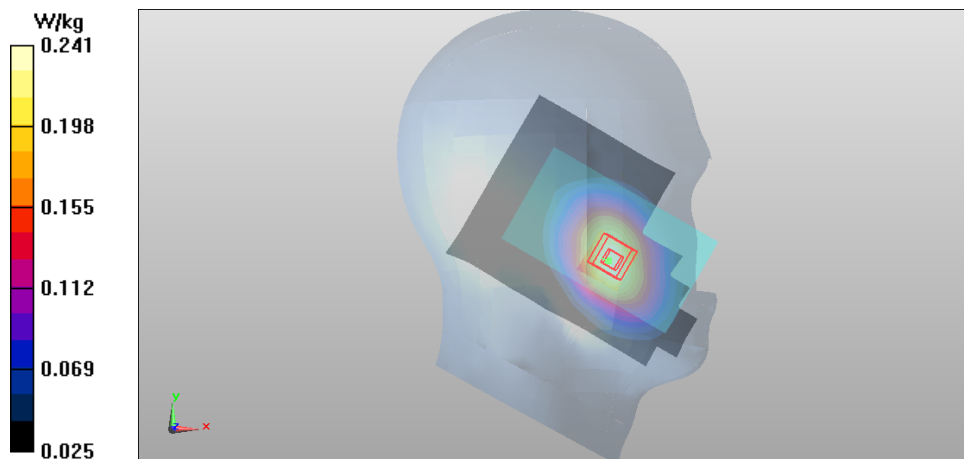
Peak SAR (extrapolated) = 0.295 mW/g

SAR(1 g) = 0.230 mW/g

SAR(10 g) = 0.170 mW/g

Power Drift = 0.23 dB

Maximum value of SAR (measured) = 0.241 W/kg



Date/Time: 2012-10-17 08:13:20

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band5)

Frequency: 829 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 21.4

Medium parameters used: f = 829 MHz; $\sigma = 0.913$ mho/m; $\epsilon_r = 40.631$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.88, 5.88, 5.88); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.6.6 (6824)

LTE - Left/Cheek - Low - QPSK - 10MHz - 50% RB - 50% offset/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.256 W/kg

LTE - Left/Cheek - Low - QPSK - 10MHz - 50% RB - 50% offset/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 16.482 V/m

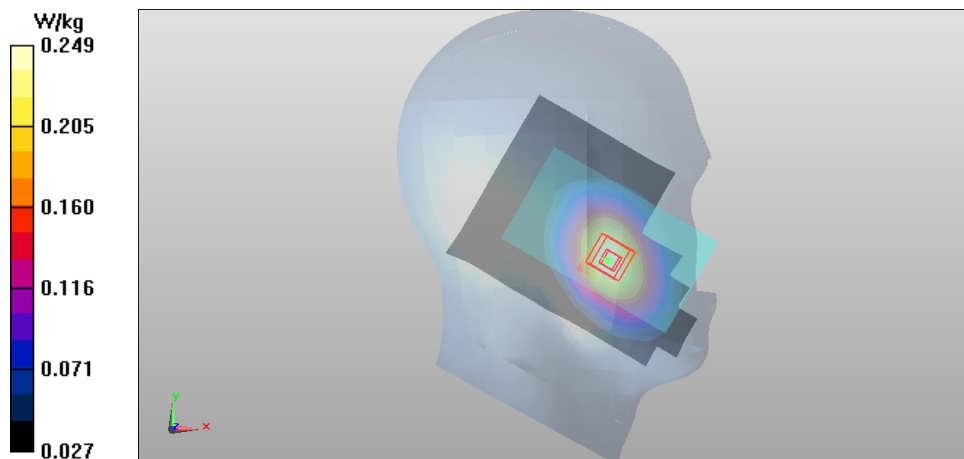
Peak SAR (extrapolated) = 0.301 mW/g

SAR(1 g) = 0.236 mW/g

SAR(10 g) = 0.175 mW/g

Power Drift = 0.07 dB

Maximum value of SAR (measured) = 0.249 W/kg



Date/Time: 2012-10-17 08:27:26

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band5)

Frequency: 829 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 21.4

Medium parameters used: f = 829 MHz; $\sigma = 0.913$ mho/m; $\epsilon_r = 40.631$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.88, 5.88, 5.88); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.6.6 (6824)

LTE - Left/Cheek - Low - QPSK - 10MHz - 1 RB - 50% offset/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.299 W/kg

LTE - Left/Cheek - Low - QPSK - 10MHz - 1 RB - 50% offset/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 17.784 V/m

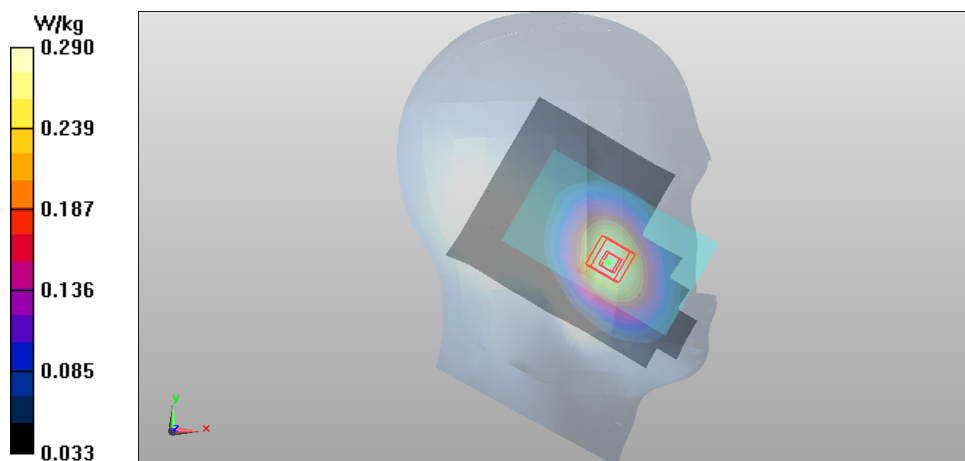
Peak SAR (extrapolated) = 0.351 mW/g

SAR(1 g) = 0.276 mW/g

SAR(10 g) = 0.206 mW/g

Power Drift = 0.08 dB

Maximum value of SAR (measured) = 0.290 W/kg



Date/Time: 2012-10-17 08:41:20

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band5)

Frequency: 829 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 21.4

Medium parameters used: f = 829 MHz; σ = 0.913 mho/m; ϵ_r = 40.631; ρ = 1000 kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.88, 5.88, 5.88); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.6.6 (6824)

LTE - Left/Cheek - Low - QPSK - 10MHz - 1 RB - 100% offset/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.300 W/kg

LTE - Left/Cheek - Low - QPSK - 10MHz - 1 RB - 100% offset/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 17.942 V/m

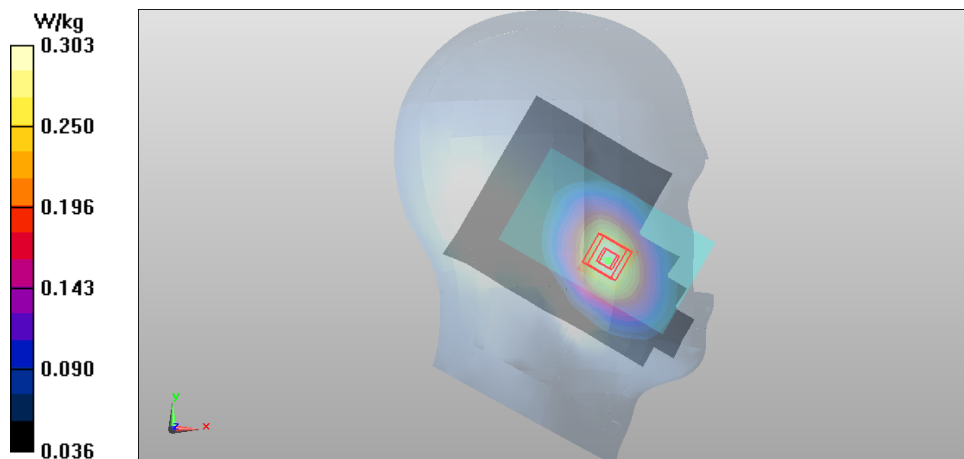
Peak SAR (extrapolated) = 0.366 mW/g

SAR(1 g) = 0.287 mW/g

SAR(10 g) = 0.212 mW/g

Power Drift = -0.02 dB

Maximum value of SAR (measured) = 0.303 W/kg



Date/Time: 2012-10-09 16:31:07

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 21.8

Medium parameters used (interpolated): $f = 836.5$ MHz; $\sigma = 0.914$ mho/m; $\epsilon_r = 39.874$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.88, 5.88, 5.88); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.6.6 (6824)

LTE - Left/Cheek - Middle - QPSK - 10MHz - 1 RB - 0% offset/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.307 W/kg

LTE - Left/Cheek - Middle - QPSK - 10MHz - 1 RB - 0% offset/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 18.280 V/m

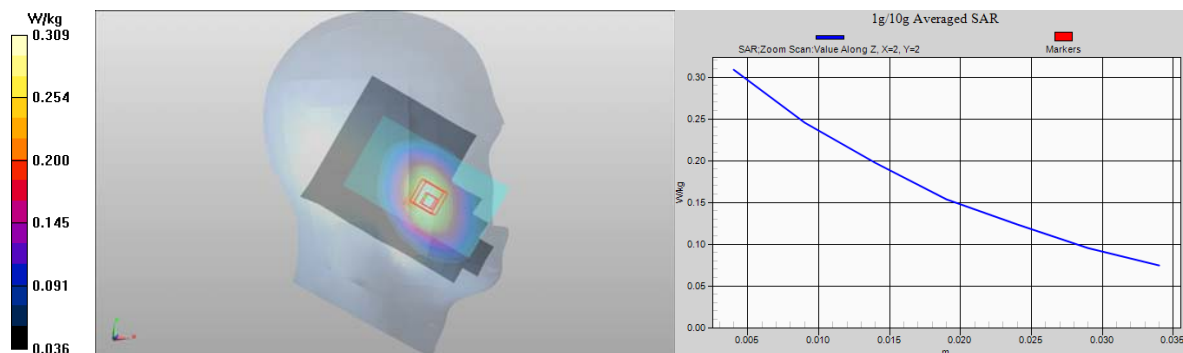
Peak SAR (extrapolated) = 0.366 mW/g

SAR(1 g) = 0.293 mW/g

SAR(10 g) = 0.219 mW/g

Power Drift = 0.03 dB

Maximum value of SAR (measured) = 0.309 W/kg



Date/Time: 2012-10-17 09:18:11

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 21.4

Medium parameters used (interpolated): $f = 836.5$ MHz; $\sigma = 0.918$ mho/m; $\epsilon_r = 40.571$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.88, 5.88, 5.88); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.6.6 (6824)

LTE - Left/Cheek - Middle - 16QAM - 10MHz - 100% RB/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.242 W/kg

LTE - Left/Cheek - Middle - 16QAM - 10MHz - 100% RB/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 16.060 V/m

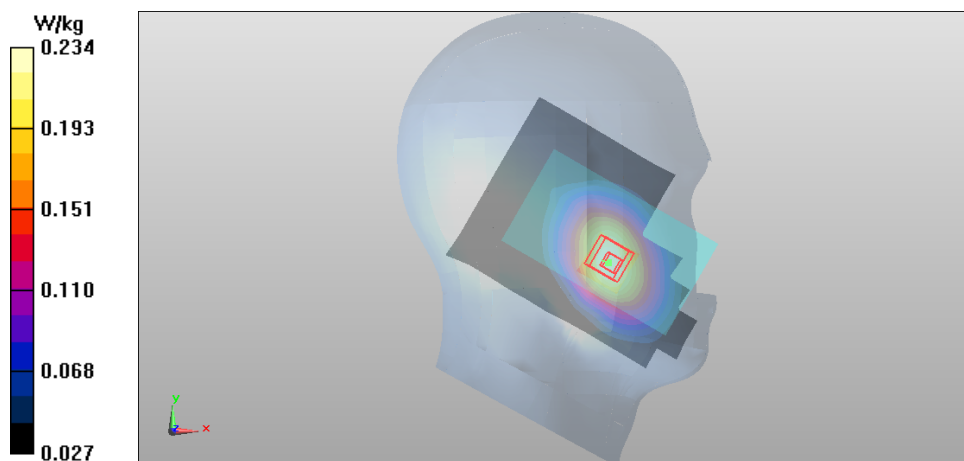
Peak SAR (extrapolated) = 0.283 mW/g

SAR(1 g) = 0.224 mW/g

SAR(10 g) = 0.168 mW/g

Power Drift = 0.11 dB

Maximum value of SAR (measured) = 0.234 W/kg



Date/Time: 2012-10-17 09:32:41

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 829 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 21.4

Medium parameters used: f = 829 MHz; $\sigma = 0.913$ mho/m; $\epsilon_r = 40.631$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.88, 5.88, 5.88); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.6.6 (6824)

LTE - Left/Cheek - Low - 16QAM - 10MHz - 50% RB - 50% offset/Area Scan (81x121x1): Measurement grid:

dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.200 W/kg

LTE - Left/Cheek - Low - 16QAM - 10MHz - 50% RB - 50% offset/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 14.611 V/m

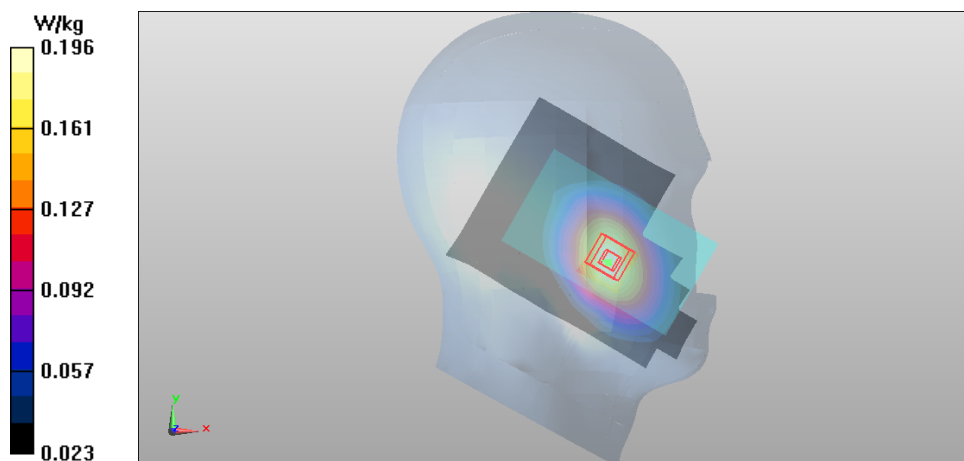
Peak SAR (extrapolated) = 0.234 mW/g

SAR(1 g) = 0.185 mW/g

SAR(10 g) = 0.138 mW/g

Power Drift = 0.08 dB

Maximum value of SAR (measured) = 0.196 W/kg



Date/Time: 2012-10-17 09:46:43

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 829 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 21.4

Medium parameters used: f = 829 MHz; σ = 0.913 mho/m; ϵ_r = 40.631; ρ = 1000 kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.88, 5.88, 5.88); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.6.6 (6824)

LTE - Left/Cheek - Low - 16QAM - 10MHz - 1 RB - 50% offset/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.215 W/kg

LTE - Left/Cheek - Low - 16QAM - 10MHz - 1 RB - 50% offset/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 15.221 V/m

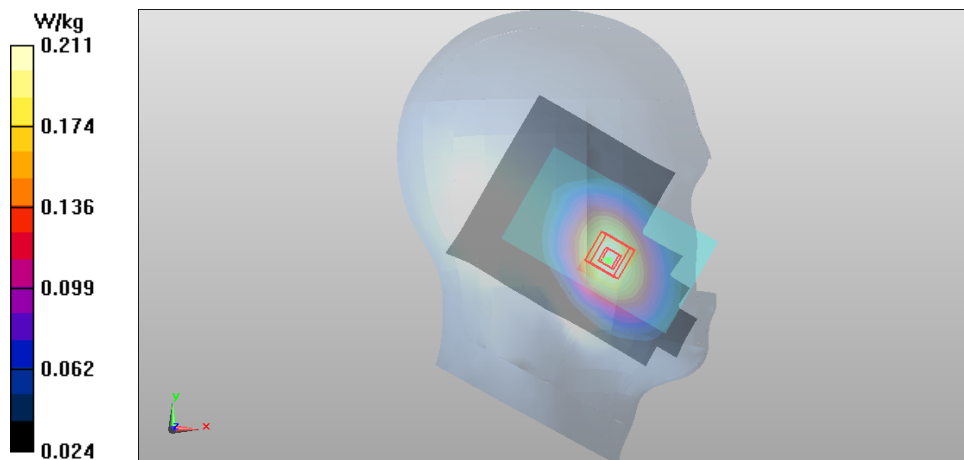
Peak SAR (extrapolated) = 0.248 mW/g

SAR(1 g) = 0.199 mW/g

SAR(10 g) = 0.149 mW/g

Power Drift = 0.07 dB

Maximum value of SAR (measured) = 0.211 W/kg



Date/Time: 2012-10-17 10:01:44

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 21.4

Medium parameters used (interpolated): f = 836.5 MHz; $\sigma = 0.918$ mho/m; $\epsilon_r = 40.571$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.88, 5.88, 5.88); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.6.6 (6824)

LTE - Left/Cheek - Middle - 16QAM - 10MHz - 1 RB - 100% offset/Area Scan (81x121x1): Measurement grid:

dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.205 W/kg

LTE - Left/Cheek - Middle - 16QAM - 10MHz - 1 RB - 100% offset/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

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

Reference Value = 14.790 V/m

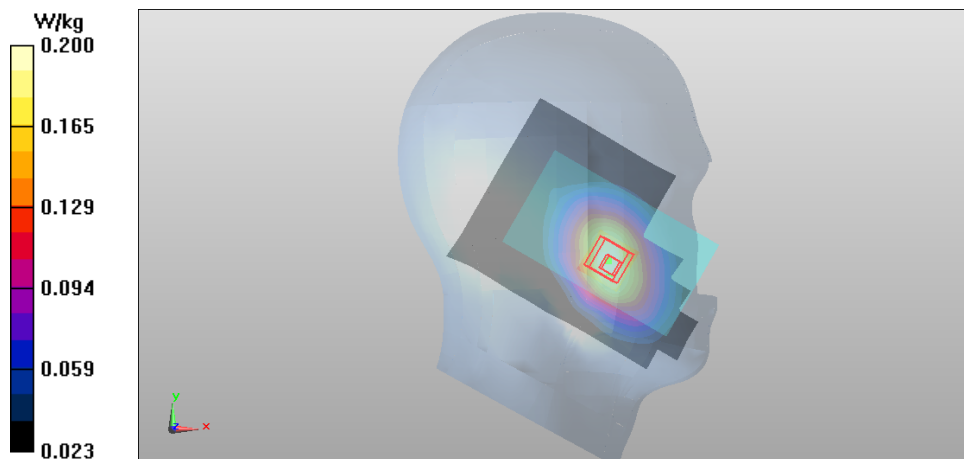
Peak SAR (extrapolated) = 0.245 mW/g

SAR(1 g) = 0.191 mW/g

SAR(10 g) = 0.143 mW/g

Power Drift = 0.14 dB

Maximum value of SAR (measured) = 0.200 W/kg



Date/Time: 2012-10-17 10:16:05

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 21.4

Medium parameters used (interpolated): f = 836.5 MHz; $\sigma = 0.918$ mho/m; $\epsilon_r = 40.571$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.88, 5.88, 5.88); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.6.6 (6824)

LTE - Left/Cheek - Middle - 16QAM - 10MHz - 1 RB - 0% offset/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.254 W/kg

LTE - Left/Cheek - Middle - 16QAM - 10MHz - 1 RB - 0% offset/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 16.614 V/m

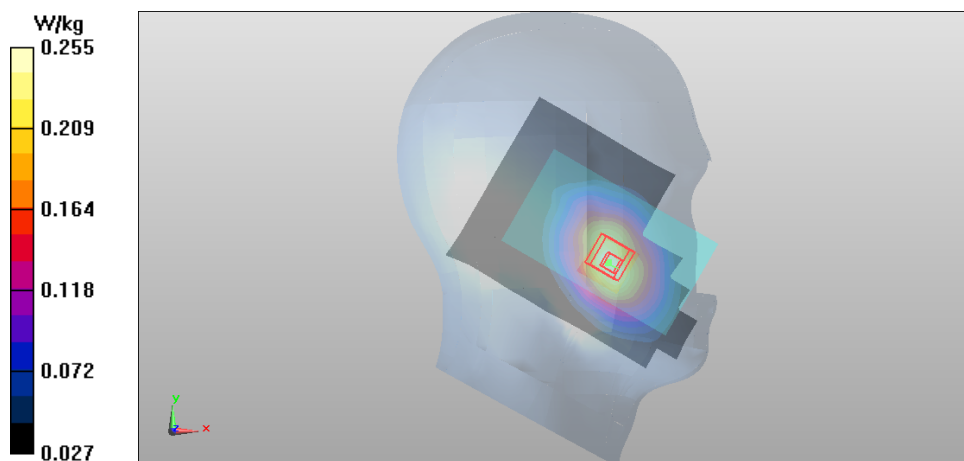
Peak SAR (extrapolated) = 0.302 mW/g

SAR(1 g) = 0.233 mW/g

SAR(10 g) = 0.174 mW/g

Power Drift = 0.05 dB

Maximum value of SAR (measured) = 0.255 W/kg



Date/Time: 2012-10-08 11:49:08

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: WCDMA1900

Frequency: 1852.4 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: t= 21.2 C

Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.316 mho/m; ϵ_r = 38.681; ρ = 1000 kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(7.55, 7.55, 7.55); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

WCDMA – Left/Cheek - Low - Cover CC-3401/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.08 W/kg

WCDMA – Left/Cheek - Low - Cover CC-3401/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 8.324 V/m

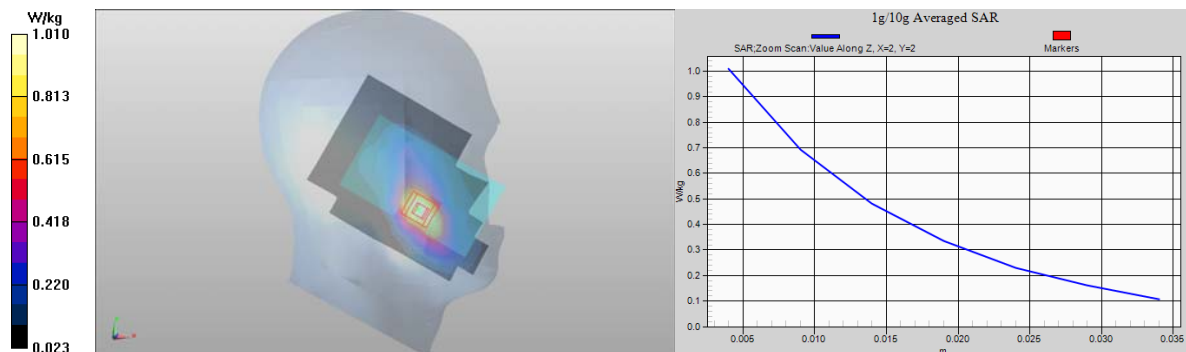
Peak SAR (extrapolated) = 1.391 mW/g

SAR(1 g) = 0.933 mW/g

SAR(10 g) = 0.592 mW/g

Power Drift = 0.17 dB

Maximum value of SAR (measured) = 1.01 W/kg



Date/Time: 2012-10-16 13:26:20

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: t= 21.3C

Medium parameters used: f = 1860 MHz; σ = 1.326 mho/m; ϵ_r = 39.141; ρ = 1000 kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(7.55, 7.55, 7.55); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE - Left/Cheek - Low - QPSK - 20MHz - 100% RB - Cover CC-3401/Area Scan (81x121x1): Measurement grid:
dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.989 W/kg

LTE - Left/Cheek - Low - QPSK - 20MHz - 100% RB - Cover CC-3401/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 8.323 V/m

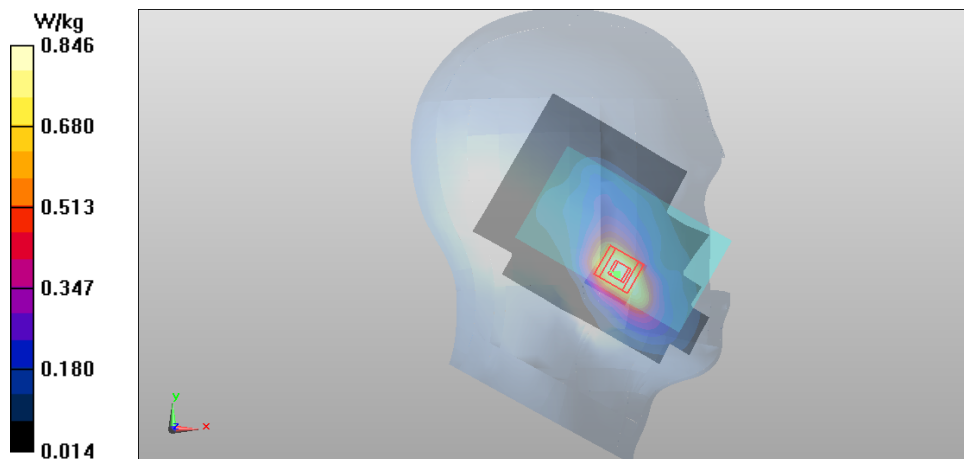
Peak SAR (extrapolated) = 1.176 mW/g

SAR(1 g) = 0.793 mW/g

SAR(10 g) = 0.500 mW/g

Power Drift = -0.48 dB

Maximum value of SAR (measured) = 0.846 W/kg



Date/Time: 2012-10-16 13:46:49

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: t= 21.3C

Medium parameters used: f = 1860 MHz; σ = 1.326 mho/m; ϵ_r = 39.141; ρ = 1000 kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(7.55, 7.55, 7.55); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE - Left/Cheek - Low - QPSK - 20MHz - 50% RB - 50% offset - Cover CC-3401/Area Scan (81x121x1):

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

Maximum value of SAR (interpolated) = 0.919 W/kg

LTE - Left/Cheek - Low - QPSK - 20MHz - 50% RB - 50% offset - Cover CC-3401/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 7.718 V/m

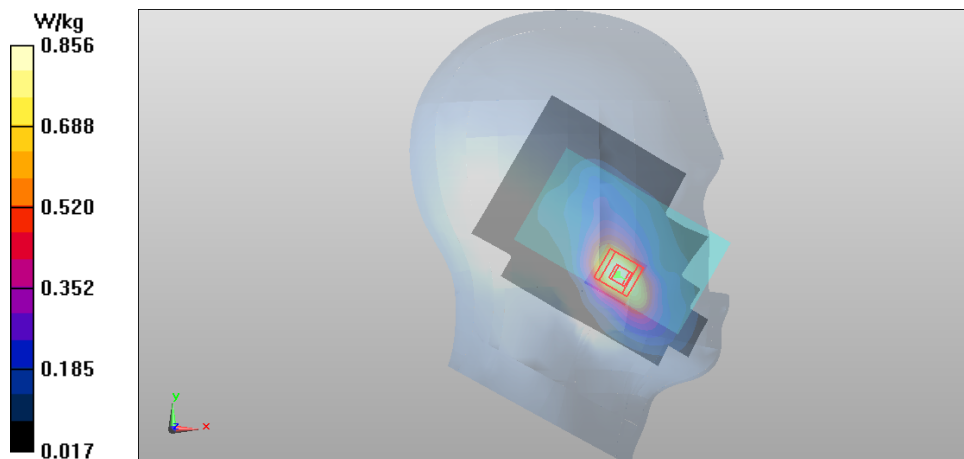
Peak SAR (extrapolated) = 1.189 mW/g

SAR(1 g) = 0.791 mW/g

SAR(10 g) = 0.498 mW/g

Power Drift = 0.13 dB

Maximum value of SAR (measured) = 0.856 W/kg



Date/Time: 2012-10-16 15:34:14

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: t= 21.3C

Medium parameters used: f = 1860 MHz; σ = 1.326 mho/m; ϵ_r = 39.141; ρ = 1000 kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(7.55, 7.55, 7.55); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE - Left/Cheek - Low - QPSK - 20MHz - 1 RB - 50% offset - Cover CC-3401/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.10 W/kg

LTE - Left/Cheek - Low - QPSK - 20MHz - 1 RB - 50% offset - Cover CC-3401/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 7.724 V/m

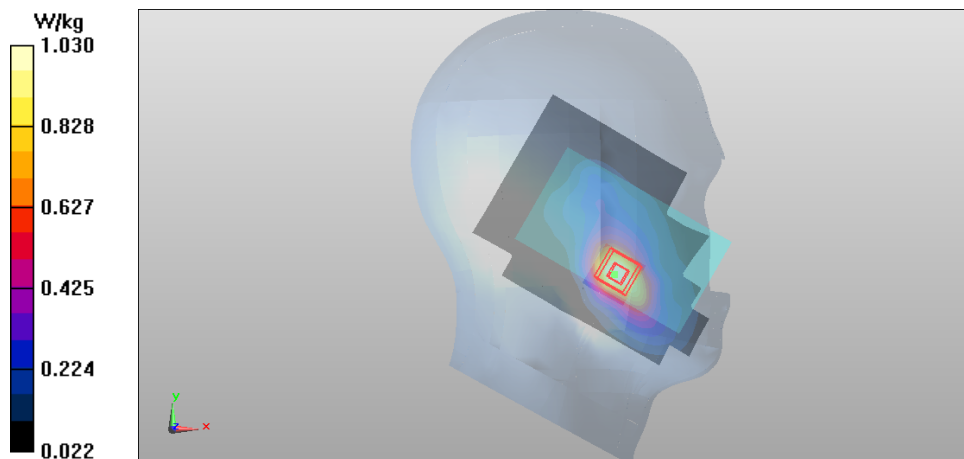
Peak SAR (extrapolated) = 1.427 mW/g

SAR(1 g) = 0.955 mW/g

SAR(10 g) = 0.598 mW/g

Power Drift = 0.04 dB

Maximum value of SAR (measured) = 1.03 W/kg



Date/Time: 2012-10-08 17:08:56

Test Laboratory: TCC Nokia
Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: $t = 21.5$ C

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.36$ mho/m; $\epsilon_r = 38.454$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(7.55, 7.55, 7.55); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE - Left/Cheek - High - QPSK - 20MHz - 1 RB - 100% offset - Cover CC-3401/Area Scan (81x121x1):

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

Maximum value of SAR (interpolated) = 1.33 W/kg

LTE - Left/Cheek - High - QPSK - 20MHz - 1 RB - 100% offset - Cover CC-3401/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 7.385 V/m

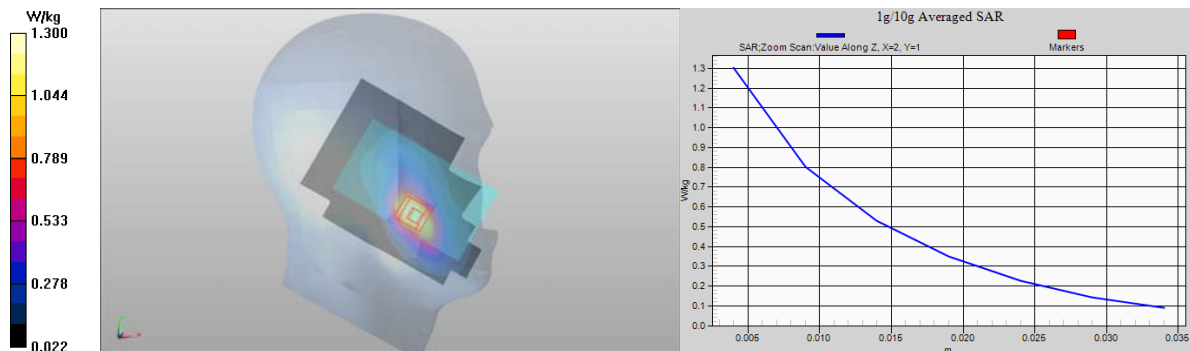
Peak SAR (extrapolated) = 1.891 mW/g

SAR(1 g) = 1.17 mW/g

SAR(10 g) = 0.707 mW/g

Power Drift = 0.03 dB

Maximum value of SAR (measured) = 1.30 W/kg



Date/Time: 2012-10-17 08:11:44

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: t= 21.3C

Medium parameters used: f = 1900 MHz; $\sigma = 1.39$ mho/m; $\epsilon_r = 39.295$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(7.55, 7.55, 7.55); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE - Left/Cheek - High - QPSK - 20MHz - 1 RB - 0% offset - Cover CC-3401/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.12 W/kg

LTE - Left/Cheek - High - QPSK - 20MHz - 1 RB - 0% offset - Cover CC-3401/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 7.353 V/m

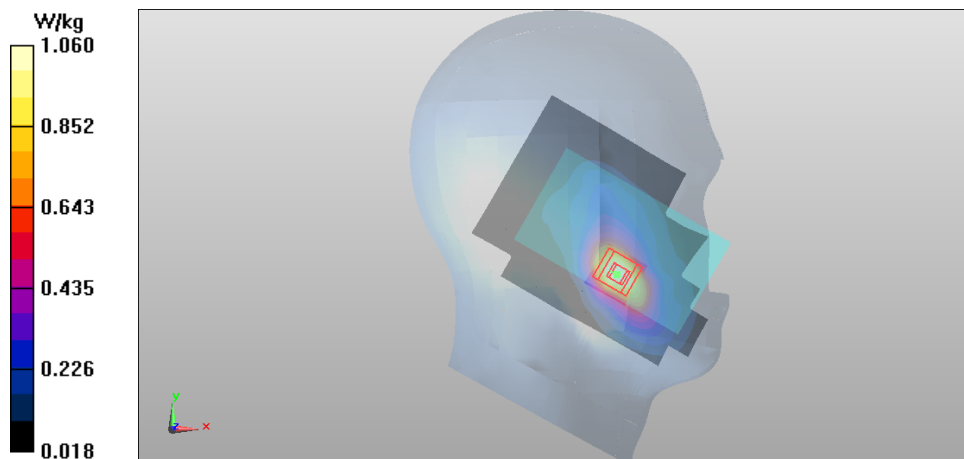
Peak SAR (extrapolated) = 1.461 mW/g

SAR(1 g) = 0.973 mW/g

SAR(10 g) = 0.607 mW/g

Power Drift = 0.19 dB

Maximum value of SAR (measured) = 1.06 W/kg



Date/Time: 2012-10-17 08:34:30

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: t= 21.3C

Medium parameters used: f = 1860 MHz; σ = 1.355 mho/m; ϵ_r = 39.425; ρ = 1000 kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(7.55, 7.55, 7.55); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE - Left/Cheek - Low - 16QAM - 20MHz - 100% RB - Cover CC-3401/Area Scan (81x121x1): Measurement grid:
dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.819 W/kg

LTE - Left/Cheek - Low - 16QAM - 20MHz - 100% RB - Cover CC-3401/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 6.797 V/m

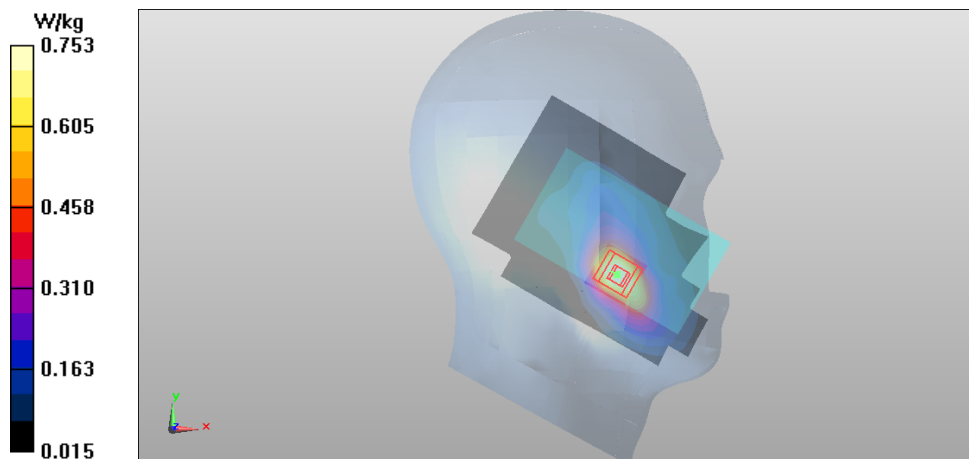
Peak SAR (extrapolated) = 1.036 mW/g

SAR(1 g) = 0.696 mW/g

SAR(10 g) = 0.438 mW/g

Power Drift = 0.10 dB

Maximum value of SAR (measured) = 0.753 W/kg



Date/Time: 2012-10-17 08:52:42

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: t= 21.3C

Medium parameters used: f = 1860 MHz; σ = 1.355 mho/m; ϵ_r = 39.425; ρ = 1000 kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(7.55, 7.55, 7.55); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE - Left/Cheek - Low - 16QAM - 20MHz - 50% RB - 50% offset - Cover CC-3401/Area Scan (81x121x1):

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

Maximum value of SAR (interpolated) = 0.824 W/kg

LTE - Left/Cheek - Low - 16QAM - 20MHz - 50% RB - 50% offset - Cover CC-3401/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 6.689 V/m

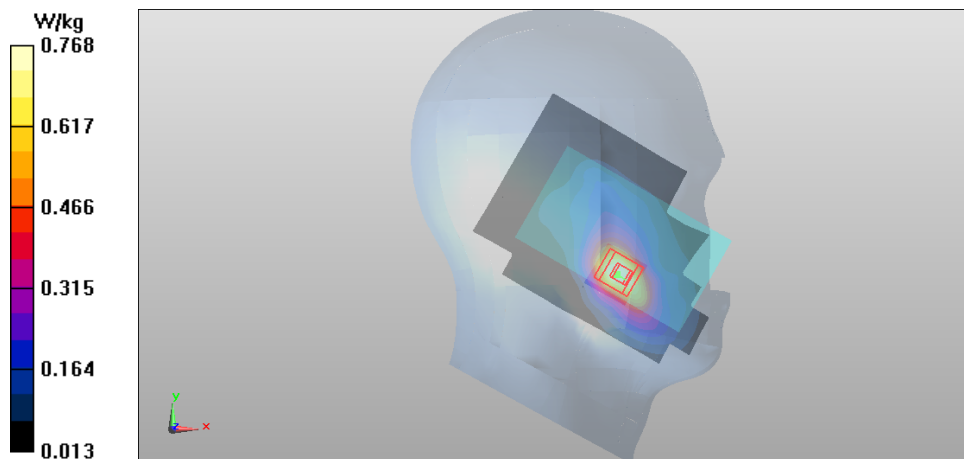
Peak SAR (extrapolated) = 1.066 mW/g

SAR(1 g) = 0.708 mW/g

SAR(10 g) = 0.443 mW/g

Power Drift = 0.22 dB

Maximum value of SAR (measured) = 0.768 W/kg



Date/Time: 2012-10-17 09:09:22

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: t= 21.3C

Medium parameters used: f = 1860 MHz; σ = 1.355 mho/m; ϵ_r = 39.425; ρ = 1000 kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(7.55, 7.55, 7.55); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE - Left/Cheek - Low - 16QAM - 20MHz - 1 RB - 50% offset - Cover CC-3401/Area Scan (81x121x1):

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

Maximum value of SAR (interpolated) = 0.926 W/kg

LTE - Left/Cheek - Low - 16QAM - 20MHz - 1 RB - 50% offset - Cover CC-3401/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 7.090 V/m

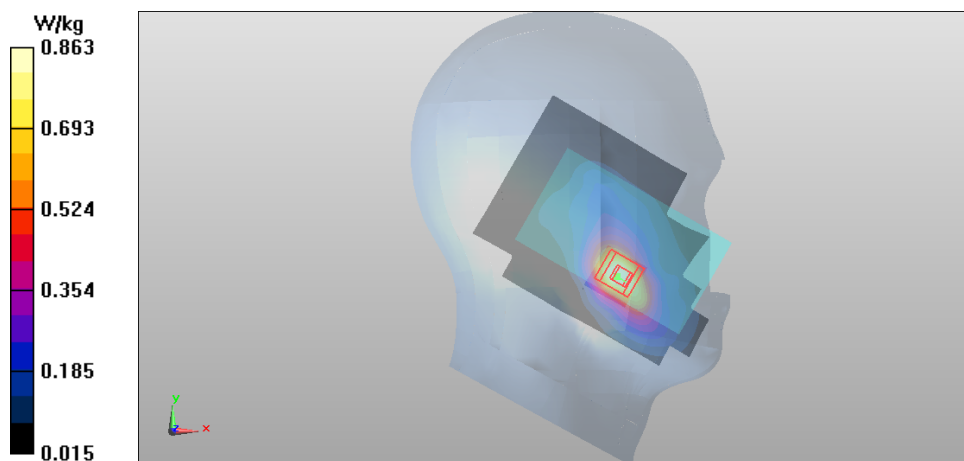
Peak SAR (extrapolated) = 1.193 mW/g

SAR(1 g) = 0.799 mW/g

SAR(10 g) = 0.500 mW/g

Power Drift = 0.23 dB

Maximum value of SAR (measured) = 0.863 W/kg



Date/Time: 2012-10-17 09:56:02

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: t= 21.3C

Medium parameters used: f = 1900 MHz; $\sigma = 1.39$ mho/m; $\epsilon_r = 39.295$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(7.55, 7.55, 7.55); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE - Left/Cheek - High - 16QAM - 20MHz - 1 RB - 100% offset - Cover CC-3401/Area Scan (81x121x1):

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

Maximum value of SAR (interpolated) = 1.02 W/kg

LTE - Left/Cheek - High - 16QAM - 20MHz - 1 RB - 100% offset - Cover CC-3401/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 6.934 V/m

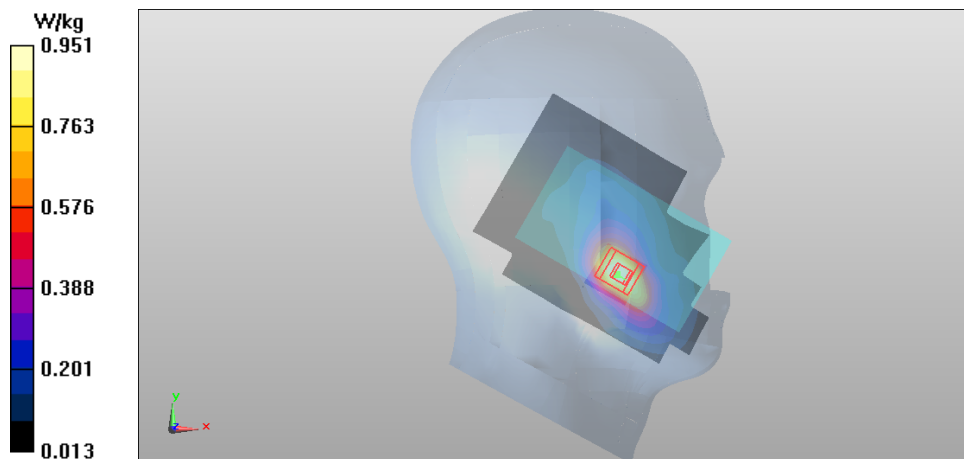
Peak SAR (extrapolated) = 1.368 mW/g

SAR(1 g) = 0.878 mW/g

SAR(10 g) = 0.539 mW/g

Power Drift = 0.32 dB

Maximum value of SAR (measured) = 0.951 W/kg



Date/Time: 2012-10-17 10:44:56

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: t= 21.3C

Medium parameters used: f = 1860 MHz; σ = 1.355 mho/m; ϵ_r = 39.425; ρ = 1000 kg/m³

Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(7.55, 7.55, 7.55); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE - Left/Cheek - Low - 16QAM - 20MHz - 1 RB - 0% offset - Cover CC-3401/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.860 W/kg

LTE - Left/Cheek - Low - 16QAM - 20MHz - 1 RB - 0% offset - Cover CC-3401/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 7.292 V/m

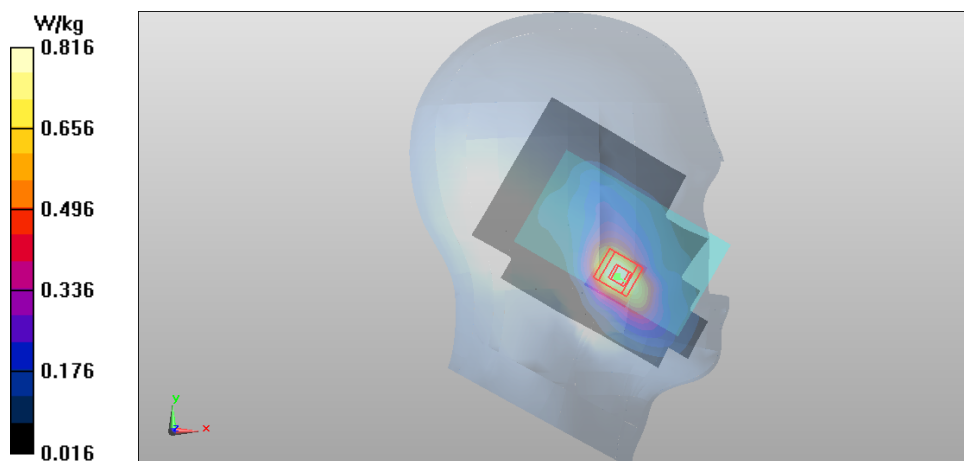
Peak SAR (extrapolated) = 1.140 mW/g

SAR(1 g) = 0.764 mW/g

SAR(10 g) = 0.483 mW/g

Power Drift = 0.05 dB

Maximum value of SAR (measured) = 0.816 W/kg



Date/Time: 2012-07-02 11:04:44

DASY Configuration for WLAN - Left/Cheek - Middle/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 004402/13/976064/3

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

Medium: HSL2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.758$ mho/m; $\epsilon_r = 37.942$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Probe: EX3DV4 - SN3573; ConvF(6.52, 6.52, 6.52); Calibrated: 2012-02-23;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn793; Calibrated: 2011-09-16
Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-11 10:33:10

DASY Configuration for WCDMA - Left/Cheek - High/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: WCDMA850; Frequency: 846.6 MHz; Duty Cycle: 1:1; PMF: 1

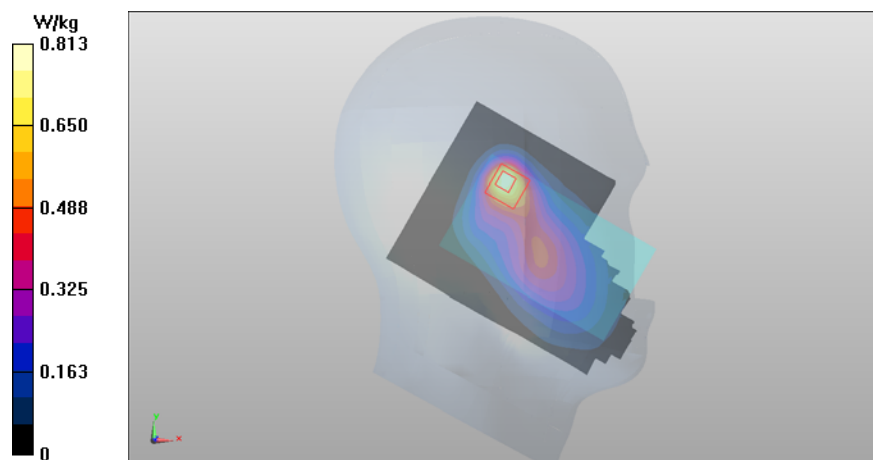
Medium: HSL850 Medium parameters used: $f = 847$ MHz; $\sigma = 0.904$ mho/m; $\epsilon_r = 39.66$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Probe: ES3DV3 - SN3165; ConvF(5.88, 5.88, 5.88); Calibrated: 2012-02-21;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
Measurement SW: DASY52, Version 52.6 (2)

Fast SAR of Combined Scans: SAR(1 g) = 0.713 mW/g; SAR(10 g) = 0.353 mW/g

Maximum value of SAR (interpolated) = 0.813 W/kg



Date/Time: 2012-07-02 11:04:44

DASY Configuration for WLAN - Left/Cheek - Middle/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 004402/13/976064/3

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

Medium: HSL2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.758$ mho/m; $\epsilon_r = 37.942$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Probe: EX3DV4 - SN3573; ConvF(6.52, 6.52, 6.52); Calibrated: 2012-02-23;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn793; Calibrated: 2011-09-16
Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-09 16:31:07

DASY Configuration for LTE - Left/Cheek - Middle - QPSK - 10MHz - 1 RB - 0% offset/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5); Frequency: 836.5 MHz; Duty Cycle: 1:1; PMF: 1

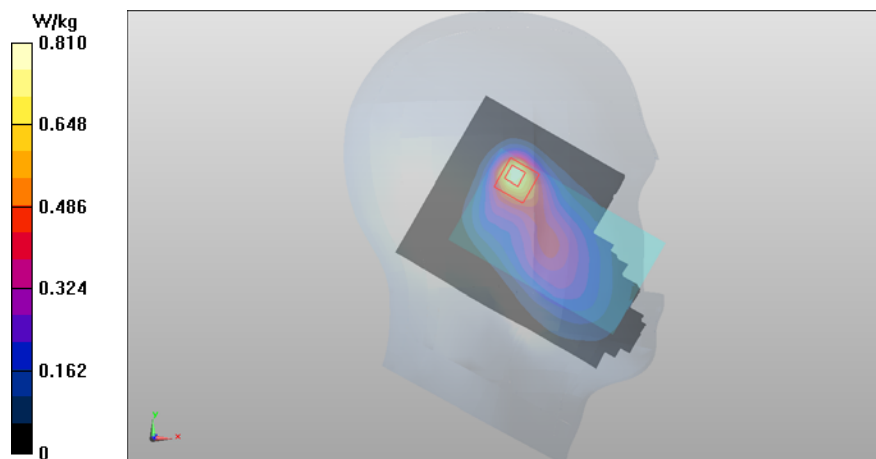
Medium: HSL850 Medium parameters used (interpolated): $f = 836.5$ MHz; $\sigma = 0.914$ mho/m; $\epsilon_r = 39.874$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Probe: ES3DV3 - SN3165; ConvF(5.88, 5.88, 5.88); Calibrated: 2012-02-21;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
Measurement SW: DASY52, Version 52.6 (2)

Fast SAR of Combined Scans: SAR(1 g) = 0.708 mW/g; SAR(10 g) = 0.348 mW/g

Maximum value of SAR (interpolated) = 0.810 W/kg



Date/Time: 2012-07-02 11:04:44

DASY Configuration for WLAN - Left/Cheek - Middle/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 004402/13/976064/3

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

Medium: HSL2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.758$ mho/m; $\epsilon_r = 37.942$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Probe: EX3DV4 - SN3573; ConvF(6.52, 6.52, 6.52); Calibrated: 2012-02-23;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn793; Calibrated: 2011-09-16
Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-08 11:49:08

DASY Configuration for WCDMA – Left/Cheek - Low - Cover CC-3401/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: WCDMA1900; Frequency: 1852.4 MHz; Duty Cycle: 1:1; PMF: 1

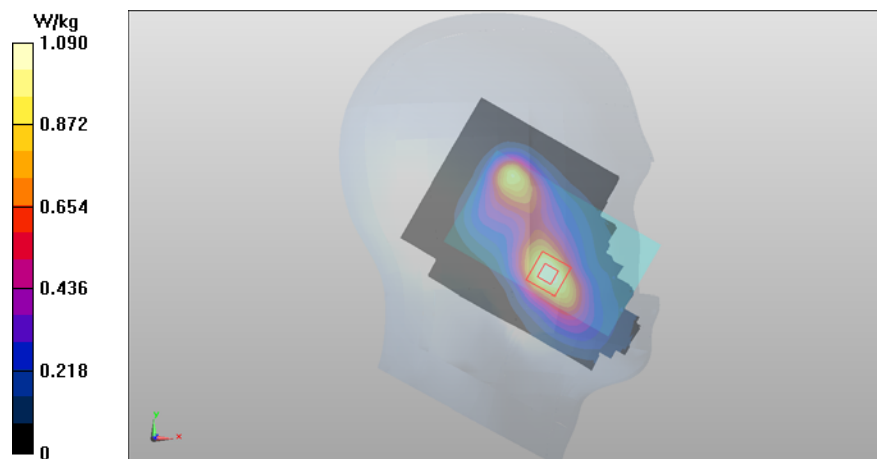
Medium: HSL1900 Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.316$ mho/m; $\epsilon_r = 38.681$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Probe: EX3DV4 - SN3835; ConvF(7.55, 7.55, 7.55); Calibrated: 2012-02-07;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn538; Calibrated: 2012-08-03
Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
Measurement SW: DASY52, Version 52.8 (2)

Fast SAR of Combined Scans: SAR(1 g) = 0.996 mW/g; SAR(10 g) = 0.576 mW/g

Maximum value of SAR (interpolated) = 1.09 W/kg



Date/Time: 2012-07-02 11:04:44

DASY Configuration for WLAN - Left/Cheek - Middle/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 004402/13/976064/3

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

Medium: HSL2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.758$ mho/m; $\epsilon_r = 37.942$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Probe: EX3DV4 - SN3573; ConvF(6.52, 6.52, 6.52); Calibrated: 2012-02-23;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn793; Calibrated: 2011-09-16
Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-08 17:08:56

DASY Configuration for LTE - Left/Cheek - High - QPSK - 20MHz - 1 RB - 100% offset - Cover CC-3401/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2); Frequency: 1900 MHz; Duty Cycle: 1:1; PMF: 1

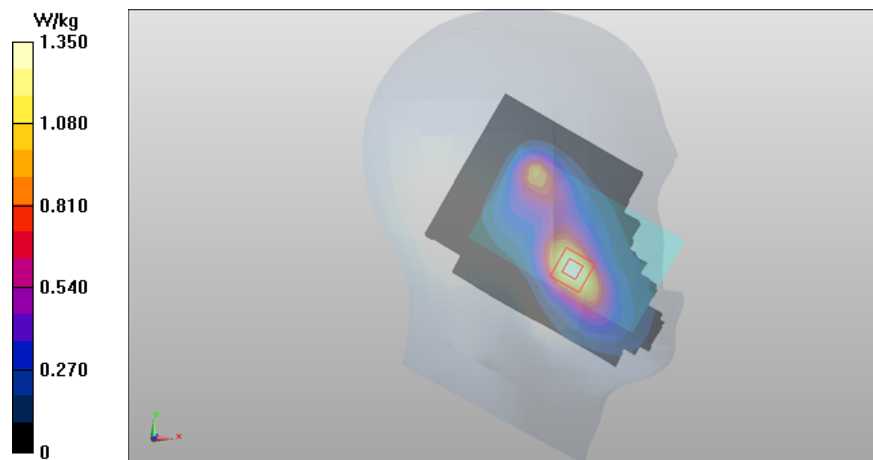
Medium: HSL1900 Medium parameters used: $f = 1900$ MHz; $\sigma = 1.36$ mho/m; $\epsilon_r = 38.454$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Probe: EX3DV4 - SN3835; ConvF(7.55, 7.55, 7.55); Calibrated: 2012-02-07;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn538; Calibrated: 2012-08-03
Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
Measurement SW: DASY4, Version 4.7 (80)

Fast SAR of Combined Scans: SAR(1 g) = 1.22 mW/g; SAR(10 g) = 0.688 mW/g

Maximum value of SAR (interpolated) = 1.35 W/kg



Date/Time: 2012-07-03 09:44:15

DASY Configuration for WLAN a-mode - Left/Cheek - Channel 64/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 004402/13/976060/1

Communication System: WLAN5000 a-mode; Frequency: 5320 MHz; Duty Cycle: 1:1; PMF: 1

Medium: HSL5000 Medium parameters used: $f = 5320$ MHz; $\sigma = 4.594$ mho/m; $\epsilon_r = 34.999$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Probe: EX3DV4 - SN3834; ConvF(4.57, 4.57, 4.57); Calibrated: 2012-02-07;
Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn1213; Calibrated: 2012-02-14
Phantom: SAM1; Type: SAM; Serial: TP-1126
Measurement SW: DASY52, Version 52.8 (1)

Date/Time: 2012-10-11 10:33:10

DASY Configuration for WCDMA - Left/Cheek - High/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: WCDMA850; Frequency: 846.6 MHz; Duty Cycle: 1:1; PMF: 1

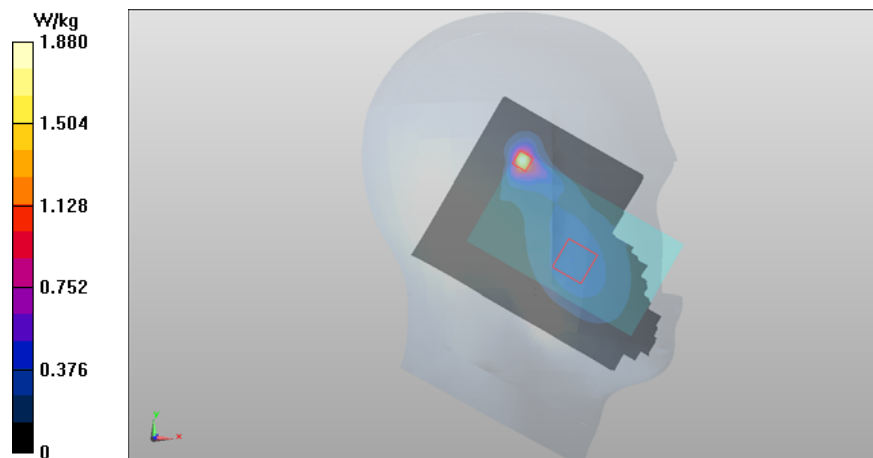
Medium: HSL850 Medium parameters used: $f = 847$ MHz; $\sigma = 0.904$ mho/m; $\epsilon_r = 39.66$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Probe: ES3DV3 - SN3165; ConvF(5.88, 5.88, 5.88); Calibrated: 2012-02-21;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
Measurement SW: DASY52, Version 52.6 (2)

Fast SAR of Combined Scans: SAR(1 g) = 0.802 mW/g; SAR(10 g) = 0.242 mW/g

Maximum value of SAR (interpolated) = 1.88 W/kg



Date/Time: 2012-07-03 09:44:15

DASY Configuration for WLAN a-mode - Left/Cheek - Channel 64/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 004402/13/976060/1

Communication System: WLAN5000 a-mode; Frequency: 5320 MHz; Duty Cycle: 1:1; PMF: 1

Medium: HSL5000 Medium parameters used: $f = 5320$ MHz; $\sigma = 4.594$ mho/m; $\epsilon_r = 34.999$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Probe: EX3DV4 - SN3834; ConvF(4.57, 4.57, 4.57); Calibrated: 2012-02-07;
Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn1213; Calibrated: 2012-02-14
Phantom: SAM1; Type: SAM; Serial: TP-1126
Measurement SW: DASY52, Version 52.8 (1)

Date/Time: 2012-10-09 16:31:07

DASY Configuration for LTE - Left/Cheek - Middle - QPSK - 10MHz - 1 RB - 0% offset/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5); Frequency: 836.5 MHz; Duty Cycle: 1:1; PMF: 1

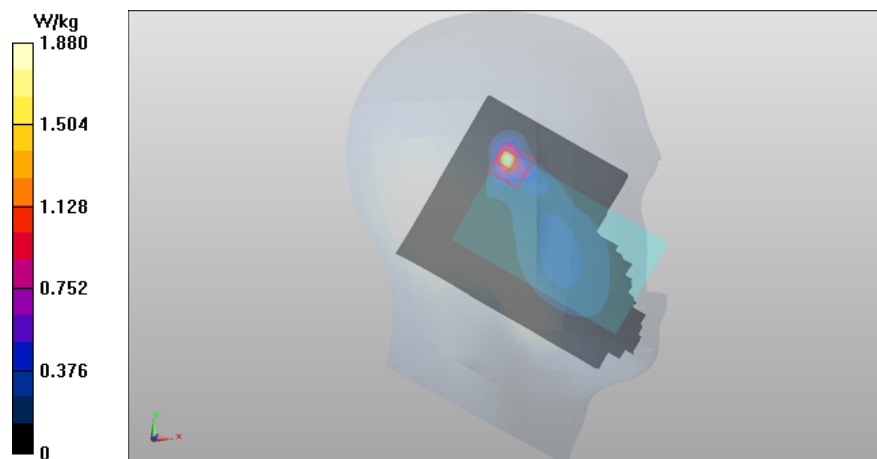
Medium: HSL850 Medium parameters used (interpolated): $f = 836.5$ MHz; $\sigma = 0.914$ mho/m; $\epsilon_r = 39.874$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Probe: ES3DV3 - SN3165; ConvF(5.88, 5.88, 5.88); Calibrated: 2012-02-21;
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
Measurement SW: DASY52, Version 52.6 (2)

Fast SAR of Combined Scans: SAR(1 g) = 0.798 mW/g; SAR(10 g) = 0.231 mW/g

Maximum value of SAR (interpolated) = 1.88 W/kg



Date/Time: 2012-07-03 09:44:15

DASY Configuration for WLAN a-mode - Left/Cheek - Channel 64/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 004402/13/976060/1

Communication System: WLAN5000 a-mode; Frequency: 5320 MHz; Duty Cycle: 1:1; PMF: 1

Medium: HSL5000 Medium parameters used: $f = 5320$ MHz; $\sigma = 4.594$ mho/m; $\epsilon_r = 34.999$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Probe: EX3DV4 - SN3834; ConvF(4.57, 4.57, 4.57); Calibrated: 2012-02-07;
Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn1213; Calibrated: 2012-02-14
Phantom: SAM1; Type: SAM; Serial: TP-1126
Measurement SW: DASY52, Version 52.8 (1)

Date/Time: 2012-10-08 11:49:08

DASY Configuration for WCDMA – Left/Cheek - Low - Cover CC-3401/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: WCDMA1900; Frequency: 1852.4 MHz; Duty Cycle: 1:1; PMF: 1

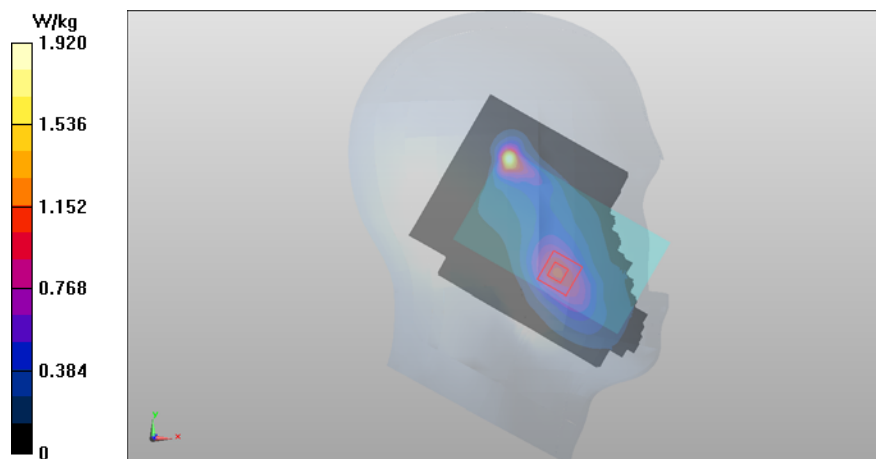
Medium: HSL1900 Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.316$ mho/m; $\epsilon_r = 38.681$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Probe: EX3DV4 - SN3835; ConvF(7.55, 7.55, 7.55); Calibrated: 2012-02-07;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn538; Calibrated: 2012-08-03
Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
Measurement SW: DASY52, Version 52.8 (2)

Fast SAR of Combined Scans: SAR(1 g) = 0.957 mW/g; SAR(10 g) = 0.553 mW/g

Maximum value of SAR (interpolated) = 1.92 W/kg



Date/Time: 2012-07-03 09:44:15

DASY Configuration for WLAN a-mode - Left/Cheek - Channel 64/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 004402/13/976060/1

Communication System: WLAN5000 a-mode; Frequency: 5320 MHz; Duty Cycle: 1:1; PMF: 1

Medium: HSL5000 Medium parameters used: $f = 5320$ MHz; $\sigma = 4.594$ mho/m; $\epsilon_r = 34.999$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Probe: EX3DV4 - SN3834; ConvF(4.57, 4.57, 4.57); Calibrated: 2012-02-07;
Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn1213; Calibrated: 2012-02-14
Phantom: SAM1; Type: SAM; Serial: TP-1126
Measurement SW: DASY52, Version 52.8 (1)

Date/Time: 2012-10-08 17:08:56

DASY Configuration for LTE - Left/Cheek - High - QPSK - 20MHz - 1 RB - 100% offset - Cover CC-3401/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2); Frequency: 1900 MHz; Duty Cycle: 1:1; PMF: 1

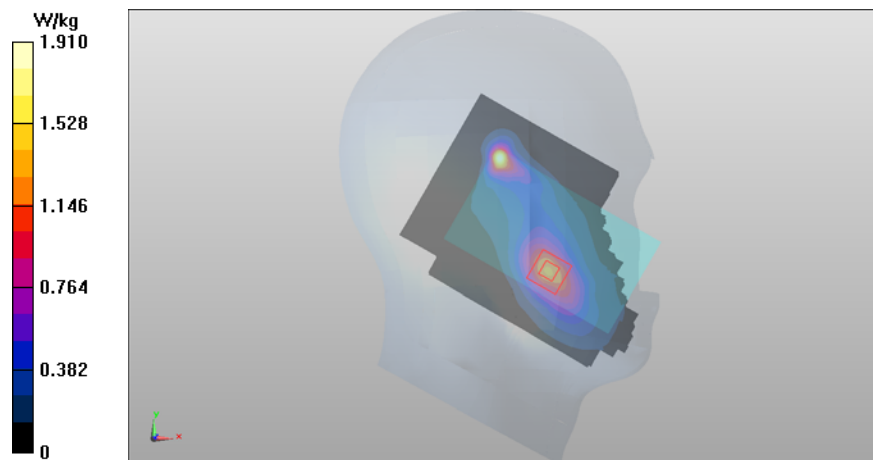
Medium: HSL1900 Medium parameters used: $f = 1900$ MHz; $\sigma = 1.36$ mho/m; $\epsilon_r = 38.454$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Probe: EX3DV4 - SN3835; ConvF(7.55, 7.55, 7.55); Calibrated: 2012-02-07;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn538; Calibrated: 2012-08-03
Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
Measurement SW: DASY4, Version 4.7 (80)

Fast SAR of Combined Scans: SAR(1 g) = 1.18 mW/g; SAR(10 g) = 0.664 mW/g

Maximum value of SAR (interpolated) = 1.91 W/kg



APPENDIX B.2: BODY-WORN MEASUREMENT SCANS

Date/Time: 2012-10-09 09:37:32

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: WCDMA850

Frequency: 846.6 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: $t = 21.3$ C

Medium parameters used: $f = 847$ MHz; $\sigma = 1.013$ mho/m; $\epsilon_r = 52.952$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.6.6 (6824)

WCDMA/Body - High - Spacer 15mm - No Accessory - Back Facing Phantom/Area Scan (81x121x1):

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

Maximum value of SAR (interpolated) = 0.387 W/kg

WCDMA/Body - High - Spacer 15mm - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 19.250 V/m

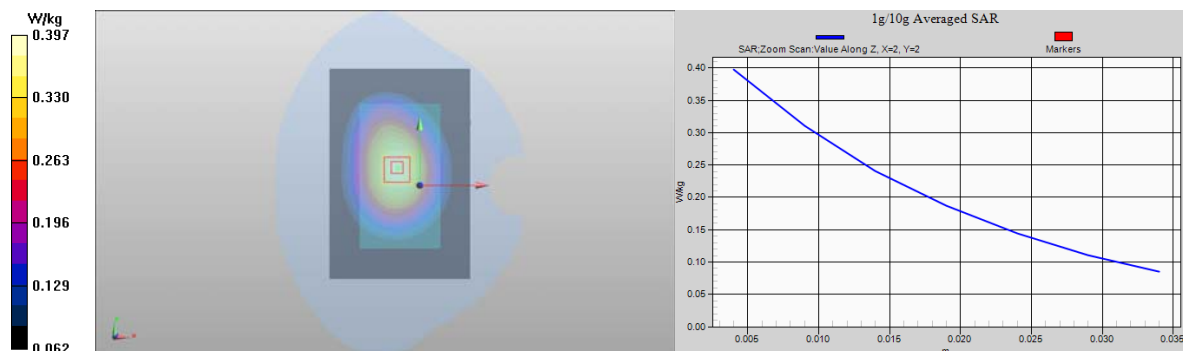
Peak SAR (extrapolated) = 0.476 mW/g

SAR(1 g) = 0.378 mW/g

SAR(10 g) = 0.285 mW/g

Power Drift = 0.05 dB

Maximum value of SAR (measured) = 0.397 W/kg



Date/Time: 2012-10-17 13:28:09

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.8

Medium parameters used (interpolated): $f = 836.5$ MHz; $\sigma = 1.007$ mho/m; $\epsilon_r = 53.377$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Middle - QPSK - 10MHz - 100% RB - Spacer 15mm - No Accessory - Back Facing Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.266 W/kg

LTE/Body - Middle - QPSK - 10MHz - 100% RB - Spacer 15mm - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 16.204 V/m

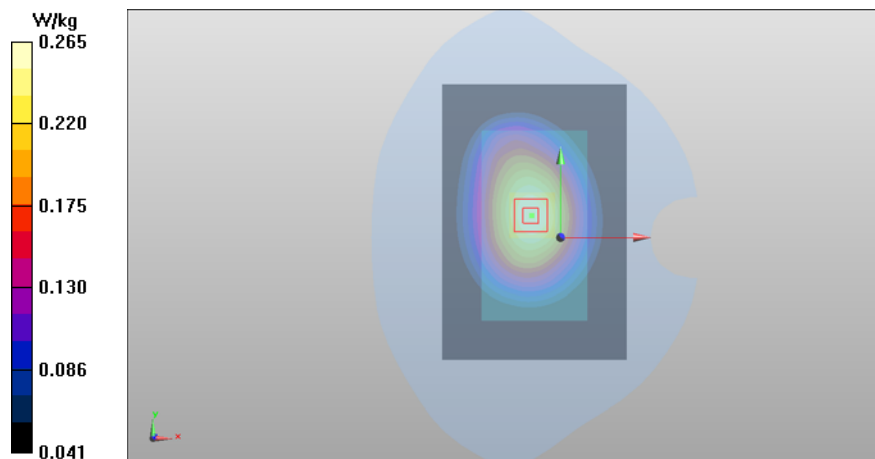
Peak SAR (extrapolated) = 0.315 mW/g

SAR(1 g) = 0.251 mW/g

SAR(10 g) = 0.189 mW/g

Power Drift = -0.00 dB

Maximum value of SAR (measured) = 0.265 W/kg



Date/Time: 2012-10-17 13:52:05

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 829 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.8

Medium parameters used: f = 829 MHz; $\sigma = 1.002$ mho/m; $\epsilon_r = 53.433$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Low - QPSK - 10MHz - 50% RB - 50% offset - Spacer 15mm - No Accessory - Back Facing

Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.281 W/kg

LTE/Body - Low - QPSK - 10MHz - 50% RB - 50% offset - Spacer 15mm - No Accessory - Back Facing

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

Reference Value = 16.793 V/m

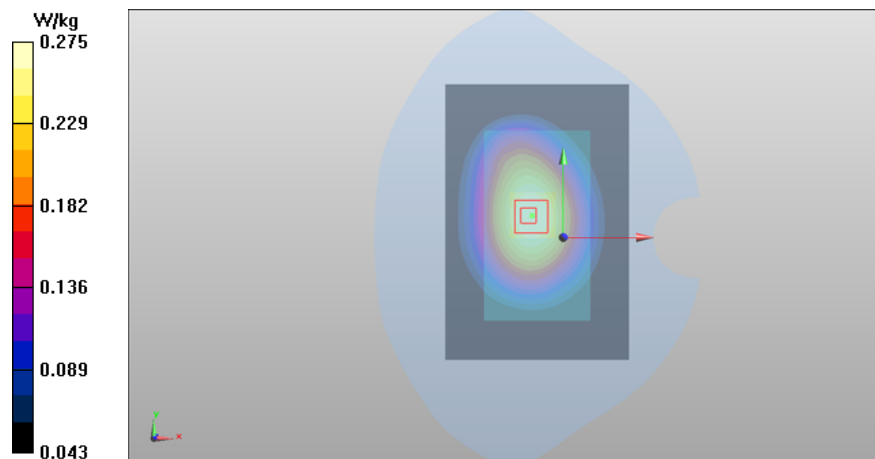
Peak SAR (extrapolated) = 0.331 mW/g

SAR(1 g) = 0.263 mW/g

SAR(10 g) = 0.199 mW/g

Power Drift = -0.01 dB

Maximum value of SAR (measured) = 0.275 W/kg



Date/Time: 2012-10-17 16:13:35

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 844 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.8

Medium parameters used: f = 844 MHz; $\sigma = 1.012$ mho/m; $\epsilon_r = 53.319$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165

- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;

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

- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15

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

- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.6 (6824)

LTE/Body - High - QPSK - 10MHz - 1 RB - 50% offset - Spacer 15mm - No Accessory - Back Facing Phantom/Area

Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.347 W/kg

LTE/Body - High - QPSK - 10MHz - 1 RB - 50% offset - Spacer 15mm - No Accessory - Back Facing Phantom/Zoom

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

Reference Value = 18.573 V/m

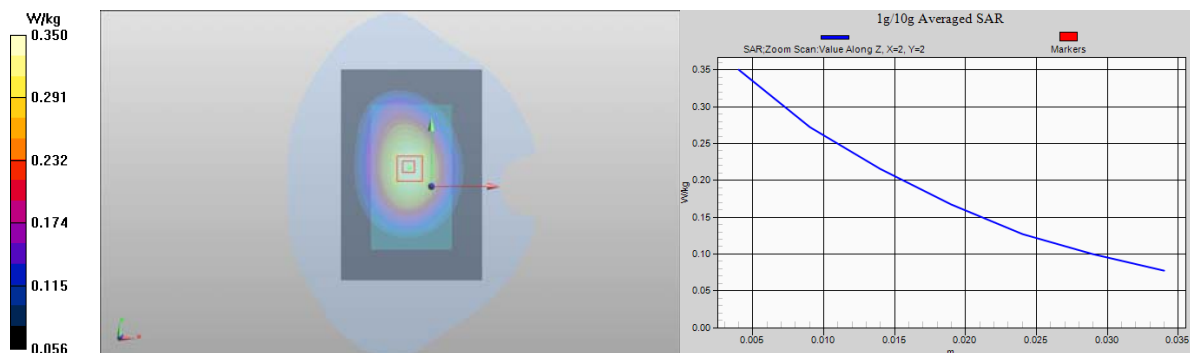
Peak SAR (extrapolated) = 0.422 mW/g

SAR(1 g) = 0.332 mW/g

SAR(10 g) = 0.251 mW/g

Power Drift = 0.02 dB

Maximum value of SAR (measured) = 0.350 W/kg



SAR Report

Appendix B.2 for FCC_RM-824_08

Applicant: Nokia Corporation

Type: RM-824

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Date/Time: 2012-10-17 14:17:24

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 829 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.8

Medium parameters used: f = 829 MHz; $\sigma = 1.002$ mho/m; $\epsilon_r = 53.433$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Low - QPSK - 10MHz - 1 RB - 100% offset - Spacer 15mm - No Accessory - Back Facing Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.309 W/kg

LTE/Body - Low - QPSK - 10MHz - 1 RB - 100% offset - Spacer 15mm - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 17.929 V/m

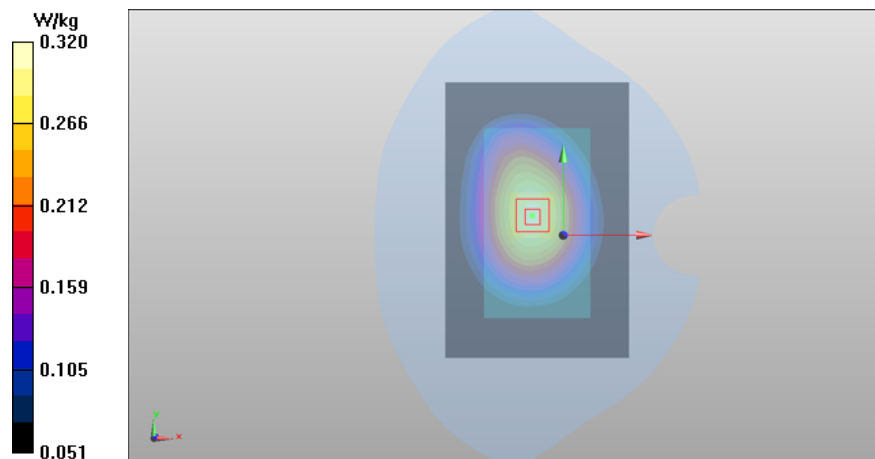
Peak SAR (extrapolated) = 0.390 mW/g

SAR(1 g) = 0.299 mW/g

SAR(10 g) = 0.225 mW/g

Power Drift = -0.03 dB

Maximum value of SAR (measured) = 0.320 W/kg



Date/Time: 2012-10-09 12:12:42

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 21.3 C

Medium parameters used (interpolated): f = 836.5 MHz; $\sigma = 1.006$ mho/m; $\epsilon_r = 53.015$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Middle - QPSK - 10MHz - 1RB - 0% offset - Spacer 15mm - No Accessory - Back Facing Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.329 W/kg

LTE/Body - Middle - QPSK - 10MHz - 1RB - 0% offset - Spacer 15mm - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 16.601 V/m

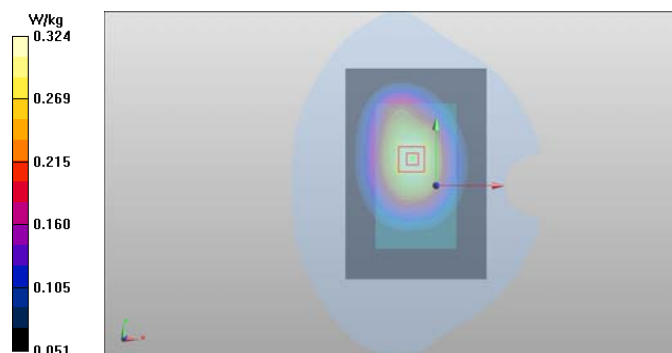
Peak SAR (extrapolated) = 0.390 mW/g

SAR(1 g) = 0.311 mW/g

SAR(10 g) = 0.235 mW/g

Power Drift = 0.05 dB

Maximum value of SAR (measured) = 0.324 W/kg



Date/Time: 2012-10-17 14:44:20

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.8

Medium parameters used (interpolated): $f = 836.5$ MHz; $\sigma = 1.007$ mho/m; $\epsilon_r = 53.377$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Middle - 16QAM - 10MHz - 100% RB - Spacer 15mm - No Accessory - Back Facing Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.212 W/kg

LTE/Body - Middle - 16QAM - 10MHz - 100% RB - Spacer 15mm - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 14.540 V/m

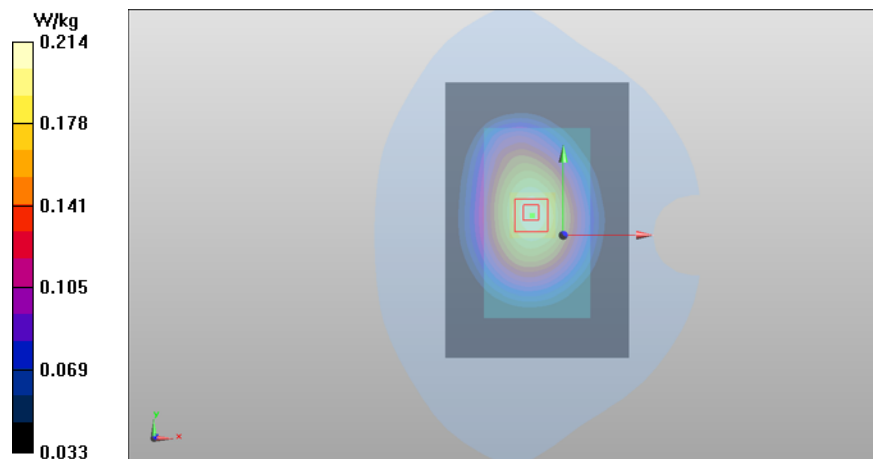
Peak SAR (extrapolated) = 0.260 mW/g

SAR(1 g) = 0.203 mW/g

SAR(10 g) = 0.153 mW/g

Power Drift = 0.02 dB

Maximum value of SAR (measured) = 0.214 W/kg



Date/Time: 2012-10-17 15:02:28

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 829 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.8

Medium parameters used: f = 829 MHz; $\sigma = 1.002$ mho/m; $\epsilon_r = 53.433$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Low - 16QAM - 10MHz - 50% RB - 50% offset - Spacer 15mm - No Accessory - Back Facing

Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.226 W/kg

LTE/Body - Low - 16QAM - 10MHz - 50% RB - 50% offset - Spacer 15mm - No Accessory - Back Facing

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

Reference Value = 15.117 V/m

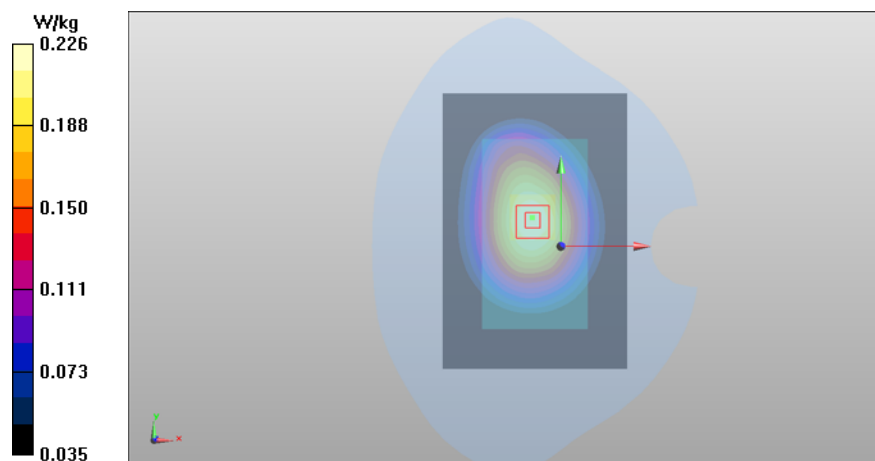
Peak SAR (extrapolated) = 0.269 mW/g

SAR(1 g) = 0.215 mW/g

SAR(10 g) = 0.162 mW/g

Power Drift = -0.06 dB

Maximum value of SAR (measured) = 0.226 W/kg



Date/Time: 2012-10-17 15:15:28

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 829 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.8

Medium parameters used: f = 829 MHz; $\sigma = 1.002$ mho/m; $\epsilon_r = 53.433$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Low - 16QAM - 10MHz - 1 RB - 50% offset - Spacer 15mm - No Accessory - Back Facing

Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.240 W/kg

LTE/Body - Low - 16QAM - 10MHz - 1 RB - 50% offset - Spacer 15mm - No Accessory - Back Facing

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

Reference Value = 15.795 V/m

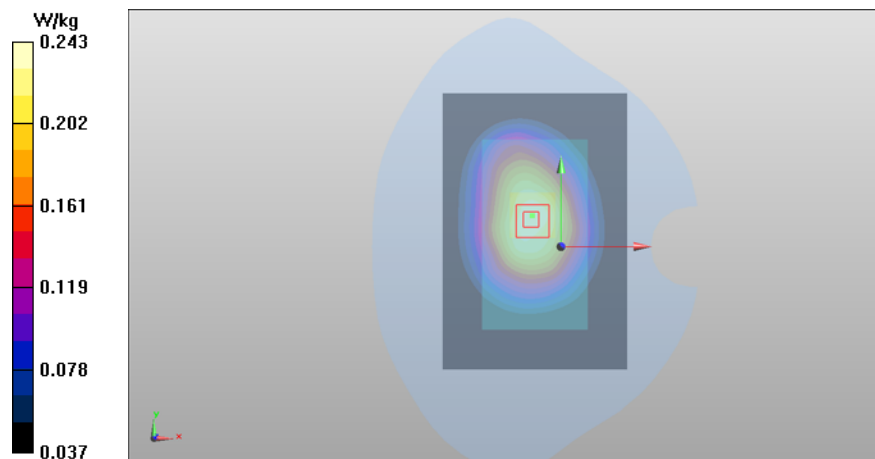
Peak SAR (extrapolated) = 0.289 mW/g

SAR(1 g) = 0.232 mW/g

SAR(10 g) = 0.176 mW/g

Power Drift = -0.19 dB

Maximum value of SAR (measured) = 0.243 W/kg



Date/Time: 2012-10-17 15:28:38

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.8

Medium parameters used (interpolated): $f = 836.5$ MHz; $\sigma = 1.007$ mho/m; $\epsilon_r = 53.377$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Middle - 16QAM - 10MHz - 1 RB - 100% offset - Spacer 15mm - No Accessory - Back Facing

Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.228 W/kg

LTE/Body - Middle - 16QAM - 10MHz - 1 RB - 100% offset - Spacer 15mm - No Accessory - Back Facing

Phantom/Zoom Scan (5x7x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 15.511 V/m

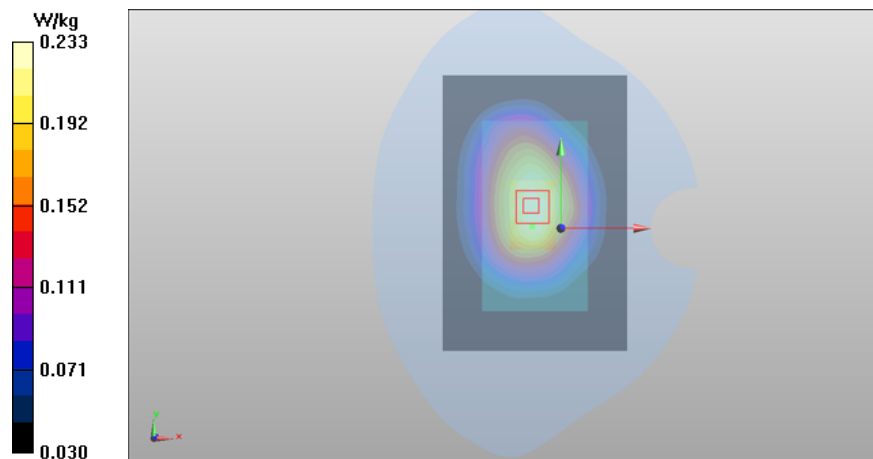
Peak SAR (extrapolated) = 0.311 mW/g

SAR(1 g) = 0.219 mW/g

SAR(10 g) = 0.167 mW/g

Power Drift = -0.34 dB

Maximum value of SAR (measured) = 0.233 W/kg



Date/Time: 2012-10-17 15:43:51

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.8

Medium parameters used (interpolated): $f = 836.5$ MHz; $\sigma = 1.007$ mho/m; $\epsilon_r = 53.377$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Middle - 16QAM - 10MHz - 1 RB - 0% offset - Spacer 15mm - No Accessory - Back Facing

Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.254 W/kg

LTE/Body - Middle - 16QAM - 10MHz - 1 RB - 0% offset - Spacer 15mm - No Accessory - Back Facing

Phantom/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 16.362 V/m

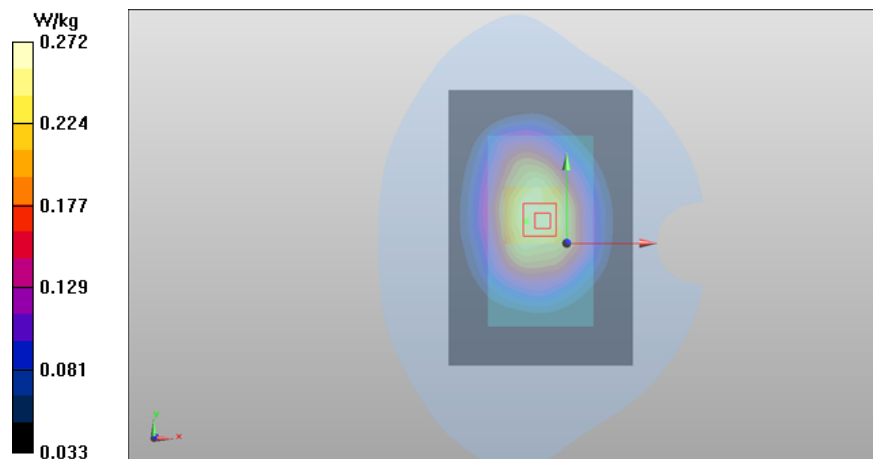
Peak SAR (extrapolated) = 0.347 mW/g

SAR(1 g) = 0.256 mW/g

SAR(10 g) = 0.193 mW/g

Power Drift = 0.28 dB

Maximum value of SAR (measured) = 0.272 W/kg



Date/Time: 2012-10-09 09:49:32

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: WCDMA1900

Frequency: 1852.4 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: $t = 20.7$ C

Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.477$ mho/m; $\epsilon_r = 51.229$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

WCDMA/Body - Low - Spacer 15mm - No Accessory - Display Facing Phantom - Cover CC-3401/Area Scan (81x121x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 0.553 W/kg

WCDMA/Body - Low - Spacer 15mm - No Accessory - Display Facing Phantom - Cover CC-3401/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm

Reference Value = 9.131 V/m

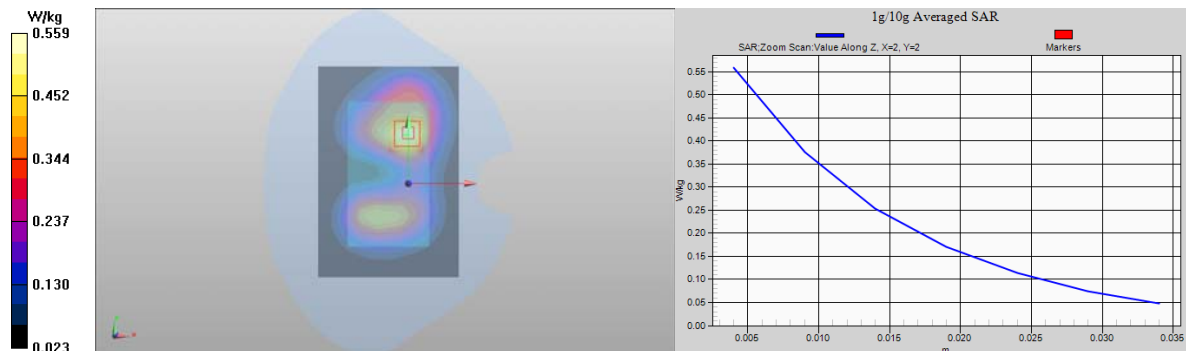
Peak SAR (extrapolated) = 0.785 mW/g

SAR(1 g) = 0.521 mW/g

SAR(10 g) = 0.328 mW/g

Power Drift = 0.05 dB

Maximum value of SAR (measured) = 0.559 W/kg



Date/Time: 2012-10-17 12:54:19

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: $t = 21.4$ C

Medium parameters used: $f = 1860$ MHz; $\sigma = 1.473$ mho/m; $\epsilon_r = 52.155$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Low - QPSK - 20MHz - 100% RB - Spacer 15mm - No Accessory - Display Facing Phantom/Area Scan (81x121x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 0.535 W/kg

LTE/Body - Low - QPSK - 20MHz - 100% RB - Spacer 15mm - No Accessory - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm

Reference Value = 9.843 V/m

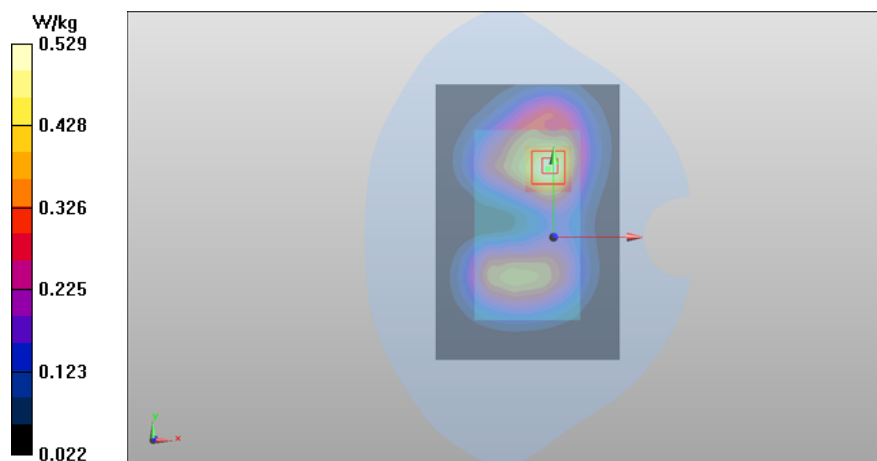
Peak SAR (extrapolated) = 0.740 mW/g

SAR(1 g) = 0.492 mW/g

SAR(10 g) = 0.308 mW/g

Power Drift = -0.22 dB

Maximum value of SAR (measured) = 0.529 W/kg



Date/Time: 2012-10-17 13:19:13

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: $t = 21.4$ C

Medium parameters used: $f = 1860$ MHz; $\sigma = 1.473$ mho/m; $\epsilon_r = 52.155$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Low - QPSK - 20MHz - 50% RB - 50% offset - Spacer 15mm - No Accessory - Display Facing

Phantom/Area Scan (81x121x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 0.508 W/kg

LTE/Body - Low - QPSK - 20MHz - 50% RB - 50% offset - Spacer 15mm - No Accessory - Display Facing

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

Reference Value = 9.562 V/m

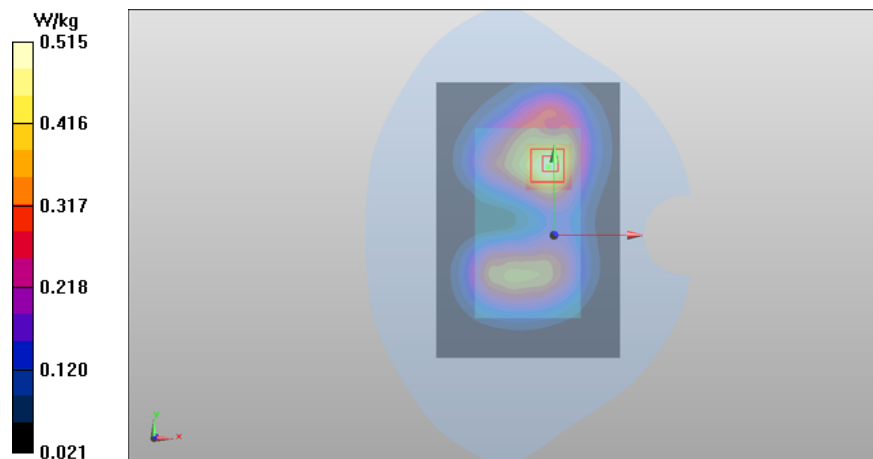
Peak SAR (extrapolated) = 0.732 mW/g

SAR(1 g) = 0.482 mW/g

SAR(10 g) = 0.302 mW/g

Power Drift = 0.09 dB

Maximum value of SAR (measured) = 0.515 W/kg



Date/Time: 2012-10-17 13:33:38

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: $t = 21.4$ C

Medium parameters used: $f = 1860$ MHz; $\sigma = 1.473$ mho/m; $\epsilon_r = 52.155$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Low - QPSK - 20MHz - 1 RB - 50% offset - Spacer 15mm - No Accessory - Display Facing

Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.608 W/kg

LTE/Body - Low - QPSK - 20MHz - 1 RB - 50% offset - Spacer 15mm - No Accessory - Display Facing

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

Reference Value = 10.415 V/m

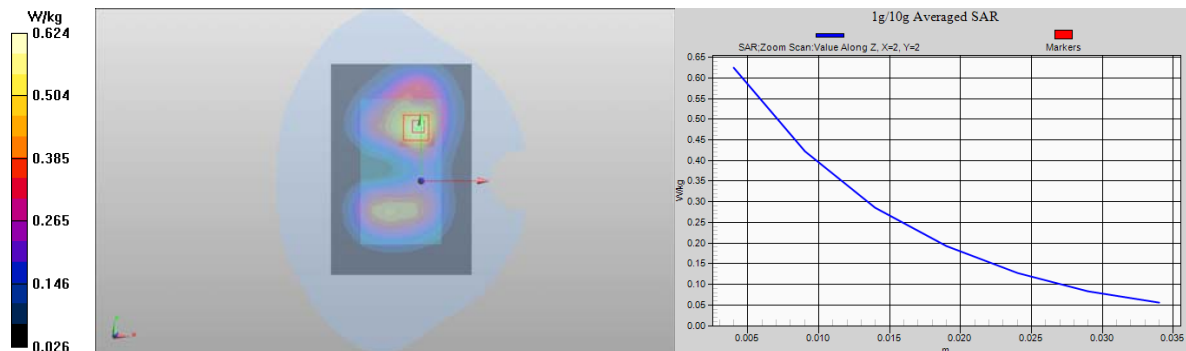
Peak SAR (extrapolated) = 0.871 mW/g

SAR(1 g) = 0.581 mW/g

SAR(10 g) = 0.364 mW/g

Power Drift = 0.14 dB

Maximum value of SAR (measured) = 0.624 W/kg



SAR Report

Appendix B.2 for FCC_RM-824_08

Applicant: Nokia Corporation

Type: RM-824

Copyright © 2012 TCC Nokia

Date/Time: 2012-10-17 13:47:59

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: $t = 21.4$ C

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.509$ mho/m; $\epsilon_r = 52.061$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE/Body - High - QPSK - 20MHz - 1 RB - 100% offset - Spacer 15mm - No Accessory - Display Facing

Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.596 W/kg

LTE/Body - High - QPSK - 20MHz - 1 RB - 100% offset - Spacer 15mm - No Accessory - Display Facing

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

Reference Value = 9.788 V/m

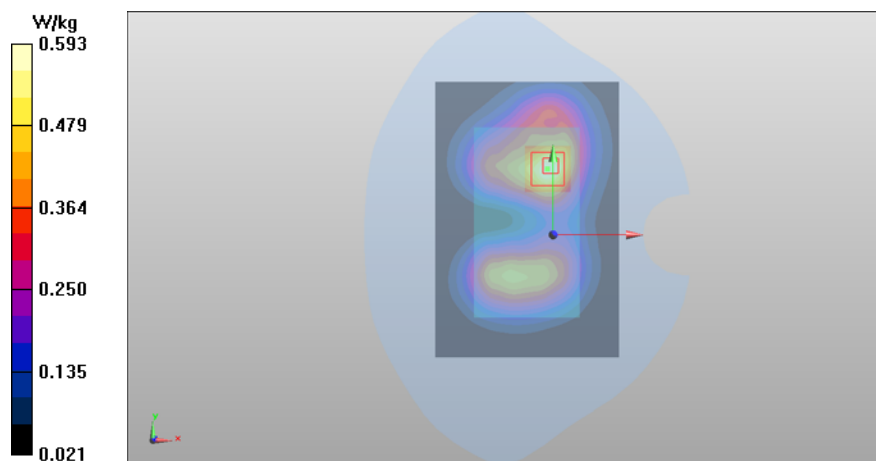
Peak SAR (extrapolated) = 0.852 mW/g

SAR(1 g) = 0.556 mW/g

SAR(10 g) = 0.344 mW/g

Power Drift = -0.17 dB

Maximum value of SAR (measured) = 0.593 W/kg



Date/Time: 2012-10-17 14:03:52

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: $t = 21.4$ C

Medium parameters used: $f = 1860$ MHz; $\sigma = 1.473$ mho/m; $\epsilon_r = 52.155$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Low - QPSK - 20MHz - 1 RB - 0% offset - Spacer 15mm - No Accessory - Display Facing Phantom/Area Scan (81x121x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 0.582 W/kg

LTE/Body - Low - QPSK - 20MHz - 1 RB - 0% offset - Spacer 15mm - No Accessory - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm

Reference Value = 10.132 V/m

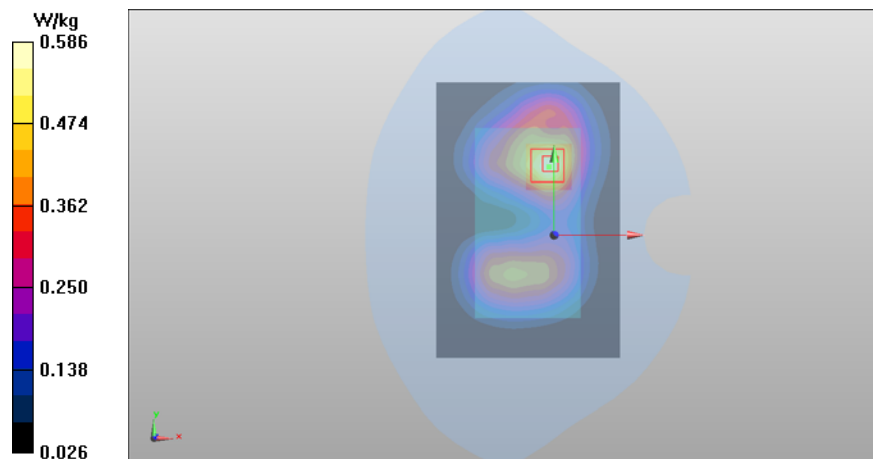
Peak SAR (extrapolated) = 0.818 mW/g

SAR(1 g) = 0.548 mW/g

SAR(10 g) = 0.346 mW/g

Power Drift = 0.11 dB

Maximum value of SAR (measured) = 0.586 W/kg



Date/Time: 2012-10-17 14:21:54

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: $t = 21.4$ C

Medium parameters used: $f = 1860$ MHz; $\sigma = 1.473$ mho/m; $\epsilon_r = 52.155$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Low - 16QAM - 20MHz - 100% RB - Spacer 15mm - No Accessory - Display Facing Phantom/Area Scan (81x121x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 0.436 W/kg

LTE/Body - Low - 16QAM - 20MHz - 100% RB - Spacer 15mm - No Accessory - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm

Reference Value = 8.034 V/m

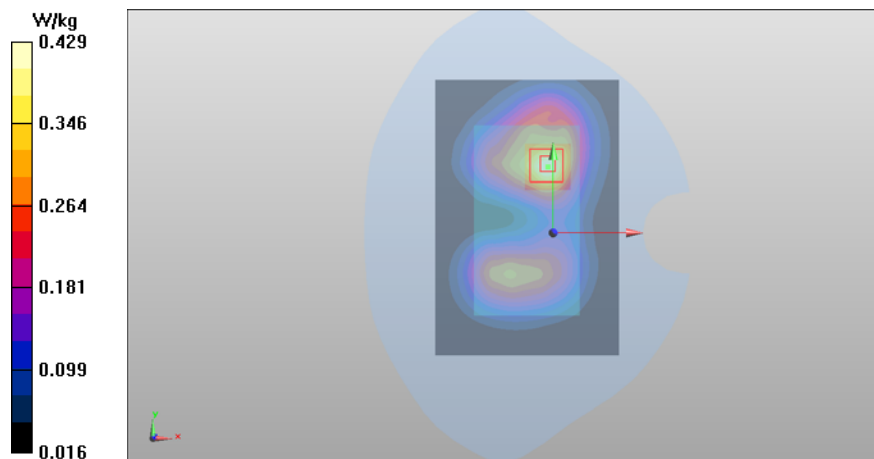
Peak SAR (extrapolated) = 0.591 mW/g

SAR(1 g) = 0.400 mW/g

SAR(10 g) = 0.252 mW/g

Power Drift = 0.03 dB

Maximum value of SAR (measured) = 0.429 W/kg



Date/Time: 2012-10-17 15:05:47

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: $t = 21.4$ C

Medium parameters used: $f = 1860$ MHz; $\sigma = 1.473$ mho/m; $\epsilon_r = 52.155$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Low - 16QAM - 20MHz - 50% RB - 50% offset - Spacer 15mm - No Accessory - Display Facing

Phantom/Area Scan (81x121x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 0.431 W/kg

LTE/Body - Low - 16QAM - 20MHz - 50% RB - 50% offset - Spacer 15mm - No Accessory - Display Facing

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

Reference Value = 7.984 V/m

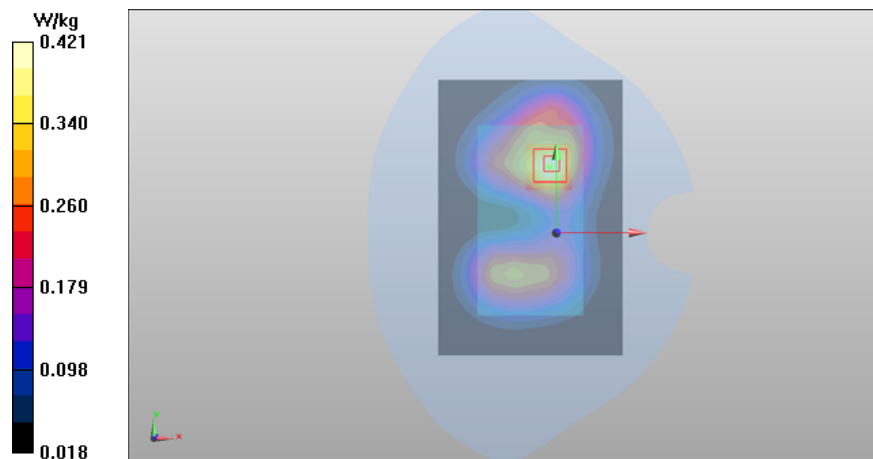
Peak SAR (extrapolated) = 0.597 mW/g

SAR(1 g) = 0.399 mW/g

SAR(10 g) = 0.252 mW/g

Power Drift = 0.18 dB

Maximum value of SAR (measured) = 0.421 W/kg



Date/Time: 2012-10-17 15:30:18

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: $t = 21.4$ C

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.509$ mho/m; $\epsilon_r = 52.061$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE/Body - High - 16QAM - 20MHz - 1 RB - 50% offset - Spacer 15mm - No Accessory - Display Facing

Phantom/Area Scan (81x121x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 0.409 W/kg

LTE/Body - High - 16QAM - 20MHz - 1 RB - 50% offset - Spacer 15mm - No Accessory - Display Facing

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

Reference Value = 7.474 V/m

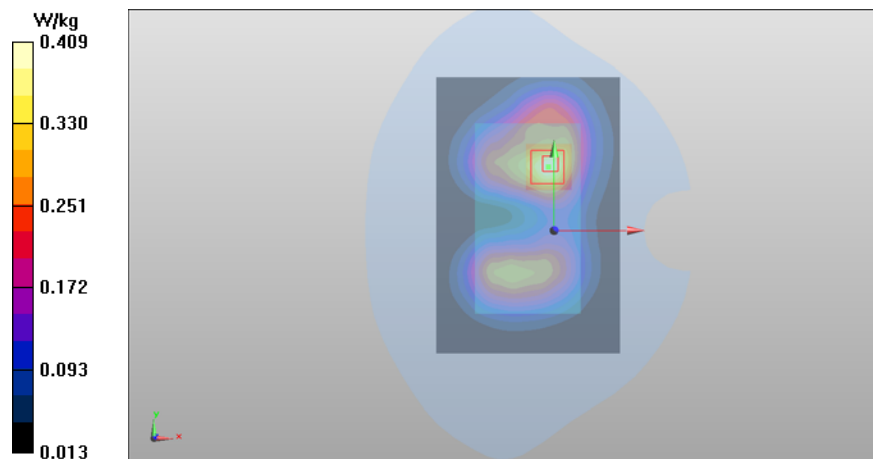
Peak SAR (extrapolated) = 0.579 mW/g

SAR(1 g) = 0.380 mW/g

SAR(10 g) = 0.236 mW/g

Power Drift = 0.16 dB

Maximum value of SAR (measured) = 0.409 W/kg



Date/Time: 2012-10-17 15:18:14

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: $t = 21.4$ C

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.509$ mho/m; $\epsilon_r = 52.061$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE/Body - High - 16QAM - 20MHz - 1 RB - 100% offset - Spacer 15mm - No Accessory - Display Facing

Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.482 W/kg

LTE/Body - High - 16QAM - 20MHz - 1 RB - 100% offset - Spacer 15mm - No Accessory - Display Facing

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

Reference Value = 8.093 V/m

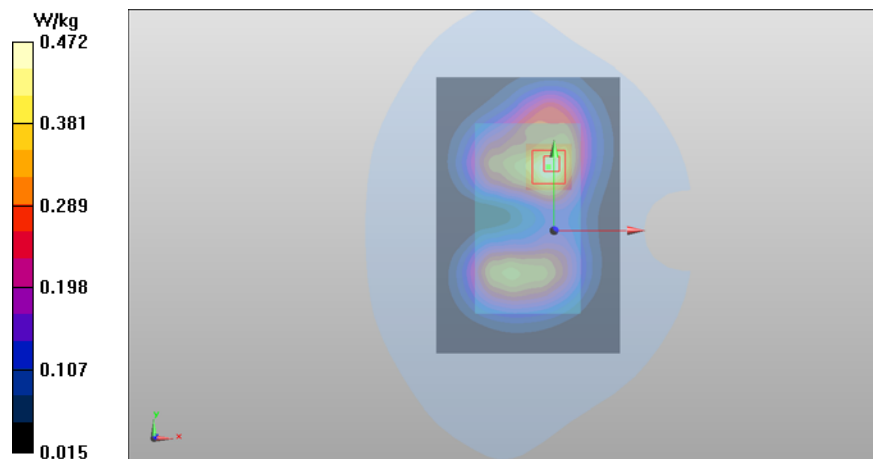
Peak SAR (extrapolated) = 0.675 mW/g

SAR(1 g) = 0.444 mW/g

SAR(10 g) = 0.277 mW/g

Power Drift = 0.12 dB

Maximum value of SAR (measured) = 0.472 W/kg



Date/Time: 2012-10-17 15:43:09

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: $t = 21.4$ C

Medium parameters used: $f = 1860$ MHz; $\sigma = 1.473$ mho/m; $\epsilon_r = 52.155$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Low- 16QAM - 20MHz - 1 RB - 0% offset - Spacer 15mm - No Accessory - Display Facing

Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.474 W/kg

LTE/Body - Low- 16QAM - 20MHz - 1 RB - 0% offset - Spacer 15mm - No Accessory - Display Facing

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

Reference Value = 8.435 V/m

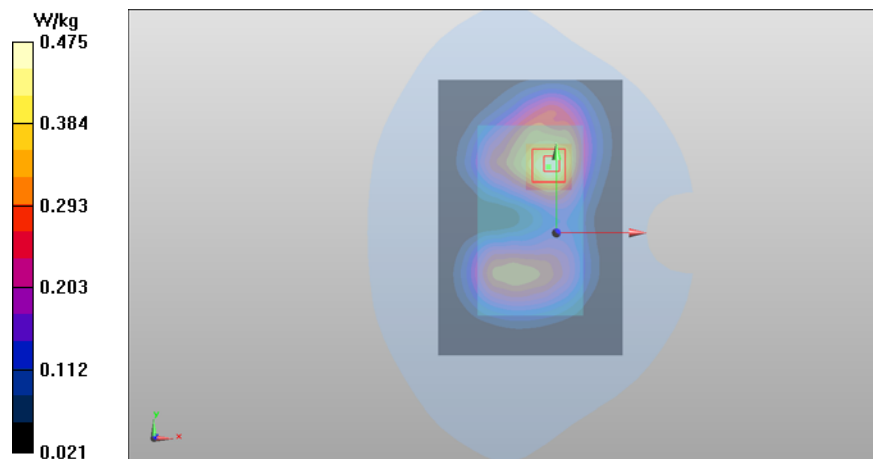
Peak SAR (extrapolated) = 0.665 mW/g

SAR(1 g) = 0.446 mW/g

SAR(10 g) = 0.281 mW/g

Power Drift = 0.09 dB

Maximum value of SAR (measured) = 0.475 W/kg



Date/Time: 2012-07-03 08:08:02

DASY Configuration for WLAN/Body - Middle - Spacer 15mm - No Accessory - Back Facing Phantom/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 004402/13/976064/3

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

Medium: BSL2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.94$ mho/m; $\epsilon_r = 50.394$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: EX3DV4 - SN3573; ConvF(6.45, 6.45, 6.45); Calibrated: 2012-02-23;

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

Electronics: DAE4 Sn793; Calibrated: 2011-09-16

Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177

Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-09 09:37:32

DASY Configuration for WCDMA/Body - High - Spacer 15mm - No Accessory - Back Facing Phantom/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: WCDMA850; Frequency: 846.6 MHz; Duty Cycle: 1:1; PMF: 1

Medium: BSL850 Medium parameters used: $f = 847$ MHz; $\sigma = 1.013$ mho/m; $\epsilon_r = 52.952$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: ES3DV3 - SN3165; ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;

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

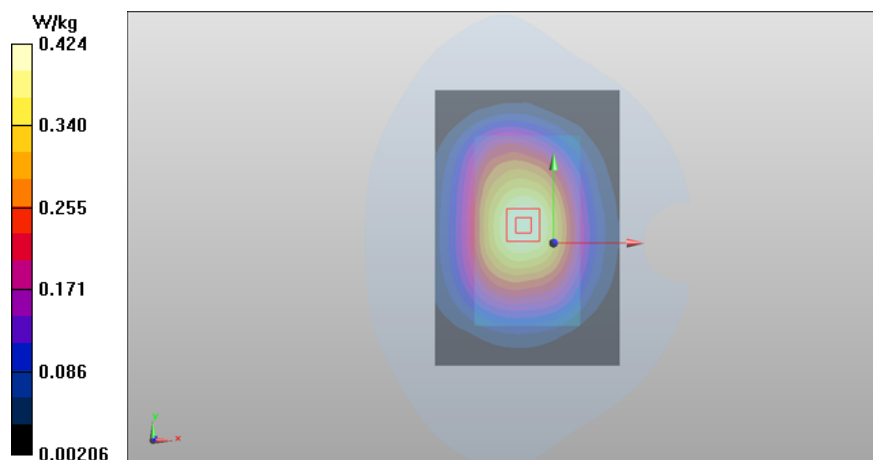
Electronics: DAE4 Sn1316; Calibrated: 2012-02-15

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

Measurement SW: DASY52, Version 52.6 (2)

Fast SAR of Combined Scans: SAR(1 g) = 0.401 mW/g; SAR(10 g) = 0.282 mW/g

Maximum value of SAR (interpolated) = 0.424 W/kg



Date/Time: 2012-07-03 08:08:02

DASY Configuration for WLAN/Body - Middle - Spacer 15mm - No Accessory - Back Facing Phantom/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 004402/13/976064/3

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

Medium: BSL2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.94$ mho/m; $\epsilon_r = 50.394$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: EX3DV4 - SN3573; ConvF(6.45, 6.45, 6.45); Calibrated: 2012-02-23;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn793; Calibrated: 2011-09-16
Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-17 16:13:35

DASY Configuration for LTE/Body - High - QPSK - 10MHz - 1 RB - 50% offset - Spacer 15mm - No Accessory - Back Facing Phantom/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5); Frequency: 844 MHz; Duty Cycle: 1:1; PMF: 1

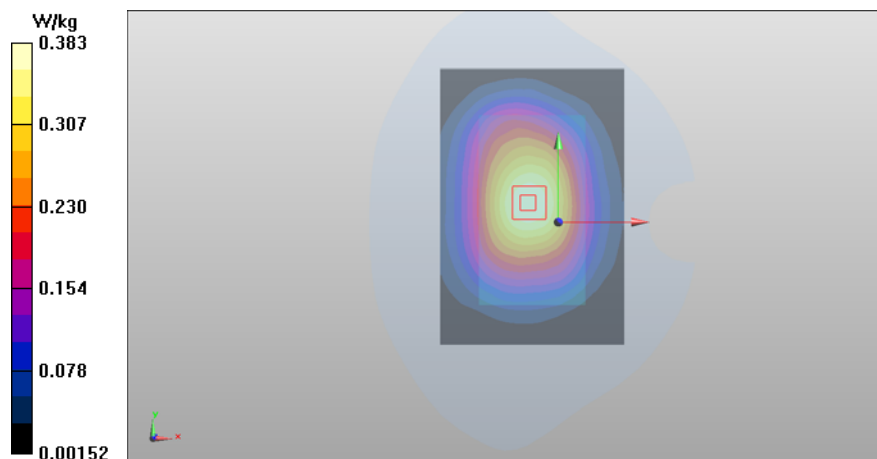
Medium: BSL850 Medium parameters used: $f = 844$ MHz; $\sigma = 1.012$ mho/m; $\epsilon_r = 53.319$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: ES3DV3 - SN3165; ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
Measurement SW: DASY52, Version 52.8 (0)

Fast SAR of Combined Scans: SAR(1 g) = 0.363 mW/g; SAR(10 g) = 0.255 mW/g

Maximum value of SAR (interpolated) = 0.383 W/kg



Date/Time: 2012-07-03 06:54:29

DASY Configuration for WLAN/Body - Middle - Spacer 15mm - No Accessory - Display Facing Phantom/Area

Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 004402/13/976064/3

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

Medium: BSL2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.94$ mho/m; $\epsilon_r = 50.394$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: EX3DV4 - SN3573; ConvF(6.45, 6.45, 6.45); Calibrated: 2012-02-23;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn793; Calibrated: 2011-09-16

Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177

Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-09 09:49:32

DASY Configuration for WCDMA/Body - Low - Spacer 15mm - No Accessory - Display Facing Phantom - Cover CC-3401/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: WCDMA1900; Frequency: 1852.4 MHz; Duty Cycle: 1:1; PMF: 1

Medium: BSL1900 Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.477$ mho/m; $\epsilon_r = 51.229$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: EX3DV4 - SN3835; ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;

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

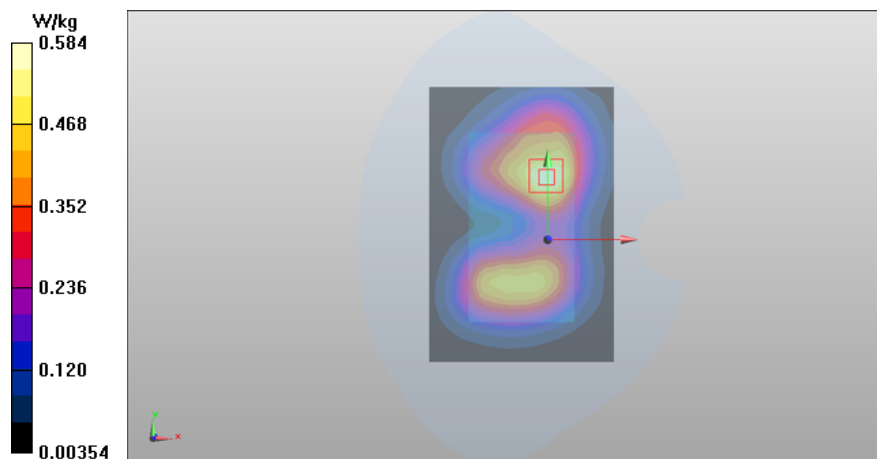
Electronics: DAE4 Sn538; Calibrated: 2012-08-03

Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177

Measurement SW: DASY4, Version 4.7 (80)

Fast SAR of Combined Scans: SAR(1 g) = 0.533 mW/g; SAR(10 g) = 0.316 mW/g

Maximum value of SAR (interpolated) = 0.584 W/kg



Date/Time: 2012-07-03 06:54:29

DASY Configuration for WLAN/Body - Middle - Spacer 15mm - No Accessory - Display Facing Phantom/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 004402/13/976064/3

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

Medium: BSL2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.94$ mho/m; $\epsilon_r = 50.394$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: EX3DV4 - SN3573; ConvF(6.45, 6.45, 6.45); Calibrated: 2012-02-23;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn793; Calibrated: 2011-09-16

Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177

Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-17 13:33:38

DASY Configuration for LTE/Body - Low - QPSK - 20MHz - 1 RB - 50% offset - Spacer 15mm - No Accessory - Display Facing Phantom/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2); Frequency: 1860 MHz; Duty Cycle: 1:1; PMF: 1

Medium: BSL1900 Medium parameters used: $f = 1860$ MHz; $\sigma = 1.473$ mho/m; $\epsilon_r = 52.155$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: EX3DV4 - SN3835; ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;

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

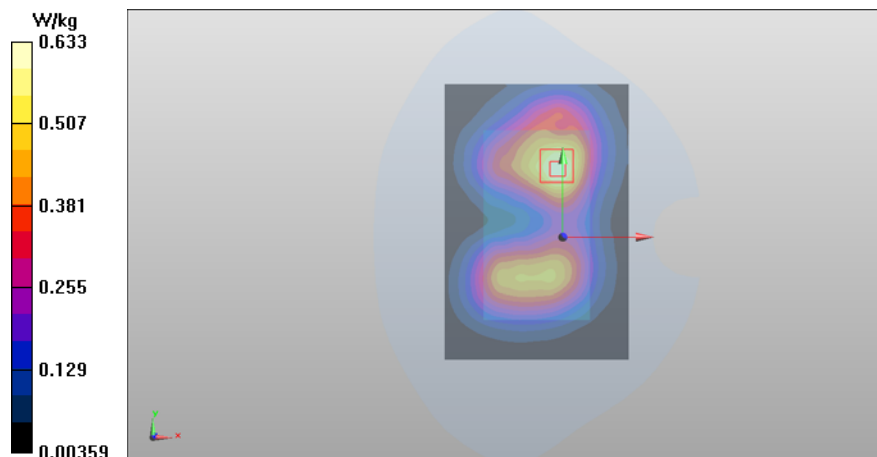
Electronics: DAE4 Sn538; Calibrated: 2012-08-03

Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177

Measurement SW: DASY4, Version 4.7 (80)

Fast SAR of Combined Scans: SAR(1 g) = 0.577 mW/g; SAR(10 g) = 0.344 mW/g

Maximum value of SAR (interpolated) = 0.633 W/kg



Date/Time: 2012-07-04 16:53:21

DASY Configuration for WLAN/Body - Channel 64 - Spacer 15mm - No Accessory - Back Facing Phantom/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 004402/13/976060/1

Communication System: WLAN5000 a-mode; Frequency: 5320 MHz; Duty Cycle: 1:1; PMF: 1

Medium: BSL5000 Medium parameters used: $f = 5320$ MHz; $\sigma = 5.618$ mho/m; $\epsilon_r = 48.321$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: EX3DV4 - SN3834; ConvF(3.75, 3.75, 3.75); Calibrated: 2012-02-07;
Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn1213; Calibrated: 2012-02-14
Phantom: SAM2; Type: SAM; Serial: TP-1570
Measurement SW: DASY52, Version 52.8 (1)

Date/Time: 2012-10-09 09:37:32

DASY Configuration for WCDMA/Body - High - Spacer 15mm - No Accessory - Back Facing Phantom/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: WCDMA850; Frequency: 846.6 MHz; Duty Cycle: 1:1; PMF: 1

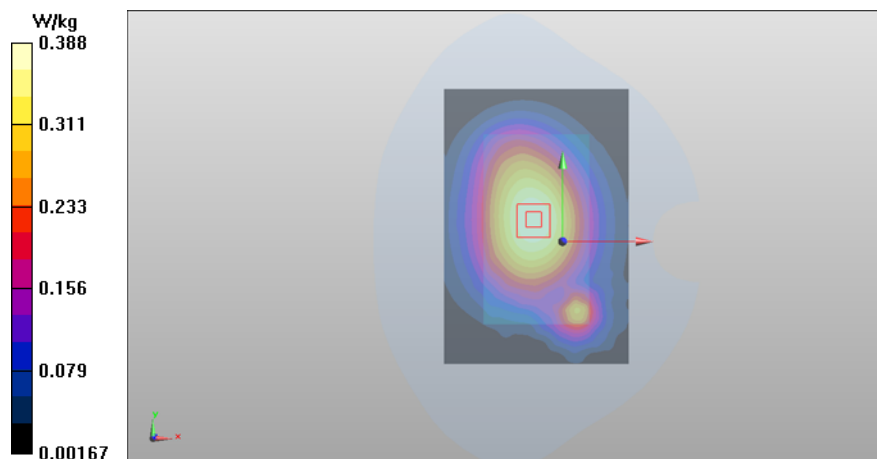
Medium: BSL850 Medium parameters used: $f = 847$ MHz; $\sigma = 1.013$ mho/m; $\epsilon_r = 52.952$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: ES3DV3 - SN3165; ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
Measurement SW: DASY52, Version 52.6 (2)

Fast SAR of Combined Scans: SAR(1 g) = 0.367 mW/g; SAR(10 g) = 0.263 mW/g

Maximum value of SAR (interpolated) = 0.388 W/kg



Date/Time: 2012-07-04 16:53:21

DASY Configuration for WLAN/Body - Channel 64 - Spacer 15mm - No Accessory - Back Facing Phantom/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 004402/13/976060/1

Communication System: WLAN5000 a-mode; Frequency: 5320 MHz; Duty Cycle: 1:1; PMF: 1

Medium: BSL5000 Medium parameters used: $f = 5320$ MHz; $\sigma = 5.618$ mho/m; $\epsilon_r = 48.321$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: EX3DV4 - SN3834; ConvF(3.75, 3.75, 3.75); Calibrated: 2012-02-07;
Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn1213; Calibrated: 2012-02-14
Phantom: SAM2; Type: SAM; Serial: TP-1570
Measurement SW: DASY52, Version 52.8 (1)

Date/Time: 2012-10-17 16:13:35

DASY Configuration for LTE/Body - High - QPSK - 10MHz - 1 RB - 50% offset - Spacer 15mm - No Accessory - Back Facing Phantom/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5); Frequency: 844 MHz; Duty Cycle: 1:1; PMF: 1

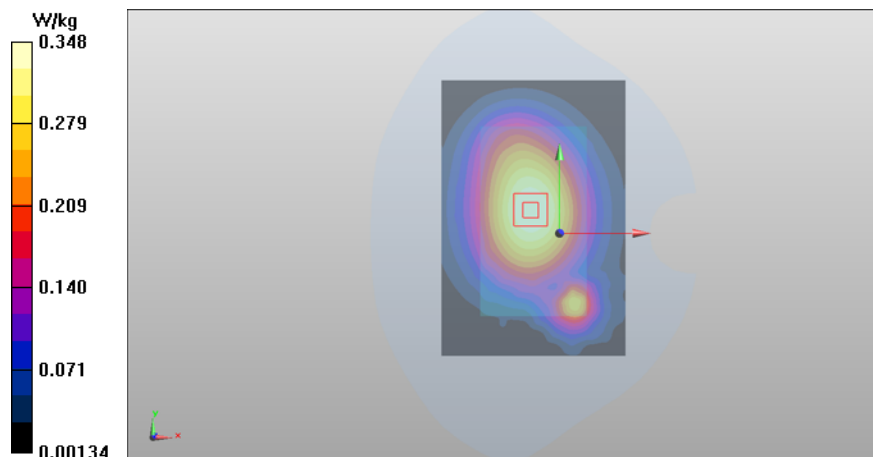
Medium: BSL850 Medium parameters used: $f = 844$ MHz; $\sigma = 1.012$ mho/m; $\epsilon_r = 53.319$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: ES3DV3 - SN3165; ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
Measurement SW: DASY52, Version 52.8 (0)

Fast SAR of Combined Scans: SAR(1 g) = 0.330 mW/g; SAR(10 g) = 0.236 mW/g

Maximum value of SAR (interpolated) = 0.348 W/kg



Date/Time: 2012-07-04 19:02:42

DASY Configuration for WLAN/Body - Channel 64 - Spacer 15mm - No Accessory - Display Facing Phantom/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 004402/13/976060/1

Communication System: WLAN5000 a-mode; Frequency: 5320 MHz; Duty Cycle: 1:1; PMF: 1

Medium: BSL5000 Medium parameters used: $f = 5320$ MHz; $\sigma = 5.618$ mho/m; $\epsilon_r = 48.321$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: EX3DV4 - SN3834; ConvF(3.75, 3.75, 3.75); Calibrated: 2012-02-07;
Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn1213; Calibrated: 2012-02-14
Phantom: SAM2; Type: SAM; Serial: TP-1570
Measurement SW: DASY52, Version 52.8 (1)

Date/Time: 2012-10-09 09:49:32

DASY Configuration for WCDMA/Body - Low - Spacer 15mm - No Accessory - Display Facing Phantom - Cover CC-3401/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: WCDMA1900; Frequency: 1852.4 MHz; Duty Cycle: 1:1; PMF: 1

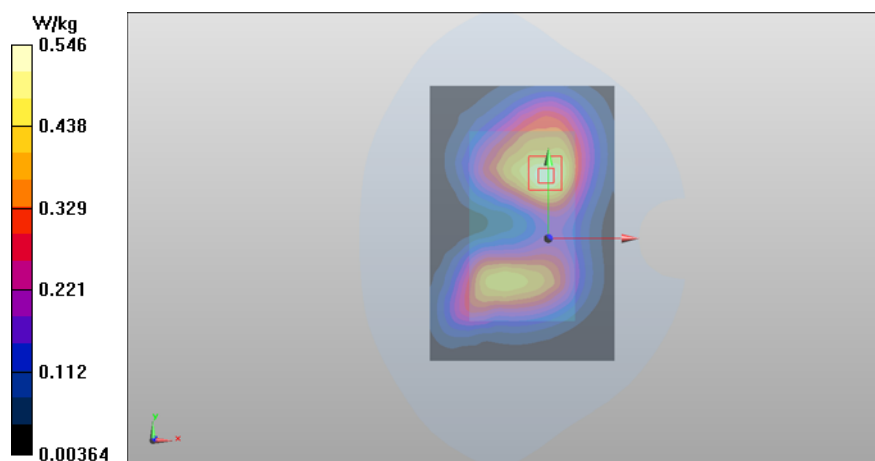
Medium: BSL1900 Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.477$ mho/m; $\epsilon_r = 51.229$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: EX3DV4 - SN3835; ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn538; Calibrated: 2012-08-03
Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
Measurement SW: DASY4, Version 4.7 (80)

Fast SAR of Combined Scans: SAR(1 g) = 0.499 mW/g; SAR(10 g) = 0.300 mW/g

Maximum value of SAR (interpolated) = 0.546 W/kg



Date/Time: 2012-07-04 19:02:42

DASY Configuration for WLAN/Body - Channel 64 - Spacer 15mm - No Accessory - Display Facing Phantom/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 004402/13/976060/1

Communication System: WLAN5000 a-mode; Frequency: 5320 MHz; Duty Cycle: 1:1; PMF: 1

Medium: BSL5000 Medium parameters used: $f = 5320$ MHz; $\sigma = 5.618$ mho/m; $\epsilon_r = 48.321$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: EX3DV4 - SN3834; ConvF(3.75, 3.75, 3.75); Calibrated: 2012-02-07;
Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn1213; Calibrated: 2012-02-14
Phantom: SAM2; Type: SAM; Serial: TP-1570
Measurement SW: DASY52, Version 52.8 (1)

Date/Time: 2012-10-17 13:33:38

DASY Configuration for LTE/Body - Low - QPSK - 20MHz - 1 RB - 50% offset - Spacer 15mm - No Accessory - Display Facing Phantom/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2); Frequency: 1860 MHz; Duty Cycle: 1:1; PMF: 1

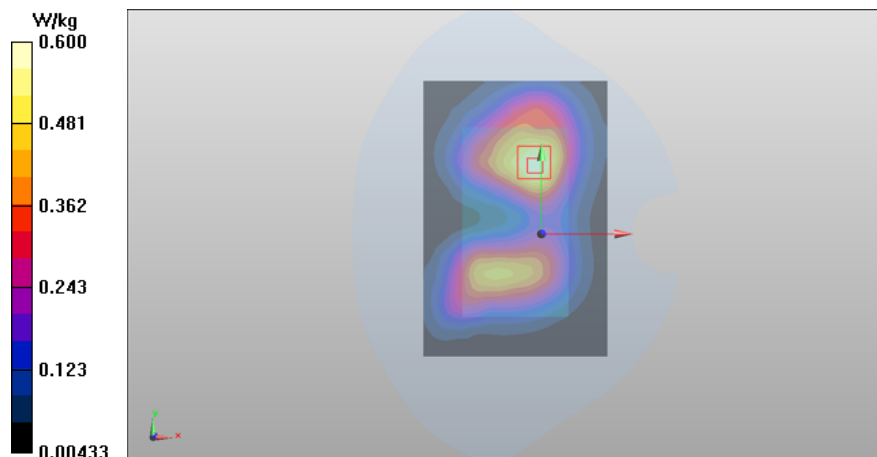
Medium: BSL1900 Medium parameters used: $f = 1860$ MHz; $\sigma = 1.473$ mho/m; $\epsilon_r = 52.155$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: EX3DV4 - SN3835; ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn538; Calibrated: 2012-08-03
Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
Measurement SW: DASY4, Version 4.7 (80)

Fast SAR of Combined Scans: SAR(1 g) = 0.548 mW/g; SAR(10 g) = 0.330 mW/g

Maximum value of SAR (interpolated) = 0.600 W/kg



APPENDIX B.3: WIRELESS ROUTER MEASUREMENT SCANS

Date/Time: 2012-10-09 11:17:05

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: WCDMA850

Frequency: 846.6 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: $t = 21.3$ C

Medium parameters used: $f = 847$ MHz; $\sigma = 1.013$ mho/m; $\epsilon_r = 52.952$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.6.6 (6824)

WCDMA/Body - High - Spacer 10mm - No Accessory - Back Facing Phantom/Area Scan (81x121x1):

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

Maximum value of SAR (interpolated) = 0.516 W/kg

WCDMA/Body - High - Spacer 10mm - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 21.434 V/m

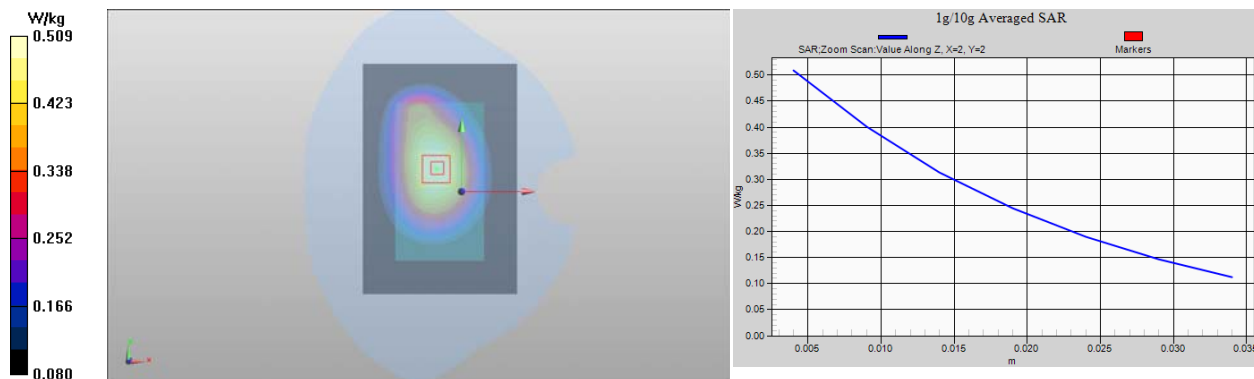
Peak SAR (extrapolated) = 0.600 mW/g

SAR(1 g) = 0.484 mW/g

SAR(10 g) = 0.368 mW/g

Power Drift = 0.00 dB

Maximum value of SAR (measured) = 0.509 W/kg



Date/Time: 2012-10-17 16:57:21

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.8

Medium parameters used (interpolated): $f = 836.5$ MHz; $\sigma = 1.007$ mho/m; $\epsilon_r = 53.377$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Middle - QPSK - 10MHz - 100% RB - Spacer 10mm - No Accessory - Back Facing Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.346 W/kg

LTE/Body - Middle - QPSK - 10MHz - 100% RB - Spacer 10mm - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 18.577 V/m

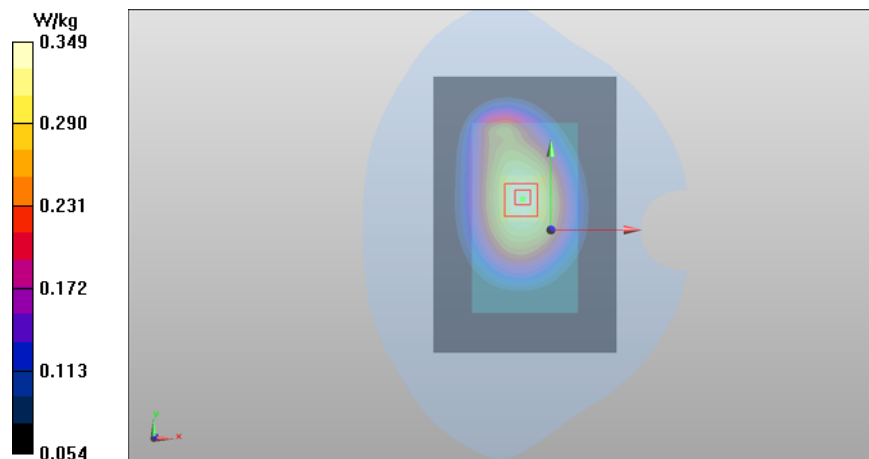
Peak SAR (extrapolated) = 0.411 mW/g

SAR(1 g) = 0.331 mW/g

SAR(10 g) = 0.252 mW/g

Power Drift = -0.04 dB

Maximum value of SAR (measured) = 0.349 W/kg



Date/Time: 2012-10-17 17:15:35

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 829 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.8

Medium parameters used: f = 829 MHz; $\sigma = 1.002$ mho/m; $\epsilon_r = 53.433$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Low - QPSK - 10MHz - 50% RB - 50% offset - Spacer 10mm - No Accessory - Back Facing

Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.365 W/kg

LTE/Body - Low - QPSK - 10MHz - 50% RB - 50% offset - Spacer 10mm - No Accessory - Back Facing

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

Reference Value = 19.258 V/m

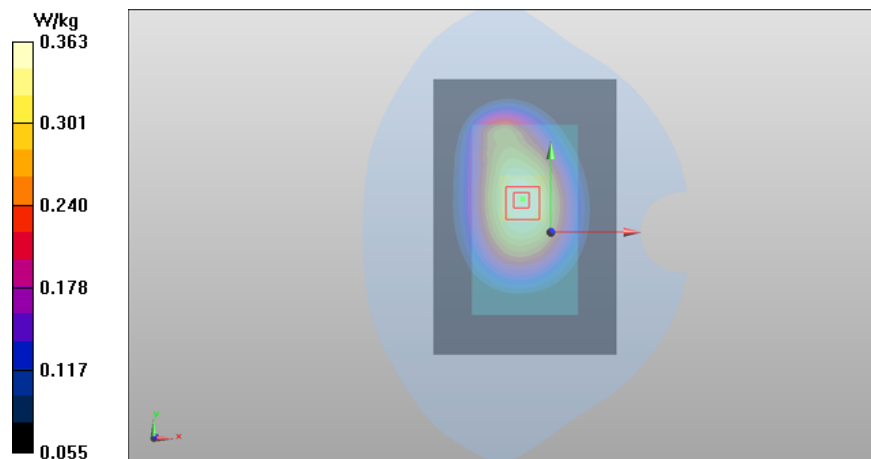
Peak SAR (extrapolated) = 0.429 mW/g

SAR(1 g) = 0.346 mW/g

SAR(10 g) = 0.264 mW/g

Power Drift = -0.02 dB

Maximum value of SAR (measured) = 0.363 W/kg



Date/Time: 2012-10-17 17:29:49

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 829 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.8

Medium parameters used: f = 829 MHz; $\sigma = 1.002$ mho/m; $\epsilon_r = 53.433$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Low - QPSK - 10MHz - 1 RB - 50% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.428 W/kg

LTE/Body - Low - QPSK - 10MHz - 1 RB - 50% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 20.826 V/m

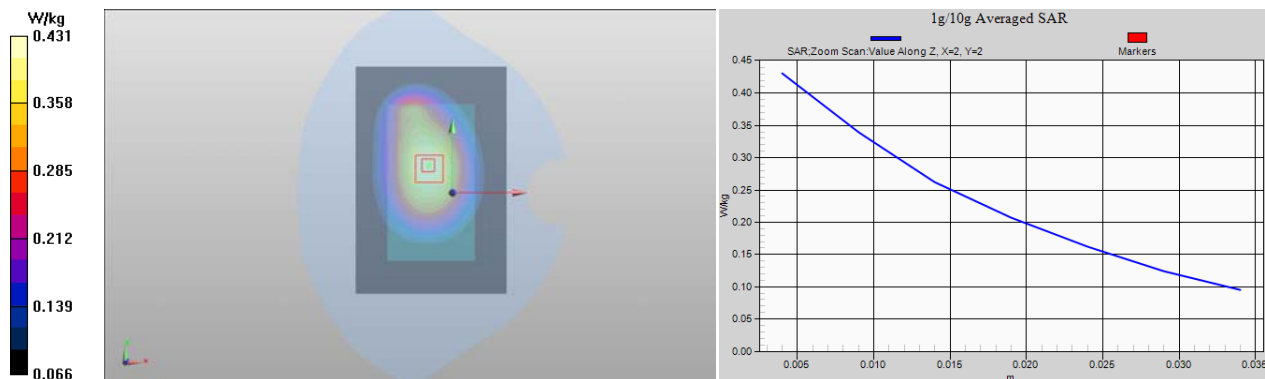
Peak SAR (extrapolated) = 0.507 mW/g

SAR(1 g) = 0.408 mW/g

SAR(10 g) = 0.310 mW/g

Power Drift = 0.03 dB

Maximum value of SAR (measured) = 0.431 W/kg



Date/Time: 2012-10-17 17:43:29

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 829 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.8

Medium parameters used: f = 829 MHz; $\sigma = 1.002$ mho/m; $\epsilon_r = 53.433$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Low - QPSK - 10MHz - 1 RB - 100% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.404 W/kg

LTE/Body - Low - QPSK - 10MHz - 1 RB - 100% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 20.355 V/m

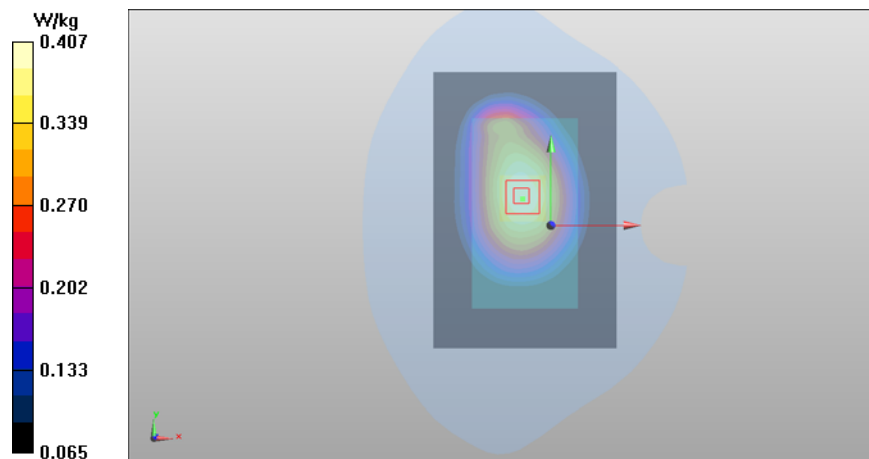
Peak SAR (extrapolated) = 0.482 mW/g

SAR(1 g) = 0.387 mW/g

SAR(10 g) = 0.295 mW/g

Power Drift = -0.08 dB

Maximum value of SAR (measured) = 0.407 W/kg



Date/Time: 2012-10-09 13:29:10

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: $t = 21.3$ C

Medium parameters used (interpolated): $f = 836.5$ MHz; $\sigma = 1.006$ mho/m; $\epsilon_r = 53.015$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Middle - QPSK - 10MHz - 1RB - zero offset - Spacer 10 mm - No Accessory - Back Facing

Phantom/Area Scan (81x121x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 0.388 W/kg

LTE/Body - Middle - QPSK - 10MHz - 1RB - zero offset - Spacer 10 mm - No Accessory - Back Facing

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

Reference Value = 18.852 V/m

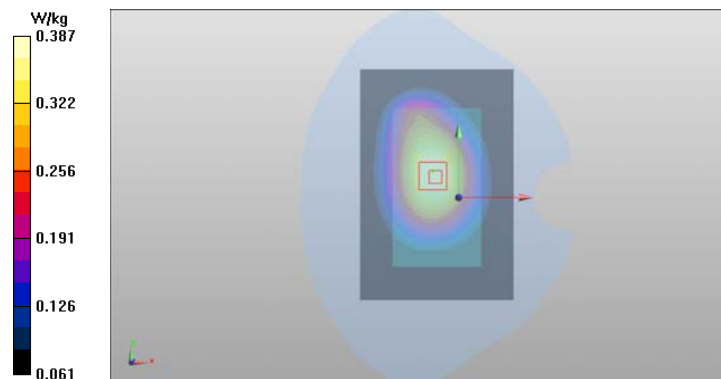
Peak SAR (extrapolated) = 0.499 mW/g

SAR(1 g) = 0.372 mW/g

SAR(10 g) = 0.281 mW/g

Power Drift = -0.01 dB

Maximum value of SAR (measured) = 0.387 W/kg



Date/Time: 2012-10-17 18:16:17

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.8

Medium parameters used (interpolated): $f = 836.5$ MHz; $\sigma = 1.007$ mho/m; $\epsilon_r = 53.377$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Middle - 16QAM - 10MHz - 100% RB - Spacer 10mm - No Accessory - Back Facing Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.271 W/kg

LTE/Body - Middle - 16QAM - 10MHz - 100% RB - Spacer 10mm - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 16.505 V/m

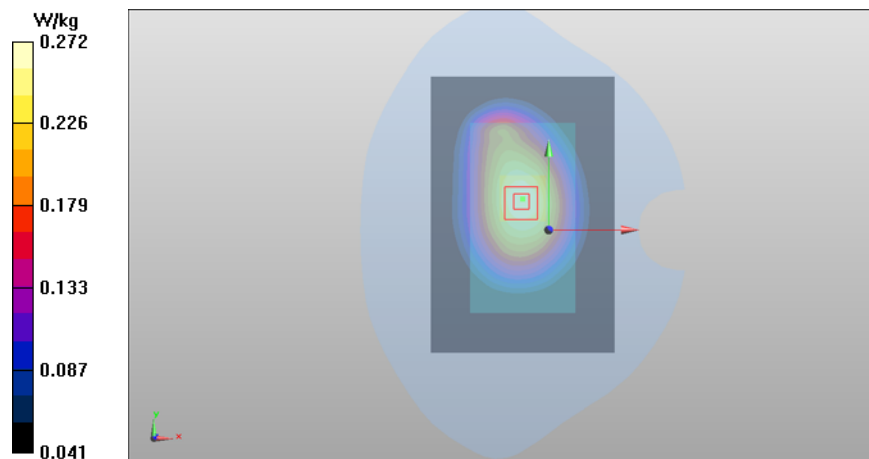
Peak SAR (extrapolated) = 0.320 mW/g

SAR(1 g) = 0.259 mW/g

SAR(10 g) = 0.197 mW/g

Power Drift = 0.05 dB

Maximum value of SAR (measured) = 0.272 W/kg



Date/Time: 2012-10-17 18:29:10

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 829 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.8

Medium parameters used: f = 829 MHz; σ = 1.002 mho/m; ϵ_r = 53.433; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Low - 16QAM - 10MHz - 50% RB - 50% offset - Spacer 10mm - No Accessory - Back Facing

Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.293 W/kg

LTE/Body - Low - 16QAM - 10MHz - 50% RB - 50% offset - Spacer 10mm - No Accessory - Back Facing

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

Reference Value = 17.274 V/m

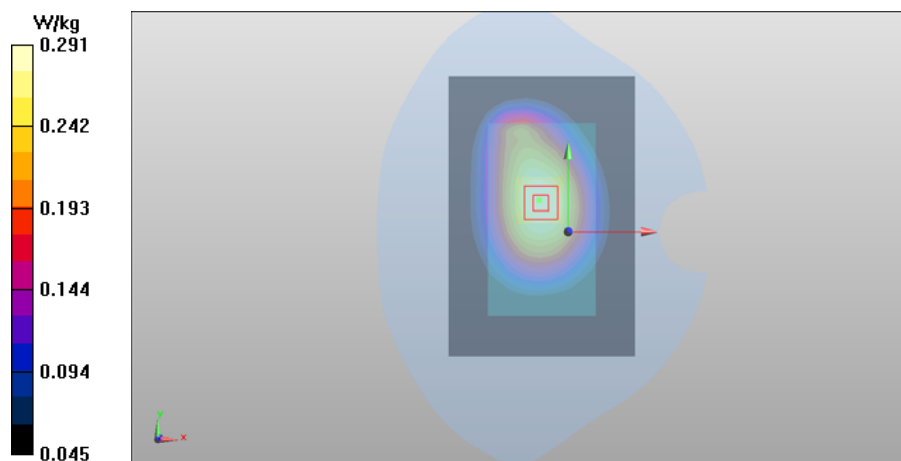
Peak SAR (extrapolated) = 0.341 mW/g

SAR(1 g) = 0.277 mW/g

SAR(10 g) = 0.211 mW/g

Power Drift = -0.04 dB

Maximum value of SAR (measured) = 0.291 W/kg



Date/Time: 2012-10-17 18:41:35

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 829 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.8

Medium parameters used: f = 829 MHz; $\sigma = 1.002$ mho/m; $\epsilon_r = 53.433$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Low - 16QAM - 10MHz - 1 RB - 50% offset - Spacer 10mm - No Accessory - Back Facing

Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.325 W/kg

LTE/Body - Low - 16QAM - 10MHz - 1 RB - 50% offset - Spacer 10mm - No Accessory - Back Facing

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

Reference Value = 18.070 V/m

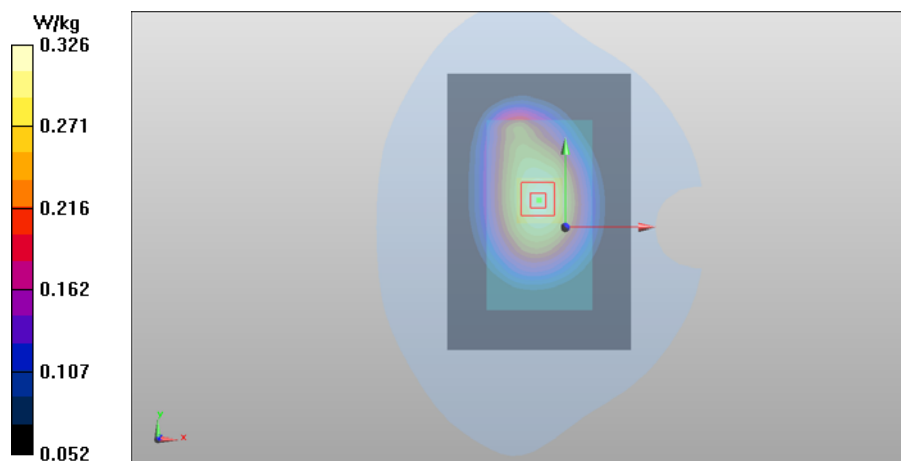
Peak SAR (extrapolated) = 0.391 mW/g

SAR(1 g) = 0.310 mW/g

SAR(10 g) = 0.234 mW/g

Power Drift = -0.04 dB

Maximum value of SAR (measured) = 0.326 W/kg



Date/Time: 2012-10-17 18:54:00

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.8

Medium parameters used (interpolated): $f = 836.5$ MHz; $\sigma = 1.007$ mho/m; $\epsilon_r = 53.377$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Middle - 16QAM - 10MHz - 1 RB - 100% offset - Spacer 10mm - No Accessory - Back Facing

Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.340 W/kg

LTE/Body - Middle - 16QAM - 10MHz - 1 RB - 100% offset - Spacer 10mm - No Accessory - Back Facing

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

Reference Value = 18.578 V/m

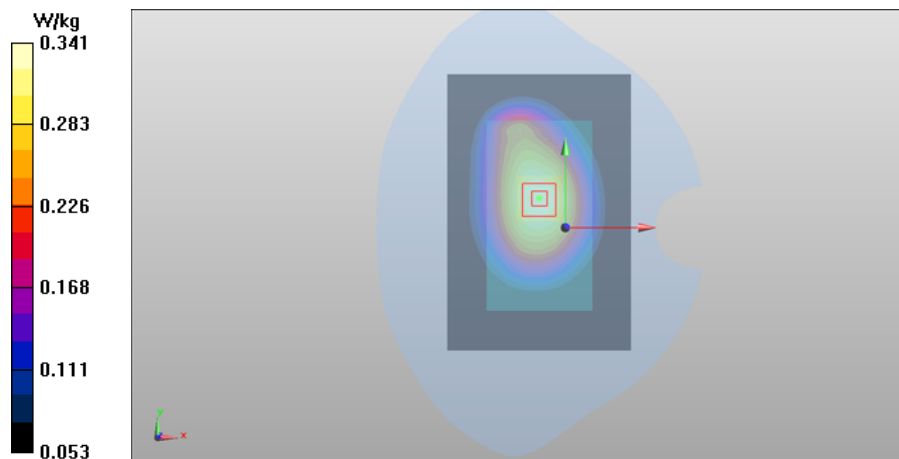
Peak SAR (extrapolated) = 0.403 mW/g

SAR(1 g) = 0.324 mW/g

SAR(10 g) = 0.247 mW/g

Power Drift = 0.00 dB

Maximum value of SAR (measured) = 0.341 W/kg



Date/Time: 2012-10-17 19:06:21

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5)

Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.8

Medium parameters used (interpolated): $f = 836.5$ MHz; $\sigma = 1.007$ mho/m; $\epsilon_r = 53.377$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Middle - 16QAM - 10MHz - 1 RB - 0% offset - Spacer 10mm - No Accessory - Back Facing

Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.361 W/kg

LTE/Body - Middle - 16QAM - 10MHz - 1 RB - 0% offset - Spacer 10mm - No Accessory - Back Facing

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

Reference Value = 19.202 V/m

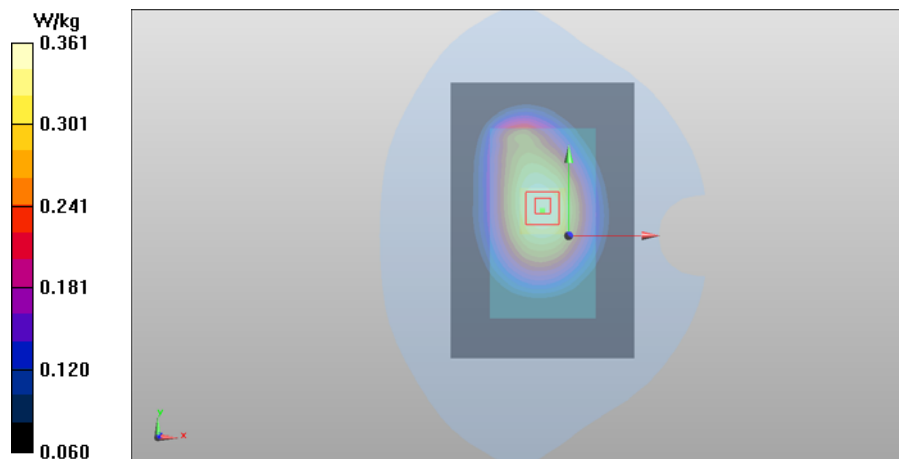
Peak SAR (extrapolated) = 0.425 mW/g

SAR(1 g) = 0.344 mW/g

SAR(10 g) = 0.263 mW/g

Power Drift = 0.03 dB

Maximum value of SAR (measured) = 0.361 W/kg



Date/Time: 2012-10-15 14:29:44

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: WCDMA1900

Frequency: 1852.4 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: t= 20.8C

Medium parameters used (interpolated): f = 1852.4 MHz; $\sigma = 1.471$ mho/m; $\epsilon_r = 51.251$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

WCDMA/Body - Low - Spacer 10mm - No Accessory - Display Facing Phantom/Area Scan (81x121x1): Measurement grid:

dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.921 W/kg

WCDMA/Body - Low - Spacer 10mm - No Accessory - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement

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

Reference Value = 13.004 V/m

Peak SAR (extrapolated) = 1.324 mW/g

SAR(1 g) = 0.873 mW/g

SAR(10 g) = 0.530 mW/g

Power Drift = -0.36 dB

Maximum value of SAR (measured) = 0.915 W/kg

WCDMA/Body - Low - Spacer 10mm - No Accessory - Display Facing Phantom/Zoom Scan 2 (5x5x7)/Cube 0: Measurement

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

Reference Value = 13.004 V/m

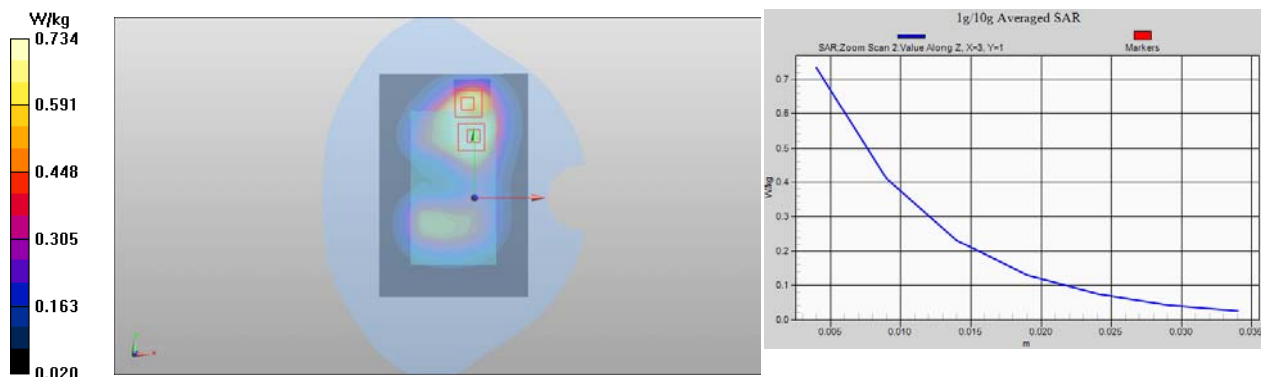
Peak SAR (extrapolated) = 1.181 mW/g

SAR(1 g) = 0.674 mW/g

SAR(10 g) = 0.383 mW/g

Power Drift = -0.36 dB

Maximum value of SAR (measured) = 0.734 W/kg



SAR Report

Appendix B.3 for FCC_RM-824_08

Applicant: Nokia Corporation

Type: RM-824

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Date/Time: 2012-10-17 17:41:16

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: $t = 21.4$ C

Medium parameters used: $f = 1860$ MHz; $\sigma = 1.473$ mho/m; $\epsilon_r = 52.155$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Low - QPSK - 20MHz - 100% RB - Spacer 10mm - No Accessory - Back Facing Phantom/Area Scan (81x121x1):

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

Maximum value of SAR (interpolated) = 0.921 W/kg

LTE/Body - Low - QPSK - 20MHz - 100% RB - Spacer 10mm - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube

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

Reference Value = 9.147 V/m

Peak SAR (extrapolated) = 1.435 mW/g

SAR(1 g) = 0.778 mW/g

SAR(10 g) = 0.400 mW/g

Power Drift = 0.11 dB

Maximum value of SAR (measured) = 0.871 W/kg

LTE/Body - Low - QPSK - 20MHz - 100% RB - Spacer 10mm - No Accessory - Back Facing Phantom/Zoom Scan 2 (5x5x7)/Cube

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

Reference Value = 9.147 V/m

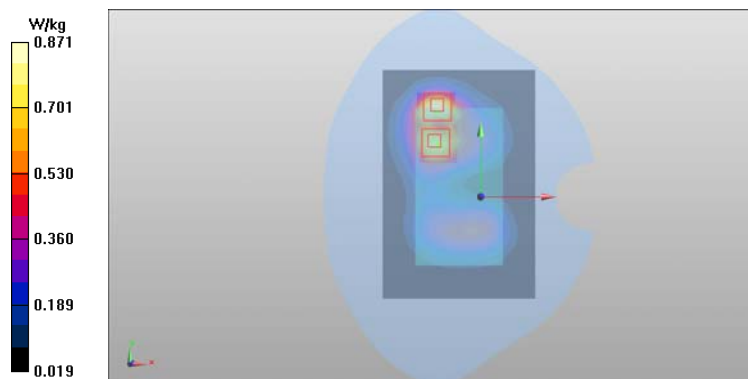
Peak SAR (extrapolated) = 1.156 mW/g

SAR(1 g) = 0.758 mW/g

SAR(10 g) = 0.457 mW/g

Power Drift = 0.11 dB

Maximum value of SAR (measured) = 0.799 W/kg



SAR Report

Appendix B.3 for FCC_RM-824_08

Applicant: Nokia Corporation

Type: RM-824

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Date/Time: 2012-10-17 18:03:36

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: $t = 21.4\text{ }^{\circ}\text{C}$

Medium parameters used: $f = 1860\text{ MHz}$; $\sigma = 1.473\text{ mho/m}$; $\epsilon_r = 52.155$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Low - QPSK - 20MHz - 50% RB - 50% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Area Scan (81x121x1): Measurement grid: $dx=15\text{ mm}$, $dy=15\text{ mm}$

Maximum value of SAR (interpolated) = 0.898 W/kg

LTE/Body - Low - QPSK - 20MHz - 50% RB - 50% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{ mm}$, $dy=7.5\text{ mm}$, $dz=5\text{ mm}$

Reference Value = 9.199 V/m

Peak SAR (extrapolated) = 1.415 mW/g

SAR(1 g) = 0.759 mW/g

SAR(10 g) = 0.392 mW/g

Power Drift = -0.02 dB

Maximum value of SAR (measured) = 0.847 W/kg

LTE/Body - Low - QPSK - 20MHz - 50% RB - 50% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{ mm}$, $dy=7.5\text{ mm}$, $dz=5\text{ mm}$

Reference Value = 9.199 V/m

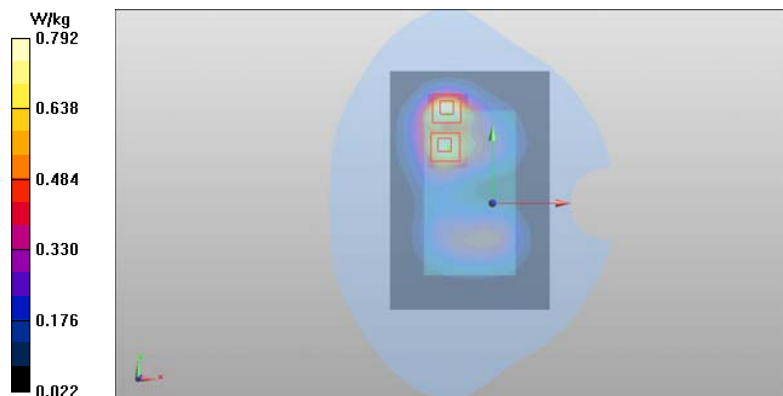
Peak SAR (extrapolated) = 1.138 mW/g

SAR(1 g) = 0.747 mW/g

SAR(10 g) = 0.451 mW/g

Power Drift = -0.02 dB

Maximum value of SAR (measured) = 0.792 W/kg



SAR Report

Appendix B.3 for FCC_RM-824_08

Applicant: Nokia Corporation

Type: RM-824

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Date/Time: 2012-10-17 18:41:33

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: $t = 21.4$ C

Medium parameters used: $f = 1860$ MHz; $\sigma = 1.473$ mho/m; $\epsilon_r = 52.155$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Low - QPSK - 20MHz - 1 RB - 50% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Area Scan

(81x121x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 0.934 W/kg

LTE/Body - Low - QPSK - 20MHz - 1 RB - 50% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Zoom Scan

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

Reference Value = 10.289 V/m

Peak SAR (extrapolated) = 1.686 mW/g

SAR(1 g) = 0.910 mW/g

SAR(10 g) = 0.469 mW/g

Power Drift = -0.15 dB

Maximum value of SAR (measured) = 1.06 W/kg

LTE/Body - Low - QPSK - 20MHz - 1 RB - 50% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Zoom Scan 2

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

Reference Value = 10.289 V/m

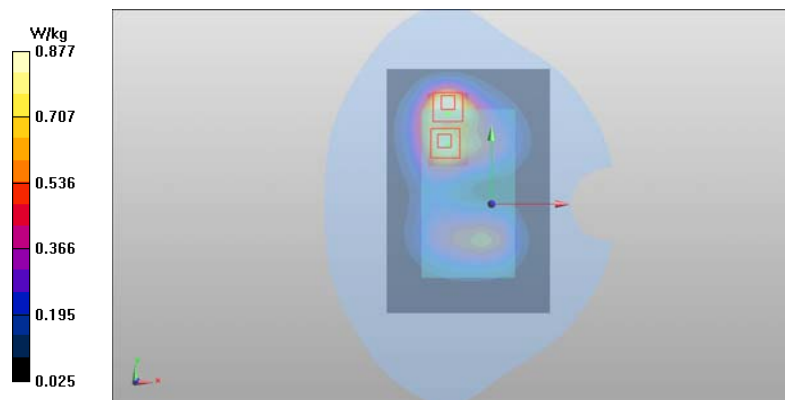
Peak SAR (extrapolated) = 1.283 mW/g

SAR(1 g) = 0.843 mW/g

SAR(10 g) = 0.509 mW/g

Power Drift = -0.15 dB

Maximum value of SAR (measured) = 0.877 W/kg



SAR Report

Appendix B.3 for FCC_RM-824_08

Applicant: Nokia Corporation

Type: RM-824

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Date/Time: 2012-10-15 12:53:46

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: $t = 20.8^\circ\text{C}$

Medium parameters used: $f = 1900\text{ MHz}$; $\sigma = 1.522\text{ mho/m}$; $\epsilon_r = 50.891$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

Body - High - QPSK - 20MHz - 1RB - 100% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Area Scan (81x121x1): Measurement grid: $dx=15\text{ mm}$, $dy=15\text{ mm}$

Maximum value of SAR (interpolated) = 1.19 W/kg

Body - High - QPSK - 20MHz - 1RB - 100% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 8.061 V/m

Peak SAR (extrapolated) = 1.899 mW/g

SAR(1 g) = 0.972 mW/g

SAR(10 g) = 0.485 mW/g

Power Drift = -0.30 dB

Maximum value of SAR (measured) = 1.12 W/kg

Body - High - QPSK - 20MHz - 1RB - 100% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 8.061 V/m

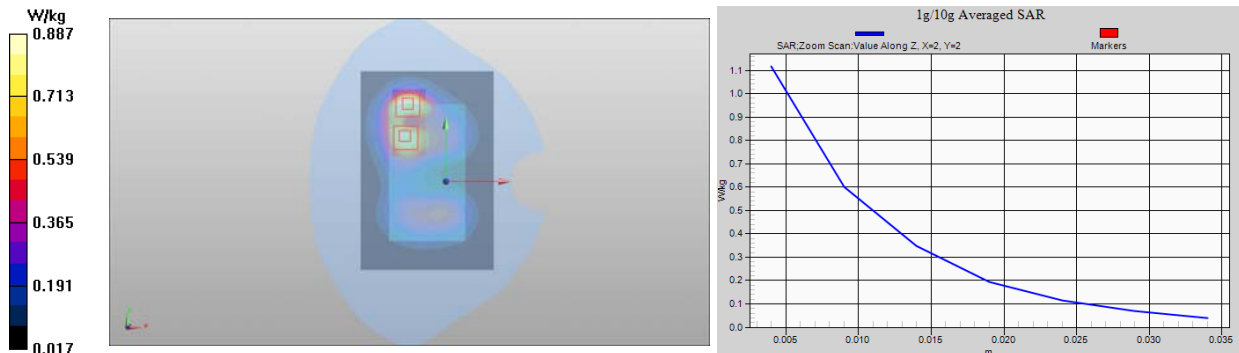
Peak SAR (extrapolated) = 1.290 mW/g

SAR(1 g) = 0.843 mW/g

SAR(10 g) = 0.501 mW/g

Power Drift = -0.30 dB

Maximum value of SAR (measured) = 0.887 W/kg



SAR Report

Appendix B.3 for FCC_RM-824_08

Applicant: Nokia Corporation

Type: RM-824

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Date/Time: 2012-10-17 21:14:37

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: $t = 21.4\text{ }^{\circ}\text{C}$

Medium parameters used: $f = 1860\text{ MHz}$; $\sigma = 1.473\text{ mho/m}$; $\epsilon_r = 52.155$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Low - QPSK - 20MHz - 1 RB - 0% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Area Scan (81x121x1): Measurement grid: $dx=15\text{ mm}$, $dy=15\text{ mm}$

Maximum value of SAR (interpolated) = 0.873 W/kg

LTE/Body - Low - QPSK - 20MHz - 1 RB - 0% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 9.731 V/m

Peak SAR (extrapolated) = 1.483 mW/g

SAR(1 g) = 0.809 mW/g

SAR(10 g) = 0.423 mW/g

Power Drift = 0.13 dB

Maximum value of SAR (measured) = 0.928 W/kg

LTE/Body - Low - QPSK - 20MHz - 1 RB - 0% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 9.731 V/m

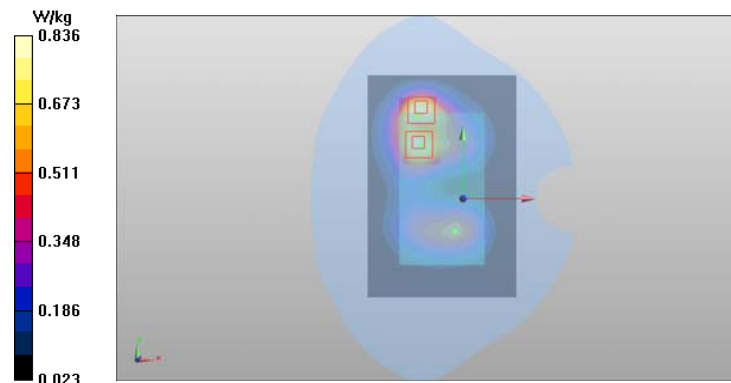
Peak SAR (extrapolated) = 1.217 mW/g

SAR(1 g) = 0.799 mW/g

SAR(10 g) = 0.487 mW/g

Power Drift = 0.13 dB

Maximum value of SAR (measured) = 0.836 W/kg



SAR Report

Appendix B.3 for FCC_RM-824_08

Applicant: Nokia Corporation

Type: RM-824

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Date/Time: 2012-10-18 09:20:23

Test Laboratory: TCC Nokia
Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: $t = 21.1\text{C}$

Medium parameters used: $f = 1860\text{ MHz}$; $\sigma = 1.474\text{ mho/m}$; $\epsilon_r = 51.969$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Low - 16QAM - 20MHz - 100% RB - Spacer 10mm - No Accessory - Back Facing Phantom/Area Scan (81x121x1): Measurement grid: $dx=15\text{ mm}$, $dy=15\text{ mm}$

Maximum value of SAR (interpolated) = 0.854 W/kg

LTE/Body - Low - 16QAM - 20MHz - 100% RB - Spacer 10mm - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 8.002 V/m

Peak SAR (extrapolated) = 1.380 mW/g

SAR(1 g) = 0.727 mW/g

SAR(10 g) = 0.368 mW/g

Power Drift = -0.17 dB

Maximum value of SAR (measured) = 0.825 W/kg

LTE/Body - Low - 16QAM - 20MHz - 100% RB - Spacer 10mm - No Accessory - Back Facing Phantom/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 8.002 V/m

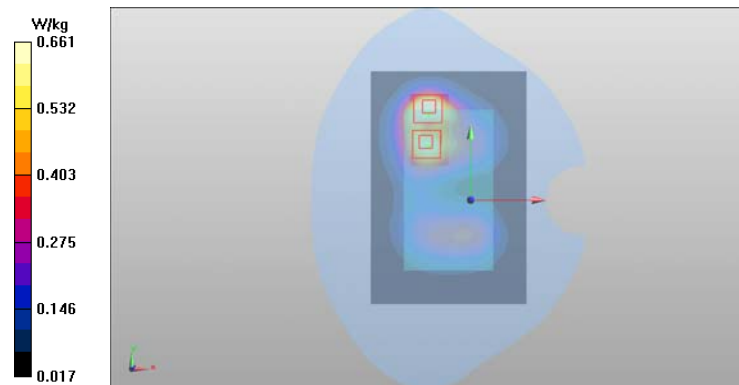
Peak SAR (extrapolated) = 0.969 mW/g

SAR(1 g) = 0.632 mW/g

SAR(10 g) = 0.379 mW/g

Power Drift = -0.17 dB

Maximum value of SAR (measured) = 0.661 W/kg



Date/Time: 2012-10-18 09:44:29

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: $t = 21.1\text{C}$

Medium parameters used: $f = 1860\text{ MHz}$; $\sigma = 1.474\text{ mho/m}$; $\epsilon_r = 51.969$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Low - 16QAM - 20MHz - 50% RB - 50% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Area Scan (81x121x1): Measurement grid: $dx=15\text{ mm}$, $dy=15\text{ mm}$

Maximum value of SAR (interpolated) = 0.844 W/kg

LTE/Body - Low - 16QAM - 20MHz - 50% RB - 50% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 7.838 V/m

Peak SAR (extrapolated) = 1.384 mW/g

SAR(1 g) = 0.728 mW/g

SAR(10 g) = 0.370 mW/g

Power Drift = 0.03 dB

Maximum value of SAR (measured) = 0.828 W/kg

LTE/Body - Low - 16QAM - 20MHz - 50% RB - 50% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 7.838 V/m

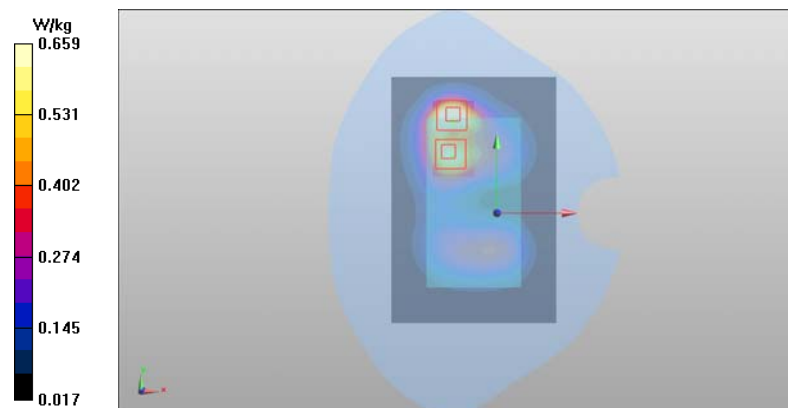
Peak SAR (extrapolated) = 1.091 mW/g

SAR(1 g) = 0.639 mW/g

SAR(10 g) = 0.383 mW/g

Power Drift = 0.03 dB

Maximum value of SAR (measured) = 0.659 W/kg



SAR Report

Appendix B.3 for FCC_RM-824_08

Applicant: Nokia Corporation

Type: RM-824

Copyright © 2012 TCC Nokia

Date/Time: 2012-10-18 10:05:54

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: t= 21.1C

Medium parameters used: f = 1900 MHz; σ = 1.511 mho/m; ϵ_r = 51.879; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE/Body - High - 16QAM - 20MHz - 1 RB - 50% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.795 W/kg

LTE/Body - High - 16QAM - 20MHz - 1 RB - 50% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 6.940 V/m

Peak SAR (extrapolated) = 1.295 mW/g

SAR(1 g) = 0.698 mW/g

SAR(10 g) = 0.347 mW/g

Power Drift = 0.30 dB

Maximum value of SAR (measured) = 0.738 W/kg

LTE/Body - High - 16QAM - 20MHz - 1 RB - 50% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 6.940 V/m

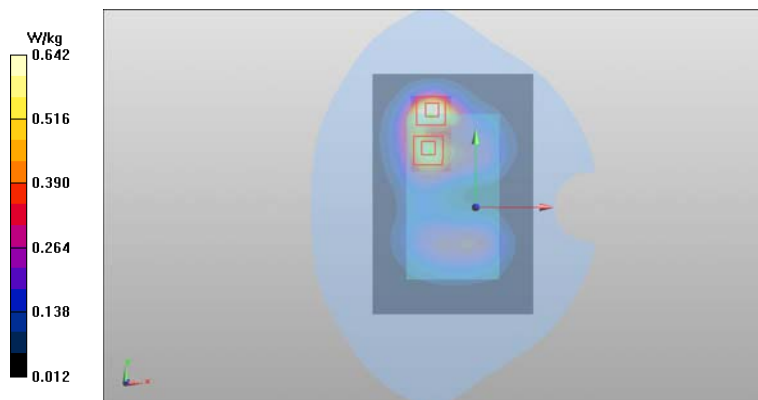
Peak SAR (extrapolated) = 0.942 mW/g

SAR(1 g) = 0.603 mW/g

SAR(10 g) = 0.358 mW/g

Power Drift = 0.30 dB

Maximum value of SAR (measured) = 0.642 W/kg



SAR Report

Appendix B.3 for FCC_RM-824_08

Applicant: Nokia Corporation

Type: RM-824

Copyright © 2012 TCC Nokia

Date/Time: 2012-10-18 10:27:34

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: t= 21.1C

Medium parameters used: f = 1900 MHz; σ = 1.511 mho/m; ϵ_r = 51.879; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE/Body - High - 16QAM - 20MHz - 1 RB - 100% offset - Spacer 10mm - No Accessory -Back Facing Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.936 W/kg

LTE/Body - High - 16QAM - 20MHz - 1 RB - 100% offset - Spacer 10mm - No Accessory -Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 7.393 V/m

Peak SAR (extrapolated) = 1.599 mW/g

SAR(1 g) = 0.835 mW/g

SAR(10 g) = 0.412 mW/g

Power Drift = 0.10 dB

Maximum value of SAR (measured) = 0.876 W/kg

LTE/Body - High - 16QAM - 20MHz - 1 RB - 100% offset - Spacer 10mm - No Accessory -Back Facing Phantom/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 7.393 V/m

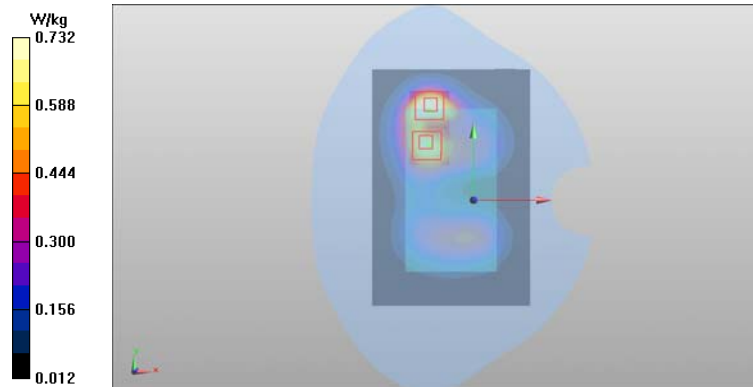
Peak SAR (extrapolated) = 1.083 mW/g

SAR(1 g) = 0.693 mW/g

SAR(10 g) = 0.410 mW/g

Power Drift = 0.10 dB

Maximum value of SAR (measured) = 0.732 W/kg



SAR Report

Appendix B.3 for FCC_RM-824_08

Applicant: Nokia Corporation

Type: RM-824

Copyright © 2012 TCC Nokia

Date/Time: 2012-10-18 11:44:11

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2)

Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: t= 21.1C

Medium parameters used: f = 1860 MHz; σ = 1.474 mho/m; ϵ_r = 51.969; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3835
- ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2012-08-03
- Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.6 (6824)

LTE/Body - Low - 16QAM - 20MHz - 1 RB - 0% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Area Scan (81x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.843 W/kg

LTE/Body - Low - 16QAM - 20MHz - 1 RB - 0% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 8.583 V/m

Peak SAR (extrapolated) = 1.432 mW/g

SAR(1 g) = 0.763 mW/g

SAR(10 g) = 0.390 mW/g

Power Drift = 0.08 dB

Maximum value of SAR (measured) = 0.892 W/kg

LTE/Body - Low - 16QAM - 20MHz - 1 RB - 0% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 8.583 V/m

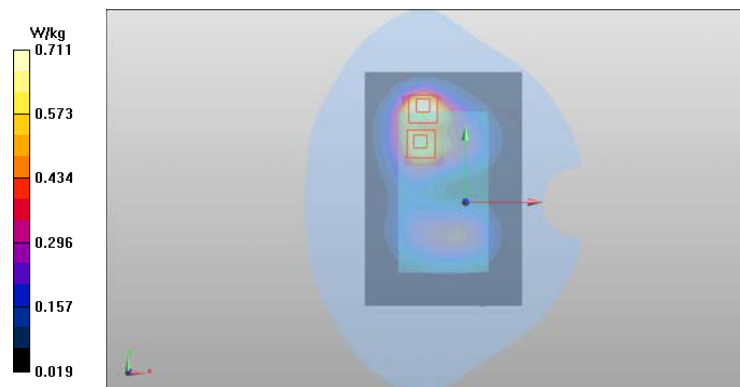
Peak SAR (extrapolated) = 1.080 mW/g

SAR(1 g) = 0.682 mW/g

SAR(10 g) = 0.409 mW/g

Power Drift = 0.08 dB

Maximum value of SAR (measured) = 0.711 W/kg



SAR Report

Appendix B.3 for FCC_RM-824_08

Applicant: Nokia Corporation

Type: RM-824

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Date/Time: 2012-07-09 17:14:15

DASY Configuration for WLAN/Body - Middle - Spacer 10mm - No Accessory - Back Facing Phantom/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 004402/13/976064/3

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

Medium: BSL 2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.951$ mho/m; $\epsilon_r = 51.395$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: EX3DV4 - SN3573; ConvF(6.45, 6.45, 6.45); Calibrated: 2012-02-23;

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

Electronics: DAE4 Sn793; Calibrated: 2011-09-16

Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177

Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-09 11:17:05

DASY Configuration for WCDMA/Body - High - Spacer 10mm - No Accessory - Back Facing Phantom/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: WCDMA850; Frequency: 846.6 MHz; Duty Cycle: 1:1; PMF: 1

Medium: BSL850 Medium parameters used: $f = 847$ MHz; $\sigma = 1.013$ mho/m; $\epsilon_r = 52.952$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: ES3DV3 - SN3165; ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;

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

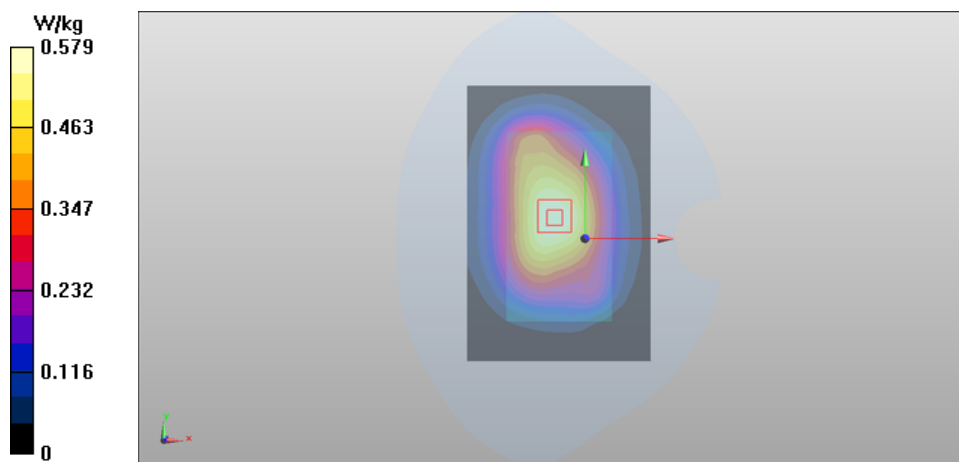
Electronics: DAE4 Sn1316; Calibrated: 2012-02-15

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

Measurement SW: DASY52, Version 52.6 (2)

Fast SAR of Combined Scans: SAR(1 g) = 0.547 mW/g; SAR(10 g) = 0.381 mW/g

Maximum value of SAR (interpolated) = 0.579 W/kg



Date/Time: 2012-07-09 17:14:15

DASY Configuration for WLAN/Body - Middle - Spacer 10mm - No Accessory - Back Facing Phantom/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 004402/13/976064/3

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

Medium: BSL 2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.951$ mho/m; $\epsilon_r = 51.395$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: EX3DV4 - SN3573; ConvF(6.45, 6.45, 6.45); Calibrated: 2012-02-23;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn793; Calibrated: 2011-09-16
Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-17 17:29:49

DASY Configuration for LTE/Body - Low - QPSK - 10MHz - 1 RB - 50% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001126/4

Communication System: LTE850 (band 5); Frequency: 829 MHz; Duty Cycle: 1:1; PMF: 1

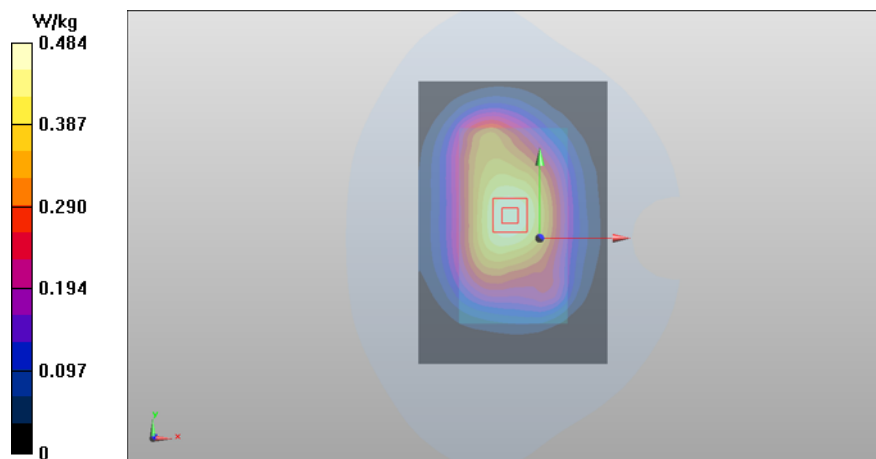
Medium: BSL850 Medium parameters used: $f = 829$ MHz; $\sigma = 1.002$ mho/m; $\epsilon_r = 53.433$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: ES3DV3 - SN3165; ConvF(5.97, 5.97, 5.97); Calibrated: 2012-02-21;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn1316; Calibrated: 2012-02-15
Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
Measurement SW: DASY52, Version 52.8 (0)

Fast SAR of Combined Scans: SAR(1 g) = 0.458 mW/g; SAR(10 g) = 0.319 mW/g

Maximum value of SAR (interpolated) = 0.484 W/kg



Date/Time: 2012-07-09 16:32:04

DASY Configuration for WLAN/Body - Middle - Spacer 10mm - No Accessory - Display Facing Phantom -/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 004402/13/976064/3

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

Medium: BSL 2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.951$ mho/m; $\epsilon_r = 51.395$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: EX3DV4 - SN3573; ConvF(6.45, 6.45, 6.45); Calibrated: 2012-02-23;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn793; Calibrated: 2011-09-16

Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177

Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-15 14:29:44

DASY Configuration for WCDMA/Body - Low - Spacer 10mm - No Accessory - Display Facing Phantom/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: WCDMA1900; Frequency: 1852.4 MHz; Duty Cycle: 1:1; PMF: 1

Medium: BSL1900 Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.471$ mho/m; $\epsilon_r = 51.251$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: EX3DV4 - SN3835; ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;

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

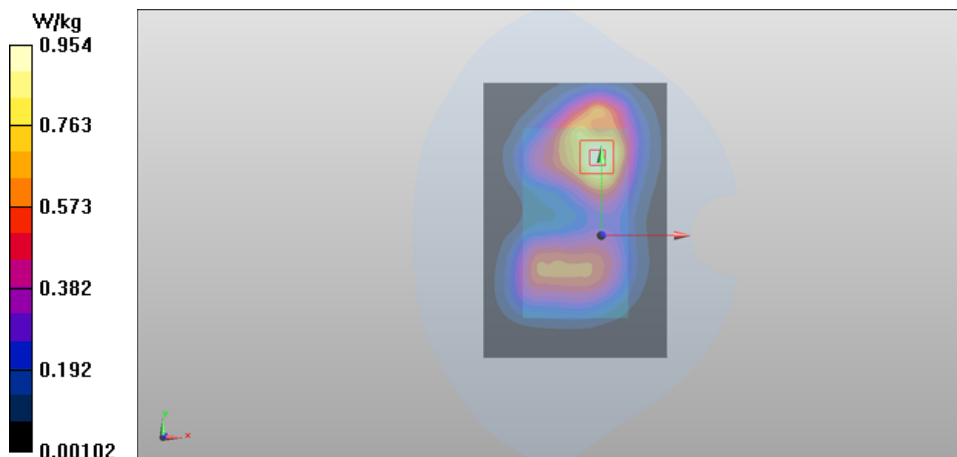
Electronics: DAE4 Sn538; Calibrated: 2012-08-03

Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177

Measurement SW: DASY4, Version 4.7 (80)

Fast SAR of Combined Scans: SAR(1 g) = 0.882 mW/g; SAR(10 g) = 0.529 mW/g

Maximum value of SAR (interpolated) = 0.954 W/kg



Date/Time: 2012-07-09 17:14:15

DASY Configuration for WLAN/Body - Middle - Spacer 10mm - No Accessory - Back Facing Phantom/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 004402/13/976064/3

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

Medium: BSL 2450 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.951$ mho/m; $\epsilon_r = 51.395$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: EX3DV4 - SN3573; ConvF(6.45, 6.45, 6.45); Calibrated: 2012-02-23;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn793; Calibrated: 2011-09-16
Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
Measurement SW: DASY4, Version 4.7 (80)

Date/Time: 2012-10-15 12:53:46

DASY Configuration for LTE/Body - High - QPSK - 20MHz - 1RB - 100% offset - Spacer 10mm - No Accessory - Back Facing Phantom/Area Scan:

Test Laboratory: TCC Nokia

Type: RM-824; Serial: 353670/05/001185/0

Communication System: LTE1900 (band 2); Frequency: 1900 MHz; Duty Cycle: 1:1; PMF: 1

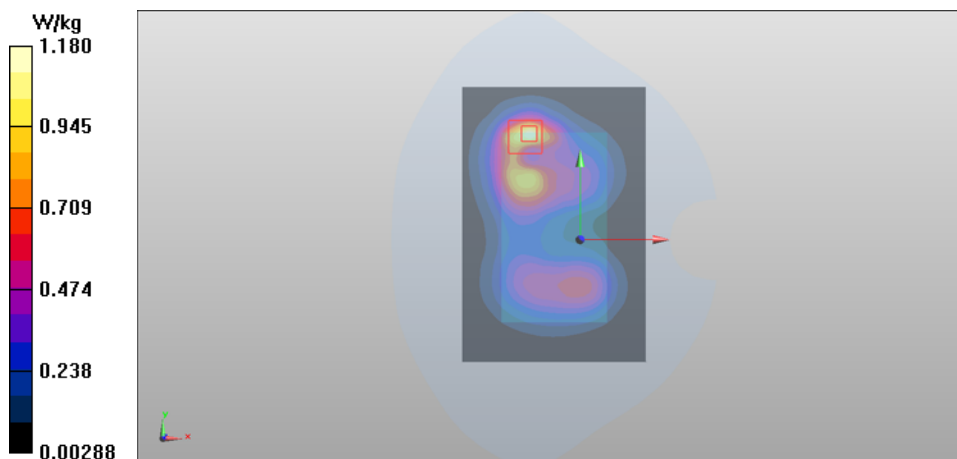
Medium: BSL1900 Medium parameters used: $f = 1900$ MHz; $\sigma = 1.522$ mho/m; $\epsilon_r = 50.891$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Probe: EX3DV4 - SN3835; ConvF(6.96, 6.96, 6.96); Calibrated: 2012-02-07;
Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn538; Calibrated: 2012-08-03
Phantom: SAM 2 (2012 10 05); Type: Twin SAM 040 CA; Serial: TP - 1177
Measurement SW: DASY4, Version 4.7 (80)

Fast SAR of Combined Scans: SAR(1 g) = 0.989 mW/g; SAR(10 g) = 0.499 mW/g

Maximum value of SAR (interpolated) = 1.18 W/kg



APPENDIX C: DIELECTRIC PARAMETERS OF THE TISSUE SIMULANTS

Head tissue simulant dielectric parameters used in the measurements 826 – 1908 MHz:

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	2012-10-11	39.8	0.89	39.7	0.90	39.7	0.90
F (MHz)	Date	Dielectric Parameters					
		Ch 20450 829.0 MHz		Ch 20525 836.5 MHz		Ch 20600 844.0 MHz	
		ϵ_r	σ [S/m]	ϵ_r	σ [S/m]	ϵ_r	σ [S/m]
836	2012-10-09	39.9	0.91	39.9	0.91	39.8	0.92
	2012-10-17	40.6	0.91	40.6	0.92	40.5	0.92
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	2012-10-08	38.7	1.32	38.5	1.34	38.4	1.36
f (MHz)	Date	Dielectric Parameters					
		Ch 18700 1860.0 MHz		Ch 18900 1880.0 MHz		Ch 19100 1900.0 MHz	
		ϵ_r	σ [S/m]	ϵ_r	σ [S/m]	ϵ_r	σ [S/m]
1880	2012-10-08	38.6	1.32	38.5	1.34	38.5	1.36
	2012-10-16	39.1	1.33	39.1	1.34	39.0	1.36
	2012-10-17	39.4	1.36	39.4	1.37	39.3	1.39

Body tissue simulant dielectric parameters used in the measurements 826 – 1908 MHz:

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	2012-10-09	53.1	1.00	53.0	1.01	53.0	1.01
F (MHz)	Date	Dielectric Parameters					
		Ch 20450 829.0 MHz		Ch 20525 836.5 MHz		Ch 20600 844.0 MHz	
		ϵ_r	σ [S/m]	ϵ_r	σ [S/m]	ϵ_r	σ [S/m]
836	2012-10-09	53.1	1.00	53.0	1.01	53.0	1.01
	2012-10-17	53.4	1.00	53.4	1.01	53.3	1.01
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	2012-10-09	51.2	1.48	51.1	1.50	51.0	1.53
	2012-10-15	51.3	1.47	51.1	1.50	50.9	1.53
f (MHz)	Date	Dielectric Parameters					
		Ch 18700 1860.0 MHz		Ch 18900 1880.0 MHz		Ch 19100 1900.0 MHz	
		ϵ_r	σ [S/m]	ϵ_r	σ [S/m]	ϵ_r	σ [S/m]
1880	2012-10-10	51.1	1.48	51.0	1.50	50.9	1.52
	2012-10-15	51.2	1.48	51.1	1.50	50.9	1.52
	2012-10-17	52.2	1.47	52.1	1.49	52.1	1.51
	2012-10-18	52.0	1.47	51.9	1.49	51.9	1.51

APPENDIX D: RELEVANT PAGES FROM PROBE CALIBRATION REPORTS



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 108**

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

Client **Nokia Salo TCC**

Certificate No: **ES3-3165_Feb12**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3165**

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

Calibration date: **February 21, 2012**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41498087	31-Mar-11 (No. 217-01372)	Apr-12
Reference 3 dB Attenuator	SN: S5054 (3c)	29-Mar-11 (No. 217-01369)	Apr-12
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Reference 30 dB Attenuator	SN: S5129 (30b)	29-Mar-11 (No. 217-01370)	Apr-12
Reference Probe ES3DV2	SN: 3013	29-Dec-11 (No. ES3-3013_Dec11)	Dec-12
DAE4	SN: 654	3-May-11 (No. DAE4-654_May11)	May-12
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-11)	In house check: Apr-13
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	
Issued: February 23, 2012			
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			

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

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	41.9	0.89	6.13	6.13	6.13	0.29	1.78	± 12.0 %
835	41.5	0.90	5.88	5.88	5.88	0.21	2.26	± 12.0 %
1750	40.1	1.37	5.51	5.51	5.51	0.49	1.46	± 12.0 %
1900	40.0	1.40	5.24	5.24	5.24	0.54	1.44	± 12.0 %
2450	39.2	1.80	4.37	4.37	4.37	0.70	1.37	± 12.0 %
2600	39.0	1.96	4.20	4.20	4.20	0.80	1.28	± 12.0 %

^C Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

^F At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

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

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	55.5	0.96	6.06	6.06	6.06	0.37	1.66	± 12.0 %
835	55.2	0.97	5.97	5.97	5.97	0.59	1.30	± 12.0 %
1750	53.4	1.49	4.84	4.84	4.84	0.52	1.61	± 12.0 %
1900	53.3	1.52	4.57	4.57	4.57	0.42	1.93	± 12.0 %
2450	52.7	1.95	4.14	4.14	4.14	0.73	1.08	± 12.0 %
2600	52.5	2.16	3.96	3.96	3.96	0.80	1.03	± 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.



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 108**

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 Multilateral Agreement for the recognition of calibration certificates

Client **Nokia Salo TCC**

Certificate No: **EX3-3835_Feb12**

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3835**

Calibration procedure(s) **QA CAL-01.v8, QA CAL-14.v3, QA CAL-23.v4, QA CAL-25.v4**
Calibration procedure for dosimetric E-field probes

Calibration date: **February 7, 2012**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41498087	31-Mar-11 (No. 217-01372)	Apr-12
Reference 3 dB Attenuator	SN: S5054 (3c)	29-Mar-11 (No. 217-01369)	Apr-12
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Reference 30 dB Attenuator	SN: S5129 (30b)	29-Mar-11 (No. 217-01370)	Apr-12
Reference Probe ES3DV2	SN: 3013	29-Dec-11 (No. ES3-3013_Dec11)	Dec-12
DAE4	SN: 654	3-May-11 (No. DAE4-654_May11)	May-12
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-11)	In house check: Apr-13
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	
Issued: February 7, 2012			
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3835

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	41.9	0.89	8.96	8.96	8.96	0.40	0.87	± 12.0 %
835	41.5	0.90	8.61	8.61	8.61	0.42	0.85	± 12.0 %
900	41.5	0.97	8.50	8.50	8.50	0.28	1.11	± 12.0 %
1750	40.1	1.37	7.83	7.83	7.83	0.60	0.66	± 12.0 %
1900	40.0	1.40	7.55	7.55	7.55	0.71	0.62	± 12.0 %
2450	39.2	1.80	6.73	6.73	6.73	0.44	0.80	± 12.0 %
2600	39.0	1.96	6.49	6.49	6.49	0.28	1.15	± 12.0 %
5200	36.0	4.66	4.67	4.67	4.67	0.45	1.80	± 13.1 %
5300	35.9	4.76	4.60	4.60	4.60	0.40	1.80	± 13.1 %
5500	35.6	4.96	4.29	4.29	4.29	0.45	1.80	± 13.1 %
5600	35.5	5.07	4.22	4.22	4.22	0.40	1.80	± 13.1 %
5800	35.3	5.27	4.07	4.07	4.07	0.50	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.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3835

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	55.5	0.96	8.78	8.78	8.78	0.26	1.17	± 12.0 %
835	55.2	0.97	8.68	8.68	8.68	0.23	1.29	± 12.0 %
900	55.0	1.05	8.48	8.48	8.48	0.23	1.34	± 12.0 %
1750	53.4	1.49	7.28	7.28	7.28	0.56	0.79	± 12.0 %
1900	53.3	1.52	6.96	6.96	6.96	0.41	0.87	± 12.0 %
2450	52.7	1.95	6.57	6.57	6.57	0.80	0.50	± 12.0 %
2600	52.5	2.16	6.46	6.46	6.46	0.80	0.50	± 12.0 %
5200	49.0	5.30	3.96	3.96	3.96	0.55	1.90	± 13.1 %
5300	48.9	5.42	3.86	3.86	3.86	0.50	1.90	± 13.1 %
5500	48.6	5.65	3.54	3.54	3.54	0.58	1.90	± 13.1 %
5600	48.5	5.77	3.34	3.34	3.34	0.60	1.90	± 13.1 %
5800	48.2	6.00	3.70	3.70	3.70	0.60	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.

APPENDIX E: RELEVANT PAGES FROM DIPOLE VALIDATION KIT REPORTS



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 108**

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

Client **Nokia Salo TCC**

Certificate No: **D835V2-462_Sep11**

CALIBRATION CERTIFICATE

Object **D835V2 - SN: 462**

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

Calibration date: **September 13, 2011**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-10 (No. 217-01266)	Oct-11
Power sensor HP 8481A	US37292783	06-Oct-10 (No. 217-01266)	Oct-11
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	29-Apr-11 (No. ES3-3205_Apr11)	Apr-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

	Name	Function	Signature
Calibrated by:	Dimce Iliev	Laboratory Technician	

Approved by:	Katja Pokovic	Technical Manager	
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Issued: September 13, 2011

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Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.6 Ω - 1.8 j Ω
Return Loss	- 32.4 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.8 Ω - 3.7 j Ω
Return Loss	- 27.2 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.391 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 27, 2002

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: CW; Frequency: 835 MHz

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.89 \text{ mho/m}$; $\epsilon_r = 41.1$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

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

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

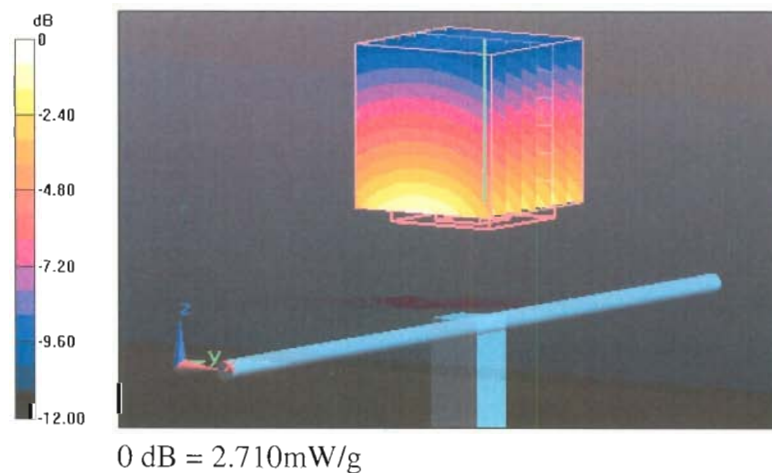
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 56.987 V/m; Power Drift = 0.02 dB

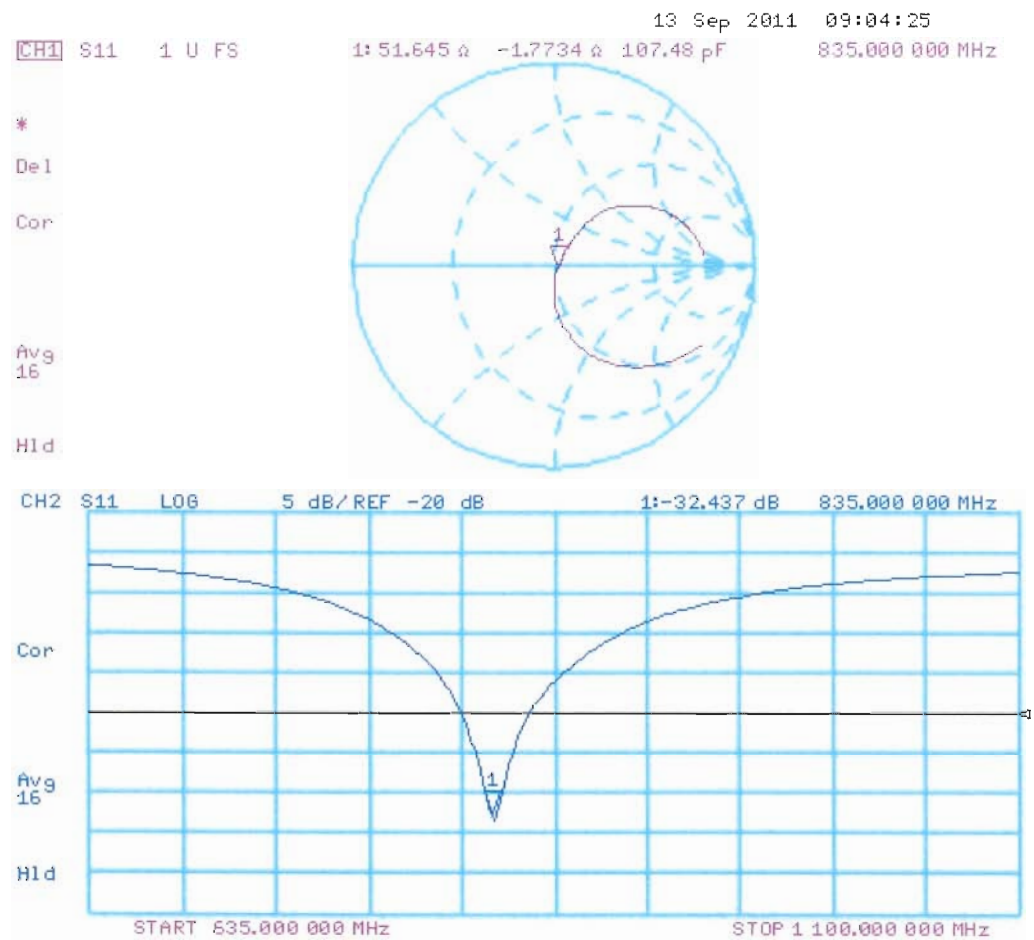
Peak SAR (extrapolated) = 3.423 W/kg

SAR(1 g) = 2.33 mW/g; SAR(10 g) = 1.52 mW/g

Maximum value of SAR (measured) = 2.708 mW/g



Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 12.09.2011

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: CW; Frequency: 835 MHz

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 1 \text{ mho/m}$; $\epsilon_r = 53.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

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

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

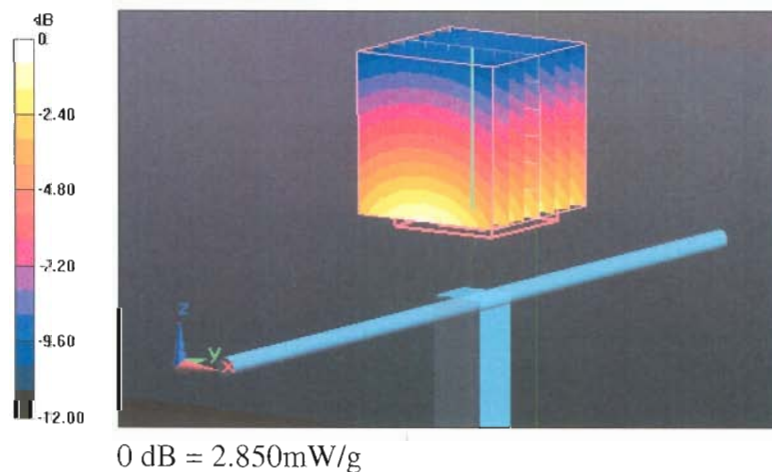
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 55.464 V/m; Power Drift = 0.0033 dB

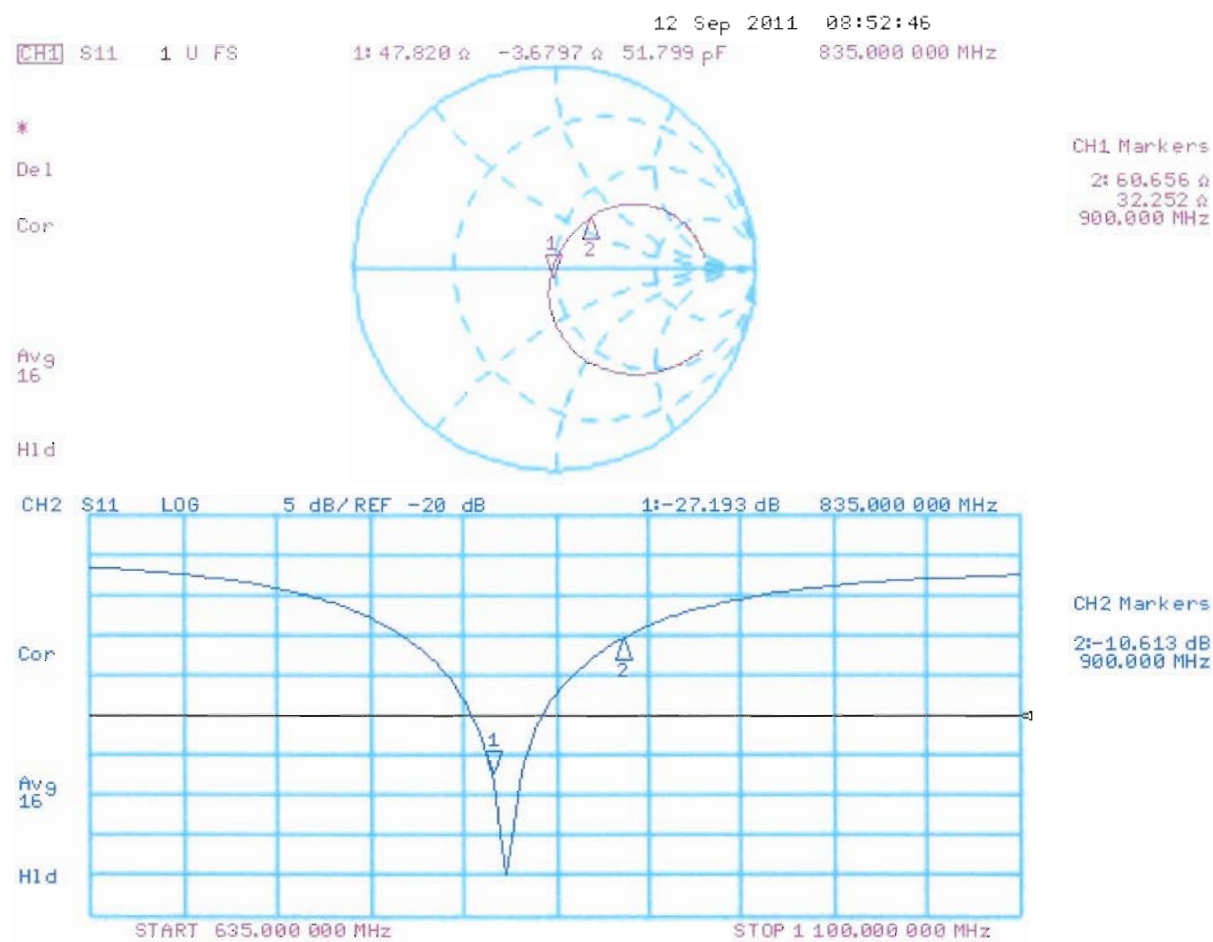
Peak SAR (extrapolated) = 3.540 W/kg

SAR(1 g) = 2.45 mW/g; SAR(10 g) = 1.61 mW/g

Maximum value of SAR (measured) = 2.851 mW/g



Impedance Measurement Plot for Body TSL



Dipole D835V2 – SN: 462 Antenna Parameters measured: 2012-04-03.

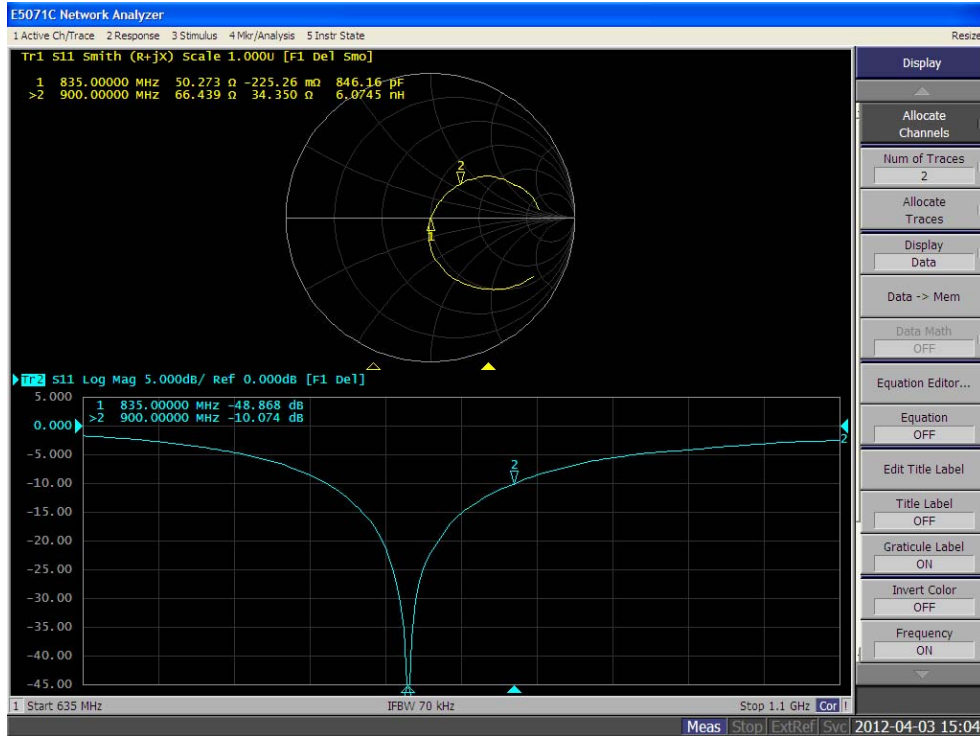
Antenna Parameters with Head TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	50.7 Ω - 2.8 j Ω	50.3 Ω - 0.2 j Ω
Return loss	-30.7 dB	-48.9 dB

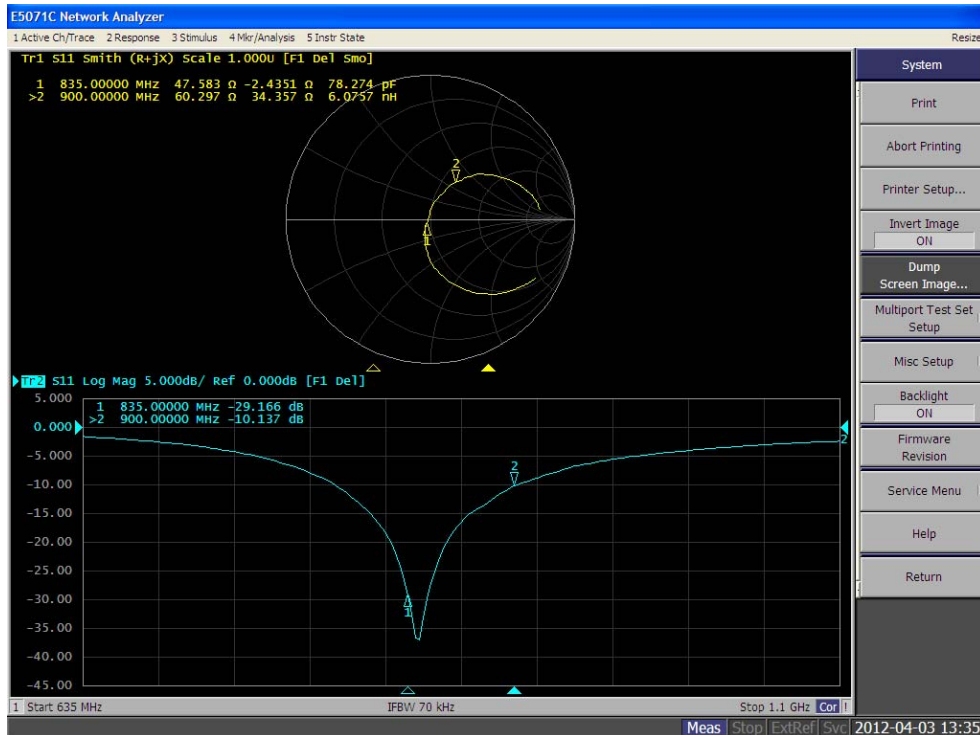
Antenna Parameters with Body TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	47.4 Ω - 3.8 j Ω	47.6 Ω - 2.4 j Ω
Return loss	-26.5 dB	-29.2 dB

Impedance Measurement Plot for Head TSL 835



Impedance Measurement Plot for Body TSL 835





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Accreditation No.: **SCS 108**

Client **Nokia Salo TCC**

Certificate No: **D1900V2-5d030_Feb12**

CALIBRATION CERTIFICATE

Object **D1900V2 - SN: 5d030**

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

Calibration date: **February 22, 2012**

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	05-Oct-11 (No. 217-01451)	Oct-12
Power sensor HP 8481A	US37292783	05-Oct-11 (No. 217-01451)	Oct-12
Reference 20 dB Attenuator	SN: 5086 (20g)	29-Mar-11 (No. 217-01368)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

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

Issued: February 22, 2012

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

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$52.0\ \Omega + 5.3\ j\Omega$
Return Loss	- 25.2 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	$47.6\ \Omega + 5.4\ j\Omega$
Return Loss	- 24.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.192 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 17, 2002

DASY5 Validation Report for Head TSL

Date: 22.02.2012

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900 \text{ MHz}$; $\sigma = 1.4 \text{ mho/m}$; $\epsilon_r = 40.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.01, 5.01, 5.01); Calibrated: 30.12.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

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

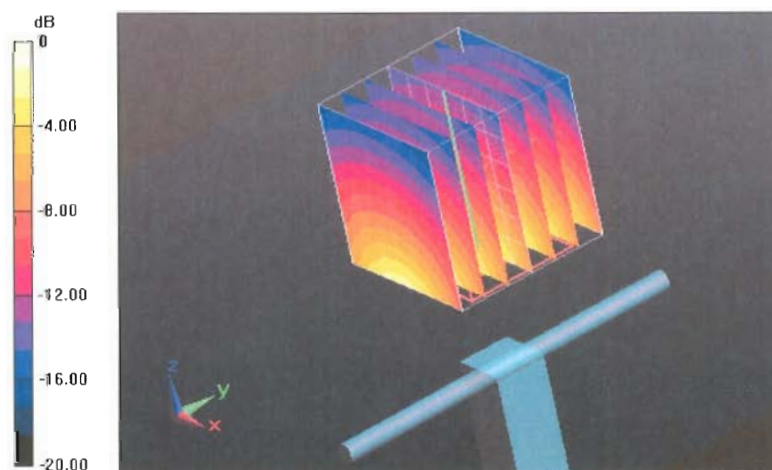
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 96.565 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 17.4270

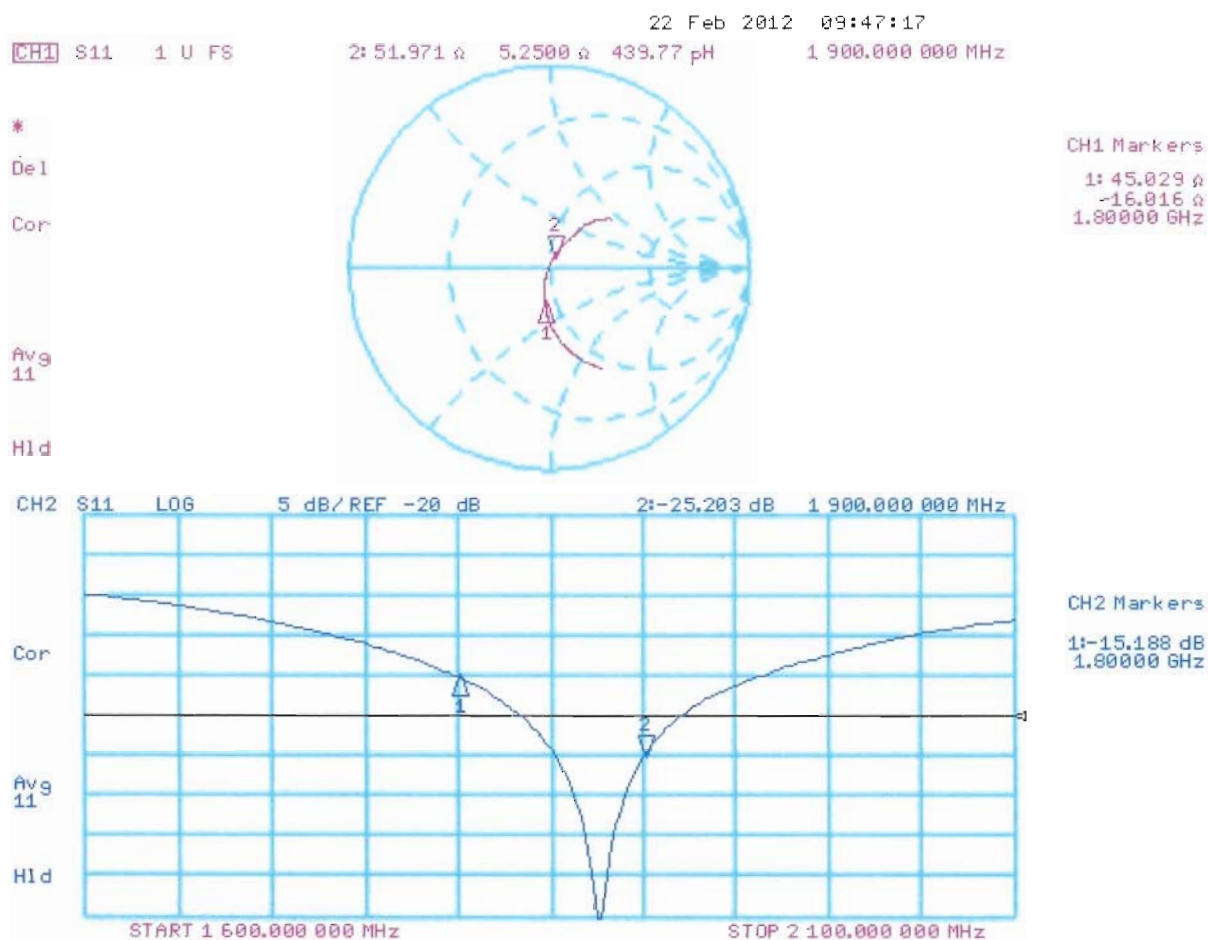
SAR(1 g) = 9.79 mW/g; SAR(10 g) = 5.18 mW/g

Maximum value of SAR (measured) = 12.117 mW/g



0 dB = 12.120mW/g = 21.67 dB mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 22.02.2012

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.56$ mho/m; $\epsilon_r = 53$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.62, 4.62, 4.62); Calibrated: 30.12.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

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

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

Reference Value = 93.541 V/m; Power Drift = -0.0095 dB

Peak SAR (extrapolated) = 17.4260

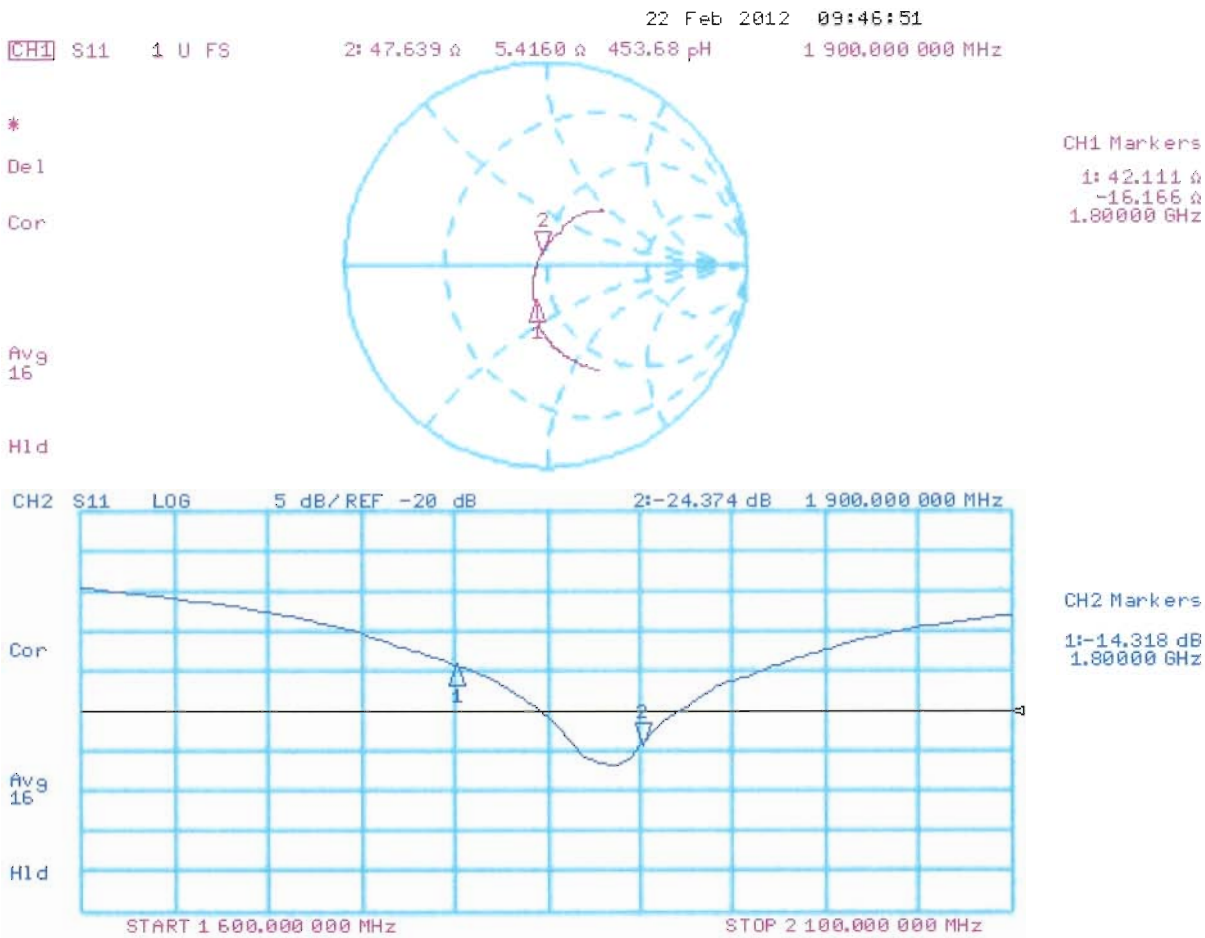
SAR(1 g) = 9.87 mW/g; SAR(10 g) = 5.17 mW/g

Maximum value of SAR (measured) = 12.485 mW/g



0 dB = 12.480mW/g = 21.92 dB mW/g

Impedance Measurement Plot for Body TSL



APPENDIX F: CONDUCTED POWER MEASUREMENTS FOR SUPPORTED LTE TRANSMISSION MODES

F.1 Power Tuning Targets

Tuning targets LTE			
Slot configuration	Low channel	Mid channel	High channel
LTE850 (Band 5)	-	23.0	-
LTE1900 (Band 2)	-	23.0	-

F.2 Conducted Power from the Samples used in the Testing

Type: RM-824; Serial number: 353670/05/001126/4 used for LTE850 (Band 5) for SAR Head, Body-worn and Wireless Router measurements.

“Max Average Power (dBm)” column lists measured powers with MPR active. The “Reduced Power” column lists measured powers with MPR and A-MPR active (as defined by 3GPP TS 36.101). A-MPR is not specified for LTE850 (Band 5) in this specification (Table 6.2.4-1).

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
824.7	20407	1.4	1	0	QPSK	22.65	-
824.7	20407	1.4	1	5	QPSK	22.68	-
824.7	20407	1.4	1	2	QPSK	22.76	-
824.7	20407	1.4	3	2	QPSK	22.78	-
824.7	20407	1.4	6	0	QPSK	21.85	-
824.7	20407	1.4	1	0	16QAM	22.08	-
824.7	20407	1.4	1	5	16QAM	22.22	-
824.7	20407	1.4	1	2	16QAM	22.30	-
824.7	20407	1.4	3	2	16QAM	22.04	-
824.7	20407	1.4	6	0	16QAM	21.07	-
836.5	20525	1.4	1	0	QPSK	22.46	-
836.5	20525	1.4	1	5	QPSK	22.48	-
836.5	20525	1.4	1	2	QPSK	22.46	-
836.5	20525	1.4	3	2	QPSK	22.74	-
836.5	20525	1.4	6	0	QPSK	21.64	-
836.5	20525	1.4	1	0	16QAM	22.11	-
836.5	20525	1.4	1	5	16QAM	22.13	-
836.5	20525	1.4	1	2	16QAM	22.27	-
836.5	20525	1.4	3	2	16QAM	22.05	-
836.5	20525	1.4	6	0	16QAM	20.97	-
848.3	20643	1.4	1	0	QPSK	22.29	-
848.3	20643	1.4	1	5	QPSK	22.32	-
848.3	20643	1.4	1	2	QPSK	22.30	-
848.3	20643	1.4	3	2	QPSK	22.52	-
848.3	20643	1.4	6	0	QPSK	21.53	-
848.3	20643	1.4	1	0	16QAM	21.91	-
848.3	20643	1.4	1	5	16QAM	22.09	-
848.3	20643	1.4	1	2	16QAM	22.09	-
848.3	20643	1.4	3	2	16QAM	21.80	-
848.3	20643	1.4	6	0	16QAM	20.72	-

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
825.5	20415	3	1	0	QPSK	22.68	-
825.5	20415	3	1	14	QPSK	22.83	-
825.5	20415	3	1	7	QPSK	22.90	-
825.5	20415	3	8	3	QPSK	22.01	-
825.5	20415	3	15	0	QPSK	21.93	-
825.5	20415	3	1	0	16QAM	21.86	-
825.5	20415	3	1	14	16QAM	21.92	-
825.5	20415	3	1	7	16QAM	22.02	-
825.5	20415	3	8	3	16QAM	21.16	-
825.5	20415	3	15	0	16QAM	20.83	-
836.5	20525	3	1	0	QPSK	22.57	-
836.5	20525	3	1	14	QPSK	22.42	-
836.5	20525	3	1	7	QPSK	22.51	-
836.5	20525	3	8	3	QPSK	21.80	-
836.5	20525	3	15	0	QPSK	21.84	-
836.5	20525	3	1	0	16QAM	21.88	-
836.5	20525	3	1	14	16QAM	21.91	-
836.5	20525	3	1	7	16QAM	21.90	-
836.5	20525	3	8	3	16QAM	20.92	-
836.5	20525	3	15	0	16QAM	20.76	-
847.5	20635	3	1	0	QPSK	22.36	-
847.5	20635	3	1	14	QPSK	22.39	-
847.5	20635	3	1	7	QPSK	22.34	-
847.5	20635	3	8	3	QPSK	21.65	-
847.5	20635	3	15	0	QPSK	21.73	-
847.5	20635	3	1	0	16QAM	21.92	-
847.5	20635	3	1	14	16QAM	21.89	-
847.5	20635	3	1	7	16QAM	21.81	-
847.5	20635	3	8	3	16QAM	20.89	-
847.5	20635	3	15	0	16QAM	20.60	-

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
826.5	20425	5	1	0	QPSK	22.66	-
826.5	20425	5	1	24	QPSK	22.80	-
826.5	20425	5	1	12	QPSK	22.90	-
826.5	20425	5	12	6	QPSK	22.01	-
826.5	20425	5	25	0	QPSK	21.99	-
826.5	20425	5	1	0	16QAM	22.08	-
826.5	20425	5	1	24	16QAM	22.21	-
826.5	20425	5	1	12	16QAM	22.27	-
826.5	20425	5	12	6	16QAM	20.99	-
826.5	20425	5	25	0	16QAM	20.89	-
836.5	20525	5	1	0	QPSK	22.45	-
836.5	20525	5	1	24	QPSK	22.41	-
836.5	20525	5	1	12	QPSK	22.52	-
836.5	20525	5	12	6	QPSK	21.87	-
836.5	20525	5	25	0	QPSK	21.85	-
836.5	20525	5	1	0	16QAM	21.73	-
836.5	20525	5	1	24	16QAM	21.74	-
836.5	20525	5	1	12	16QAM	21.81	-
836.5	20525	5	12	6	16QAM	20.79	-
836.5	20525	5	25	0	16QAM	20.86	-
846.5	20625	5	1	0	QPSK	22.50	-
846.5	20625	5	1	24	QPSK	22.25	-
846.5	20625	5	1	12	QPSK	22.32	-
846.5	20625	5	12	6	QPSK	21.70	-
846.5	20625	5	25	0	QPSK	21.75	-
846.5	20625	5	1	0	16QAM	21.81	-
846.5	20625	5	1	24	16QAM	21.56	-
846.5	20625	5	1	12	16QAM	21.71	-
846.5	20625	5	12	6	16QAM	20.74	-
846.5	20625	5	25	0	16QAM	20.66	-

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
829.0	20450	10	1	0	QPSK	22.79	-
829.0	20450	10	1	49	QPSK	22.58	-
829.0	20450	10	1	24	QPSK	22.87	-
829.0	20450	10	25	12	QPSK	22.07	-
829.0	20450	10	50	0	QPSK	22.03	-
829.0	20450	10	1	0	16QAM	21.92	-
829.0	20450	10	1	49	16QAM	21.84	-
829.0	20450	10	1	24	16QAM	21.96	-
829.0	20450	10	25	12	16QAM	20.98	-
829.0	20450	10	50	0	16QAM	21.01	-
836.5	20525	10	1	0	QPSK	22.46	-
836.5	20525	10	1	49	QPSK	22.54	-
836.5	20525	10	1	24	QPSK	22.52	-
836.5	20525	10	25	12	QPSK	21.90	-
836.5	20525	10	50	0	QPSK	21.82	-
836.5	20525	10	1	0	16QAM	21.93	-
836.5	20525	10	1	49	16QAM	22.00	-
836.5	20525	10	1	24	16QAM	21.95	-
836.5	20525	10	25	12	16QAM	20.89	-
836.5	20525	10	50	0	16QAM	20.85	-
844.0	20600	10	1	0	QPSK	22.44	-
844.0	20600	10	1	49	QPSK	22.23	-
844.0	20600	10	1	24	QPSK	22.54	-
844.0	20600	10	25	12	QPSK	21.94	-
844.0	20600	10	50	0	QPSK	21.82	-
844.0	20600	10	1	0	16QAM	21.89	-
844.0	20600	10	1	49	16QAM	21.73	-
844.0	20600	10	1	24	16QAM	21.94	-
844.0	20600	10	25	12	16QAM	20.94	-
844.0	20600	10	50	0	16QAM	20.82	-

Type: RM-824; Serial number: 353670/05/001185/0 used for LTE1900 (Band 2) for SAR Head, Body-worn and Wireless Router measurements.

“Max Average Power (dBm)” column lists measured powers with MPR active. The “Reduced Power” column lists measured powers with MPR and A-MPR active (as defined by 3GPP TS 36.101). A-MPR is not specified for LTE1900 (Band 2) in 1.4MHz Channel BW in this specification (Table 6.2.4-1).

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power (dBm)
1850.7	18607	1.4	1	0	QPSK	23.13	-
1850.7	18607	1.4	1	5	QPSK	23.12	-
1850.7	18607	1.4	1	2	QPSK	23.22	-
1850.7	18607	1.4	3	2	QPSK	23.03	-
1850.7	18607	1.4	6	0	QPSK	22.30	-
1850.7	18607	1.4	1	0	16QAM	22.43	-
1850.7	18607	1.4	1	5	16QAM	22.44	-
1850.7	18607	1.4	1	2	16QAM	22.49	-
1850.7	18607	1.4	3	2	16QAM	22.29	-
1850.7	18607	1.4	6	0	16QAM	21.40	-
1880.0	18900	1.4	1	0	QPSK	22.95	-
1880.0	18900	1.4	1	5	QPSK	22.97	-
1880.0	18900	1.4	1	2	QPSK	22.97	-
1880.0	18900	1.4	3	2	QPSK	23.13	-
1880.0	18900	1.4	6	0	QPSK	22.14	-
1880.0	18900	1.4	1	0	16QAM	22.59	-
1880.0	18900	1.4	1	5	16QAM	22.50	-
1880.0	18900	1.4	1	2	16QAM	22.50	-
1880.0	18900	1.4	3	2	16QAM	22.35	-
1880.0	18900	1.4	6	0	16QAM	21.19	-
1909.3	19193	1.4	1	0	QPSK	23.68	-
1909.3	19193	1.4	1	5	QPSK	23.99	-
1909.3	19193	1.4	1	2	QPSK	23.88	-
1909.3	19193	1.4	3	2	QPSK	24.14	-
1909.3	19193	1.4	6	0	QPSK	23.13	-
1909.3	19193	1.4	1	0	16QAM	22.98	-
1909.3	19193	1.4	1	5	16QAM	23.34	-
1909.3	19193	1.4	1	2	16QAM	23.42	-
1909.3	19193	1.4	3	2	16QAM	23.19	-
1909.3	19193	1.4	6	0	16QAM	22.17	-

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power (dBm)
1851.5	18615	3	1	0	QPSK	23.01	23.02
1851.5	18615	3	1	14	QPSK	22.85	22.95
1851.5	18615	3	1	7	QPSK	22.90	22.94
1851.5	18615	3	8	3	QPSK	22.20	21.20
1851.5	18615	3	15	0	QPSK	22.25	21.27
1851.5	18615	3	1	0	16QAM	21.99	22.19
1851.5	18615	3	1	14	16QAM	21.92	21.96
1851.5	18615	3	1	7	16QAM	21.88	21.99
1851.5	18615	3	8	3	16QAM	21.35	20.26
1851.5	18615	3	15	0	16QAM	21.13	20.08
1880.0	18900	3	1	0	QPSK	22.96	23.12
1880.0	18900	3	1	14	QPSK	22.92	23.13
1880.0	18900	3	1	7	QPSK	22.90	23.08
1880.0	18900	3	8	3	QPSK	22.26	21.22
1880.0	18900	3	15	0	QPSK	22.31	21.23
1880.0	18900	3	1	0	16QAM	22.22	22.16
1880.0	18900	3	1	14	16QAM	22.11	22.27
1880.0	18900	3	1	7	16QAM	22.21	22.29
1880.0	18900	3	8	3	16QAM	21.31	20.38
1880.0	18900	3	15	0	16QAM	21.16	20.10
1908.5	19185	3	1	0	QPSK	23.12	23.18
1908.5	19185	3	1	14	QPSK	23.96	24.09
1908.5	19185	3	1	7	QPSK	23.72	23.79
1908.5	19185	3	8	3	QPSK	23.04	21.99
1908.5	19185	3	15	0	QPSK	22.89	21.88
1908.5	19185	3	1	0	16QAM	22.24	22.31
1908.5	19185	3	1	14	16QAM	23.15	23.24
1908.5	19185	3	1	7	16QAM	23.00	23.02
1908.5	19185	3	8	3	16QAM	22.06	21.19
1908.5	19185	3	15	0	16QAM	21.73	20.78

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power (dBm)
1852.5	18625	5	1	0	QPSK	23.01	23.09
1852.5	18625	5	1	24	QPSK	22.81	22.90
1852.5	18625	5	1	12	QPSK	22.90	22.92
1852.5	18625	5	12	6	QPSK	22.11	21.10
1852.5	18625	5	25	0	QPSK	22.28	21.27
1852.5	18625	5	1	0	16QAM	22.44	22.62
1852.5	18625	5	1	24	16QAM	22.16	22.21
1852.5	18625	5	1	12	16QAM	22.41	22.35
1852.5	18625	5	12	6	16QAM	21.11	20.03
1852.5	18625	5	25	0	16QAM	21.21	20.16
1880.0	18900	5	1	0	QPSK	23.11	23.26
1880.0	18900	5	1	24	QPSK	23.16	23.34
1880.0	18900	5	1	12	QPSK	22.92	23.05
1880.0	18900	5	12	6	QPSK	22.30	21.23
1880.0	18900	5	25	0	QPSK	22.25	21.25
1880.0	18900	5	1	0	16QAM	22.69	22.52
1880.0	18900	5	1	24	16QAM	22.88	22.40
1880.0	18900	5	1	12	16QAM	22.60	22.26
1880.0	18900	5	12	6	16QAM	21.26	20.17
1880.0	18900	5	25	0	16QAM	21.27	20.28
1907.5	19175	5	1	0	QPSK	22.63	22.82
1907.5	19175	5	1	24	QPSK	23.75	23.92
1907.5	19175	5	1	12	QPSK	23.28	23.40
1907.5	19175	5	12	6	QPSK	22.50	21.60
1907.5	19175	5	25	0	QPSK	22.60	21.56
1907.5	19175	5	1	0	16QAM	22.33	22.07
1907.5	19175	5	1	24	16QAM	23.35	23.06
1907.5	19175	5	1	12	16QAM	22.91	22.63
1907.5	19175	5	12	6	16QAM	21.56	20.59
1907.5	19175	5	25	0	16QAM	21.42	20.59

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power (dBm)
1855.0	18650	10	1	0	QPSK	23.06	23.09
1855.0	18650	10	1	49	QPSK	23.69	23.61
1855.0	18650	10	1	24	QPSK	22.86	22.84
1855.0	18650	10	25	12	QPSK	22.12	21.07
1855.0	18650	10	50	0	QPSK	22.08	21.01
1855.0	18650	10	1	0	16QAM	22.40	22.39
1855.0	18650	10	1	49	16QAM	22.85	22.86
1855.0	18650	10	1	24	16QAM	22.14	22.09
1855.0	18650	10	25	12	16QAM	20.98	19.95
1855.0	18650	10	50	0	16QAM	21.06	20.01
1880.0	18900	10	1	0	QPSK	23.18	23.24
1880.0	18900	10	1	49	QPSK	23.31	23.37
1880.0	18900	10	1	24	QPSK	22.95	23.07
1880.0	18900	10	25	12	QPSK	22.35	21.22
1880.0	18900	10	50	0	QPSK	22.48	21.39
1880.0	18900	10	1	0	16QAM	22.63	22.45
1880.0	18900	10	1	49	16QAM	22.73	22.75
1880.0	18900	10	1	24	16QAM	22.34	22.45
1880.0	18900	10	25	12	16QAM	21.28	20.32
1880.0	18900	10	50	0	16QAM	21.42	20.37
1905.0	19150	10	1	0	QPSK	23.27	23.39
1905.0	19150	10	1	49	QPSK	23.86	24.03
1905.0	19150	10	1	24	QPSK	22.55	22.80
1905.0	19150	10	25	12	QPSK	22.01	20.95
1905.0	19150	10	50	0	QPSK	21.99	20.96
1905.0	19150	10	1	0	16QAM	22.66	22.70
1905.0	19150	10	1	49	16QAM	23.28	23.37
1905.0	19150	10	1	24	16QAM	22.06	22.07
1905.0	19150	10	25	12	16QAM	21.03	20.01
1905.0	19150	10	50	0	16QAM	21.05	19.99

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power (dBm)
1857.5	18675	15	1	0	QPSK	23.03	23.15
1857.5	18675	15	1	74	QPSK	23.68	23.66
1857.5	18675	15	1	36	QPSK	23.34	23.32
1857.5	18675	15	37	18	QPSK	22.47	21.49
1857.5	18675	15	75	0	QPSK	22.37	21.41
1857.5	18675	15	1	0	16QAM	22.20	22.33
1857.5	18675	15	1	74	16QAM	22.98	22.89
1857.5	18675	15	1	36	16QAM	22.54	22.56
1857.5	18675	15	37	18	16QAM	21.47	20.52
1857.5	18675	15	75	0	16QAM	21.40	20.45
1880.0	18900	15	1	0	QPSK	23.05	23.19
1880.0	18900	15	1	74	QPSK	23.06	23.14
1880.0	18900	15	1	36	QPSK	22.98	23.10
1880.0	18900	15	37	18	QPSK	22.29	21.31
1880.0	18900	15	75	0	QPSK	22.49	21.43
1880.0	18900	15	1	0	16QAM	22.51	22.32
1880.0	18900	15	1	74	16QAM	22.56	22.45
1880.0	18900	15	1	36	16QAM	22.30	22.32
1880.0	18900	15	37	18	16QAM	21.34	20.38
1880.0	18900	15	75	0	16QAM	21.45	20.45
1902.5	19125	15	1	0	QPSK	22.44	22.69
1902.5	19125	15	1	74	QPSK	23.78	23.89
1902.5	19125	15	1	36	QPSK	22.69	22.90
1902.5	19125	15	37	18	QPSK	22.12	21.09
1902.5	19125	15	75	0	QPSK	22.11	21.06
1902.5	19125	15	1	0	16QAM	21.94	21.88
1902.5	19125	15	1	74	16QAM	23.18	23.23
1902.5	19125	15	1	36	16QAM	22.18	22.17
1902.5	19125	15	37	18	16QAM	21.11	20.16
1902.5	19125	15	75	0	16QAM	21.06	20.14

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power (dBm)
1860.0	18700	20	1	0	QPSK	23.09	23.10
1860.0	18700	20	1	99	QPSK	23.05	23.09
1860.0	18700	20	1	49	QPSK	23.88	23.89
1860.0	18700	20	50	24	QPSK	23.06	22.11
1860.0	18700	20	100	0	QPSK	23.09	22.11
1860.0	18700	20	1	0	16QAM	22.45	22.40
1860.0	18700	20	1	99	16QAM	22.31	22.24
1860.0	18700	20	1	49	16QAM	23.13	23.02
1860.0	18700	20	50	24	16QAM	22.09	21.05
1860.0	18700	20	100	0	16QAM	22.05	21.04
1880.0	18900	20	1	0	QPSK	22.96	23.02
1880.0	18900	20	1	99	QPSK	22.99	23.16
1880.0	18900	20	1	49	QPSK	23.00	23.09
1880.0	18900	20	50	24	QPSK	22.49	21.37
1880.0	18900	20	100	0	QPSK	22.57	21.46
1880.0	18900	20	1	0	16QAM	22.37	22.35
1880.0	18900	20	1	99	16QAM	22.45	22.31
1880.0	18900	20	1	49	16QAM	22.38	22.32
1880.0	18900	20	50	24	16QAM	21.42	20.40
1880.0	18900	20	100	0	16QAM	21.53	20.49
1900.0	19100	20	1	0	QPSK	22.91	23.08
1900.0	19100	20	1	99	QPSK	23.81	23.88
1900.0	19100	20	1	49	QPSK	23.23	23.43
1900.0	19100	20	50	24	QPSK	22.67	21.63
1900.0	19100	20	100	0	QPSK	22.80	21.77
1900.0	19100	20	1	0	16QAM	22.38	22.42
1900.0	19100	20	1	99	16QAM	23.15	23.12
1900.0	19100	20	1	49	16QAM	22.74	22.63
1900.0	19100	20	50	24	16QAM	21.67	20.70
1900.0	19100	20	100	0	16QAM	21.76	20.81

APPENDIX G: CONDUCTED POWER MEASUREMENTS FOR SUPPORTED WCDMA TRANSMISSION MODES

G.1 Power Tuning Targets

Tuning targets			
Mode	Low channel	Mid channel	High channel
WCDMA850	-	23.5	-
WCDMA1900	-	23.5	-

G.2 Conducted Power from the Samples used in the Testing

Type: RM-824; Serial number: 353670/05/001126/4 used for WCDMA850 for SAR Head, Body-worn and Wireless Router measurements.

Type: RM-824; Serial number: 353670/05/001185/0 used for WCDMA1900 for SAR Head, Body-worn and Wireless Router measurements.

WCDMA850 (Band 5)			
Mode	Low channel	Mid channel	High channel
WCDMA	23.50	23.49	23.41

WCDMA1900 (Band 2)			
Mode	Low channel	Mid channel	High channel
WCDMA	23.78	23.79	23.59

WCDMA and HSUPA Subtest mode conducted powers, measured from as separate, fully representative sample are presented in Appendix D.