

SAR Compliance Test Report

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Tested device:	RM-956		
FCC ID:	QTLRM-956	IC:	-
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Testing has been carried out in accordance with:	47CFR §2.1093 Radiofrequency Radiation Exposure Evaluation: Portable Devices FCC published RF exposure KDB procedures RSS-102 Evaluation Procedure for Mobile and Portable Radio Transmitters with Respect to Health Canada's Safety Code 6 for Exposure of Humans to Radio Frequency Fields IEEE 1528 - 2003 IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Technique		
Documentation:	The documentation of the testing performed on the tested devices is archived for 15 years at TCC Nokia.		
Test results:	The tested device complies with the requirements in respect of all parameters subject to the test. The test results and statements relate only to the items tested. The test report shall not be reproduced except in full, without written approval of the laboratory.		
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1. SUMMARY OF SAR TEST REPORT

1.1 Test Details

Period of test	2013-10-28 to 2013-11-04
SN, HW and SW numbers of tested device	SN: 004402/47/426946/5;004402/47/426947/3, HW: 0402, SW: dd3.39, DUT: 53571 SN: 004402/47/426976/2;004402/47/426977/0, HW: 0402, SW: dd3.39, DUT: 53572
Batteries used in testing	BL-5C, DUT: 52557, 52558
Headsets used in testing	WH-108, DUT: 53214, 53215
Other accessories used in testing	-
State of sample	Prototype unit
Notes	-

1.2 Maximum Results

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

1.2.1 Head Configuration

Mode	Ch / f(MHz)	Conducted power	Position	Measured SAR value (1g avg)	Reported* SAR value (1g avg)	SAR limit (1g avg)	Result	Plot #
3-slot GPRS850	251 / 848.8	27.90 dBm	Right, Cheek	0.580 W/kg	0.60 W/kg	1.6 W/kg	PASSED	1
WCDMA850	4233 / 846.6	23.73 dBm	Right, Cheek	0.638 W/kg	0.66 W/kg	1.6 W/kg	PASSED	2
4-slot GPRS1900	810 / 1909.8	24.30 dBm	Right, Cheek	0.814 W/kg	0.82 W/kg	1.6 W/kg	PASSED	3

1.2.2 Body Worn Configuration

Mode	Ch / f(MHz)	Conducted power	Separation distance	Measured SAR value (1g avg)	Reported* SAR value (1g avg)	SAR limit (1g avg)	Result	Plot #
3-slot GPRS850	128 / 824.2	27.90 dBm	1.5 cm	0.648 W/kg	0.67 W/kg	1.6 W/kg	PASSED	4
WCDMA850	4132 / 826.4	23.83 dBm	1.5 cm	0.686 W/kg	0.69 W/kg	1.6 W/kg	PASSED	5
4-slot GPRS1900	810 / 1909.8	24.30 dBm	1.5 cm	0.607 W/kg	0.61 W/kg	1.6 W/kg	PASSED	6

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

Summary SAR data

	FCC-defined SAR values for the Grants of Equipment Authorization			
	PCE	DTS	NII	DSS
Maximum Head SAR values	0.82W/kg	-	-	0.24W/kg
{Max + Max} Simultaneous Head SAR value	1.06W/kg			
Maximum Body SAR values	0.69W/kg	-	-	0.08W/kg
{Max + Max} Simultaneous Body SAR value	0.78W/kg			
Maximum Product Specific (Wireless Router) SAR values	-	-	-	-
Maximum Simultaneous SAR value Head SAR: 4-slot GPRS1900 + BT2450*	1.06W/kg			

Note:

PCE contains the highest results between all cellular modes (cellular, AWS and PCS bands)
DTS contains the highest results between WLAN 2.4GHz + RLAN 5725-5850MHz
NII contains the highest results between RLAN 5150-5250, 5250-5350 and 5470-5725
DSS contains the highest results between BT 2450

1.2.3 Maximum Drift

Corresponds to maximum drift of 5% allowed by the FCC without further drift assessment	Maximum drift during measurements
0.2dB	0.18dB

1.2.4 Measurement Uncertainty

Expanded Uncertainty (k=2) 95%	± 27.1%
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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)	Power Tuning Target (dBm)				Upper Limit of Power Tuning Tolerance (dBm)			
					1-slot	2-slot	3-slot	4-slot	1-slot	2-slot	3-slot	4-slot
GSM / GPRS	850	GMSK	1/8 to 4/8	824 – 849	32.50	29.50	27.70	26.50	32.85	29.85	28.05	26.85
	1900			1850 – 1910	30.00	27.00	25.20	24.00	30.35	27.35	25.55	24.35
WCDMA	850 (Band V)		1	826 – 847	23.5				23.85			
HSUPA	850 (Band V)		1	826 – 847	See Appendix D for details							
BT	2450	GFSK	1	2402 – 2480	6.00				7.50			

Outside of USA, the transmitter of the device is capable of operating also in GSM/GPRS900, GSM/GPRS1800, and WCDMA2100 bands which are not part of this filing.

SAR for multi slot GPRS mode was evaluated against the head profile of the phantom due to possible VoIP use.

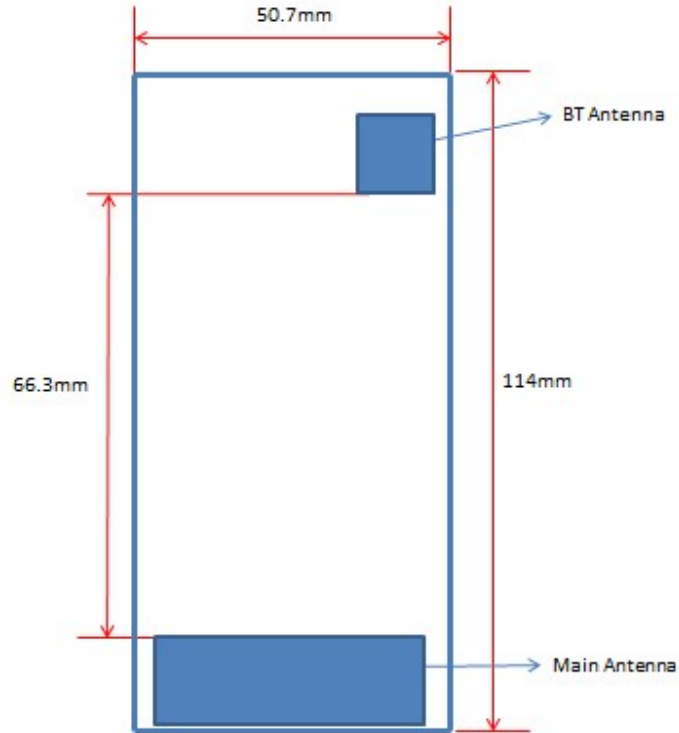
This device has Voice-over-IP capability for use at the ear. Therefore, SAR for multi slot GPRS mode was evaluated against the head profile of the phantom.

This is a BT Class 1 device; as its power tuning target is 6dBm (3.98mW), SAR testing was deemed unnecessary since $(3.98\text{mW}/5\text{mm}) \cdot \sqrt{2.48\text{GHz}} < 3.0$ (KDB447498 D01 General RF Exposure Guidelines v05 Section 4.3.1 Standalone SAR test exclusion considerations)

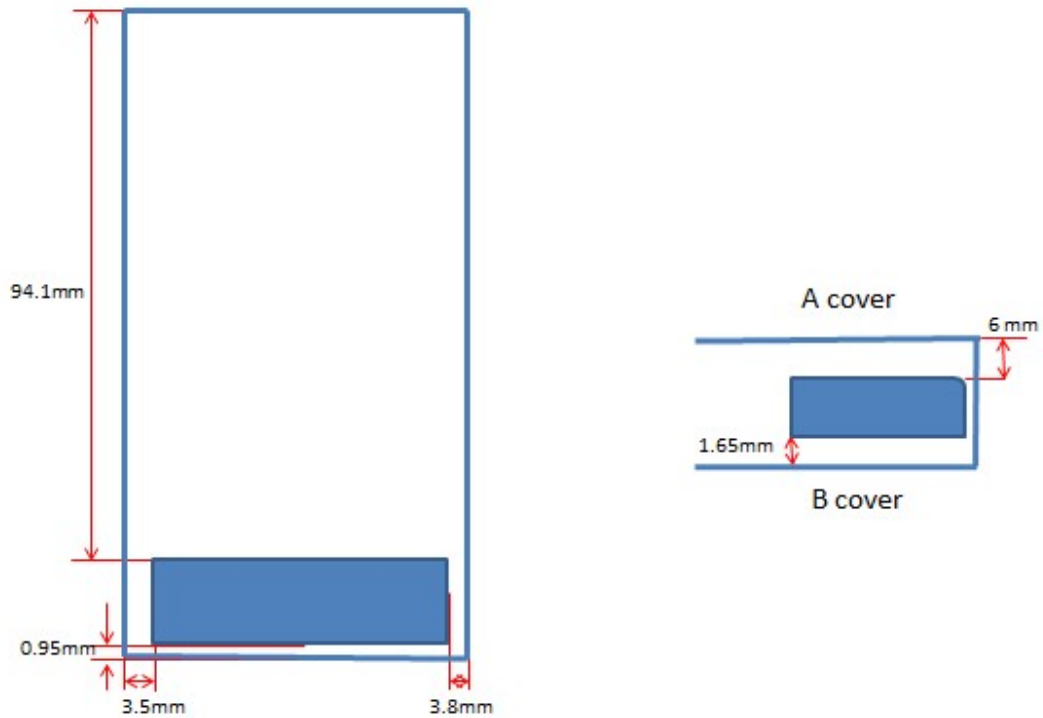
2.1 Description of the Antenna

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

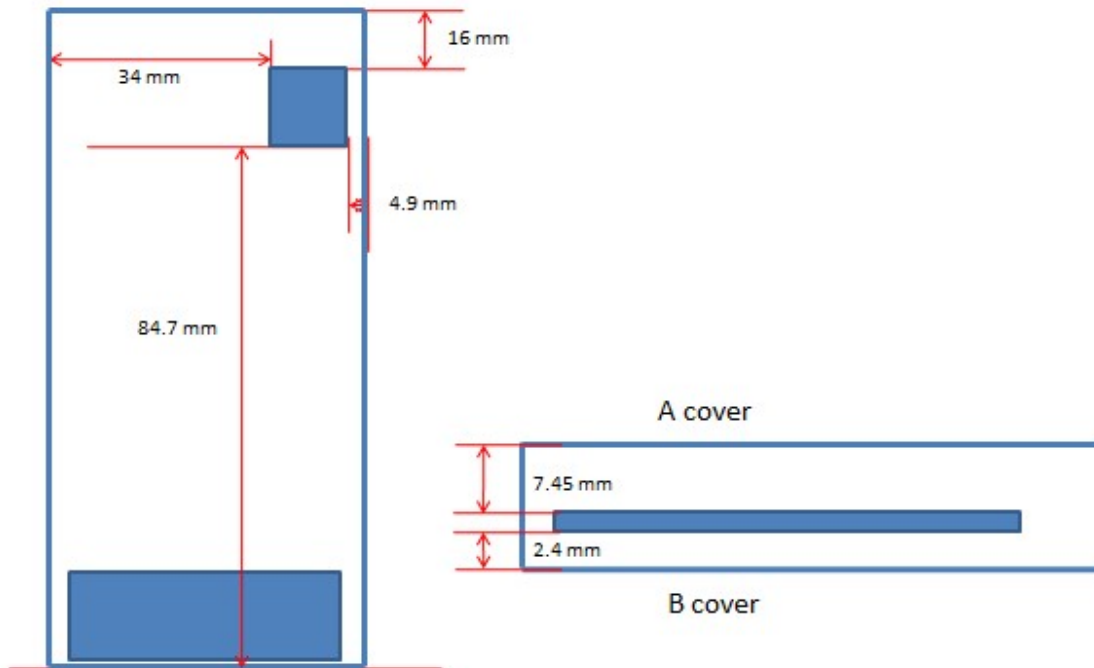
Phone Dimension and Distance Between Main antenna and BT Antenna



Distance between Device edge and Main Antenna



Distance between Out of Device and BT Antenna



3. TEST CONDITIONS

3.1 Temperature and Humidity

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

3.2 Test Signal, Frequencies and Output Power

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

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

This device was tested in all the available multi-slot GMSK GPRS modes.

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

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

The conducted output power of the device was measured by a separate test laboratory on the same unit(s) as used for SAR testing. The results are given in Appendices G-H of this report.

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

- KDB 648474 D04 Handset SAR v01r01
- KDB 447498 D01 General RF Exposure Guidance v05
- KDB 690783 D01 SAR Listings on Grants
- KDB 865664 D01 SAR measurements 100MHz to 6GHz v01
- KDB 865664 D02 SAR Reporting v01
- KDB 941225 D01 SAR Measurement Procedures for 3G Devices v02

4. DESCRIPTION OF THE TEST EQUIPMENT

4.1 Measurement System and Components

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

The following table lists calibration dates of SPEAG components:

Test Equipment	Serial Number	Calibration date	Calibration expiry
DAE 4	887	2013-03	2014-03
DAE 4	710	2013-03	2014-03
E-field Probe EX3DV4	3836	2013-03	2014-03
E-field Probe ES3DV3	3195	2013-03	2014-03
Dipole Validation Kit, D835V2	4d005	2012-03	2014-03
Dipole Validation Kit, D835V2	479	2013-03	2015-03
Dipole Validation Kit, D1900V2	509	2012-12	2014-12
DASY5 software	Version 52.8	-	-

Additional test equipment used in testing:

Test Equipment	Model	Serial Number	Calibration date	Calibration expiry
Signal Generator	SME06	829445	2013-04	2014-04
Signal Generator	E4432B	US40052231	2013-04	2014-04
Call Tester	CMU200	835352/008	-	-
Call Tester	CMU200	110735	-	-
Amplifier	ZHL-42W	QA1252001	-	-
Amplifier	AR 5S1G4M1	306024	-	-
RF Network Analyzer	8753ES	My40002096	2013-04	2014-04
RF Network Analyzer	8753ES	US39170317	2013-04	2014-04
Dielectric Probe Kit	85070C	2577	-	-
Dielectric Probe Kit	85070C	653	-	-
Power Meter	R&S NRP	101293	2013-04	2014-04
Power Sensor	R&S NRP-Z51	102842	2013-04	2014-04
Power Meter	Agilent E4419B	My41291520	2013-04	2014-04
Power Sensor	Agilent 8482A	US37295411	2013-04	2014-04

4.1.1 Isotropic E-field Probe Type ES3DV3

Construction	Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., butyl diglycol)
Calibration	Calibration certificate in Appendix E
Frequency	10 MHz to 4 GHz (dosimetry); Linearity: ± 0.2 dB (30 MHz to 4 GHz)
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.3 dB in HSL (rotation normal to probe axis)
Dynamic Range	5 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 E
Frequency	10 MHz to >6 GHz (dosimetry); Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	10 μ W/g to > 100 mW/g, Linearity: ± 0.2 dB
Dimensions	Overall length: 330 mm Tip length: 10 mm Body diameter: 12 mm Tip diameter: 2.5 mm Distance from probe tip to dipole centers: 1.0 mm
Application	General dosimetry up to 6 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms

4.2 Phantoms

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

The phantom used for all Body SAR tests i.e. for both system checks and device testing, was a "Triple Flat Phantom", also manufactured by SPEAG; this phantom conform to the requirements of FCC published RF exposure KDB procedures.

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

4.3 Tissue Simulants

Recommended values for the dielectric parameters of the tissue simulants are given in IEEE 1528 – 2003 and FCC published RF Exposure KDB Procedures. All tests were carried out using simulants whose dielectric parameters were within $\pm 5\%$ of the recommended values. All tests were carried out within 24 hours of measuring the dielectric parameters.

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

4.3.1 Tissue Simulant Recipes

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

800MHz band

Ingredient	Head (% by weight)	Body (% by weight)
Deionised Water	39.74	55.97
HEC	0.25	1.21
Sugar	58.31	41.76
Preservative	0.15	0.27
Salt	1.55	0.79

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

4.4 System validation and System checking

4.4.1 System validation status

Probe Calibration Point f / MHz	Test System	DASY SW	Dipole Type / SN	Probe Type / SN	DAE unit Type / SN	Validation done	
						Head tissue simulant	Body tissue simulant
835	TCC Beijing / SAR-1	V52.8	D835V2 / 4d005	EX3DV4 / 3836	DAE4 / 710	2013-03	2013-03
835	TCC Beijing / SAR-3	V52.8	D835V2 / 479	ES3DV3 / 3195	DAE4 / 887	2013-08	-
1900	TCC Beijing / SAR-1	V52.8	D1900V2 / 509	EX3DV4 / 3836	DAE4 / 710	2013-07	-
1900	TCC Beijing / SAR-3	V52.8	D1900V2 / 509	ES3DV3 / 3195	DAE4 / 887	2013-08	2013-09

4.4.2 System checking

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

System checking, head tissue simulant

f [MHz]	Description	SAR 1g [W/kg]	Estimated SAR 1g [W/kg]	Estimated SAR 1g Deviation	Dielectric Parameters		SAR 1g Deviation from target	Dielectric Parameters Deviation from target		Temp [°C]	Plot #
				dSAR [%]	ϵ_r	σ [S/m]	dSAR [%]	d ϵ_r [%]	d σ [%]		
	Tolerances			±3%			±10 %	±5 %	±5 %		
835	IEEE1528 / IEC62209				41.5	0.90					
	Reference result SN:479	2.48	-		40.9	0.94	TCC Bej/SAR-3 ES3DV4 SN:3195 Head 835MHz				
	2013-10-28	2.30	-	-	40.7	0.92	-7.26	-0.49	-2.13	22.5	1
	2013-10-29	2.30	-	-	40.1	0.92	-7.26	-1.96	-2.13	22.5	-
1900	IEEE1528 / IEC62209				40.0	1.40					
	Reference result SN:509	9.63	-		39.5	1.38	TCC Bej/SAR-1 EX3DV4 SN:3836 Head 1900MHz				
	2013-10-29	9.55	-	-	38.7	1.41	-0.83	-2.03	2.17	21.7	-
1900	Reference result SN:509	9.63	-		39.5	1.38	TCC Bej/SAR-3 ES3DV4 SN:3195 Head 1900MHz				
	2013-11-04	9.42	-	-	39.1	1.38	-2.18	-1.01	0.00	22.5	2

System checking, body tissue simulant

f [MHz]	Description	SAR 1g [W/kg]	Estimated SAR 1g [W/kg]	Estimated SAR 1g Deviation	Dielectric Parameters		SAR 1g Deviation from target	Dielectric Parameters Deviation from target		Temp [°C]	Plot #
				dSAR [%]	ϵ_r	σ [S/m]	dSAR [%]	d ϵ_r [%]	d σ [%]		
	Tolerances			±3%			±10 %	±5 %	±5 %		
835	IEEE1528 / IEC62209				55.2	0.97					
	Reference result SN:4d005	2.42	-		55.0	1.00	TCC Bej/SAR-1 EX3DV4 SN3836 Body 835MHz				
	2013-10-30	2.51	-	-	54.5	0.97	1.24	-0.91	-5.00	21.9	3
1900	IEEE1528 / IEC62209				53.3	1.52					
	Reference result SN:509	9.84	-		52.2	1.52	TCC Bej/SAR-3 ES3DV4 SN:3195 Body 1900MHz				
	2013-10-31	9.59	-	-	51.2	1.54	-2.54	-1.92	1.32	22.5	4

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

4.5 Tissue Simulants used in the Measurements

Head tissue simulant measurements

f [MHz]	Description	Dielectric Parameters		Dielectric Parameters Deviation from recommended value		Temp [°C]
		ϵ_r	σ [S/m]	$d\epsilon_r$ [%]	$d\sigma$ [%]	
	Tolerances			± 5 %	± 5 %	
836	Recommended value	41.5	0.90			
	2013-10-29	40.2	0.92	-3.13	2.22	22.5
835	Recommended value	41.5	0.90			
	2013-10-28	40.7	0.92	-1.93	2.22	22.5
1880	Recommended value	40.0	1.40			
	2013-10-29	38.8	1.39	-2.00	-4.29	21.7

Body tissue simulant measurements

f [MHz]	Description	Dielectric Parameters		Dielectric Parameters Deviation from Recommended value		Temp [°C]
		ϵ_r	σ [S/m]	$d\epsilon_r$ [%]	$d\sigma$ [%]	
	Tolerances			± 5 %	± 5 %	
835	Recommended value	55.2	0.97			
	2013-10-30	54.5	0.97	-1.27	-1.03	21.9
836	Recommended value	55.2	0.97			
	2013-10-30	54.5	0.97	-1.27	-1.03	21.9
1880	Recommended value	53.3	1.52			
	2013-10-31	51.2	1.52	-3.94	0.00	22.5

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

5. DESCRIPTION OF THE TEST PROCEDURE

5.1 Device Holder

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



Device holder supplied by SPEAG

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



Nokia spacer

5.2 Test Positions

5.2.1 Against Phantom Head

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

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

5.2.2 Body Worn Configuration

The device was placed in the SPEAG holder using the Nokia spacer and placed below the flat section of the phantom. The distance between the device and the phantom was kept at the

separation distance indicated in Section 1.2.2 using a separate flat spacer that was removed before the start of the measurements. The device was oriented with both sides facing the phantom to find the highest results.

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

5.3 Scan Procedures

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

5.4 SAR Averaging Methods

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

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

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

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

6. MEASUREMENT UNCERTAINTY

Table 6.1 – Measurement uncertainty evaluation

Uncertainty Component	Section in IEEE 1528	Tol. (%)	Prob Dist	Div	C_i	$C_i \cdot U_i$ (%)	V_i
Measurement System							
Probe Calibration	E2.1	±6.55	N	1	1	±6.55	∞
Axial Isotropy	E2.2	±4.7	R	√3	$(1-c_p)^{1/2}$	±1.9	∞
Hemispherical Isotropy	E2.2	±9.6	R	√3	$(c_p)^{1/2}$	±3.9	∞
Boundary Effect	E2.3	±1.0	R	√3	1	±0.6	∞
Linearity	E2.4	±4.7	R	√3	1	±2.7	∞
System Detection Limits	E2.5	±1.0	R	√3	1	±0.6	∞
Readout Electronics	E2.6	±1.0	N	1	1	±1.0	∞
Response Time	E2.7	±0.8	R	√3	1	±0.5	∞
Integration Time	E2.8	±2.6	R	√3	1	±1.5	∞
RF Ambient Conditions - Noise	E6.1	±3.0	R	√3	1	±1.7	∞
RF Ambient Conditions - Reflections	E6.1	±3.0	R	√3	1	±1.7	∞
Probe Positioner Mechanical Tolerance	E6.2	±0.4	R	√3	1	±0.2	∞
Probe Positioning with respect to Phantom Shell	E6.3	±2.9	R	√3	1	±1.7	∞
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	E5	±3.9	R	√3	1	±2.3	∞
Test sample Related							
Test Sample Positioning	E4.2	±6.0	N	1	1	±6.0	11
Device Holder Uncertainty	E4.1	±5.0	N	1	1	±5.0	7
Output Power Variation - SAR drift measurement	6.6.3	±5.0	R	√3	1	±2.9	∞
Phantom and Tissue Parameters							
Phantom Uncertainty (shape and thickness tolerances)	E3.1	±4.0	R	√3	1	±2.3	∞
Conductivity Target - tolerance	E3.2	±5.0	R	√3	0.64	±1.8	∞
Conductivity - measurement uncertainty	E3.3	±5.5	N	1	0.64	±3.5	5
Permittivity Target - tolerance	E3.2	±5.0	R	√3	0.6	±1.7	∞
Permittivity - measurement uncertainty	E3.3	±2.9	N	1	0.6	±1.7	5
Combined Standard Uncertainty			RSS			±13.5	116
Coverage Factor for 95%			k=2				
Expanded Uncertainty						±27.1	

7. RESULTS

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

850MHz Band Head SAR results

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz	Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz		
GSM	Tuning Target + Tolerance [dBm]		32.85			Scaling factor*				
	Conducted Slot Average Power [dBm]		32.70	32.80	32.80	0.15	0.05	0.05	dB	
	Time-averaged power [dBm]		23.67	23.77	23.77	1.04	1.01	1.01	Lin	
	Left Cheek	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	0.500	-	-	0.506	-		
	Left Tilt	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Tilt	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-		
2-slot GPRS	Tuning Target + Tolerance [dBm]		29.85			Scaling factor*				
	Conducted Slot Average Power [dBm]		29.70	29.70	29.70	0.15	0.15	0.15	dB	
	Time-averaged power [dBm]		23.68	23.68	23.68	1.04	1.04	1.04	Lin	
	Left Cheek	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	0.508	-	-	0.526	-		
	Left Tilt	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Tilt	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-		

(Table continues)

(Table continues)

3-slot GPRS	Tuning Target + Tolerance [dBm]		28.05			Scaling factor*					
	Conducted Slot Average Power [dBm]		27.90	27.90	27.90	0.15	0.15	0.15	dB		
	Time-averaged power [dBm]		23.64	23.64	23.64	1.04	1.04	1.04	Lin		
	Left Cheek	Estimated SAR	-	-	-	-	-	-	-	-	-
		Full SAR	-	0.518	-	-	0.536	-	-	-	-
	Left Tilt	Estimated SAR	-	-	-	-	-	-	-	-	-
		Full SAR	-	0.317	-	-	0.328	-	-	-	-
	Right Cheek	Estimated SAR	-	-	-	-	-	-	-	-	1
		Full SAR	0.545	0.556	0.580	0.564	0.576	0.600	-	-	-
Right Tilt	Estimated SAR	-	-	-	-	-	-	-	-	-	
	Full SAR	-	0.347	-	-	0.359	-	-	-	-	
4-slot GPRS	Tuning Target + Tolerance [dBm]		26.85			Scaling factor*					
	Conducted Slot Average Power [dBm]		26.60	26.60	26.60	0.25	0.25	0.25	dB		
	Time-averaged power [dBm]		23.59	23.59	23.59	1.06	1.06	1.06	Lin		
	Left Cheek	Estimated SAR	-	-	-	-	-	-	-	-	-
		Full SAR	-	0.507	-	-	0.537	-	-	-	-
	Left Tilt	Estimated SAR	-	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-	-	-	-
	Right Cheek	Estimated SAR	-	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-	-	-	-
Right Tilt	Estimated SAR	-	-	-	-	-	-	-	-	-	
	Full SAR	-	-	-	-	-	-	-	-	-	
Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #	
			Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz	Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz			
WCDMA	Tuning Target + Tolerance [dBm]		23.85			Scaling factor*					
	Conducted Slot Average Power [dBm]		23.83	23.63	23.73	0.02	0.22	0.12	dB		
	Time-averaged power [dBm]		23.83	23.63	23.73	1.00	1.05	1.03	Lin		
	Left Cheek	Estimated SAR	-	-	-	-	-	-	-	-	-
		Full SAR	-	0.423	-	-	0.445	-	-	-	-
	Left Tilt	Estimated SAR	-	-	-	-	-	-	-	-	-
		Full SAR	-	0.265	-	-	0.279	-	-	-	-
	Right Cheek	Estimated SAR	-	-	-	-	-	-	-	-	2
		Full SAR	0.481	0.477	0.638	0.483	0.502	0.656	-	-	-
Right Tilt	Estimated SAR	-	-	-	-	-	-	-	-	-	
	Full SAR	-	0.307	-	-	0.323	-	-	-	-	

1900MHz Band Head SAR results

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz	Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz		
GSM	Tuning Target + Tolerance [dBm]		30.35			Scaling factor*				
	Conducted Slot Average Power [dBm]		30.30	30.20	30.10	0.05	0.15	0.25	dB	
	Time-averaged power [dBm]		21.27	21.17	21.07	1.01	1.04	1.06	Lin	
	Left Cheek	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	0.590	-	-	0.611	-	-	-
	Left Tilt	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-	-	-
	Right Cheek	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-	-	-
	Right Tilt	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-	-	-
2-slot GPRS	Tuning Target + Tolerance [dBm]		27.35			Scaling factor*				
	Conducted Slot Average Power [dBm]		27.00	27.00	27.00	0.35	0.35	0.35	dB	
	Time-averaged power [dBm]		20.98	20.98	20.98	1.08	1.08	1.08	Lin	
	Left Cheek	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	0.624	-	-	0.676	-	-	-
	Left Tilt	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-	-	-
	Right Cheek	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-	-	-
	Right Tilt	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-	-	-

(Table continues)

(Table continues)

3-slot GPRS	Tuning Target + Tolerance [dBm]		25.55			Scaling factor*				
	Conducted Slot Average Power [dBm]		25.50	25.50	25.40	0.05	0.05	0.15	dB	
	Time-averaged power [dBm]		21.24	21.24	21.14	1.01	1.01	1.04	Lin	
	Left Cheek	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	0.671	-	-	0.679	-	-	-
	Left Tilt	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-	-	-
	Right Cheek	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	-	-	-	-	-	-	-
	Right Tilt	Estimated SAR	-	-	-	-	-	-	-	-
Full SAR		-	-	-	-	-	-	-	-	
4-slot GPRS	Tuning Target + Tolerance [dBm]		24.35			Scaling factor*				
	Conducted Slot Average Power [dBm]		24.10	24.30	24.30	0.25	0.05	0.05	dB	
	Time-averaged power [dBm]		21.09	21.29	21.29	1.06	1.01	1.01	Lin	
	Left Cheek	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	0.671	-	-	0.679	-	-	-
	Left Tilt	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	0.346	-	-	0.350	-	-	-
	Right Cheek	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	0.646	0.695	0.814	0.684	0.703	0.823	-	3
	Right Tilt	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	-	0.272	-	-	0.275	-	-	-
	Repeated SAR: Right Cheek	Estimated SAR	-	-	-	-	-	-	-	-
Full SAR		-	-	0.723	-	-	0.731	-	-	

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

Test configuration	Max. Reported* 1g SAR results			
	BT2450	3-slot GPRS 850	WCDMA850	4-slot GPRS 1900
Head: Left, Cheek	0.236†	0.536	0.445	0.679
Head: Left, Tilt	0.236†	0.328	0.279	0.350
Head: Right, Cheek	0.236†	0.600	0.656	0.823
Head: Right, Tilt	0.236†	0.359	0.323	0.275

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

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

Test configuration	Max. Reported* 1g SAR results		
	3-slot GPRS 850 + BT2450†	WCDMA850 + BT2450†	4-slot GPRS 1900 + BT2450†
Head: Left, Cheek	0.772	0.681	0.915
Head: Left, Tilt	0.564	0.515	0.586
Head: Right, Cheek	0.836	0.892	1.06
Head: Right, Tilt	0.595	0.559	0.511

† SAR value estimated, according to KDB447498 from: [(max. power of channel, including tune-up tolerance, mW) / 5mm].[$\sqrt{2.480 / 7.5}$] W/kg

Plots of the Measurement scans are given in Appendix B.

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

850MHz Band Body SAR results

Mode	Device orientation		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
				Ch 128	Ch 190	Ch 251	Ch 128	Ch 190	Ch 251		
				824.2 MHz	836.6 MHz	848.8 MHz	824.2 MHz	836.6 MHz	848.8 MHz		
3-slot GPRS	Tuning Target + Tolerance [dBm]			28.05			Scaling factor*				
	Conducted Slot Average Power [dBm]			27.90	27.90	27.90	0.15	0.15	0.15	dB	
	Time-averaged power [dBm]			23.64	23.64	23.64	1.04	1.04	1.04	Lin	
	Back facing phantom	Without headset	Estimated SAR	-	-	-	-	-	-	-	4
			Full SAR	0.648	0.628	0.607	0.671	0.650	0.628	-	-
		Headset WH-108	Estimated SAR	-	-	-	-	-	-	-	-
			Full SAR	-	0.368	-	-	0.381	-	-	-
	Display facing phantom	Without headset	Estimated SAR	-	-	-	-	-	-	-	-
			Full SAR	-	0.449	-	-	0.465	-	-	-
		Headset WH-108	Estimated SAR	-	-	-	-	-	-	-	-
			Full SAR	-	0.243	-	-	0.252	-	-	-
Mode	Device orientation		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
				Ch 4132	Ch 4175	Ch 4233	Ch 4132	Ch 4175	Ch 4233		
				826.4 MHz	835.0 MHz	846.6 MHz	826.4 MHz	835.0 MHz	846.6 MHz		
WCDMA	Tuning Target + Tolerance [dBm]			23.85			Scaling factor*				
	Conducted Slot Average Power [dBm]			23.83	23.63	23.73	0.02	0.22	0.12	dB	
	Time-averaged power [dBm]			23.83	23.63	23.73	1.00	1.05	1.03	Lin	
	Back facing phantom	Without headset	Estimated SAR	-	-	-	-	-	-	-	5
			Full SAR	0.686	0.601	0.646	0.689	0.632	0.664	-	-
		Headset WH-108	Estimated SAR	-	-	-	-	-	-	-	-
			Full SAR	-	0.425	-	-	0.447	-	-	-
	Display facing phantom	Without headset	Estimated SAR	-	-	-	-	-	-	-	-
			Full SAR	-	0.399	-	-	0.420	-	-	-
		Headset WH-108	Estimated SAR	-	-	-	-	-	-	-	-
			Full SAR	-	0.225	-	-	0.237	-	-	-

1900MHz Band Body SAR results

Mode	Device orientation		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
				Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz	Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz		
4-slot GPRS	Tuning Target + Tolerance [dBm]			24.35			Scaling factor*				
	Conducted Slot Average Power [dBm]			24.10	24.30	24.30	0.25	0.05	0.05	dB	
	Time-averaged power [dBm]			21.09	21.29	21.29	1.06	1.01	1.01	Lin	
	Back facing phantom	Without headset	Estimated SAR	-	-	-	-	-	-	-	6
		Headset WH-108	Estimated SAR	-	-	-	-	-	-	-	-
		Without headset	Full SAR	0.552	0.580	0.607	0.585	0.587	0.614	-	-
		Headset WH-108	Full SAR	-	0.561	-	-	0.567	-	-	-
	Display facing phantom	Without headset	Estimated SAR	-	-	-	-	-	-	-	-
		Headset WH-108	Estimated SAR	-	0.463	-	-	0.468	-	-	-
		Without headset	Full SAR	-	-	-	-	-	-	-	-
		Headset WH-108	Full SAR	-	0.393	-	-	0.398	-	-	-

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

Test configuration	Max. Reported* 1g SAR results			
	BT2450	3-slot GPRS 850	WCDMA850	4-slot GPRS 1900
Body: Back facing phantom, Without Headset	0.079†	0.665	0.689	0.614
Body: Back facing phantom, Headset WH-108	0.079†	0.381	0.447	0.567
Body: Display facing phantom, Without Headset	0.079†	0.465	0.420	0.468
Body: Display facing phantom, Headset WH-108	0.079†	0.252	0.237	0.398

Note: * Reported SAR values are scaled to, or measured at, upper limit of power tuning tolerance. As a consequence of this upward drift correction, the contribution of measurement drift to the overall measurement uncertainty (Section 6) is reduced to zero.

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

Test configuration	Max. Reported* 1g SAR results		
	3-slot GPRS 850 + BT2450†	WCDMA850 + BT2450†	4-slot GPRS 1900 + BT2450†
Body: Back facing phantom, Without Headset	0.744	0.768	0.693
Body: Back facing phantom, Headset WH-108	0.460	0.526	0.646
Body: Display facing phantom, Without Headset	0.544	0.499	0.547
Body: Display facing phantom, Headset WH-108	0.331	0.316	0.477

† SAR value estimated, according to KDB447498 from: $[(\text{max. power of channel, including tune-up tolerance, mW}) / 15\text{mm}] \cdot [\sqrt{2.480 / 7.5}] \text{ W/kg}$

Plots of the Measurement scans are given in Appendix B.

APPENDIX A: SYSTEM CHECKING SCANS

Plot 1:

Date/Time: 2013-10-28 9:44:49 AM

Test Laboratory: TCC Nokia

Type: D835V2; Serial: 479

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Head 835 SAR3; Medium Notes: Medium Temperature: $t=22.5\text{ C}$

Medium parameters used: $f = 835\text{ MHz}$; $\sigma = 0.924\text{ S/m}$; $\epsilon_r = 40.703$; $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF(6.39, 6.39, 6.39); Calibrated: 2013-03-08;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn887; Calibrated: 2013-03-07
- Phantom: SAR3 - SAM3; Type: Not Specified; Serial: Not Specified
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.8 (7028)

d=15mm, Pin=250mW/Area Scan (61x81x1): Interpolated grid: $dx=1.500\text{ mm}$, $dy=1.500\text{ mm}$

Maximum value of SAR (interpolated) = 2.47 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 = 53.151 V/m

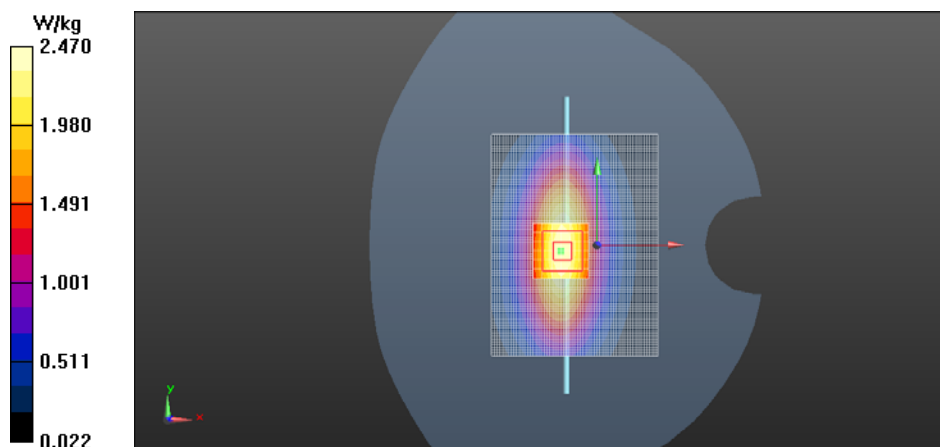
Peak SAR (extrapolated) = 3.35 W/kg

SAR(1 g) = 2.3 W/kg

SAR(10 g) = 1.5 W/kg

Power Drift = -0.07 dB

Maximum value of SAR (measured) = 2.49 W/kg



Plot 2:

Date/Time: 2013-11-04 9:43:51 AM

Test Laboratory: TCC Nokia

Type: D1900V2; Serial: 509

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: Head 1900 SAR3; Medium Notes: Medium Temperature: t=22.5 C

Medium parameters used: f = 1900 MHz; $\sigma = 1.38$ S/m; $\epsilon_r = 39.05$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF(5.14, 5.14, 5.14); Calibrated: 2013-03-08;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn887; Calibrated: 2013-03-07
- Phantom: SAR3 - SAM2 ; Type: Not Specified; Serial: Not Specified
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.8 (7028)

d=10mm, Pin=250mW/Area Scan (61x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 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 = 89.721 V/m

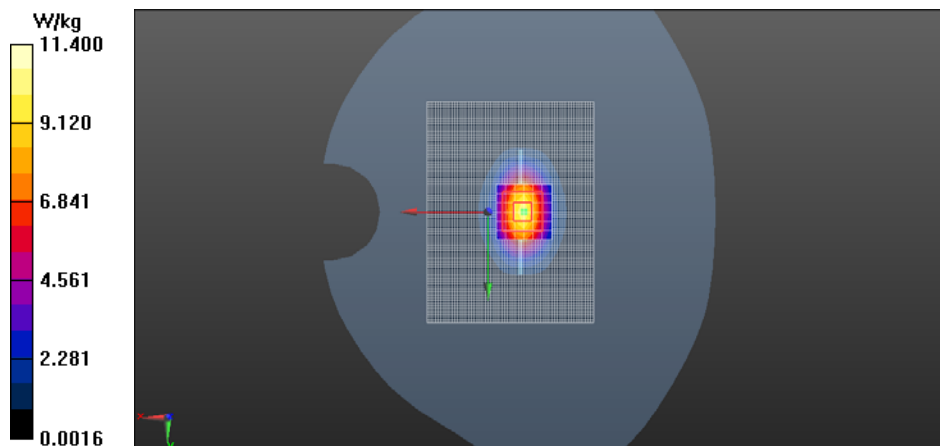
Peak SAR (extrapolated) = 16.9 W/kg

SAR(1 g) = 9.42 W/kg

SAR(10 g) = 4.93 W/kg

Power Drift = -0.07 dB

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



Plot 3:

Date/Time: 2013-10-30 10:23:39 AM

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

Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Body 835 SAR1; Medium Notes: Medium Temperature: $t=21.9$

Medium parameters used: $f = 835$ MHz; $\sigma = 0.972$ S/m; $\epsilon_r = 54.526$; $\rho = 1000$ kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.97, 8.97, 8.97); Calibrated: 2013-03-08;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2013-03-08
- Phantom: SAR1 - TFP; Type: Not Specified; Serial: Not Specified
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.8 (7028)

d=15mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 2.68 W/kg

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

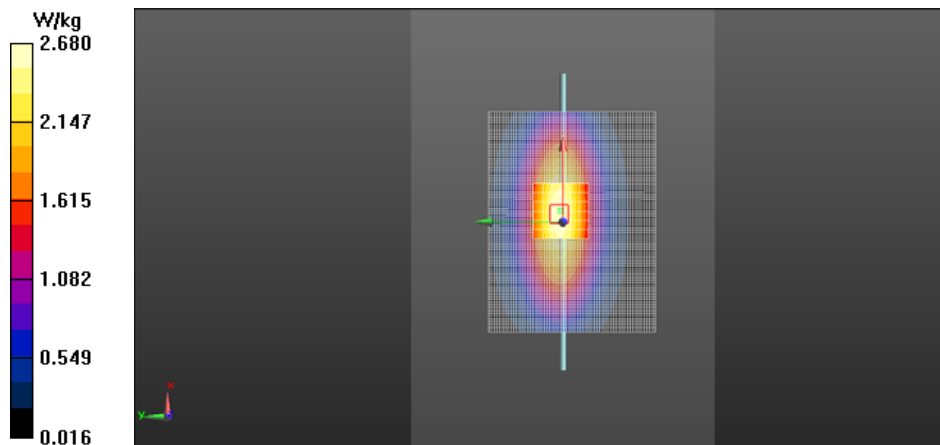
Reference Value = 52.365 V/m

Peak SAR (extrapolated) = 3.72 W/kg

SAR(1 g) = 2.51 W/kg

Maximum value of SAR (measured) = 2.72 W/kg

Power Drift = -0.00 dB



Plot 4:

Date/Time: 2013-10-31 9:46:37 AM

Test Laboratory: TCC Nokia

Type: D1900V2; Serial: 509

Communication System: CW1900

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: Body 1900 SAR3; Medium Notes: Medium Temperature: t=22.5 C

Medium parameters used: f = 1900 MHz; σ = 1.541 S/m; ϵ_r = 51.16; ρ = 1000 kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF(4.73, 4.73, 4.73); Calibrated: 2013-03-08;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn887; Calibrated: 2013-03-07
- Phantom: SAR3 - TFP; Type: Not Specified; Serial: Not Specified
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.8 (7028)

d=10mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

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

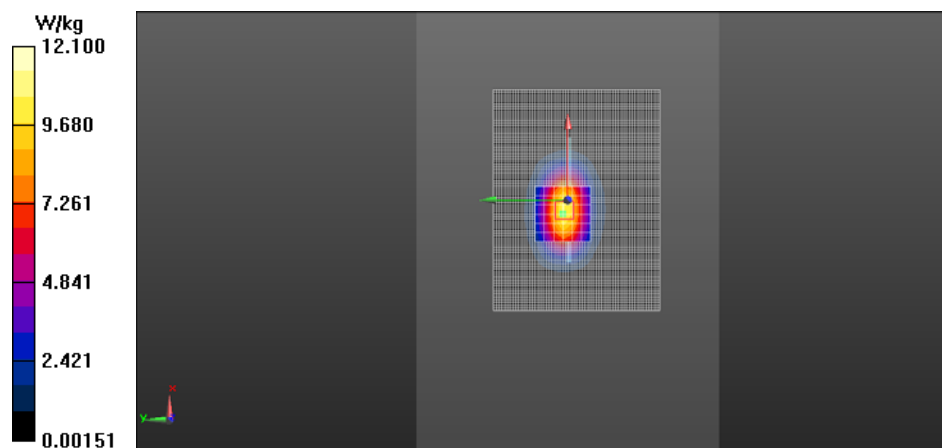
Reference Value = 82.909 V/m

Peak SAR (extrapolated) = 16.9 W/kg

SAR(1 g) = 9.59 W/kg

Maximum value of SAR (measured) = 10.8 W/kg

Power Drift = 0.02 dB



APPENDIX B: MEASUREMENT SCANS

Plot 1:

Date/Time: 2013-10-29 4:22:45 PM

Test Laboratory: TCC Nokia

Type: RM-956; Serial: 004402/47/426976/2;004402/47/426977/0

Communication System: 3-slot GPRS850

Frequency: 848.8 MHz; Duty Cycle: 1:2.80027

Medium: Head 835 SAR3; Medium Notes: Medium Temperature: t=22.5 C

Medium parameters used: f = 849 MHz; $\sigma = 0.93$ S/m; $\epsilon_r = 40.04$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF(6.39, 6.39, 6.39); Calibrated: 2013-03-08;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn887; Calibrated: 2013-03-07
- Phantom: SAR3 - SAM3; Type: Not Specified; Serial: Not Specified
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.8 (7028)

3-slot GPRS850 - Right/Cheek - High/Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.828 W/kg

3- slot GPRS850 - Right/Cheek - High/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 10.300 V/m

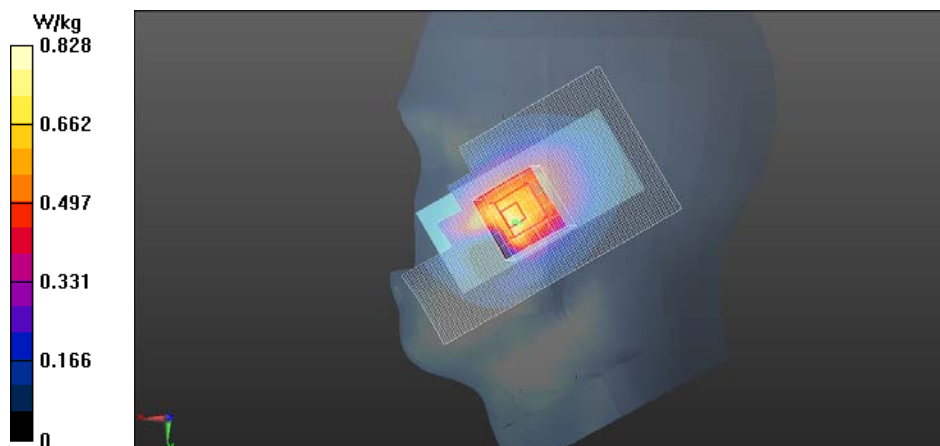
Peak SAR (extrapolated) = 0.736 W/kg

SAR(1 g) = 0.580 W/kg

SAR(10 g) = 0.422 W/kg

Power Drift = 0.08 dB

Maximum value of SAR (measured) = 0.612 W/kg



Plot 2:

Date/Time: 2013-10-28 1:07:33 PM

Test Laboratory: TCC Nokia

Type: RM-956; Serial: 004402/47/426976/2;004402/47/426977/0

Communication System: WCDMA850

Frequency: 846.6 MHz; Duty Cycle: 1:1

Medium: Head 835 SAR3; Medium Notes: Medium Temperature: t=22.5 C

Medium parameters used: f = 847 MHz; $\sigma = 0.932$ S/m; $\epsilon_r = 40.596$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF(6.39, 6.39, 6.39); Calibrated: 2013-03-08;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn887; Calibrated: 2013-03-07
- Phantom: SAR3 - SAM3; Type: Not Specified; Serial: Not Specified
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.8 (7028)

WCDMA850 (Band 5) - Right/Cheek - High/Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.669 W/kg

WCDMA850 (Band 5) - Right/Cheek - High/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 10.996 V/m

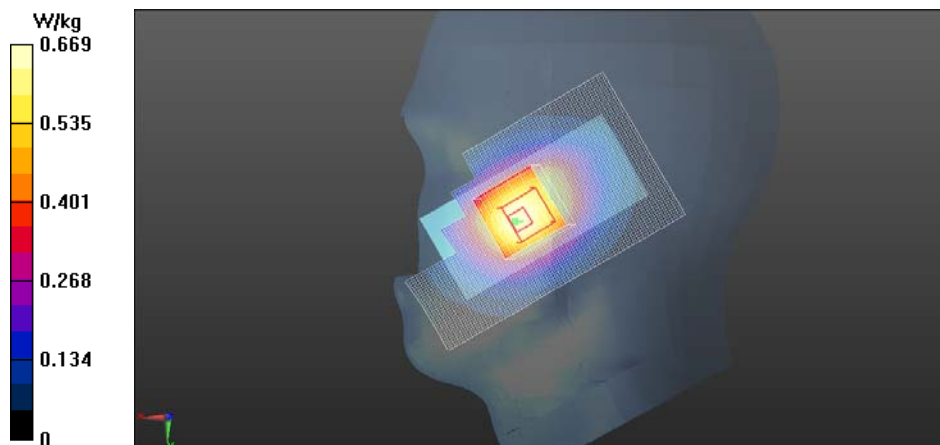
Peak SAR (extrapolated) = 0.802 W/kg

SAR(1 g) = 0.638 W/kg

SAR(10 g) = 0.472 W/kg

Power Drift = 0.03 dB

Maximum value of SAR (measured) = 0.680 W/kg



Plot 3:

Date/Time: 2013-10-29 1:22:37 PM

Test Laboratory: TCC Nokia

Type: RM-956; Serial: 004402/47/426946/5;004402/47/426947/3

Communication System: 4-slot GPRS1900

Frequency: 1909.8 MHz; Duty Cycle: 1:2.08018

Medium: Head 1900 SAR1; Medium Notes: Medium Temperature: t=21.7C

Medium parameters used: f = 1910 MHz; $\sigma = 1.416$ S/m; $\epsilon_r = 38.69$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(7.79, 7.79, 7.79); Calibrated: 2013-03-08;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2013-03-08
- Phantom: SAR1 - SAM3; Type: Not Specified; Serial: Not Specified
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.8 (7028)

4-slot GPRS1900 - Right/Cheek - High/Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.941 W/kg

4-slot GPRS1900 - Right/Cheek - High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 21.293 V/m

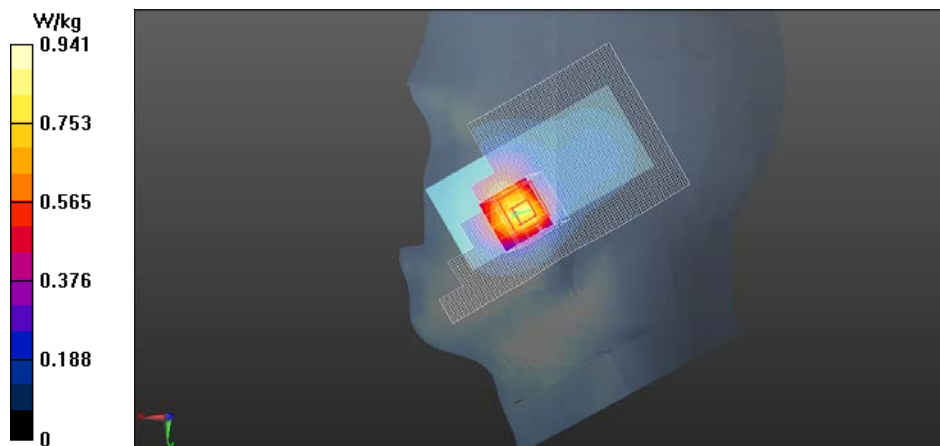
Peak SAR (extrapolated) = 1.25 W/kg

SAR(1 g) = 0.814 W/kg

SAR(10 g) = 0.492 W/kg

Power Drift = 0.02 dB

Maximum value of SAR (measured) = 0.861 W/kg



Plot 4:

Date/Time: 2013-10-30 12:12:38 PM

Test Laboratory: TCC Nokia

Type: RM-956; Serial: 004402/47/426976/2;004402/47/426977/0

Communication System: 3-slot GPRS850

Frequency: 824.2 MHz; Duty Cycle: 1:2.80027

Medium: Body 835 SAR1; Medium Notes: Medium Temperature: t=21.9

Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.962 S/m; ϵ_r = 54.626; ρ = 1000 kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF(8.97, 8.97, 8.97); Calibrated: 2013-03-08;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2013-03-08
- Phantom: SAR1 - TFP; Type: Not Specified; Serial: Not Specified
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.8 (7028)

3-slot GPRS850/Body - Low - Spacer 15mm - No Headset - Back Facing Phantom/Area Scan (61x101x1):

Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.690 W/kg

3-slot GPRS850/Body - Low - Spacer 15mm - No Headset - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0:

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

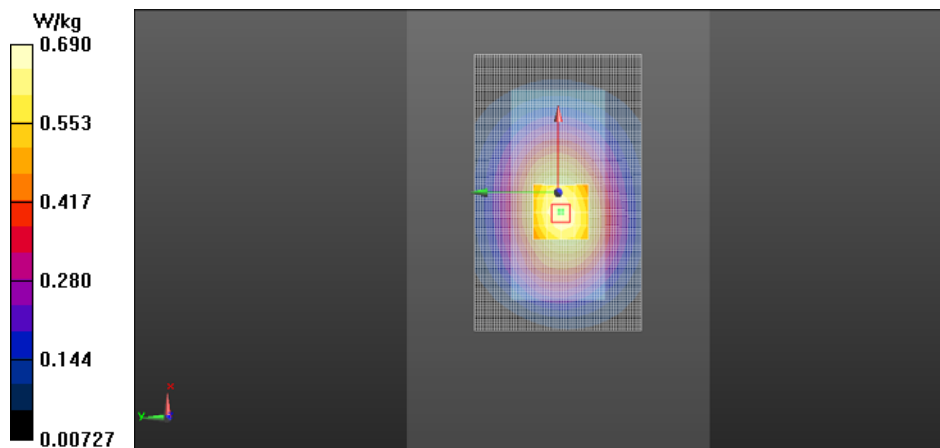
Reference Value = 26.423 V/m

Peak SAR (extrapolated) = 0.859 W/kg

SAR(1 g) = 0.648 W/kg

Maximum value of SAR (measured) = 0.685 W/kg

Power Drift = -0.04 dB



Plot 5:

Date/Time: 2013-10-30 1:48:23 PM

Test Laboratory: TCC Nokia

Type: RM-956; Serial: 004402/47/426976/2;004402/47/426977/0

Communication System: WCDMA850

Frequency: 826.4 MHz; Duty Cycle: 1:1

Medium: Body 835 SAR1; Medium Notes: Medium Temperature: t=21.9

Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.964 S/m; ϵ_r = 54.605; ρ = 1000 kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3836
- ConvF[8.97, 8.97, 8.97]; Calibrated: 2013-03-08;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2013-03-08
- Phantom: SAR1 - TFP; Type: Not Specified; Serial: Not Specified
- Measurement SW: DASY52, Version 52.8 (5); SEMCAD X Version 14.6.8 (7028)

WCDMA850/Body - Low - Spacer 15mm - No Headset - Back Facing Phantom/Area Scan (61x101x1):

Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.733 W/kg

WCDMA850/Body - Low - Spacer 15mm - No Headset - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0:

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

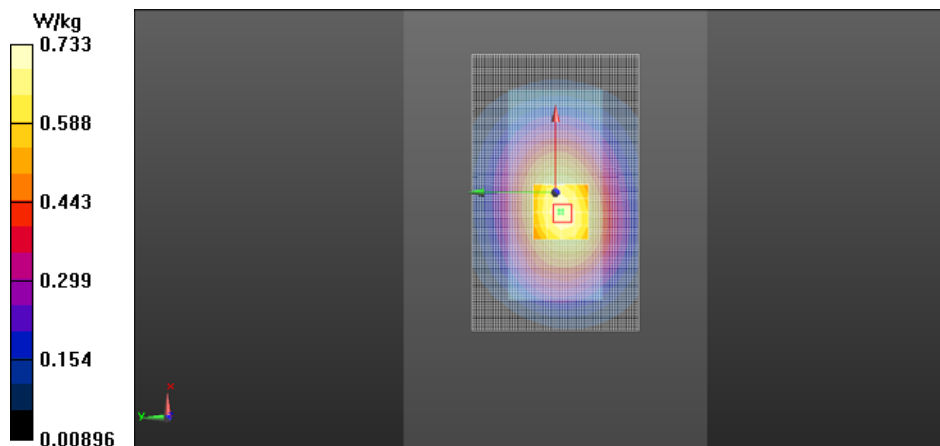
Reference Value = 27.185 V/m

Peak SAR (extrapolated) = 0.909 W/kg

SAR(1 g) = 0.686 W/kg

Maximum value of SAR (measured) = 0.727 W/kg

Power Drift = -0.00 dB



Plot 6:

Date/Time: 2013-10-31 12:00:01 PM

Test Laboratory: TCC Nokia

Type: RM-956; Serial: 004402/47/426946/5;004402/47/426947/3

Communication System: 4-slot GPRS1900

Frequency: 1909.8 MHz; Duty Cycle: 1:2.08018

Medium: Body 1900 SAR3; Medium Notes: Medium Temperature: t=22.5 C

Medium parameters used: f = 1910 MHz; σ = 1.552 S/m; ϵ_r = 51.13; ρ = 1000 kg/m³

Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3195
- ConvF[4.73, 4.73, 4.73]; Calibrated: 2013-03-08;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn887; Calibrated: 2013-03-07
- Phantom: SAR3 - TFP; Type: Not Specified; Serial: Not Specified
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.8 (7028)

4-slot GPRS1900/Body - High - Spacer 15mm - No Headset - Back Facing Phantom/Area Scan (61x101x1):

Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.651 W/kg

4-slot GPRS1900/Body - High - Spacer 15mm - No Headset - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0:

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

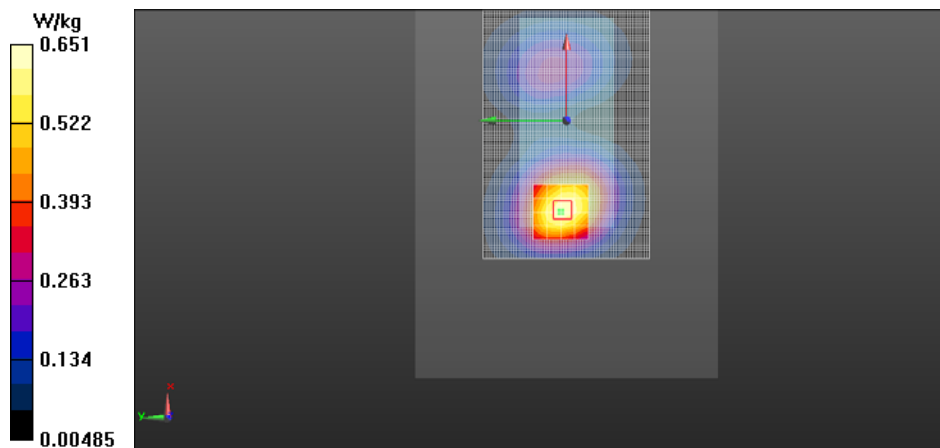
Reference Value = 6.187 V/m

Peak SAR (extrapolated) = 0.923 W/kg

SAR(1 g) = 0.607 W/kg

Maximum value of SAR (measured) = 0.654 W/kg

Power Drift = 0.18 dB



APPENDIX C: DIELECTRIC PARAMETERS OF THE TISSUE SIMULANTS

Head tissue simulant dielectric parameters used in the measurements:

f (MHz)	Date	Dielectric Parameters					
		824.2MHz		837.0MHz		849.0MHz	
		ϵ_r	σ [S/m]	ϵ_r	σ [S/m]	ϵ_r	σ [S/m]
GSM/GPRS850	2013-10-29	40.2	0.91	40.1	0.92	40.0	0.93
f (MHz)	Date	Dielectric Parameters					
		826.4 MHz		835.0 MHz		846.6 MHz	
		ϵ_r	σ [S/m]	ϵ_r	σ [S/m]	ϵ_r	σ [S/m]
WCDMA850	2013-10-28	40.8	0.92	40.7	0.92	40.6	0.93
f (MHz)	Date	Dielectric Parameters					
		1850.0MHz		1880.0MHz		1910.0MHz	
		ϵ_r	σ [S/m]	ϵ_r	σ [S/m]	ϵ_r	σ [S/m]
GSM/GPRS1900	2013-10-29	38.9	1.36	38.8	1.39	38.7	1.42

Body tissue simulant dielectric parameters used in the measurements:

f (MHz)	Date	Dielectric Parameters					
		824.2MHz		837.0MHz		849.0MHz	
		ϵ_r	σ [S/m]	ϵ_r	σ [S/m]	ϵ_r	σ [S/m]
GSM/GPRS850	2013-10-30	54.6	0.96	54.5	0.97	54.4	0.99
f (MHz)	Date	Dielectric Parameters					
		826.4 MHz		835.0 MHz		846.6 MHz	
		ϵ_r	σ [S/m]	ϵ_r	σ [S/m]	ϵ_r	σ [S/m]
WCDMA850	2013-10-30	54.6	0.96	54.5	0.97	54.4	0.98
f (MHz)	Date	Dielectric Parameters					
		1850.0MHz		1880.0MHz		1910.0MHz	
		ϵ_r	σ [S/m]	ϵ_r	σ [S/m]	ϵ_r	σ [S/m]
GSM/GPRS1900	2013-10-31	51.3	1.49	51.2	1.52	51.1	1.55

APPENDIX D: CONDUCTED AVERAGE POWER MEASUREMENTS FOR WCDMA AND HSUPA

Type: RM-956, SN: 004402/47/426976/2;004402/47/426977/0, HW: 0307, SW: 1.1335.1

D.1. WCDMA850 Test results

Average power

Ch / f (MHz)	P [dBm]
4132	23.83
4175	23.63
4233	23.73

D.2. HSUPA850 Test results

Average power

Ch / f (MHz)	P [dBm]				
	Subtest mode 1	Subtest mode 2	Subtest mode 3	Subtest mode 4	Subtest mode 5
4132	22.08	20.58	21.58	20.83	22.08
4175	21.88	20.38	21.38	20.63	21.88
4233	21.98	20.48	21.48	20.73	21.98

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

Maximum Power Reduction (MPR)				
Subtest mode 1	Subtest mode 2	Subtest mode 3	Subtest mode 4	Subtest mode 5
1.75dB	3.25dB	2.25dB	3.00dB	1.75dB

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

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

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APPENDIX G: CONDUCTED POWER MEASUREMENTS FOR SUPPORTED GSM/GPRS TRANSMISSION MODES

G.1 Power Tuning Targets for Head and Body-worn measurements

GSM 850			
Slot configuration	Low channel	Mid channel	High channel
GSM 1-slot	32.5	32.5	32.5
GPRS 2-slot	29.5	29.5	29.5
GPRS 3-slot	27.7	27.7	27.7
GPRS 4-slot	26.5	26.5	26.5

GSM 1900			
Slot configuration	Low channel	Mid channel	High channel
GSM 1-slot	30.0	30.0	30.0
GPRS 2-slot	27.0	27.0	27.0
GPRS 3-slot	25.2	25.2	25.2
GPRS 4-slot	24.0	24.0	24.0

G.2 Conducted Power from the Samples used in the Testing

Type: RM-956; Serial number: 004402/47/426976/2;004402/47/426977/0 used for GSM/GPRS850 SAR Head and Body-worn measurements.

GSM 850			
Slot configuration	Low channel	Mid channel	High channel
GSM 1-slot	32.70	32.80	32.80
GPRS 2-slot	29.70	29.70	29.70
GPRS 3-slot	27.90	27.90	27.90
GPRS 4-slot	26.60	26.60	26.60

Type: RM-956; Serial number: 004402/47/426946/5;004402/47/426947/3 used for GSM/GPRS1900 SAR Head and Body-worn measurements.

GSM 1900			
Slot configuration	Low channel	Mid channel	High channel
GSM 1-slot	30.30	30.20	30.10
GPRS 2-slot	27.00	27.00	27.00
GPRS 3-slot	25.50	25.50	25.40
GPRS 4-slot	24.10	24.30	24.30

APPENDIX H: CONDUCTED POWER MEASUREMENTS FOR SUPPORTED WCDMA TRANSMISSION MODES

H.1 Power Tuning Targets

Tuning targets			
Mode	Low channel	Mid channel	High channel
WCDMA850	23.50	23.50	23.50

H.2 Conducted Power measurements from the Samples used in the Testing

Type: RM-957; Serial: 004402/47/426976/2;004402/47/426977/0 used for WCDMA850 SAR Head and Body-worn measurements.

WCDMA 850 (band 5)			
Mode	Low channel	Mid channel	High channel
WCDMA	23.83	23.63	23.73

WCDMA and HSUPA Subtest mode conducted powers, measured from as separate, fully representative sample are presented in Appendix D.