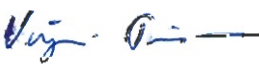


SAR Compliance Test Report

Test report no.:	Salo-SAR0430_01	Date of report:	2003-09-15
Template version:	2	Number of pages:	66
Testing laboratory:	TCC Salo, P.O. Box 86 Joensuunkatu 7E FIN-24101 SALO, FINLAND Tel. +358 (0) 7180 08000 Fax. +358 (0) 7180 45220	Client:	Nokia Corporation Visiokatu 6, P.O. Box 68 FIN-33721 Tampere, FINLAND Tel. +358 (0) 7180 08000 Fax. +358 (0) 7180 46880
Responsible test engineer:	Virpi Tuominen	Product contact person:	Janne Ilkka
Measurements made by:	Virpi Tuominen		
Tested device:	RA-3		
FCC ID:	PDNRA-3	IC:	661R-RA3
Supplement reports:	-		
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 Techniques		
Documentation:	The documentation of the testing performed on the tested devices is archived for 15 years at TCC Salo.		
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:	2004-09-15		
For the contents:			


Virpi Tuominen
Senior Design Engineer

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1. SUMMARY OF SAR TEST REPORT

1.1 Test Details

Period of test	2004-07-13 to 2003-07-21
SN, HW and SW numbers of tested device	SN: 004400/49/175235/6, HW: 5200, SW: 04.22, DUT: 07304
Batteries used in testing	BP-5L, DUT #'s: 07261, 07262, 07305
Headsets used in testing	HDS-3, DUT: 07069
Other accessories used in testing	MMC-card, DUT: 07263
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	Position	SAR limit (1g avg)	Measured SAR value (1g avg)	Result
GSM850 + WLAN	Left Cheek	1.6 W/kg	0.56 W/kg	PASSED
GSM1900 + WLAN	Right Cheek	1.6 W/kg	0.99 W/kg	PASSED

1.2.2 Body Worn Configuration

Mode	Separation distance	SAR limit (1g avg)	Measured SAR value (1g avg)	Result
GSM/GPRS850 + WLAN	1.5cm	1.6 W/kg	1.15 W/kg	PASSED
GSM/GPRS1900 + WLAN	1.5cm	1.6 W/kg	0.92 W/kg	PASSED

1.2.3 Maximum Drift

Maximum drift during measurements	-0.33 dB
-----------------------------------	----------

1.2.4 Measurement Uncertainty

Extended Uncertainty (k=2) 95%	$\pm 29.1 \%$
--------------------------------	---------------

2. DESCRIPTION OF THE DEVICE UNDER TEST

Device category	Portable					
Exposure environment	General population/uncontrolled					
Modes and Bands of Operation	GSM 850	GSM 1900	GPRS (GSM)	EGPRS (EDGE)	BT	WLAN
Modulation Mode	GMSK	GMSK	GMSK	8PSK	GFSK	
Duty Cycle	1/8	1/8	1/8 or 2/8	1/8 or 2/8		1
Transmitter Frequency Range (MHz)	824.2 – 848.8	1850.2 – 1909.8	824.2 – 848.8 1850.2 – 1909.8	824.2 – 848.8 1850.2 – 1909.8	2400.0 – 2483.5	2400.0 – 2483.5

Outside of USA and Canada, the transmitter of the device is capable of operating also in GSM1800, which is not part of this filing.

EGPRS mode was not measured, because maximum averaged output power is more than 2 dB lower in EGPRS mode than in GPRS mode.

2.1 Picture of the Device



2.2 Description of the Antenna

The device has two internal patch antennas. The antenna for GSM/GPRS is at the top of the device; the antenna for WLAN/Bluetooth is at the bottom of the device.

3. TEST CONDITIONS

3.1 Temperature and Humidity

Period of measurement:	2004-07-13 to 2004-07-21
Ambient temperature (°C):	22.1 to 22.4
Ambient humidity (RH %):	43 to 53

3.2 Test Signal, Frequencies, and Output Power

GSM, GPRS and BT were put into operation by using a call tester, and WLAN was activated by using control software. 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.

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

The power output was measured by a separate test laboratory on the same unit as used for SAR testing.

4. DESCRIPTION OF THE TEST EQUIPMENT

4.1 Measurement System and Components

The measurements were performed using an automated near-field scanning system, DASY 4 software version 4.2, manufactured by Schmid & Partner Engineering AG (SPEAG) in Switzerland. The SAR extrapolation algorithm used in all measurements on the device was the 'worst-case extrapolation' algorithm.

The following table lists calibration dates of SPEAG components:

Test Equipment	Serial Number	Calibration interval	Calibration expiry
DASY3 DAE V1	372	12 months	08/2004
E-field Probe ET3DV6	1766	12 months	04/2005
Dipole Validation Kit, D900V2	056	24 months	01/2006
Dipole Validation Kit, D1800V2	256	24 months	01/2006
Dipole Validation Kit, D2450V2	749	24 months	06/2006

Additional test equipment used in testing:

Test Equipment	Model	Serial Number	Calibration interval	Calibration expiry
Signal Generator	SML03	101265	12 months	07/2004
Amplifier	ZHL-42 (SMA)	N072095-5	12 months	07/2005
Power Meter	NRVS	849305/028	12 months	07/2005
Power Sensor	NRV-Z32	839176/020	12 months	07/2005
Call Tester	CMU 200	101111	12 months	07/2004
Call Tester	CMU 200	104983	12 months	04/2005
Vector Network Analyzer	8753E	US38432928	12 months	10/2004
Dielectric Probe Kit	85070B	US33020420	-	-

4.1.1 Isotropic E-field Probe, SN: 1766

Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection system Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., butyl diglycol)
Calibration	Calibration certificate in Appendix C
Frequency	10 MHz to 3 GHz (dosimetry); Linearity: ± 0.2 dB (30 MHz to 3 GHz)
Optical Surface Detection	± 0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.4 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: 16 mm Body diameter: 12 mm Tip diameter: 6.8 mm
Application	Distance from probe tip to dipole centers: 2.7 mm General dosimetry up to 3 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 validation testing and device testing, was the twin-headed "SAM Phantom", manufactured by SPEAG. The phantom conforms to the requirements of IEEE 1528 - 2003.

Validation tests were 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 Simulating Liquids

Recommended values for the dielectric parameters of the simulating liquids are given in IEEE 1528 - 2003 and FCC Supplement C to OET Bulletin 65. All tests were carried out using liquids 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 liquid was 15.0 ± 0.5 cm measured from the ear reference point during validation and device measurements.

4.3.1 Liquid Recipes

The following recipes were used for Head and Body liquids:

800MHz band

Ingredient	Head (% by weight)	Body (% by weight)
Deionised Water	39.74	50.65
HEC	0.25	-
Sugar	58.31	48.21
Preservative	0.15	0.2
Salt	1.55	0.94

1900MHz band

Ingredient	Head (% by weight)	Body (% by weight)
Deionised Water	54.88	69.02
Butyl Diglycol	44.91	30.76
Salt	0.21	0.22

2450MHz band

Ingredient	Head (% by weight)	Body (% by weight)
Deionised Water	56	70
Tween 20	44	-
Butyl Diglycol	-	30

4.3.2 Verification of the System

The manufacturer calibrates the probes annually. Dielectric parameters of the simulating liquids were measured every day using the dielectric probe kit and the network analyser. A SAR measurement was made following the determination of the dielectric parameters of the liquids, 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 validation results (dielectric parameters and SAR values) are given in the table below.

System verification, head tissue simulant

f [MHz]	Description	SAR [W/kg], 1g	Dielectric Parameters		Temp [°C]
			ϵ_r	σ [S/m]	
900	Reference result	2.64	40.3	0.94	N/A
	± 10% window	2.38 to 2.90			
	2004-07-13	2.72	40.1	0.96	21.5
1800	Reference result	9.95	39.0	1.38	N/A
	± 10% window	8.96 to 10.9			
	2004-07-16	8.99	38.6	1.37	21.7
2450	Reference result	13.5	38.5	1.86	N/A
	± 10% window	12.2 to 14.9			
	2004-07-21	13.6	40.2	1.85	21.7

System verification, body tissue simulant

f [MHz]	Description	SAR [W/kg], 1g	Dielectric Parameters		Temp [°C]
			ϵ_r	σ [S/m]	
900	Reference result	2.76	54.4	1.04	N/A
	± 10% window	2.48 to 3.04			
	2004-07-14	2.73	53.2	1.01	21.6
1800	Reference result	9.49	53.2	1.49	N/A
	± 10% window	8.54 to 10.4			
	2004-07-14	9.24	51.1	1.50	21.5

Plots of the Verification 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]	
837	Recommended value	41.5	0.90	N/A
	$\pm 5\%$ window	39.4 – 43.6	0.86 – 0.95	
	2004-07-13	40.8	0.90	21.0
1880	Recommended value	40.0	1.40	N/A
	$\pm 5\%$ window	38.0 – 42.0	1.33 – 1.47	
	2004-07-16	38.2	1.43	21.0
2442	Recommended value	39.2	1.80	N/A
	$\pm 5\%$ window	37.2 to 41.2	1.71 to 1.89	
	2002-07-21	40.2	1.84	21.0

Body tissue simulant measurements

f [MHz]	Description	Dielectric Parameters		Temp [°C]
		ϵ_r	σ [S/m]	
837	Recommended value	55.2	0.97	N/A
	$\pm 5\%$ window	52.4 – 58.0	0.92 – 1.02	
	2004-07-13	54.0	0.95	21.0
	2004-07-14	53.8	0.95	21.0
1880	Recommended value	53.3	1.52	N/A
	$\pm 5\%$ window	50.6 – 56.0	1.44 – 1.60	
	2004-07-14	50.7	1.58	21.0
2442	Recommended value	52.7	1.95	N/A
	$\pm 5\%$ window	50.1 to 55.3	1.85 to 2.05	
	2004-07-21	52.5	2.01	21.0

5. DESCRIPTION OF THE TEST PROCEDURE

5.1 Device Holder

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



Device holder supplied by SPEAG

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



Nokia spacer

5.2 Test Positions

5.2.1 Against Phantom Head

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

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



Photo of the device in “cheek” position, for GSM testing on the left and for WLAN on the right.



Photo of the device in “tilt” position, for GSM testing on the left and for WLAN on the right.

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 the photo below using a separate flat spacer that was removed before the start of the measurements. The device was oriented with its antenna facing the phantom since this orientation gave higher results.

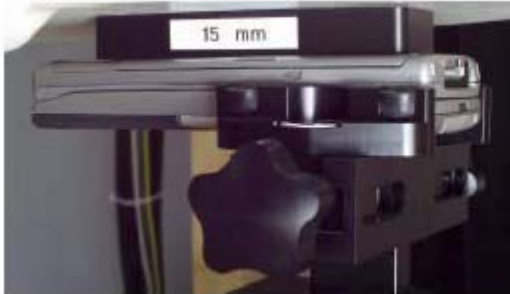


Photo of the device positioned for Body SAR measurement, for GPRS and GSM on the left and for WLAN on the right. The spacer was removed for the tests.

5.3 Scan Procedures

First coarse scans were used for determination of the field distribution. Next a cube scan, 5x5x7 points covering a volume of 30x30x30 mm 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 coarse scan and again at the end of the cube 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 cube 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 cube 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	G_i	$G_i \cdot U_i$ (%)	V_i
Measurement System							
Probe Calibration	E2.1	±4.8	N	1	1	±4.8	∞
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	±8.3	R	√3	1	±4.8	∞
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	E5.2	±3.9	R	√3	1	±2.3	∞
Test sample Related							
Test Sample Positioning	E4.2.1	±6.0	N	1	1	±6.0	11
Device Holder Uncertainty	E4.1.1	±5.0	N	1	1	±5.0	7
Output Power Variation - SAR drift measurement	6.6.3	±10.0	R	√3	1	±5.8	∞
Phantom and Tissue Parameters							
Phantom Uncertainty (shape and thickness tolerances)	E3.1	±4.0	R	√3	1	±2.3	∞
Liquid Conductivity Target - tolerance	E3.2	±5.0	R	√3	0.64	±1.8	∞
Liquid Conductivity - measurement uncertainty	E3.3	±5.5	N	1	0.64	±3.5	5
Liquid Permittivity Target tolerance	E3.2	±5.0	R	√3	0.6	±1.7	∞
Liquid Permittivity - measurement uncertainty	E3.3	±2.9	N	1	0.6	±1.7	5
Combined Standard Uncertainty			RSS			±14.5	187
Coverage Factor for 95%			k=2				
Expanded Standard Uncertainty						±29.1	

7. RESULTS

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

GSM850, Head SAR results

MMC-card option	Position		SAR, averaged over 1g (W/kg)		
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
Without MMC-card	Power level		31.3 dBm	31.7 dBm	31.4 dBm
	Left	Cheek	0.507	0.475	0.403
		Tilt	-	0.252	-
	Right	Cheek	-	0.387	-
		Tilt	-	0.207	-
With MMC-card	Left Cheek		0.514	0.483	0.415
Without MMC-card	Left Cheek, BT active		0.519	-	-

GSM1900, Head SAR results

MMC-card option	Position		SAR, averaged over 1g (W/kg)		
			Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz
Without MMC-card	Power level		31.7 dBm	29.4 dBm	32.4 dBm
	Left	Cheek	0.751	0.811	0.884
		Tilt	-	0.776	-
	Right	Cheek	0.850	0.843	0.939
		Tilt	-	0.700	-
With MMC-card	Right Cheek		0.779	0.767	0.901
Without MMC-card	Right Cheek, BT active		-	-	0.903

WLAN2450, Head SAR results

MMC-card option	Position		SAR, averaged over 1g (W/kg)		
			Ch 1 2412.0 MHz	Ch 7 2442.0 MHz	Ch 13 2472.0 MHz
Without MMC-card	Power level		23.8 dBm	23.7 dBm	22.6 dBm
	Left	Cheek	0.044	0.034	0.031
		Tilt	-	0.041	-
	Right	Cheek	0.047	0.043	0.043
		Tilt	-	0.041	-
With MMC-card	Right Cheek		0.021	0.033	0.048

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

GPRS850 (2-slot TX), Body SAR results

MMC-card option	Body-worn location setup 1.5cm	SAR, averaged over 1g (W/kg)		
		Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
Without MMC-card	Power level	28.6 dBm	28.1 dBm	27.44 dBm
	Without headset	0.877	0.798	0.706
	Headset HDS-3	0.630	0.588	0.484
With MMC-card	Without headset	0.859	0.623	-
Without MMC-card	Without headset, BT active	0.843	-	-

GSM850, Body SAR results

MMC-card option	Body-worn location setup 1.5cm	SAR, averaged over 1g (W/kg)		
		Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
Without MMC-card	Power level	31.3 dBm	31.7 dBm	31.4 dBm
	Without headset	0.836	0.877	0.805
	Headset HDS-3	0.633	0.610	0.592
With MMC-card	Without headset	0.860	0.857	-
Without MMC-card	Without headset, BT active	-	0.860	-

GPRS1900 (2-slot TX), Body SAR results

MMC-card option	Body-worn location setup 1.5cm	SAR, averaged over 1g (W/kg)		
		Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz
Without MMC-card	Power level	28.7 dBm	28.6 dBm	26.3 dBm
	Without headset	0.655	0.556	0.371
	Headset HDS-3	0.633	0.496	0.352
With MMC-card	Without headset	0.629	0.501	-
Without MMC-card	Without headset, BT active	0.656	-	-

GSM1900, Body SAR results

MMC-card option	Body-worn location setup 1.5cm	SAR, averaged over 1g (W/kg)		
		Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz
Without MMC-card	Power level	31.7 dBm	29.4 dBm	32.4 dBm
	Without headset	0.592	0.517	0.533
	Headset HDS-3	0.600	0.506	0.512

WLAN2450, Body SAR results

MMC-card option	Body-worn location setup 1.5cm	SAR, averaged over 1g (W/kg)		
		Ch 1 2412.0 MHz	Ch 7 2442.0 MHz	Ch 13 2472.0 MHz
Without MMC-card	Power level	23.8 dBm	23.7 dBm	22.6 dBm
	Without headset	0.205	0.198	0.232
	Headset HDS-3	0.148	0.117	0.126
With MMC-card	Without headset	0.179	0.238	0.269

Combined GSM/GPRS and WLAN, SAR Results

Test configuration		Max. 1g SAR results			Sum of 1g SAR values	
		WLAN	GSM/GPRS 850	GSM/GPRS 1900	WLAN + GSM/GPRS 850	WLAN + GSM/GPRS 1900
Head	Left Cheek	0.044	0.514	0.884	0.558	0.928
	Left Tilt	0.041	0.252	0.776	0.293	0.817
	Right Cheek	0.048	0.387	0.939	0.435	0.987
	Right Tilt	0.041	0.207	0.700	0.248	0.741
Body	With headset	0.148	0.633	0.633	0.781	0.781
	Without headset	0.269	0.877	0.655	1.146	0.924

Combining the maximum SAR values of WLAN2450 with GSM850 and GSM1900 tends to overestimate SAR since their maxima don't necessarily occur in the same location.

Plots of the Measurement scans are given in Appendix B.

APPENDIX A: VALIDATION SCANS

Date: 2004-07-13

Test Laboratory: TCC Salo

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN: 056

Program Name: System Performance Check at 900 MHz

Communication System: CW; Frequency: 900 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 900 \text{ MHz}$; $\sigma = 0.96 \text{ mho/m}$; $\epsilon_r = 40.1$; $\rho = 1000 \text{ kg/m}^3$, $t(\text{liq.})=21.5^\circ\text{C}$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1766; ConvF(6.14, 6.14, 6.14); Calibrated: 26.04.2004
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn372; Calibrated: 26.08.2003
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

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

Reference Value = 57.8 V/m; Power Drift = -0.1 dB

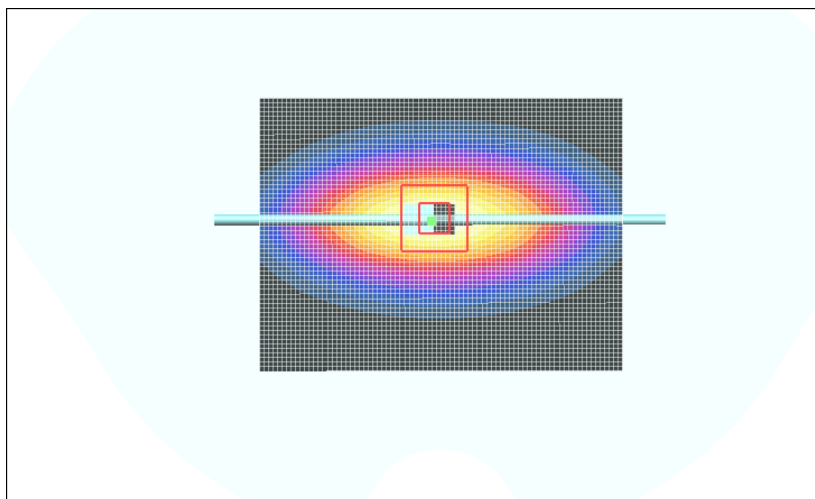
Maximum value of SAR (interpolated) = 2.92 mW/g

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

Reference Value = 57.8 V/m; Power Drift = -0.1 dB

Maximum value of SAR (measured) = 2.95 mW/g, Peak SAR (extrapolated) = 4.13 W/kg

SAR(1 g) = 2.72 mW/g; SAR(10 g) = 1.75 mW/g



Date: 2004-07-16

Test Laboratory: TCC Salo

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN: 256

Program Name: System Performance Check at 1800 MHz

Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1800$ MHz; $\sigma = 1.37$ mho/m; $\epsilon_r = 38.6$; $\rho = 1000$ kg/m³, $t(\text{liq.}) = 21.7^\circ\text{C}$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1766; ConvF(5.05, 5.05, 5.05); Calibrated: 26.04.2004
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn372; Calibrated: 26.08.2003
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

d=10mm, Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm

Reference Value = 91.3 V/m; Power Drift = -0.004 dB

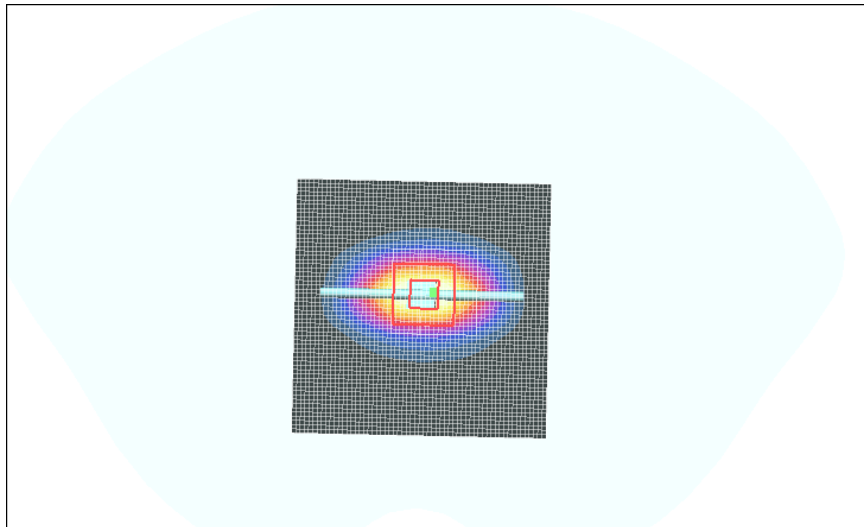
Maximum value of SAR (interpolated) = 10.8 mW/g

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

Reference Value = 91.3 V/m; Power Drift = -0.004 dB

Maximum value of SAR (measured) = 10.1 mW/g, Peak SAR (extrapolated) = 15.3 W/kg

SAR(1 g) = 8.99 mW/g; SAR(10 g) = 4.83 mW/g



Date: 2004-07-21

Test Laboratory: TCC Salo

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:749

Program Name: System Performance Check at 2450 MHz

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

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.85$ mho/m; $\epsilon_r = 40.2$; $\rho = 1000$ kg/m³, $t(\text{liq.}) = 21.7^\circ\text{C}$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1766; ConvF(4.3, 4.3, 4.3); Calibrated: 26.04.2004
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn372; Calibrated: 26.08.2003
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

d=10mm, Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm

Reference Value = 96.5 V/m; Power Drift = -0.0 dB

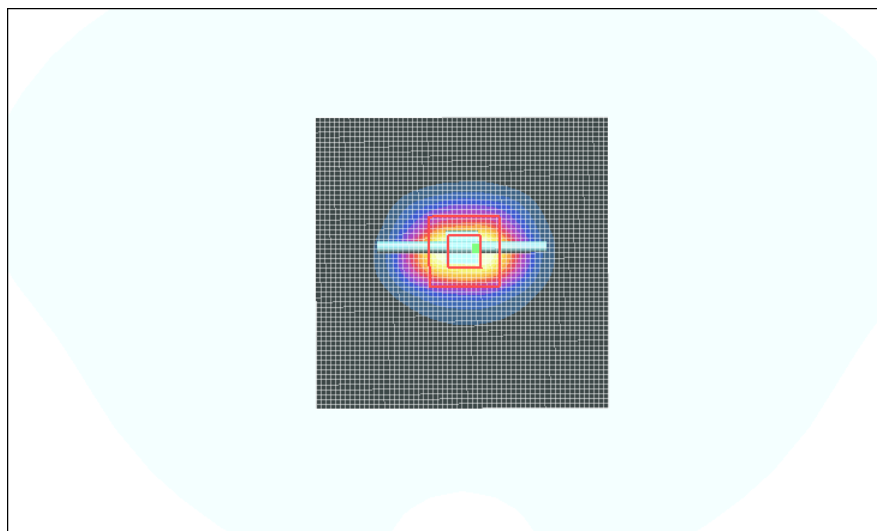
Maximum value of SAR (interpolated) = 16.8 mW/g

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

Reference Value = 96.5 V/m; Power Drift = -0.0 dB

Maximum value of SAR (measured) = 15.1 mW/g, Peak SAR (extrapolated) = 28.1 W/kg

SAR(1 g) = 13.6 mW/g; SAR(10 g) = 6.32 mW/g



Date: 2004-07-14

Test Laboratory: TCC Salo

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN: 056

Program Name: System Performance Check at 900 MHz

Communication System: CW; Frequency: 900 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 900 \text{ MHz}$; $\sigma = 1.01 \text{ mho/m}$; $\epsilon_r = 53.2$; $\rho = 1000 \text{ kg/m}^3$, $t(\text{liq.}) = 21.6^\circ\text{C}$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1766; ConvF(5.88, 5.88, 5.88); Calibrated: 26.04.2004
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn372; Calibrated: 26.08.2003
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

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

Reference Value = 56.2 V/m; Power Drift = -0.009 dB

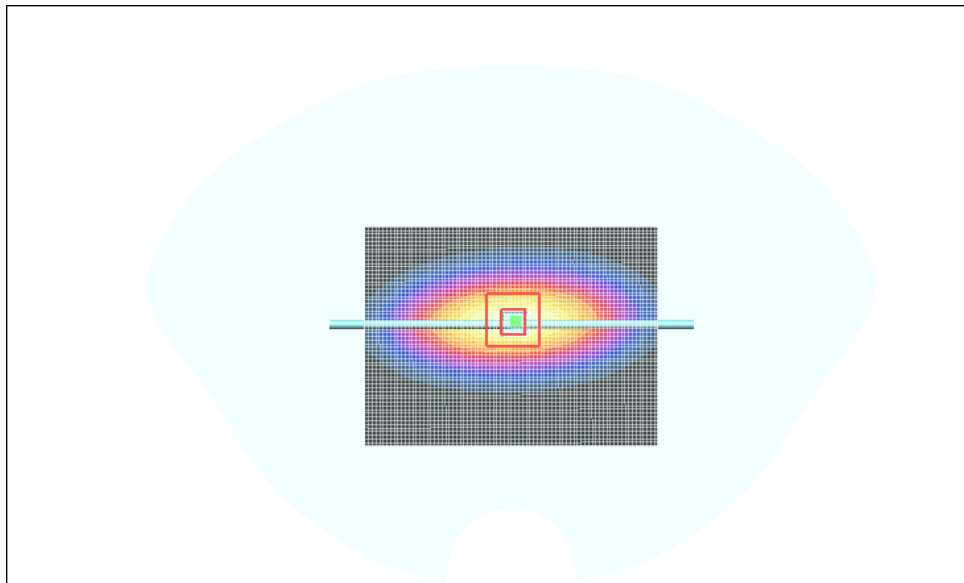
Maximum value of SAR (interpolated) = 2.93 mW/g

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

Reference Value = 56.2 V/m; Power Drift = -0.009 dB

Maximum value of SAR (measured) = 2.96 mW/g, Peak SAR (extrapolated) = 3.96 W/kg

SAR(1 g) = 2.73 mW/g; SAR(10 g) = 1.79 mW/g



Date: 2004-07-14

Test Laboratory: TCC Salo

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN: 256

Program Name: System Performance Check at 1800 MHz

Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1800$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 51.1$; $\rho = 1000$ kg/m³, $t(\text{liq.}) = 21.5^\circ\text{C}$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1766; ConvF(4.63, 4.63, 4.63); Calibrated: 26.04.2004
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn372; Calibrated: 26.08.2003
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

d=10mm, Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm

Reference Value = 88.6 V/m; Power Drift = -0.002 dB

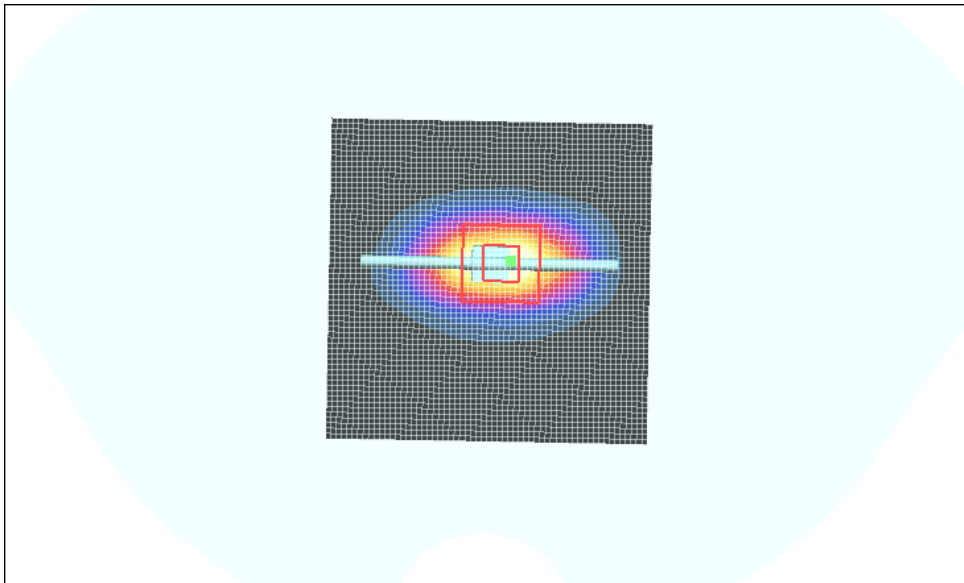
Maximum value of SAR (interpolated) = 11.7 mW/g

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

Reference Value = 88.6 V/m; Power Drift = -0.002 dB

Maximum value of SAR (measured) = 10.4 mW/g, Peak SAR (extrapolated) = 15.5 W/kg

SAR(1 g) = 9.24 mW/g; SAR(10 g) = 4.97 mW/g



APPENDIX B: MEASUREMENT SCANS

Date: 2004-07-13

Test Laboratory: TCC Salo

Type: RA-3; DUT: 07304, GSM850 - Worst case extrapolation – Left

Communication System: GSM850; Frequency: 824.2 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 824.2$ MHz; $\sigma = 0.9$ mho/m; $\epsilon_r = 40.8$; $\rho = 1000$ kg/m³, $t(\text{liq.}) = 21.1^\circ\text{C}$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1766; ConvF(6.26, 6.26, 6.26); Calibrated: 26.04.2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn372; Calibrated: 26.08.2003
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Cheek, no MMC - Low/Area Scan (51x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Reference Value = 18.5 V/m; Power Drift = -0.0 dB

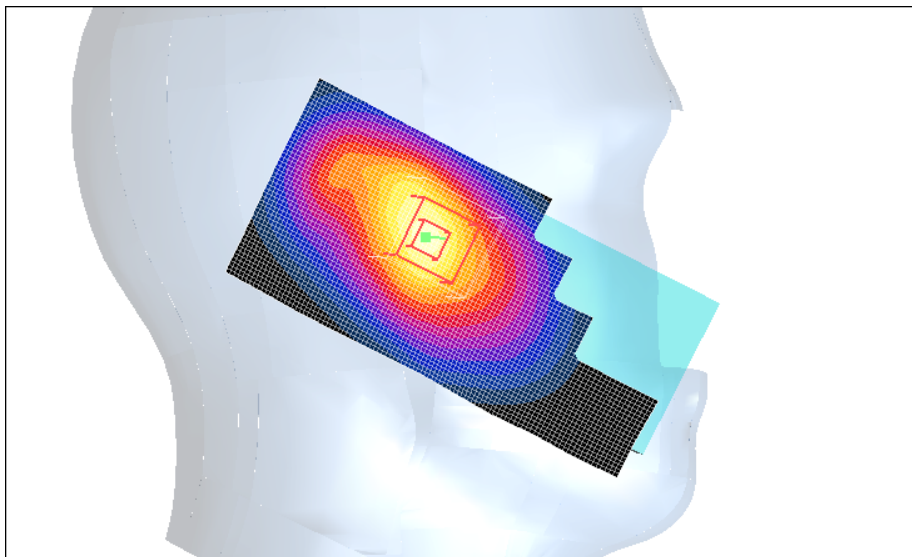
Maximum value of SAR (interpolated) = 0.524 mW/g

Cheek, no MMC - Low/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 18.5 V/m; Power Drift = -0.0 dB

Maximum value of SAR (measured) = 0.536 mW/g, Peak SAR (extrapolated) = 0.742 W/kg

SAR(1 g) = 0.507 mW/g; SAR(10 g) = 0.357 mW/g



Date: 2004-07-13

Test Laboratory: TCC Salo

Type: RA-3; DUT: 07304, GSM850 - Worst case extrapolation – Left

Communication System: GSM850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 836.6$ MHz; $\sigma = 0.9$ mho/m; $\epsilon_r = 40.8$; $\rho = 1000$ kg/m³, $t(\text{liq.}) = 21.3^\circ\text{C}$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1766; ConvF(6.26, 6.26, 6.26); Calibrated: 26.04.2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn372; Calibrated: 26.08.2003
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Tilt, no MMC - Middle/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Reference Value = 15.2 V/m; Power Drift = 0.004 dB

Maximum value of SAR (interpolated) = 0.247 mW/g

Tilt, no MMC - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 15.2 V/m; Power Drift = 0.004 dB

Maximum value of SAR (measured) = 0.256 mW/g, Peak SAR (extrapolated) = 0.523 W/kg

SAR(1 g) = 0.252 mW/g; SAR(10 g) = 0.146 mW/g

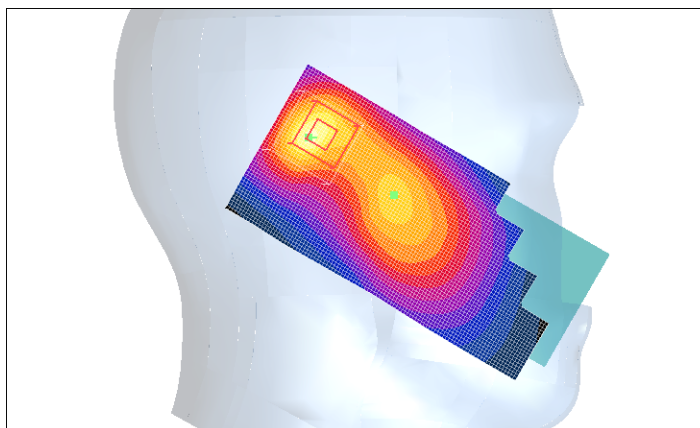
Warning: Maximum averaged SAR over 10 g is located on the boundary of the measurement cube.

Tilt, no MMC - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 1: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 15.2 V/m; Power Drift = 0.004 dB

Maximum value of SAR (measured) = 0.203 mW/g, Peak SAR (extrapolated) = 0.284 W/kg

SAR(1 g) = 0.196 mW/g; SAR(10 g) = 0.144 mW/g



Date: 2004-07-13

Test Laboratory: TCC Salo

Type: RA-3; DUT: 07304, GSM850 - Worst case extrapolation – Right

Communication System: GSM850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 836.6$ MHz; $\sigma = 0.9$ mho/m; $\epsilon_r = 40.8$; $\rho = 1000$ kg/m³, $t(\text{liq.}) = 21.1^\circ\text{C}$

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1766; ConvF(6.26, 6.26, 6.26); Calibrated: 26.04.2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn372; Calibrated: 26.08.2003
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Cheek, no MMC - Middle/Area Scan (51x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Reference Value = 17.6 V/m; Power Drift = 0.0 dB

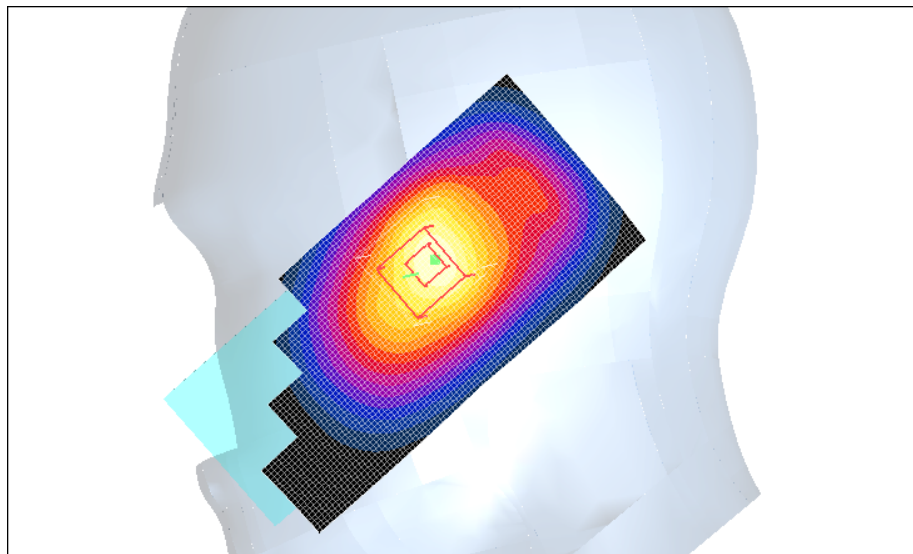
Maximum value of SAR (interpolated) = 0.409 mW/g

Cheek, no MMC - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 17.6 V/m; Power Drift = 0.0 dB

Maximum value of SAR (measured) = 0.406 mW/g, Peak SAR (extrapolated) = 0.499 W/kg

SAR(1 g) = 0.387 mW/g; SAR(10 g) = 0.288 mW/g



Date: 2004-07-13

Test Laboratory: TCC Salo

Type: RA-3; DUT: 07304, GSM850 - Worst case extrapolation – Right

Communication System: GSM850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 836.6$ MHz; $\sigma = 0.9$ mho/m; $\epsilon_r = 40.8$; $\rho = 1000$ kg/m³, $t(\text{liq.}) = 21.1^\circ\text{C}$

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1766; ConvF(6.26, 6.26, 6.26); Calibrated: 26.04.2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn372; Calibrated: 26.08.2003
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Tilt, no MMC - Middle/Area Scan (51x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Reference Value = 14.5 V/m; Power Drift = -0.0 dB

Maximum value of SAR (interpolated) = 0.223 mW/g

Tilt, no MMC - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 14.5 V/m; Power Drift = -0.0 dB

Maximum value of SAR (measured) = 0.227 mW/g, Peak SAR (extrapolated) = 0.402 W/kg

SAR(1 g) = 0.207 mW/g; SAR(10 g) = 0.125 mW/g

Warning: Maximum averaged SAR over 10 g is located on the boundary of the measurement cube.

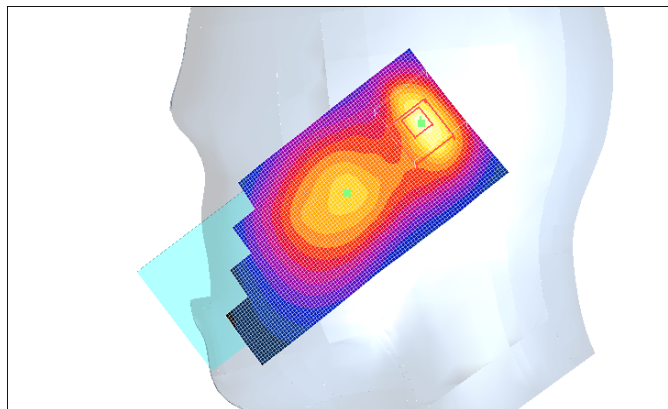
Tilt, no MMC - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 1: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 14.5 V/m; Power Drift = -0.0 dB

Maximum value of SAR (measured) = 0.177 mW/g, Peak SAR (extrapolated) = 0.213 W/kg

SAR(1 g) = 0.170 mW/g; SAR(10 g) = 0.131 mW/g

Warning: Maximum averaged SAR over 10 g is located on the boundary of the measurement cube.



Date: 2004-07-13

Test Laboratory: TCC Salo

Type: RA-3; DUT: 07304, GSM850 - Worst case extrapolation – Left

Communication System: GSM850; Frequency: 824.2 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 824.2$ MHz; $\sigma = 0.9$ mho/m; $\epsilon_r = 40.8$; $\rho = 1000$ kg/m³, $t(\text{liq.}) = 20.9^\circ\text{C}$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1766; ConvF(6.26, 6.26, 6.26); Calibrated: 26.04.2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn372; Calibrated: 26.08.2003
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Cheek, with MMC - Low/Area Scan (51x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Reference Value = 18.5 V/m; Power Drift = 0.005 dB

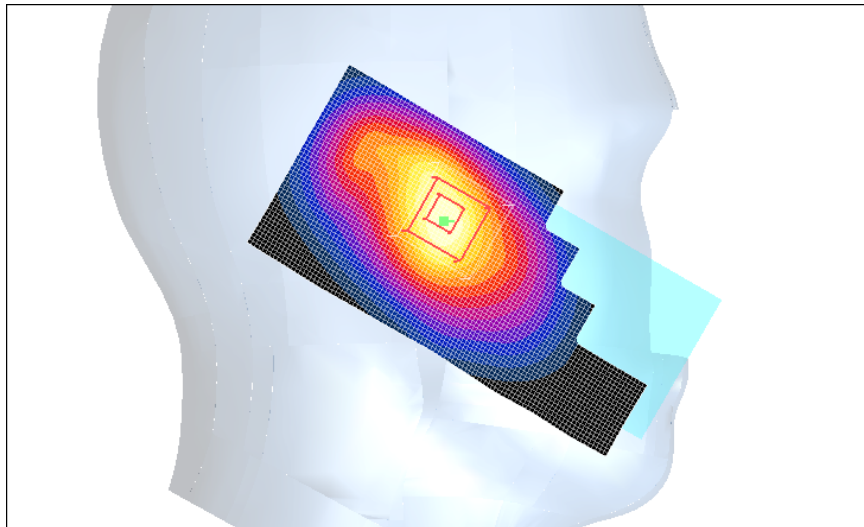
Maximum value of SAR (interpolated) = 0.540 mW/g

Cheek, with MMC - Low/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 18.5 V/m; Power Drift = 0.005 dB

Maximum value of SAR (measured) = 0.535 mW/g, Peak SAR (extrapolated) = 0.778 W/kg

SAR(1 g) = 0.514 mW/g; SAR(10 g) = 0.362 mW/g



Date: 2004-07-13

Test Laboratory: TCC Salo

Type: RA-3; DUT: 07304, GSM850 - Worst case extrapolation – Left

Communication System: GSM850; Frequency: 824.2 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 824.2$ MHz; $\sigma = 0.9$ mho/m; $\epsilon_r = 40.8$; $\rho = 1000$ kg/m³, $t(\text{liq.}) = 20.8^\circ\text{C}$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1766; ConvF(6.26, 6.26, 6.26); Calibrated: 26.04.2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn372; Calibrated: 26.08.2003
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Cheek, with MMC, BT active - Low/Area Scan (51x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Reference Value = 18.7 V/m; Power Drift = -0.0 dB

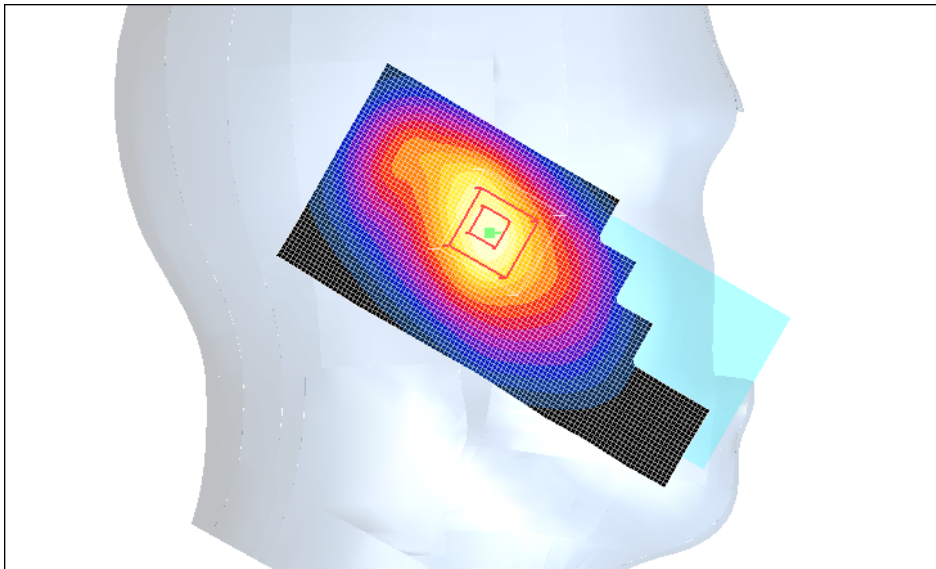
Maximum value of SAR (interpolated) = 0.542 mW/g

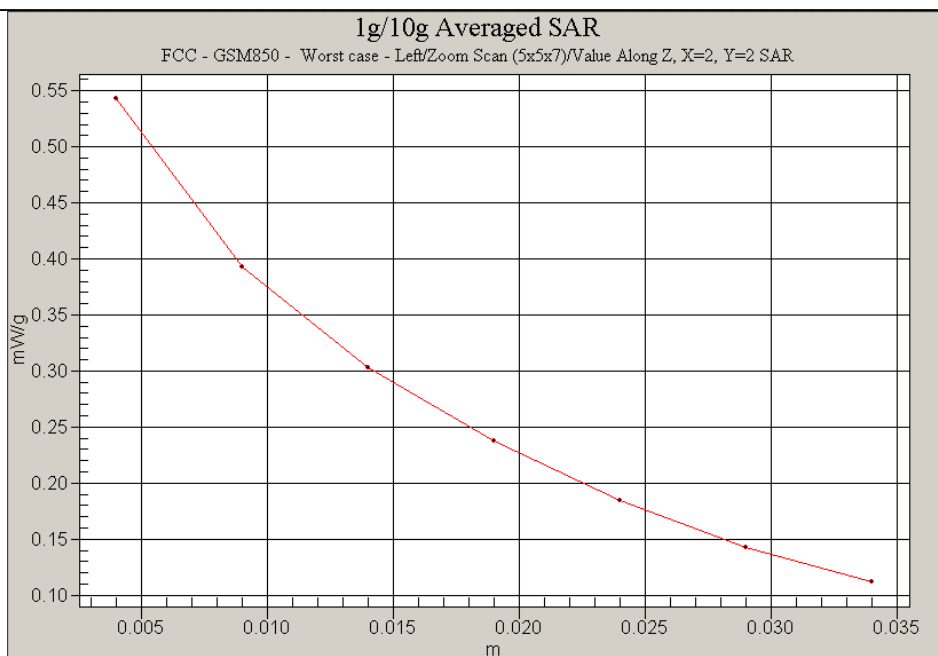
Cheek, with MMC, BT active - Low/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 18.7 V/m; Power Drift = -0.0 dB

Maximum value of SAR (measured) = 0.541 mW/g, Peak SAR (extrapolated) = 0.777 W/kg

SAR(1 g) = 0.519 mW/g; SAR(10 g) = 0.367 mW/g





Date: 2004-07-16

Test Laboratory: TCC Salo

Type: RA-3; DUT: 07304, GSM1900 - Worst case extrapolation – Left

Communication System: GSM1900; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1909.8$ MHz; $\sigma = 1.43$ mho/m; $\epsilon_r = 38.2$; $\rho = 1000$ kg/m³, $t(\text{liq.}) = 20.9^\circ\text{C}$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1766; ConvF(4.91, 4.91, 4.91); Calibrated: 26.04.2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn372; Calibrated: 26.08.2003
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Cheek, no MMC - High/Area Scan (51x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Reference Value = 22.2 V/m; Power Drift = -0.0 dB

Maximum value of SAR (interpolated) = 0.976 mW/g

Cheek, no MMC - High/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 22.2 V/m; Power Drift = -0.0 dB

Maximum value of SAR (measured) = 0.993 mW/g, Peak SAR (extrapolated) = 1.66 W/kg

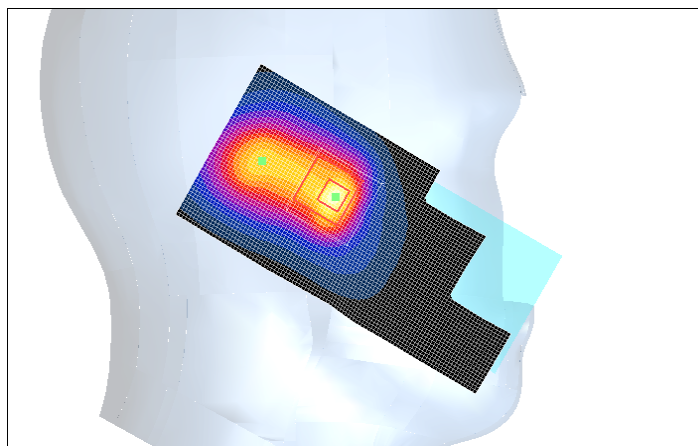
SAR(1 g) = 0.884 mW/g; SAR(10 g) = 0.495 mW/g

Cheek, no MMC - High/Zoom Scan (5x5x7) (5x5x7)/Cube 1: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 22.2 V/m; Power Drift = -0.0 dB

Maximum value of SAR (measured) = 0.824 mW/g, Peak SAR (extrapolated) = 1.47 W/kg

SAR(1 g) = 0.770 mW/g; SAR(10 g) = 0.439 mW/g



Date: 2004-07-16

Test Laboratory: TCC Salo

Type: RA-3; DUT: 07304, GSM1900 - Worst case extrapolation – Left

Communication System: GSM1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.43$ mho/m; $\epsilon_r = 38.2$; $\rho = 1000$ kg/m³, $t(\text{liq.}) = 21.2^\circ\text{C}$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1766; ConvF(4.91, 4.91, 4.91); Calibrated: 26.04.2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn372; Calibrated: 26.08.2003
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Tilt, no MMC - Middle/Area Scan (51x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Reference Value = 24.1 V/m; Power Drift = -0.1 dB

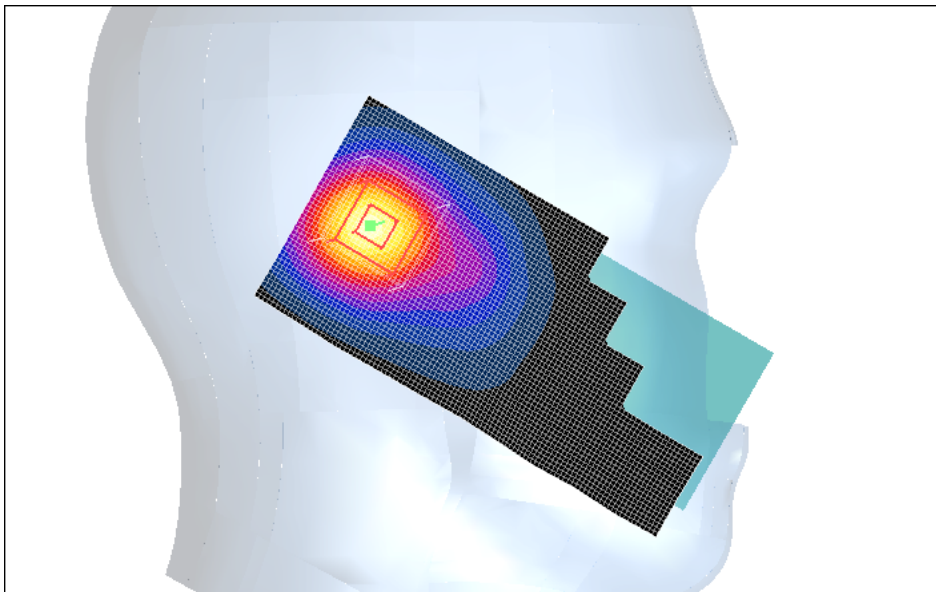
Maximum value of SAR (interpolated) = 0.817 mW/g

Tilt, no MMC - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 24.1 V/m; Power Drift = -0.1 dB

Maximum value of SAR (measured) = 0.840 mW/g, Peak SAR (extrapolated) = 1.5 W/kg

SAR(1 g) = 0.776 mW/g; SAR(10 g) = 0.436 mW/g



Date: 2004-07-16

Test Laboratory: TCC Salo

Type: RA-3; DUT: 07304, GSM1900 - Worst case extrapolation – Right

Communication System: GSM1900; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1909.8 \text{ MHz}$; $\sigma = 1.43 \text{ mho/m}$; $\epsilon_r = 38.2$; $\rho = 1000 \text{ kg/m}^3$, $t(\text{liq.}) = 20.7^\circ\text{C}$

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1766; ConvF(4.91, 4.91, 4.91); Calibrated: 26.04.2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn372; Calibrated: 26.08.2003
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Cheek, no MMC - High/Area Scan (51x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Reference Value = 20.4 V/m; Power Drift = -0.0 dB

Maximum value of SAR (interpolated) = 1.1 mW/g

Cheek, no MMC - High/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 20.4 V/m; Power Drift = -0.0 dB

Maximum value of SAR (measured) = 1.04 mW/g, Peak SAR (extrapolated) = 1.85 W/kg

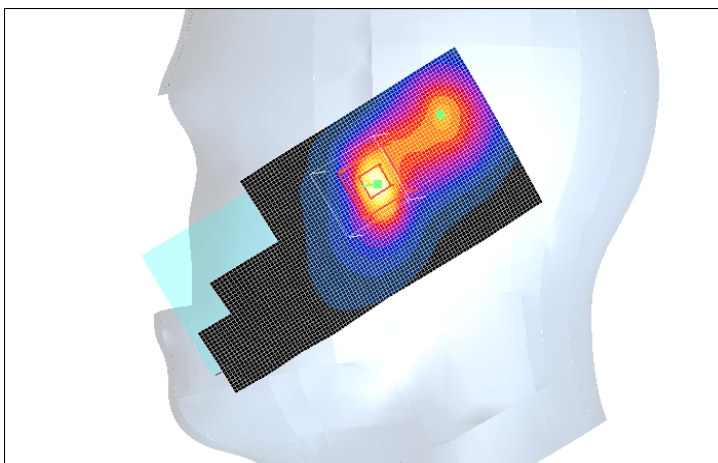
SAR(1 g) = 0.939 mW/g; SAR(10 g) = 0.498 mW/g

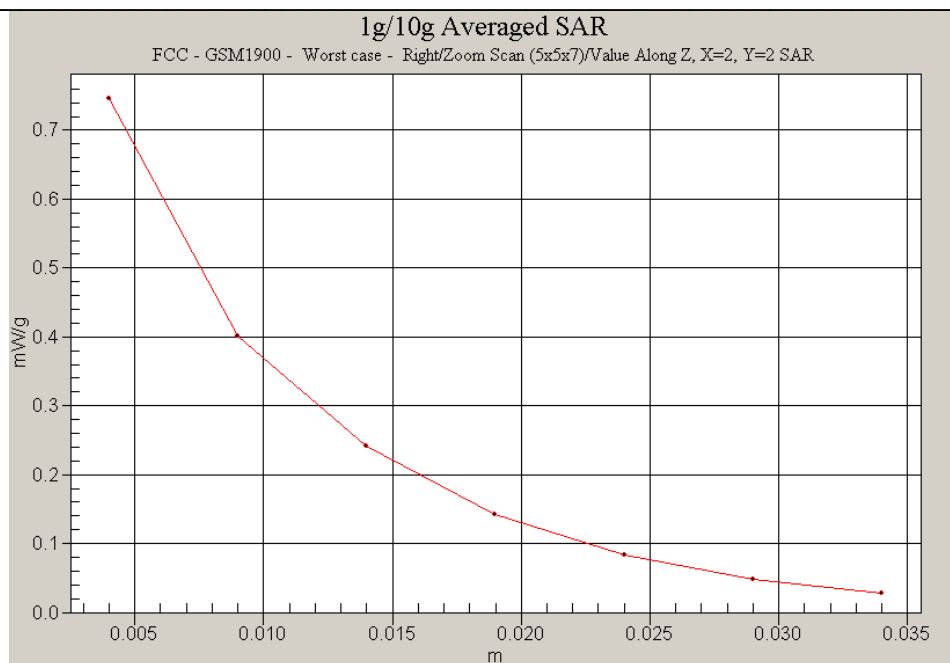
Cheek, no MMC - High/Zoom Scan (5x5x7) (5x5x7)/Cube 1: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 20.4 V/m; Power Drift = -0.0 dB

Maximum value of SAR (measured) = 0.746 mW/g, Peak SAR (extrapolated) = 1.4 W/kg

SAR(1 g) = 0.698 mW/g; SAR(10 g) = 0.388 mW/g





Date: 2004-07-16

Test Laboratory: TCC Salo

Type: RA-3; DUT: 07304, GSM1900 - Worst case extrapolation – Right

Communication System: GSM1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.43$ mho/m; $\epsilon_r = 38.2$; $\rho = 1000$ kg/m³, $t(\text{liq.}) = 20.6^\circ\text{C}$

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1766; ConvF(4.91, 4.91, 4.91); Calibrated: 26.04.2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn372; Calibrated: 26.08.2003
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Tilt, no MMC - Middle/Area Scan (51x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Reference Value = 22.3 V/m; Power Drift = 0.0 dB

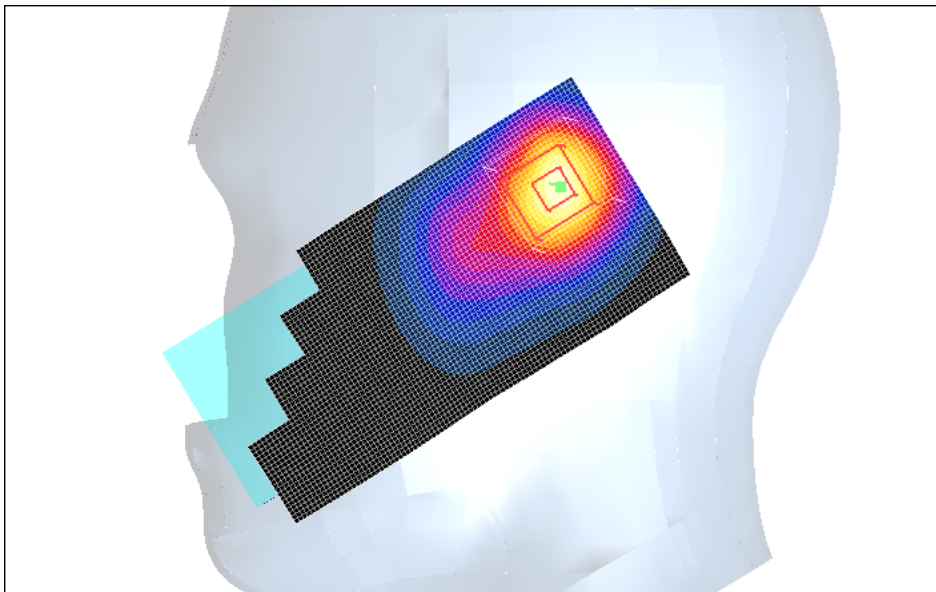
Maximum value of SAR (interpolated) = 0.742 mW/g

Tilt, no MMC - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 22.3 V/m; Power Drift = 0.0 dB

Maximum value of SAR (measured) = 0.742 mW/g, Peak SAR (extrapolated) = 1.38 W/kg

SAR(1 g) = 0.700 mW/g; SAR(10 g) = 0.394 mW/g



Date: 2004-07-16

Test Laboratory: TCC Salo

Type: RA-3; DUT: 07304, GSM1900 - Worst case extrapolation – Right

Communication System: GSM1900; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1909.8$ MHz; $\sigma = 1.43$ mho/m; $\epsilon_r = 38.2$; $\rho = 1000$ kg/m³, $t(\text{liq.}) = 20.5^\circ\text{C}$

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1766; ConvF(4.91, 4.91, 4.91); Calibrated: 26.04.2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn372; Calibrated: 26.08.2003
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Cheek, with MMC - High/Area Scan (51x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Reference Value = 20.9 V/m; Power Drift = -0.1 dB

Maximum value of SAR (interpolated) = 1.02 mW/g

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

Reference Value = 20.9 V/m; Power Drift = -0.1 dB

Maximum value of SAR (measured) = 0.994 mW/g, Peak SAR (extrapolated) = 1.8 W/kg

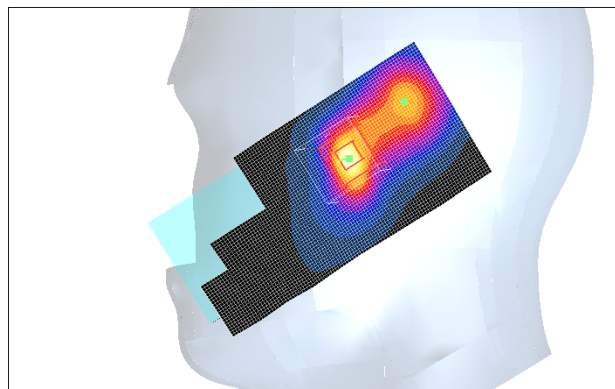
SAR(1 g) = 0.901 mW/g; SAR(10 g) = 0.478 mW/g

Cheek, with MMC - High/Zoom Scan (5x5x7) (5x5x7)/Cube 1: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 20.9 V/m; Power Drift = -0.1 dB

Maximum value of SAR (measured) = 0.730 mW/g, Peak SAR (extrapolated) = 1.35 W/kg

SAR(1 g) = 0.688 mW/g; SAR(10 g) = 0.387 mW/g



Date: 2004-07-16

Test Laboratory: TCC Salo

Type: RA-3; DUT: 07304, GSM1900 - Worst case extrapolation – Right

Communication System: GSM1900; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1909.8$ MHz; $\sigma = 1.43$ mho/m; $\epsilon_r = 38.2$; $\rho = 1000$ kg/m³, $t(\text{liq.}) = 20.4^\circ\text{C}$

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1766; ConvF(4.91, 4.91, 4.91); Calibrated: 26.04.2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn372; Calibrated: 26.08.2003
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Cheek, no MMC, BT active - High/Area Scan (51x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Reference Value = 20.9 V/m; Power Drift = 0.01 dB

Maximum value of SAR (interpolated) = 1.03 mW/g

Cheek, no MMC, BT active - High/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 20.9 V/m; Power Drift = 0.01 dB

Maximum value of SAR (measured) = 0.989 mW/g, Peak SAR (extrapolated) = 1.78 W/kg

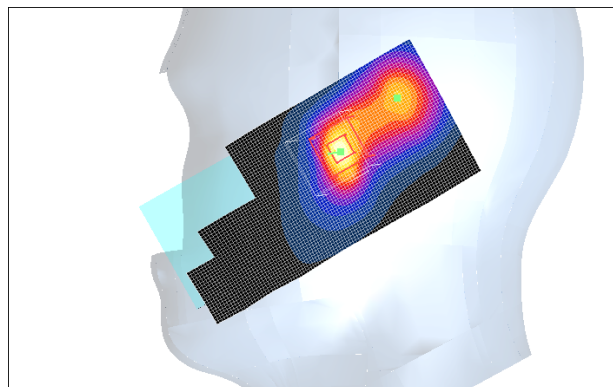
SAR(1 g) = 0.903 mW/g; SAR(10 g) = 0.480 mW/g

Cheek, no MMC, BT active - High/Zoom Scan (5x5x7) (5x5x7)/Cube 1: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 20.9 V/m; Power Drift = 0.01 dB

Maximum value of SAR (measured) = 0.762 mW/g, Peak SAR (extrapolated) = 1.4 W/kg

SAR(1 g) = 0.705 mW/g; SAR(10 g) = 0.394 mW/g



Date: 2004-07-21

Test Laboratory: TCC Salo

Type: RA-3; DUT: 07304, WLAN 2450, Worst case extrapolation, Left

Communication System: WLAN 2450; Frequency: 2412 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2412$ MHz; $\sigma = 1.84$ mho/m; $\epsilon_r = 40.2$; $\rho = 1000$ kg/m³, $t(\text{liq.}) = 21.3^\circ\text{C}$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1766; ConvF(4.3, 4.3, 4.3); Calibrated: 26.04.2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn372; Calibrated: 26.08.2003
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Cheek, no MMC - Low/Area Scan (51x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Reference Value = 3.92 V/m; Power Drift = -0.2 dB

Maximum value of SAR (interpolated) = 0.046 mW/g

Cheek, no MMC - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 3.92 V/m; Power Drift = -0.2 dB

Maximum value of SAR (measured) = 0.046 mW/g, Peak SAR (extrapolated) = 0.094 W/kg

SAR(1 g) = 0.044 mW/g; SAR(10 g) = 0.022 mW/g

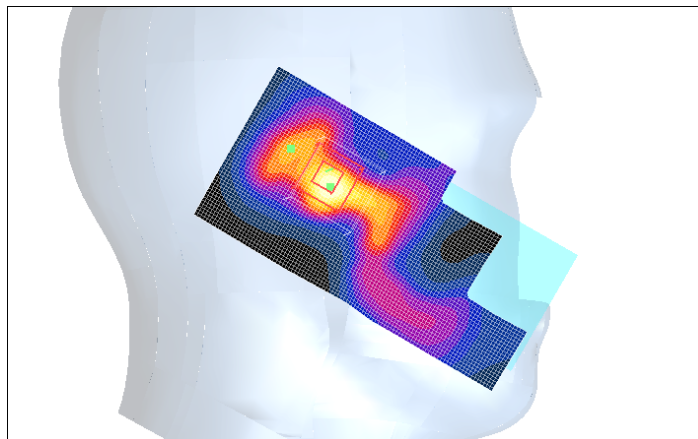
Cheek, no MMC - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 3.92 V/m; Power Drift = -0.2 dB

Maximum value of SAR (measured) = 0.042 mW/g, Peak SAR (extrapolated) = 0.081 W/kg

SAR(1 g) = 0.034 mW/g; SAR(10 g) = 0.017 mW/g

Maximum averaged SAR over 1 g is located on the boundary of the measurement cube.



Date: 2004-07-21

Test Laboratory: TCC Salo

Type: RA-3; DUT: 07304, WLAN 2450, Worst case extrapolation, Left

Communication System: WLAN 2450; Frequency: 2442 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2442$ MHz; $\sigma = 1.84$ mho/m; $\epsilon_r = 40.2$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1766; ConvF(4.3, 4.3, 4.3); Calibrated: 26.04.2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn372; Calibrated: 26.08.2003
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Tilt, no MMC - Middle/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Reference Value = 4.7 V/m; Power Drift = -0.0 dB

Maximum value of SAR (interpolated) = 0.048 mW/g

Tilt, no MMC - Middle/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.7 V/m; Power Drift = -0.0 dB

Maximum value of SAR (measured) = 0.043 mW/g, Peak SAR (extrapolated) = 0.086 W/kg

SAR(1 g) = 0.041 mW/g; SAR(10 g) = 0.022 mW/g

