Sony Ericsson

Company Internal
REPORT

Prepared (also subject responsible if other)		No.		
LD/SEMC/BGLIM *Magnus Söderman*		*BGLI07:612*		
Approved	Checked	Date	Rev	Reference
LD/SEMC/BGLIMC *Peter Lindeborg*	*071119*	*071113*	A	File

Report issued by Accredited SAR Laboratory

for

PY7A1022111 (W380i)

Date of test: November 6th - 13th, 2007

Laboratory:
Sony Ericsson SAR Test Laboratory
Sony Ericsson Mobile Communications AB
Nya Vattentornet
SE-221 82 LUND, Sweden

Testing Engineer:
Magnus Söderman
magnus1.soderman@sonyericsson.com
+46-46-2127229

Testing Approval:
Peter Lindeborg
peter.lindeborg@sonyericsson.com
+46-46-2126180

Statement of Compliance
Sony Ericsson Mobile Communications AB declares under its sole responsibility that the product

Sony Ericsson Type AAB-1022111-BV; FCC ID PY7A1022111; IC 4170B-A1022111

to which this declaration relates, is in conformity with the appropriate RF exposure standards recommendations and guidelines. It also declares that the product was tested in accordance with the appropriate measurement standards, guidelines and recommended practices. Any deviations from these standards, guidelines and recommended practices are noted below:
(None)

This laboratory is accredited to ISO/IEC 17025 (SWEDAC accreditation no. 1847).

SWEDAC ACKREDITERING 1847 ISO/IEC 17025

Laboratories are accredited by the Swedish Board for Accreditation and Conformity Assessment (SWEDAC) under the terms of Swedish legislation. The accredited laboratory activities meet the requirements in SS-EN ISO/IEC 17025 (2005). This report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.
The results and statements contained herein relate only to the items tested. The names of individuals involved may be mentioned only in connection with the statements or results from this report.

Sony Ericsson encourages all feedback, both positive and negative, on this report.

Sony Ericsson

Company Internal
REPORT

Prepared (also subject responsible if other)		No.		
LD/SEMC/BGLIM *Magnus Söderman*		*BGLI07:612*		
Approved	Checked	Date	Rev	Reference
LD/SEMC/BGLIMC *Peter Lindeborg*	*071119*	*071113*	A	File

Table of contents

Sony Ericsson

Company Internal
REPORT

Prepared (also subject responsible if other)		No.		
LD/SEMC/BGLIM *Magnus Söderman*		*BGLI07:612*		
Approved	Checked	Date	Rev	Reference
LD/SEMC/BGLIMC *Peter Lindeborg*	*071119*	*071113*	A	File

1 Introduction

In this test report, compliance of the Sony Ericsson PY7A1022111 (W380i) portable telephone with RF safety guidelines is demonstrated. The applicable RF safety guidelines and the SAR measurement specifications used for the test are described in the SAR Measurement Specifications of Wireless Handsets [1].

2 Device Under Test

2.1 Device description

Device model	PY7A1022111		
Market name	W380i		
Serial number (EUT #)	CB510TJ8JR (#9524)		
Mode	GSM 1900		
Crest factor	8.3		
Multiple access scheme	TDMA		
Maximum output power setting [dBm]	Ch. 512	Ch. 661	Ch. 810
	30.0	30.0	30.0
Factory tolerance in power setting	±0.5 dB		
Maximum peak output power [dBm]	30.5	30.5	30.5
Mode	GPRS 1900		
Crest factor	4.15		
Multiple access scheme	TDMA		
Maximum output power setting [dBm]	Ch. 512	Ch. 661	Ch. 810
	30.0	30.0	30.0
Factory tolerance in power setting	±0.5 dB		
Maximum peak output power [dBm]	30.5	30.5	30.5
Mode	EDGE 1900		
Crest factor	4.15		
Multiple access scheme	TDMA		
Maximum output power setting [dBm]	Ch. 512	Ch. 661	Ch. 810
	26.5	26.5	26.5
Factory tolerance in power setting	±0.5 dB		
Maximum peak output power [dBm]	27.0	27.0	27.0
Transmitting frequency range [MHz]	1850.2 - 1909.8		
GPRS Multislot class	10		
EDGE class	10		
GPRS capability class	B		
Prototype or production unit	Preproduction		
Hardware version	FP1		
Software version	R9AA012		
Device category	Portable		
RF exposure environment	General population / uncontrolled		

Sony Ericsson

Company Internal
REPORT

Prepared (also subject responsible if other) | No.

LD/SEMC/BGLIM *Magnus Söderman* | *BGLI07:612*

Approved	Checked	Date	Rev	Reference
LD/SEMC/BGLIMC *Peter Lindeborg*	*071119*	*071113*	A	File

2.2 Antenna Description

Type	Internal antenna	
Location	At bottom of lowest part	
Dimensions	Max length	42 mm
	Max width	11 mm
Configuration	PIFA	

Sony Ericsson

Company Internal
REPORT

Prepared (also subject responsible if other)		No.		
LD/SEMC/BGLIM *Magnus Söderman*		*BGLI07:612*		
Approved	Checked	Date	Rev	Reference
LD/SEMC/BGLIMC *Peter Lindeborg*	*071119*	*071113*	A	File

3 Test equipment

3.1 Dosimetric system

SAR measurements were made using the DASY4 professional system (software version 4.7, Build 55) with SAM twin phantom, manufactured by Schmid & Partner Engineering AG (SPEAG). The list of calibrated equipment is given below.

Description	Serial Number	Due Date
DASY4 DAE3	419	2008-01
E-field probe ET3DV6	1569	2008-01
Dipole Validation Kit, D1900V2	5d002	2009-01

3.2 Additional equipment

Description	Inventory Number	Due Date
Signal generator R&S	INV 20007667	2008-03
Directional coupler	S/N 062	2008-03
Power meter R&S NRVD	INV 20007669	2008-03
Power sensor R&S NRV-Z5	INV 20007672	2008-03
Power sensor R&S NRV-Z5	INV 20007673	2008-03
Network analyzer HP8753C	INV 421671	2008-03
S-parameter test set HP85047A	INV 421670	2008-03
Dielectric probe kit HP8507D	INV 20000053	N/A
Base station simulator CMU	INV 20002149	2008-03
Thermometer Fluke 51	INV 2071	2008-03

Sony Ericsson

Company Internal
REPORT

Prepared (also subject responsible if other)		No.		
LD/SEMC/BGLIM *Magnus Söderman*		*BGLI07:612*		
Approved	Checked	Date	Rev	Reference
LD/SEMC/BGLIMC *Peter Lindeborg*	*071119*	*071113*	A	File

4 Electrical parameters on the tissue simulating liquid

Prior to conducting SAR measurements, the relative permittivity, ε_r, and the conductivity σ, of the tissue simulating liquids were measured with the dielectric probe kit. These values are shown in the table below. The mass density, ρ, entered into the DASY4 software is also given. Recommended limits for permittivity ε_r, conductivity σ and mass density ρ are also shown.

f [MHz]	Tissue type	Measured / Recommended	Dielectric Parameters		Density
			ε_r	σ [S/m]	ρ [g/cm³]
1900	Head	Measured, 07/11/08	38.3	0.86	1.00
		Recommended	40.0	1.40	1.00
1900	Body	Measured, 07/11/13	52.2	1.59	1.00
		Recommended	53.3	1.52	1.00

5 System accuracy verification

A system accuracy verification of the DASY4 was performed using the dipole validation kit listed in section 3.1. The system verification test was conducted on the same day as the measurement of the DUT. The measurements were made at an ambient temperature of 21-23°C and humidity 25-45%. The obtained results are displayed in the table below.
RF noise had been measured in liquid when all RF equipment in lab was switched off. Measured value was 0.0002 mW/g in 1g mass.

f [MHz]	Tissue type	Measured / Reference	SAR [W/kg] 1g / 10g	Dielectric Parameters		Density	Liquid T[°C]
				ε_r	σ [S/m]	ρ [g/cm³]	
1900	Head	Measured, 07/11/08	38.0 / 19.8	38.3	1.47	1.00	21.3
		Reference	37.4 / 19.8	40.0	1.40	1.00	22.0
1900	Body	Measured, 07/11/13	38.6 / 20.6	52.2	1.59	1.00	21.0
		Reference	38.6 / 20.6	53.3	1.52	1.00	22.0

Sony Ericsson

Company Internal
REPORT

Prepared (also subject responsible if other) | No.

LD/SEMC/BGLIM *Magnus Söderman* | *BGLI07:612*

Approved	Checked	Date	Rev	Reference
LD/SEMC/BGLIMC *Peter Lindeborg*	*071119*	*071113*	A	File

6 SAR measurement uncertainty

SAR measurement uncertainty evaluation for Sony Ericsson PY7A1022111 (W380i) phone According to IEEE 1528

Uncertainty Component	Uncer. (%)	Prob Dist.	Div.	C_i	1g mass
Measurement System					
Probe Calibration	±5.9	N	1	1	±5.9
Axial Isotropy	±4.7	R	√3	0.7	±1.9
Spherical Isotropy	±9.6	R	√3	0.7	±3.9
Boundary effect	±1.0	R	√3	1	±0.6
Probe linearity	±4.7	R	√3	1	±2.7
Detection limit	±1.0	R	√3	1	±0.6
Readout electronics	±0.3	N	1	1	±0.3
Response time	±0.8	R	√3	1	±0.5
Integration time	±2.6	R	√3	1	±1.5
RF Ambient Conditions	±3.0	R	√3	1	±1.7
Mech. Constraints of robot	±0.4	R	√3	1	±0.2
Probe positioning	±2.9	R	√3	1	±1.7
Extrap, interpolation and integration	±1.0	R	√3	1	±0.6
Measurement System Uncertainty					*±8.4*
Test Sample Related					
Device positioning	±3.5	N	1	1	±3.5
Device holder uncertainty	±3.5	N	1	1	±3.5
Power drift	±5.0	R	√3	1	±2.9
Test Sample Related Uncertainty					*±5.5*
Phantom and Tissue Parameters					
Phantom uncertainty	±4.0	R	√3	1	±2.3
Liquid conductivity (measured)	±2.5	R	1	0.64	±1.6
Liquid conductivity (target)	±5.0	R	√3	0.64	±1.8
Liquid Permittivity (measured)	±2.5	R	1	0.6	±1.5
Liquid Permittivity (target)	±5.0	R	√3	0.6	±1.7
Phantom and Tissue Parameters Uncertainty					*±4.1*
Combined standard uncertainty					*±10.8*
Extended standard uncertainty (k=2)					***±21.6***

Sony Ericsson

Company Internal
REPORT

Prepared (also subject responsible if other) | No.

LD/SEMC/BGLIM *Magnus Söderman* | *BGLI07:612*

Approved	Checked	Date	Rev	Reference
LD/SEMC/BGLIMC *Peter Lindeborg*	*071119*	*071113*	A	File

7 Test results

The measured 1-gram averaged SAR values of the DUT towards the head are provided in Table 1. The ambient humidity and temperature of test facility were 25-45% and 21-23°C respectively. A base station simulator was used to control the device during the SAR measurement. The DUT was supplied with a fully charged battery for each measurement.

For head measurement, the DUT was tested on the right-hand side, and the left-hand side of the phantom in two phone positions, cheek (touch) and tilt (cheek + 15°). The DUT was tested at the lowest, middle and highest frequencies in the transmission band.

For body measurement the DUT was tested with the back (antenna) and front (display) towards the phantom flat section with 15 mm distance in both speech and data mode. The clamshell was closed during all measurements in body position. For all modes, the device was tested at the lowest, middle and highest frequencies in the transmission band. For portable hands free (PHF) usage the Sony Ericsson head set HPB-60 was connected to the DUT, and for Blue Tooth the DUT was pared with Sony Ericsson HBH-60.

Band	Channel	Power [dBm]	Position	Liquid T [°C]	Measured SAR [W/kg]	
					Right-hand 1g mass	Left-hand 1g mass
GSM 1900	512	30.5	Cheek	21.3	0.53	0.47
			Tilt	21.3	-	-
	661	30.7	Cheek	21.3	0.52	0.45
			Tilt	21.3	0.09	0.08
	810	30.4	Cheek	21.3	0.36	0.31
			Tilt	21.3	-	-

Table 1: SAR measurement result for Sony Ericsson PY7A1022111 telephone at highest possible output power. Measured towards the head.

Band	Channel	Power [dBm]	Position / Mode	Liquid T [°C]	Measured SAR [W/kg] 1g mass
GSM 1900	512	30.5	Back / GPRS	21.0	1.01
			Front / GPRS	21.0	0.40
		26.9	Back / EDGE	21.0	0.14
		30.5	Back / Bluetooth	21.0	0.52
			Back / PHF	21.0	0.49
	661	30.7	Back / GPRS	21.0	0.79
		30.7	Back / Bluetooth	21.0	0.43
	810	30.4	Back / GPRS	21.0	0.52
		30.4	Back / Bluetooth	21.0	0.27

Table 2: SAR measurement result for Sony Ericsson PY7A1022111 telephone at highest possible output power. Measured towards the body.

Sony Ericsson

Company Internal
REPORT

Prepared (also subject responsible if other)		No.		
LD/SEMC/BGLIM *Magnus Söderman*		*BGLI07:612*		
Approved	Checked	Date	Rev	Reference
LD/SEMC/BGLIMC *Peter Lindeborg*	*071119*	*071113*	A	File

8 References

[1] R.Plicanic, “SAR Measurement Specification of Wireless Handsets”, Sony Ericsson SAR Test Laboratory internal document GUG/N 03:141

[2] FCC, “Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields: Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radio Frequency Emissions,” Supplement C (Edition 01-01) to OET Bulletin 65 (Edition 97- 01).

[3] IEEE, “Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques,” Std 1528-2003, June, 2003.

[4] IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held mobile wireless devices in the frequency range of 300 MHz to 3 GHz", February 2005.

Sony Ericsson

Company Internal
REPORT

Prepared (also subject responsible if other)		No.		
LD/SEMC/BGLIM *Magnus Söderman*		*BGLI07:612*		
Approved	Checked	Date	Rev	Reference
LD/SEMC/BGLIMC *Peter Lindeborg*	*071119*	*071113*	A	File

9 Appendix

9.1 Photographs of the device under test

Front side

Rear side

Left- and right side with system connector

Top- and bottom side

Battery and cover removed

Sony Ericsson

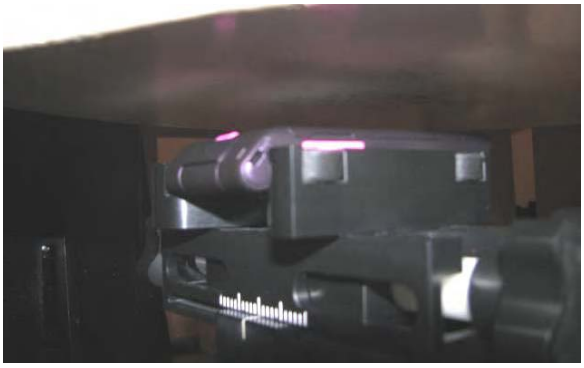
Company Internal
REPORT

Prepared (also subject responsible if other)		No.		
LD/SEMC/BGLIM *Magnus Söderman*		*BGLI07:612*		
Approved	Checked	Date	Rev	Reference
LD/SEMC/BGLIMC *Peter Lindeborg*	*071119*	*071113*	A	File

9.2 Device position at SAM Twin Phantom

DUT position towards the head: Cheek (touch) position

DUT position towards the head: Tilt (touch + 15°) position



DUT in body position with 15 mm distance

Sony Ericsson

Company Internal
REPORT

Prepared (also subject responsible if other)		No.		
LD/SEMC/BGLIM *Magnus Söderman*		*BGLI07:612*		
Approved	Checked	Date	Rev	Reference
LD/SEMC/BGLIMC *Peter Lindeborg*	*071119*	*071113*	A	File

9.3 Attachments

- Measurement plots and system validation
- Dipole calibration
- Probe calibration

Date/Time: 2007-11-08 10:10:51

Test Laboratory: Sony Ericsson Mobile Communications AB
File Name: PerfCheck1900.da4

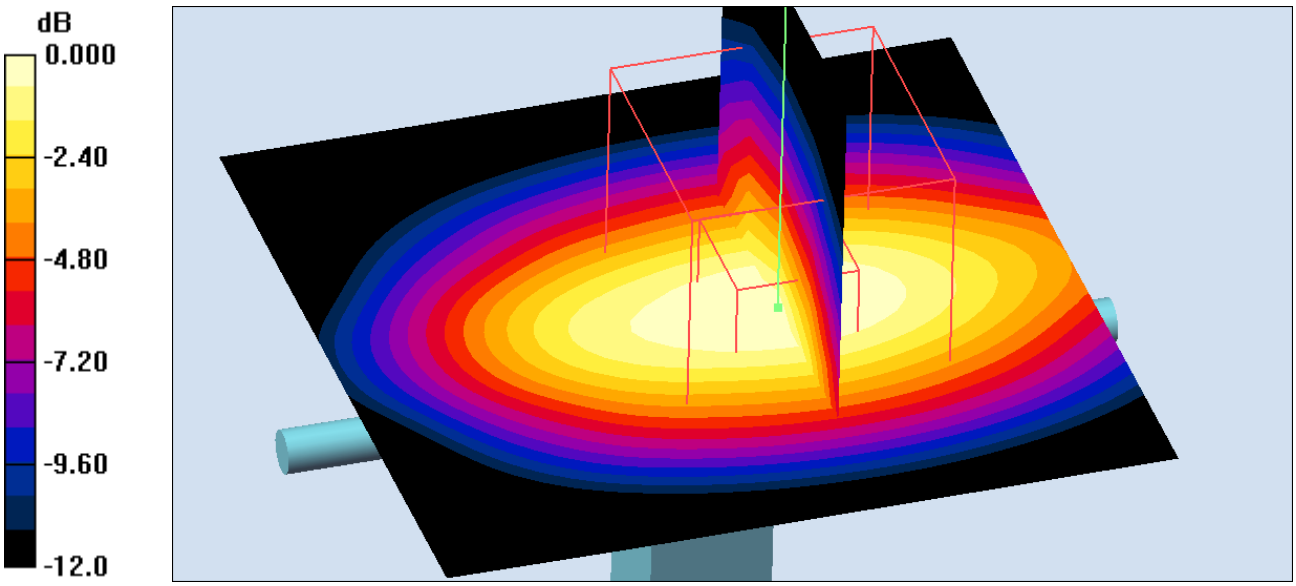
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d002
Program Name: Unnamed Program

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.47 mho/m; ε_r = 38.3; ρ = 1000 kg/m^3
Phantom section: Flat Section

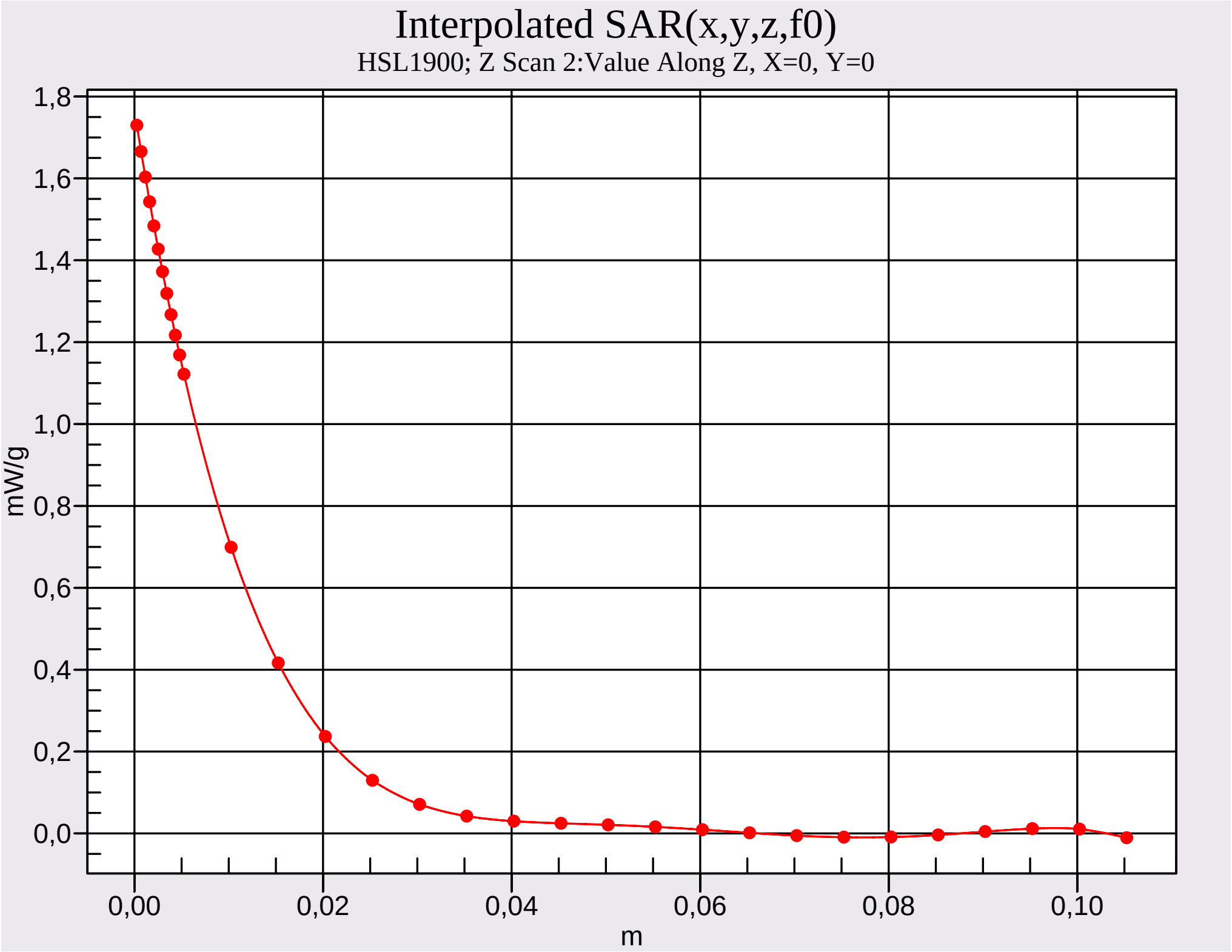
DASY4 Configuration:
- Probe: ET3DV6 - SN1569; ConvF(5.33, 5.33, 5.33); Calibrated: 2007-01-16
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn419; Calibrated: DAE not calibrated
- Phantom: SAM 2; Type: SAM QD 000 P40 CB; Serial: TP-1396
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

System Performance Check/Area Scan (41x41x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 11.2 mW/g

System Performance Check/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 88.5 V/m; Power Drift = -0.085 dB
Peak SAR (extrapolated) = 16.7 W/kg
SAR(1 g) = 9.5 mW/g; SAR(10 g) = 4.94 mW/g
Maximum value of SAR (measured) = 10.8 mW/g



0 dB = 10.8mW/g


Interpolated SAR(x,y,z,f0)
HSL1900; Z Scan 2:Value Along Z, X=0, Y=0
1,8
1,6
1,4
1,2
1,0
0,8
0,6
0,4
0,2
0,0
mW/g
0,00
0,02
0,04
0,06
0,08
0,10
m

Date/Time: 2007-11-08 15:43:19

Test Laboratory: Sony Ericsson Mobile Communications AB
File Name: L1900.da4

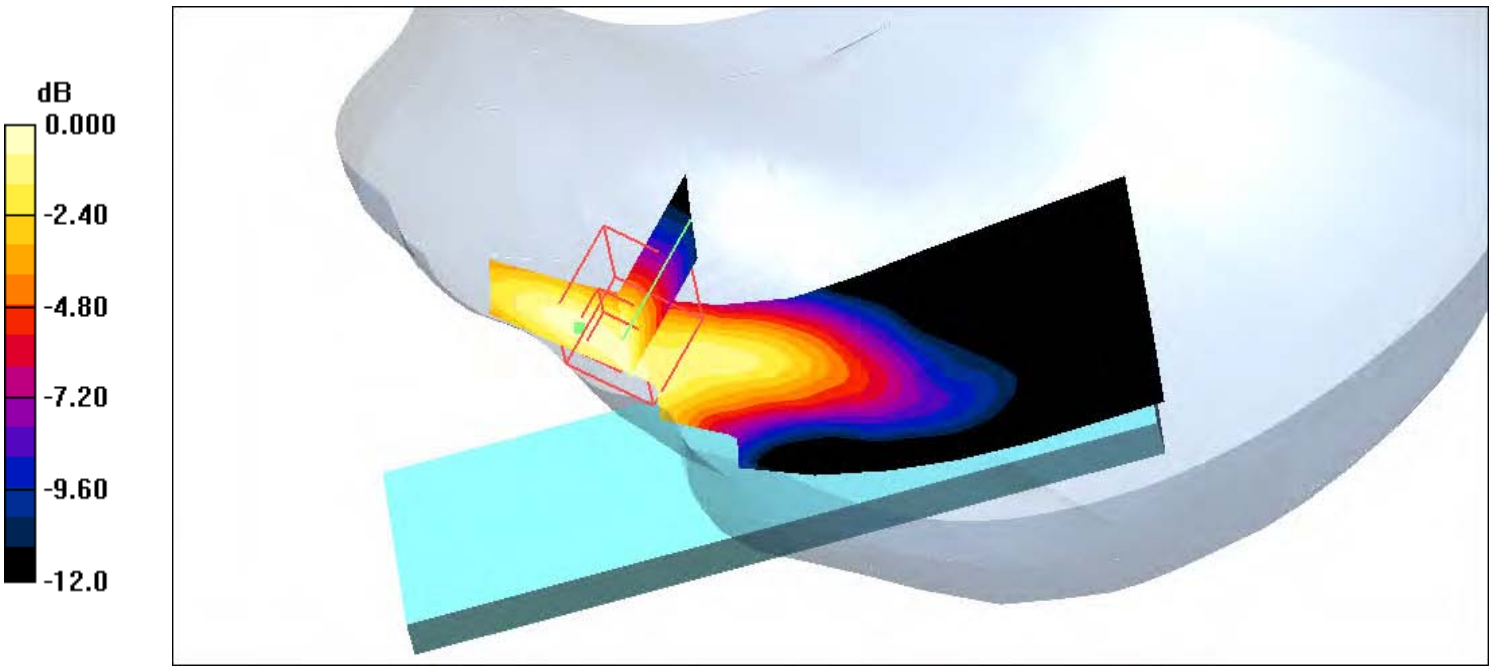
DUT: AAB-1022111-BV (Lena900); Type: AAB-1022111-BV; Serial: CB510TJ8JR
Program Name: Unnamed Program

Communication System: GSM 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.42 mho/m; ε_r = 38.5; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1569; ConvF(5.33, 5.33, 5.33); Calibrated: 2007-01-16
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn419; Calibrated: DAE not calibrated
- Phantom: SAM 2; Type: SAM QD 000 P40 CB; Serial: TP-1396
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Touch Low/Area Scan (41x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.491 mW/g

Touch Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.4 V/m; Power Drift = -0.070 dB
Peak SAR (extrapolated) = 0.740 W/kg
SAR(1 g) = 0.474 mW/g; SAR(10 g) = 0.290 mW/g
Maximum value of SAR (measured) = 0.505 mW/g



0 dB = 0.505mW/g

Date/Time: 2007-11-08 16:33:53

Test Laboratory: Sony Ericsson Mobile Communications AB
File Name: L1900.da4

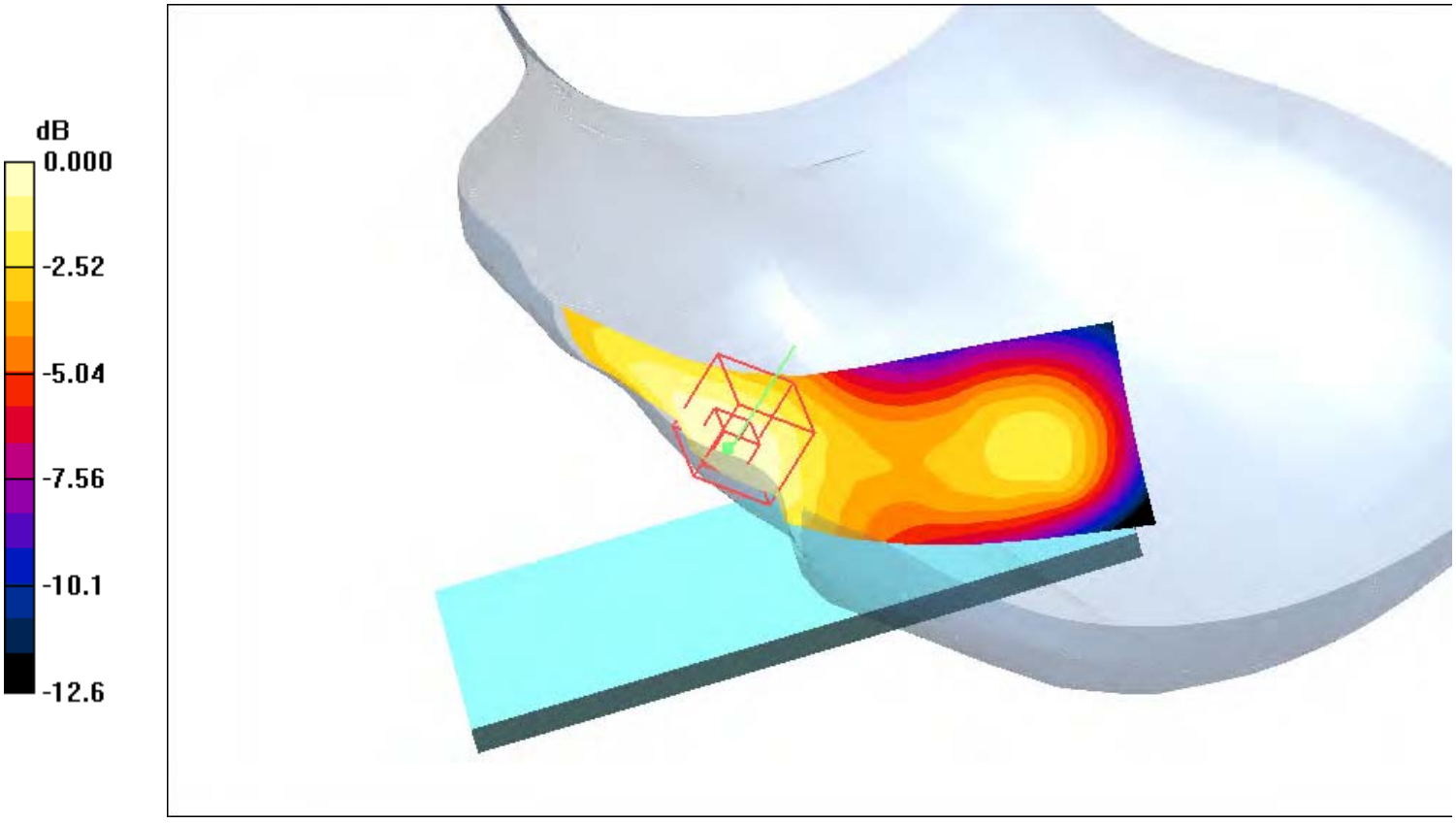
DUT: AAB-1022111-BV (Lena900); Type: AAB-1022111-BV; Serial: CB510TJ8JR
Program Name: Unnamed Program

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.45 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1569; ConvF(5.33, 5.33, 5.33); Calibrated: 2007-01-16
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn419; Calibrated: DAE not calibrated
- Phantom: SAM 2; Type: SAM QD 000 P40 CB; Serial: TP-1396
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Tilt Mid/Area Scan (41x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.082 mW/g

Tilt Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.92 V/m; Power Drift = -0.039 dB
Peak SAR (extrapolated) = 0.106 W/kg
SAR(1 g) = 0.076 mW/g; SAR(10 g) = 0.052 mW/g
Maximum value of SAR (measured) = 0.080 mW/g



0 dB = 0.080mW/g

Date/Time: 2007-11-08 11:24:18

Test Laboratory: Sony Ericsson Mobile Communications AB
File Name: R1900.da4

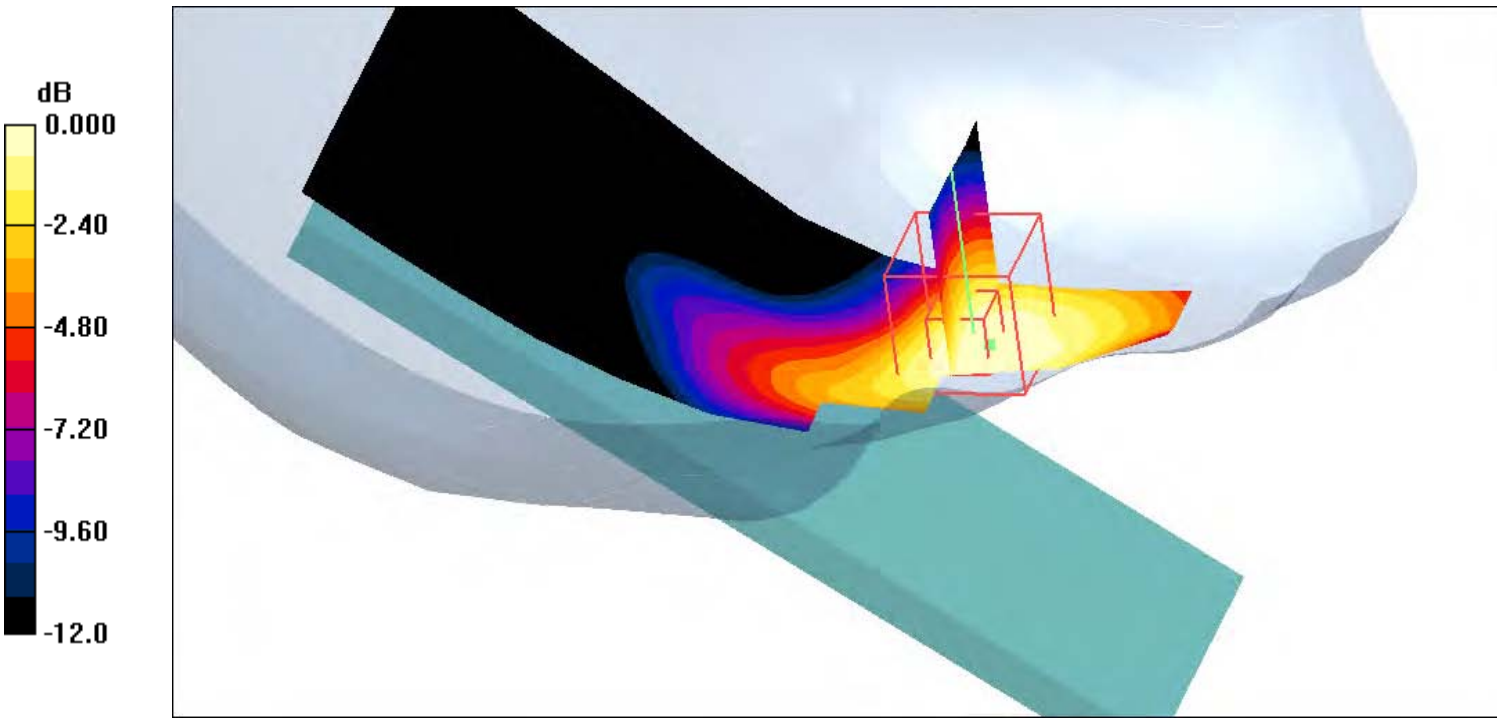
DUT: AAB-1022111-BV (Lena900); Type: AAB-1022111-BV; Serial: CB510TJ8JR
Program Name: Right Hand Side

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.45 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1569; ConvF(5.33, 5.33, 5.33); Calibrated: 2007-01-16
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn419; Calibrated: DAE not calibrated
- Phantom: SAM 2; Type: SAM QD 000 P40 CB; Serial: TP-1396
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Touch Mid (Holder High)/Area Scan (41x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.655 mW/g

Touch Mid (Holder High)/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.97 V/m; Power Drift = 0.010 dB
Peak SAR (extrapolated) = 0.774 W/kg
SAR(1 g) = 0.546 mW/g; SAR(10 g) = 0.361 mW/g
Maximum value of SAR (measured) = 0.572 mW/g



0 dB = 0.572mW/g

Date/Time: 2007-11-08 12:56:13

Test Laboratory: Sony Ericsson Mobile Communications AB
File Name: R1900.da4

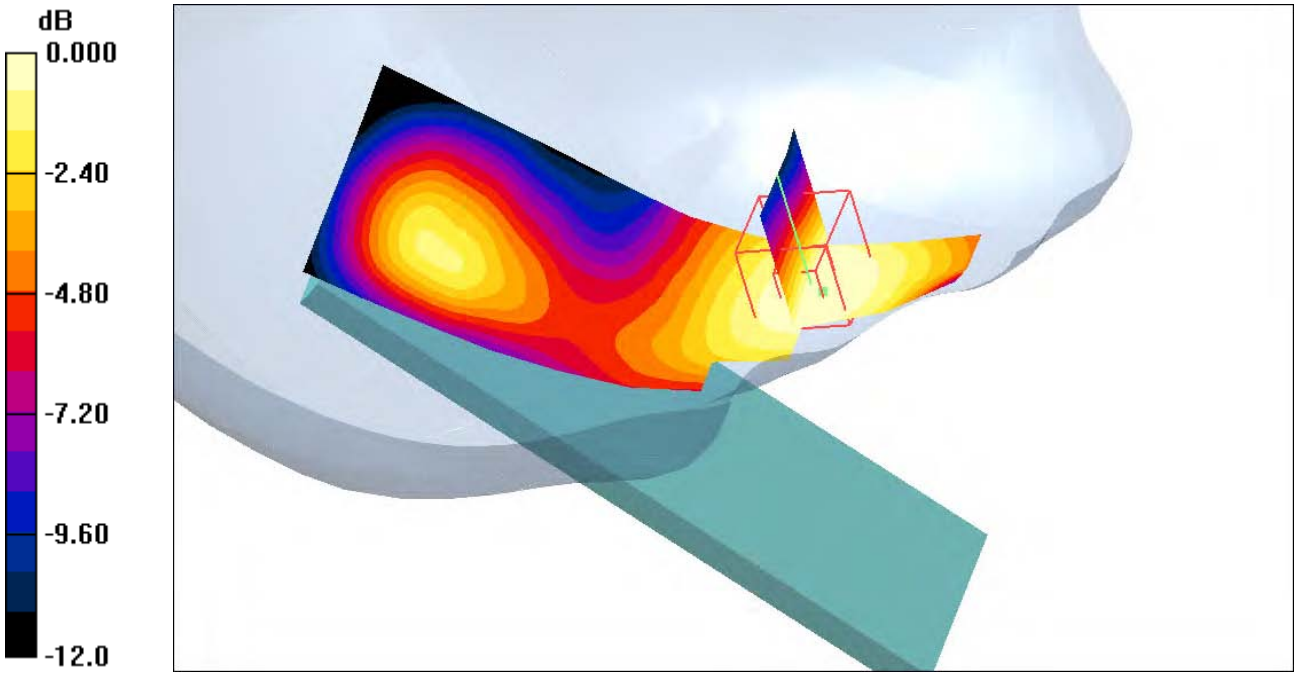
DUT: AAB-1022111-BV (Lena900); Type: AAB-1022111-BV; Serial: CB510TJ8JR
Program Name: Right Hand Side

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.45 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1569; ConvF(5.33, 5.33, 5.33); Calibrated: 2007-01-16
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn419; Calibrated: DAE not calibrated
- Phantom: SAM 2; Type: SAM QD 000 P40 CB; Serial: TP-1396
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Tilt Mid/Area Scan (41x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.099 mW/g

Tilt Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.08 V/m; Power Drift = -0.117 dB
Peak SAR (extrapolated) = 0.132 W/kg
SAR(1 g) = 0.091 mW/g; SAR(10 g) = 0.060 mW/g
Maximum value of SAR (measured) = 0.096 mW/g



0 dB = 0.096mW/g

Date/Time: 2007-11-13 10:56:21

Test Laboratory: Sony Ericsson Mobile Communications AB
File Name: PerfCheck1900_Body.da4

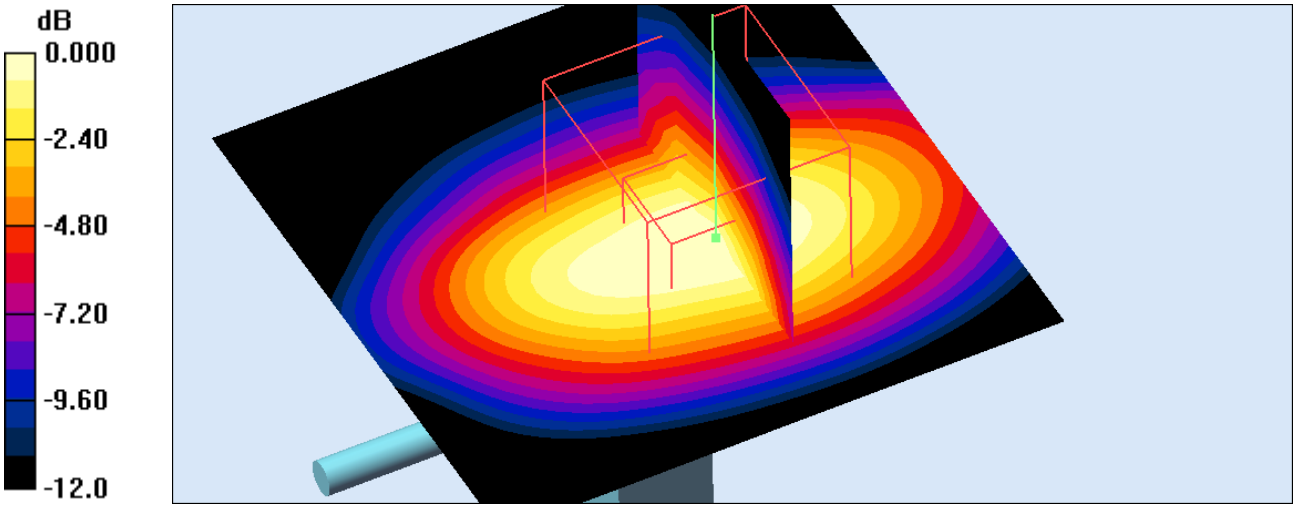
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d002
Program Name: SystemPerformanceCheck Body 1900MHz

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.6 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

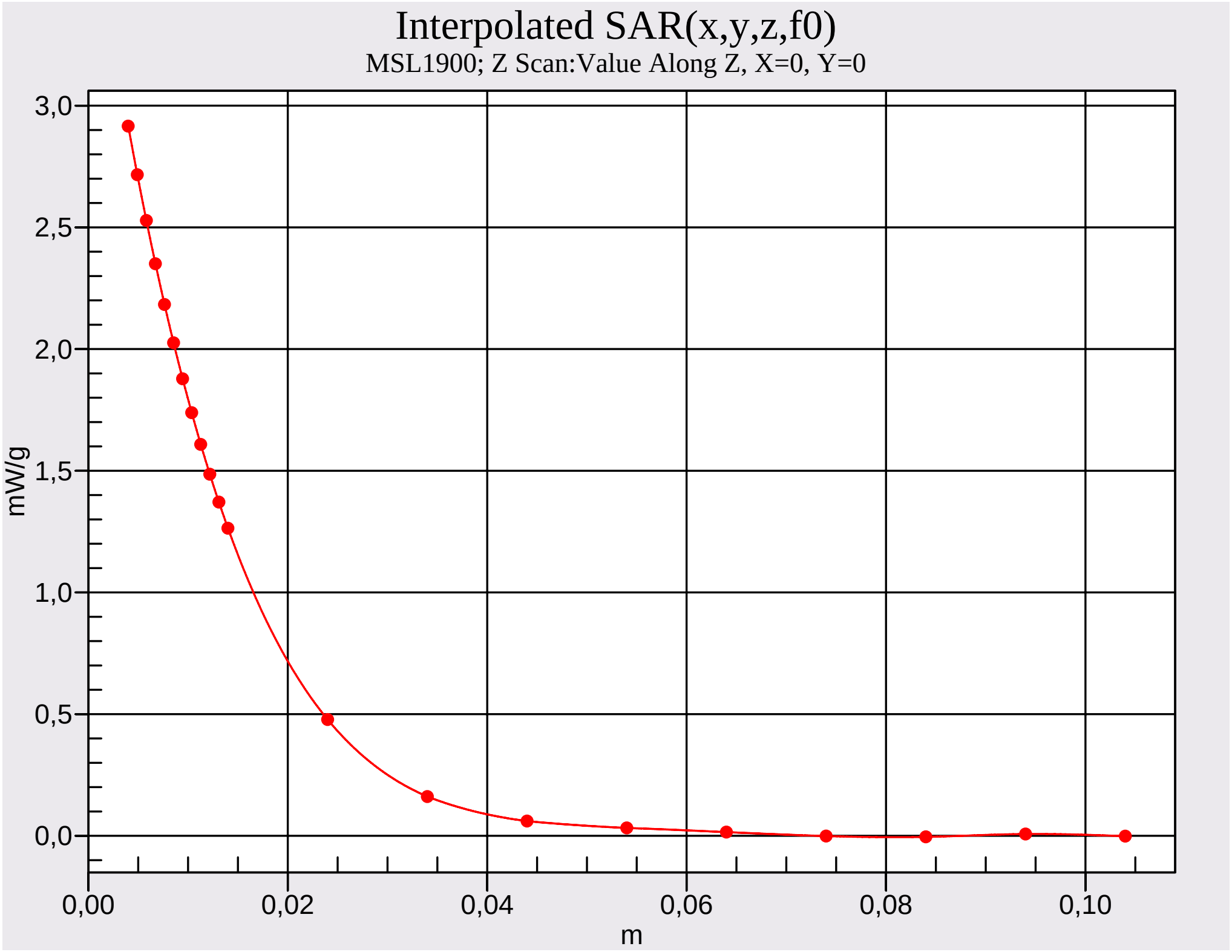
DASY4 Configuration:
- Probe: ET3DV6 - SN1569; ConvF(4.79, 4.79, 4.79); Calibrated: 2007-01-16
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn419; Calibrated: DAE not calibrated
- Phantom: SAM 2; Type: SAM QD 000 P40 CB; Serial: TP-1396
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Dipole/Area Scan (41x41x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 11.3 mW/g

Dipole/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 82.4 V/m; Power Drift = -0.017 dB
Peak SAR (extrapolated) = 16.0 W/kg
SAR(1 g) = 9.42 mW/g; SAR(10 g) = 4.99 mW/g
Maximum value of SAR (measured) = 10.5 mW/g



0 dB = 10.5mW/g


Interpolated SAR(x,y,z,f0)
MSL1900; Z Scan:Value Along Z, X=0, Y=0
3,0
2,5
2,0
1,5
1,0
0,5
0,0
mW/g
0,00
0,02
0,04
0,06
0,08
0,10
m

Date/Time: 2007-11-13 11:27:03

Test Laboratory: Sony Ericsson Mobile Communications AB
File Name: Body1900.da4

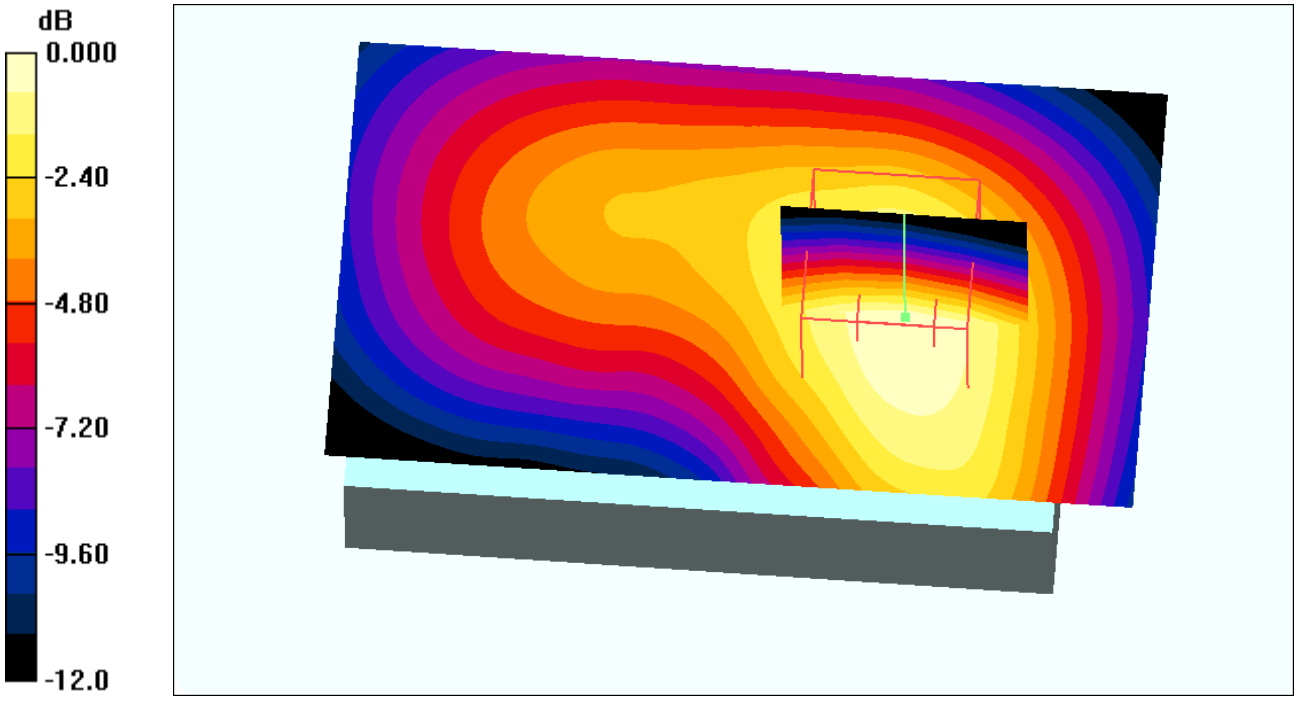
DUT: AAB-1022111-BV (Lena900) Closed; Type: AAB-1022111-BV; Serial: CB510TJ8JR
Program Name: Data Body d=15mm

Communication System: GSM1900_GPRS; Frequency: 1850.2 MHz;Duty Cycle: 1:4.15
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.54 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1569; ConvF(4.79, 4.79, 4.79); Calibrated: 2007-01-16
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn419; Calibrated: DAE not calibrated
- Phantom: SAM 2; Type: SAM QD 000 P40 CB; Serial: TP-1396
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

GPRS Low/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.11 mW/g

GPRS Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.7 V/m; Power Drift = -0.077 dB
Peak SAR (extrapolated) = 1.57 W/kg
SAR(1 g) = 1.01 mW/g; SAR(10 g) = 0.615 mW/g
Maximum value of SAR (measured) = 1.12 mW/g



0 dB = 1.12mW/g

Date/Time: 2007-11-13 13:05:40

Test Laboratory: Sony Ericsson Mobile Communications AB
File Name: Body1900.da4

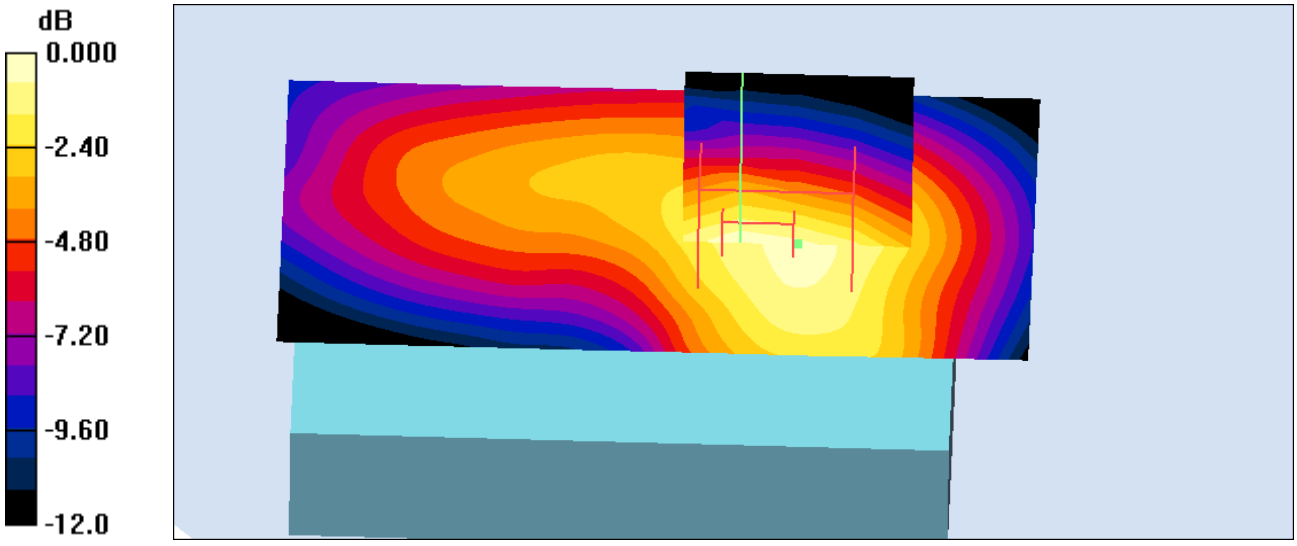
DUT: AAB-1022111-BV (Lena900) Closed; Type: AAB-1022111-BV; Serial: CB510TJ8JR
Program Name: Data Body d=15mm

Communication System: GSM1900_GPRS; Frequency: 1850.2 MHz;Duty Cycle: 1:4.15
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.54 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1569; ConvF(4.79, 4.79, 4.79); Calibrated: 2007-01-16
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn419; Calibrated: DAE not calibrated
- Phantom: SAM 2; Type: SAM QD 000 P40 CB; Serial: TP-1396
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

EDGE Low/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.133 mW/g

EDGE Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.87 V/m; Power Drift = -0.191 dB
Peak SAR (extrapolated) = 0.231 W/kg
SAR(1 g) = 0.138 mW/g; SAR(10 g) = 0.082 mW/g
Maximum value of SAR (measured) = 0.150 mW/g



0 dB = 0.150mW/g

Date/Time: 2007-11-13 13:42:46

Test Laboratory: Sony Ericsson Mobile Communications AB
File Name: Body1900_Speech.da4

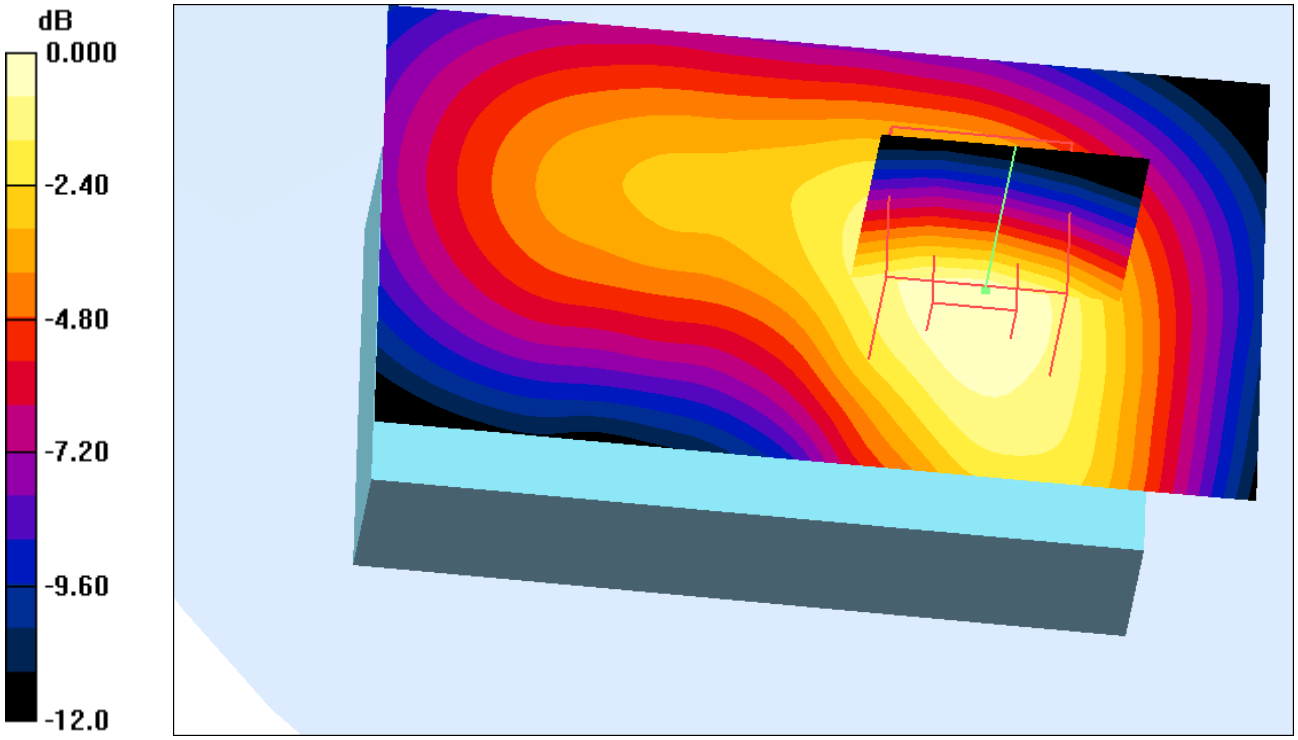
DUT: AAB-1022111-BV (Lena900) Closed; Type: AAB-1022111-BV; Serial: CB510TJ8JR
Program Name: Speech Body d=15mm

Communication System: GSM 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.54 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1569; ConvF(4.79, 4.79, 4.79); Calibrated: 2007-01-16
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn419; Calibrated: DAE not calibrated
- Phantom: SAM 2; Type: SAM QD 000 P40 CB; Serial: TP-1396
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

BT low/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.582 mW/g

BT low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.6 V/m; Power Drift = -0.155 dB
Peak SAR (extrapolated) = 0.804 W/kg
SAR(1 g) = 0.516 mW/g; SAR(10 g) = 0.312 mW/g
Maximum value of SAR (measured) = 0.564 mW/g



0 dB = 0.564mW/g

Date/Time: 2007-11-13 14:37:37

Test Laboratory: Sony Ericsson Mobile Communications AB
File Name: Body1900_Speech.da4

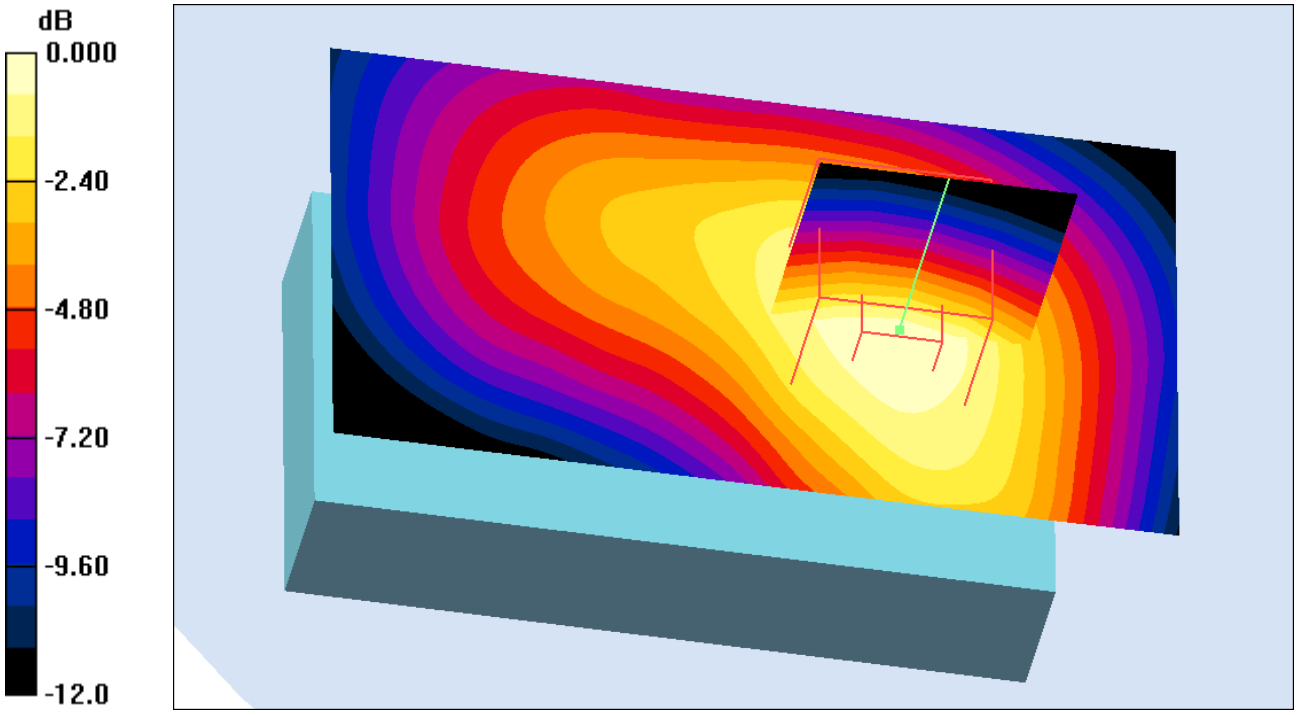
DUT: AAB-1022111-BV (Lena900) Closed; Type: AAB-1022111-BV; Serial: CB510TJ8JR
Program Name: Speech Body d=15mm

Communication System: GSM 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.54 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1569; ConvF(4.79, 4.79, 4.79); Calibrated: 2007-01-16
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn419; Calibrated: DAE not calibrated
- Phantom: SAM 2; Type: SAM QD 000 P40 CB; Serial: TP-1396
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

PHF Low/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.549 mW/g

PHF Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.3 V/m; Power Drift = -0.178 dB
Peak SAR (extrapolated) = 0.756 W/kg
SAR(1 g) = 0.492 mW/g; SAR(10 g) = 0.299 mW/g
Maximum value of SAR (measured) = 0.541 mW/g



0 dB = 0.541mW/g

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

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

Accredited by the Swiss Federal Office of Metrology and Accreditation
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client Sony Ericsson Lund — Certificate No: D1900V2-5d002_Jan07

CALIBRATION CERTIFICATE

Object	D1900V2 - SN: 5d002
Calibration procedure(s)	QA CAL-05.v6 Calibration procedure for dipole validation kits
Calibration date:	January 16, 2007
Condition of the calibrated item	In Tolerance

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	03-Oct-06 (METAS, No. 217-00608)	Oct-07
Power sensor HP 8481A	US37292783	03-Oct-06 (METAS, No. 217-00608)	Oct-07
Reference 20 dB Attenuator	SN: 5086 (20g)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference 10 dB Attenuator	SN: 5047.2 (10r)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference Probe ET3DV6	SN: 1507	19-Oct-06 (SPEAG, No. ET3-1507_Oct06)	Oct-07
Reference Probe ES3DV3	SN: 3025	19-Oct-06 (SPEAG, No. ES3-3025_Oct06)	Oct-07
DAE4	SN 907	20-Jul-06 (SPEAG, No. DAE4-907_Jul06)	Jul-07

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-05)	In house check: Oct-07
RF generator Agilent E4421B	MY41000675	11-May-05 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Oct-06)	In house check: Oct-07

	Name	Function	Signature
Calibrated by:	Marcel Fehr	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 17, 2007

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY4	V4.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.8 ± 6 %	1.43 mho/m ± 6 %
Head TSL temperature during test	(22.0 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	condition	
SAR measured	250 mW input power	9.61 mW / g
SAR normalized	normalized to 1W	38.4 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**37.4 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	5.04 mW / g
SAR normalized	normalized to 1W	20.2 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**19.8 mW / g ± 16.5 % (k=2)**

[1] Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	51.9 ± 6 %	1.55 mho/m ± 6 %
Body TSL temperature during test	(21.1 ± 0.2) °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.94 mW / g
SAR normalized	normalized to 1W	39.8 mW / g
SAR for nominal Body TSL parameters [2]	normalized to 1W	**38.6 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.24 mW / g
SAR normalized	normalized to 1W	21.0 mW / g
SAR for nominal Body TSL parameters [2]	normalized to 1W	**20.6 mW / g ± 16.5 % (k=2)**

[2] Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.8 Ω - 0.3 jΩ
Return Loss	- 34.9 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.2 Ω + 2.3 jΩ
Return Loss	- 30.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.177 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	February 14, 2002

DASY4 Validation Report for Head TSL

Date/Time: 09.01.2007 13:35:34

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d002

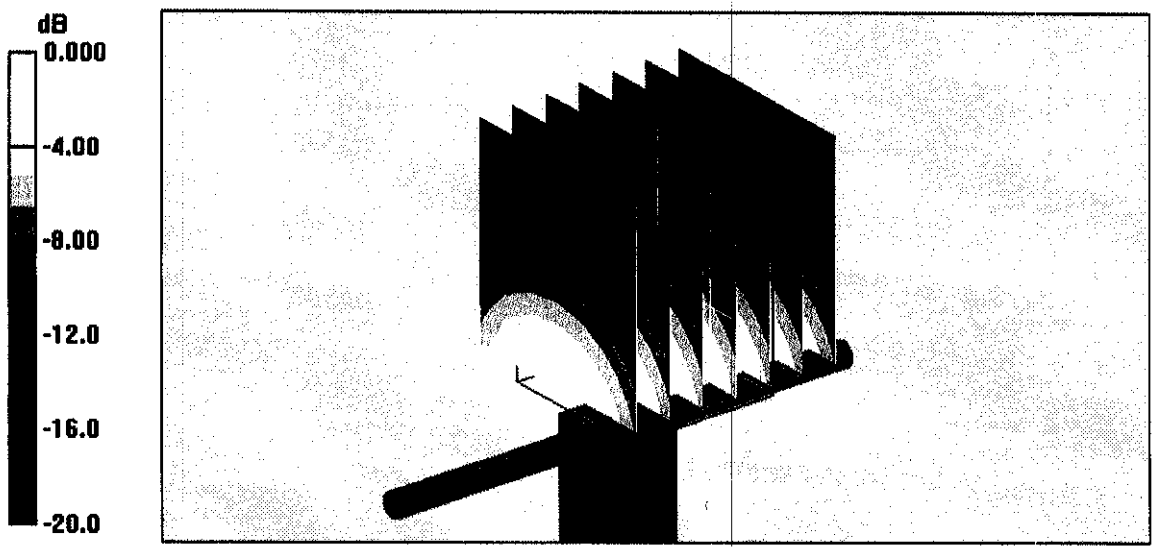
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL U10 BB;
Medium parameters used: f = 1900 MHz; σ = 1.43 mho/m; ε_r = 38.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (HF); ConvF(4.97, 4.97, 4.97); Calibrated: 19.10.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn907; Calibrated: 20.07.2006
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; ;
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

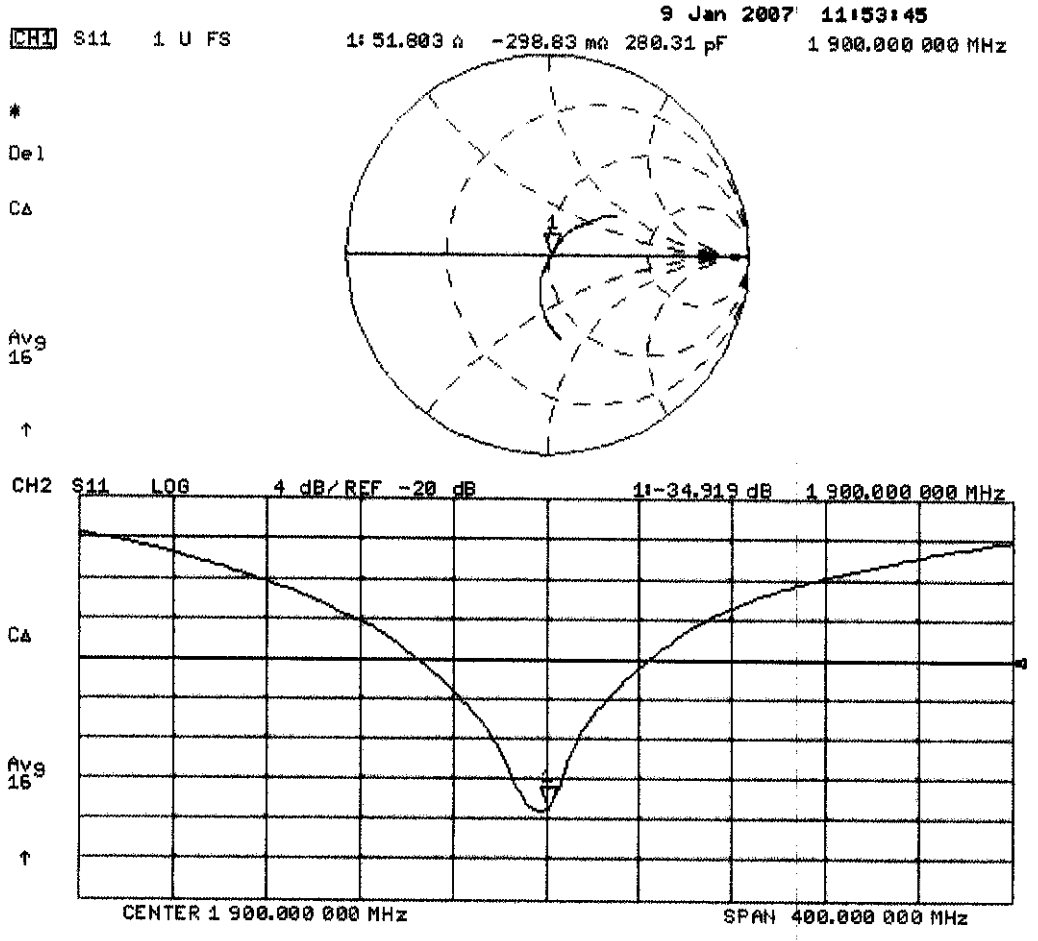
Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 91.7 V/m; Power Drift = 0.033 dB
Peak SAR (extrapolated) = 17.0 W/kg
SAR(1 g) = 9.61 mW/g; SAR(10 g) = 5.04 mW/g
Maximum value of SAR (measured) = 11.0 mW/g



0 dB = 11.0mW/g

Impedance Measurement Plot for Head TSL



DASY4 Validation Report for Body TSL

Date/Time: 16.01.2007 15:03:08

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d002

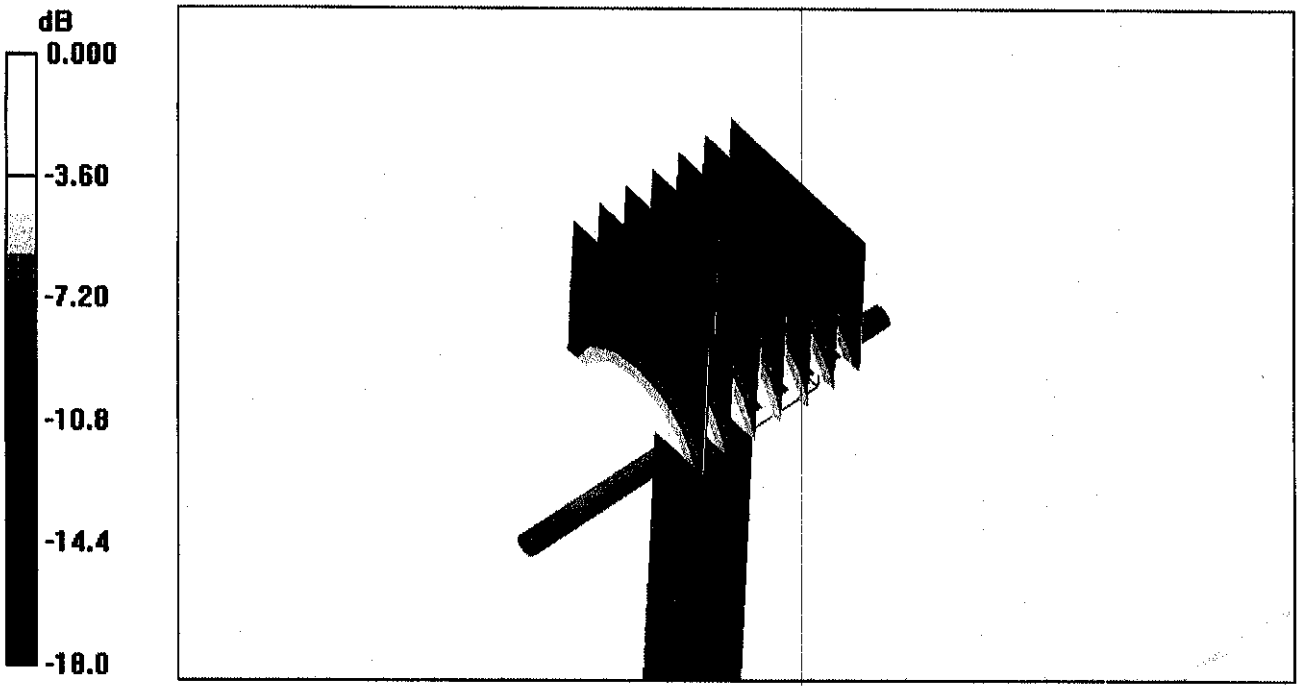
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL U10 BB;
Medium parameters used: f = 1900 MHz; σ = 1.55 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (HF); ConvF(4.43, 4.43, 4.43); Calibrated: 19.10.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn907; Calibrated: 20.07.2006
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; ;
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

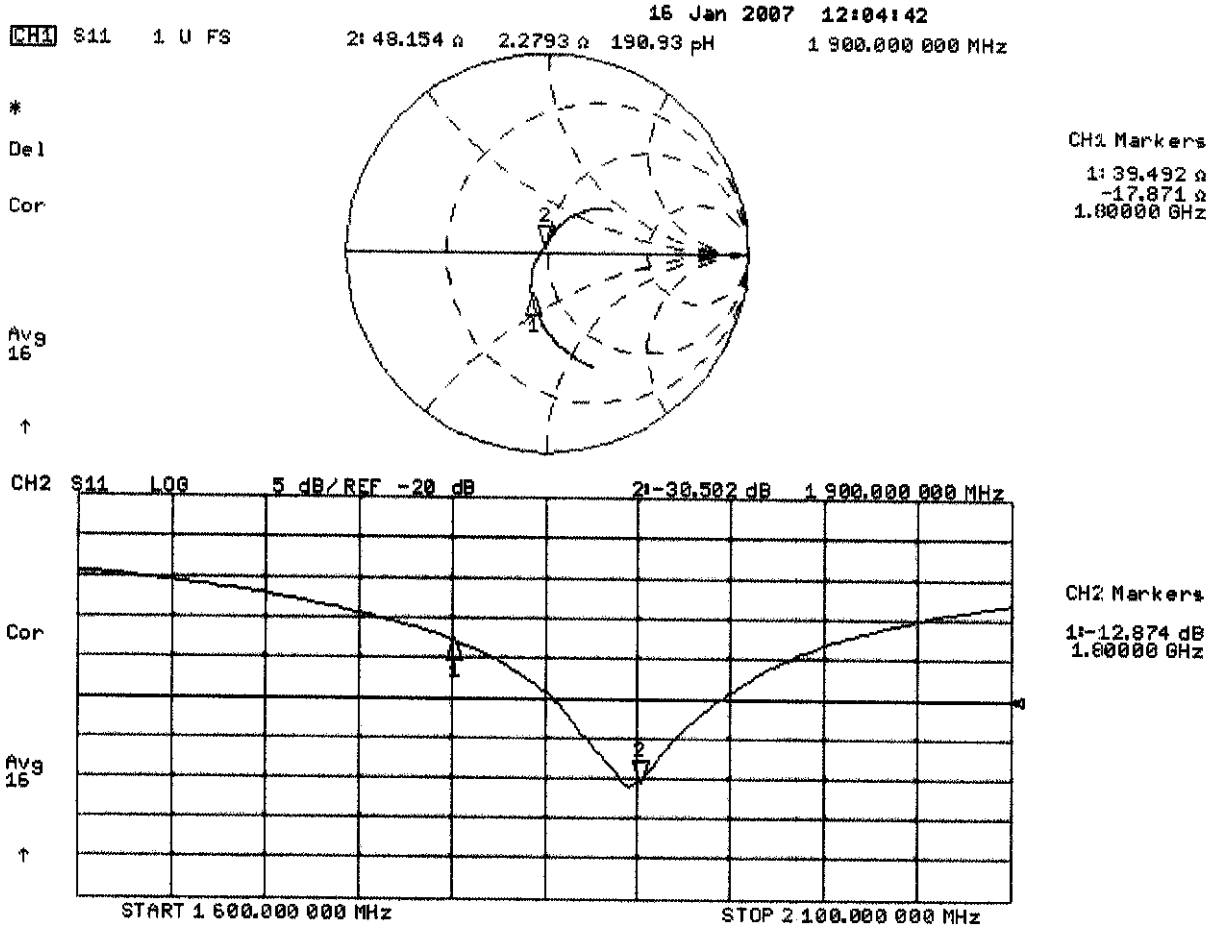
Pin = 250 mW; d = 10 mm 2/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 85.8 V/m; Power Drift = 0.053 dB
Peak SAR (extrapolated) = 17.0 W/kg
SAR(1 g) = 9.94 mW/g; SAR(10 g) = 5.24 mW/g
Maximum value of SAR (measured) = 11.3 mW/g



0 dB = 11.3mW/g

Impedance Measurement Plot for Body TSL



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

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

Accredited by the Swiss Federal Office of Metrology and Accreditation
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client Sony Ericsson Lund

Certificate No: ET3-1569_Jan07

CALIBRATION CERTIFICATE

Object	ET3DV6 - SN: 1569
Calibration procedure(s)	QA CAL-01.v6 Calibration procedure for dosimetric E-field probes
Calibration date:	January 16, 2007
Condition of the calibrated item	In Tolerance

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41495277	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41498087	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Reference 3 dB Attenuator	SN: S5054 (3c)	10-Aug-06 (METAS, No. 217-00592)	Aug-07
Reference 20 dB Attenuator	SN: S5086 (20b)	4-Apr-06 (METAS, No. 251-00558)	Apr-07
Reference 30 dB Attenuator	SN: S5129 (30b)	10-Aug-06 (METAS, No. 217-00593)	Aug-07
Reference Probe ES3DV2	SN: 3013	4-Jan-07 (SPEAG, No. ES3-3013_Jan07)	Jan-08
DAE4	SN: 654	21-Jun-06 (SPEAG, No. DAE4-654_Jun06)	Jun-07

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Oct-06)	In house check: Oct-07

	Name	Function	Signature
Calibrated by:	Katja Pokovic	Technical Manager	
Approved by:	Niels Kuster	Quality Manager	

Issued: January 16, 2007

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001

Methods Applied and Interpretation of Parameters:

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

Probe ET3DV6

SN:1569

Manufactured:	May 19, 2001
Last calibrated:	March 16, 2006
Recalibrated:	January 16, 2007

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: ET3DV6 SN:1569

Sensitivity in Free Space[A] Diode Compression[B]

NormX	**1.79** ± 10.1%	$\mu V/(V/m)^2$	DCP X	**95** mV
NormY	**2.08** ± 10.1%	$\mu V/(V/m)^2$	DCP Y	**95** mV
NormZ	**1.91** ± 10.1%	$\mu V/(V/m)^2$	DCP Z	**93** mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL **900 MHz** **Typical SAR gradient: 5 % per mm**

Sensor Center to Phantom Surface Distance		**3.7 mm**	**4.7 mm**
SAR_{be} [%]	Without Correction Algorithm	7.2	3.9
SAR_{be} [%]	With Correction Algorithm	0.1	0.1

TSL **1750 MHz** **Typical SAR gradient: 10 % per mm**

Sensor Center to Phantom Surface Distance		**3.7 mm**	**4.7 mm**
SAR_{be} [%]	Without Correction Algorithm	6.2	3.7
SAR_{be} [%]	With Correction Algorithm	0.1	0.3

Sensor Offset

Probe Tip to Sensor Center	**2.7** mm

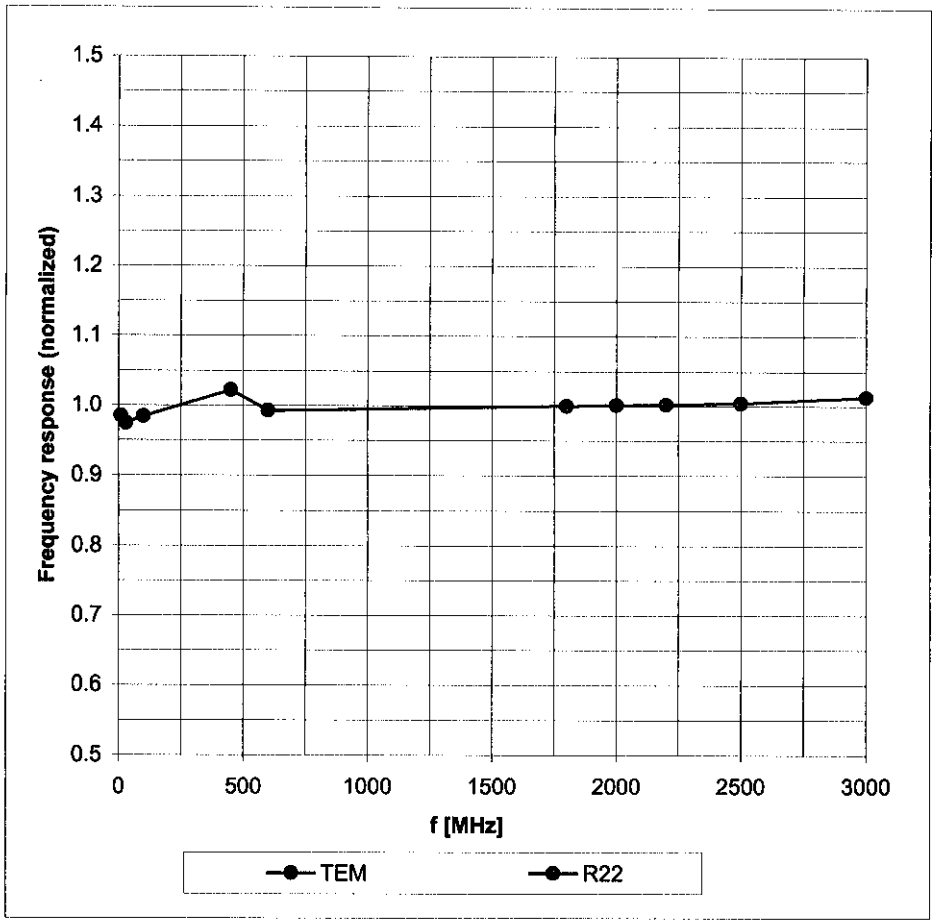
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Page 8).

[B] Numerical linearization parameter: uncertainty not required.

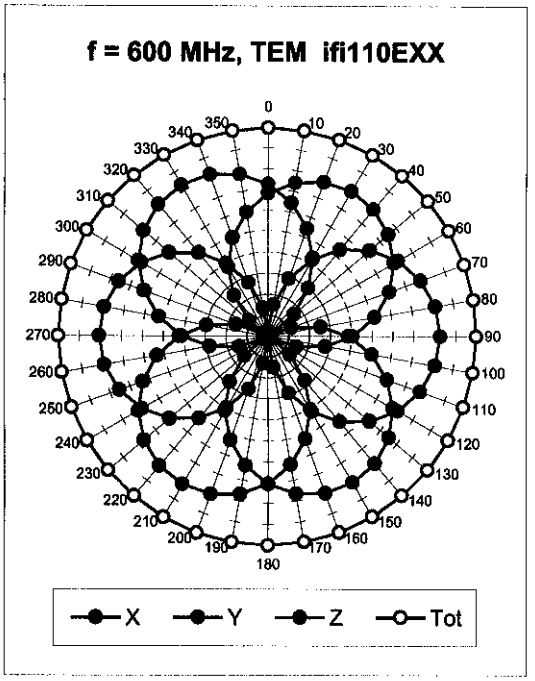
Frequency Response of E-Field

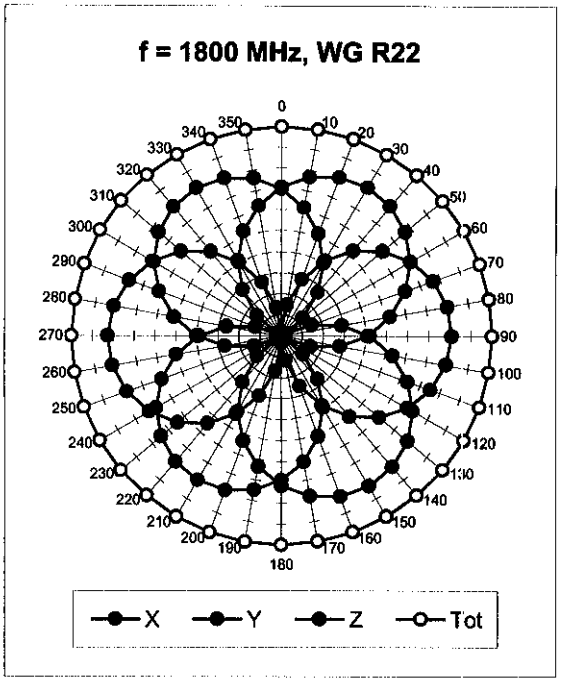
(TEM-Cell:ifi110 EXX, Waveguide: R22)

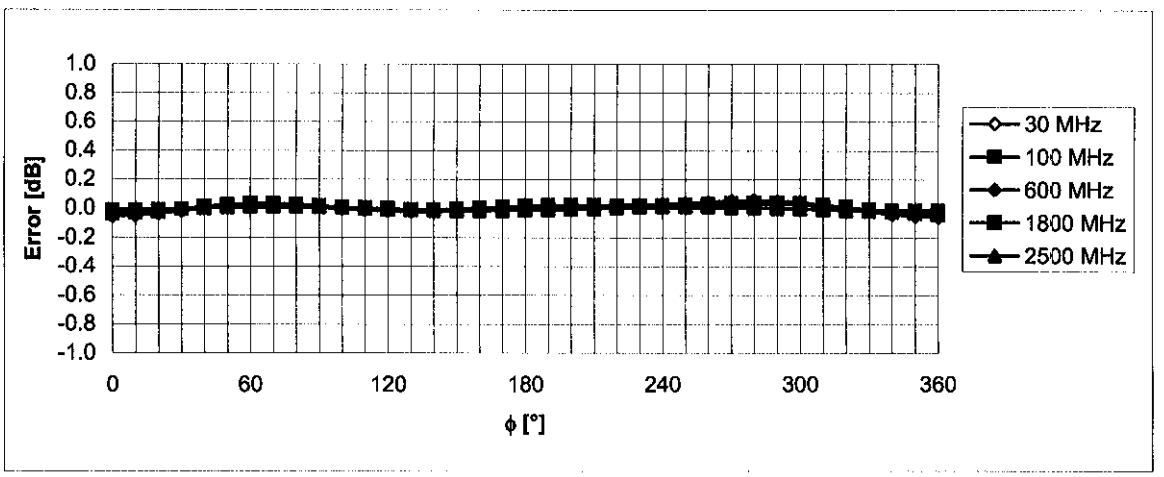


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Receiving Pattern (ϕ), ϑ = 0°



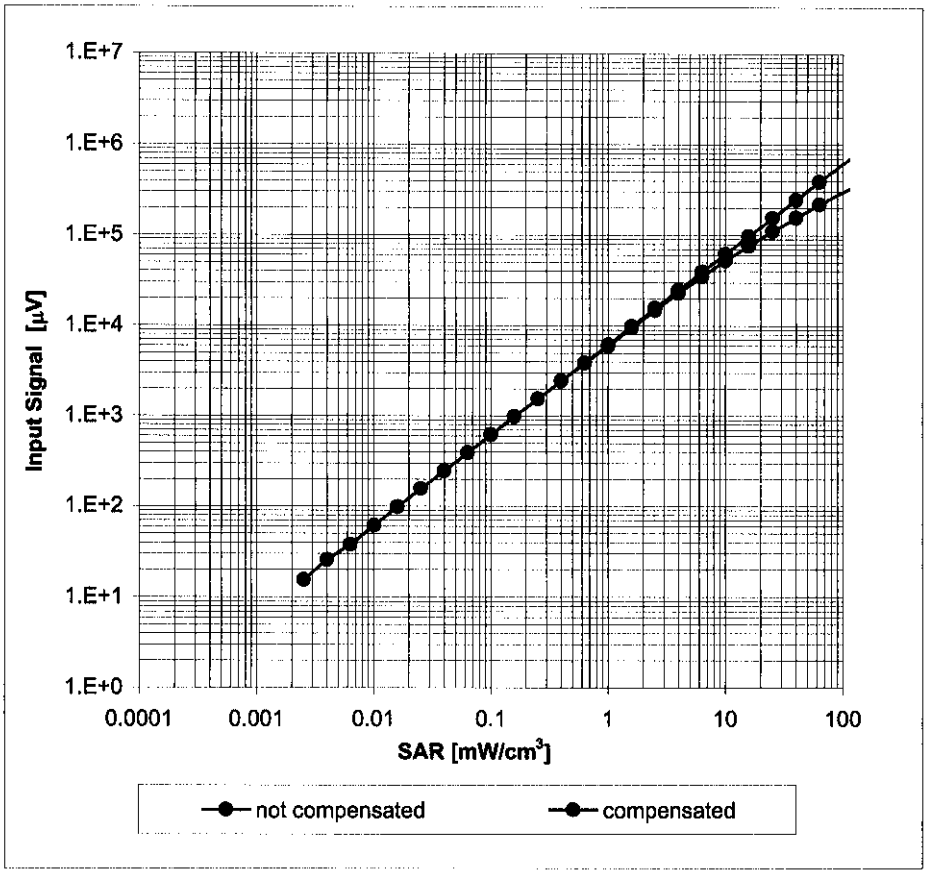


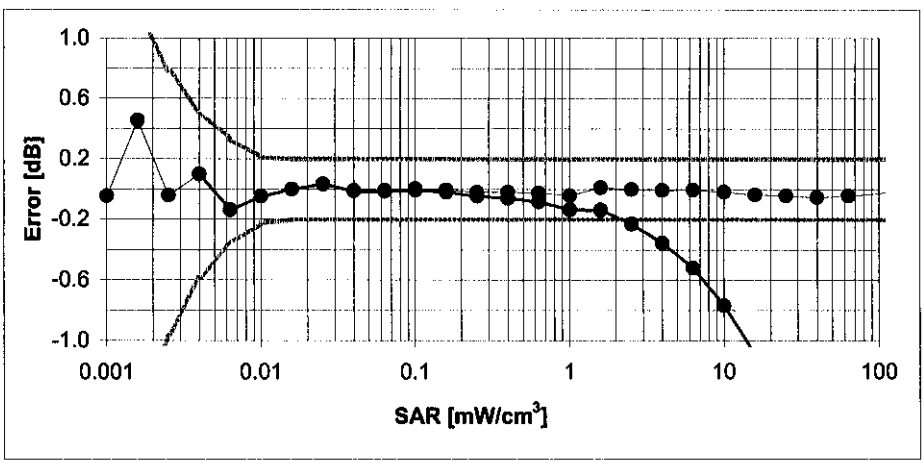


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})

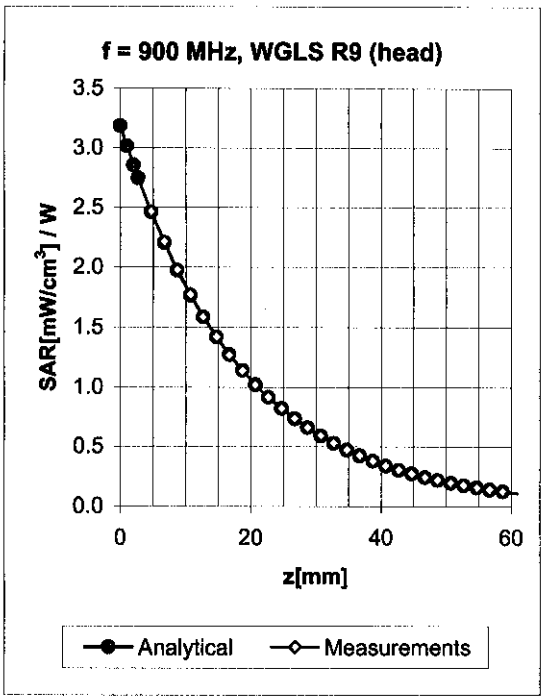
(Waveguide R22, f = 1800 MHz)

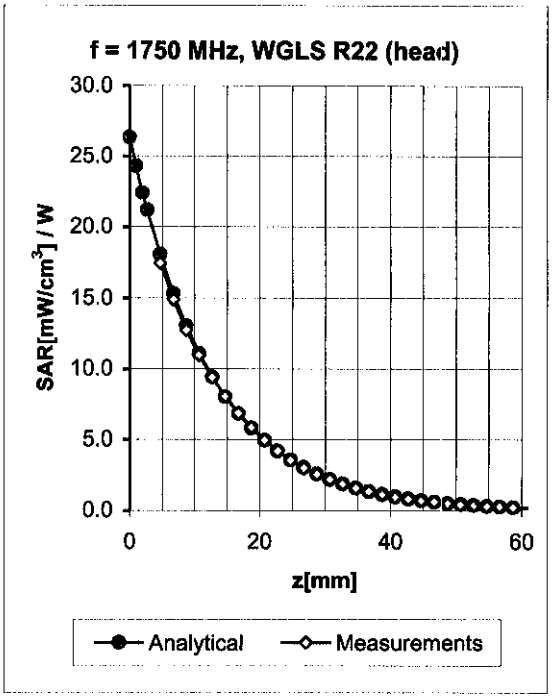




Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment



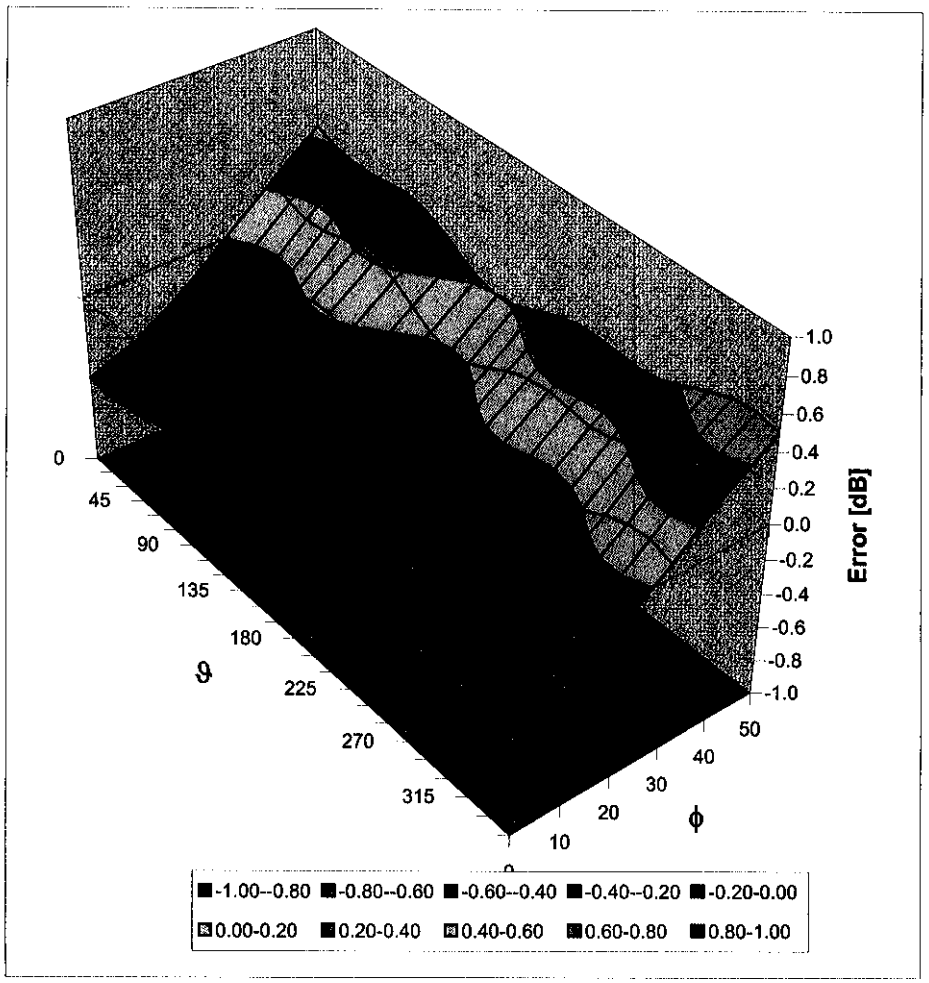


f [MHz]	Validity [MHz][C]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
835	± 50 / ± 100	Head	41.5 ± 5%	0.90 ± 5%	0.27	2.56	6.89 ± 11.0% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.28	2.66	6.85 ± 11.0% (k=2)
1750	± 50 / ± 100	Head	40.1 ± 5%	1.37 ± 5%	0.44	2.88	5.47 ± 11.0% (k=2)
1900	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.48	2.69	5.33 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.51	2.39	4.72 ± 11.8% (k=2)
835	± 50 / ± 100	Body	55.2 ± 5%	0.97 ± 5%	0.25	2.73	6.94 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.28	2.77	6.57 ± 11.0% (k=2)
1750	± 50 / ± 100	Body	53.4 ± 5%	1.49 ± 5%	0.52	2.90	4.96 ± 11.0% (k=2)
1900	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.62	2.56	4.79 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.52	1.97	4.17 ± 11.8% (k=2)

[C] **The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.**

Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



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