Sony Ericsson

Company Internal
REPORT

Prepared (also subject responsible if other)		No.		
LD/SEMC/BGLIM *Ramadan Plicanic*		*BGLI08:177*		
Approved	Checked	Date	Rev	Reference
LD/SEMC/BGLIMC *Peter Lindeborg*	*080313*	*080313*	A	File

Report issued by Accredited SAR Laboratory

For

PY7A3052081 (C702)

Date of test: *25, 28 February, 10, 11 March 2008*

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

Testing Engineer:
Ramadan Plicanic
Ramadan.Plicanic@sonyericsson.com
+46 46 19 38 62

Testing Approval
Peter Lindeborg
Peter.Lindeborg@sonyericsson.com
+46 46 212 61 80

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

Sony Ericsson Type AAD-3052081-BV; FCC ID: PY7A3052081; IC:4170B-A3052081

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)

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2 Introduction

In this test report, compliance of the Sony Ericsson PY7A3052081 (C702) 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].

3 Device under Test

3.1 Antenna Description

Type	Internal antenna	
Location	Inside, Rear, on the top	
Dimensions	Max length	40mm
	Max width	12mm
Configuration	PIFA	

3.2 Device description

Device model	**PY7A3052081(C702)**					
Serial number	**CB510WLBAV (#10701)**					
Mode	**GSM 850**			**GSM1900**		
Crest Factor	**8.3**			**8.3**		
Multiple Access Scheme	**TDMA**			**TDMA**		
Output Power (dBm)	**Ch128**	**Ch190**	**Ch251**	**Ch512**	**Ch661**	**Ch810**
	31.5	**31.5**	**31.5**	**30.2**	**30.2**	**30.2**
Factory Tolerance in Power Setting	**±0.5dB**			**±0.5dB**		
Maximum Peak Output Power (dBm)	**32.0**	**32.0**	**32.0**	**30.7**	**30.7**	**30.7**
Transmitting Frequency Range(MHz)	**824.2-848.8**			**1850.2 – 1909.8**		
Prototype or Production Unit	**Preproduction HW AP1.1**					
Device Category	**Portable**					
RF exposure environment	**General population / uncontrolled**					
Mode	**GPRS/EDGE**			**GPRS/EDGE**		
Crest Factor	**4.15**			**4.15**		
Output Power (dBm)	**Ch128**	**Ch190**	**Ch251**	**Ch128**	**Ch190**	**Ch25**
	30.5/26.5	**30.5/26.5**	**30.5/26.5**	**28.0/25.5**	**28.0/25.5**	**28.0/25.5**
Factory Tolerance in Power Setting	**±0.5dB**			**±0.5dB**		
Maximum Peak Output Power (dBm)	**31.0/27.0**	**31.0/27.0**	**31.0/27.0**	**28.5/26.0**	**28.5/26.0**	**28.5/26.0**
GPRS Multislot class	**10**			**10**		
GPRS capability class	**B**			**B**		

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4 Test equipment

4.1 Dosimetric system

SAR measurements were made using the DASY4 professional system (software version 4.7, Build 53) with SAM twin phantom, manufactured by Schmid & Partner Engineering AG (SPEAG). The list of calibrated equipment is given below.

Description	***Serial Number***	***Due Date***
DASY DAE V1	640	01 2009
E-field probe ES3DV6	3062	01 2009
Dipole Validation Kit, D835V2	4d039	01 2010
Dipole Validation Kit, D1900V2	5d073	01 2010

4.2 Additional equipment

Description	***Inventory Number***	***Due Date***
Signal generator ESG-D4000A	INV 462935	032009
Directional coupler HP778D	INV 2903	032009
Power meter R&S NRVD	INV 20007668	032009
Power sensor R&S NRV-Z5	INV 20007670	032009
Power sensor R&S NRV-Z5	INV 20007671	032009
Termination 65N50-0-11	INV 2903	032009
Network analyzer HP8753C	INV421671	032009
S-parameter test set HP85047A	INV 421670	032009
Dielectric probe kit HP85070D	INV 20000053	Self cal

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5 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	Limits / Measured	Dielectric Parameters		
			ε_r	σ (S/m)	ρ (g/cm³)
850	Head	**Measured, 25 February 2008**	42.3	0.89	1.00
		Recommended	41.5	0.90	1.00
	Body	**Measured, 11 March 2008**	54.7	0.99	1.00
		Recommended	55.2	0.97	1.00
1900	Head	**Measured, 28 February 2008**	38.2	1.47	1.00
		Recommended	40.0	1.40	1.00
	Body	**Measured, 10 March 2007**	52.2	1.59	1.00
		Recommended	53.3	1.52	1.00

6 System accuracy verification

A system accuracy verification of the DASY4 was performed using the dipole validation kits listed in section 3.1. Measurement made in ambient temperature (22.0-23.0) °C and humidity (32-36) %. The obtained results are displayed in the table below.

RF noise had been measured in liquid when all RF equipment in lab was set off. Measured value was 0.000018mW/g in 1g mass

f (MHz)	Tissue type	Measured / Reference	SAR (W/kg) 1g/10g	Dielectric Parameters			Liquid t(°C)
				ε_r	σ (S/m)	ρ (g/cm³)	
850	Head	**Measured, 25 Feb. 2008**	9.18/6.03	42.3	0.89	1.00	22.3
		Reference	9.68/6.38	41.5	0.90	1.00	22.0
	Body	**Measured, 11 March 2007**	9.79/6.43	54.7	0.99	1.00	21.2
		Reference	9.41/6.25	55.2	0.97	1.00	22.0
1900	Head	**Measured, 28 Feb. 2007**	42.0/21.4	38.2	1.47	1.00	21.5
		Reference	38.3/20.5	40.0	1.40	1.00	22.0
	Body	**Measured, 10 March 2007**	41.0/21.0	52.2	1.59	1.00	21.0
		Reference	37.9/20.3	53.3	1.52	1.00	22.0

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7 SAR measurement uncertainty

SAR measurement uncertainty evaluation for Sonyericsson PY7A3052081 (C702) 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	±1.0
Linearity	±4.7	R	√3	1	±2.7
System Detection Limits	±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
Probe Positioner	±0.4	R	√3	1	±0.2
Probe Positioning	±2.9	R	√3	1	±1.7
Max. SAR Evaluation	±1.0	R	√3	1	±0.6
Measurement System Uncertainty					***±8.4***
Test Sample Related					
Device positioning	±2.9	N	1	1	±2.9
Device holder uncertainty	±3.6	N	1	1	±3.6
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 (measurement)	±2.5	N	1	0.64	±1.6
Liquid conductivity (target)	±5.0	R	√3	0.64	±1.8
Liquid Permittivity (measurement)	±2.5	N	1	0.6	±1.5
Liquid Permittivity (target)	±5.0	R	√3	0.6	±1.7
Phantom and Tissue Parameters Uncertainty					***±4.0***
Combined standard uncertainty					***±10.8***
Extended standard uncertainty (k=2)					***±21.6***

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8 Test results

The measured 1-gram averaged SAR values of the device against head and body are provided in tables1 and 2. The ambient humidity and temperature of test facility were 32%-36% and 22.0°C–23.0°C respectively. The depth of tissue simulating liquid for head and body were 15.6cm and 15.5cm. A base station simulator was used to control the device during the SAR measurement. The phone was supplied with full-charged battery for each measurement.

For head measurement, the device was tested on the right-hand phantom (corresponding to the right side of the head) and the left-hand phantom in two phone position, cheek (touch) and tilt (cheek + 15deg).

For body measurement phone was tested on the antenna (back) and front (worst case in data mode) against flat section of phantom with 15mm distance in data and speech mode. The device was tested at the lowest, middle and highest frequencies in the transmit band. For Hands free used Sony Ericsson head set HPH-60 or for BT portable hands free HBH-610a

Mode	Channel	Power (dB)	Phone Position	Liquid t (°C)	SAR (W/kg)	
					Right-hand	Left-hand
					1g mass	1g mass
1900 GSM Head	512	30.7	**Cheek**	21.5	0.84	0.93
			Tilt	21.5	0.73	0.88
	661	30.6	**Cheek**	21.5	1.00	1.15
			Tilt	21.5	0.95	1.13
	810	30.6	**Cheek**	21.5	1.11	**1.27**
			Tilt	21.5	1.07	1.26
850 GSM Head	128	31.9	**Cheek**	22.3	0.74	0.66
			Tilt	22.3	0.50	-
	189	32.0	**Cheek**	22.3	1.16	1.05
			Tilt	22.3	0.82	0.78
	251	32.0	**Cheek**	22.3	**1.43**	1.31
			Tilt	22.3	0.89	-

Table1: SAR measurement result for Sony Ericsson PY7A3052081 (C702) telephone at highest possible output power. The phone has measured against head.

Mode	Channel	Power (dBm)	Phone Position	Liquid t (°C)	SAR (W/kg) in 1 g mass
GSM 1900 Body	512	30.7	**Antenna to phantom BT HBH-610a**	21.0	0.36
		28.6	**Antenna to phantom GPRS2TX**	21.0	0.44
	661	30.6	**Antenna to phantom BT HBH-610a**	21.0	0.41
		28.5	**Antenna to phantom GPRS2TX**	21.0	0.64
	810	30.6	**Antenna to phantom BT HBH-610a**	21.0	0.43
		28.5	**Antenna to phantom GPRS2TX**	21.0	**0.66**
		28.5	**Front to phantom GPRS2TX**	21.0	0.31
		30.6	**Antenna to phantom PHF HPH-60**	21.0	0.38
		26.1	**Antenna to phantom EDGE2Tx**	21.0	0.35
GSM 850 Body	128	31.9	**Antenna to phantom BT HBH-610a**	21.2	0.93
		31.0	**Antenna to phantom GPRS2TX**	21.2	**1.16**
		31.0	**Front to phantom GPRS2TX**	21.2	0.81
		31.9	**Antenna to phantom PHF HPH-60**	21.2	0.60
		27.0	**Antenna to phantom EDGE2Tx**	21.2	0.59
	190	32.0	**Antenna to phantom BT HBH-610a**	21.2	0.86
		31.0	**Antenna to phantom GPRS2TX**	21.2	1.03
	251	32.0	**Antenna to phantom BT HBH-610a**	21.2	0.72
		31.9	**Antenna to phantom GPRS2TX**	21.2	0.90

Table2: SAR measurement result for Sony Ericsson PY7A3052081 (C702) telephone at highest possible output power. The phone has measured against the Body.

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9 References

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

[2] Basic standard for the Measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300MHz-3GHz), European Standard EN 50361, July 2001

[3] 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).

[4] 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.

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10 Appendix

10.1 Photographs of the device under test

Front & Back side

Back with Battery

System Connector

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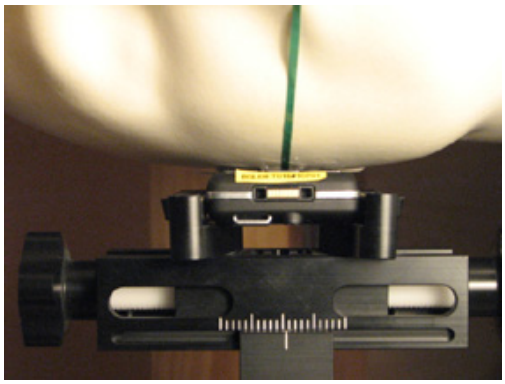
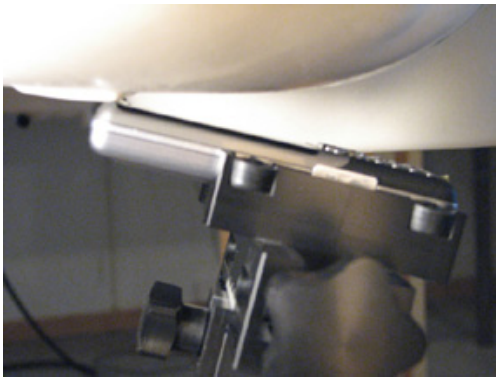
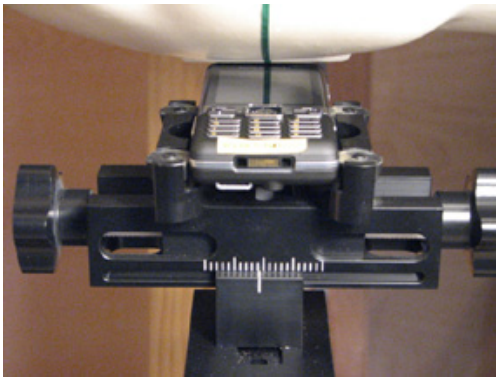
10.2 Device position on SAM Twins Phantom



Device position against the head: Cheek (touch) phone position





Device position against the head: Tilt (cheek+15deg) phone position

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Device position against the body: Phone on 15mm distance against Phantom

10.3 Attachment

- Probe & Dipole Calibration
- Measurement plots and system validation
- Annex

Date/Time: 2008-02-28 10:59:35

Test Laboratory: Sony Ericsson Mobile Communications
File Name: SystemPerformanceCheck_Head_080228_RP.da4

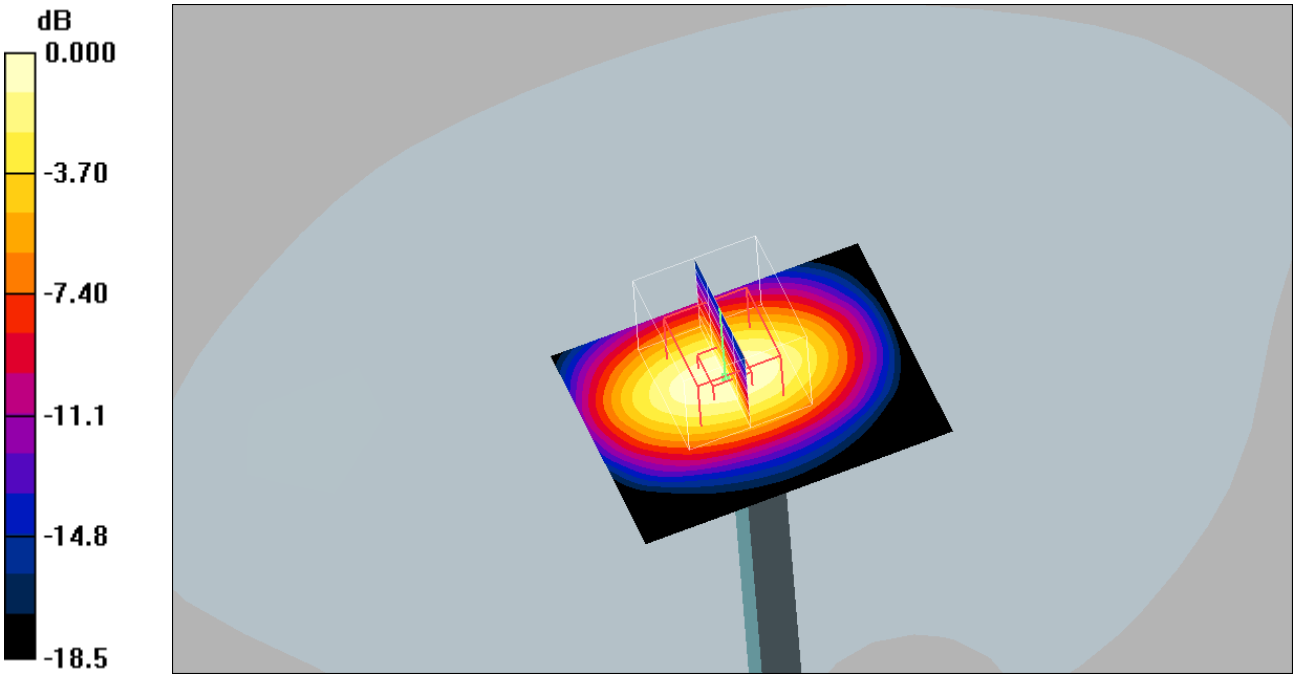
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d073
Program Name: System Performance Check at 1900 MHz - Head Simulating Liquid

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.47 mho/m; ε_r = 38.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3062; ConvF(4.74, 4.74, 4.74); Calibrated: 2008-01-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn640; Calibrated: 2008-01-21
- Phantom: SAM 5; Type: SAM; Serial: 1352
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 171

d=10mm, Pin=100mW/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 4.71 mW/g

d=10mm, Pin=100mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 49.4 V/m; Power Drift = -0.006 dB
Peak SAR (extrapolated) = 8.06 W/kg
SAR(1 g) = 4.21 mW/g; SAR(10 g) = 2.14 mW/g
Maximum value of SAR (measured) = 4.73 mW/g



0 dB = 4.73mW/g

Date/Time: 2008-02-25 09:28:38

Test Laboratory: Sony Ericsson Mobile Communications

SystemPerformanceCheck_Head_080225_RP

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d039

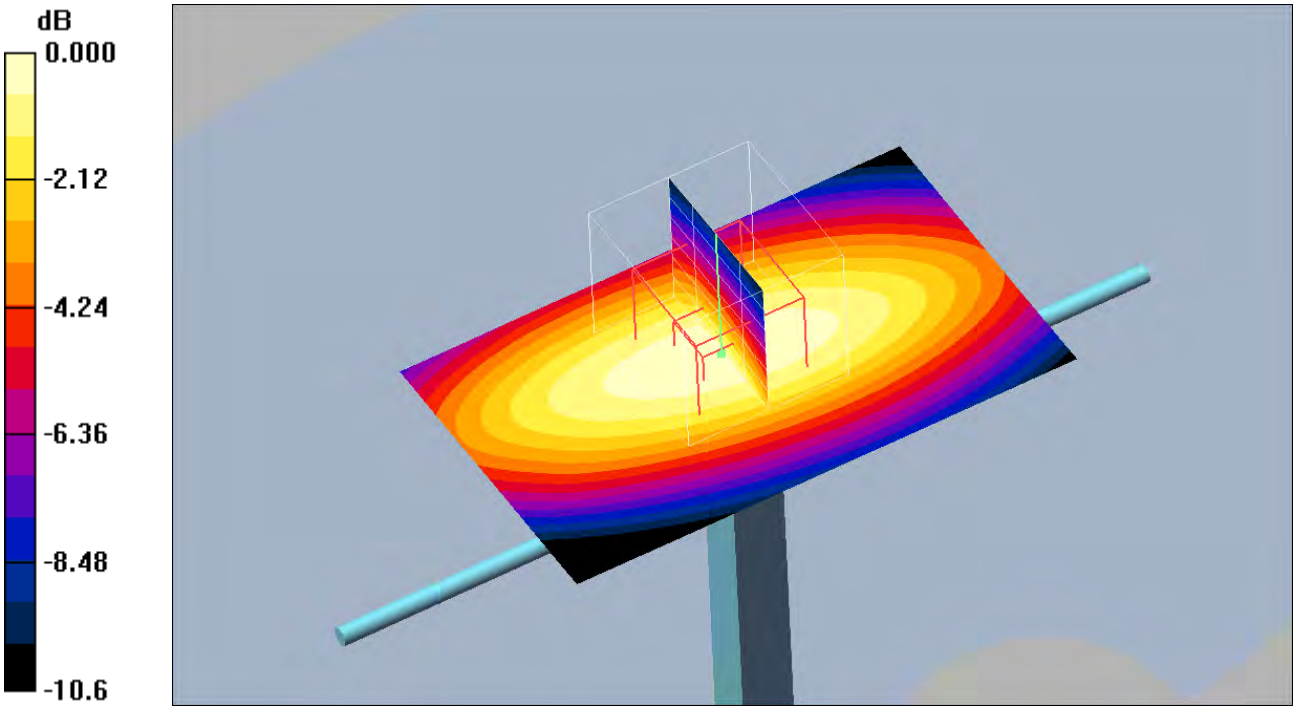
Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.89 mho/m; ε_r = 42.3; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3062; ConvF(6.15, 6.15, 6.15); Calibrated: 2008-01-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn640; Calibrated: 2008-01-21
- Phantom: SAM 6; Type: SAM; Serial: 1351
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 171

d=15mm, Pin=100mW/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.980 mW/g

d=15mm, Pin=100mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 33.4 V/m; Power Drift = -0.056 dB
Peak SAR (extrapolated) = 1.34 W/kg
SAR(1 g) = 0.918 mW/g; SAR(10 g) = 0.603 mW/g
Maximum value of SAR (measured) = 0.994 mW/g



0 dB = 0.994mW/g

Date/Time: 2008-03-11 09:08:43

Test Laboratory: Sony Ericsson Mobile Communications
File Name: SystemPerformanceCheck_Body_080311_RP.da4

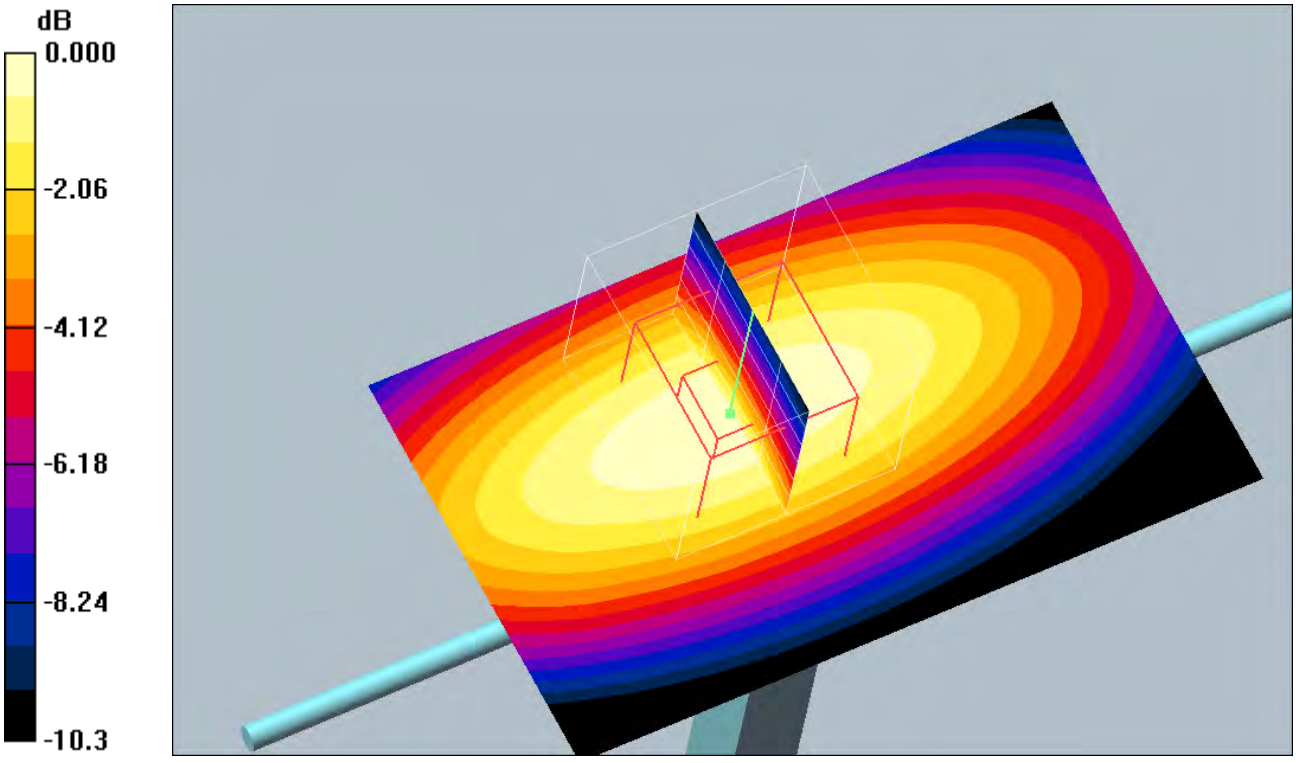
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d039
Program Name: System Performance Check at 835 MHz with BSL

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.99 mho/m; ε_r = 54.7; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3062; ConvF(6, 6, 6); Calibrated: 2008-01-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn640; Calibrated: 2008-01-21
- Phantom: SAM 5; Type: SAM; Serial: 1352
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 171

d=15mm, Pin=100mW/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.05 mW/g

d=15mm, Pin=100mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.0 V/m; Power Drift = -0.049 dB
Peak SAR (extrapolated) = 1.41 W/kg
SAR(1 g) = 0.979 mW/g; SAR(10 g) = 0.643 mW/g
Maximum value of SAR (measured) = 1.07 mW/g



0 dB = 1.07mW/g

Date/Time: 2008-03-10 10:00:06

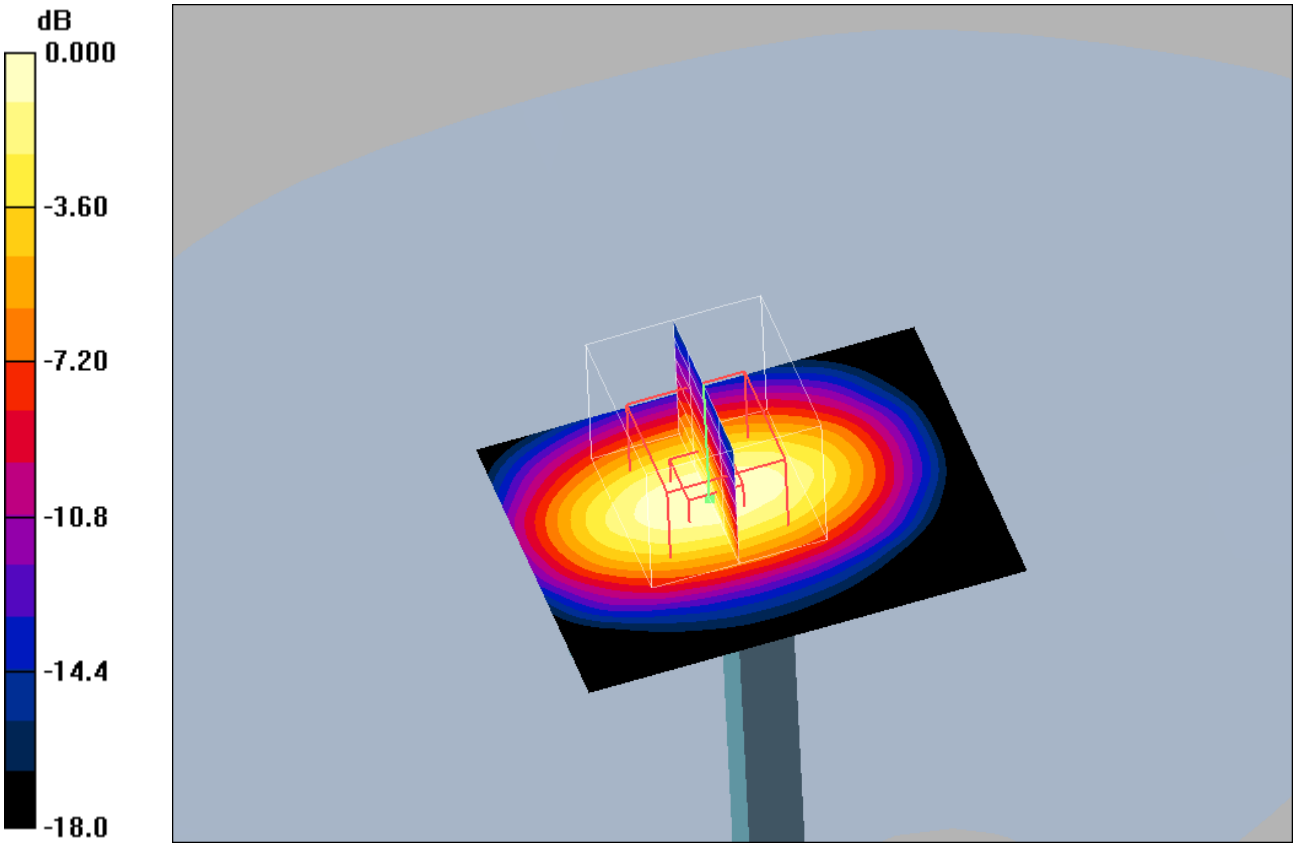
Test Laboratory: Sony Ericsson Mobile Communications
File Name: SystemPerformanceCheck_Body_080310_RP.da4

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d073
Program Name: System Performance Check at 1900 MHz - Body Simulating Liquid

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.59 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3062; ConvF(4.56, 4.56, 4.56); Calibrated: 2008-01-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn640; Calibrated: 2008-01-21
- Phantom: SAM 5; Type: SAM; Serial: 1352
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 171

d=10mm, Pin=100mW/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 4.58 mW/g
d=10mm, Pin=100mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 48.4 V/m; Power Drift = -0.008 dB
Peak SAR (extrapolated) = 7.60 W/kg
SAR(1 g) = 4.1 mW/g; SAR(10 g) = 2.1 mW/g
Maximum value of SAR (measured) = 4.62 mW/g



0 dB = 4.62mW/g

Date/Time: 2008-02-25 12:00:03

Test Laboratory: Sony Ericsson Mobile Communications

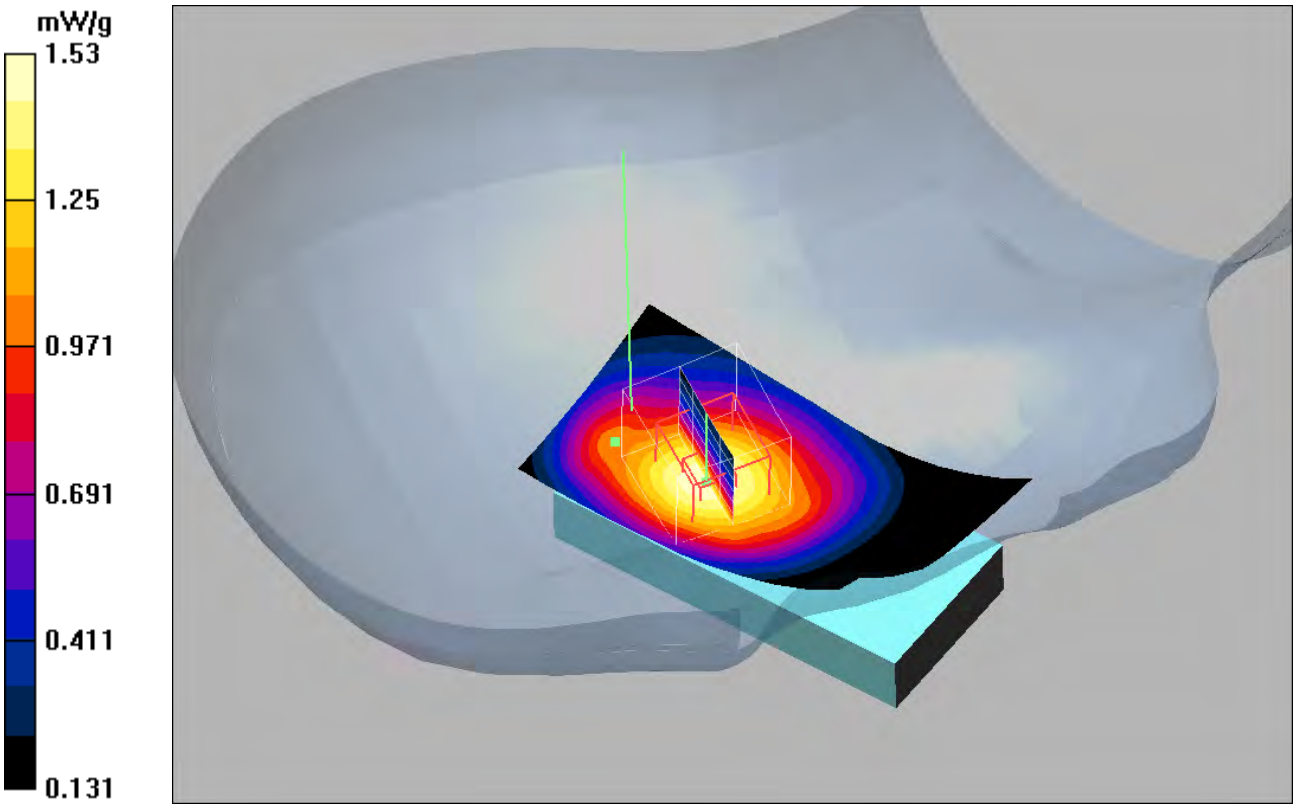
RightHandSide-GSM850_080225

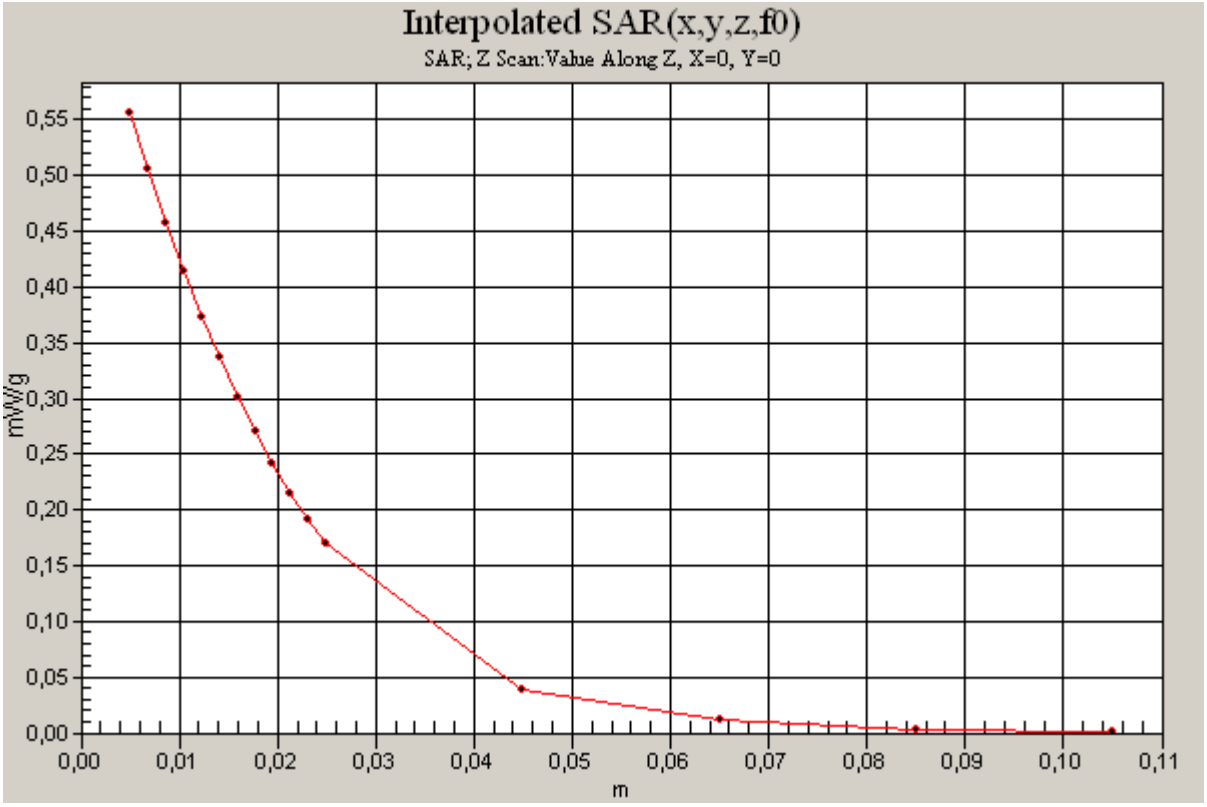
DUT: PY7A3052081; Type: GSM850,1900; Serial: #10701

Communication System: GSM835; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 848.8 MHz; σ = 0.91 mho/m; ε_r = 42.8; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3062; ConvF(6.15, 6.15, 6.15); Calibrated: 2008-01-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn640; Calibrated: 2008-01-21
- Phantom: SAM 6; Type: SAM; Serial: 1351
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 171
  Cheek position - High/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
  Maximum value of SAR (interpolated) = 1.52 mW/g
  Cheek position - High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 31.9 V/m; Power Drift = 0.061 dB
  Peak SAR (extrapolated) = 1.92 W/kg
  SAR(1 g) = 1.43 mW/g; SAR(10 g) = 0.998 mW/g
  Maximum value of SAR (measured) = 1.53 mW/g
  Cheek position - High/Z Scan (1x1x16): Measurement grid: dx=20mm, dy=20mm, dz=20mm
  Maximum value of SAR (interpolated) = 0.556 mW/g


mW/g
1.53
1.25
0.971
0.691
0.411
0.131


Interpolated SAR(x,y,z,f0)
SAR; Z Scan:Value Along Z, X=0, Y=0
mW/g
0,55
0,50
0,45
0,40
0,35
0,30
0,25
0,20
0,15
0,10
0,05
0,00
0,00
0,01
0,02
0,03
0,04
0,05
0,06
0,07
0,08
0,09
0,10
0,11
m

Date/Time: 2008-02-25 13:36:26

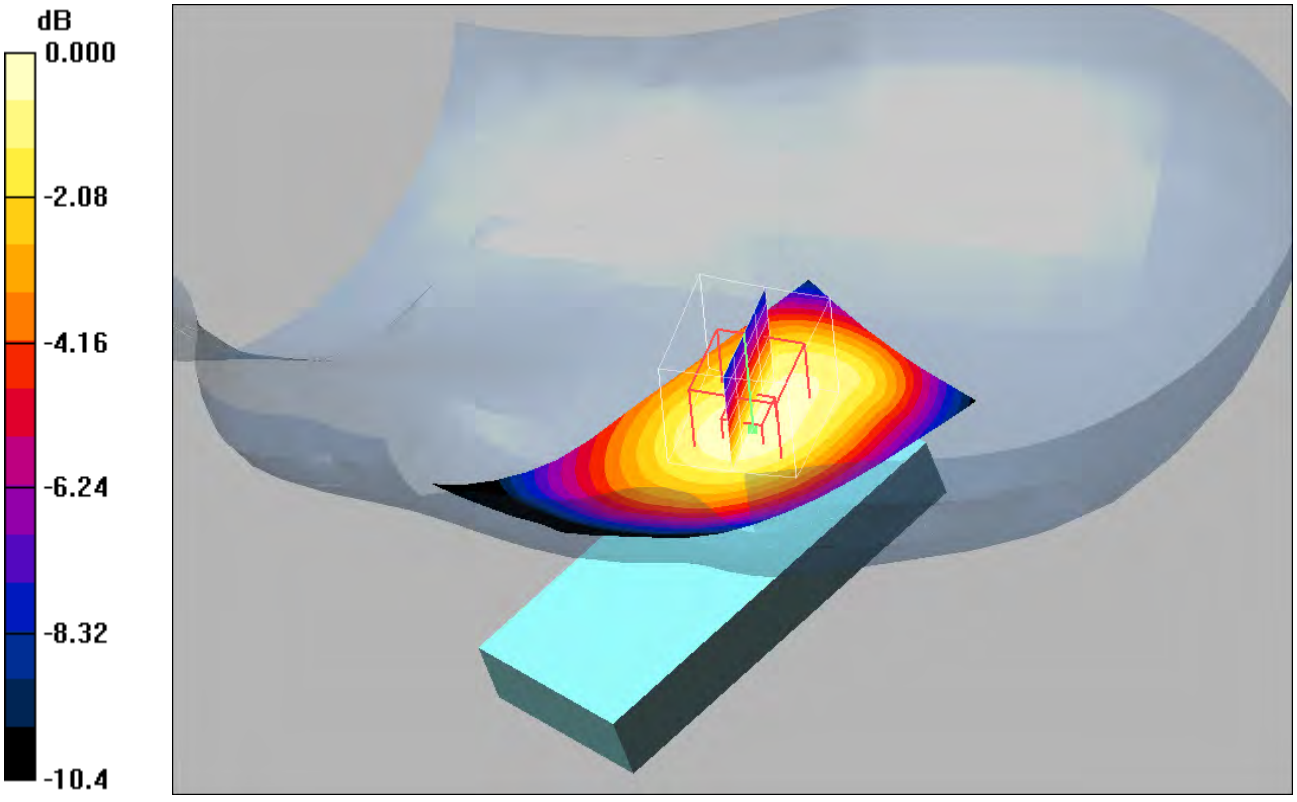
Test Laboratory: Sony Ericsson Mobile Communications
File Name: LeftHandSide-GSM850_080225.da4

DUT: PY7A3052081; Type: GSM850,1900; Serial: #10701
Program Name: ETA Testing: Left-Hand Side

Communication System: GSM835; Frequency: 836.4 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 836.6 MHz; σ = 0.9 mho/m; ε_r = 43; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3062; ConvF(6.15, 6.15, 6.15); Calibrated: 2008-01-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn640; Calibrated: 2008-01-21
- Phantom: SAM 6; Type: SAM; Serial: 1351
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 171

Tilt position-Middle/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.833 mW/g
Tilt position-Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.0 V/m; Power Drift = -0.010 dB
Peak SAR (extrapolated) = 1.03 W/kg
SAR(1 g) = 0.779 mW/g; SAR(10 g) = 0.550 mW/g
Maximum value of SAR (measured) = 0.837 mW/g



0 dB = 0.837mW/g

Date/Time: 2008-02-25 13:57:55

Test Laboratory: Sony Ericsson Mobile Communications
File Name: LeftHandSide-GSM850_080225.da4

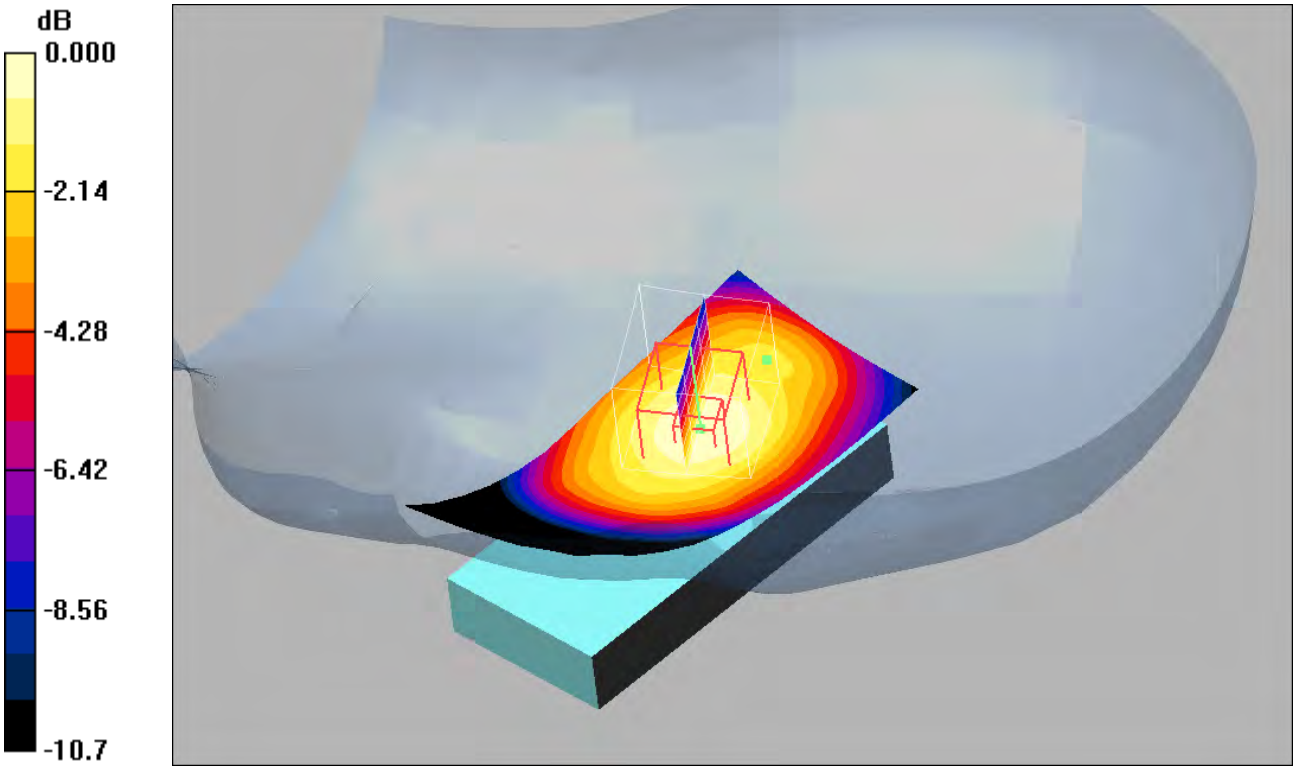
DUT: PY7A3052081; Type: GSM850,1900; Serial: #10701
Program Name: ETA Testing: Left-Hand Side

Communication System: GSM835; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 848.8 MHz; σ = 0.91 mho/m; ε_r = 42.8; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3062; ConvF(6.15, 6.15, 6.15); Calibrated: 2008-01-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn640; Calibrated: 2008-01-21
- Phantom: SAM 6; Type: SAM; Serial: 1351
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 171

Cheek position - High/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.39 mW/g

Cheek position - High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.1 V/m; Power Drift = 0.020 dB
Peak SAR (extrapolated) = 1.76 W/kg
SAR(1 g) = 1.31 mW/g; SAR(10 g) = 0.913 mW/g
Maximum value of SAR (measured) = 1.41 mW/g



0 dB = 1.41mW/g

Date/Time: 2008-02-25 11:41:26

Test Laboratory: Sony Ericsson Mobile Communications

RightHandSide-GSM850_080225

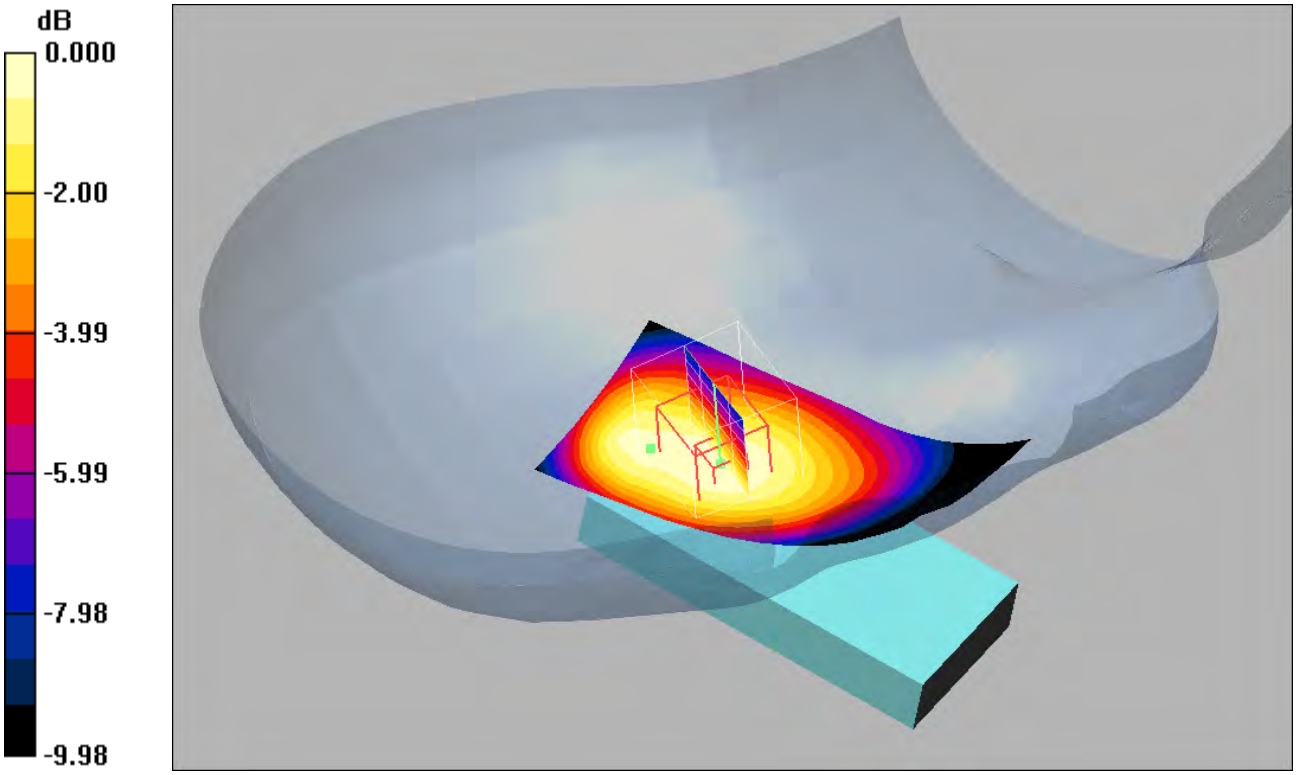
DUT: PY7A3052081; Type: GSM850,1900; Serial: #10701

Communication System: GSM835; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 848.8 MHz; σ = 0.91 mho/m; ε_r = 42.8; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3062; ConvF(6.15, 6.15, 6.15); Calibrated: 2008-01-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn640; Calibrated: 2008-01-21
- Phantom: SAM 6; Type: SAM; Serial: 1351
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 171
  Tilt position-High/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
  Maximum value of SAR (interpolated) = 0.965 mW/g

  Tilt position-High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 30.3 V/m; Power Drift = -0.021 dB
  Peak SAR (extrapolated) = 1.16 W/kg
  SAR(1 g) = 0.893 mW/g; SAR(10 g) = 0.638 mW/g
  Maximum value of SAR (measured) = 0.954 mW/g



0 dB = 0.954mW/g

Date/Time: 2008-02-28 13:08:35

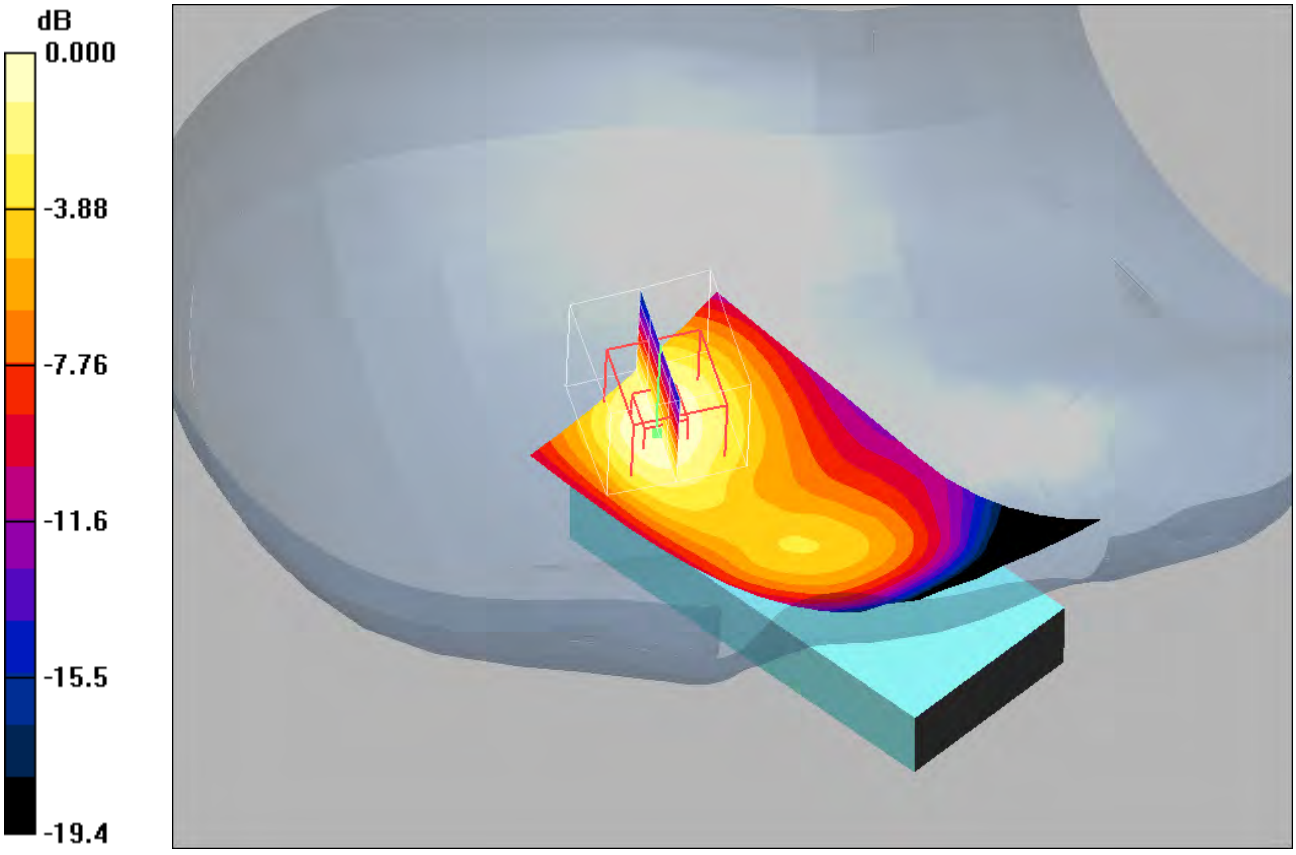
Test Laboratory: Sony Ericsson Mobile Communications
File Name: RightHandSide-GSM1900_080228.da4

DUT: PY7A3052081 (C702); Type: GSM900,1800, UMTS band1; Serial: #10701
Program Name: ETA Testing: Right-Hand Side

Communication System: GSM 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1910 MHz; σ = 1.47 mho/m; ε_r = 38.1; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3062; ConvF(4.74, 4.74, 4.74); Calibrated: 2008-01-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn640; Calibrated: 2008-01-21
- Phantom: SAM 5; Type: SAM; Serial: 1352
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 171

Cheek position - High/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.25 mW/g
Cheek position - High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.9 V/m; Power Drift = 0.014 dB
Peak SAR (extrapolated) = 1.92 W/kg
SAR(1 g) = 1.11 mW/g; SAR(10 g) = 0.605 mW/g
Maximum value of SAR (measured) = 1.26 mW/g



0 dB = 1.26mW/g

Date/Time: 2008-02-28 14:35:06

Test Laboratory: Sony Ericsson Mobile Communications
File Name: LeftHandSide-GSM1900_080228.da4

DUT: PY7A3052081 (C702); Type: GSM900,1800, UMTS band1; Serial: #10701
Program Name: ETA Testing:Left-Hand Side

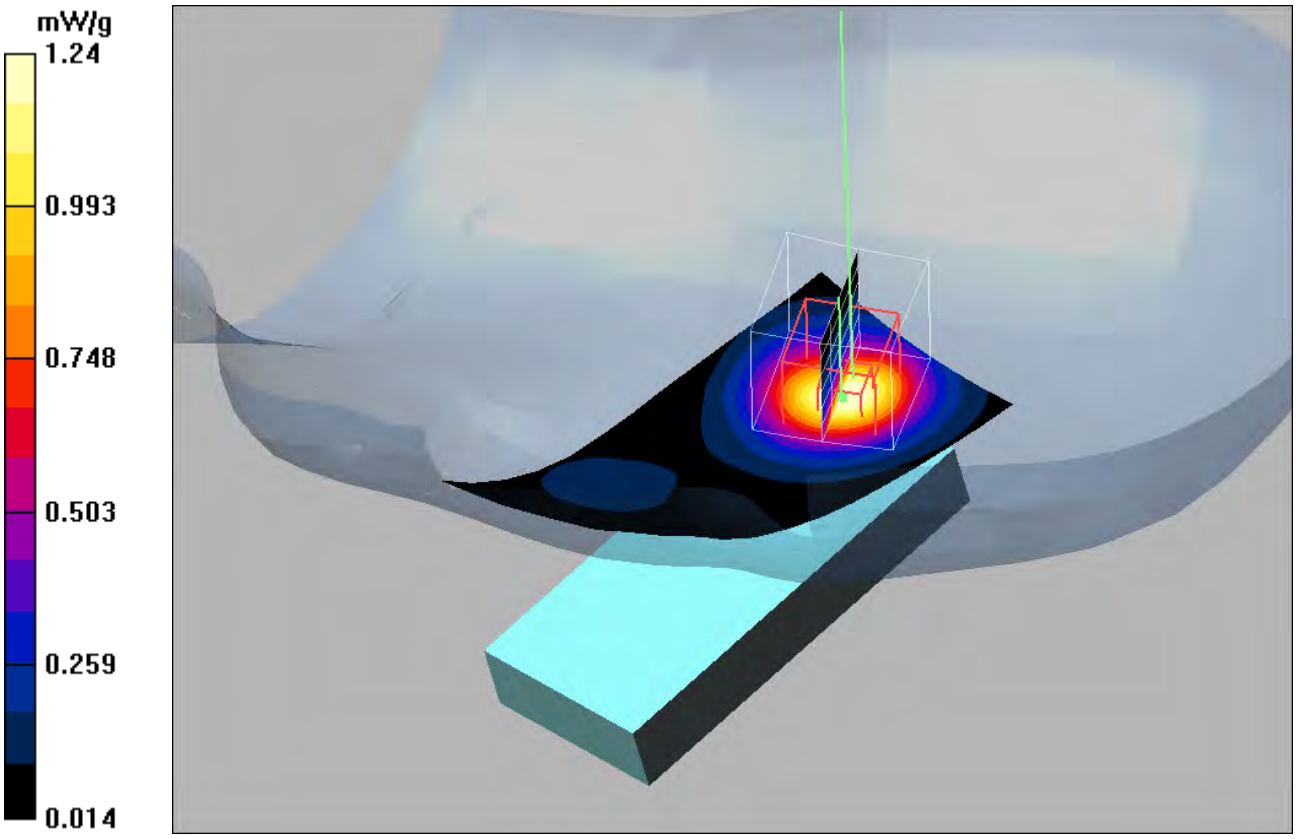
Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.45 mho/m; ε_r = 38.2; ρ = 1000 kg/m^3
Phantom section: Left Section

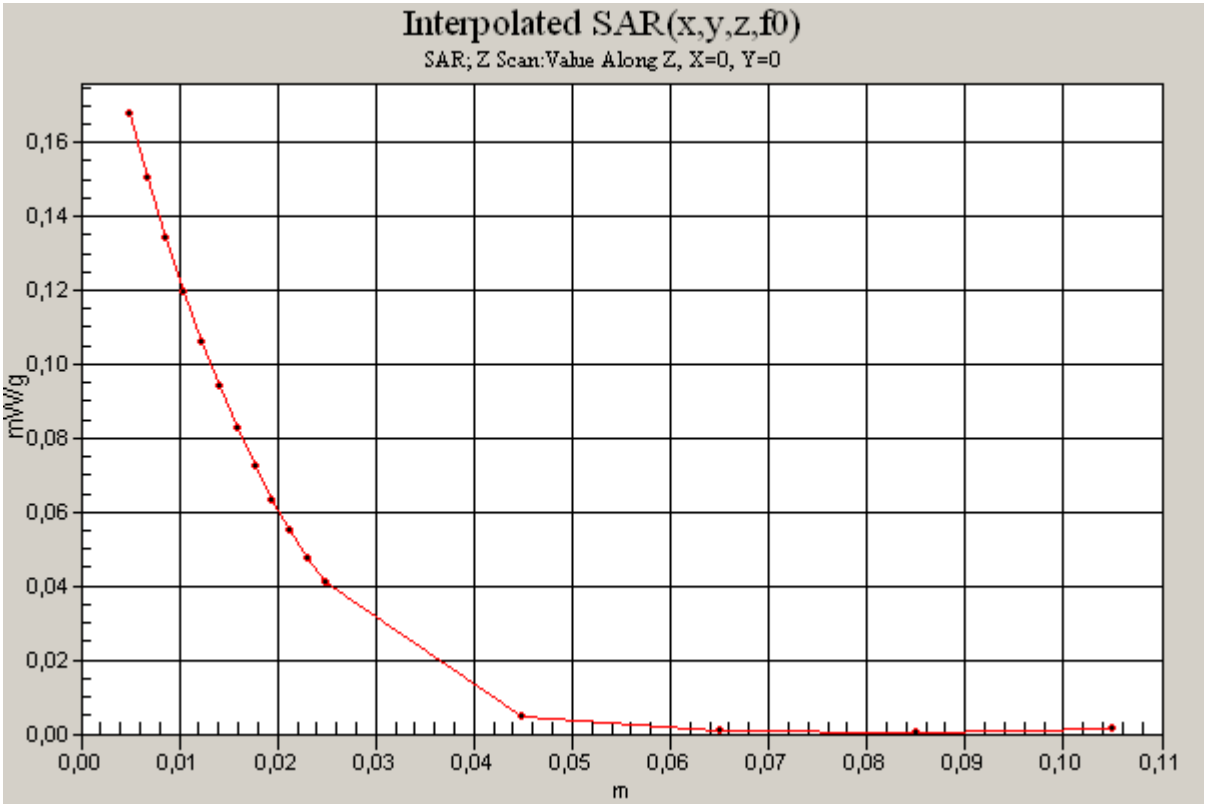
DASY4 Configuration:
- Probe: ES3DV3 - SN3062; ConvF(4.74, 4.74, 4.74); Calibrated: 2008-01-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn640; Calibrated: 2008-01-21
- Phantom: SAM 5; Type: SAM; Serial: 1352
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 171

Tilt position-Middle/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.27 mW/g

Tilt position-Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.5 V/m; Power Drift = 0.060 dB
Peak SAR (extrapolated) = 2.09 W/kg
SAR(1 g) = 1.13 mW/g; SAR(10 g) = 0.590 mW/g
Maximum value of SAR (measured) = 1.24 mW/g

Tilt position-Middle/Z Scan (1x1x16): Measurement grid: dx=20mm, dy=20mm, dz=20mm
Maximum value of SAR (interpolated) = 0.168 mW/g


mW/g
1.24
0.993
0.748
0.503
0.259
0.014


Interpolated SAR(x,y,z,f0)
SAR; Z Scan:Value Along Z, X=0, Y=0
mW/g
0,16
0,14
0,12
0,10
0,08
0,06
0,04
0,02
0,00
0,00
0,01
0,02
0,03
0,04
0,05
0,06
0,07
0,08
0,09
0,10
0,11
m

Date/Time: 2008-02-28 13:53:34

Test Laboratory: Sony Ericsson Mobile Communications
File Name: LeftHandSide-GSM1900_080228.da4

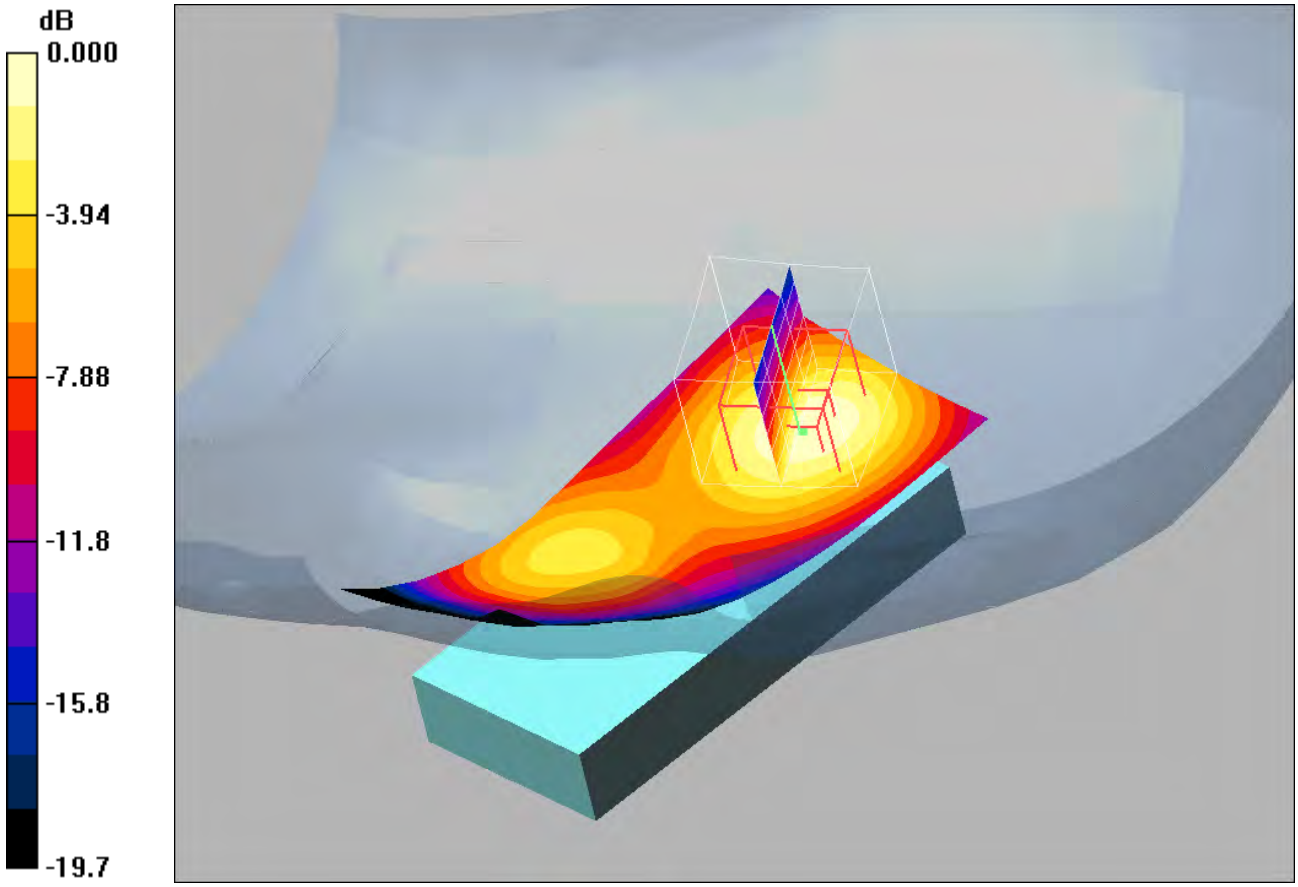
DUT: PY7A3052081 (C702); Type: GSM900,1800, UMTS band1; Serial: #10701
Program Name: ETA Testing:Left-Hand Side

Communication System: GSM 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1910 MHz; σ = 1.47 mho/m; ε_r = 38.1; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3062; ConvF(4.74, 4.74, 4.74); Calibrated: 2008-01-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn640; Calibrated: 2008-01-21
- Phantom: SAM 5; Type: SAM; Serial: 1352
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 171

Cheek position - High/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.41 mW/g

Cheek position - High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.1 V/m; Power Drift = 0.160 dB
Peak SAR (extrapolated) = 2.31 W/kg
SAR(1 g) = 1.27 mW/g; SAR(10 g) = 0.671 mW/g
Maximum value of SAR (measured) = 1.41 mW/g



0 dB = 1.41mW/g

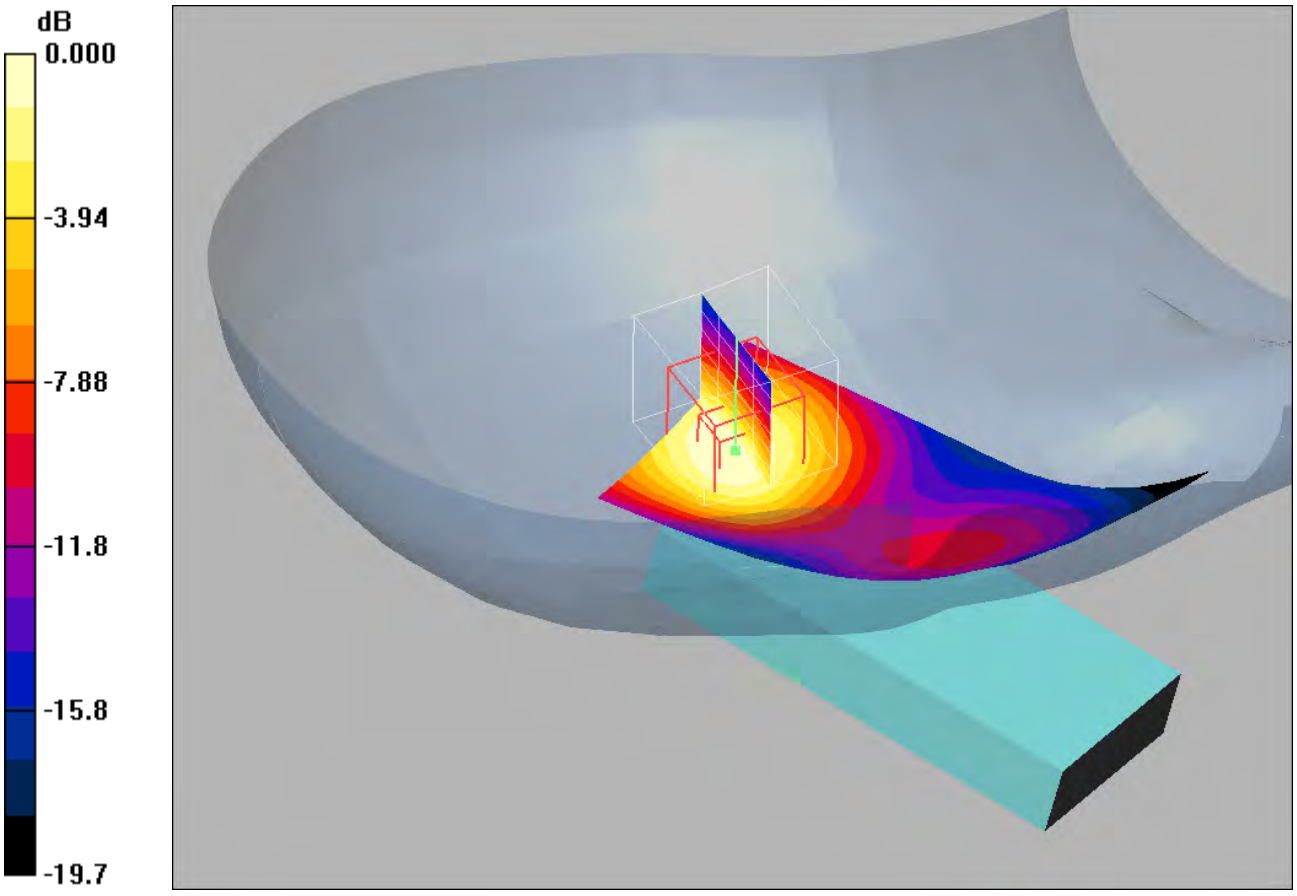
Date/Time: 2008-02-28 12:48:46

Test Laboratory: Sony Ericsson Mobile Communications
File Name: RightHandSide-GSM1900_080228.da4

DUT: PY7A3052081 (C702); Type: GSM900,1800, UMTS band1; Serial: #10701
Program Name: ETA Testing: Right-Hand Side

Communication System: GSM 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1910 MHz; σ = 1.47 mho/m; ε_r = 38.1; ρ = 1000 kg/m^3
Phantom section: Right Section DASY4 Configuration:
- Probe: ES3DV3 - SN3062; ConvF(4.74, 4.74, 4.74); Calibrated: 2008-01-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn640; Calibrated: 2008-01-21
- Phantom: SAM 5; Type: SAM; Serial: 1352
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 171

Tilt position-High/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.17 mW/g
Tilt position-High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.5 V/m; Power Drift = -0.027 dB
Peak SAR (extrapolated) = 1.94 W/kg
SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.570 mW/g
Maximum value of SAR (measured) = 1.17 mW/g



0 dB = 1.17mW/g

Date/Time: 2008-03-10 13:42:37

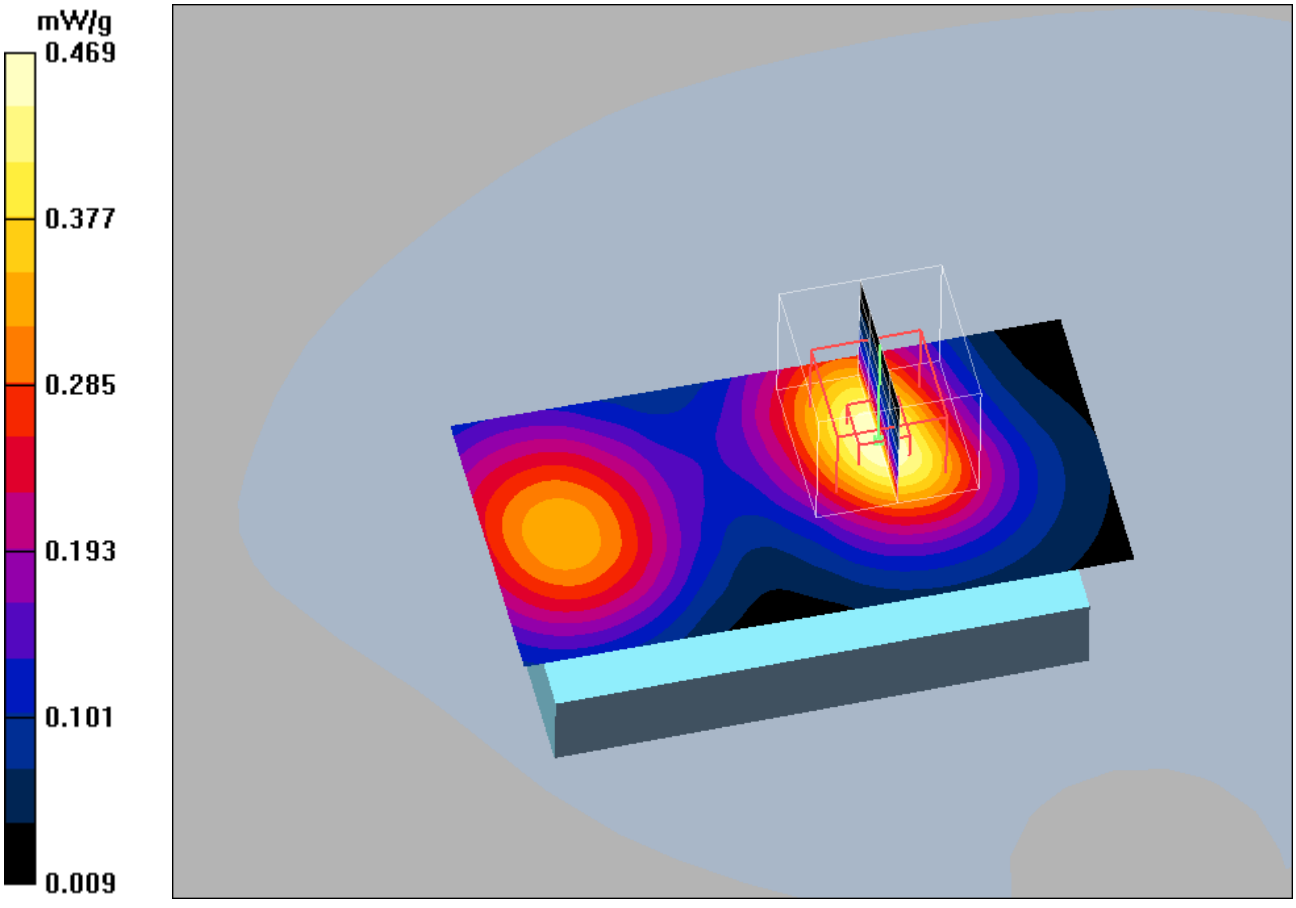
Test Laboratory: Sony Ericsson Mobile Communications
File Name: Speech_Body_080310_RP.da4

DUT: PY7A3052081 (C702); Type: GSM + UMTS; Serial: #10701
Program Name: Body SAR Measurement - Body Simulating Liquid

Communication System: GSM 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1910 MHz; σ = 1.6 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3062; ConvF(4.56, 4.56, 4.56); Calibrated: 2008-01-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn640; Calibrated: 2008-01-21
- Phantom: SAM 5; Type: SAM; Serial: 1352
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 171

d=15mm, Speech, BT - High/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.469 mW/g
d=15mm, Speech, BT - High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.77 V/m; Power Drift = 0.015 dB
Peak SAR (extrapolated) = 0.730 W/kg
SAR(1 g) = 0.427 mW/g; SAR(10 g) = 0.246 mW/g
Maximum value of SAR (measured) = 0.469 mW/g



Date/Time: 2008-03-10 12:04:51

Test Laboratory: Sony Ericsson Mobile Communications
File Name: Data_Body_080310_RP.da4

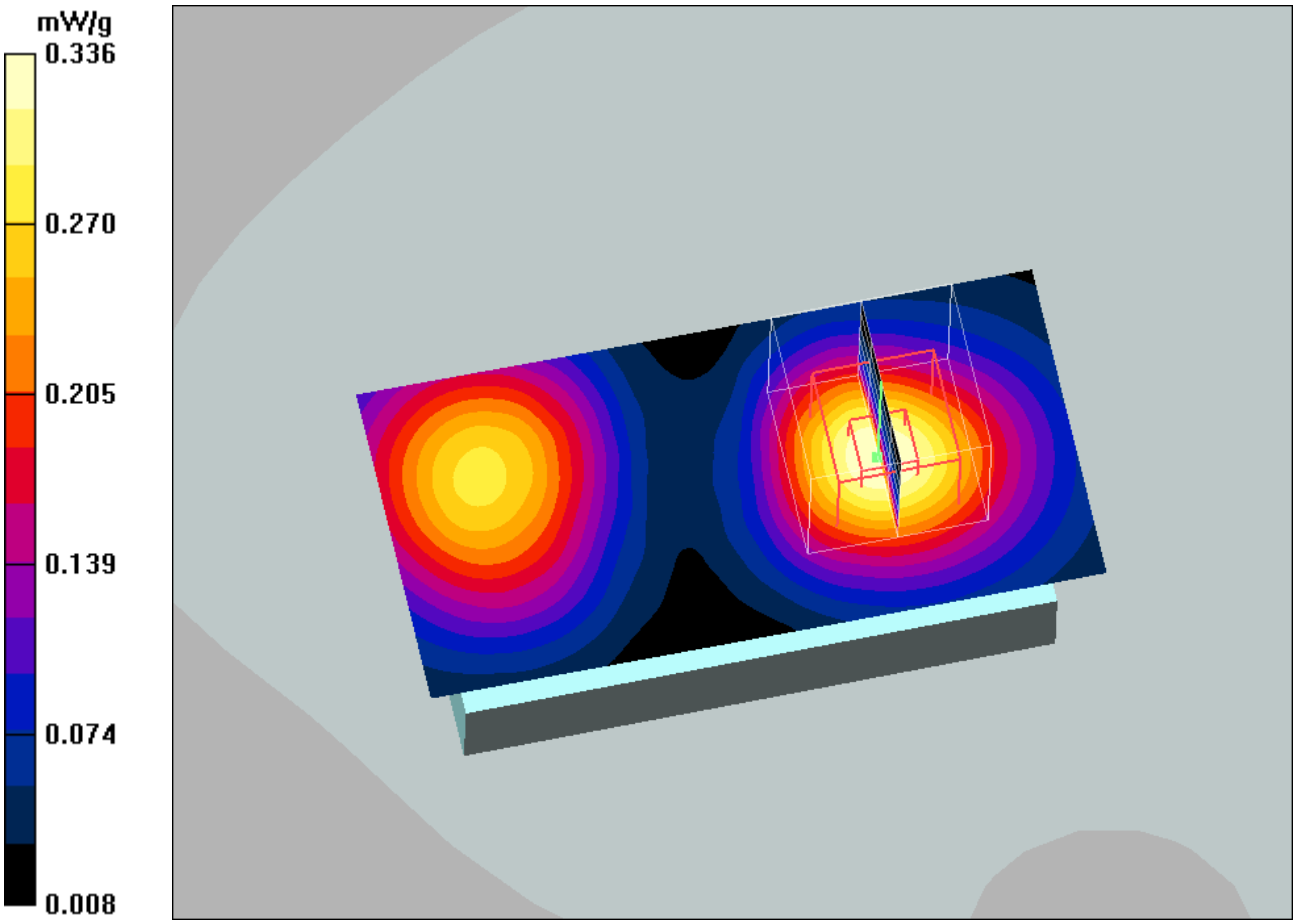
DUT: PY7A3052081 (C702); Type: GSM + UMTS; Serial: #10701
Program Name: Body SAR Measurement - Body Simulating Liquid

Communication System: GSM1900_GPRS; Frequency: 1909.8 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1910 MHz; σ = 1.6 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3062; ConvF(4.56, 4.56, 4.56); Calibrated: 2008-01-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn640; Calibrated: 2008-01-21
- Phantom: SAM 5; Type: SAM; Serial: 1352
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 171

d=15mm, Data, GPRS, Front - High/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.340 mW/g

d=15mm, Data, GPRS, Front - High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.2 V/m; Power Drift = -0.077 dB
Peak SAR (extrapolated) = 0.494 W/kg
SAR(1 g) = 0.309 mW/g; SAR(10 g) = 0.182 mW/g
Maximum value of SAR (measured) = 0.336 mW/g


mW/g
0.336
0.270
0.205
0.139
0.074
0.008

Date/Time: 2008-03-10 11:45:38

Test Laboratory: Sony Ericsson Mobile Communications
File Name: Data_Body_080310_RP.da4

DUT: PY7A3052081 (C702); Type: GSM + UMTS; Serial: #10701
Program Name: Body SAR Measurement - Body Simulating Liquid

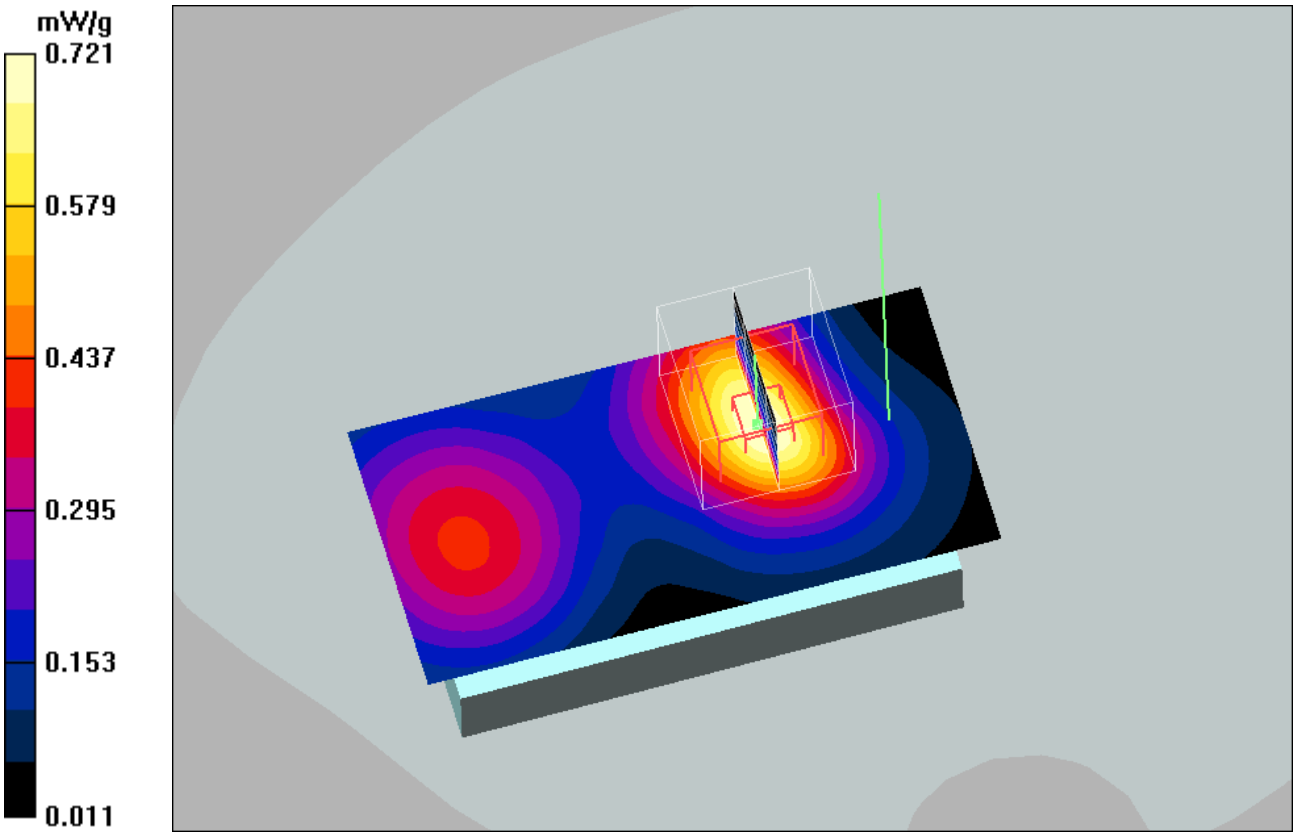
Communication System: GSM1900_GPRS; Frequency: 1909.8 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1910 MHz; σ = 1.6 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

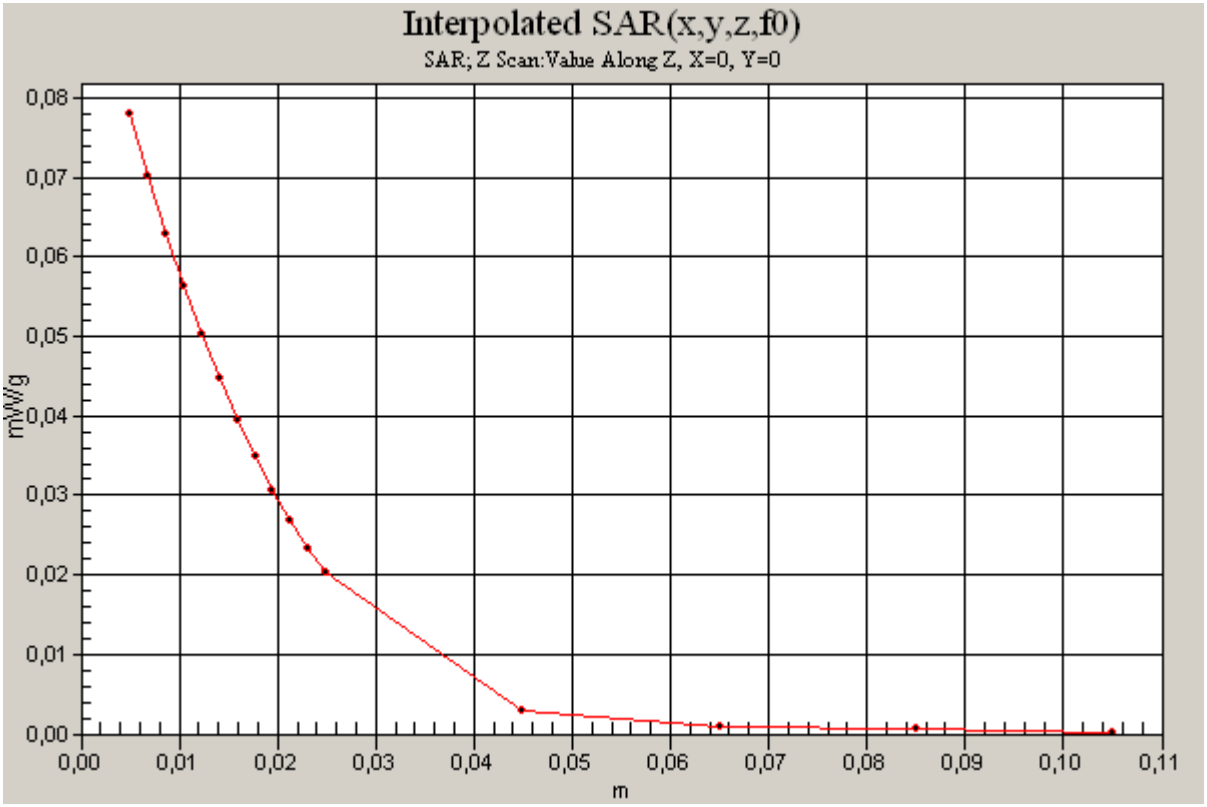
DASY4 Configuration:
- Probe: ES3DV3 - SN3062; ConvF(4.56, 4.56, 4.56); Calibrated: 2008-01-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn640; Calibrated: 2008-01-21
- Phantom: SAM 5; Type: SAM; Serial: 1352
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 171

d=15mm, Data, GPRS - High/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.723 mW/g

d=15mm, Data, GPRS - High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.8 V/m; Power Drift = -0.089 dB
Peak SAR (extrapolated) = 1.14 W/kg
SAR(1 g) = 0.656 mW/g; SAR(10 g) = 0.373 mW/g
Maximum value of SAR (measured) = 0.721 mW/g

d=15mm, Data, GPRS - High/Z Scan (1x1x16): Measurement grid: dx=20mm, dy=20mm, dz=20mm
Maximum value of SAR (interpolated) = 0.078 mW/g


mW/g
0.721
0.579
0.437
0.295
0.153
0.011


Interpolated SAR(x,y,z,f0)
SAR; Z Scan:Value Along Z, X=0, Y=0
mW/g
m
0,08
0,07
0,06
0,05
0,04
0,03
0,02
0,01
0,00
0,00
0,01
0,02
0,03
0,04
0,05
0,06
0,07
0,08
0,09
0,10
0,11

Date/Time: 2008-03-10 13:13:06

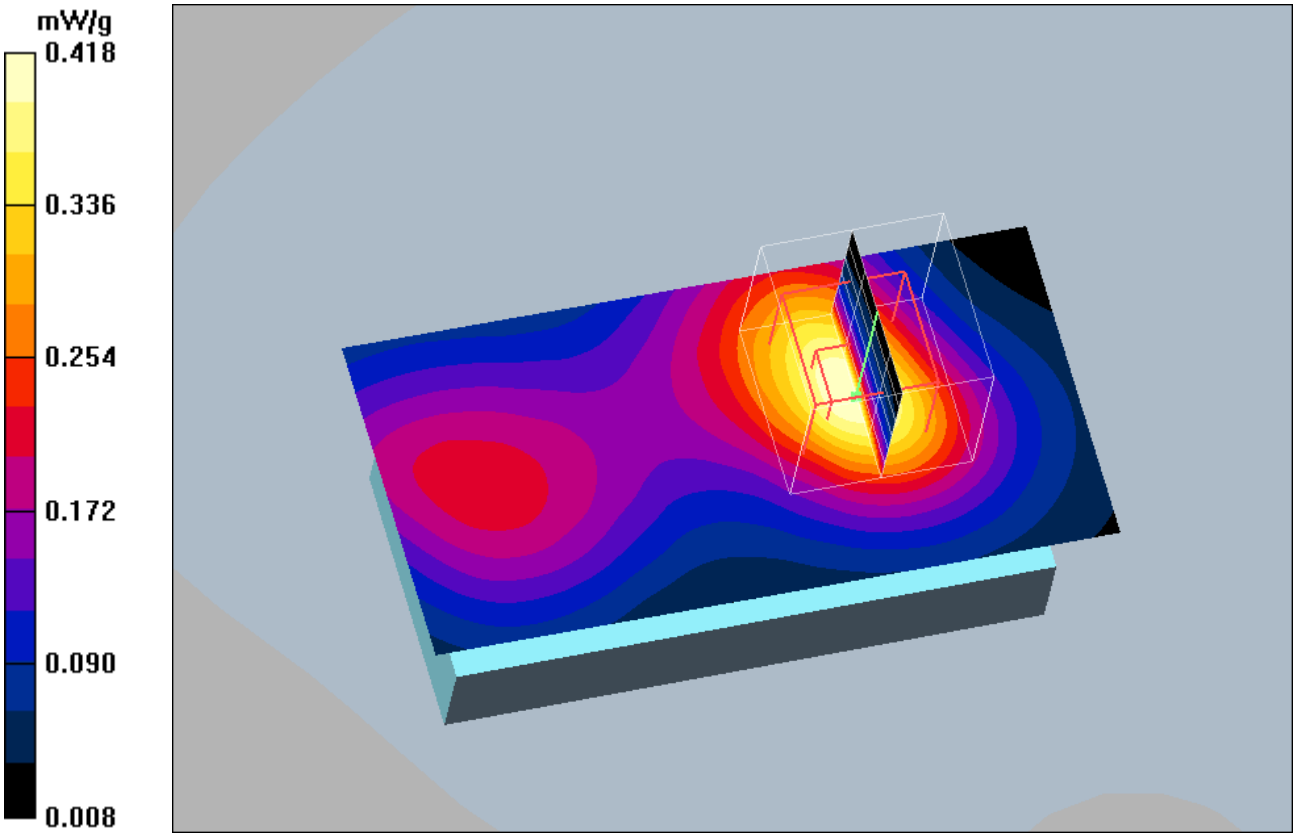
Test Laboratory: Sony Ericsson Mobile Communications
File Name: Speech_Body_080310_RP.da4

DUT: PY7A3052081 (C702); Type: GSM + UMTS; Serial: #10701
Program Name: Body SAR Measurement - Body Simulating Liquid

Communication System: GSM 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1910 MHz; σ = 1.6 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3062; ConvF(4.56, 4.56, 4.56); Calibrated: 2008-01-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn640; Calibrated: 2008-01-21
- Phantom: SAM 5; Type: SAM; Serial: 1352
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 171

d=15mm, Speech, PHF - High/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.419 mW/g
d=15mm, Speech, PHF - High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.76 V/m; Power Drift = -0.058 dB
Peak SAR (extrapolated) = 0.645 W/kg
SAR(1 g) = 0.381 mW/g; SAR(10 g) = 0.221 mW/g
Maximum value of SAR (measured) = 0.418 mW/g



Date/Time: 2008-03-11 12:58:45

Test Laboratory: Sony Ericsson Mobile Communications
File Name: Speech_Body_080311_RP.da4

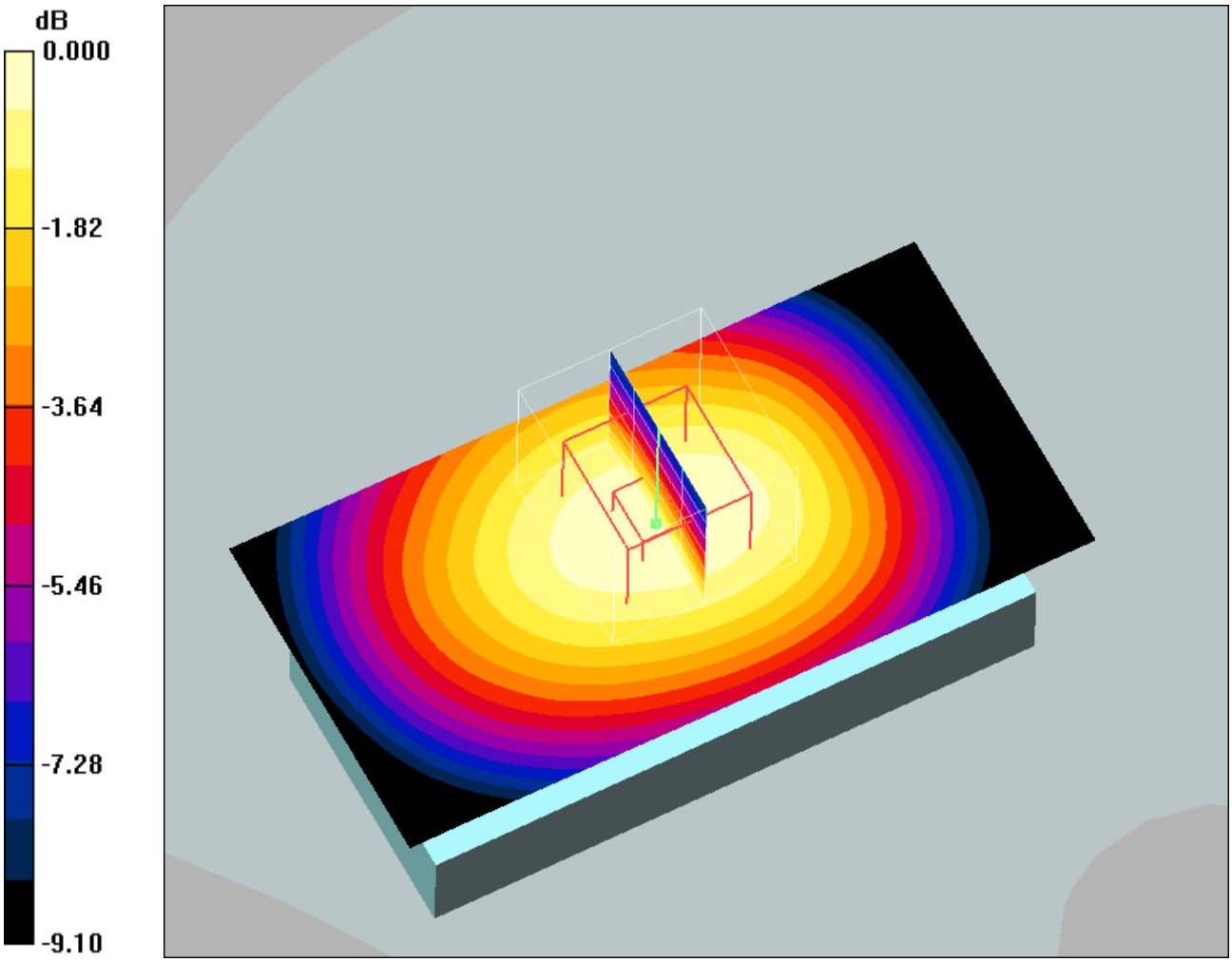
DUT: PY7A3052081 (C702); Type: GSM + UMTS; Serial: #10701
Program Name: Body SAR Measurement - Body Simulating Liquid

Communication System: GSM835MHz; Frequency: 824.2 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 824.2 MHz; σ = 0.98 mho/m; ε_r = 54.8; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3062; ConvF(6, 6, 6); Calibrated: 2008-01-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn640; Calibrated: 2008-01-21
- Phantom: SAM 5; Type: SAM; Serial: 1352
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 171

d=15mm, Speech, BT - Low/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.983 mW/g

d=15mm, Speech, BT - Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.6 V/m; Power Drift = -0.024 dB
Peak SAR (extrapolated) = 1.19 W/kg
SAR(1 g) = 0.925 mW/g; SAR(10 g) = 0.671 mW/g
Maximum value of SAR (measured) = 0.979 mW/g



0 dB = 0.979mW/g

Date/Time: 2008-03-11 11:37:51

Test Laboratory: Sony Ericsson Mobile Communications
File Name: Data_Body_080311_RP.da4

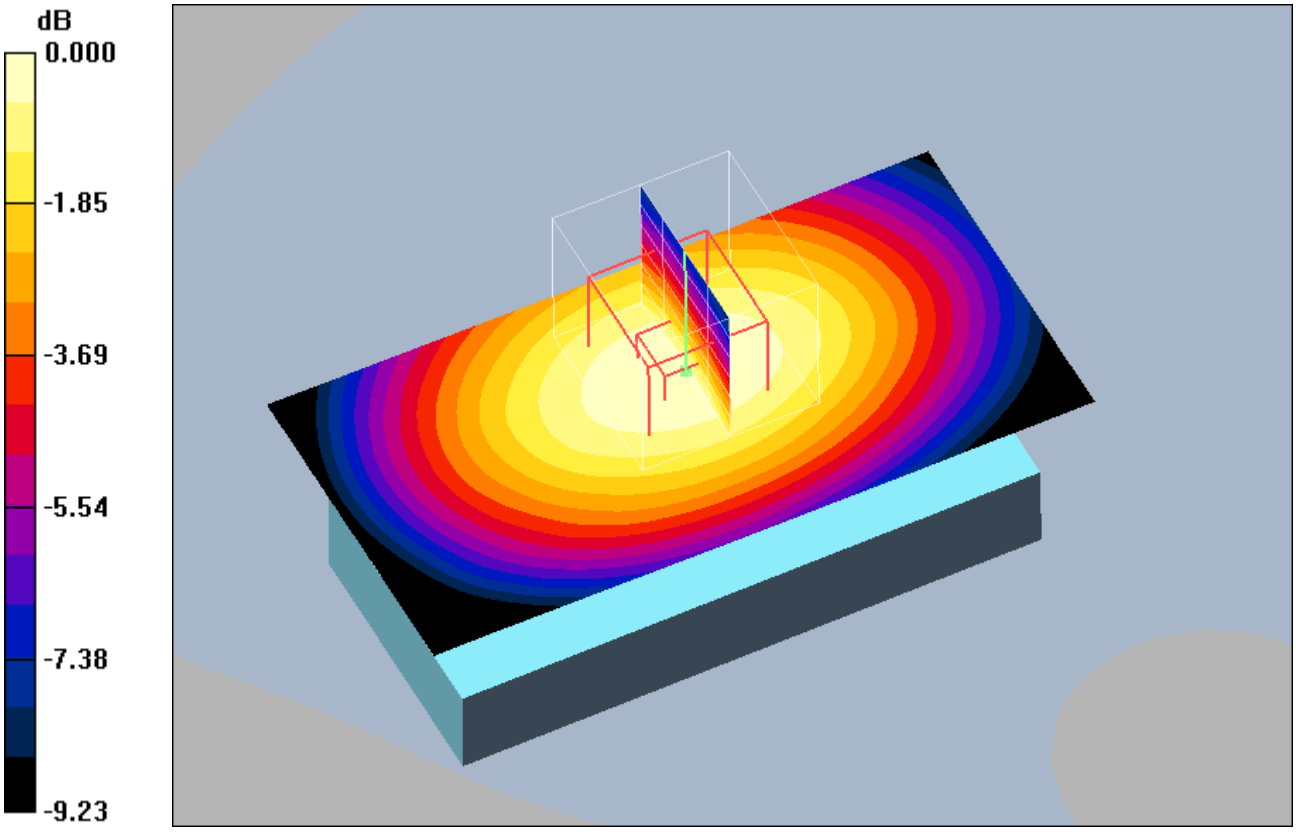
DUT: PY7A3052081 (C702); Type: GSM + UMTS; Serial: #10701
Program Name: Body SAR Measurement - Body Simulating Liquid

Communication System: GSM835MHz_GPRS2Slots; Frequency: 824.2 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 824.2 MHz; σ = 0.98 mho/m; ε_r = 54.8; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3062; ConvF(6, 6, 6); Calibrated: 2008-01-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn640; Calibrated: 2008-01-21
- Phantom: SAM 5; Type: SAM; Serial: 1352
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 171

d=15mm, Data, GPRS, Front - Low/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.869 mW/g

d=15mm, Data, GPRS, Front - Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.6 V/m; Power Drift = 0.036 dB
Peak SAR (extrapolated) = 1.04 W/kg
SAR(1 g) = 0.806 mW/g; SAR(10 g) = 0.585 mW/g
Maximum value of SAR (measured) = 0.856 mW/g



0 dB = 0.856mW/g

Date/Time: 2008-03-11 10:00:43

Test Laboratory: Sony Ericsson Mobile Communications
File Name: Data_Body_080311_RP.da4

DUT: PY7A3052081 (C702); Type: GSM + UMTS; Serial: #10701
Program Name: Body SAR Measurement - Body Simulating Liquid

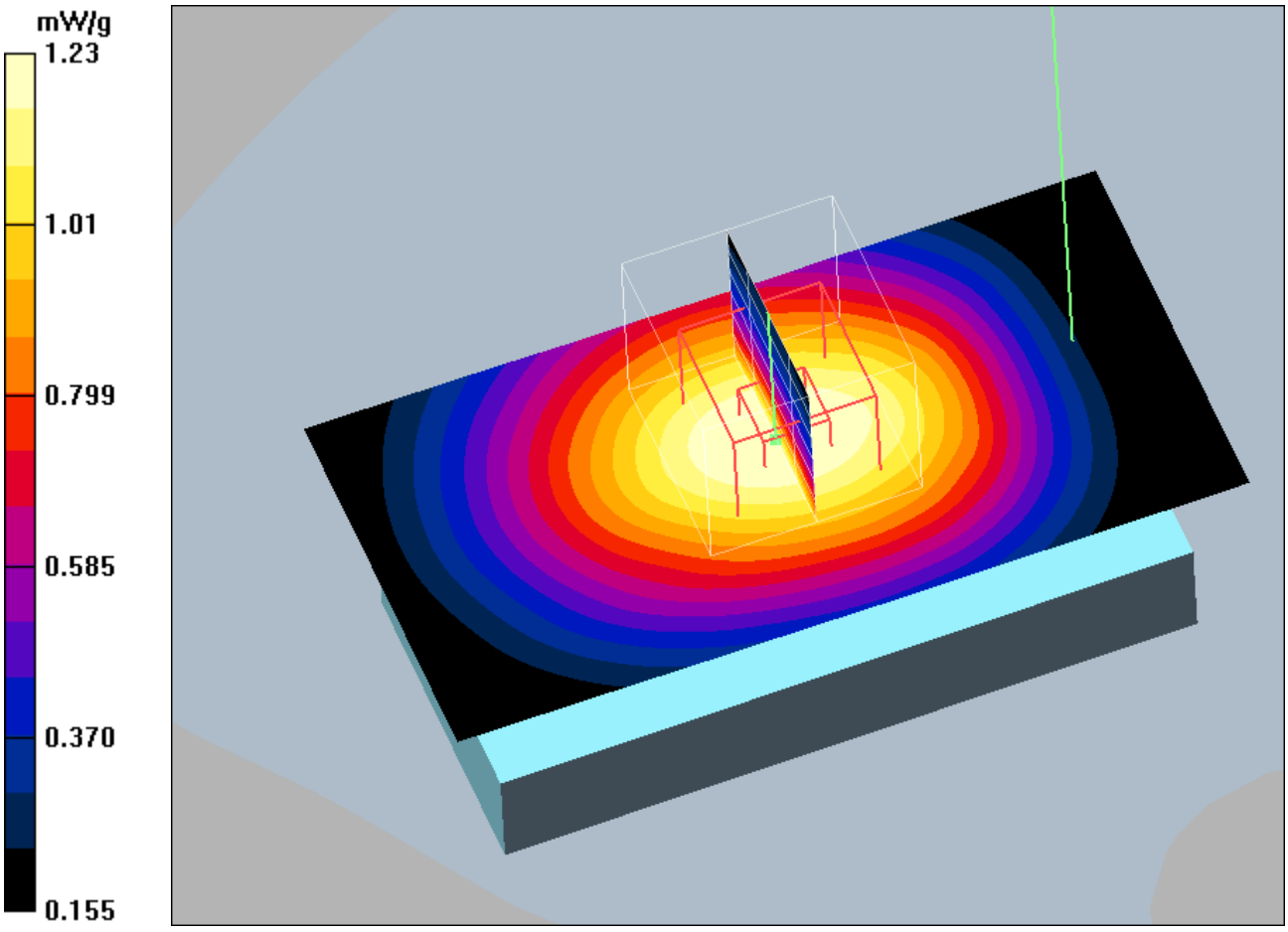
Communication System: GSM835MHz_GPRS2Slots; Frequency: 824.2 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 824.2 MHz; σ = 0.98 mho/m; ε_r = 54.8; ρ = 1000 kg/m^3
Phantom section: Flat Section

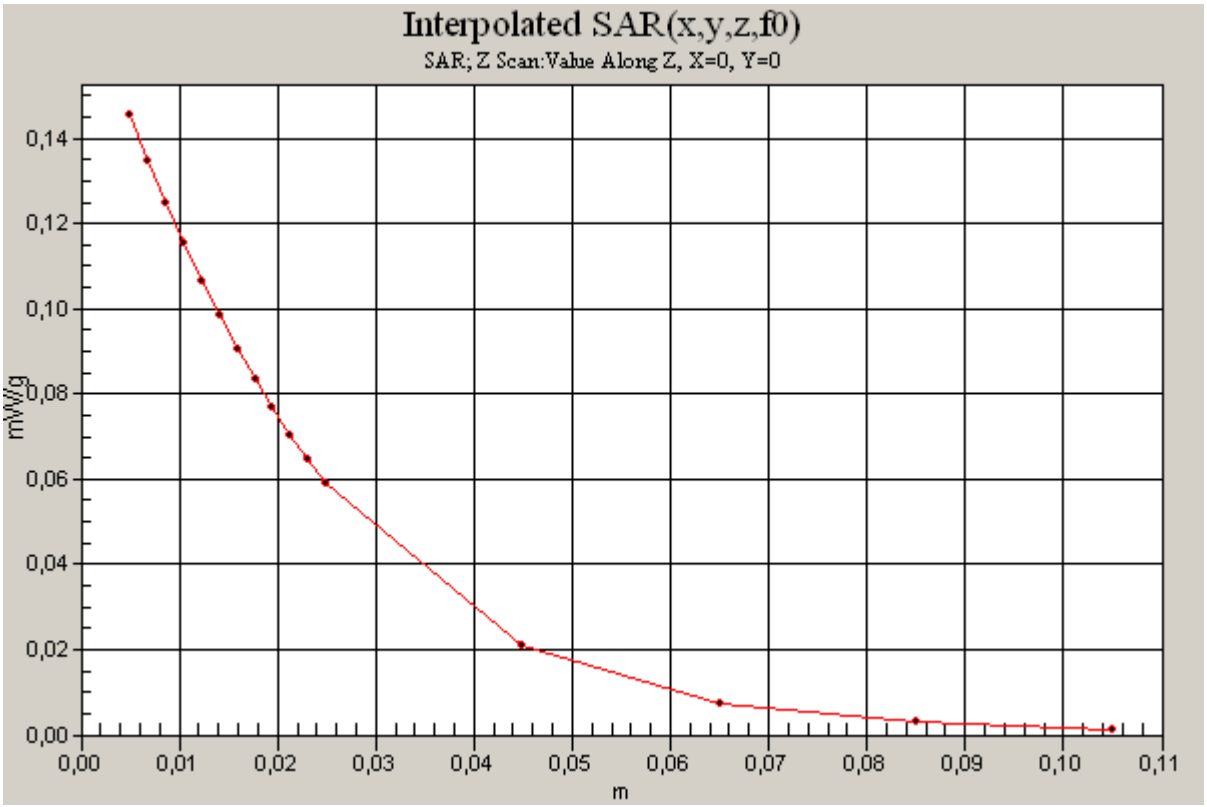
DASY4 Configuration:
- Probe: ES3DV3 - SN3062; ConvF(6, 6, 6); Calibrated: 2008-01-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn640; Calibrated: 2008-01-21
- Phantom: SAM 5; Type: SAM; Serial: 1352
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 171

d=15mm, Data, GPRS - Low/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.26 mW/g

d=15mm, Data, GPRS - Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.8 V/m; Power Drift = -0.020 dB
Peak SAR (extrapolated) = 1.51 W/kg
SAR(1 g) = 1.16 mW/g; SAR(10 g) = 0.849 mW/g
Maximum value of SAR (measured) = 1.23 mW/g

d=15mm, Data, GPRS - Low/Z Scan (1x1x16): Measurement grid: dx=20mm, dy=20mm, dz=20mm
Maximum value of SAR (interpolated) = 0.146 mW/g


mW/g
1.23
1.01
0.799
0.585
0.370
0.155


Interpolated SAR(x,y,z,f0)
SAR; Z Scan:Value Along Z, X=0, Y=0
mW/g
0,14
0,12
0,10
0,08
0,06
0,04
0,02
0,00
0,00
0,01
0,02
0,03
0,04
0,05
0,06
0,07
0,08
0,09
0,10
0,11
m

Date/Time: 2008-03-11 12:39:26

Test Laboratory: Sony Ericsson Mobile Communications
File Name: Speech_Body_080311_RP.da4

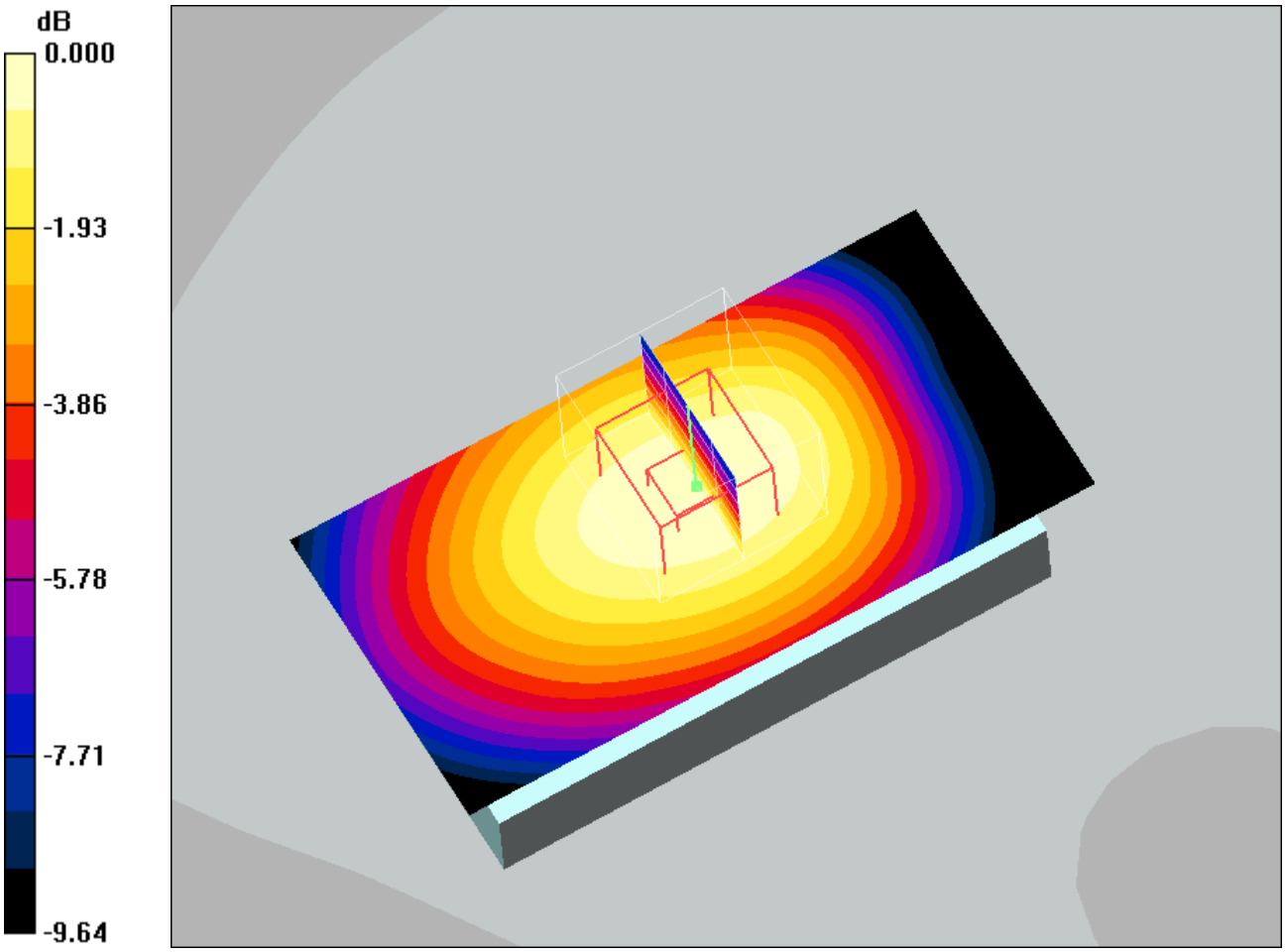
DUT: PY7A3052081 (C702); Type: GSM + UMTS; Serial: #10701
Program Name: Body SAR Measurement - Body Simulating Liquid

Communication System: GSM835MHz; Frequency: 824.2 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 824.2 MHz; σ = 0.98 mho/m; ε_r = 54.8; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3062; ConvF(6, 6, 6); Calibrated: 2008-01-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn640; Calibrated: 2008-01-21
- Phantom: SAM 5; Type: SAM; Serial: 1352
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 171

d=15mm, Speech, PHF - Low/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.636 mW/g

d=15mm, Speech, PHF - Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.3 V/m; Power Drift = 0.003 dB
Peak SAR (extrapolated) = 0.776 W/kg
SAR(1 g) = 0.596 mW/g; SAR(10 g) = 0.434 mW/g
Maximum value of SAR (measured) = 0.630 mW/g



0 dB = 0.630mW/g

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Accreditation No.: SCS 108

Client Sony Ericsson Lund **Certificate No: D835V2-4d039_Jan08**

CALIBRATION CERTIFICATE

Object	D835V2 - SN: 4d039
Calibration procedure(s)	QA CAL-05.v7 Calibration procedure for dipole validation kits
Calibration date:	January 21, 2008
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	04-Oct-07 (METAS, No. 217-00736)	Oct-08
Power sensor HP 8481A	US37292783	04-Oct-07 (METAS, No. 217-00736)	Oct-08
Reference 20 dB Attenuator	SN: 5086 (20g)	07-Aug-07 (METAS, No 217-00718)	Aug-08
Reference 10 dB Attenuator	SN: 5047.2 (10r)	07-Aug-07 (METAS, No 217-00718)	Aug-08
Reference Probe ET3DV6 (HF)	SN 1507	26-Oct-07 (SPEAG, No. ET3-1507_Oct07)	Oct-08
DAE4	SN 601	03-Jan-08 (SPEAG, No. DAE4-601_Jan08)	Jan-09

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-07)	In house check: Oct-09
RF generator R&S SMT-06	100005	04-Aug-99 (SPEAG, in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Oct-07)	In house check: Oct-08

	Name	Function	Signature
Calibrated by:	Mike Meili	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 22, 2008

Calibration Laboratory of
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Accreditation No.: SCS 108

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) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
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 V4.9	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	43.1 ± 6 %	0.92 mho/m ± 6 %
Head TSL temperature during test	(21.7 ± 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	2.40 mW / g
SAR normalized	normalized to 1W	9.60 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**9.68 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.58 mW / g
SAR normalized	normalized to 1W	6.32 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**6.38 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	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.2 ± 6 %	0.99 mho/m ± 6 %
Body TSL temperature during test	(21.9 ± 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	2.41 mW / g
SAR normalized	normalized to 1W	9.64 mW / g
SAR for nominal Body TSL parameters [2]	normalized to 1W	**9.41 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.59 mW / g
SAR normalized	normalized to 1W	6.36 mW / g
SAR for nominal Body TSL parameters [2]	normalized to 1W	**6.25 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	51.4 Ω - 2.3 jΩ
Return Loss	- 31.4 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.4 Ω - 3.9 jΩ
Return Loss	- 27.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.390 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	September 20, 2005

DASY4 Validation Report for Head TSL

Date/Time: 17.01.2008 16:03:30

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d039

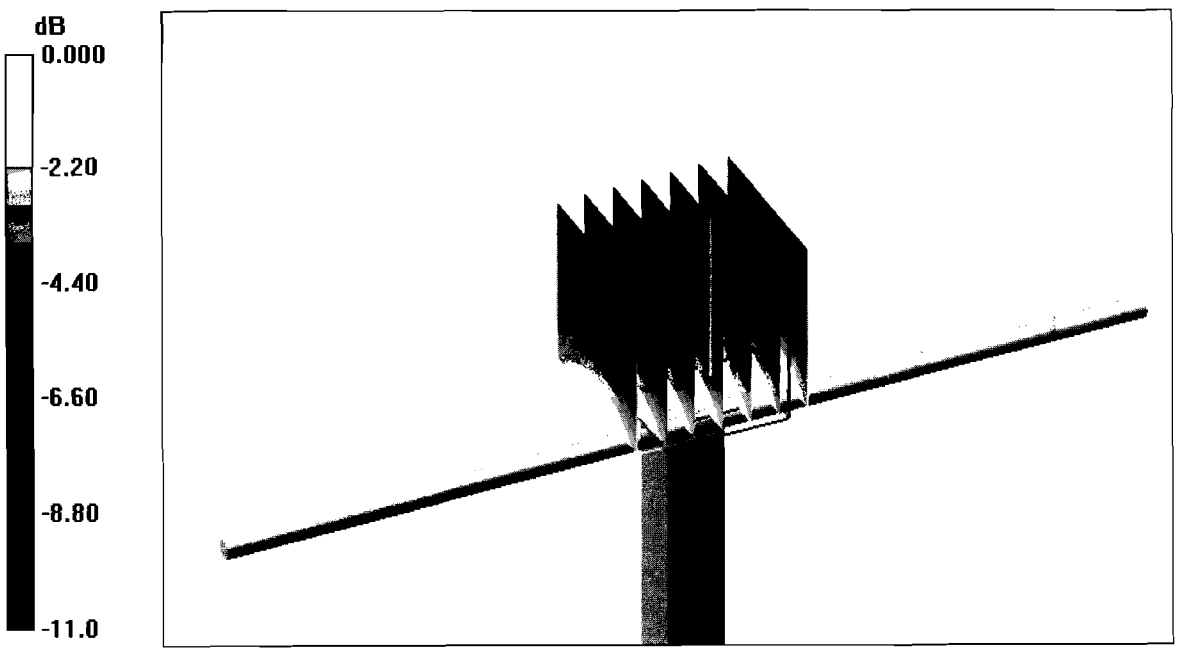
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: HSL 900 MHz;
Medium parameters used: f = 835 MHz; σ = 0.92 mho/m; ε_r = 42.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (HF); ConvF(6.01, 6.01, 6.01); Calibrated: 26.10.2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 03.01.2008
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

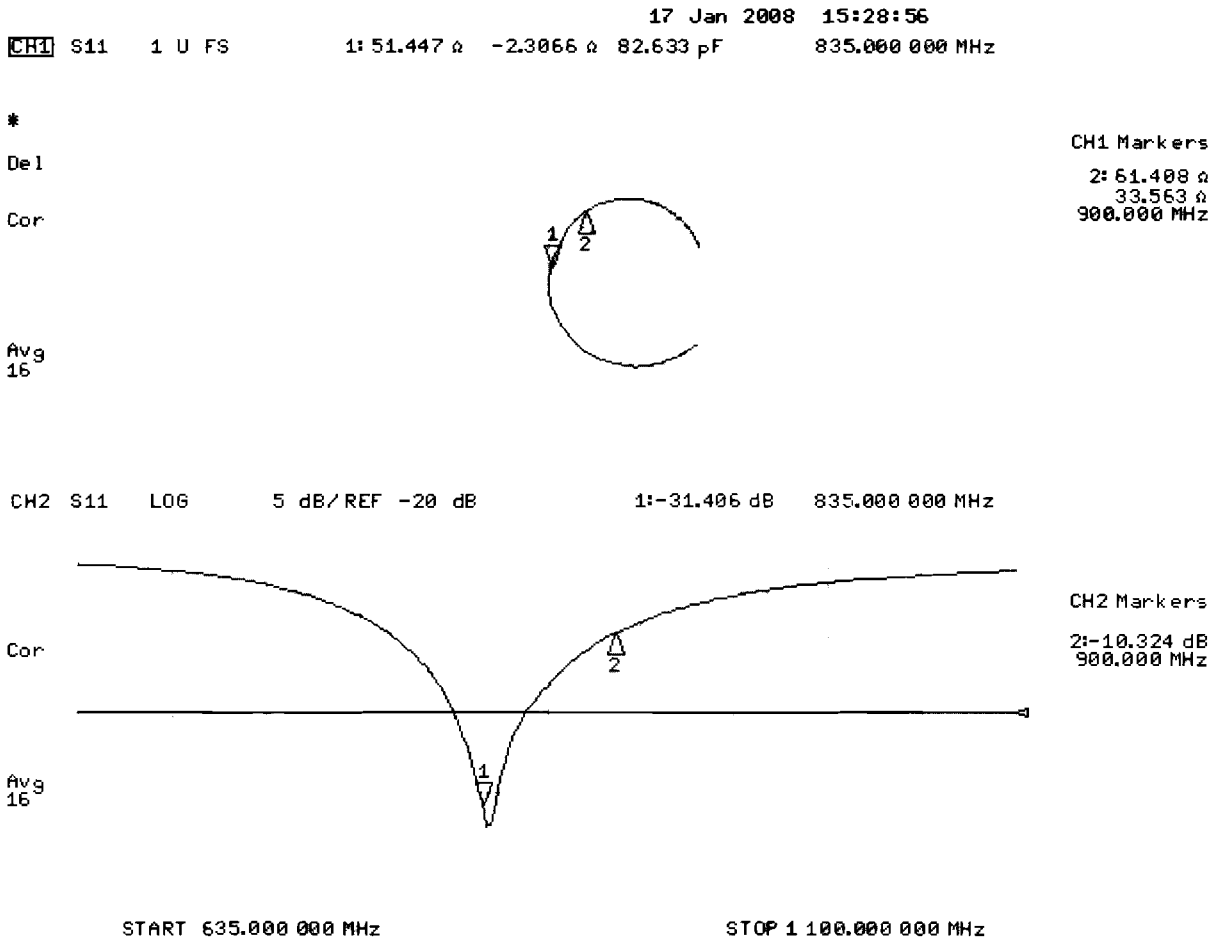
Pin = 250 mW; d = 15 mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.0 V/m; Power Drift = 0.034 dB
Peak SAR (extrapolated) = 3.49 W/kg
SAR(1 g) = 2.4 mW/g; SAR(10 g) = 1.58 mW/g
Maximum value of SAR (measured) = 2.58 mW/g



0 dB = 2.58mW/g

Impedance Measurement Plot for Head TSL



DASY4 Validation Report for Body TSL

Date/Time: 21.01.2008 12:50:12

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d039

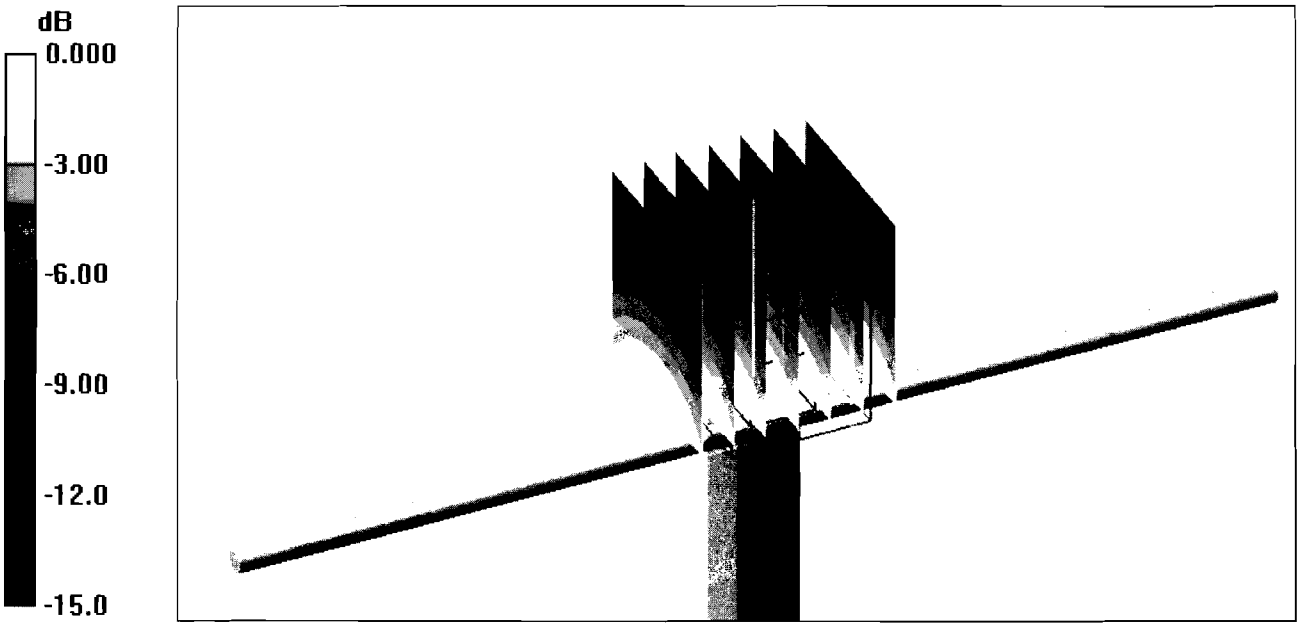
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: MSL900;
Medium parameters used: f = 835 MHz; σ = 0.99 mho/m; ε_r = 54.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (HF); ConvF(5.83, 5.83, 5.83); Calibrated: 26.10.2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 03.01.2008
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

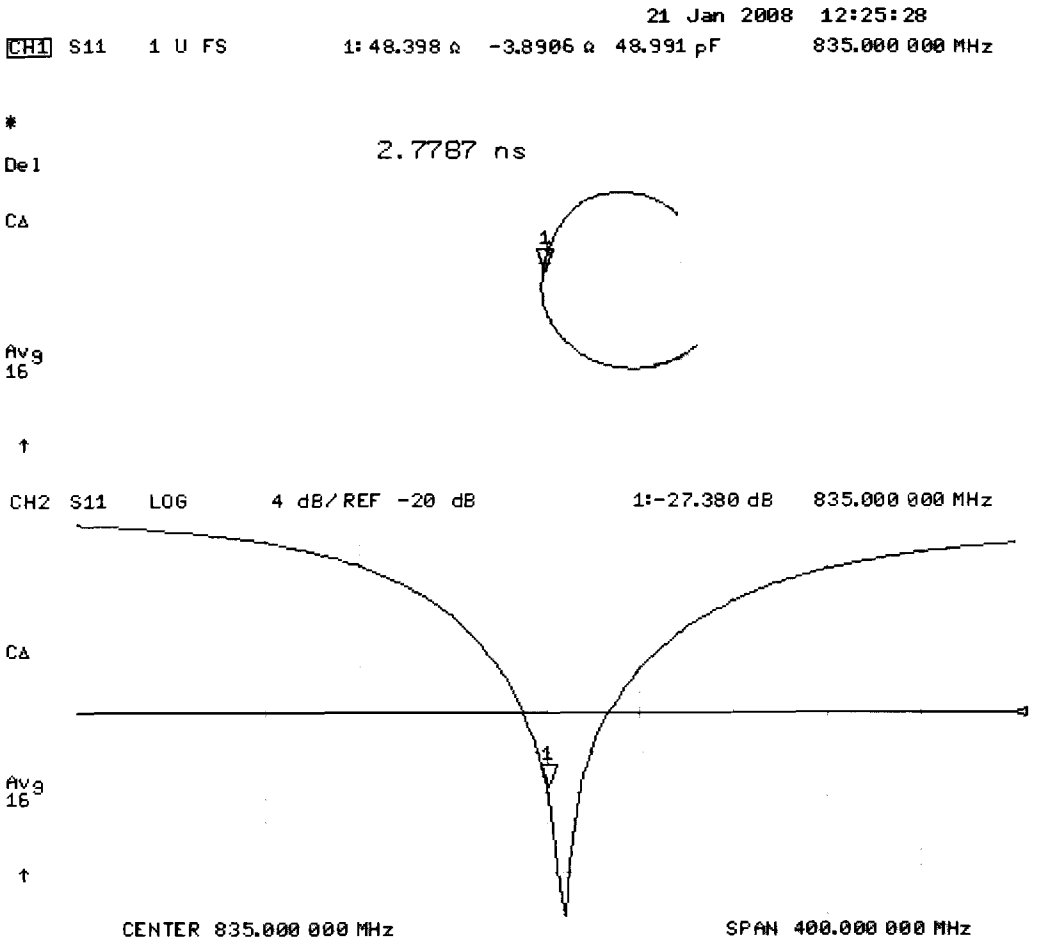
Pin = 250mW, d = 15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.7 V/m; Power Drift = 0.001 dB
Peak SAR (extrapolated) = 3.47 W/kg
SAR(1 g) = 2.41 mW/g; SAR(10 g) = 1.59 mW/g
Maximum value of SAR (measured) = 2.62 mW/g



0 dB = 2.62mW/g

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 108

Client Sony Ericsson Lund

Certificate No: D1900V2-5d073_Jan08

CALIBRATION CERTIFICATE

Object: D1900V2 - SN: 5d073

Calibration procedure(s): QA CAL-05.v7
Calibration procedure for dipole validation kits

Calibration date: January 22, 2008

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	04-Oct-07 (METAS, No. 217-00736)	Oct-08
Power sensor HP 8481A	US37292783	04-Oct-07 (METAS, No. 217-00736)	Oct-08
Reference 20 dB Attenuator	SN: 5086 (20g)	07-Aug-07 (METAS, No 217-00718)	Aug-08
Reference 10 dB Attenuator	SN: 5047.2 (10r)	07-Aug-07 (METAS, No 217-00718)	Aug-08
Reference Probe ET3DV6 (HF)	SN: 1507	26-Oct-07 (SPEAG, No. ET3-1507_Oct07)	Oct-08
DAE4	SN 601	3-Jan-08 (SPEAG, No. DAE4-601_Jan08)	Jan-09

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-07)	In house check: Oct-08
RF generator R&S SMT-06	100005	4-Aug-99 (SPEAG, in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Oct-07)	In house check: Oct-08

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

Issued: January 24, 2008

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

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Accreditation No.: SCS 108
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Glossary:

TSL	tissue simulating liquid
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) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
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	38.5 ± 6 %	1.46 mho/m ± 6 %
Head TSL temperature during test	(20.7 ± 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	10.0 mW / g
SAR normalized	normalized to 1W	40.0 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**38.3 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	5.26 mW / g
SAR normalized	normalized to 1W	21.0 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**20.5 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	52.9 ± 6 %	1.54 mho/m ± 6 %
Body TSL temperature during test	(20.6 ± 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	9.59 mW / g
SAR normalized	normalized to 1W	38.4 mW / g
SAR for nominal Body TSL parameters [2]	normalized to 1W	**37.9 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.11 mW / g
SAR normalized	normalized to 1W	20.4 mW / g
SAR for nominal Body TSL parameters [2]	normalized to 1W	**20.3 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	54.6 Ω + 6.5 jΩ
Return Loss	- 22.4 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	50.0 Ω + 6.8 jΩ
Return Loss	- 23.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.196 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	January 24, 2006

DASY4 Validation Report for Head TSL

Date/Time: 16.01.2008 16:35:30

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d073

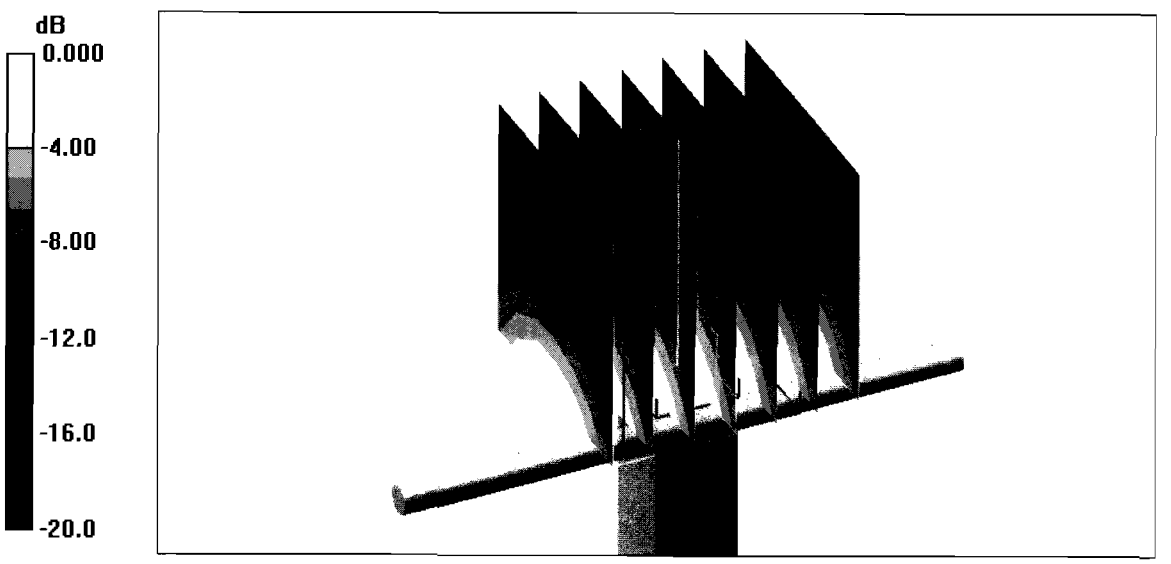
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL U10 BB;
Medium parameters used: f = 1900 MHz; σ = 1.46 mho/m; ε_r = 38.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (HF); ConvF(4.86, 4.86, 4.86); Calibrated: 26.10.2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 03.01.2008
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; ;
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

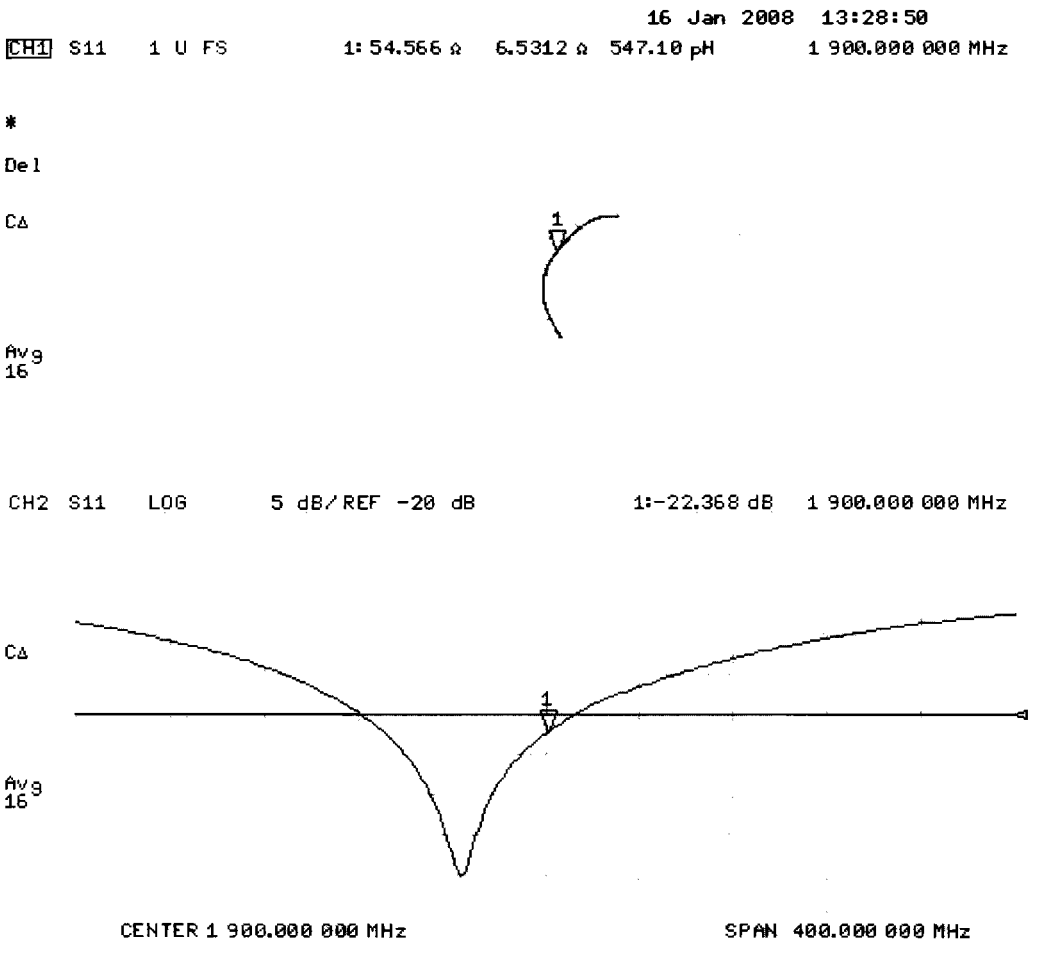
Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.6 V/m; Power Drift = 0.021 dB
Peak SAR (extrapolated) = 17.6 W/kg
SAR(1 g) = 10 mW/g; SAR(10 g) = 5.26 mW/g
Maximum value of SAR (measured) = 11.2 mW/g



0 dB = 11.2mW/g

Impedance Measurement Plot for Head TSL



DASY4 Validation Report for Body TSL

Date/Time: 22.01.2008 14:52:53

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d073

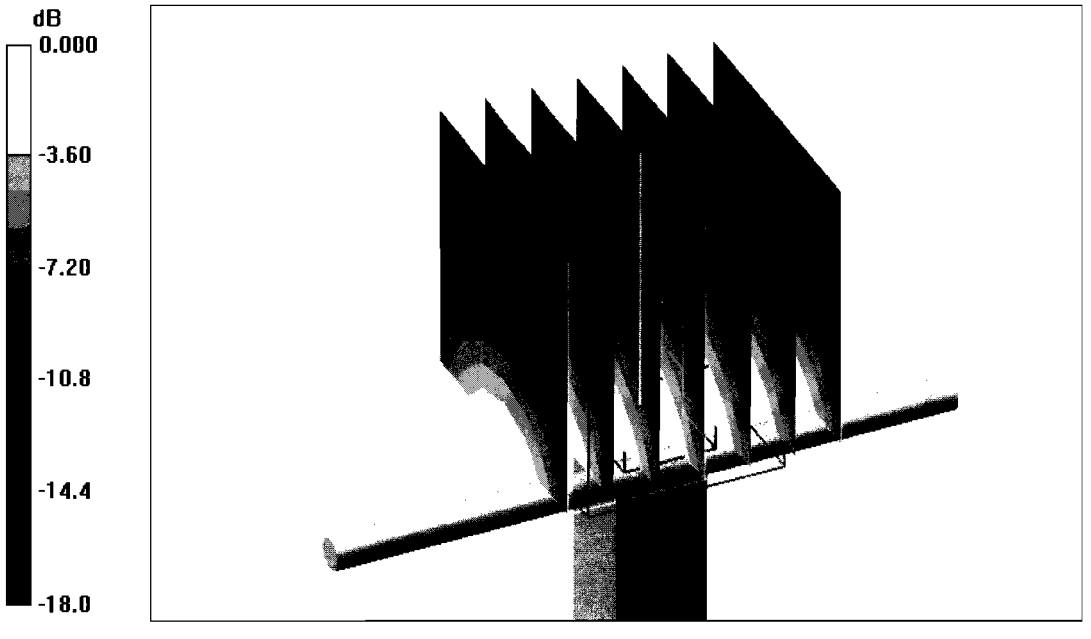
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL U10 BB;
Medium parameters used: f = 1900 MHz; σ = 1.54 mho/m; ε_r = 53.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (HF); ConvF(4.48, 4.48, 4.48); Calibrated: 26.10.2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 03.01.2008
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; ;
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

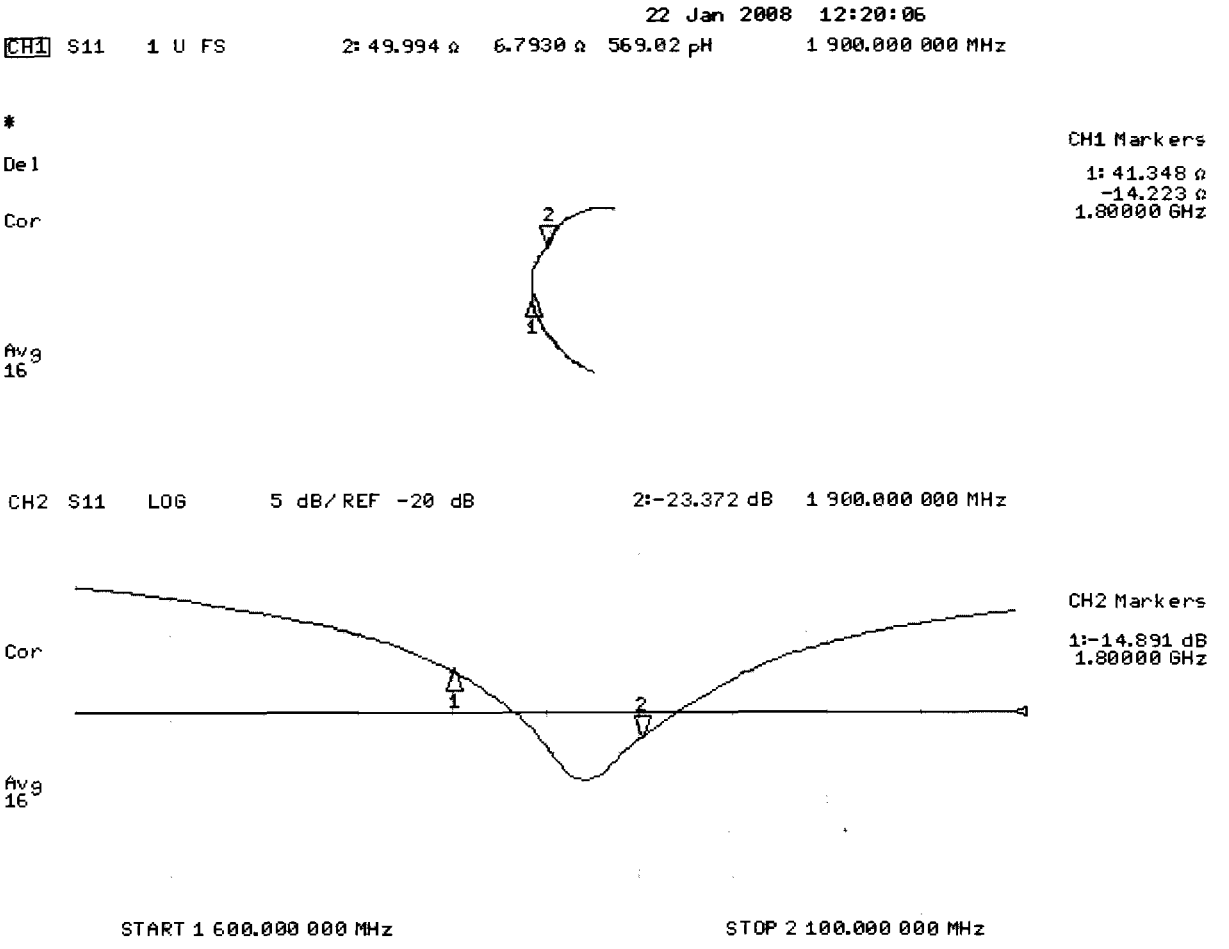
Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 90.3 V/m; Power Drift = -0.016 dB
Peak SAR (extrapolated) = 16.5 W/kg
SAR(1 g) = 9.59 mW/g; SAR(10 g) = 5.11 mW/g
Maximum value of SAR (measured) = 10.9 mW/g



0 dB = 10.9mW/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 Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client [redacted]

CALIBRATION CERTIFICATE

Object [redacted]

Calibration procedure(s) [redacted]

Calibration date: [redacted]

Condition of the calibrated item [redacted]

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	29-Mar-07 (METAS, No. 217-00670)	Mar-08
Power sensor E4412A	MY41495277	29-Mar-07 (METAS, No. 217-00670)	Mar-08
Power sensor E4412A	MY41498087	29-Mar-07 (METAS, No. 217-00670)	Mar-08
Reference 3 dB Attenuator	SN: S5054 (3c)	8-Aug-07 (METAS, No. 217-00719)	Aug-08
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-07 (METAS, No. 217-00671)	Mar-08
Reference 30 dB Attenuator	SN: S5129 (30b)	8-Aug-07 (METAS, No. 217-00720)	Aug-08
Reference Probe ES3DV2	SN: 3013	2-Jan-08 (SPEAG, No. ES3-3013_Jan08)	Jan-09
DAE4	SN: 654	20-Apr-07 (SPEAG, No. DAE4-654_Apr07)	Apr-08

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Oct-07)	In house check: Oct-08

	Name	Function	Signature
Calibrated by:	[redacted]		
Approved by:	[redacted]		

Issued: January 23, 2008

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) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not 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 ES3DV3

SN:3062

Manufactured:	January 30, 2004
Last calibrated:	January 16, 2007
Recalibrated:	January 23, 2008

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: ES3DV3 SN:3062

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

NormX	**1.16** ± 10.1%	$\mu V/(V/m)^2$	DCP X	**93** mV
NormY	**1.24** ± 10.1%	$\mu V/(V/m)^2$	DCP Y	**96** mV
NormZ	**1.08** ± 10.1%	$\mu V/(V/m)^2$	DCP Z	**94** 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		**3.0 mm**	**4.0 mm**
SAR_{be} [%]	Without Correction Algorithm	9.4	5.3
SAR_{be} [%]	With Correction Algorithm	0.9	0.8

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

Sensor Center to Phantom Surface Distance		**3.0 mm**	**4.0 mm**
SAR_{be} [%]	Without Correction Algorithm	10.7	6.5
SAR_{be} [%]	With Correction Algorithm	0.8	0.7

Sensor Offset

Probe Tip to Sensor Center	**2.0** mm

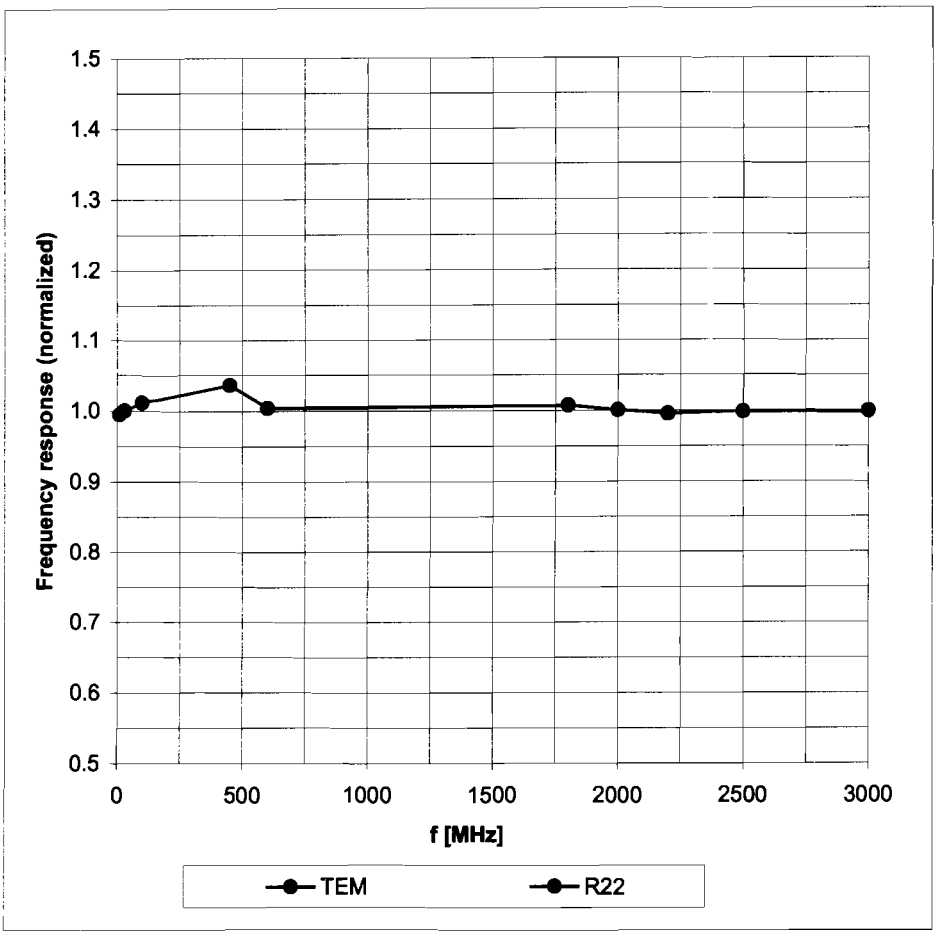
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[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.

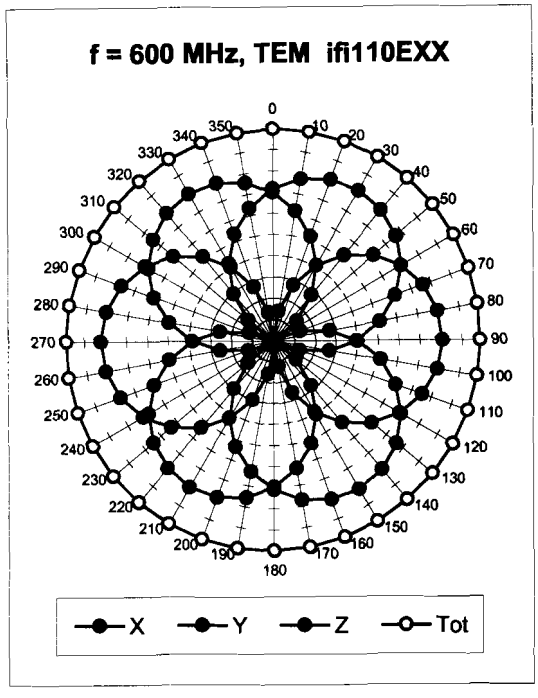
Frequency Response of E-Field

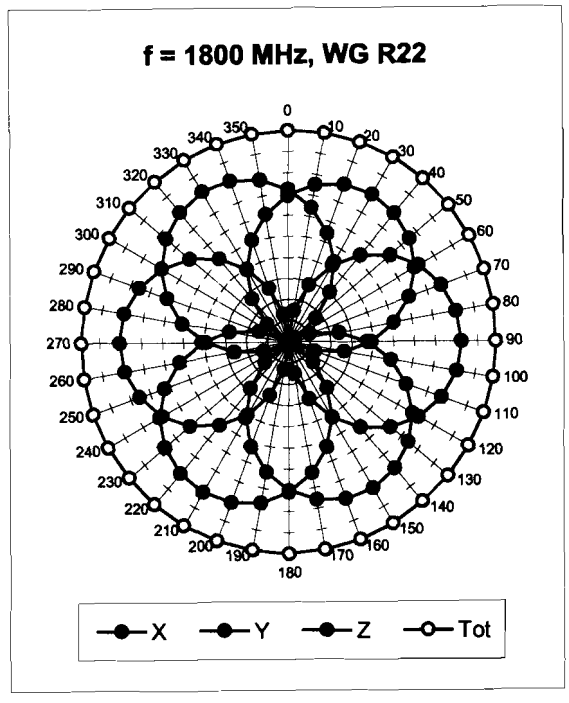
(TEM-Cell:ifi110 EXX, Waveguide: R22)

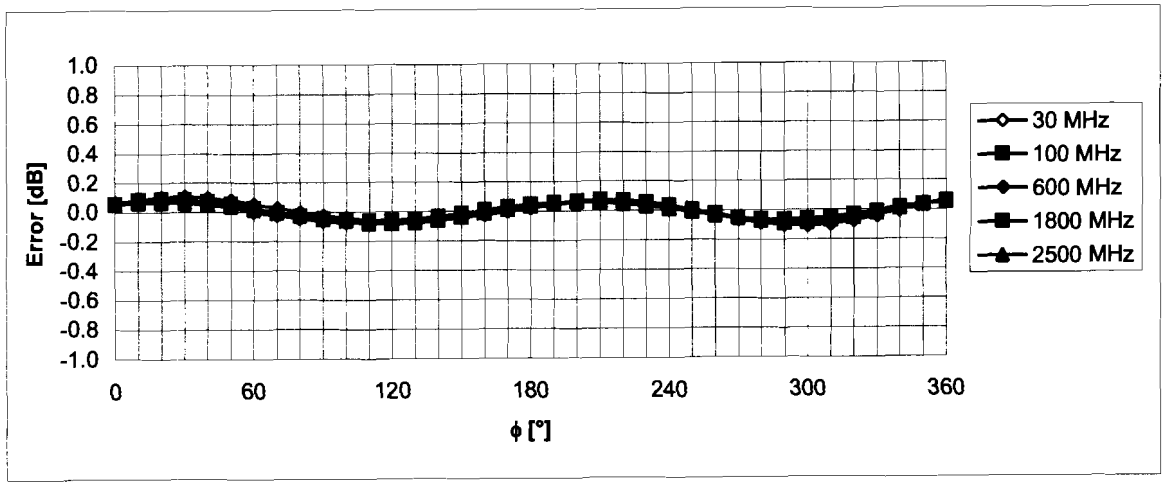


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Receiving Pattern (ϕ), ϑ = 0°



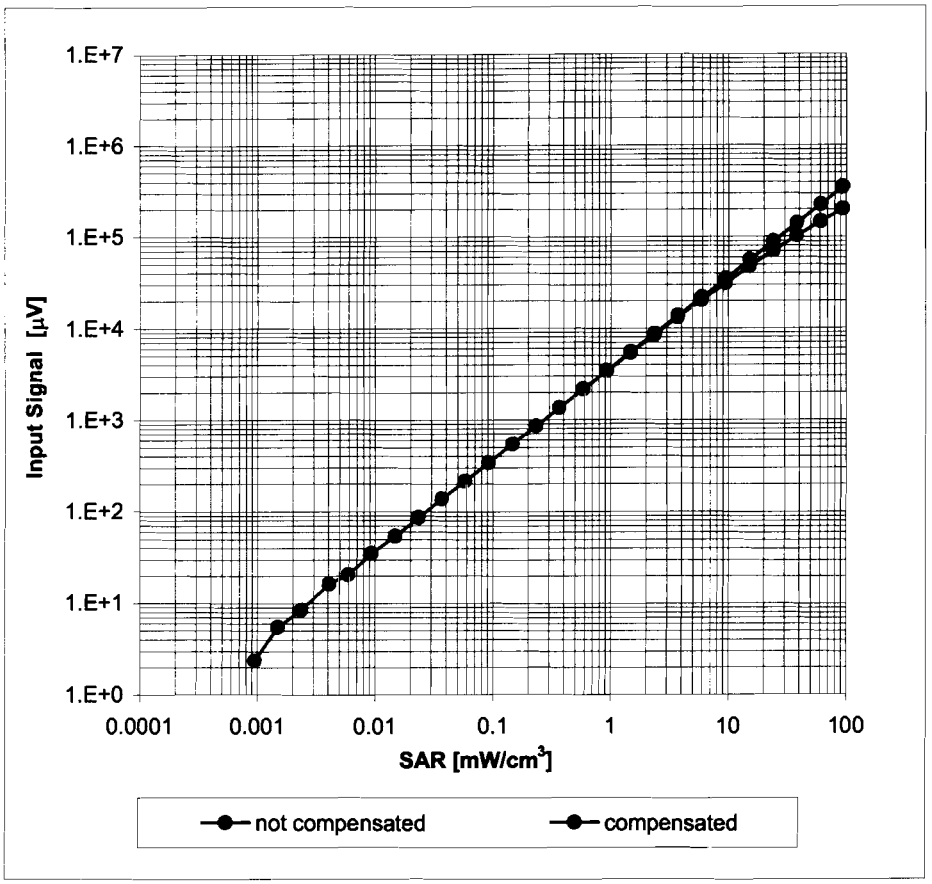


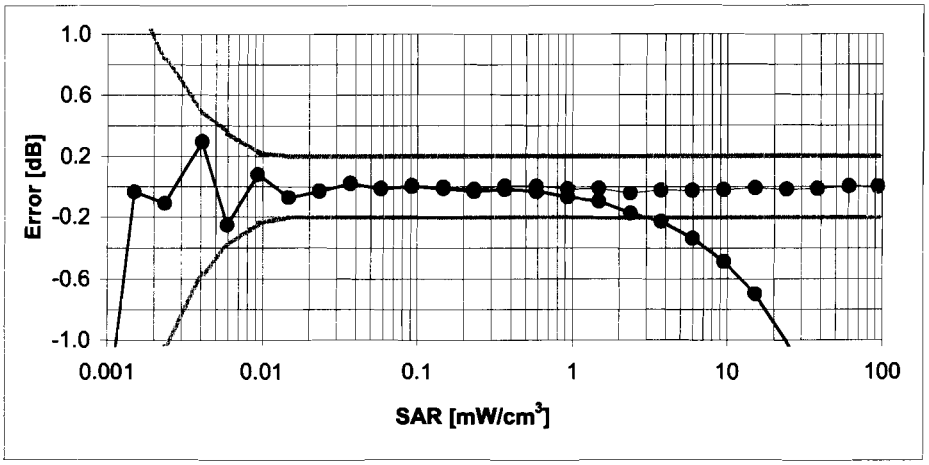


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})

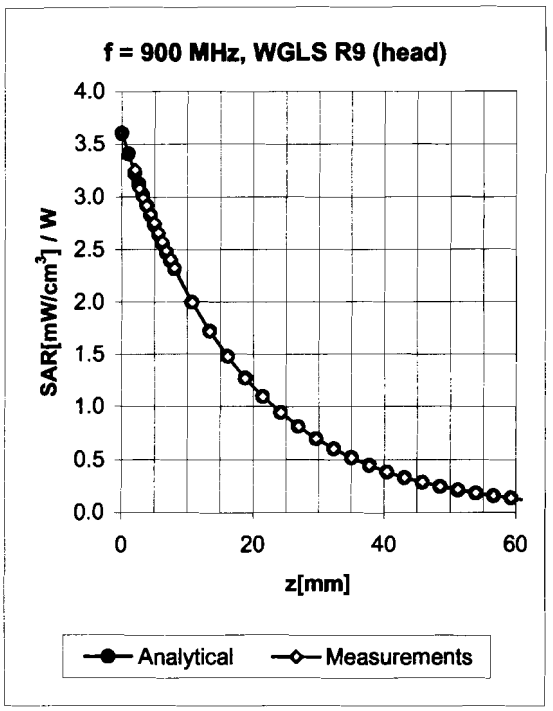
(Waveguide R22, f = 1800 MHz)

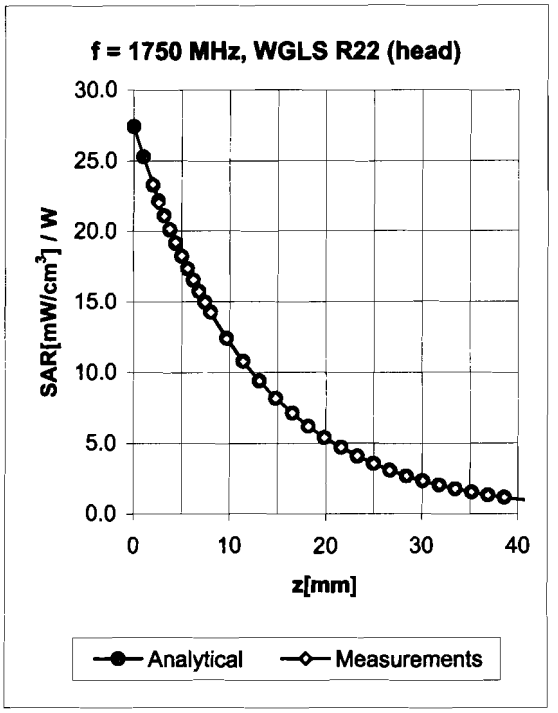




Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment



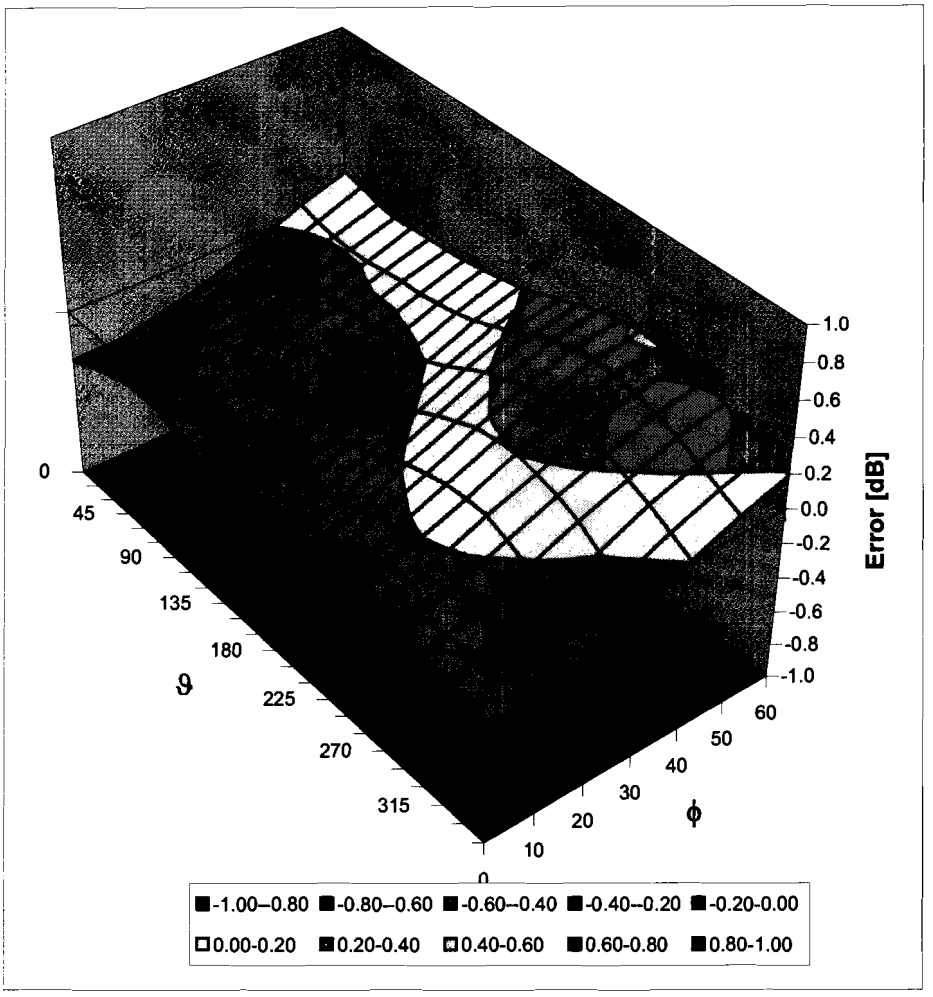


f [MHz]	Validity [MHz][C]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
835	± 50 / ± 100	Head	41.5 ± 5%	0.90 ± 5%	0.88	1.22	6.15 ± 11.0% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.90	1.17	6.06 ± 11.0% (k=2)
1750	± 50 / ± 100	Head	40.1 ± 5%	1.37 ± 5%	0.51	1.74	4.83 ± 11.0% (k=2)
1900	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.89	1.14	4.74 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.72	1.26	4.29 ± 11.8% (k=2)
835	± 50 / ± 100	Body	55.2 ± 5%	0.97 ± 5%	0.92	1.20	6.00 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.93	1.17	5.77 ± 11.0% (k=2)
1750	± 50 / ± 100	Body	53.4 ± 5%	1.49 ± 5%	0.96	1.13	4.72 ± 11.0% (k=2)
1900	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.90	1.19	4.56 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.70	1.43	3.95 ± 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)