SAR TEST REPORT for FCC

No. 2010SAR00053

For

Sony Ericsson Mobile Communications(China) Co., Ltd.

GSM 850/1900 dual bands mobile phone

AAB-1880028-BV

With

Hardware Version: A

Software Version: R2AC001

SEMC ID: AAB-1880028-BV

Industry Canada ID: 4170B-A1880028

FCCID: PY7A1880028

Issued Date: 2010-7-1

No. **DGA-PL-114/01-02**

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of TMC Beijing.

Test Laboratory:

TMC Beijing, Telecommunication Metrology Center of MIIT

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1 Test Laboratory

1.1 Testing Location

Company Name:	TMC Beijing, Telecommunication Metrology Center of MIIT
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Postal Code:	100191
Telephone:	+86-10-62304633
Fax:	+86-10-62304793

1.2 Testing Environment

Temperature:	18°C~25 °C,
Relative humidity:	30%~ 70%
Ground system resistance:	< 0.5 Ω

Ambient noise is checked and found very low and in compliance with requirement of standards.

Reflection of surrounding objects is minimized and in compliance with requirement of standards.

1.3 Project Data

Project Leader:	Qi Dianyuan
Test Engineer:	Lin Xiaojun
Testing Start Date:	June 28, 2010
Testing End Date:	June 28, 2010

1.4 Signature

Lin Xiaojun

(Prepared this test report)

Qi Dianyuan

(Reviewed this test report)

Xiao Li

Deputy Director of the laboratory

(Approved this test report)

2 General Information

2.1 Statement of Compliance

The SAR values found for the AAB-1880028-BV Mobile Phone are below the maximum recommended levels of 1.6 W/Kg as averaged over any 1g tissue according to the FCC rule, the ANSI C95.1-1999.

For body worn operation, this device has been tested and meets FCC RF exposure guidelines when used with any accessory that contains no metal and that positions the handset a minimum of 15mm from the body. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

The measurement together with the test system set-up is described in chapter 5 of this test report. A detailed description of the equipment under test can be found in chapter 3 of this test report.

2.2 Applicant Information

Company Name:	Sony Ericsson Mobile Communications(China) Co., Ltd.
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City:	Beijing
Postal Code:	/
Country:	China
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Fax:	+86-10-58656750

2.3 Manufacturer Information

Company Name:	Sony Ericsson Mobile Communications AB
Address /Post:	Nya Vattentornet 22188 Lund Sweden
City:	Lund
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Country:	Sweden
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Email:	Anders.Nordlof@sonyericsson.com
Telephone:	+46 46 193919
Fax:	+46 46 193295

3 Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1 About EUT

Description:	GSM 850/1900, GPRS, EDGE, BT EDR2.0, FM-receiver mobile phone
Model:	AAB-1880028-BV
Operating mode(s):	GSM, PCS, Bluetooth
GPRS Multislot Class:	10
GPRS capability Class:	B
EGPRS Multislot Class:	10
Test device Production information:	Production unit
Device type:	Portable device
Antenna type:	Integrated antenna
Accessories/Body-worn configurations:	Headset

3.2 Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	WUJABC0227	A	R2AC001

*EUT ID: is used to identify the test sample in the lab internally.

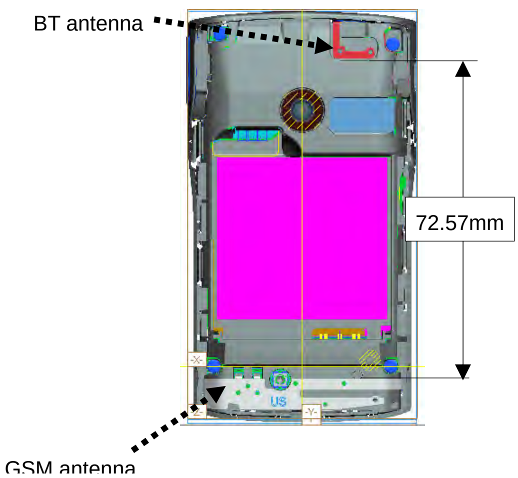
3.3 Internal Identification of AE used during the test

AE ID*	Description	Model	SN	Manufacturer
AE1	Travel Adapter	CAA-0004001-BV	/	Sony Ericsson
AE2	Battery	BST-38	/	Sony Ericsson
AE3	Headset	EMC262-002	/	MERRY ELECTRONICS

*AE ID: is used to identify the test sample in the lab internally.

3.4 Antenna description

There are two antennae in the EUT, Main antenna and BT antenna.



Antenna dimension:

Max length: 9mm

Max width: 50mm

4 CHARACTERISTICS OF THE TEST

4.1 Applicable Limit Regulations

ANSI C95.1–1999: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.
It specifies the maximum exposure limit of **1.6 W/kg** as averaged over any 1 gram of tissue for portable devices being used within 20 cm of the user in the uncontrolled environment.

4.2 Applicable Measurement Standards

IEEE 1528–2003: Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques.

OET Bulletin 65 (Edition 97-01) and Supplement C(Edition 01-01): Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits.

KDB648474 D01 SAR Handsets Multi Xmiter and Ant, v01r05: SAR Evaluation Considerations for Handsets with Multiple Transmitters and Antennas.

5 OPERATIONAL CONDITIONS DURING TEST

5.1 Schematic Test Configuration

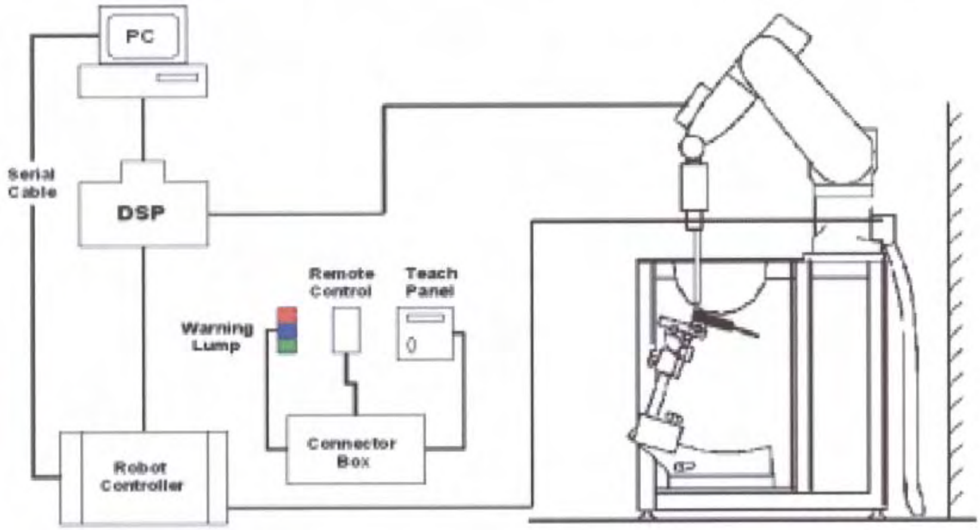
For the SAR tests at GSM 850 and PCS 1900, a communication link is set up with a System Simulator (SS) by air link. The EUT is commanded to operate at maximum transmitting power.

In order to determine the highest value of the peak spatial-average SAR of the EUT, it was tested at middle frequency (cheek and tilt, for both left and right sides of the SAM phantom). After found the worst case, perform the tests at the high and low frequencies. In addition, for all other conditions where the peak spatial-average SAR value determined is within 3 dB of the applicable SAR limit, all other test frequencies shall be tested as well.

5.2 SAR Measurement Set-up

These measurements were performed with the automated near-field scanning system DASY4 Professional from Schmid & Partner Engineering AG (SPEAG). The system is based on a high precision robot (working range greater than 0.9m) which positions the probes with a positional repeatability of better than ± 0.02mm. Special E-field and H-field probes have been developed for measurements close to material discontinuity, the sensors of which are directly loaded with a Schottky diode and connected via highly resistive lines (length =300mm) to the data acquisition unit.

A cell controller system contains the power supply, robot controller, teaches pendant (Joystick), and remote control, is used to drive the robot motors. The PC consists of the Micron Pentium III 800 MHz computer with Windows 2000 system and SAR Measurement Software DASY4, A/D interface card, monitor, mouse, and keyboard. The Stäubli Robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC plug-in card.



Picture 1: SAR Lab Test Measurement Set-up

The DAE consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer.

5.3 Dasy4 E-field Probe System

The SAR measurements were conducted with the dosimetric probe ES3DV3 (manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe has been calibrated according to the standard procedure with an accuracy of better than ± 10%. The spherical isotropy was evaluated and found to be better than ± 0.25dB.

ES3DV3 Probe Specification

Construction	Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)

Calibration	Basic Broad Band Calibration in air Conversion Factors (CF) for HSL 900 and HSL 1810 Additional CF for other liquids and frequencies upon request
Frequency	10 MHz to 4 GHz; Linearity: ± 0.2 dB (30 MHz to 4 GHz)
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.3 dB in tissue material (rotation normal to probe axis)
Dynamic Range	5 µW/g to > 100 mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 3.9 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.0 mm
Application	General dosimetry up to 4 GHz Dosimetry in strong gradient fields Compliance tests of mobile phones

Picture 2: ES3DV3 E-field Probe

Picture3:ES3DV3 E-field probe

5.4 E-field Probe Calibration

Each probe is calibrated according to a dosimetric assessment procedure with accuracy better than ± 10%. The spherical isotropy was evaluated and found to be better than ± 0.25dB. The sensitivity parameters (NormX, NormY, NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested.

The free space E-field from amplified probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies bellow 1 GHz, and in a wave guide above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees.

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The measured free space E-field in the medium correlates to temperature rise in a dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$SAR = C\frac{\Delta T}{\Delta t}$$

Where: Δt = Exposure time (30 seconds),

C = Heat capacity of tissue (brain or muscle),

ΔT = Temperature increase due to RF exposure.

Or

$$SAR = \frac{|E|^2 \sigma}{\rho}$$

Where:

σ = Simulated tissue conductivity,

ρ = Tissue density (kg/m^3).

Picture 4: Device Holder

5.5 Other Test Equipment

5.5.1 Device Holder for Transmitters

In combination with the Generic Twin Phantom V3.0, the Mounting Device (POM) enables the rotation of the mounted transmitter in spherical coordinates whereby the rotation points is the ear opening. The devices can be easily, accurately, and repeatably positioned according to the FCC and CENELEC specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom).

5.5.2 Phantom

The Generic Twin Phantom is constructed of a fiberglass shell integrated in a wooden table. The shape of the shell is based on data from an anatomical study designed to determine the maximum exposure in at least 90% of all users. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents the evaporation of the liquid. Reference markings on the Phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot.

Shell Thickness	2±0. l mm
Filling Volume	Approx. 20 liters
Dimensions	810 x l000 x 500 mm (H x L x W)
Available	Special

Picture 5: Generic Twin Phantom

5.6 Equivalent Tissues

The liquid used for the frequency range of 800-2000 MHz consisted of water, sugar, salt and Cellulose. The liquid has been previously proven to be suited for worst-case. The Table 1 and 2 shows the detail solution. It's satisfying the latest tissue dielectric parameters requirements proposed by the IEEE 1528.

Table 1. Composition of the Head Tissue Equivalent Matter

MIXTURE %	FREQUENCY 850MHz
Water	41.45
Sugar	56.0
Salt	1.45
Preventol	0.1
Cellulose	1.0
Dielectric Parameters Target Value	f=850MHz ε=41.5 σ=0.90
MIXTURE %	FREQUENCY 1900MHz
Water	55.242
Glycol monobutyl	44.452
Salt	0.306
Dielectric Parameters Target Value	f=1900MHz ε=40.0 σ=1.40

Table 2. Composition of the Body Tissue Equivalent Matter

MIXTURE %	FREQUENCY 850MHz
Water	52.5
Sugar	45.0
Salt	1.4
Preventol	0.1
Cellulose	1.0
Dielectric Parameters Target Value	f=850MHz ε=55.2 σ=0.97
MIXTURE %	FREQUENCY 1900MHz
Water	69.91
Glycol monobutyl	29.96
Salt	0.13
Dielectric Parameters Target Value	f=1900MHz ε=53.3 σ=1.52

5.7 System Specifications

Specifications

Positioner: Stäubli Unimation Corp. Robot Model: RX90L

Repeatability: ±0.02 mm

No. of Axis: 6

Data Acquisition Electronic (DAE) System

Cell Controller

Processor: Pentium III

Clock Speed: 800 MHz

Operating System: Windows 2000

Data Converter

Features: Signal Amplifier, multiplexer, A/D converter, and control logic

Software: DASY4 software

Connecting Lines: Optical downlink for data and status info.
Optical uplink for commands and clock

6 CONDUCTED OUTPUT POWER MEASUREMENT

6.1 Summary

During the process of testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication tester (CMU-200) to ensure the maximum power transmission and proper modulation. This result contains conducted output power for the EUT. In all cases, the measured peak output power should be greater and within 5% than EMI measurement.

6.2 Conducted Power

6.2.1 Measurement Methods

The EUT was set up for the maximum output power. The channel power was measured with Agilent Spectrum Analyzer E4440A. These measurements were done at low, middle and high channels for each test bands both before and after SAR test.

6.2.2 Measurement result

Table 3: Conducted Power Measurement Results

GSM 850MHz Speech	Conducted Power (dBm)		
	Channel 128 (824.2MHz)	Channel 190 (836.6MHz)	Channel 251 (848.8MHz)
	33.2	33.3	33.3
Max Power	33.3	33.3	33.3
GSM 850MHz GPRS	Conducted Power (dBm)		
	Channel 128 (824.2MHz)	Channel 190 (836.6MHz)	Channel 251 (848.8MHz)
	31.5	31.5	31.5
Max Power	31.5	31.5	31.5
GSM 850MHz EGPRS	Conducted Power (dBm)		
	Channel 128 (824.2MHz)	Channel 190 (836.6MHz)	Channel 251 (848.8MHz
	31.5	31.5	31.5
Max Power	31.5	31.5	31.5
GSM 1900MHz Speech	Conducted Power (dBm)		
	Channel 512 (1850.2MHz)	Channel 661 (1880MHz)	Channel 810 (1909.8MHz)
	30.3	30.3	30.3
Max Power	30.3	30.3	30.3
GSM 1900MHz GPRS	Conducted Power (dBm)		
	Channel 512 (1850.2MHz)	Channel 661 (1880MHz)	Channel 810 (1909.8MHz)
	30.3	30.3	30.3
Max Power	30.3	30.3	30.3
GSM 1900MHz EGPRS	Conducted Power (dBm)		

	Channel 512 (1850.2MHz)	Channel 661 (1880MHz)	Channel 810 (1909.8MHz)
	30.3	30.3	30.3
Max Power	30.3	30.3	30.3

6.2.3 Power Drift

To control the output power stability during the SAR test, DASY4 system calculates the power drift by measuring the E-field at the same location at the beginning and at the end of the measurement for each test position. These drift values can be found in Table 10 to Table 13 labeled as: (Power Drift [dB]). This ensures that the power drift during one measurement is within 5%.

6.2.4 Tolerance

Table 4: GSM850 Transmitter Output Power

(Transmitter Output Powers are for Calibration Targets. Tolerances are for BL.)

Power Control Level	Transmitter Output Power (dBm)	Tolerance	
		NTC	ETC
5	33	+0.3/-0.5	+1/-1.5
6	31	± 0.5	± 2
7	29	± 2	± 3
8	27	± 2	± 3
9	25	± 2	± 3
10	23	± 2	± 3
11	21	± 2	± 3
12	19	± 2	±-3
13	17	± 2	± 3
14	15	± 2	± 3
15	13	± 2	± 3
16	11	± 3	± 4
17	9	± 3	± 4
18	7	± 3	± 4
19	5	± 3	± 4

Table 5: PCS Transmitter Output Power

(Transmitter Output Powers are for Calibration Targets. Tolerances are for BL.)

Power Control Level	Transmitter Output Power (dBm)	Tolerance	
		NTC	ETC
0	30	+0.3/-0.5	± 1
1	28	± 0.5	± 2
2	26	± 2	± 2
3	24	± 2	± 3
4	22	± 2	± 3
5	20	± 2	± 3
6	18	± 2	± 3
7	16	± 2	± 3

8	14	± 2	± 3
9	12	± 2	± 3
10	10	± 2	± 3
11	8	± 2	± 3
12	6	± 2	± 3
13	4	± 2	± 3
14	2	± 3	± 4
15	0	± 3	± 4

7 TEST RESULTS

7.1 Dielectric Performance

Table 6: Dielectric Performance of Head Tissue Simulating Liquid

Measurement is made at temperature 23.0 °C and relative humidity 40%.
Liquid temperature during the test: 22.5°C
Measurement Date : 850 MHz **June 28, 2010** 1900 MHz **June 29, 2010**

/	Frequency	Permittivity ε	Conductivity σ (S/m)
Target value	850 MHz	41.5	0.90
	1900 MHz	40.0	1.40
Measurement value (Average of 10 tests)	850 MHz	40.6	0.89
	1900 MHz	39.7	1.40

Table 7: Dielectric Performance of Body Tissue Simulating Liquid

Measurement is made at temperature 23.0 °C and relative humidity 40%.
Liquid temperature during the test: 22.5°C
Measurement Date : 850 MHz **June 28, 2010** 1900 MHz **June 29, 2010**

/	Frequency	Permittivity ε	Conductivity σ (S/m)
Target value	850 MHz	55.2	0.97
	1900 MHz	53.3	1.52
Measurement value (Average of 10 tests)	850 MHz	54.4	0.96
	1900 MHz	51.8	1.54

7.2 System Validation

Table 8: System Validation of Head

Measurement is made at temperature 23.0 °C and relative humidity 40%.
Liquid temperature during the test: 22.5°C
Measurement Date : 850 MHz **June 28, 2010** 1900 MHz **June 29, 2010**

		Frequency	Permittivity ε	Conductivity σ (S/m)
Liquid parameters	Dipole calibration Target value	835 MHz	39.9	0.88
		1900 MHz	38.9	1.38
	Actural Measurement value	835 MHz	40.7	0.87
		1900 MHz	39.7	1.40

Verification results	Frequency	Target value (W/kg)		Measured value (W/kg)		Deviation	
		10 g Average	1 g Average	10 g Average	1 g Average	10 g Average	1 g Average
	835 MHz	1.54	2.38	1.49	2.28	-3.25%	-4.20%
	1900 MHz	5.05	9.91	4.88	9.65	-3.37%	-2.62%

Note：Target values are the data of the dipole validation results, please check Annex F for the Dipole Calibration Certificate.

Table 9: System Validation of Body

Measurement is made at temperature 23.0 °C and relative humidity 40%.
Liquid temperature during the test: 22.5°C
Measurement Date : 850 MHz **June 28, 2010** 1900 MHz **June 29, 2010**

Liquid parameters		Frequency	Permittivity ε	Conductivity σ (S/m)
	Dipole calibration Target value	835 MHz	54.5	0.97
		1900 MHz	52.5	1.51
	Actural Measurement value	835 MHz	54.5	0.94
		1900 MHz	51.8	1.54

Verification results	Frequency	Target value (W/kg)		Measured value (W/kg)		Deviation	
		10 g Average	1 g Average	10 g Average	1 g Average	10 g Average	1 g Average
	835 MHz	1.57	2.41	1.52	2.30	-3.18%	-4.56%
	1900 MHz	5.24	10.4	5.03	10.1	-4.01%	-2.88%

Note：Target values are the data of the dipole validation results, please check Annex F for the Dipole Calibration Certificate.

7.3 Summary of Measurement Results

	Duty Cycle
Speech	**1 : 8.3**
GPRS/EGPRS	**1 : 4**

Table 10: SAR Values (Head, GSM 850 MHz Band)

Limit of SAR (W/kg)	1 g Average	Power Drift (dB)
	1.6	
Test Case	Measurement 1 g Average	
Left hand, Touch cheek, High frequency (See Fig.1)	1.09	-0.016
Left hand, Touch cheek, Mid frequency (See Fig.2)	1.06	-0.087
Left hand, Touch cheek, Low frequency (See Fig.3)	1.04	0.037

Left hand, Tilt 15 Degree, Mid frequency (See Fig.4)	0.445	0.005
Right hand, Touch cheek, High frequency (See Fig.5)	0.922	-0.058
Right hand, Touch cheek, Mid frequency (See Fig.6)	0.855	0.123
Right hand, Touch cheek, Low frequency (See Fig.7)	0.835	-0.027
Right hand, Tilt 15 Degree, Mid frequency (See Fig.8)	0.474	-0.080

Table 11: SAR Values (Body, GSM 850 MHz Band)

Limit of SAR (W/kg)	**1 g Average**	**Power Drift (dB)**
	1.6	
Test Case	**Measurement Result (W/kg)**	
	1 g Average	
Body, Towards Ground, High frequency with GPRS (See Fig.9)	0.949	-0.047
Body, Towards Ground, Mid frequency with GPRS (See Fig.10)	0.917	-0.098
Body, Towards Ground, Low frequency with GPRS (See Fig.11)	0.934	-0.077
Body, Towards Ground, High frequency with EGPRS (See Fig.12)	0.345	-0.059
Body, Towards Ground, High frequency with Headset (See Fig.13)	0.611	0.014
Body, Towards Phantom, High frequency with GPRS (See Fig.14)	0.644	-0.082

Table 12: SAR Values (Head, PCS 1900 MHz Band)

Limit of SAR (W/kg)	**1 g Average**	**Power Drift (dB)**
	1.6	
Test Case	**Measurement**	
	1 g Average	
Left hand, Touch cheek, High frequency (See Fig.15)	0.748	-0.124
Left hand, Touch cheek, Mid frequency (See Fig.16)	0.875	-0.147
Left hand, Touch cheek, Low frequency (See Fig.17)	0.908	-0.025
Left hand, Tilt 15 Degree, Mid frequency (See Fig.18)	0.473	-0.00903
Right hand, Touch cheek, High frequency (See Fig.19)	1	-0.000805
Right hand, Touch cheek, Mid frequency (See Fig.20)	1.17	-0.083
Right hand, Touch cheek, Low frequency (See Fig.21)	1.3	0.022
Right hand, Tilt 15 Degree, Mid frequency (See Fig.22)	0.762	0.049

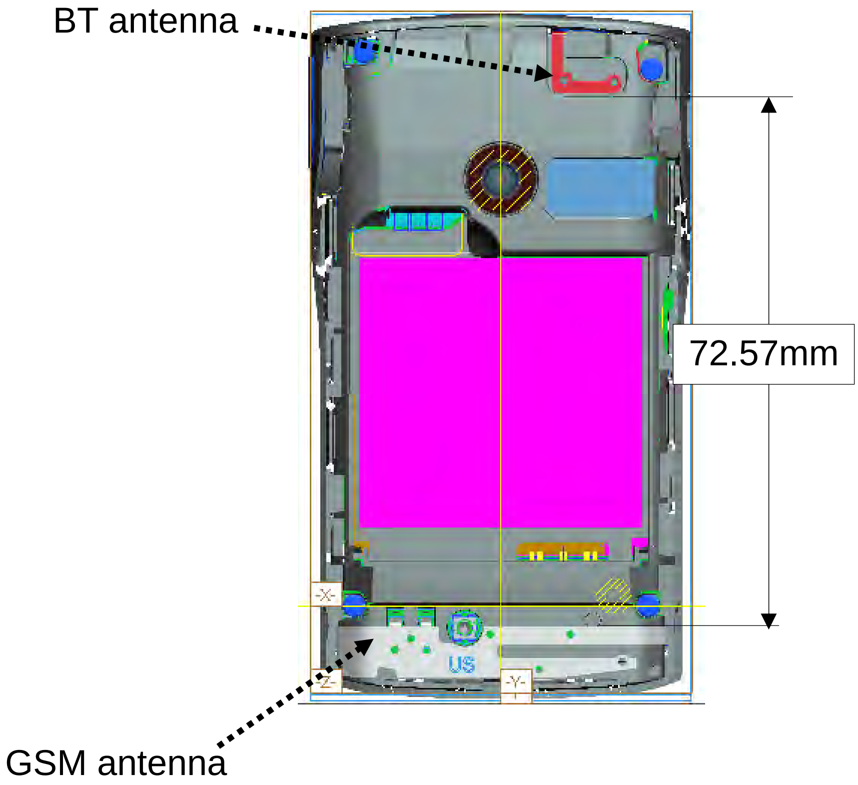
Table 13: SAR Values (Body, PCS 1900 MHz Band)

Limit of SAR (W/kg)	**1 g Average**	**Power Drift (dB)**
	1.6	
Test Case	**Measurement Result (W/kg)**	
	1 g Average	
Body, Towards Ground, High frequency with GPRS (See Fig.23)	0.699	0.050
Body, Towards Ground, Mid frequency with GPRS (See Fig.24)	0.816	-0.059

Body, Towards Ground, Low frequency with GPRS (See Fig.25)	0.820	-0.012
Body, Towards Ground, Low frequency with EGPRS (See Fig.26)	0.384	-0.099
Body, Towards Ground, Low frequency with Headset (See Fig.27)	0.446	-0.005
Body,Towards Phantom, Low frequency with GPRS (See Fig.28)	0.625	0.196

7.4 Summary of Measurement Results (Bluetooth function)

The distance between BT antenna and GSM antenna is ＞5cm. The location of the antennas inside mobile phone is shown below:



The output power of BT antenna is 3.2mW. According to the output power measurement result and the distance between the two antennas, we can draw the conclusion that: stand-alone SAR and simultaneous transmission SAR are not required for BT transmitter, because the output power of BT transmitter is ≤$2P_{Ref}$ and its antenna is ＞5cm from other antenna

7.5 Conclusion

Localized Specific Absorption Rate (SAR) of this portable wireless device has been measured in all cases requested by the relevant standards cited in Clause 4.2 of this report. Maximum localized SAR is below exposure limits specified in the relevant standards cited in Clause 4.1 of this test report.

The maximum SAR values are obtained at the case of **PCS 1900 MHz Band, Head, Right hand, Touch cheek, Low frequency (Table 10)**, and the value are: **1.3(1g).**

8 Measurement Uncertainty

No.	Error Description	Type	Tolerance (±%)	Probability Distribution	Divisor	c_i	Standard Uncertainty (%) u_i' (%)	Degree of freedom V_{eff} or v_i
1	System repeatability	A	0.5	N	1	1	0.5	9
	Measurement system							
2	—probe calibration	B	3.5	N	1	1	3.5	∞
3	—axial isotropy of the probe	B	4.7	R	$\sqrt{3}$	0.5	4.3	∞
4	—hemisphere isotropy of the probe	B	9.4	R	$\sqrt{3}$			
5	—space resolution	B	0	R	$\sqrt{3}$	1	0	∞
6	—boundary effect	B	11.0	R	$\sqrt{3}$	1	6.4	∞
7	—probe linearity	B	4.7	R	$\sqrt{3}$	1	2.7	∞
8	—detection limit	B	1.0	R	$\sqrt{3}$	1	0.6	∞
9	—readout electronics	B	1.0	N	1	1	1.0	∞
10	—RF Ambient Conditions	B	3.0	R	$\sqrt{3}$	1	1.73	∞
11	— Probe Positioner Mechanical Tolerance	B	0.4	R	$\sqrt{3}$	1	0.2	∞
12	— Probe Positioning with respect to Phantom Shell	B	2.9	R	$\sqrt{3}$	1	1.7	∞
13	—Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	B	3.9	R	$\sqrt{3}$	1	2.3	∞
	Test sample Related							
14	—Test Sample Positioning	A	4.9	N	1	1	4.9	5
15	—Device Holder	A	6.1	N	1	1	6.1	5
16	—Output Power Variation - SAR drift measurement	B	5.0	R	$\sqrt{3}$	1	2.9	∞
	Phantom and Tissue Parameters							
17	— Phantom Uncertainty (shape and thickness tolerances)	B	1.0	R	$\sqrt{3}$	1	0.6	∞

18	— liquid conductivity (deviation from target)	B	5.0	R	$\sqrt{3}$	0.6	1.7	∞
19	— liquid conductivity (measurement error)	A	0.23	N	1	1	0.23	9
20	-liquid permittivity (deviation from target)	B	5.0	R	$\sqrt{3}$	0.6	1.7	∞
21	— liquid permittivity (measurement error)	A	0.46	N	1	1	0.46	9
Combined standard uncertainty		$u_c^{'}=\sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$		/			12.2	88.7
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$		N	k=2		24.4	/

9 MAIN TEST INSTRUMENTS

Table 14: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	HP 8753E	US38433212	August 29,2009	One year
02	Power meter	NRVD	101253	September 4, 2009	One year
03	Power sensor	NRV-Z5	100333		
04	Signal Generator	E4433B	US37230472	September 3, 2009	One Year
05	Amplifier	VTL5400	0505	No Calibration Requested	
06	BTS	CMU 200	113312	August 10, 2009	One year
07	E-field Probe	SPEAG ES3DV3	3149	September 25, 2009	One year
08	DAE	SPEAG DAE4	771	November 19, 2009	One year
09	Dipole Validation Kit	SPEAG D835V2	443	February 26, 2010	Two years
10	Dipole Validation Kit	SPEAG D1900V2	541	February 26, 2010	Two years

END OF REPORT BODY

ANNEX A MEASUREMENT PROCESS

The evaluation was performed with the following procedure:

Step 1: Measurement of the SAR value at a fixed location above the reference point was measured and was used as a reference value for assessing the power drop.

Step 2: The SAR distribution at the exposed side of the phantom was measured at a distance of 3.9 mm from the inner surface of the shell. The area covered the entire dimension of the flat phantom and the horizontal grid spacing was 10 mm x 10 mm. Based on this data, the area of the maximum absorption was determined by spline interpolation.

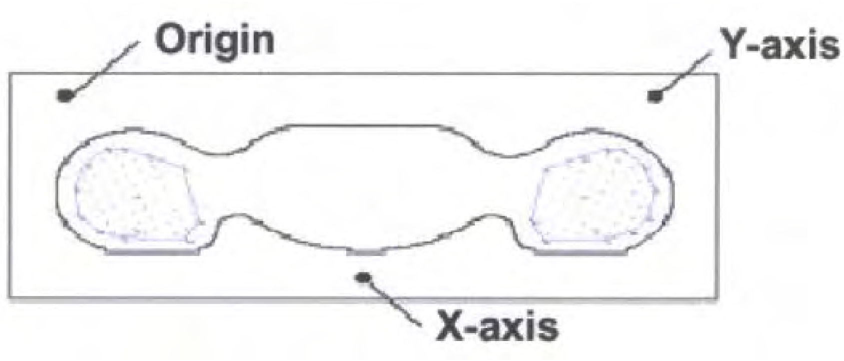
Step 3: Around this point, a volume of 30 mm x 30 mm x 30 mm was assessed by measuring 7 x 7x 7 points. On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

a. The data at the surface were extrapolated, since the center of the dipoles is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.2 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.

b. The maximum interpolated value was searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1g or 10g) were computed using the 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the "Not a knot"-condition (in x ~ y and z-directions). The volume was integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the average.

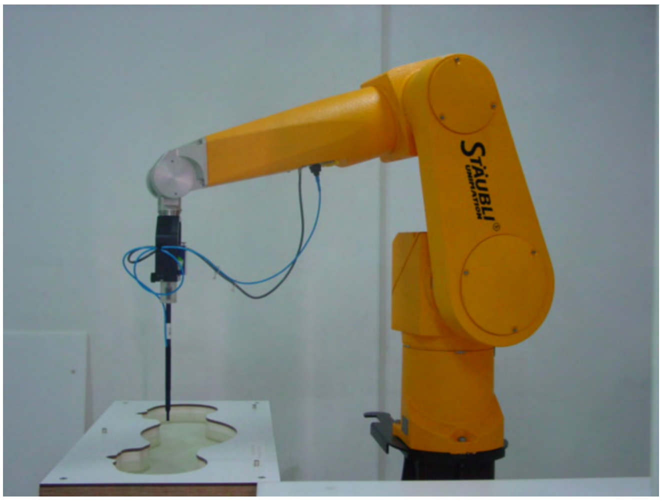
c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

Step 4: Re-measurement the SAR value at the same location as in Step 1. If the value changed by more than 5%, the evaluation is repeated.

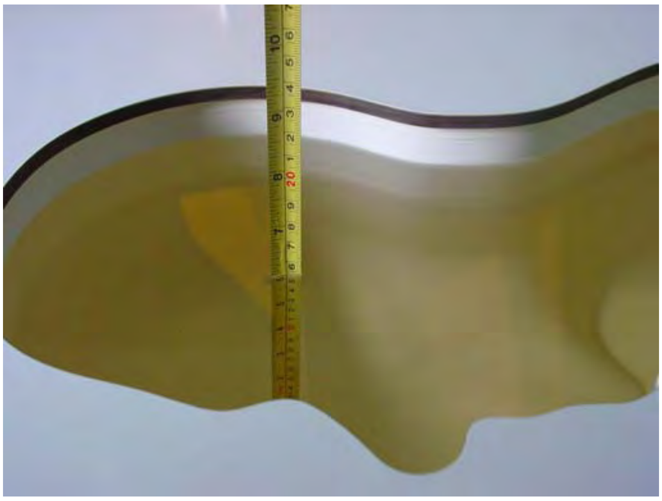


Picture A: SAR Measurement Points in Area Scan

ANNEX B TEST LAYOUT

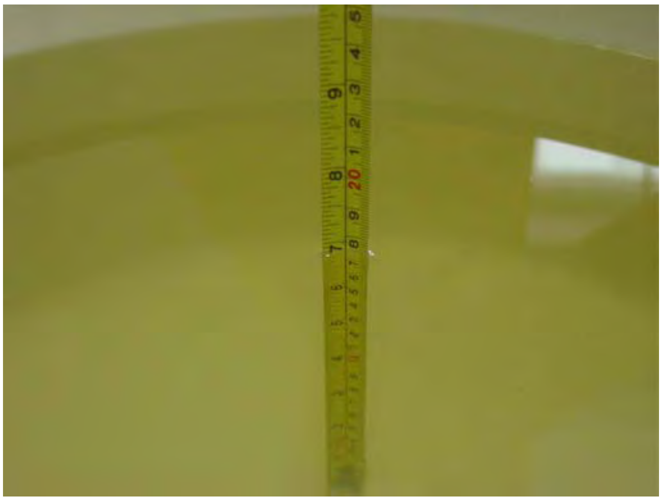


Picture B1: Specific Absorption Rate Test Layout

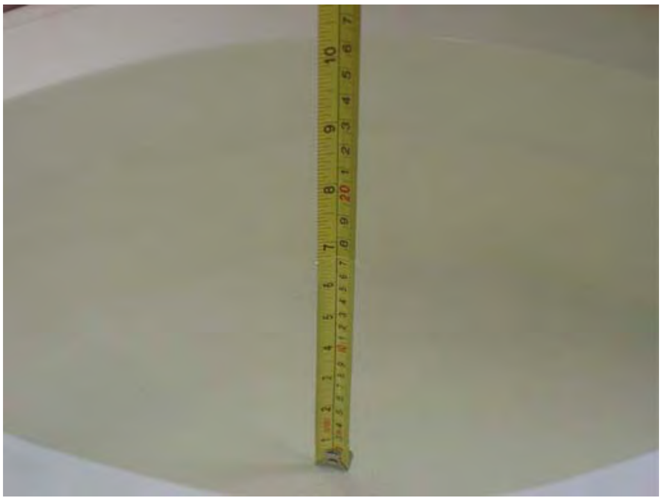


Picture B2: Liquid depth in the Flat Phantom (850 MHz Head)

Picture B3: Liquid depth in the Flat Phantom (1900MHz Head)



Picture B4: Liquid depth in the Flat Phantom (850 MHz Body)



Picture B5: Liquid depth in the Flat Phantom (1900MHz Body)

ANNEX C GRAPH RESULTS

850 Left Cheek High

Date/Time: 2010-6-28 8:36:37
Electronics: DAE4 Sn771
Medium: 850 HEAD
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.89 mho/m; εr = 40.6; ρ = 1000 kg/m^3
Ambient Temperature:23.0^{o}C Liqiud Temperature: 22.5^{o}C
Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Cheek High/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.22 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.6 V/m; Power Drift = -0.016 dB
Peak SAR (extrapolated) = 1.47 W/kg
SAR(1 g) = 1.09 mW/g; SAR(10 g) = 0.778 mW/g
Maximum value of SAR (measured) = 1.14 mW/g

0 dB = 1.14mW/g

Fig. 1 850MHz CH251

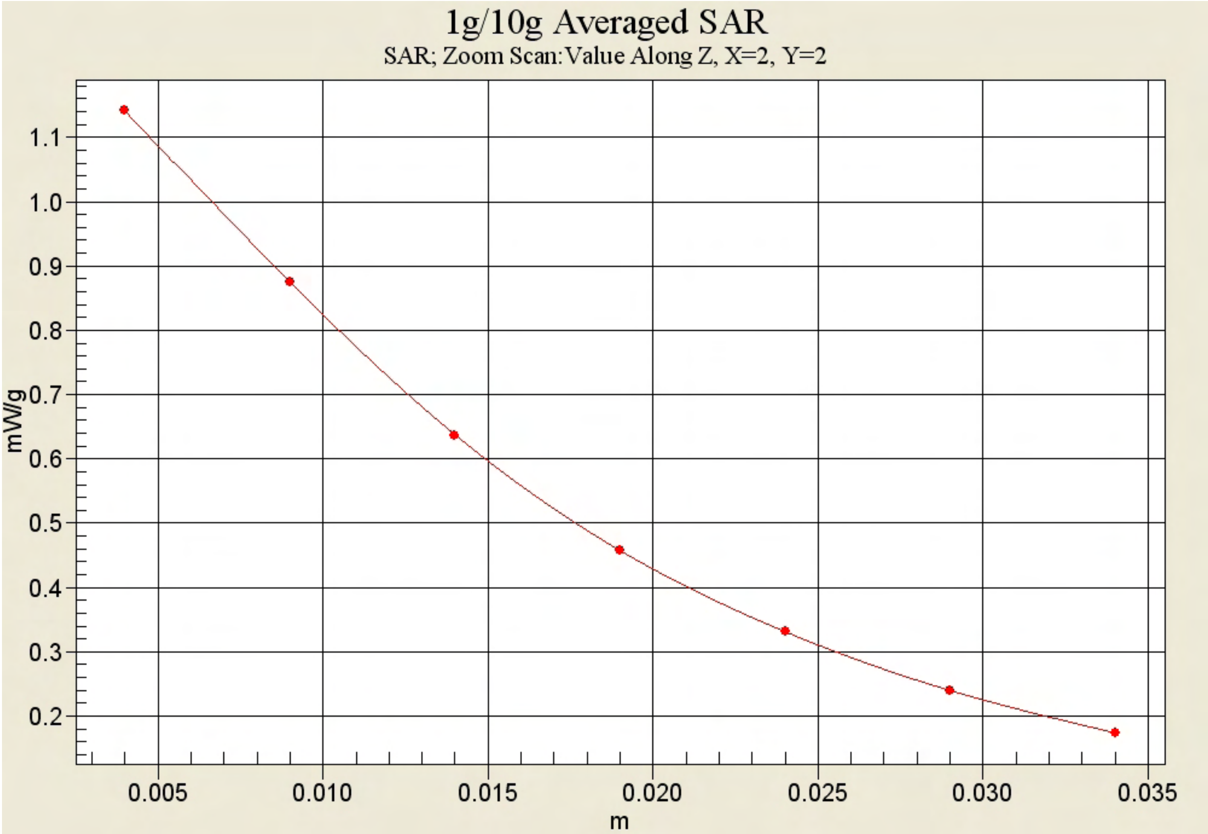


Fig.1-1 Z-Scan at power reference point (850 MHz CH251)

850 Left Cheek Middle
Date/Time: 2010-6-28 8:07:42
Electronics: DAE4 Sn771
Medium: 850 HEAD
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.878 mho/m; εr = 40.7; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 Frequency: 836.6 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Cheek Middle/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.19 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.7 V/m; Power Drift = -0.087 dB
Peak SAR (extrapolated) = 1.46 W/kg
SAR(1 g) = 1.06 mW/g; SAR(10 g) = 0.756 mW/g
Maximum value of SAR (measured) = 1.12 mW/g

0 dB = 1.12mW/g

Fig. 2 850 MHz CH190

850 Left Cheek Low

Date/Time: 2010-6-28 8:50:56
Electronics: DAE4 Sn771
Medium: 850 HEAD
Medium parameters used: f = 825 MHz; σ = 0.866 mho/m; εr = 40.7; ρ = 1000 kg/m^3
Ambient Temperature:23.0^{o}C   Liqiud Temperature: 22.5^{o}C
Communication System: GSM 850 Frequency: 824.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Cheek Low/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.16 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.8 V/m; Power Drift = 0.037 dB
Peak SAR (extrapolated) = 1.43 W/kg
SAR(1 g) = 1.04 mW/g; SAR(10 g) = 0.748 mW/g
Maximum value of SAR (measured) = 1.10 mW/g

0 dB = 1.10mW/g

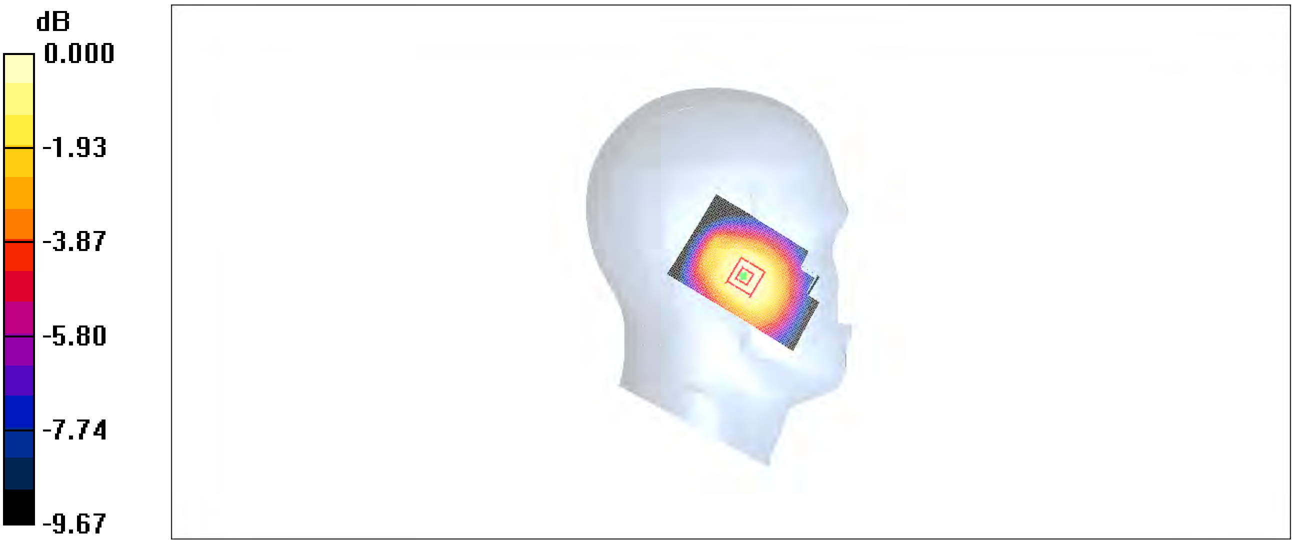
Fig. 3 850 MHz CH128

850 Left Tilt Middle

Date/Time: 2010-6-28 8:22:13
Electronics: DAE4 Sn771
Medium: 850 HEAD
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.878 mho/m; εr = 40.7; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C   Liqiud Temperature: 22.5°C
Communication System: GSM 850 Frequency: 836.6 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Tilt Middle/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.466 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.5 V/m; Power Drift = 0.005 dB
Peak SAR (extrapolated) = 0.564 W/kg
SAR(1 g) = 0.445 mW/g; SAR(10 g) = 0.328 mW/g
Maximum value of SAR (measured) = 0.469 mW/g



0 dB = 0.469mW/g

Fig. 4 850 MHz CH190

850 Right Cheek High

Date/Time: 2010-6-28 9:33:49

Electronics: DAE4 Sn771

Medium: 850 HEAD

Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.89 mho/m; εr = 40.6; ρ = 1000 kg/m^3

Ambient Temperature:23.0^{o}C   Liqiud Temperature: 22.5^{o}C

Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3

Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Cheek High/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.985 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 13.0 V/m; Power Drift = -0.058 dB

Peak SAR (extrapolated) = 1.16 W/kg

SAR(1 g) = 0.922 mW/g; SAR(10 g) = 0.673 mW/g

Maximum value of SAR (measured) = 0.961 mW/g

0 dB = 0.961mW/g

Fig. 5 850MHz CH251

850 Right Cheek Middle

Date/Time: 2010-6-28 9:05:17

Electronics: DAE4 Sn771

Medium: 850 HEAD

Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.878 mho/m; εr = 40.7; ρ = 1000 kg/m^3

Ambient Temperature:23.0^{o}C Liqiud Temperature: 22.5^{o}C

Communication System: GSM 850 Frequency: 836.6 MHz Duty Cycle: 1:8.3

Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Cheek Middle/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.929 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 12.8 V/m; Power Drift = 0.123 dB

Peak SAR (extrapolated) = 1.14 W/kg

SAR(1 g) = 0.885 mW/g; SAR(10 g) = 0.649 mW/g

Maximum value of SAR (measured) = 0.935 mW/g

0 dB = 0.935mW/g

Fig. 6 850 MHz CH190

850 Right Cheek Low

Date/Time: 2010-6-28 9:48:02
Electronics: DAE4 Sn771
Medium: 850 HEAD
Medium parameters used: f = 825 MHz; σ = 0.866 mho/m; εr = 40.7; ρ = 1000 kg/m^3
Ambient Temperature:23.0^{o}C Liqiud Temperature: 22.5^{o}C
Communication System: GSM 850 Frequency: 824.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Cheek Low/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.886 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.9 V/m; Power Drift = -0.027 dB
Peak SAR (extrapolated) = 1.06 W/kg
SAR(1 g) = 0.835 mW/g; SAR(10 g) = 0.615 mW/g
Maximum value of SAR (measured) = 0.881 mW/g

0 dB = 0.881mW/g

Fig. 7 850 MHz CH128

850 Right Tilt Middle
Date/Time: 2010-6-28 9:19:30
Electronics: DAE4 Sn771
Medium: 850 HEAD
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.878 mho/m; εr = 40.7; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 Frequency: 836.6 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Tilt Middle/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.500 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.6 V/m; Power Drift = -0.080 dB
Peak SAR (extrapolated) = 0.610 W/kg
SAR(1 g) = 0.474 mW/g; SAR(10 g) = 0.347 mW/g
Maximum value of SAR (measured) = 0.503 mW/g

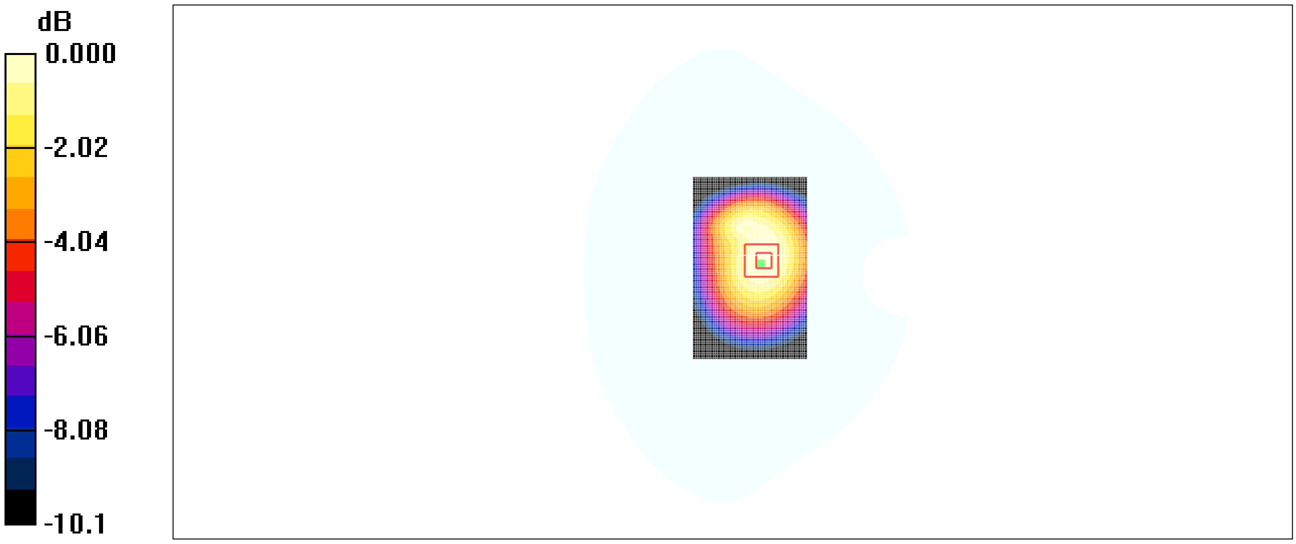
0 dB = 0.503mW/g

Fig. 8 850 MHz CH190

850 Body Towards Ground High with GPRS
Date/Time: 2010-6-28 13:41:06
Electronics: DAE4 Sn771
Medium: 850 Body
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.96 mho/m; εr = 54.4; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 GPRS Frequency: 848.8 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

Toward Ground High/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.02 mW/g

Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.5 V/m; Power Drift = -0.047 dB
Peak SAR (extrapolated) = 1.31 W/kg
SAR(1 g) = 0.949 mW/g; SAR(10 g) = 0.659 mW/g
Maximum value of SAR (measured) = 1.00 mW/g



0 dB = 1.00mW/g

Fig. 9 850 MHz CH251

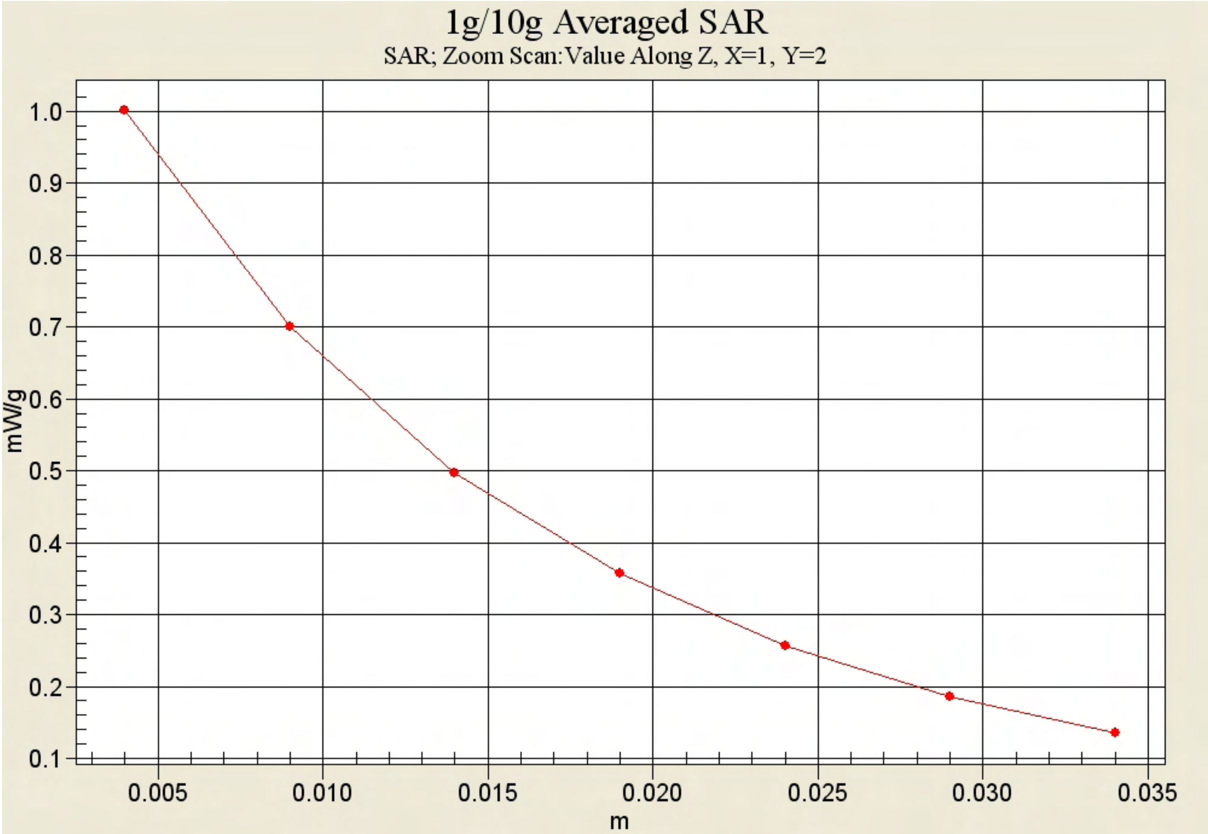
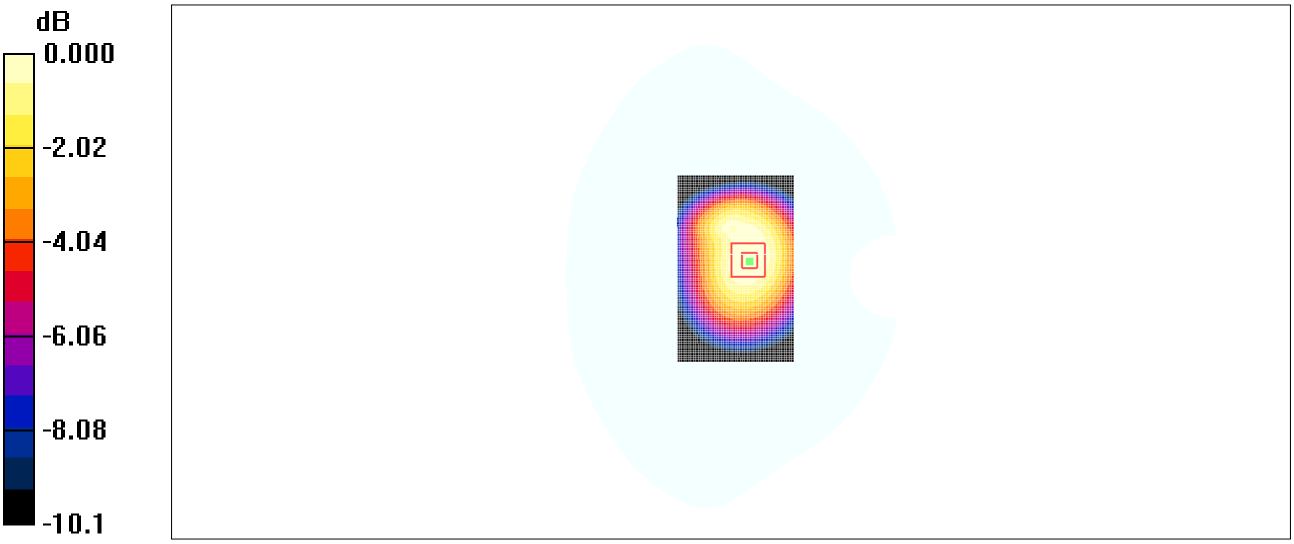


Fig. 9-1 Z-Scan at power reference point (850 MHz CH251)

850 Body Towards Ground Middle with GPRS
Date/Time: 2010-6-28 13:56:20
Electronics: DAE4 Sn771
Medium: 850 Body
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.95 mho/m; εr = 54.5; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 GPRS Frequency: 836.6 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

Toward Ground Middle/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.975 mW/g

Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.2 V/m; Power Drift = -0.098 dB
Peak SAR (extrapolated) = 1.25 W/kg
SAR(1 g) = 0.917 mW/g; SAR(10 g) = 0.640 mW/g
Maximum value of SAR (measured) = 0.945 mW/g



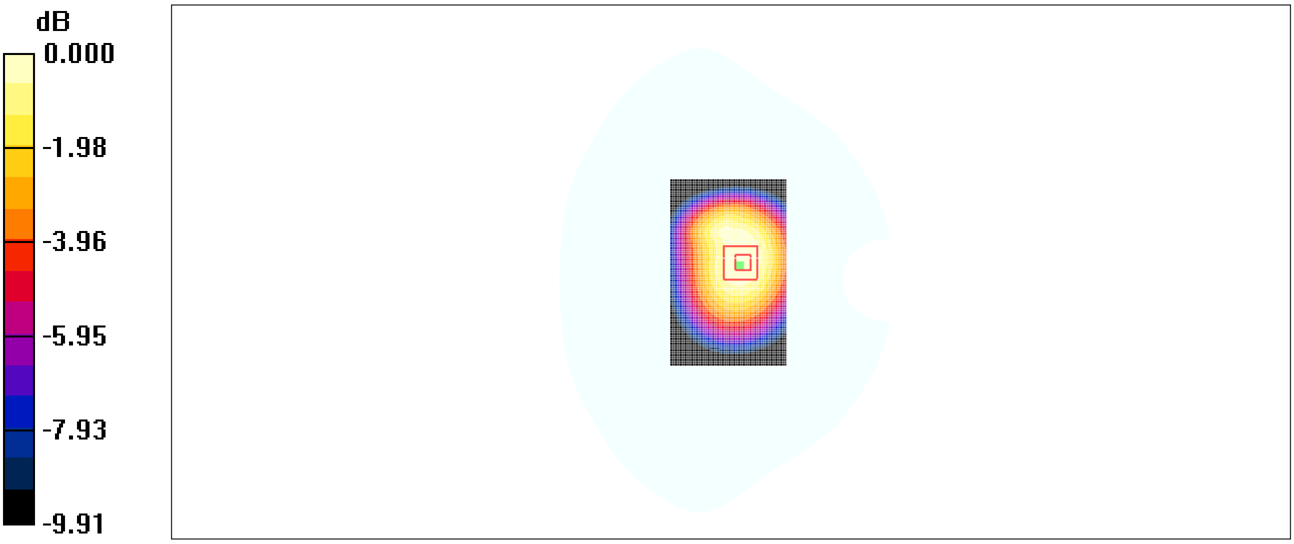
0 dB = 0.945mW/g

Fig. 10 850 MHz CH190

850 Body Towards Ground Low with GPRS
Date/Time: 2010-6-28 14:11:37
Electronics: DAE4 Sn771
Medium: 850 Body
Medium parameters used (interpolated): f = 825 MHz; σ = 0.933 mho/m; εr = 54.6; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 GPRS Frequency: 824.2 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

Toward Ground Low/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.997 mW/g

Toward Ground Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.6 V/m; Power Drift = -0.077 dB
Peak SAR (extrapolated) = 1.27 W/kg
SAR(1 g) = 0.934 mW/g; SAR(10 g) = 0.654 mW/g
Maximum value of SAR (measured) = 0.984 mW/g



0 dB = 0.984mW/g

Fig. 11 850 MHz CH128

850 Body Towards Ground High with EGPRS

Date/Time: 2010-6-28 14:28:01

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.96 mho/m; εr = 54.4; ρ = 1000 kg/m^3

Ambient Temperature:23.0°C   Liqiud Temperature: 22.5°C

Communication System: GSM 850 GPRS Frequency: 848.8 MHz Duty Cycle: 1:4

Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

Toward Ground High/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.370 mW/g

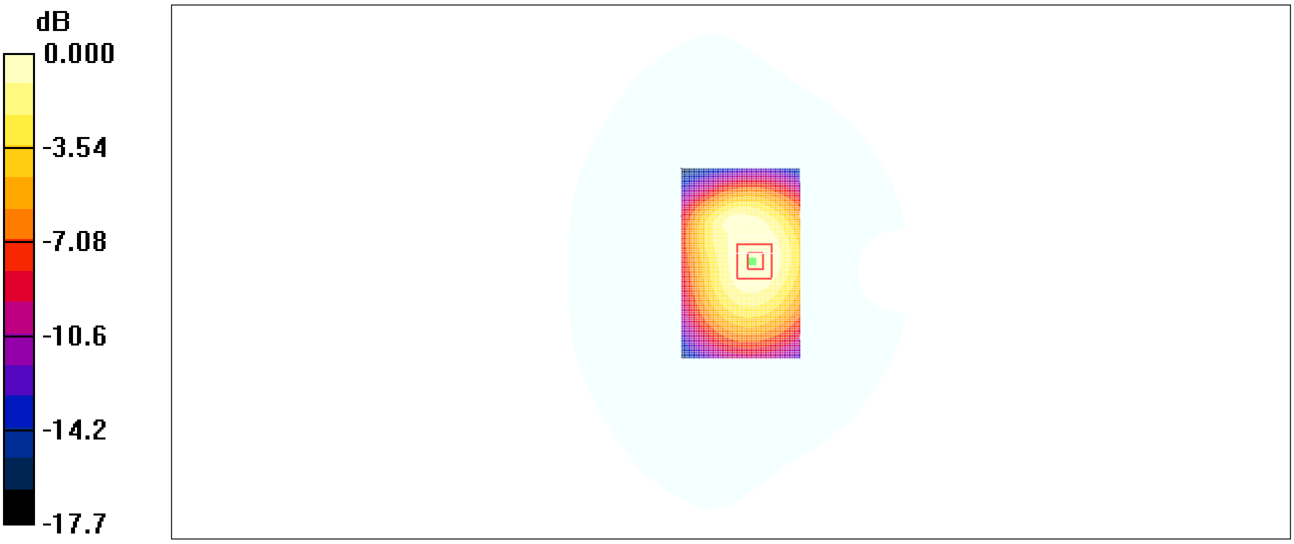
Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.9 V/m; Power Drift = -0.059 dB

Peak SAR (extrapolated) = 0.475 W/kg

SAR(1 g) = 0.345 mW/g; SAR(10 g) = 0.241 mW/g

Maximum value of SAR (measured) = 0.361 mW/g



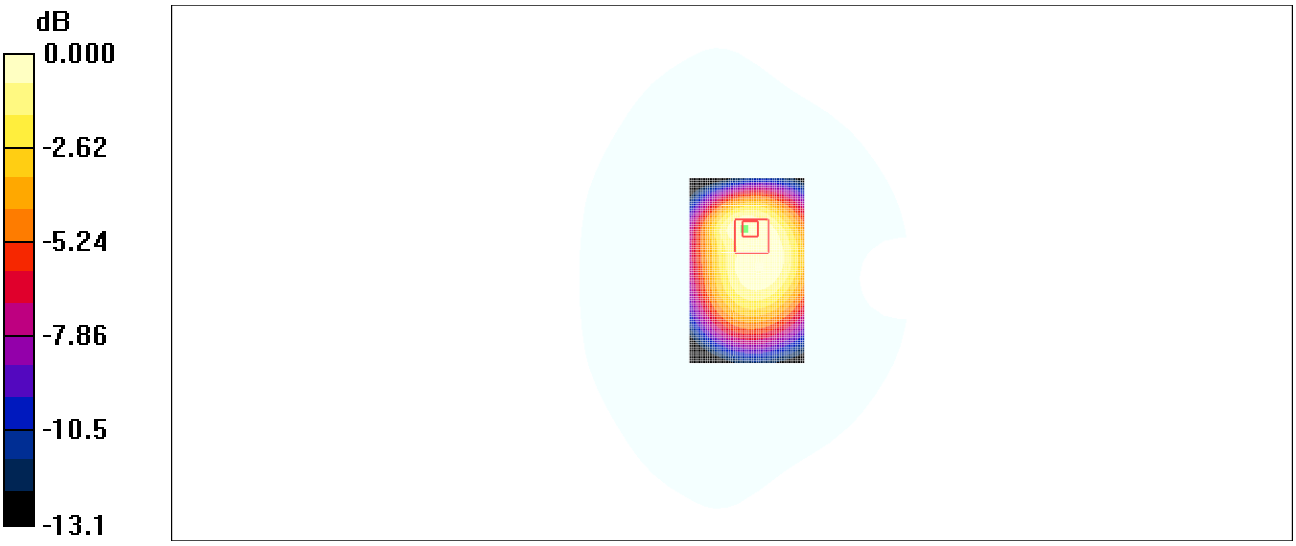
0 dB = 0.361mW/g

Fig. 12 850 MHz CH251

850 Body Towards Ground High with Headset
Date/Time: 2010-6-28 14:45:21
Electronics: DAE4 Sn771
Medium: 850 Body
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.96 mho/m; εr = 54.4; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

Toward Ground High/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.703 mW/g

Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 24.1 V/m; Power Drift = 0.014 dB
Peak SAR (extrapolated) = 0.900 W/kg
SAR(1 g) = 0.611 mW/g; SAR(10 g) = 0.422 mW/g
Maximum value of SAR (measured) = 0.649 mW/g



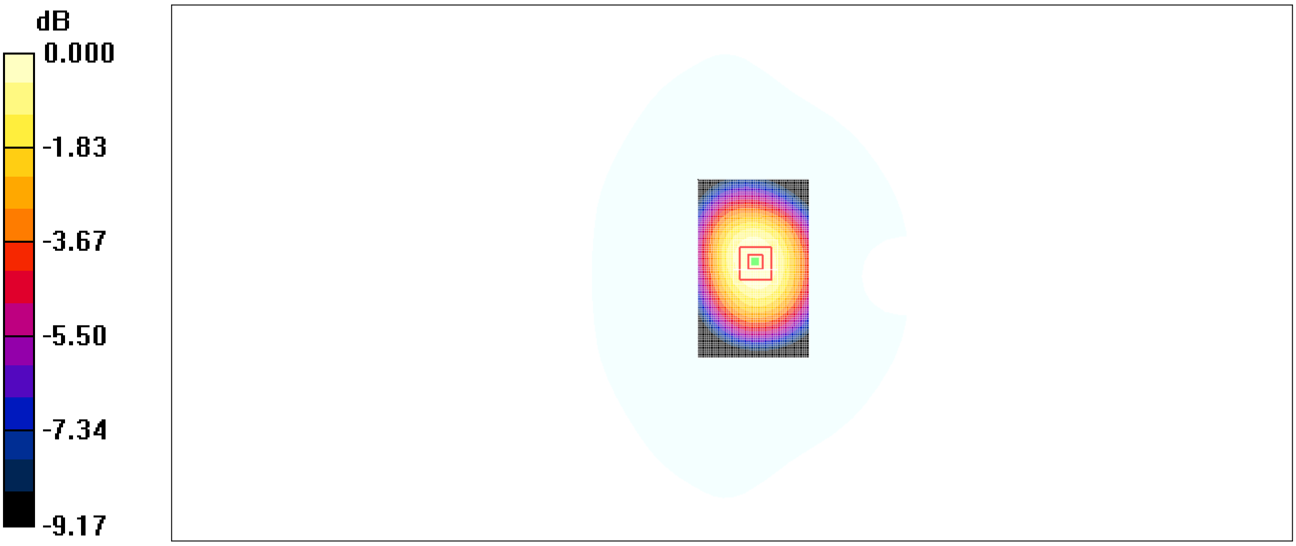
0 dB = 0.649mW/g

Fig. 13 850 MHz CH251

850 Body Towards Phantom High with GPRS
Date/Time: 2010-6-28 15:02:42
Electronics: DAE4 Sn771
Medium: 850 Body
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.96 mho/m; εr = 54.4; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 GPRS Frequency: 848.8 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

Toward Phantom High/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.684 mW/g

Toward Phantom High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 25.8 V/m; Power Drift = -0.082 dB
Peak SAR (extrapolated) = 0.834 W/kg
SAR(1 g) = 0.644 mW/g; SAR(10 g) = 0.464 mW/g
Maximum value of SAR (measured) = 0.664 mW/g



0 dB = 0.664mW/g

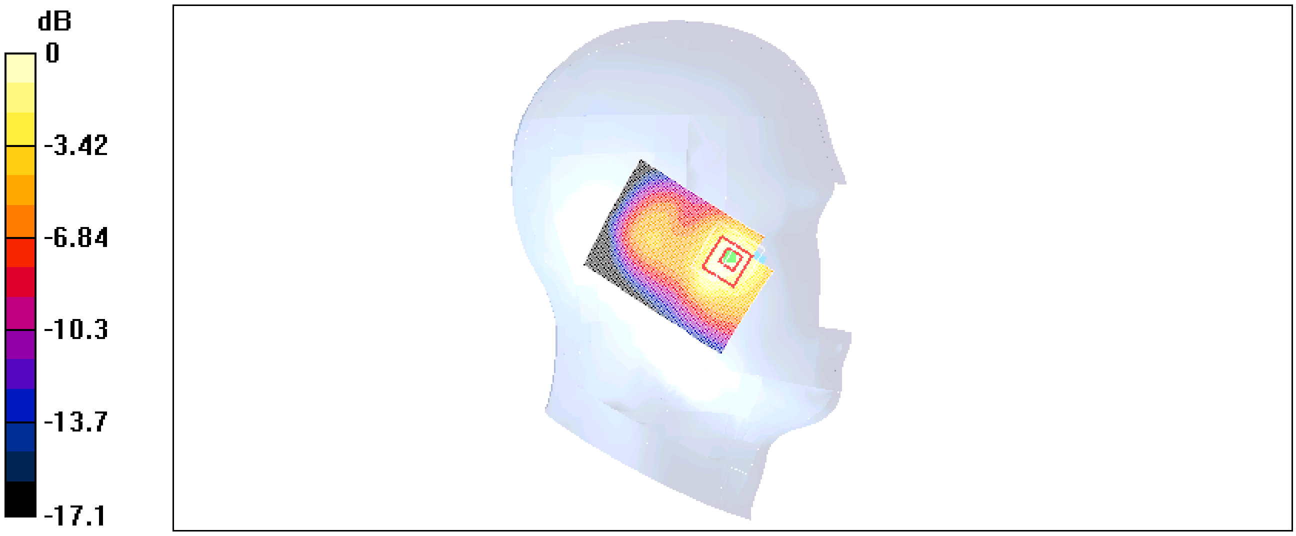
Fig. 14 850 MHz CH251

1900 Left Cheek High

Date/Time: 2010-6-29 8:40:36
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1910 MHz; σ = 1.41 mho/m; εr = 39.6; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz new Frequency: 1909.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Cheek High/Area Scan (51x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.832 mW/g

Cheek High/Zoom Scan (7x7x7) Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.5 V/m; Power Drift = -0.124 dB
Peak SAR (extrapolated) = 1.2 W/kg
SAR(1 g) = 0.748 mW/g; SAR(10 g) = 0.445 mW/g
Maximum value of SAR (measured) = 0.811 mW/g



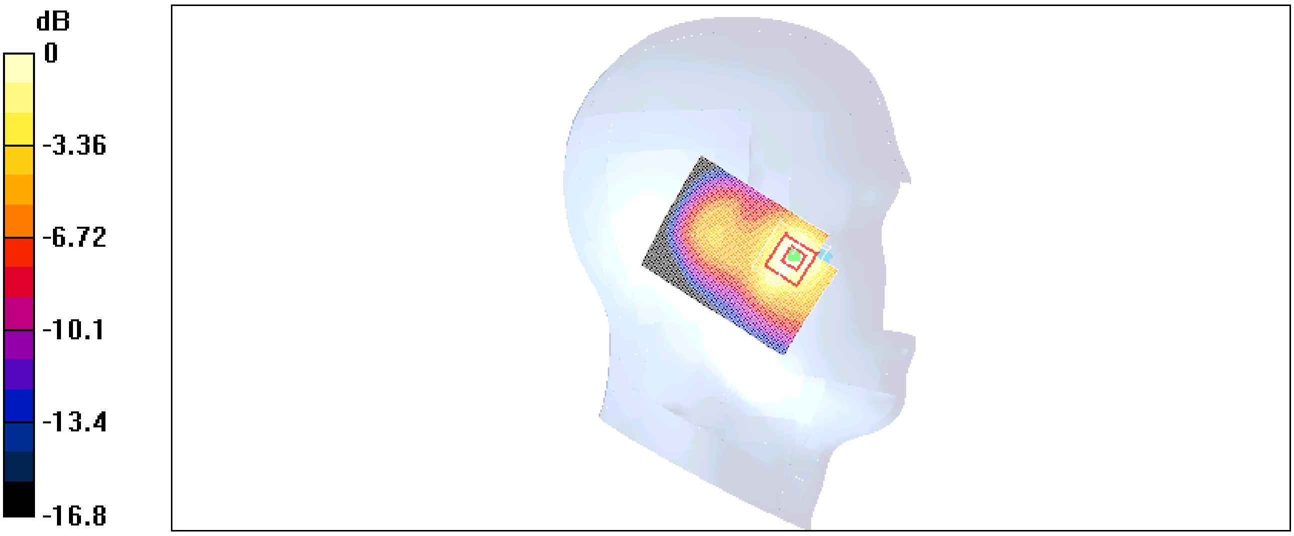
0 dB = 0.811mW/g

Fig. 15 1900 MHz CH810

1900 Left Cheek Middle
Date/Time: 2010-6-29 8:11:25
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; εr = 39.7; ρ = 1000 kg/m^3
Ambient Temperature:23.0^{o}C Liqiud Temperature: 22.5^{o}C
Communication System: GSM 1900MHz new Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Cheek Middle/Area Scan (51x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.970 mW/g

Cheek Middle/Zoom Scan (7x7x7) Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.7 V/m; Power Drift = -0.147 dB
Peak SAR (extrapolated) = 1.39 W/kg
SAR(1 g) = 0.875 mW/g; SAR(10 g) = 0.516 mW/g
Maximum value of SAR (measured) = 0.947 mW/g



0 dB = 0.947mW/g

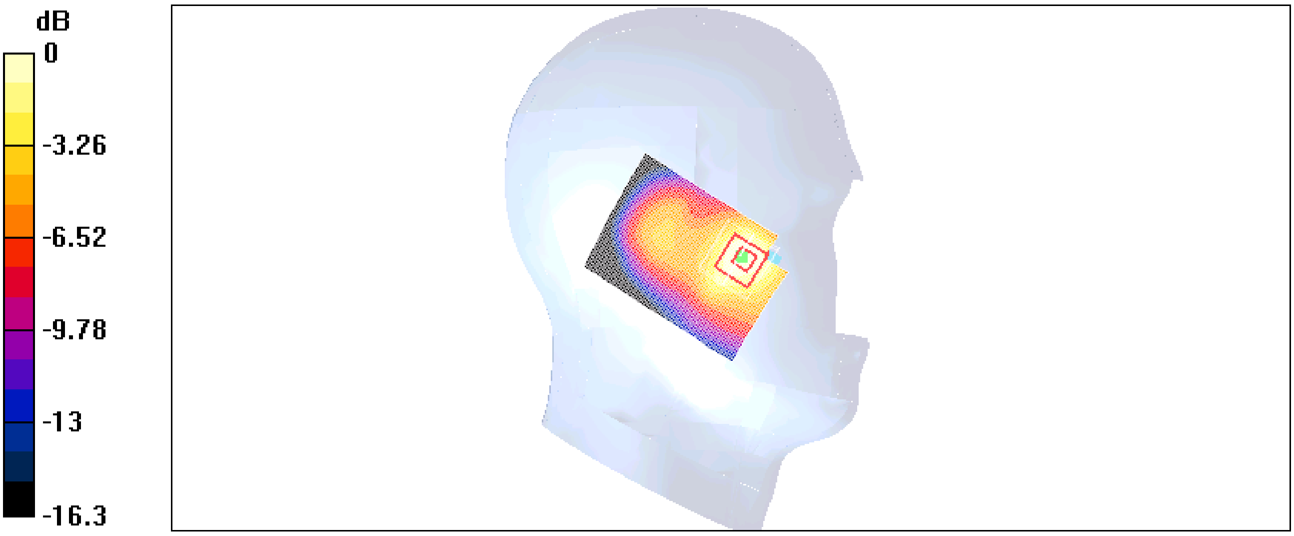
Fig. 16 1900 MHz CH661

1900 Left Cheek Low

Date/Time: 2010-6-29 8:54:49
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.36 mho/m; εr = 39.8; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz new Frequency: 1850.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Cheek Low/Area Scan (51x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1 mW/g

Cheek Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.7 V/m; Power Drift = -0.025 dB
Peak SAR (extrapolated) = 1.44 W/kg
SAR(1 g) = 0.908 mW/g; SAR(10 g) = 0.534 mW/g
Maximum value of SAR (measured) = 0.973 mW/g



0 dB = 0.973mW/g

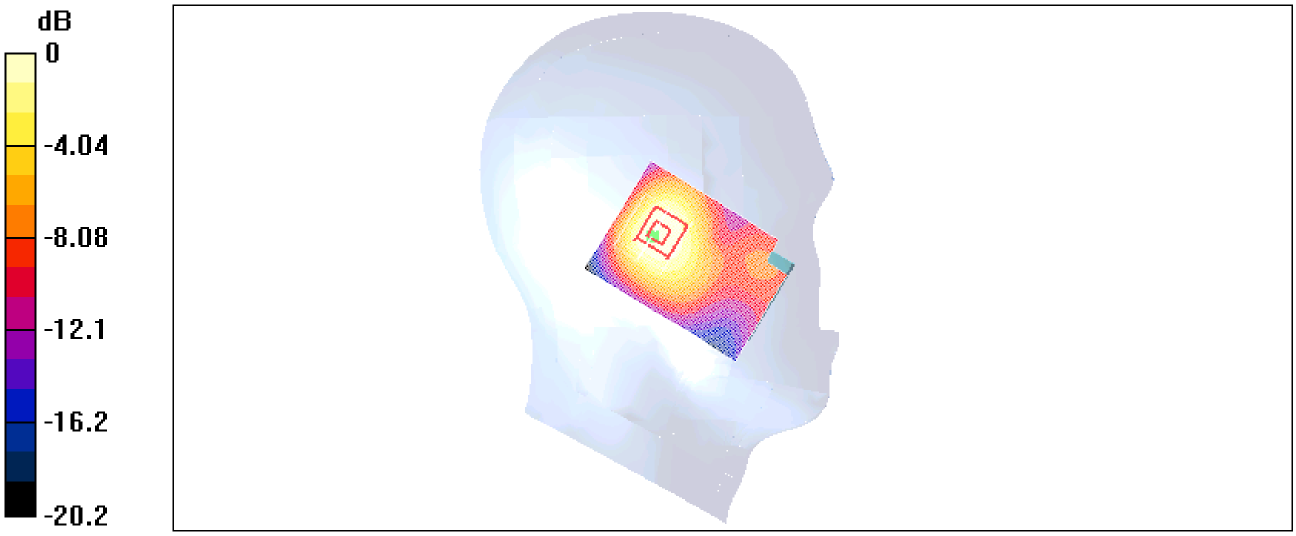
Fig. 17 1900 MHz CH512

1900 Left Tilt Middle

Date/Time: 2010-6-29 8:25:57
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; εr = 39.7; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz new Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Tilt Middle/Area Scan (51x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.549 mW/g

Tilt Middle/Zoom Scan (7x7x7) Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.6 V/m; Power Drift = -0.00903 dB
Peak SAR (extrapolated) = 0.717 W/kg
SAR(1 g) = 0.473 mW/g; SAR(10 g) = 0.290 mW/g
Maximum value of SAR (measured) = 0.498 mW/g



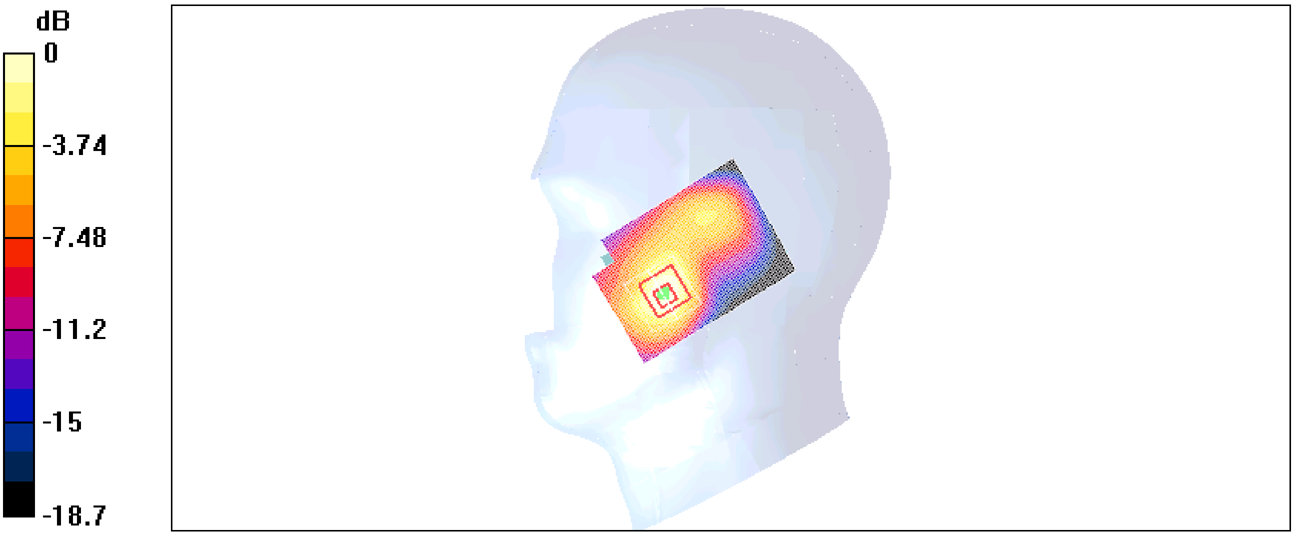
0 dB = 0.498mW/g

Fig. 18 1900 MHz CH661

1900 Right Cheek High
Date/Time: 2010-6-29 9:38:11
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1910 MHz; σ = 1.41 mho/m; εr = 39.6; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz new Frequency: 1909.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Cheek High/Area Scan (51x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.09 mW/g

Cheek High/Zoom Scan (7x7x7) Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10 V/m; Power Drift = -0.000805 dB
Peak SAR (extrapolated) = 1.74 W/kg
SAR(1 g) = 1 mW/g; SAR(10 g) = 0.545 mW/g
Maximum value of SAR (measured) = 1.11 mW/g



0 dB = 1.11mW/g

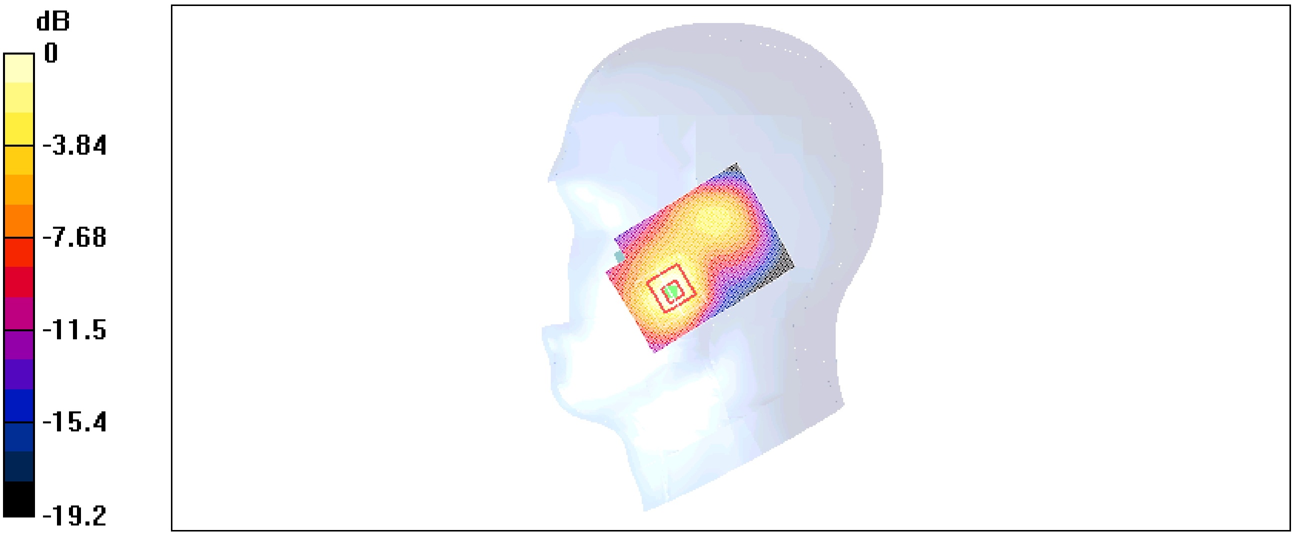
Fig. 19 1900 MHz CH810

1900 Right Cheek Middle

Date/Time: 2010-6-29 9:09:28
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; εr = 39.7; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz new Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Cheek Middle/Area Scan (51x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.27 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.8 V/m; Power Drift = -0.083 dB
Peak SAR (extrapolated) = 2.02 W/kg
SAR(1 g) = 1.17 mW/g; SAR(10 g) = 0.632 mW/g
Maximum value of SAR (measured) = 1.3 mW/g



0 dB = 1.3mW/g

Fig. 20 1900 MHz CH661

1900 Right Cheek Low

Date/Time: 2010-6-29 9:52:37

Electronics: DAE4 Sn771

Medium: Head 1900 MHz

Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.36 mho/m; εr = 39.8; ρ = 1000 kg/m^3

Ambient Temperature:23.0^{o}C Liqiud Temperature: 22.5^{o}C

Communication System: GSM 1900MHz new Frequency: 1850.2 MHz Duty Cycle: 1:8.3

Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Cheek Low/Area Scan (51x71x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 1.41 mW/g

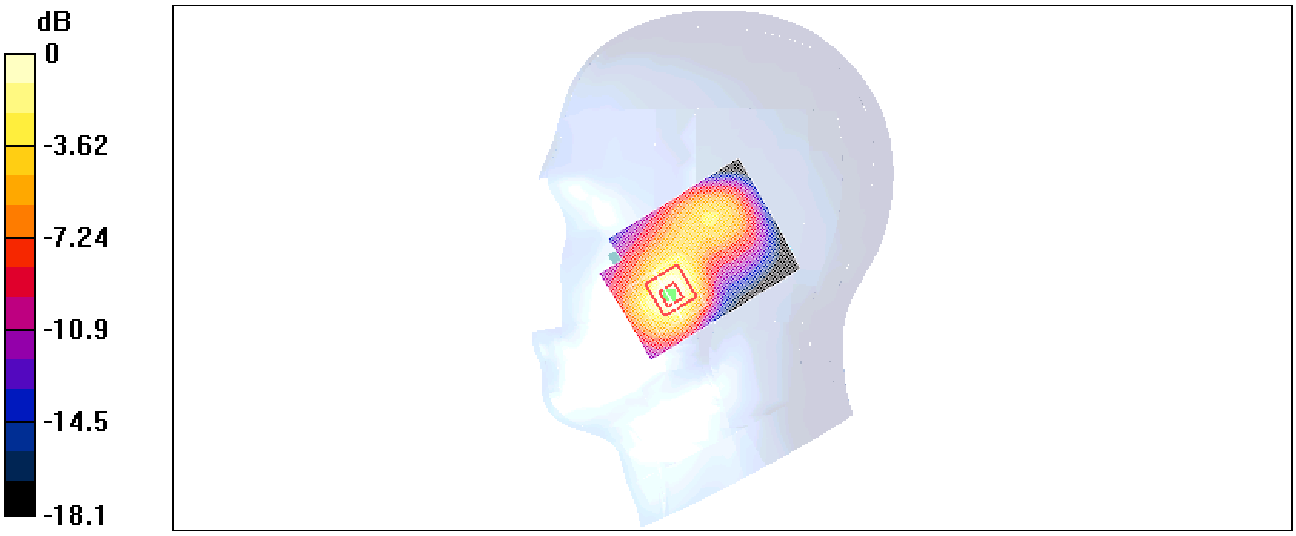
Cheek Low/Zoom Scan (7x7x7) Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.6 V/m; Power Drift = 0.022 dB

Peak SAR (extrapolated) = 2.19 W/kg

SAR(1 g) = 1.3 mW/g; SAR(10 g) = 0.708 mW/g

Maximum value of SAR (measured) = 1.43 mW/g



0 dB = 1.43mW/g

Fig. 21 1900 MHz CH512

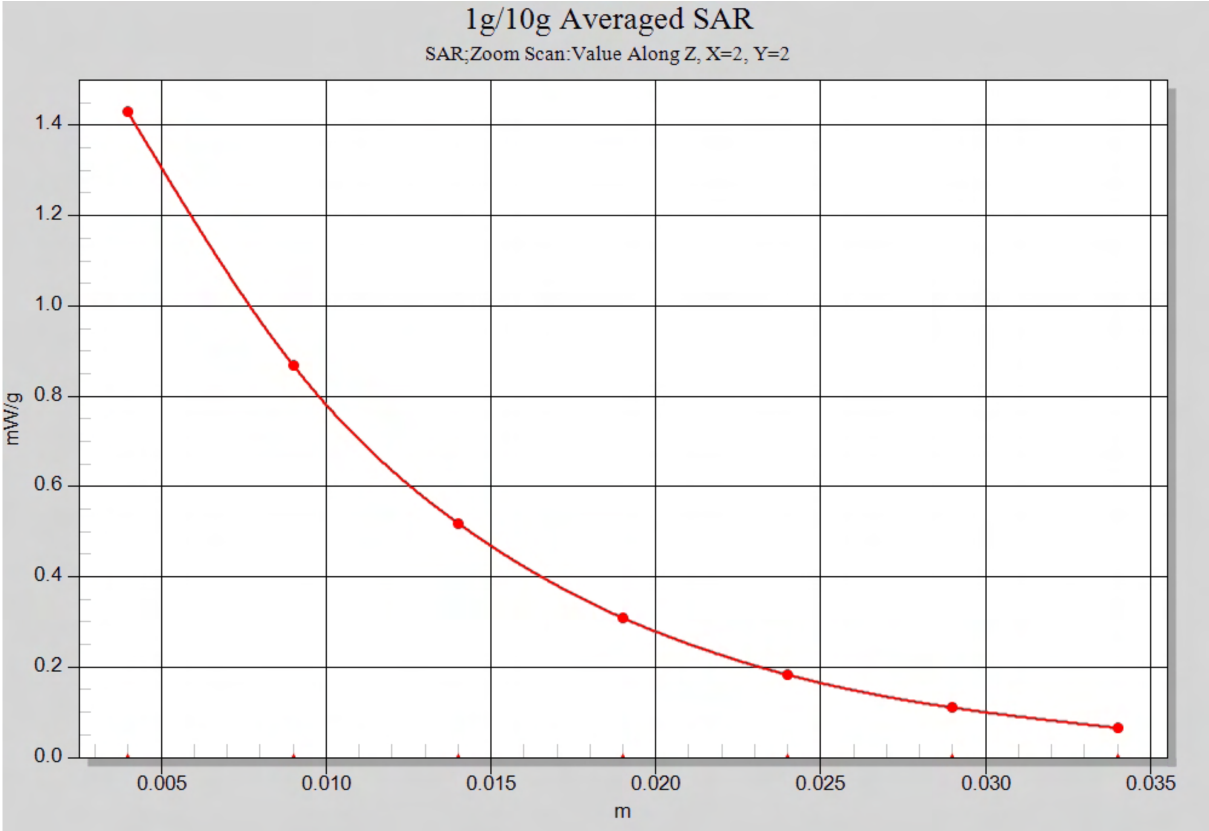


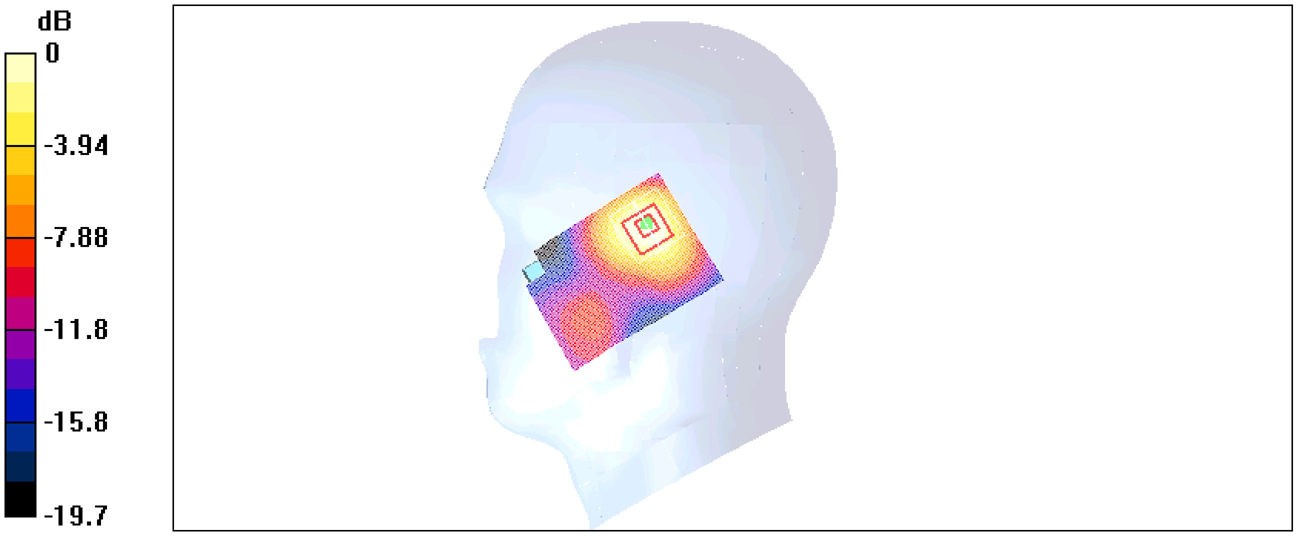
Fig. 21-1 Z-Scan at power reference point (1900 MHz CH512)

1900 Right Tilt Middle

Date/Time: 2010-6-29 9:23:40
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; εr = 39.7; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C   Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz new Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Tilt Middle/Area Scan (51x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.909 mW/g

Tilt Middle/Zoom Scan (7x7x7) Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.6 V/m; Power Drift = 0.049 dB
Peak SAR (extrapolated) = 1.19 W/kg
SAR(1 g) = 0.762 mW/g; SAR(10 g) = 0.451 mW/g
Maximum value of SAR (measured) = 0.834 mW/g



0 dB = 0.834mW/g

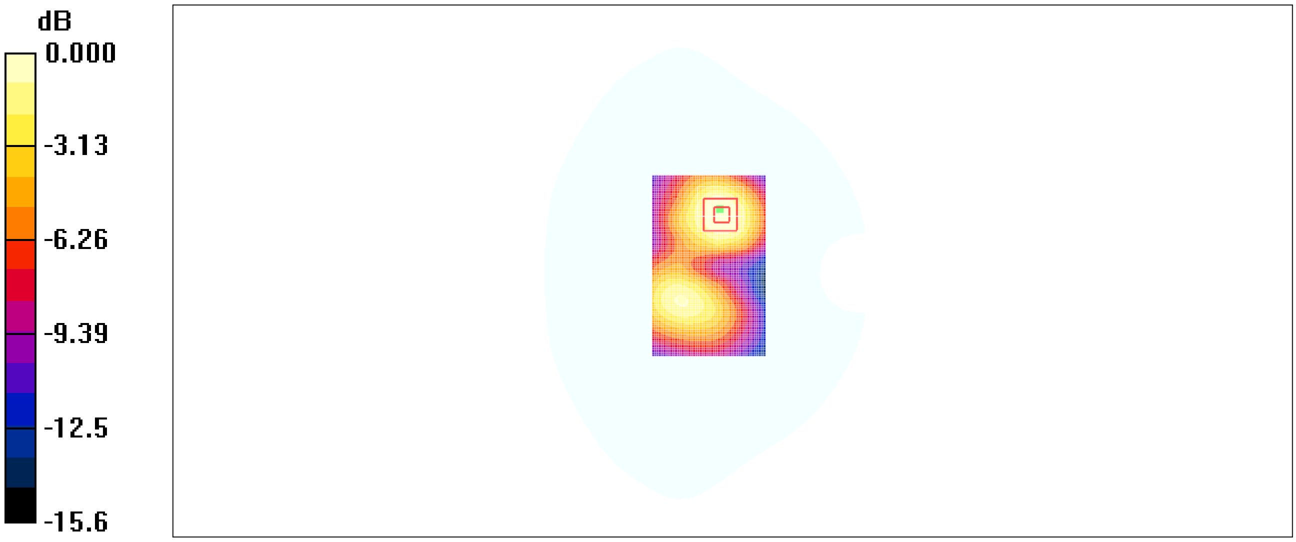
Fig.22 1900 MHz CH661

1900 Body Towards Ground High with GPRS

Date/Time: 2010-6-29 13:45:50
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1910 MHz; σ = 1.55 mho/m; εr = 51.8; ρ = 1000 kg/m^3
Ambient Temperature:23.0^{o}C Liqiud Temperature: 22.5^{o}C
Communication System: GSM 1900MHz GPRS Frequency: 1909.8 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

Toward Ground High/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.795 mW/g

Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.1 V/m; Power Drift = 0.050 dB
Peak SAR (extrapolated) = 1.17 W/kg
SAR(1 g) = 0.699 mW/g; SAR(10 g) = 0.412 mW/g
Maximum value of SAR (measured) = 0.729 mW/g



0 dB = 0.729mW/g

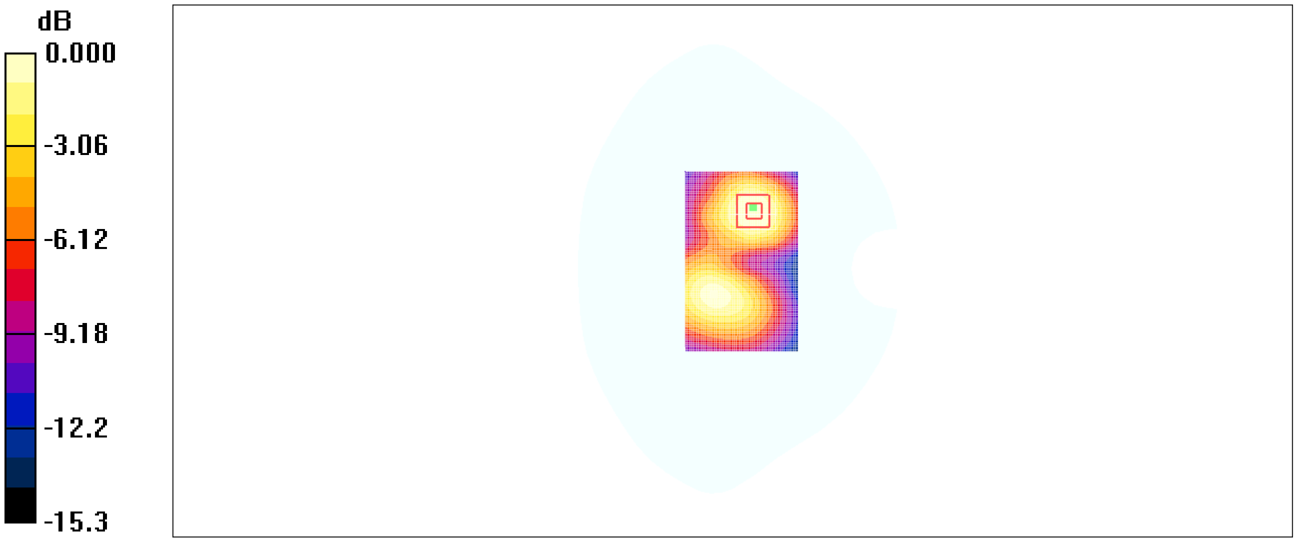
Fig. 23 1900 MHz CH810

1900 Body Towards Ground Middle with GPRS

Date/Time: 2010-6-29 14:01:13
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.52 mho/m; εr = 51.9; ρ = 1000 kg/m^3
Ambient Temperature:23.0^{o}C Liqiud Temperature: 22.5^{o}C
Communication System: GSM 1900MHz GPRS Frequency: 1880 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

Toward Ground Middle/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.936 mW/g

Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.5 V/m; Power Drift = -0.059 dB
Peak SAR (extrapolated) = 1.36 W/kg
SAR(1 g) = 0.816 mW/g; SAR(10 g) = 0.478 mW/g
Maximum value of SAR (measured) = 0.845 mW/g



0 dB = 0.845mW/g

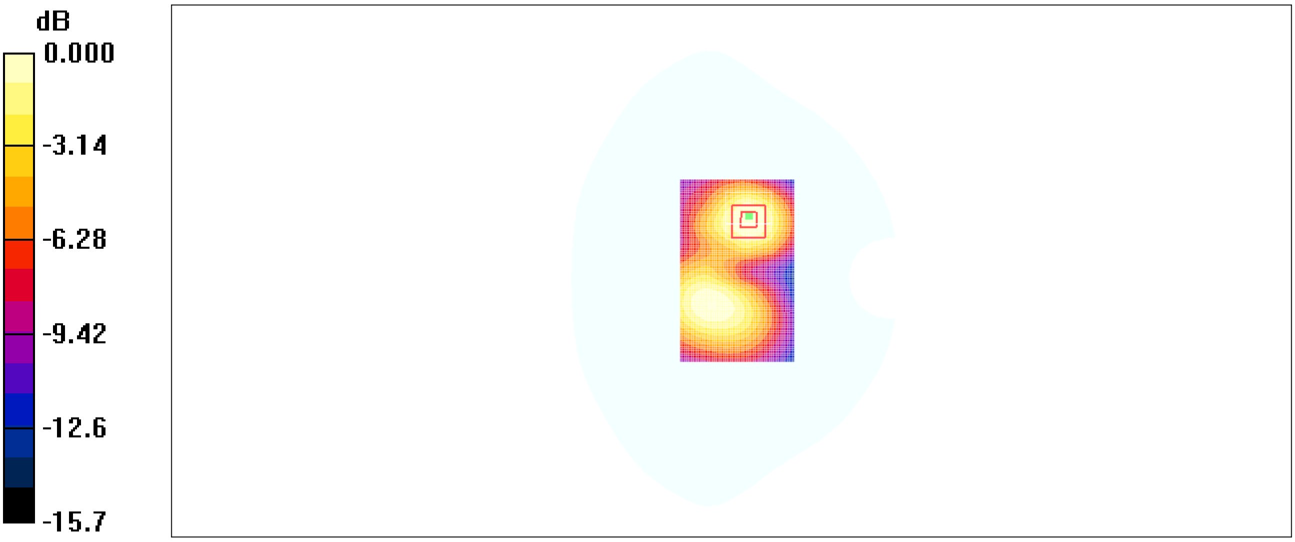
Fig. 24 1900 MHz CH661

1900 Body Towards Ground Low with GPRS

Date/Time: 2010-6-29 14:16:33
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.50 mho/m; εr = 51.9; ρ = 1000 kg/m^3
Ambient Temperature:$23.0^{o}C$ Liqiud Temperature: $22.5^{o}C$
Communication System: GSM 1900MHz GPRS Frequency: 1850.2 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

Toward Ground Low/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.925 mW/g

Toward Ground Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.9 V/m; Power Drift = -0.012 dB
Peak SAR (extrapolated) = 1.36 W/kg
SAR(1 g) = 0.820 mW/g; SAR(10 g) = 0.476 mW/g
Maximum value of SAR (measured) = 0.848 mW/g



0 dB = 0.848mW/g

Fig. 25 1900 MHz CH512

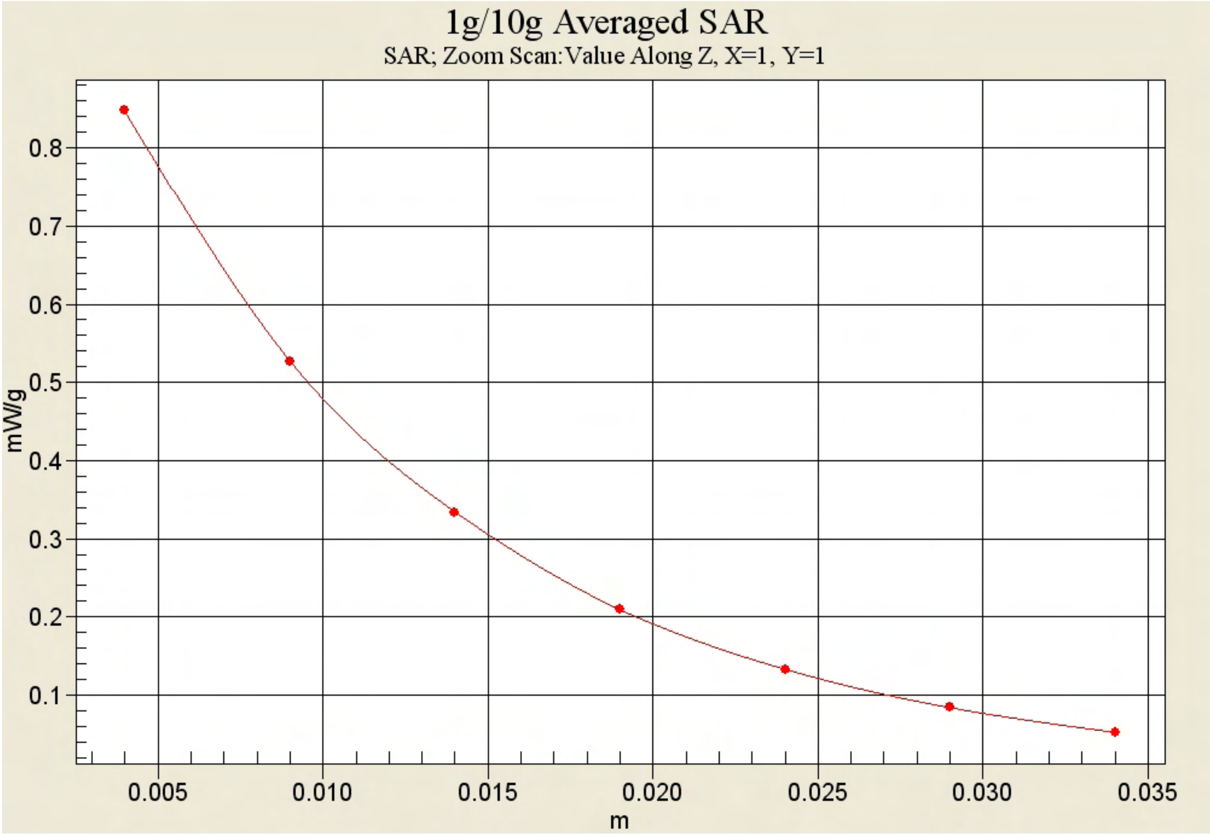
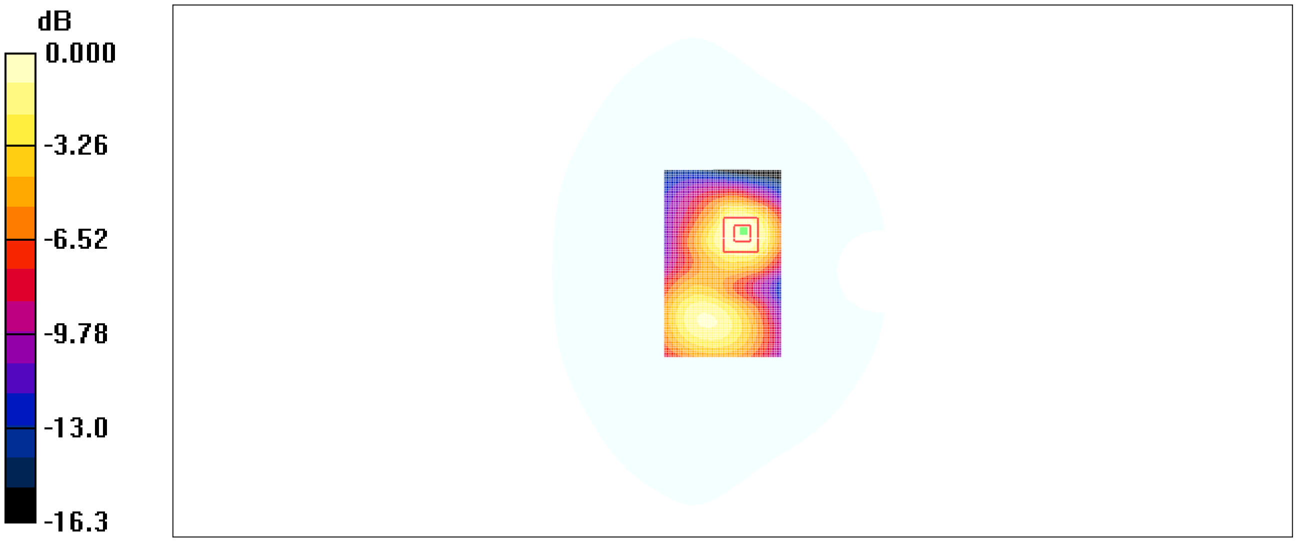


Fig. 25-1 Z-Scan at power reference point (1900 MHz CH512)

1900 Body Towards Ground Low with EGPRS
Date/Time: 2010-6-29 14:33:06
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.50 mho/m; εr = 51.9; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz GPRS Frequency: 1850.2 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

Toward Ground Low/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.450 mW/g

Toward Ground Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.76 V/m; Power Drift = -0.099 dB
Peak SAR (extrapolated) = 0.647 W/kg
SAR(1 g) = 0.384 mW/g; SAR(10 g) = 0.219 mW/g
Maximum value of SAR (measured) = 0.394 mW/g



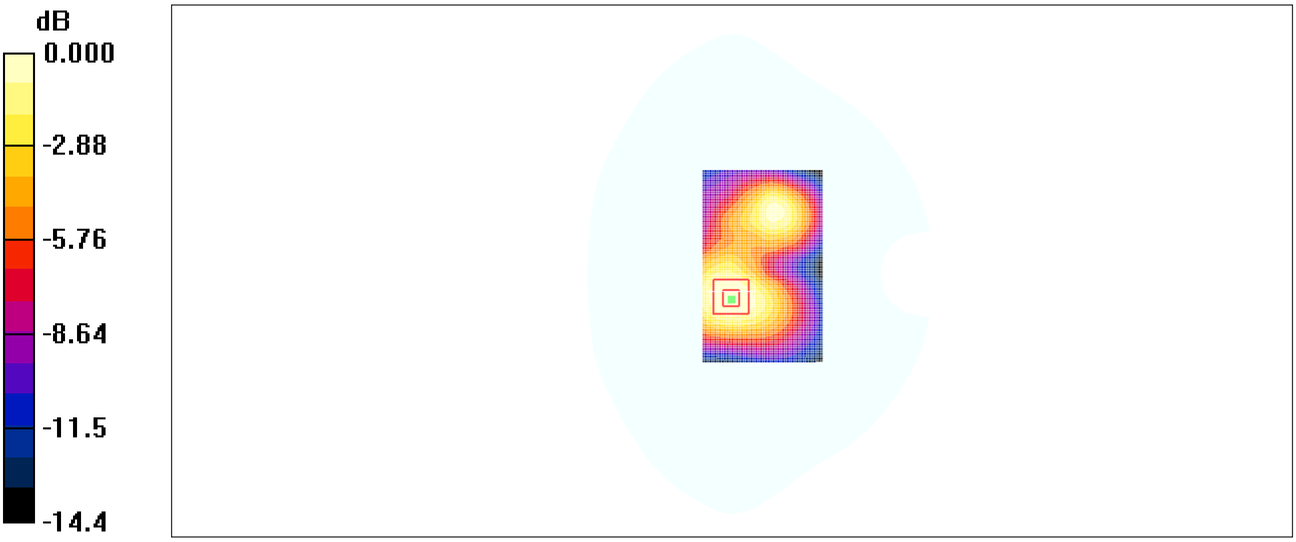
0 dB = 0.394mW/g

Fig. 26 1900 MHz CH512

1900 Body Towards Ground Low with Headset
Date/Time: 2010-6-29 14:50:22
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.50 mho/m; εr = 51.9; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1850.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

Toward Ground Low/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.493 mW/g

Toward Ground Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.2 V/m; Power Drift = -0.005 dB
Peak SAR (extrapolated) = 0.686 W/kg
SAR(1 g) = 0.446 mW/g; SAR(10 g) = 0.279 mW/g
Maximum value of SAR (measured) = 0.457 mW/g



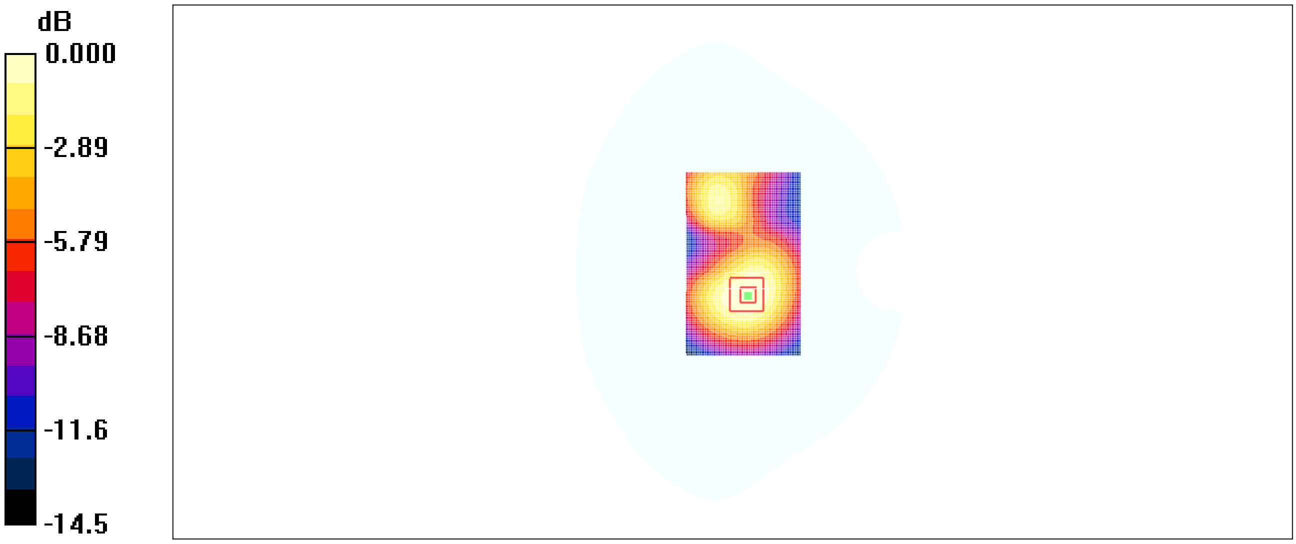
0 dB = 0.457mW/g

Fig. 27 1900 MHz CH512

1900 Body Towards Phantom Low with GPRS
Date/Time: 2010-6-29 15:07:28
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.50 mho/m; εr = 51.9; ρ = 1000 kg/m^3
Ambient Temperature:23.0^{o}C   Liqiud Temperature: 22.5^{o}C
Communication System: GSM 1900MHz GPRS Frequency: 1850.2 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

Toward Phantom Low/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.697 mW/g

Toward Phantom Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.7 V/m; Power Drift = 0.196 dB
Peak SAR (extrapolated) = 0.961 W/kg
SAR(1 g) = 0.625 mW/g; SAR(10 g) = 0.395 mW/g
Maximum value of SAR (measured) = 0.646 mW/g



0 dB = 0.646mW/g

Fig.28 1900 MHz CH512

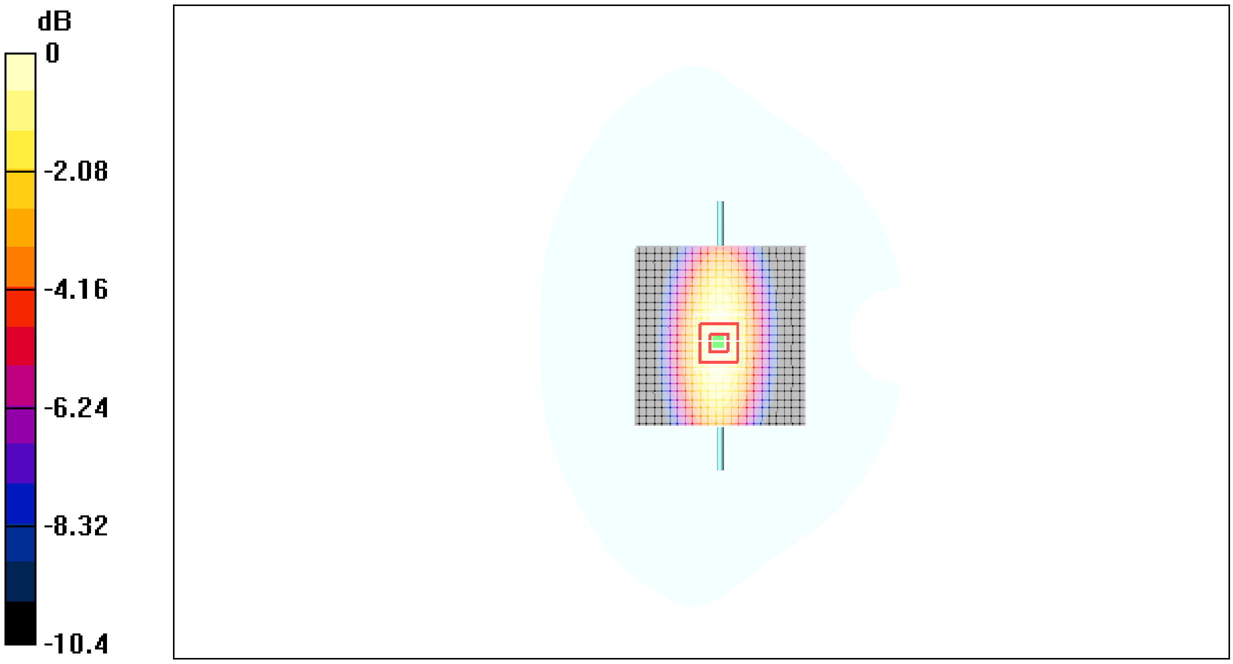
ANNEX D SYSTEM VALIDATION RESULTS

835MHz

Date/Time: 2010-6-28 7:28:15
Electronics: DAE4 Sn771
Medium: Head 850
Medium parameters used: f = 835 MHz; σ = 0.87 mho/m; ε_r = 40.7; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

System Validation /Area Scan (101x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 2.51 mW/g

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.9 V/m; Power Drift = -0.078 dB
Peak SAR (extrapolated) = 3.36 W/kg
SAR(1 g) = 2.28 mW/g; SAR(10 g) = 1.49 mW/g
Maximum value of SAR (measured) = 2.41 mW/g



0 dB = 2.41mW/g

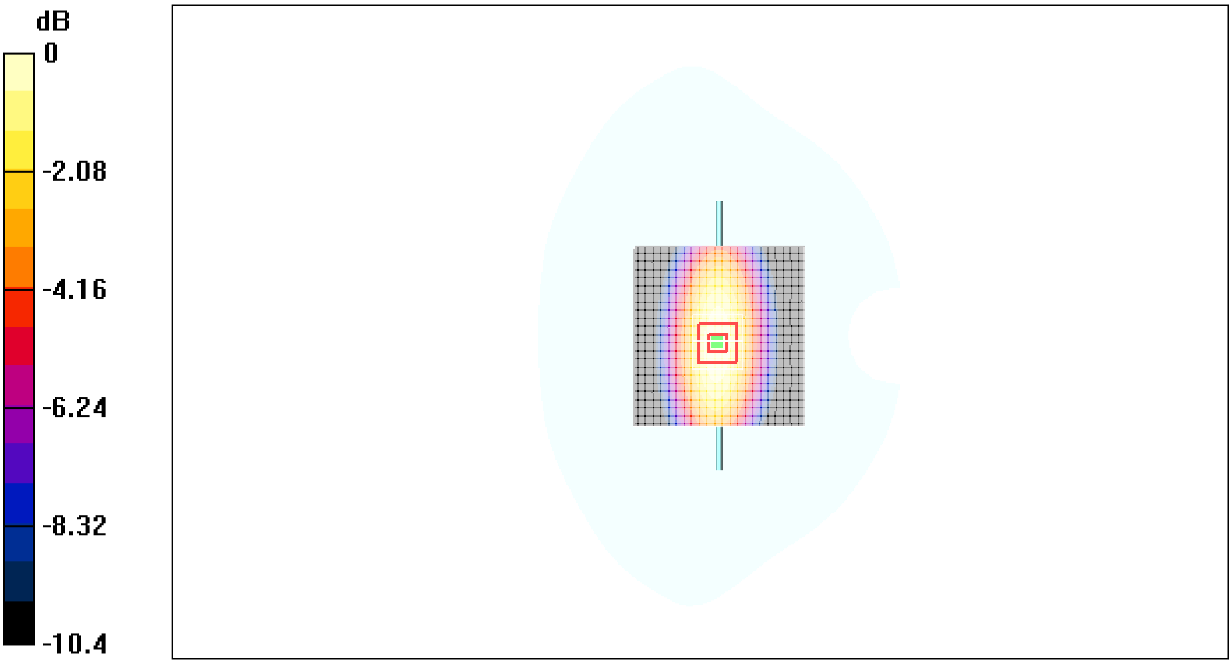
Fig.29 validation 835MHz 250mW

835MHz

Date/Time: 2010-6-28 13:16:41
Electronics: DAE4 Sn771
Medium: 850 Body
Medium parameters used: f = 835 MHz; σ = 0.94 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3
Ambient Temperature:23.0^{o}C Liquid Temperature: 22.5^{o}C
Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

System Validation /Area Scan (101x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 2.48 mW/g

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 50.5V/m; Power Drift = -0.063 dB
Peak SAR (extrapolated) = 3.31 W/kg
SAR(1 g) = 2.30 mW/g; SAR(10 g) = 1.52 mW/g
Maximum value of SAR (measured) = 2.37 mW/g



0 dB = 2.37mW/g

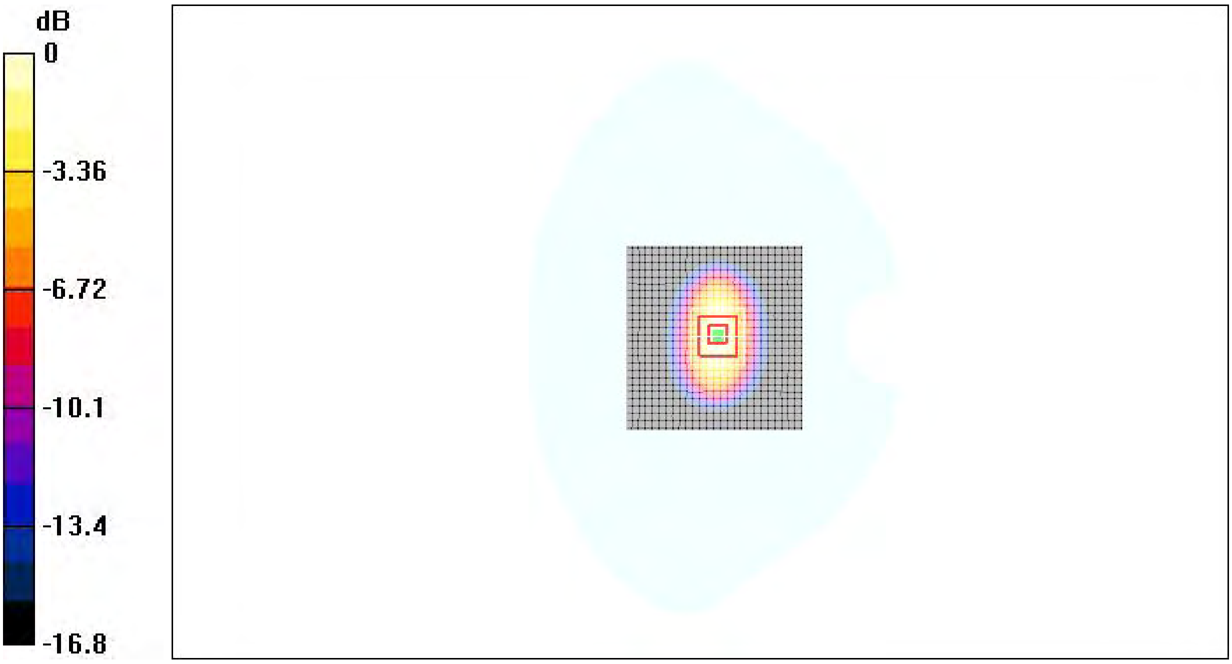
Fig.30 validation 835MHz 250mW

1900MHz

Date/Time: 2010-6-29 7:31:10
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.40 mho/m; ε_r = 39.7; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

System Validation/Area Scan (101x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 11.2 mW/g

System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.5 V/m; Power Drift = 0.104 dB
Peak SAR (extrapolated) = 14.9 W/kg
SAR(1 g) = 9.65 mW/g; SAR(10 g) = 4.88 mW/g
Maximum value of SAR (measured) = 10.3 mW/g



0 dB = 10.3mW/g

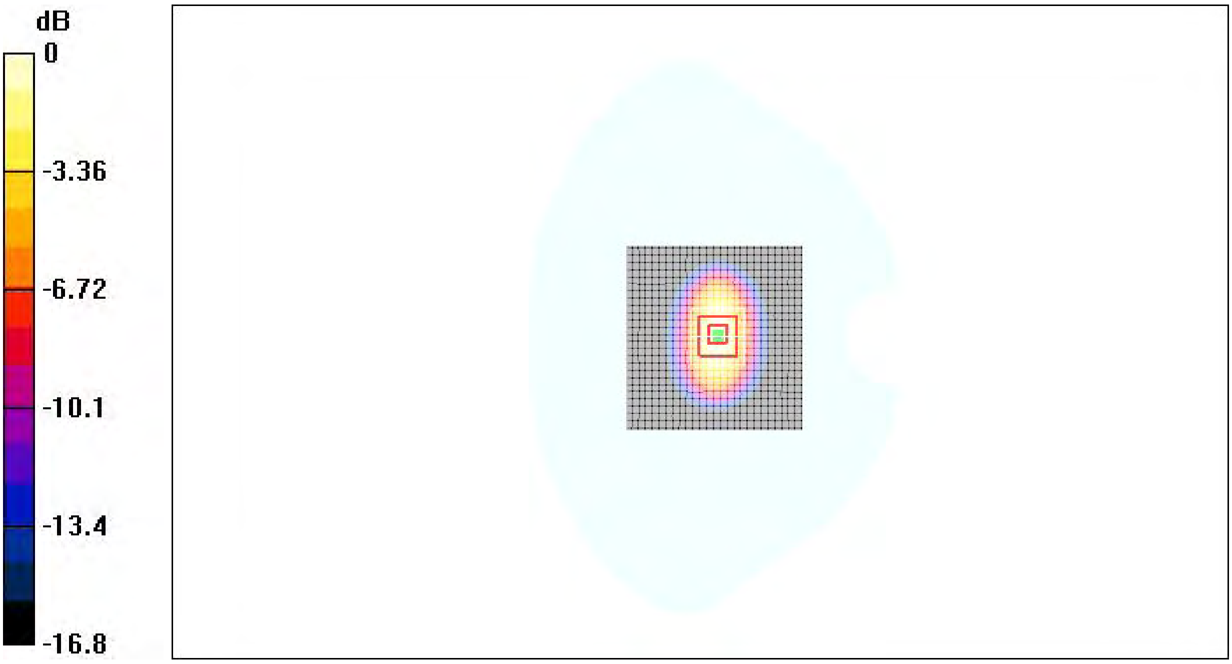
Fig.31 validation 1900MHz 250mW

1900MHz

Date/Time: 2010-6-29 13:21:05
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.54 mho/m; ε_r = 51.8; ρ = 1000 kg/m^3
Ambient Temperature:23.0^{o}C   Liquid Temperature: 22.5^{o}C
Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

System Validation/Area Scan (101x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 11.3 mW/g

System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 90.2 V/m; Power Drift = 0.085 dB
Peak SAR (extrapolated) = 16.0 W/kg
SAR(1 g) = 10.1 mW/g; SAR(10 g) = 5.03 mW/g
Maximum value of SAR (measured) = 10.6 mW/g



0 dB = 10.6mW/g

Fig.32 validation 1900MHz 250mW

Calibration certificate and Test positions are described in the additional document:

Appendix to test report no. 2010SAR00053

Calibration certificate and Test positions

Appendix to test report no. 2010SAR00053

Calibration certificate and Test positions

No. **DGA-PL-114/01-02**

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of TMC Beijing.

Test Laboratory:

TMC Beijing, Telecommunication Metrology Center of MIIT

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TABLE OF CONTENT

ANNEX E PROBE CALIBRATION CERTIFICATE

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
C 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 TMC China

Certificate No: ES3DV3-3149_Sep09

CALIBRATION CERTIFICATE

Object	**ES3DV3-SN: 3149**
Calibration procedure(s)	**QA CAL-01.v6** **Calibration procedure for dosimetric E-field probes**
Calibration date:	**September 25, 2009**
Condition of the calibrated item	**In Tolerance**

This calibration certify 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 at an environment temperature (22±3)^{0}C and humidity<70%

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID#	Cal Data (Calibrated by, Certification NO.)	Scheduled Calibration
Power meter E4419B	GB41293874	5-May-09 (METAS, NO. 251-00388)	May-10
Power sensor E4412A	MY41495277	5-May-09 (METAS, NO. 251-00388)	May-10
Reference 3 dB Attenuator	SN:S5054 (3c)	10-Aug-09 (METAS, NO. 251-00403)	Aug-10
Reference 20 dB Attenuator	SN:S5086 (20b)	3-May-09 (METAS, NO. 251-00389)	May-10
Reference 30 dB Attenuator	SN:S5129 (30b)	10-Aug-09 (METAS, NO. 251-00404)	Aug-10
DAE4	SN:617	10-Jun-09 (SPEAG, NO.DAE4-907_Jun09)	Jun-10
Reference Probe ES3DV2	SN: 3013	12-Jan-09 (SPEAG, NO. ES3-3013_Jan09)	Jan-10

Secondary Standards	ID#	Check Data (in house)	Scheduled Calibration
RF generator HP8648C	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 Nov-07)	In house check: Nov-09

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

Issued: September 25, 2009

This calibration certificate shall not be reported except in full without written approval of the laboratory.

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**

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., ϑ = 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 ϑ = 0 (f ≤ 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 ≤ 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: 3149

Manufactured: June 12, 2007

Calibrated: September 25, 2009

Calibrated for DASY4 System

DASY – Parameters of Probe: ES3DV3 SN:3149

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

NormX	1.14±10.1%	μV/(V/m)^2	DCP X	94mV
NormY	1.23±10.1%	μV/(V/m)^2	DCP Y	95mV
NormZ	1.29±10.1%	μV/(V/m)^2	DCP Z	91mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)
Please see Page 8

Boundary Effect

TSL 900MHz Typical SAR gradient: 5% per mm

Sensor Center to Phantom Surface Distance		3.0 mm	4.0 mm
SARbe[%]	Without Correction Algorithm	3.8	1.6
SARbe[%]	With Correction Algorithm	0.8	0.7

TSL 1810MHz Typical SAR gradient: 10% per mm

Sensor Center to Phantom Surface Distance		3.0 mm	4.0 mm
SARbe[%]	Without Correction Algorithm	6.8	3.6
SARbe[%]	With Correction Algorithm	0.4	0.2

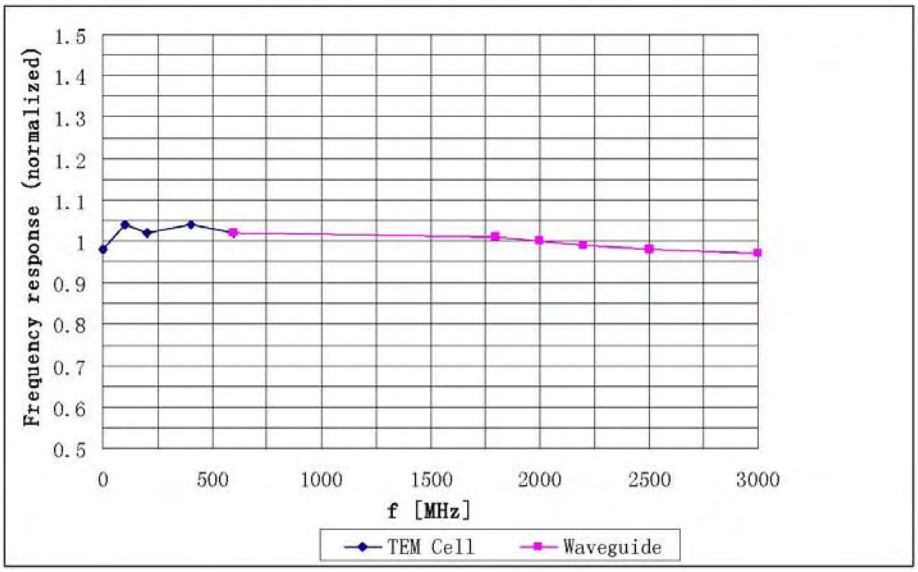
Sensor Offset

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 distributio 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.

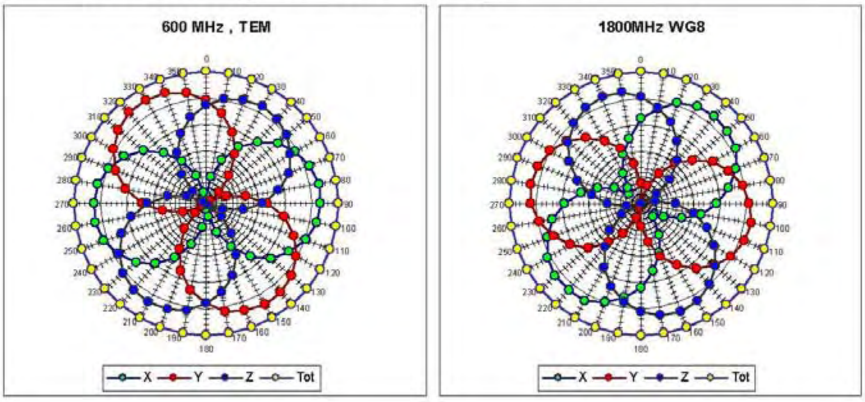
Frequency Response of E-Field

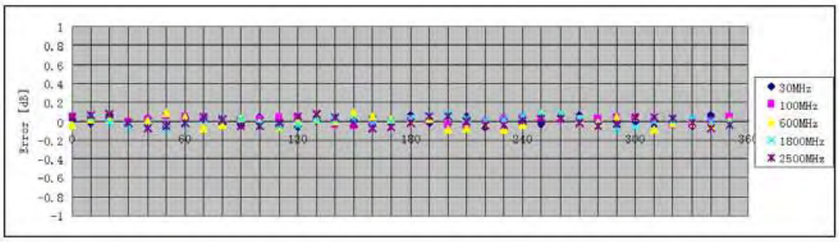


Uncertainty of Frequency Response of E-field: ±5.0% (k=2)

ES3DV3 SN: 3149 September 25, 2009

Receiving Pattern (ϕ), θ =0°

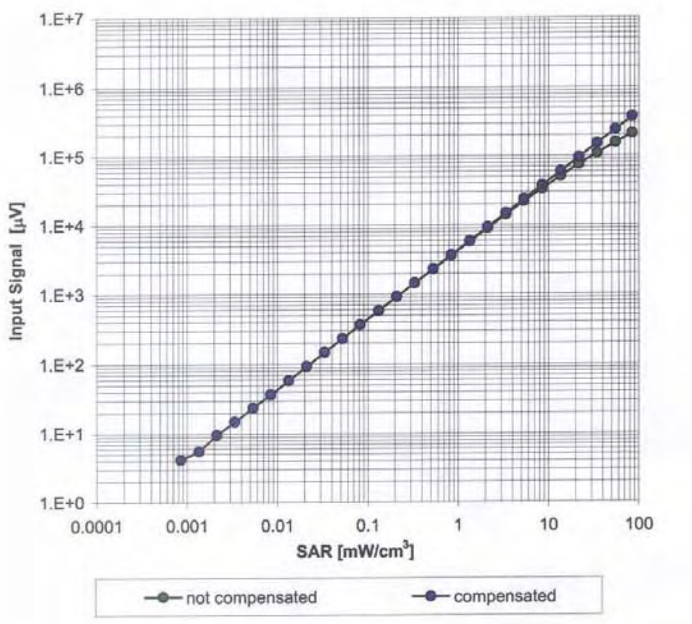


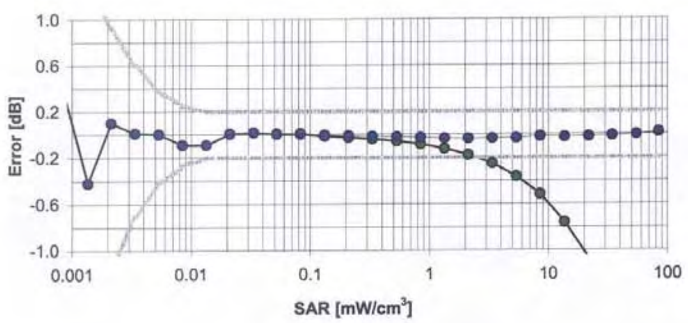


Uncertainty of Axial Isotropy Assessment: ±0.5% (k=2)

Dynamic Range f(SAR_{head})

(Waveguide: WG8, f = 1800 MHz)

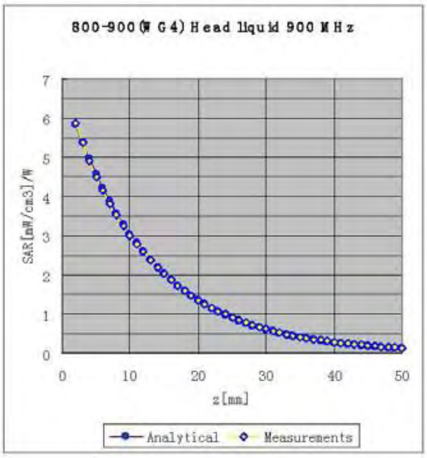


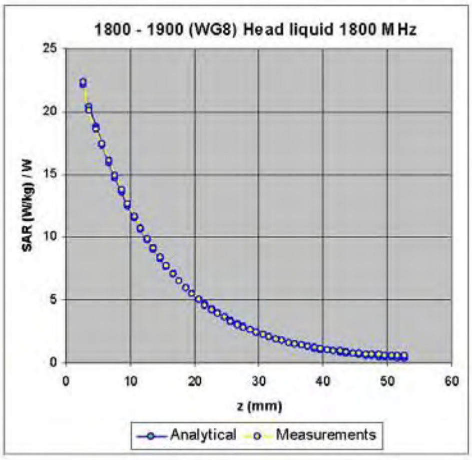


Uncertainty of Linearity Assessment: ±0.5% (k=2)

ES3DV3 SN: 3149 September 25, 2009

Conversion Factor Assessment



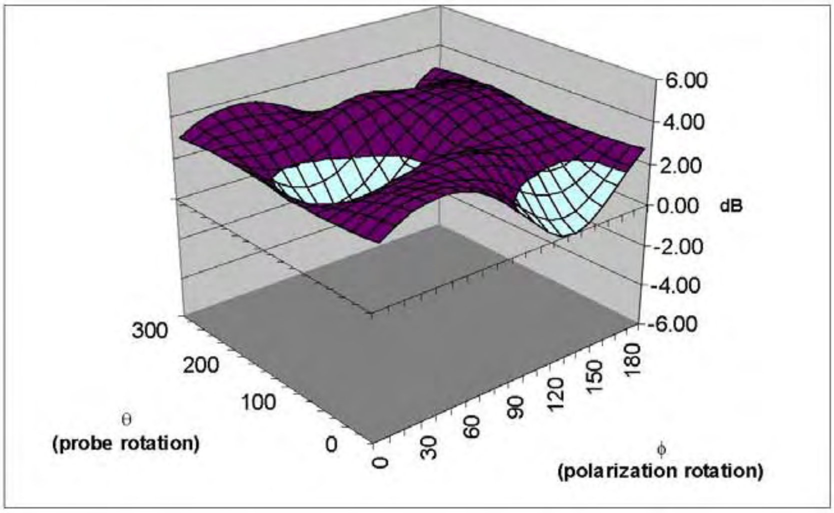


f[MHz]	Validity[MHz][C]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF	Uncertainty
850	±50 / ±100	Head	41.5±5%	0.90±5%	0.91	1.13	6.56	±11.0% (k=2)
900	±50 / ±100	Head	41.5±5%	0.97±5%	0.83	1.26	6.34	±11.0% (k=2)
1800	±50 / ±100	Head	40.0±5%	1.40±5%	0.69	1.47	5.18	±11.0% (k=2)
1900	±50 / ±100	Head	40.0±5%	1.40±5%	0.72	1.38	5.03	±11.0% (k=2)
2100	±50 / ±100	Head	39.8±5%	1.49±5%	0.66	1.34	4.58	±11.0% (k=2)
850	±50 / ±100	Body	55.2±5%	0.97±5%	0.76	1.26	6.22	±11.0% (k=2)
900	±50 / ±100	Body	55.0±5%	1.05±5%	0.99	1.06	6.02	±11.0% (k=2)
1800	±50 / ±100	Body	53.3±5%	1.52±5%	0.75	1.34	4.97	±11.0% (k=2)
1900	±50 / ±100	Body	53.3±5%	1.52±5%	0.62	1.33	4.68	±11.0% (k=2)
2100	±50 / ±100	Body	53.5±5%	1.57±5%	0.68	1.34	4.35	±11.0% (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

Error (ϕ , θ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ±2.5% (k=2)

ANNEX F DIPOLE CALIBRATION CERTIFICATE

835 MHz Dipole Calibration Certificate

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Telecommunication Metrology Center of MIIT

ilac-MRA CNAS 校准 CNAS L0442

Client TMC   Certificate No: D835V2-443_Feb10

CALIBRATION CERTIFICATE

Object	D835V2 - SN: 443
Calibration Procedure(s)	TMC-XZ-01-027 Calibration procedure for dipole validation kits
Calibration date:	February 26, 2010
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)℃ and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRVD	101253	04-Sep-09 (TMC, No.JZ09-248)	Jun-10
Power sensor NRV-Z5	100333	04-Sep-09 (TMC, No. JZ09-248)	Jun-10
Reference Probe ES3DV3	SN 3149	25-Sep-09(SPEAG, No.ES3-3149_Sep09)	Sep-10
DAE4	SN 771	19-Nov-09(SPEAG, No.DAE4-771_Nov09)	Nov-10
RF generator E4438C	MY45092879	18-Jun-09(TMC, No.JZ09-302)	Jun-10
Network Analyzer 8753E	US38433212	29-Aug-09(TMC, No.JZ09-056)	Aug-10

	Name	Function	Signature
Calibrated by:	Lin Hao	SAR Test Engineer	林浩
Reviewed by:	Qi Dianyuan	SAR Project Leader	
Approved by:	Lu Bingsong	Deputy Director of the laboratory	

Issued: February 26, 2010

This calibration certificate shall not be reproduced except in full without written approval of the laboratoty.

Certificate No: D835V2-443_Feb10   Page 1 of 9

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Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORMx,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 300MHz to 3GHz)", 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) DASY 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	DASY5	V5.0
Extrapolation	Advanced Extrapolation	
Phantom	2mm Oval Phantom ELI4	
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	41.6 ± 6 %	0.92mho/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	2.38 mW / g
SAR normalized	normalized to 1W	9.52 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**9.41 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	1.54 mW / g
SAR normalized	normalized to 1W	6.16 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**6.12 mW /g ± 16.5 % (k=2)**

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

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Telecommunication Metrology Center of MIIT

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	54.5 ± 6%	0.97mho/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	**9.57 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	Condition	
SAR measured	250 mW input power	1.57 mW / g
SAR normalized	normalized to 1W	6.28 mW / g
SAR for nominal Body TSL parameters [2]	normalized to 1W	**6.24 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	53.7Ω -3.7 jΩ
Return Loss	- 25.9dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	49.4Ω - 5.1 jΩ
Return Loss	-25.6dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.387 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 3, 2001

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DASY5 Validation Report for Head TSL

Date/Time: 2010-2-26 14:31:40

Test Laboratory: TMC, Beijing, China

DUT: Dipole 835 MHz; Type: D835V2; Serial: SN: 443

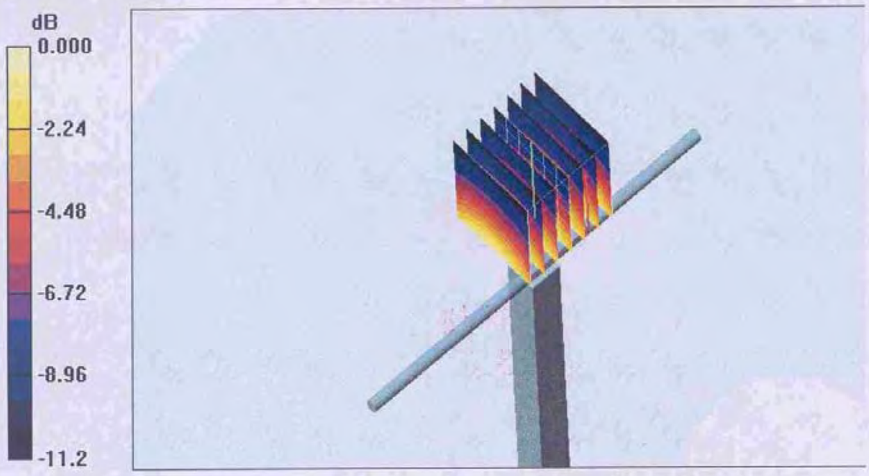
Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1
Medium: Head 835MHz
Medium parameters used: f = 835 MHz; σ = 0.92 mho/m; ε_r = 41.6; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3149; ConvF(6.56, 6.56, 6.56); Calibrated: 25.09.09
- Electronics: DAE4 Sn771; Calibration: 19.11.09
- Phantom: 2mm Oval Phantom ELI4; Type: QDOVA001BB
- Measurement SW: DASY5, V5.0 Build 119.9; Postprocessing SW: SEMCAD, V13.2 Build 87

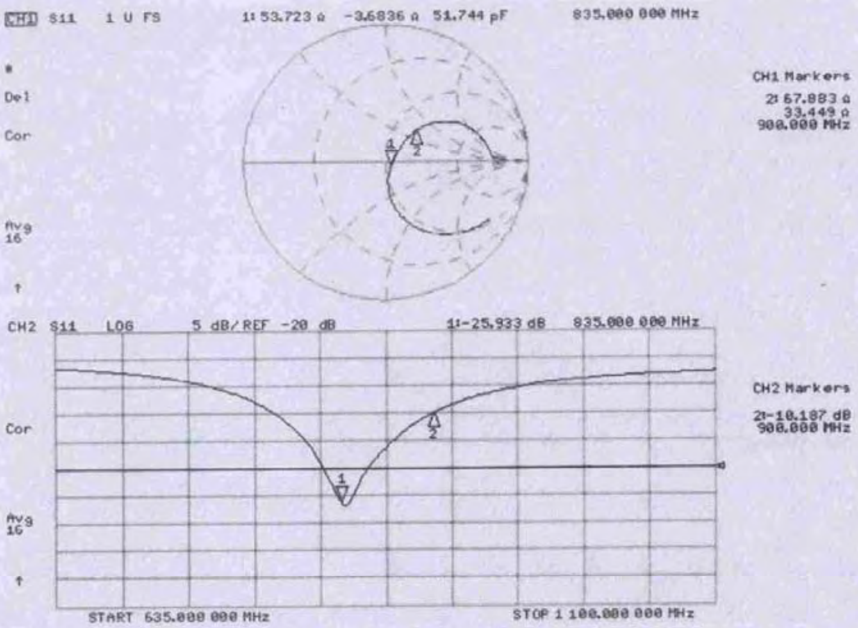
Pin=250mW; d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.8 V/m; Power Drift = -0.037 dB
Peak SAR (extrapolated) = 3.11 W/kg
SAR(1 g) = 2.38 mW/g; SAR(10 g) = 1.54 mW/g
Maximum value of SAR (measured) = 2.71 mW/g



0 dB = 2.71mW/g

Impedance Measurement Plot for Head TSL



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Telecommunication Metrology Center of MIIT

DASY5 Validation Report for Body TSL

Date/Time: 2010-2-26 9:52:36

Test Laboratory: TMC, Beijing, China

DUT: Dipole 835 MHz; Type: D835V2; Serial: SN: 443

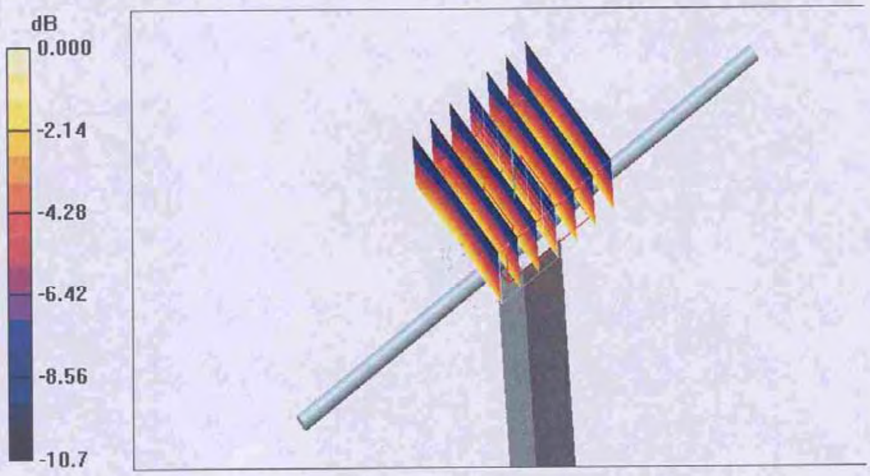
Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1
Medium: Body 835MHz
Medium parameters used: f = 835 MHz; σ = 0.97 mho/m; ε_r = 54.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3149; ConvF(6.22, 6.22, 6.22); Calibrated: 25.09.09
- Electronics: DAE4 Sn771; Calibration: 19.11.09
- Phantom: 2mm Oval Phantom ELI4; Type: QDOVA001BB
- Measurement SW: DASY5, V5.0 Build 119.9; Postprocessing SW: SEMCAD, V13.2 Build 87

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

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.0 V/m; Power Drift = -0.025 dB
Peak SAR (extrapolated) = 3.78 W/kg
SAR(1 g) = 2.41 mW/g; SAR(10 g) = 1.57 mW/g
Maximum value of SAR (measured) = 2.70 mW/g



0 dB = 2.70mW/g

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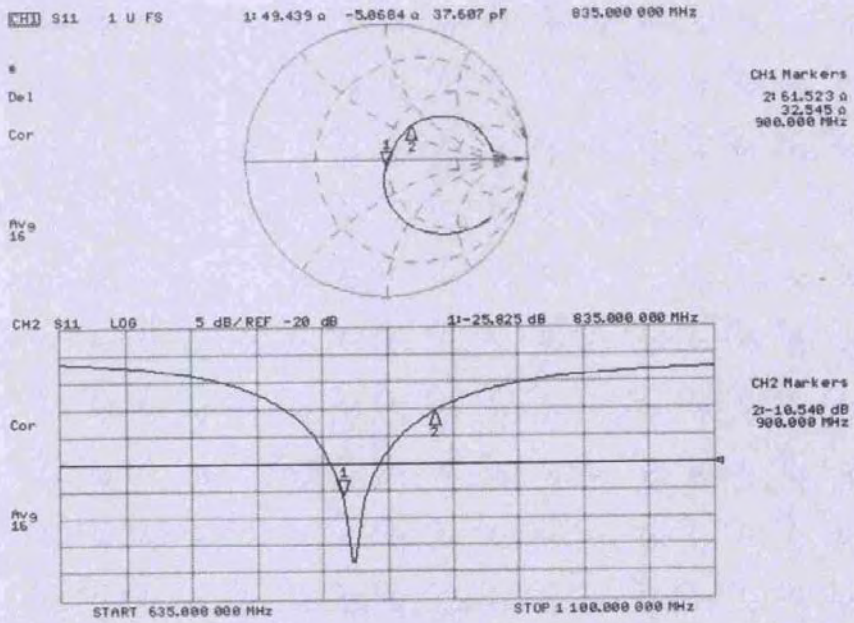
Telecommunication Metrology Center of MIIT

Impedance Measurement Plot for Body TSL



1900 MHz Dipole Calibration Certificate

工业和信息化部通信计量中心
Telecommunication Metrology Center of MIIT

校准 CNAS L0442

Client: TMC

Certificate No: D1900V2-541_Feb10

CALIBRATION CERTIFICATE

Object	D1900V2 - SN: 541
Calibration Procedure(s)	TMC-XZ-01-027 Calibration procedure for dipole validation kits
Calibration date:	February 26, 2010
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)℃ and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRVD	101253	04-Sep-09 (TMC, No. JZ09-248)	Sep-10
Power sensor NRV-Z5	100333	04-Sep-09 (TMC, No. JZ09-248)	Sep-10
Reference Probe ES3DV3	SN 3149	25-Sep-09(SPEAG, No.ES3-3149_Sep09)	Sep-10
DAE4	SN 771	19-Nov-09(SPEAG, No.DAE4-771_Nov09)	Nov-10
RF generator E4438C	MY45092879	18-Jun-09(TMC, No.JZ09-302)	Jun-10
Network Analyzer 8753E	US38433212	29-Aug-09(TMC, No.JZ09-056)	Aug-10

	Name	Function	Signature
Calibrated by:	Lin Hao	SAR Test Engineer	林浩
Reviewed by:	Qi Dianyuan	SAR Project Leader	
Approved by:	Lu Bingsong	Deputy Director of the laboratory	

Issued: February 26, 2010

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Telecommunication Metrology Center of MIIT

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORMx,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 300MHz to 3GHz)", 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) DASY 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.

工业和信息化部通信计量中心 TMC
Telecommunication Metrology Center of MIIT

Measurement Conditions

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

DASY Version	DASY5	V5.0
Extrapolation	Advanced Extrapolation	
Phantom	2mm Oval Phantom ELI4	
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	39.6 ± 6 %	1.40mho/m ± 6 %
Head TSL temperature during test	(21.9 ± 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	9.91 mW / g
SAR normalized	normalized to 1W	39.6 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**39.4 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	5.05 mW / g
SAR normalized	normalized to 1W	20.2 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**20.1 mW /g ± 16.5 % (k=2)**

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

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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	52.5 ± 6%	1.51 mho/m ± 6 %
Body TSL temperature during test	(21.8 ± 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	10.4 mW / g
SAR normalized	normalized to 1W	41.6 mW / g
SAR for nominal Body TSL parameters [2]	normalized to 1W	**41.4 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	**20.9 mW /g ± 16.5 % (k=2)**

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

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Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	54.8Ω + 4.0 jΩ
Return Loss	- 23.7dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.9Ω + 7.1 jΩ
Return Loss	- 22.6dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.201 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	October 4, 2001

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DASY5 Validation Report for Head TSL

Date/Time: 2010-2-26 15:20:47

Test Laboratory: TMC, Beijing, China

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: SN: 541

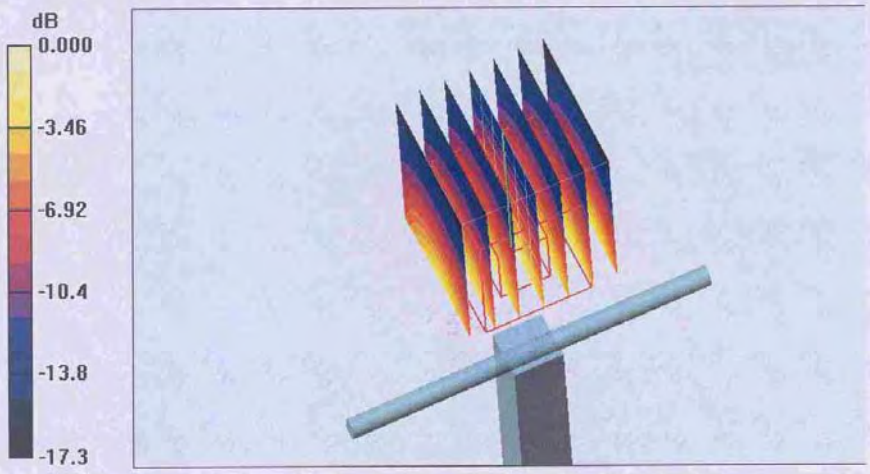
Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1
Medium: Head 1900MHz
Medium parameters used: f = 1900 MHz; σ = 1.40 mho/m; ε_r = 39.6; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3149; ConvF(5.03, 5.03, 5.03); Calibrated: 25.09.09
- Electronics: DAE4 Sn771; Calibration: 19.11.09
- Phantom: 2mm Oval Phantom ELI4; Type: QDOVA001BB
- Measurement SW: DASY5, V5.0 Build 119.9; Postprocessing SW: SEMCAD, V13.2 Build 87

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

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 85.1 V/m; Power Drift = -0.057 dB
Peak SAR (extrapolated) = 18.8 W/kg
SAR(1 g) = 9.91 mW/g; SAR(10 g) = 5.05 mW/g
Maximum value of SAR (measured) = 11.5 mW/g



0 dB = 11.5mW/g

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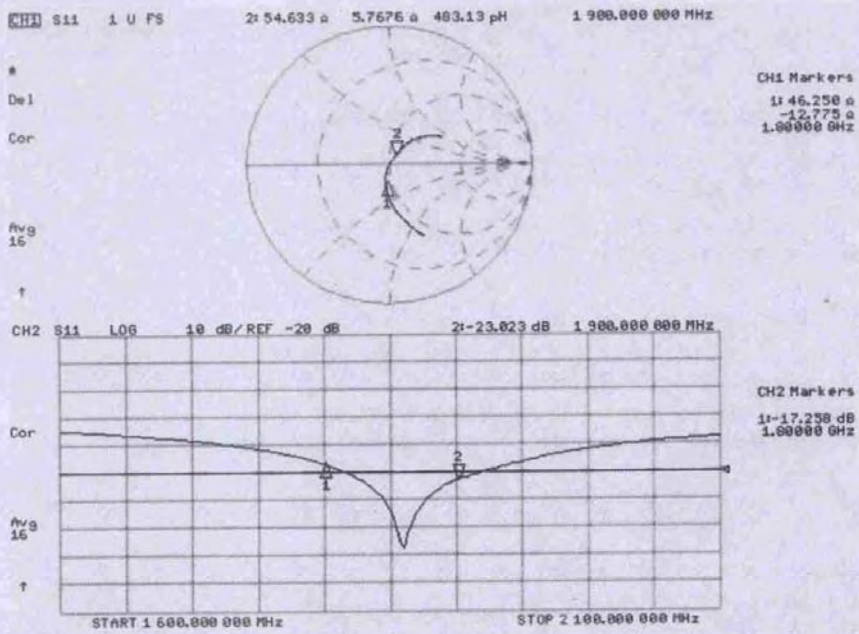
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date/Time: 2010-2-26 10:41:08

Test Laboratory: TMC, Beijing, China

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: SN: 541

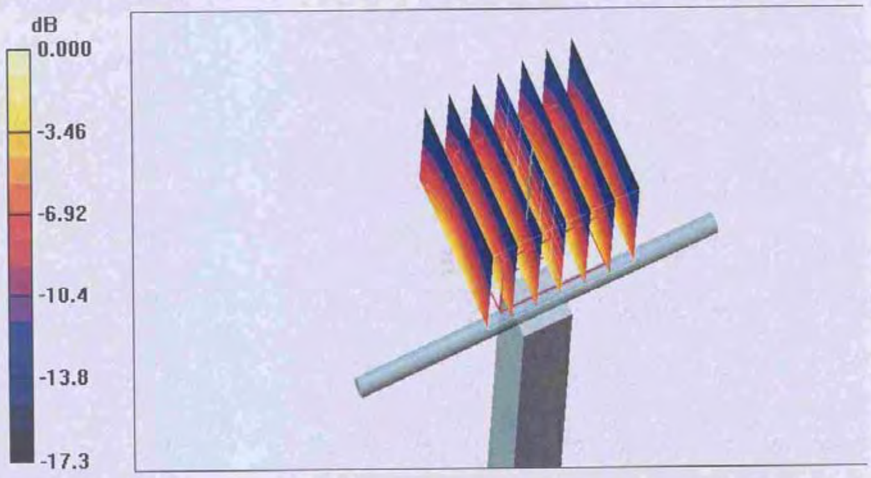
Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1
Medium: Body 1900MHz
Medium parameters used: f = 1900 MHz; σ = 1.51 mho/m; ε_r = 52.5; ρ = 1000 kg/m³
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3149; ConvF(4.68, 4.68, 4.68); Calibrated: 25.09.09
- Electronics: DAE4 Sn771; Calibration: 19.11.09
- Phantom: 2mm Oval Phantom ELI4; Type: QDOVA001BB
- Measurement SW: DASY5, V5.0 Build 119.9; Postprocessing SW: SEMCAD, V13.2 Build 87

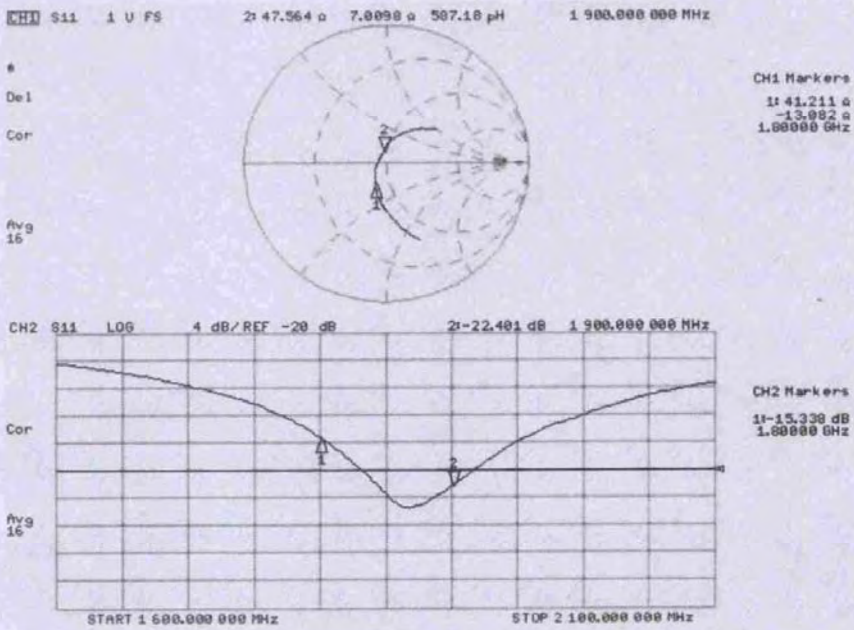
Pin=250mW; d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 80.2 V/m; Power Drift = -0.009 dB
Peak SAR (extrapolated) = 19.1 W/kg
SAR(1 g) = 10.4 mW/g; SAR(10 g) = 5.24 mW/g
Maximum value of SAR (measured) = 12.0 mW/g



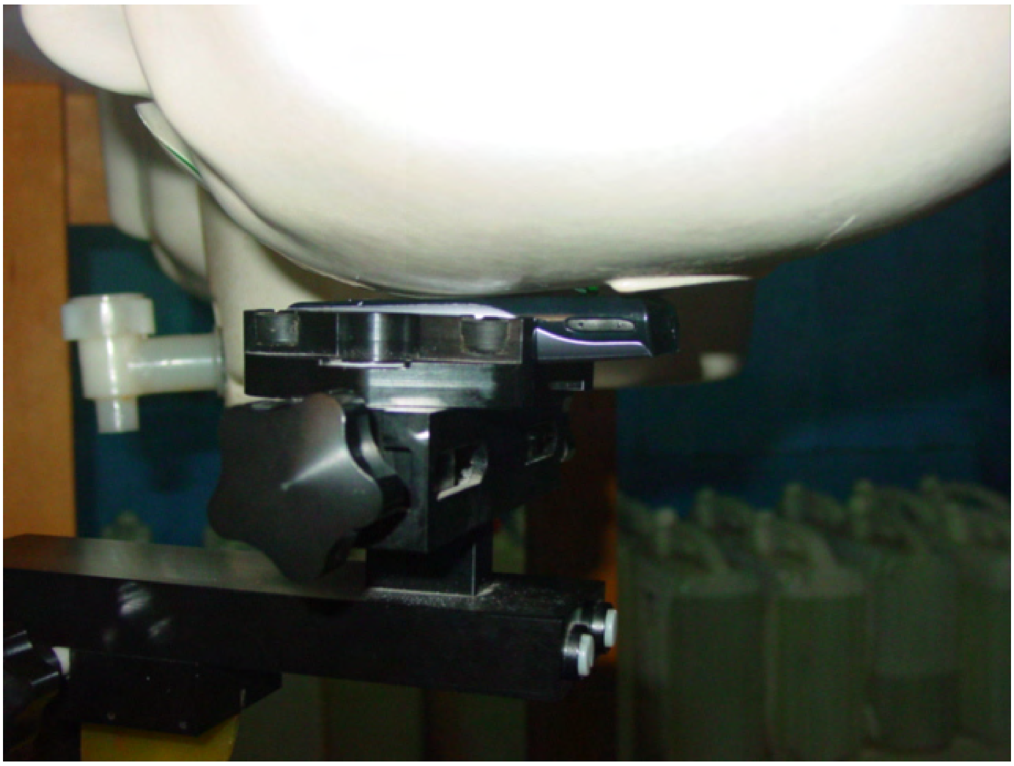
0 dB = 12.0mW/g

Impedance Measurement Plot for Body TSL



ANNEX G EUT APPEARANCE AND TEST POSITIONS

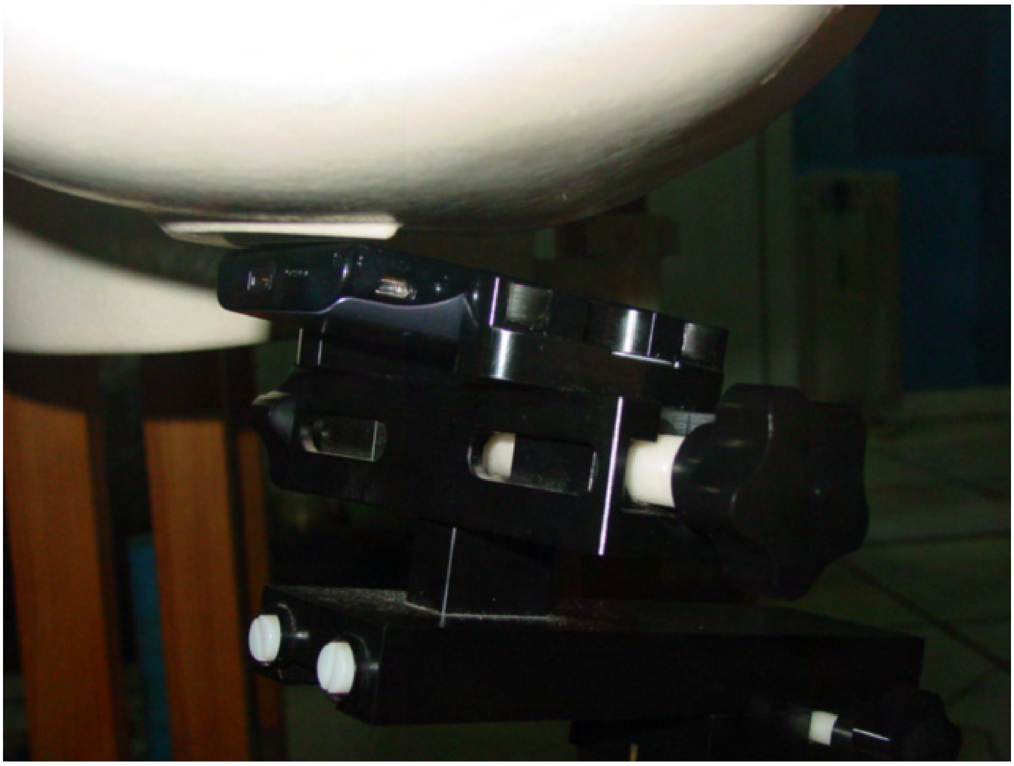
Picture G1: Constituents of the sample (Lithium Battery is in the Handset)



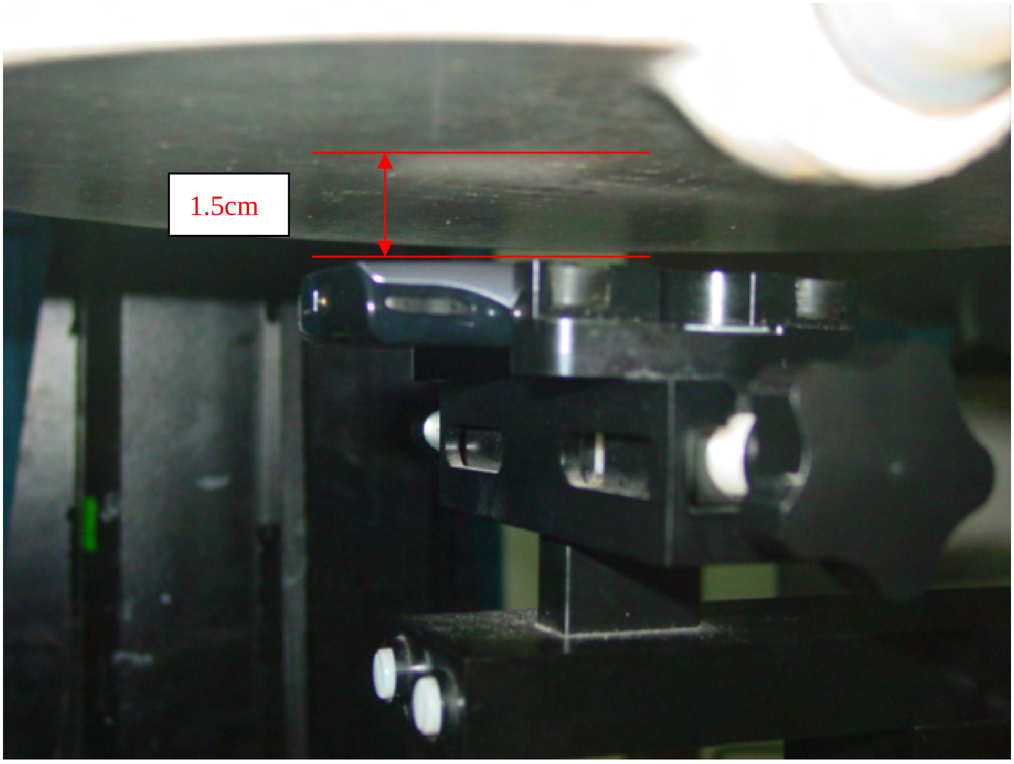
Picture G2: Left Hand Touch Cheek Position

Picture G3: Left Hand Tilt 15° Position

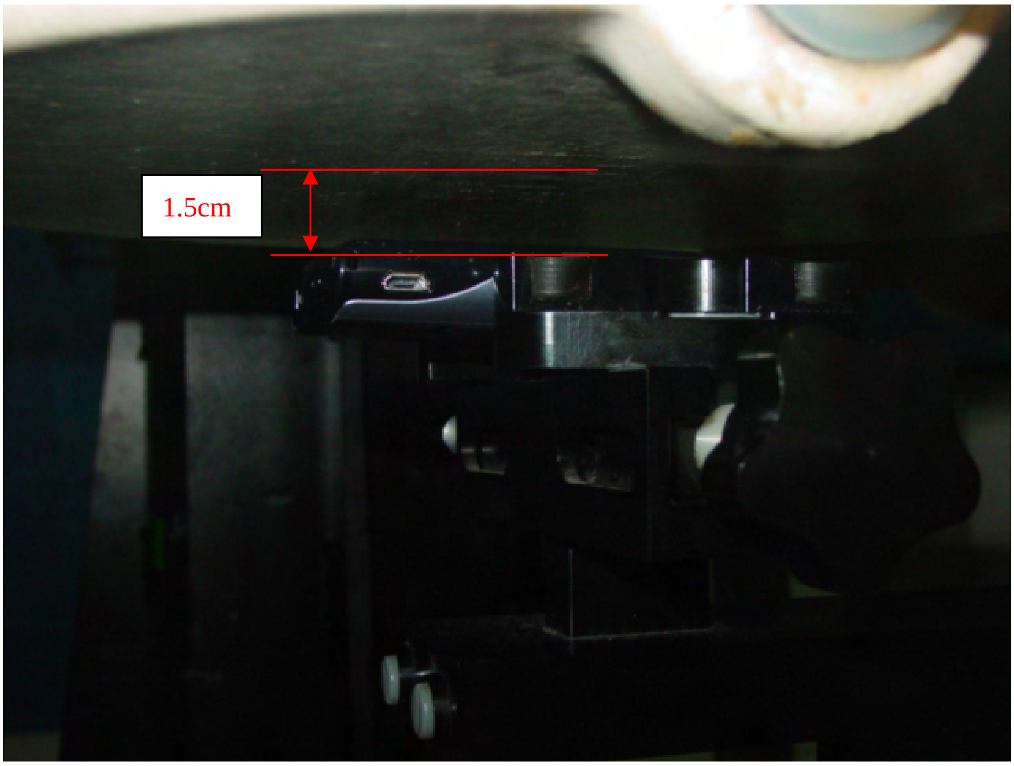
Picture G4: Right Hand Touch Cheek Position



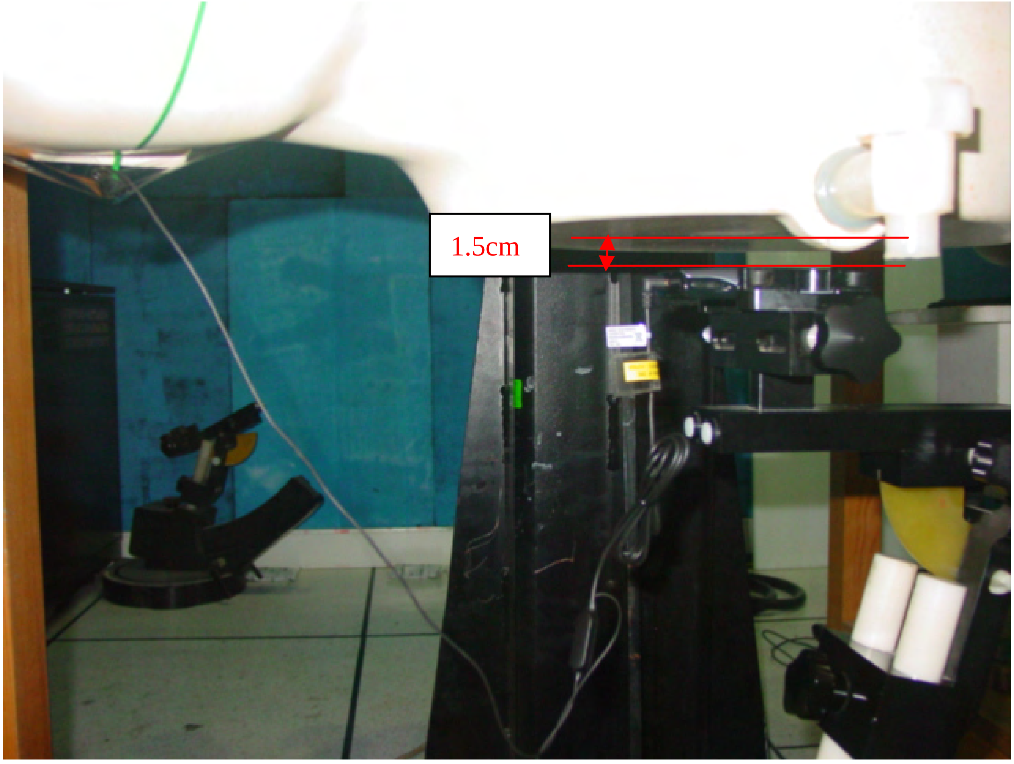
Picture G5: Right Hand Tilt 15° Position



Picture G6: Body-worn Position (towards ground, the distance from handset to the bottom of the Phantom is 1.5cm)



Picture G7: Body-worn Position (towards phantom, the distance from handset to the bottom of the Phantom is 1.5cm)



Picture G8: Body-worn Position with headset (EUT towards ground, the distance from handset to the bottom of the Phantom is 1.5cm)