SAR TEST REPORT

No. 2010SAR00039

For

TCT Mobile Limited

GSM/GPRS dual bands mobile phone

U10Q GPRS US

OT-255A

With

Hardware Version: PIO

Software Version: V992

FCCID: RAD135

Issued Date: 2010-05-27

Deutscher Akkreditierungs Rat

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

1 TEST LABORATORY 3

1.1 TESTING LOCATION 3
1.2 TESTING ENVIRONMENT 3
1.3 PROJECT DATA 3
1.4 SIGNATURE 3

2 CLIENT INFORMATION 4

2.1 APPLICANT INFORMATION 4
2.2 MANUFACTURER INFORMATION 4

3 EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE) 5

3.1 ABOUT EUT 5
3.2 INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST 5
3.3 INTERNAL IDENTIFICATION OF AE USED DURING THE TEST 5

4 CHARACTERISTICS OF THE TEST 5

4.1 APPLICABLE LIMIT REGULATIONS 5
4.2 APPLICABLE MEASUREMENT STANDARDS 5

5 OPERATIONAL CONDITIONS DURING TEST 6

5.1 SCHEMATIC TEST CONFIGURATION 6
5.2 SAR MEASUREMENT SET-UP 6
5.3 DASY4 E-FIELD PROBE SYSTEM 7
5.4 E-FIELD PROBE CALIBRATION 8
5.5 OTHER TEST EQUIPMENT 9
5.6 EQUIVALENT TISSUES 10
5.7 SYSTEM SPECIFICATIONS 10

6 LABORATORY ENVIRONMENT 11

7 CONDUCTED OUTPUT POWER MEASUREMENT 11

7.1 SUMMARY 11
7.2 CONDUCTED POWER 11

8 TEST RESULTS 12

8.1 DIELECTRIC PERFORMANCE 12
8.2 SYSTEM VALIDATION 12
8.3 EVALUATION OF MULTI-BATTERIES 13
8.4 SUMMARY OF MEASUREMENT RESULTS 14
8.5 CONCLUSION 16

9 MEASUREMENT UNCERTAINTY 16

10 MAIN TEST INSTRUMENTS 18

ANNEX A MEASUREMENT PROCESS 19

ANNEX B TEST LAYOUT 20

ANNEX C GRAPH RESULTS 25

ANNEX D SYSTEM VALIDATION RESULTS 69

ANNEX E PROBE CALIBRATION CERTIFICATE 73

ANNEX F DIPOLE CALIBRATION CERTIFICATE 82

1 Test Laboratory

1.1 Testing Location

Company Name:	TMC Beijing, Telecommunication Metrology Center of MIIT
Address:	No 52, Huayuan beilu, Haidian District, Beijing,P.R.China
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:	Sun Qian
Test Engineer:	Lin Xiaojun
Testing Start Date:	May 20, 2010
Testing End Date:	May 22, 2010

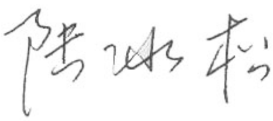
1.4 Signature

Lin Xiaojun

(Prepared this test report)

Sun Qian

(Reviewed this test report)



Lu Bingsong

Deputy Director of the laboratory

(Approved this test report)

2 Client Information

2.1 Applicant Information

Company Name:	TCT Mobile Limited
Address /Post:	4/F, South Building,No.2966, Jinke Road, Zhangjiang High-Tech Park, Pudong, Shanghai, 201203, P.R.China
City:	Shanghai
Postal Code:	201203
Country:	P. R. China
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Telephone:	0086-21-61460890
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2.2 Manufacturer Information

Company Name:	TCT Mobile Limited
Address /Post:	4/F, South Building,No.2966, Jinke Road, Zhangjiang High-Tech Park, Pudong, Shanghai, 201203, P.R.China
City:	Shanghai
Postal Code:	201203
Country:	P. R. China
Contact Person:	Gong Zhizhou
Contact Email	zhizhou.gong@jrdcom.com
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Fax:	0086-21-61460602

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

3.1 About EUT

EUT Description:	GSM/GPRS dual bands mobile phone
Model Name:	U10Q GPRS US
Marketing Name:	OT-255A
GSM Frequency Band:	GSM 850 / PCS 1900
GPRS Class:	10

3.2 Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	012239000090126	PIO	V992

*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	CBA30Y0AG0C1	\	BYD
AE2	Travel Adapter	CBA30Y0AG0C2	\	TENPAO
AE3	Battery	CAB30M0000C1	B063653C2A	BYD
AE4	Battery	CAB30M0000C2	BAK2009101000246	BAK
AE5	Stereo headset	CCA30B4000C0	\	Shunda/Juwei

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

4 CHARACTERISTICS OF THE TEST

4.1 Applicable Limit Regulations

EN 50360–2001: Product standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones.
It specifies the maximum exposure limit of **2.0 W/kg** as averaged over any 10 gram of tissue for portable devices being used within 20 cm of the user in the uncontrolled environment.

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

EN 62209-1–2006: Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures –Part 1: Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz).

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.

IEC 62209-1: Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures –Part 1:Procedure to determine the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)

IEC 62209-2 (Draft): Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures – Part 2: Procedure to determine the Specific Absorption Rate (SAR)in the head and body for 30MHz to 6GHz Handheld and Body-Mounted Devices used in close proximity to the Body.
They specify the measurement method for demonstration of compliance with the SAR limits for such equipments.

5 OPERATIONAL CONDITIONS DURING TEST

5.1 Schematic Test Configuration

During SAR test, EUT is in Traffic Mode (Channel Allocated) at Normal Voltage Condition. A communication link is set up with a System Simulator (SS) by air link, and a call is established. The Absolute Radio Frequency Channel Number (ARFCN) is allocated to 128, 190 and 251 respectively in the case of GSM 850 MHz, or to 512, 661 and 810 respectively in the case of PCS 1900 MHz. The EUT is commanded to operate at maximum transmitting power.

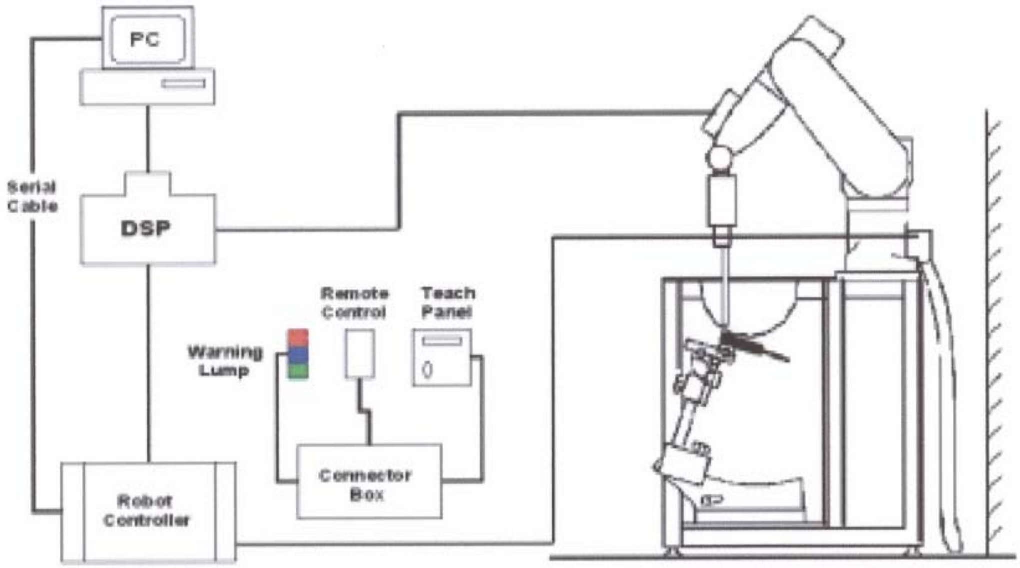
The EUT shall use its internal transmitter. The antenna(s), battery and accessories shall be those specified by the manufacturer. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output. If a wireless link is used, the antenna connected to the output of the base station simulator shall be placed at least 50 cm away from the handset. The signal transmitted by the simulator to the antenna feeding point shall be lower than the output power level of the handset by at least 30 dB.

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- 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 Professional, 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 2: 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)

Picture 3: ES3DV3 E-field

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

Picture4: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 5: 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 repeatable 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 6: 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 LABORATORY ENVIRONMENT

Table 3: The Ambient Conditions during EMF Test

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 30%, Max. = 70%
Ground system resistance	< 0.5 Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surroundi objects is minimized and in compliance with requirement of standards.	

7 CONDUCTED OUTPUT POWER MEASUREMENT

7.1 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.

7.2 Conducted Power

7.2.1 Measurement Methods

The EUT was set up for the max output power. The channel power was measured with Agilent Spectrum Analyzer E4440A. These measurements were done at low, middle and high channels.

7.2.2 Measurement result

The conducted power for GSM 850/1900 is as following:

GSM 850MHZ	**Conducted Power (dBm)**		
	Channel 251(848.8MHz)	**Channel 190(836.6MHz)**	**Channel 128(824.2MHz)**
	32.42	32.41	32.46
GSM 1900MHZ	**Conducted Power (dBm)**		
	Channel 810(1909.8MHz)	**Channel 661(1880MHz)**	**Channel 512(1850.2MHz)**
	29.45	29.65	30.22
GPRS 850MHZ	**Conducted Power (dBm)**		
	Channel 251(848.8MHz)	**Channel 190(836.6MHz)**	**Channel 128(824.2MHz)**
	31.63	31.61	31.66
GPRS 1900MHZ	**Conducted Power (dBm)**		
	Channel 810(1909.8MHz)	**Channel 661(1880MHz)**	**Channel 512(1850.2MHz)**
	28.82	29.02	29.68

7.2.3 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 15 labeled as: (Power Drift [dB]). This ensures that the power drift during one measurement is within 5%.

8 TEST RESULTS

8.1 Dielectric Performance

Table 4: Dielectric Performance of Head Tissue Simulating Liquid

Measurement is made at temperature 23.0 °C and relative humidity 38%.
Liquid temperature during the test: 22.5°C
Measurement Date : 850 MHz **May 20, 2010** 1900 MHz **May 22, 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	40.2	0.90
	1900 MHz	39.5	1.41

Table 5: Dielectric Performance of Body Tissue Simulating Liquid

Measurement is made at temperature 23.0 °C and relative humidity 38%.
Liquid temperature during the test: 22.5°C
Measurement Date : 850 MHz **May 20, 2010** 1900 MHz **May 22, 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	53.9	0.96
	1900 MHz	51.7	1.53

8.2 System Validation

Table 6: System Validation of Head

Measurement is made at temperature 23.0 °C and relative humidity 38%.
Liquid temperature during the test: 22.5°C
Measurement Date : 850 MHz **May 20, 2010** 1900 MHz **May 22, 2010**

<table>
<tr><td rowspan="5">Liquid parameters</td><td rowspan="3">Dipole calibration Target value</td><td colspan="2">Frequency</td><td colspan="2">Permittivity ε</td><td colspan="2">Conductivity σ (S/m)</td></tr>
<tr><td colspan="2">835 MHz</td><td colspan="2">41.6</td><td colspan="2">0.92</td></tr>
<tr><td colspan="2">1900 MHz</td><td colspan="2">39.6</td><td colspan="2">1.40</td></tr>
<tr><td rowspan="2">Actural Measurement value</td><td colspan="2">835 MHz</td><td colspan="2">40.3</td><td colspan="2">0.88</td></tr>
<tr><td colspan="2">1900 MHz</td><td colspan="2">39.5</td><td colspan="2">1.41</td></tr>
<tr><td rowspan="4">Verification results</td><td rowspan="2">Frequency</td><td colspan="2">Target value (W/kg)</td><td colspan="2">Measured value (W/kg)</td><td colspan="2">Deviation</td></tr>
<tr><td>10 g Average</td><td>1 g Average</td><td>10 g Average</td><td>1 g Average</td><td>10 g Average</td><td>1 g Average</td></tr>
<tr><td>835 MHz</td><td>1.54</td><td>2.38</td><td>1.47</td><td>2.31</td><td>-4.55%</td><td>-2.94%</td></tr>
<tr><td>1900 MHz</td><td>5.05</td><td>9.91</td><td>4.85</td><td>9.64</td><td>-3.96%</td><td>-2.72%</td></tr>
</table>

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

Table 7: System Validation of Body

Measurement is made at temperature 23.0 °C and relative humidity 38%.
Liquid temperature during the test: 22.5°C
Measurement Date : 850 MHz **May 20, 2010** 1900 MHz **May 22, 2010**

		Frequency		**Permittivity ε**		**Conductivity σ (S/m)**	
Liquid parameters	Dipole calibration Target value	835 MHz		54.5		0.97	
		1900 MHz		52.5		1.51	
	Actural Measurement value	835 MHz		54.0		0.94	
		1900 MHz		51.7		1.53	
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	1.53	2.44	-2.55%	1.24%
	1900 MHz	5.24	10.4	5.37	10.3	2.48%	-0.96%

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

8.3 Evaluation of Multi-Batteries

Table 8: Pretest SAR Values (EGSM 850 MHz Band)

Limit of SAR (W/kg)	**10 g Average**	**1 g Average**
	2.0	1.6
Test Case	**Measurement Result (W/kg)**	
	10 g Average	**1 g Average**
Left hand, Touch cheek, Top frequency (CAB30M0000C1)	0.758	1.04
Left hand, Touch cheek, Top frequency (CAB30M0000C2)	0.736	1.01

Note: According to the values in the above table, the battery, CAB30M0000C1, is the normal battery. We'll perform the head measurement with this battery and retest on highest value point with others.

Table 9: Pretest SAR Values (EGSM 850 MHz Band-Body)

Limit of SAR (W/kg)	**10 g Average**	**1 g Average**
	2.0	1.6
Test Case	**Measurement Result (W/kg)**	
	10 g Average	**1 g Average**
Body, Towards Ground, High frequency (CAB30M0000C1)	0.662	0.961
Body, Towards Ground, High frequency (CAB30M0000C2)	0.649	0.942

Note: According to the values in the above table, the battery, CAB30M0000C1, is the normal battery. We'll perform the body measurement with this battery and retest on highest value point with others.

8.4 Summary of Measurement Results

Table 10: SAR Values (850MHz-Head) - with battery CAB30M0000C1

Limit of SAR (W/kg)	**10 g Average**	**1 g Average**	**Power Drift (dB)**
	2.0	1.6	
Test Case	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Left hand, Touch cheek, Top frequency (See Fig.1)	0.758	1.04	-0.154
Left hand, Touch cheek, Mid frequency (See Fig.2)	0.787	1.08	-0.012
Left hand, Touch cheek, Bottom frequency (See Fig.3)	0.782	1.07	-0.048
Left hand, Tilt 15 Degree, Top frequency (See Fig.4)	0.316	0.438	-0.031
Left hand, Tilt 15 Degree, Mid frequency (See Fig.5)	0.339	0.467	-0.042
Left hand, Tilt 15 Degree, Bottom frequency (See Fig.6)	0.342	0.468	-0.081
Right hand, Touch cheek, Top frequency (See Fig.7)	0.677	0.954	-0.048
Right hand, Touch cheek, Mid frequency (See Fig.8)	0.703	0.981	-0.070
Right hand, Touch cheek, Bottom frequency (See Fig.9)	0.697	0.962	-0.038
Right hand, Tilt 15 Degree, Top frequency (See Fig.10)	0.357	0.497	-0.141
Right hand, Tilt 15 Degree, Mid frequency (See Fig.11)	0.364	0.505	-0.176
Right hand, Tilt 15 Degree, Bottom frequency (See Fig.12)	0.353	0.485	-0.135

Table 11: SAR Values (1900MHz-Head) - with battery CAB30M0000C1

Limit of SAR (W/kg)	**10 g Average**	**1 g Average**	**Power Drift (dB)**
	2.0	1.6	
Test Case	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Left hand, Touch cheek, Top frequency (See Fig.13)	0.455	0.807	0.065
Left hand, Touch cheek, Mid frequency (See Fig.14)	0.434	0.769	0.062
Left hand, Touch cheek, Bottom frequency (See Fig.15)	0.484	0.857	0.034
Left hand, Tilt 15 Degree, Top frequency (See Fig.16)	0.117	0.226	0.074
Left hand, Tilt 15 Degree, Mid frequency (See Fig.17)	0.113	0.215	0.099
Left hand, Tilt 15 Degree, Bottom frequency (See Fig.18)	0.129	0.239	0.147
Right hand, Touch cheek, Top frequency (See Fig.19)	0.597	1.11	-0.126
Right hand, Touch cheek, Mid frequency (See Fig.20)	0.563	1.03	0.073
Right hand, Touch cheek, Bottom frequency (See Fig.21)	0.627	1.15	-0.105
Right hand, Tilt 15 Degree, Top frequency (See Fig.22)	0.106	0.196	0.075
Right hand, Tilt 15 Degree, Mid frequency (See Fig.23)	0.105	0.191	0.079
Right hand, Tilt 15 Degree, Bottom frequency(See Fig.24)	0.128	0.229	-0.017

Table 12: SAR Values (1900MHz-Head) - with battery CAB30M0000C2

Limit of SAR (W/kg)	10 g Average	1 g Average	Power Drift (dB)
	2.0	1.6	
Test Case	Measurement Result (W/kg)		
	10 g Average	1 g Average	
Right hand, Touch cheek, Bottom frequency (See Fig.25)	0.617	1.13	-0.137

Table 13: SAR Values (850MHz-Body) - with battery CAB30M0000C1

Limit of SAR (W/kg)	10 g Average	1g Average	Power Drift (dB)
	2.0	1.6	
Test Case	Measurement Result (W/kg)		
	10 g Average	1 g Average	
Body, Towards Ground, Top frequency with GPRS (See Fig.26)	0.662	0.961	0.033
Body, Towards Ground, Mid frequency with GPRS (See Fig.27)	0.747	1.08	-0.013
Body, Towards Ground, Bottom frequency with GPRS (See Fig.28)	0.740	1.06	-0.031
Body, Towards Phantom, Top frequency with GPRS (See Fig.29)	0.504	0.699	0.005
Body, Towards Phantom, Mid frequency with GPRS (See Fig.30)	0.600	0.831	0.016
Body, Towards Phantom, Bottom frequency with GPRS (See Fig.31)	0.621	0.859	-0.024
Body, Towards Ground, Mid frequency with Headset (See Fig.32)	0.434	0.632	-0.011

Table 14: SAR Values (1900MHz-Body) - with battery CAB30M0000C1

Limit of SAR (W/kg)	10 g Average	1g Average	Power Drift (dB)
	2.0	1.6	
Test Case	Measurement Result (W/kg)		
	10 g Average	1 g Average	
Body, Towards Ground, Top frequency with GPRS (See Fig.33)	0.318	0.545	0.080
Body, Towards Ground, Mid frequency with GPRS (See Fig.34)	0.277	0.478	-0.017
Body, Towards Ground, Bottom frequency with GPRS (See Fig.35)	0.286	0.493	0.046
Body, Towards Phantom, Top frequency with GPRS (See Fig.36)	0.228	0.386	0.051

Body, Towards Phantom, Mid frequency with GPRS (See Fig.37)	0.197	0.331	0.085
Body, Towards Phantom, Bottom frequency with GPRS (See Fig.38)	0.210	0.353	-0.035
Body, Towards Ground, Top frequency with Headset (See Fig.39)	0.257	0.436	0.070

Table 15: SAR Values (850MHz-Body) - with battery CAB30M0000C2

Limit of SAR (W/kg)	**10 g Average**	**1g Average**	**Power Drift (dB)**
	2.0	1.6	
Test Case	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Body, Towards Ground, Mid frequency (See Fig.40)	0.736	1.07	-0.022

8.5 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.

9 Measurement Uncertainty

No.	Error source	Type	Uncertainty Value (%)	Probability Distribution	k	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	7	N	2	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	/

10 MAIN TEST INSTRUMENTS

Table 16: 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.

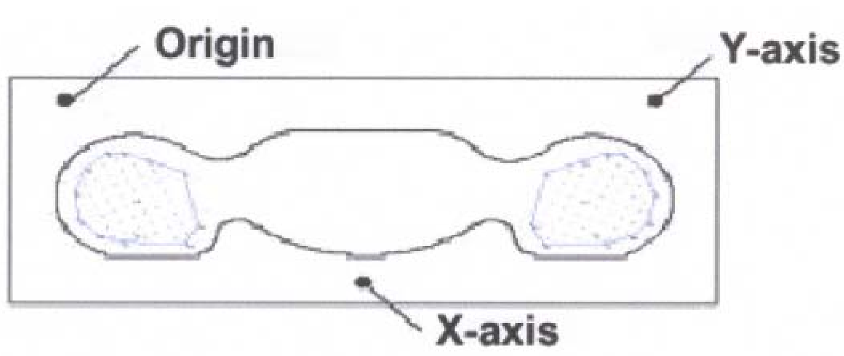
Step 3: Around this point, a volume of 30 mm x 30 mm x 30 mm was assessed by measuring 7 x 7x 7 points. On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

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.

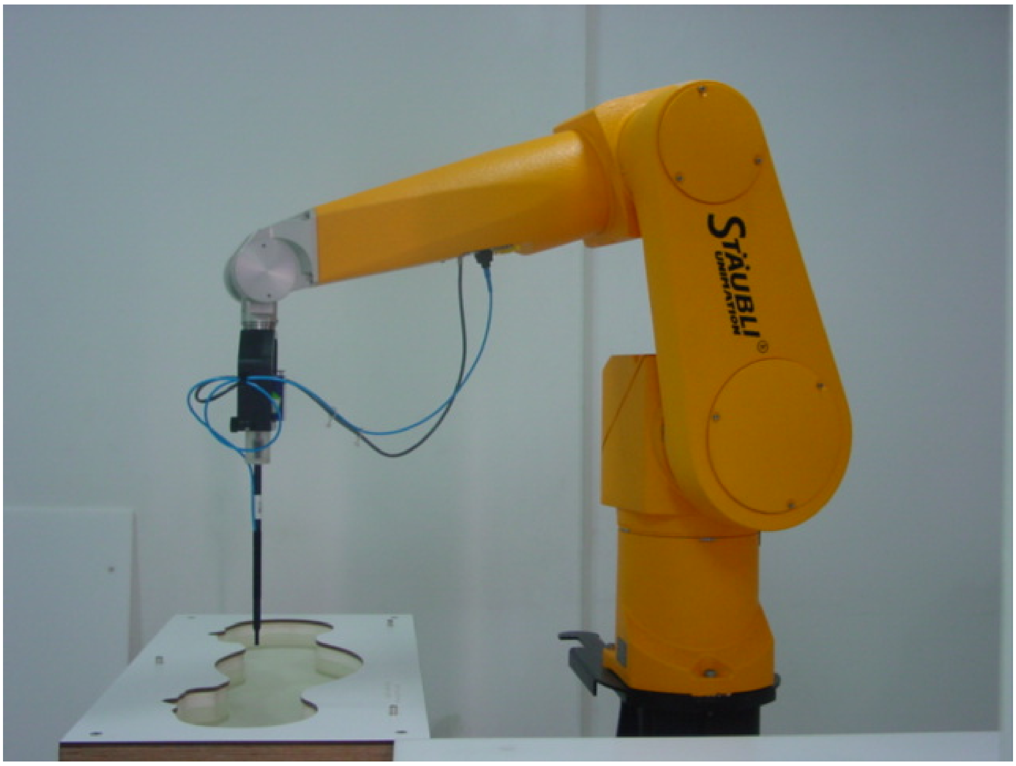
c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

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.

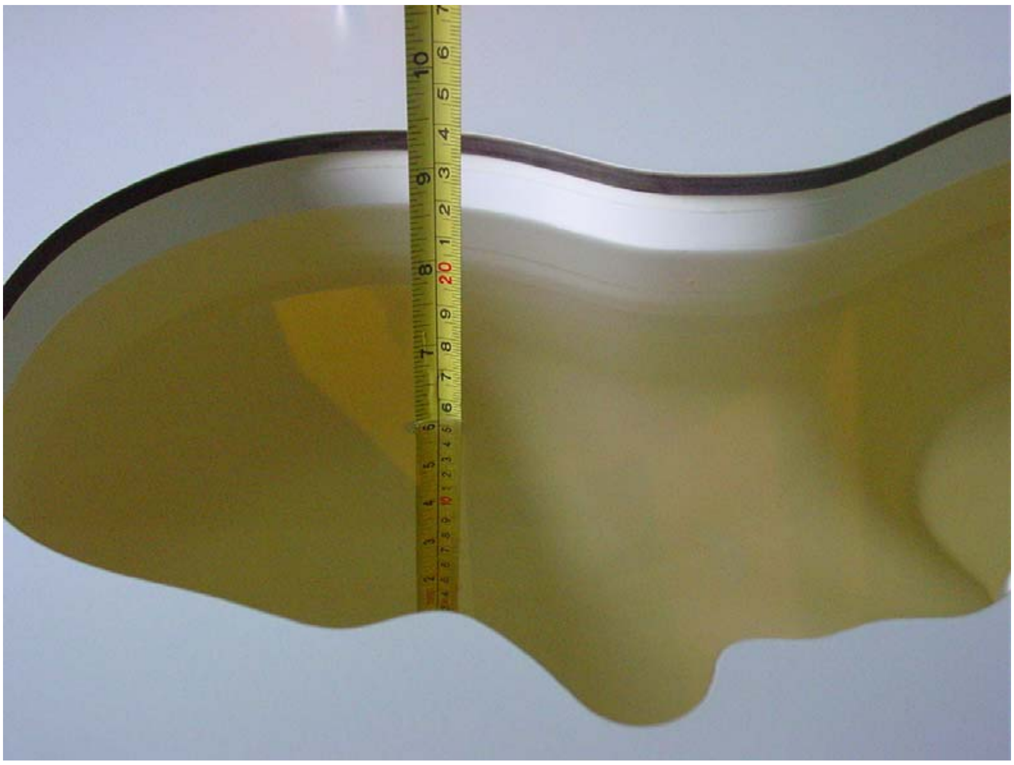


Picture A: SAR Measurement Points in Area Scan

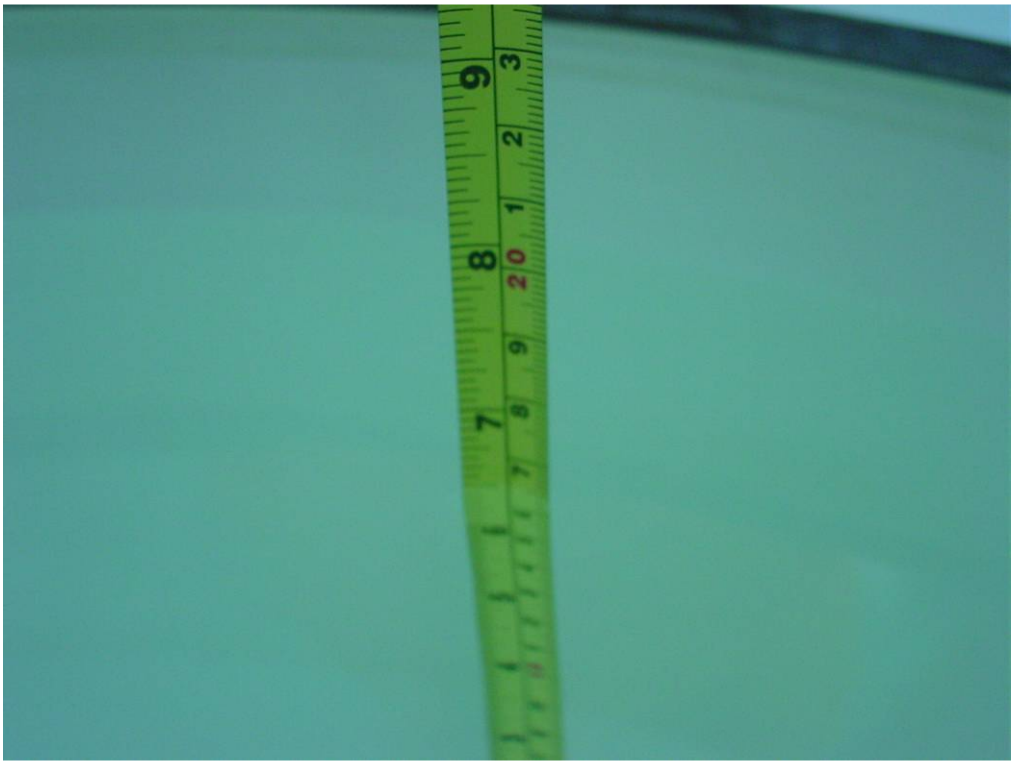
ANNEX B TEST LAYOUT



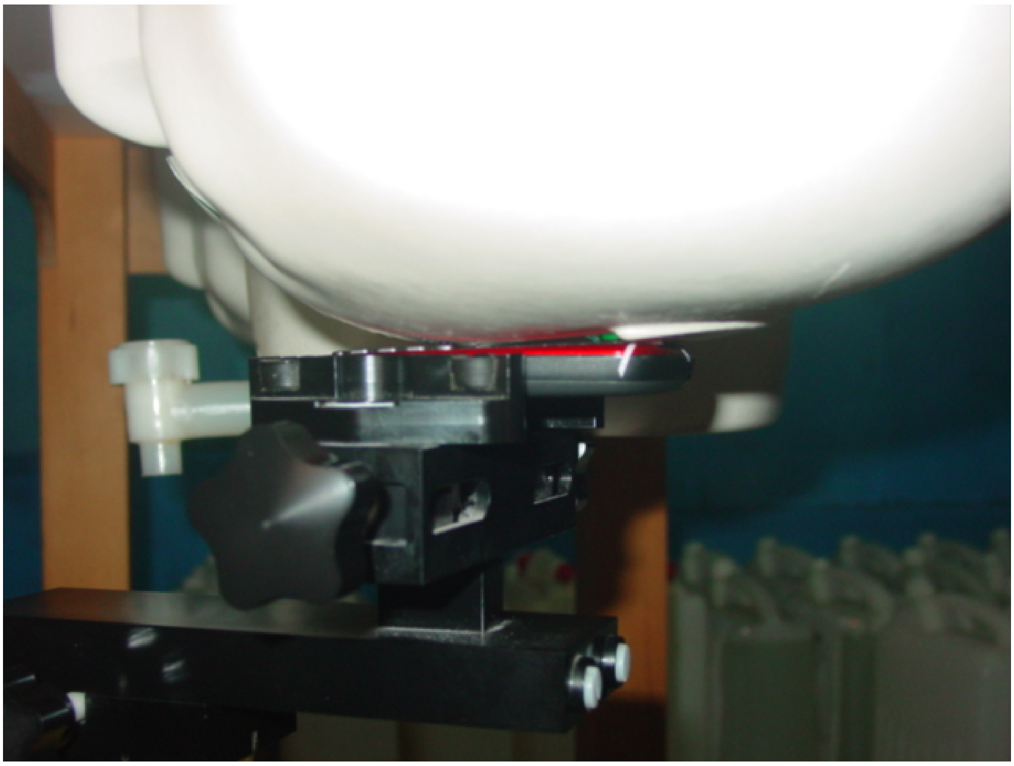
Picture B1: Specific Absorption Rate Test Layout



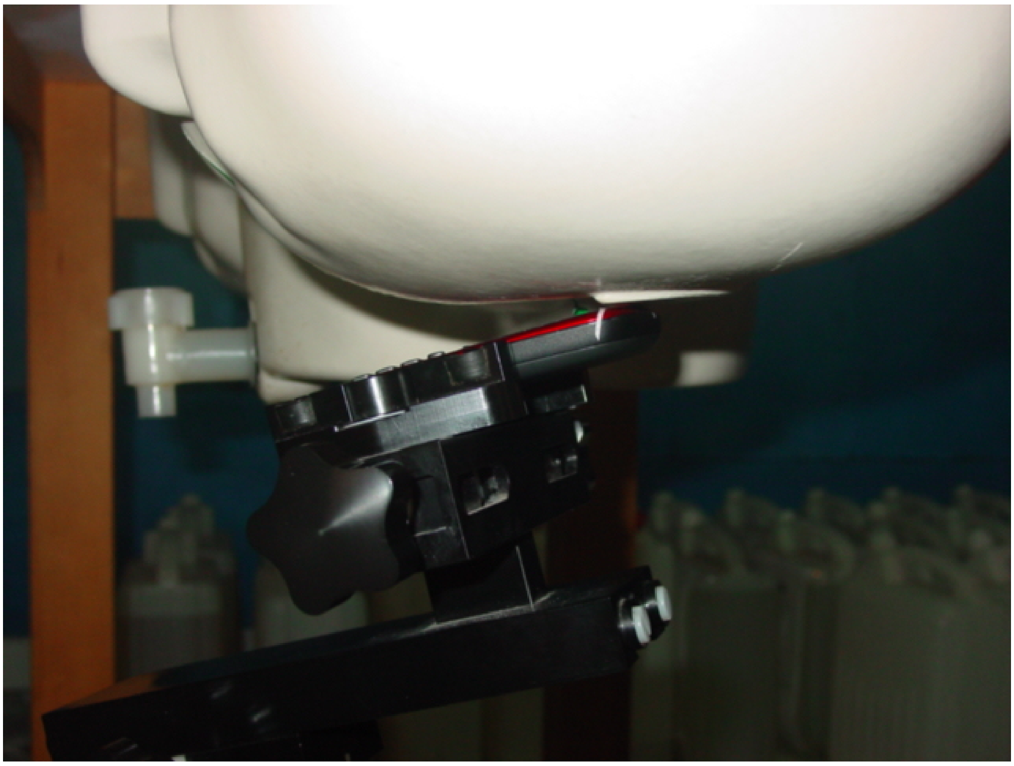
Picture B2: Liquid depth in the Flat Phantom (850 MHz)



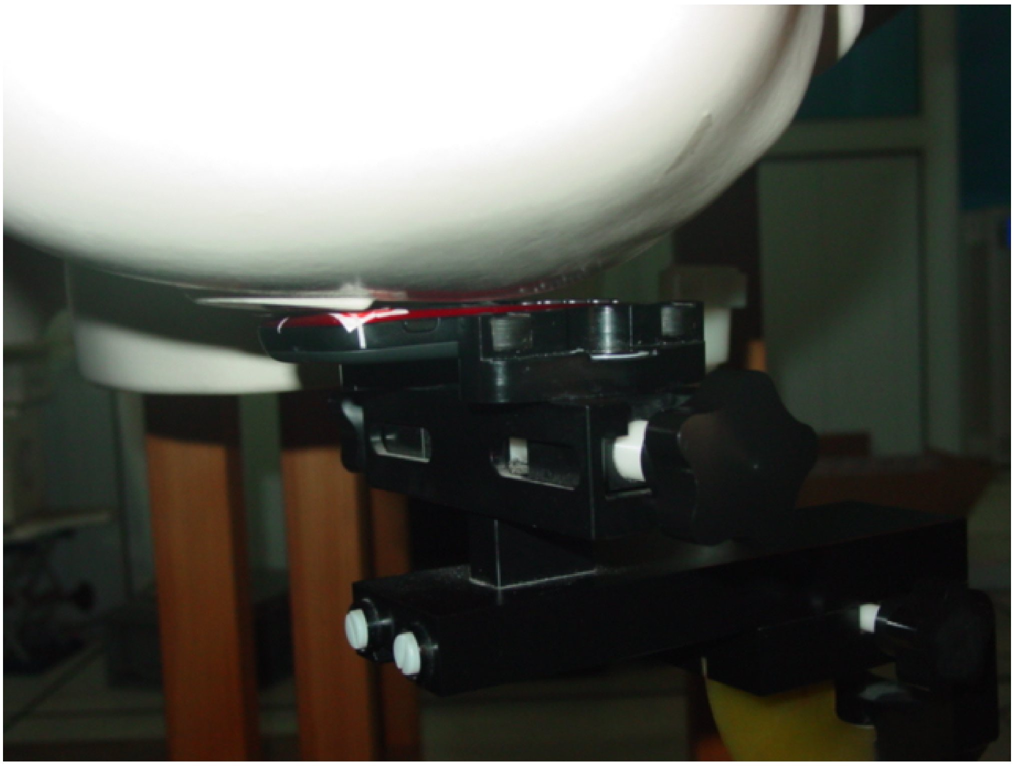
Picture B3 Liquid depth in the Flat Phantom (1900MHz)



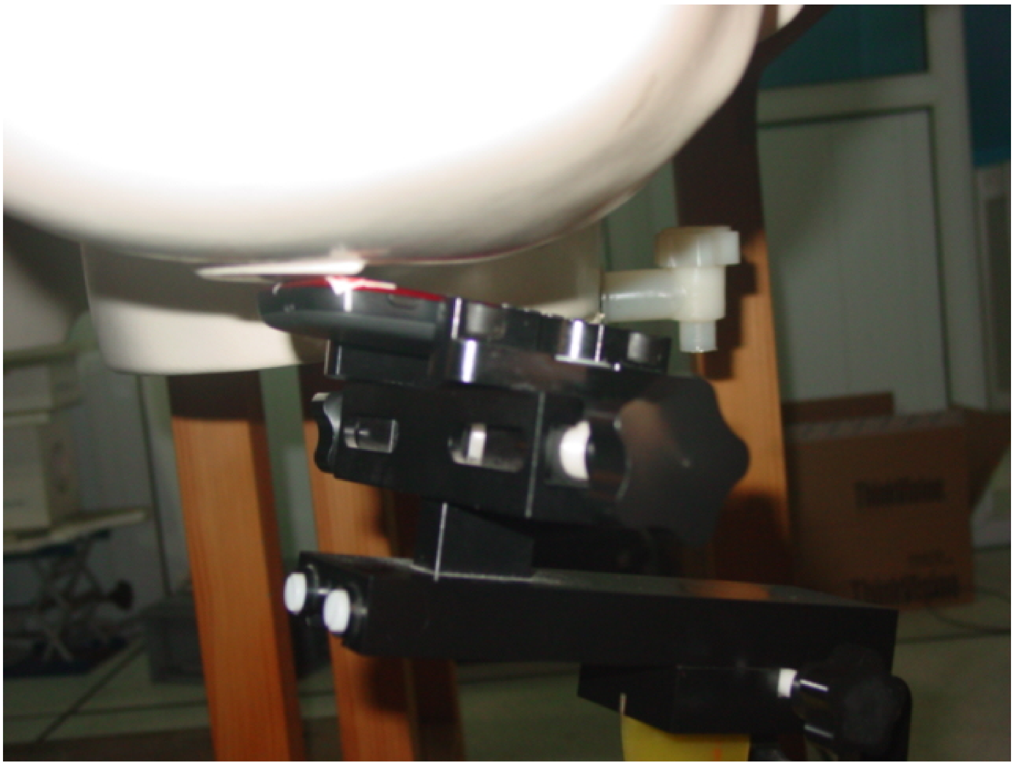
Picture B4: Left Hand Touch Cheek Position



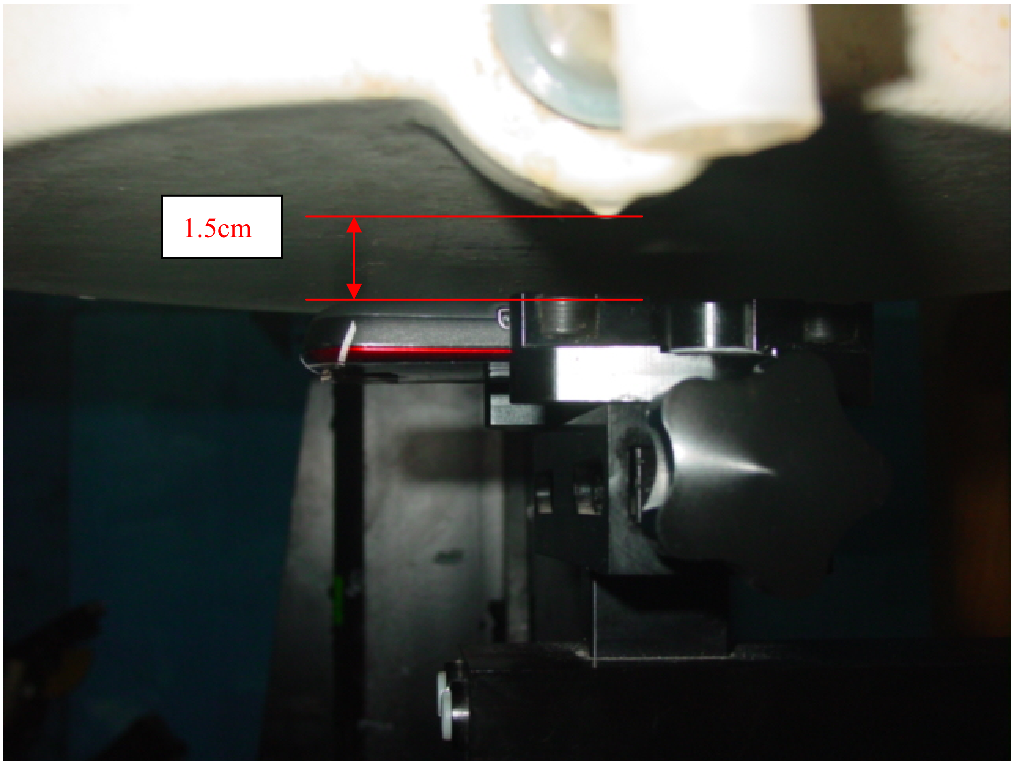
Picture B5: Left Hand Tilt 15° Position



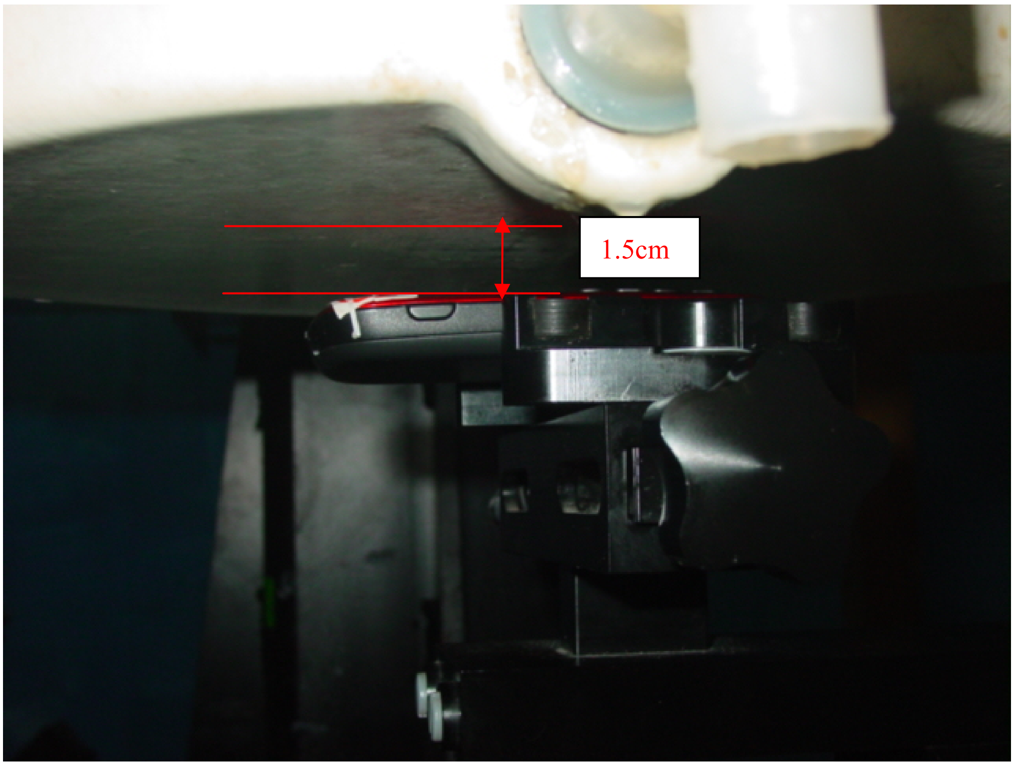
Picture B6: Right Hand Touch Cheek Position



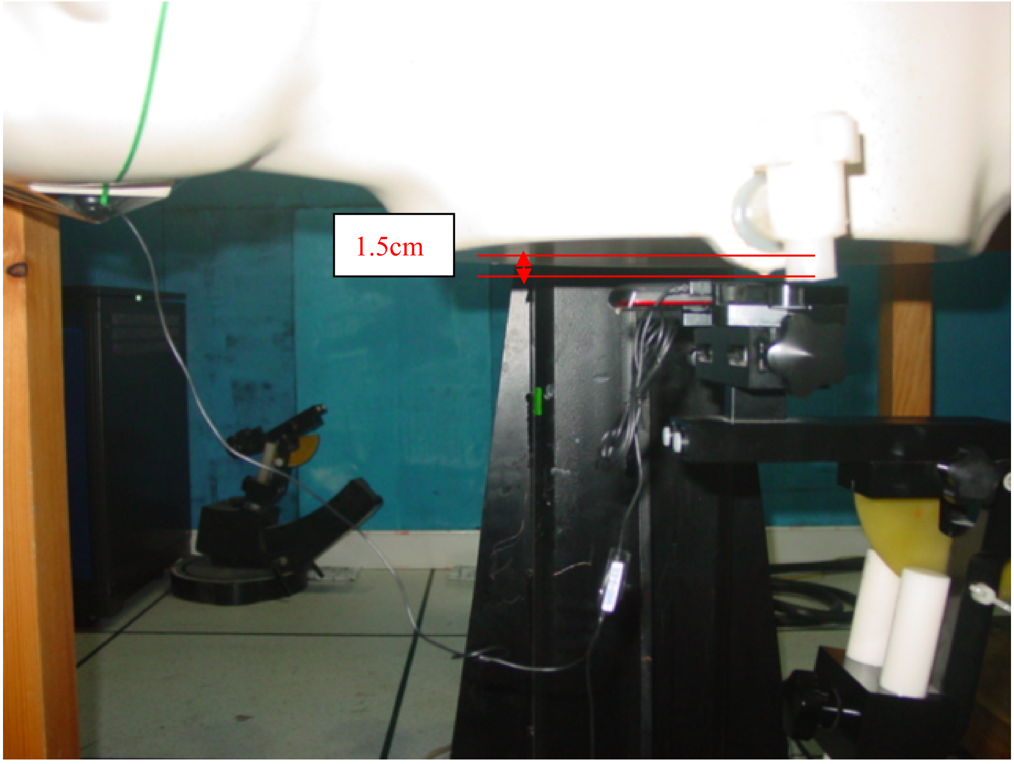
Picture B7: Right Hand Tilt 15° Position



Picture B8: Body-worn Position (towards ground, the distance from handset to the bottom of the Phantom is 1.5cm)



Picture B9: Body-worn Position (towards phantom, the distance from handset to the bottom of the Phantom is 1.5cm)



Picture B10: Body-worn Position with Headset (towards ground, the distance from handset to the bottom of the Phantom is 1.5cm)

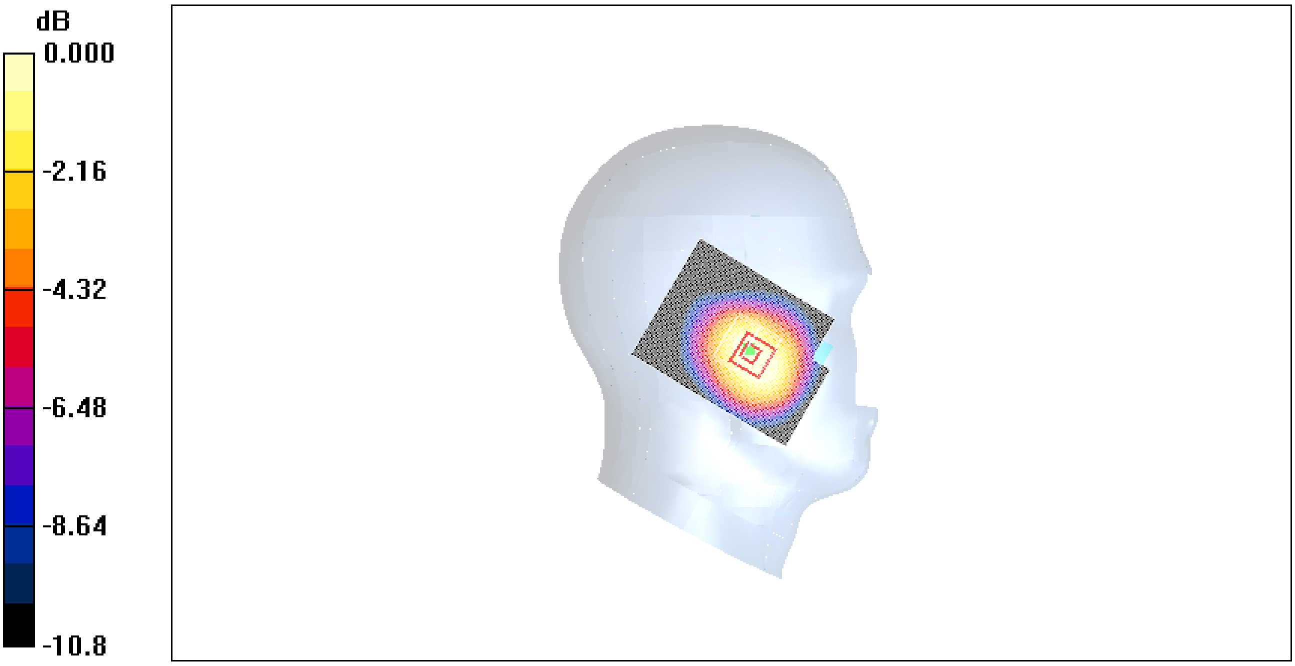
ANNEX C GRAPH RESULTS

850 Left Cheek High

Date/Time: 2010-5-20 8:07:24
Electronics: DAE4 Sn771
Medium: Head 850
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.90 mho/m; εr = 40.2; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°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 (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.17 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.3 V/m; Power Drift = -0.154 dB
Peak SAR (extrapolated) = 1.50 W/kg
SAR(1 g) = 1.04 mW/g; SAR(10 g) = 0.758 mW/g
Maximum value of SAR (measured) = 1.09 mW/g



0 dB = 1.09mW/g

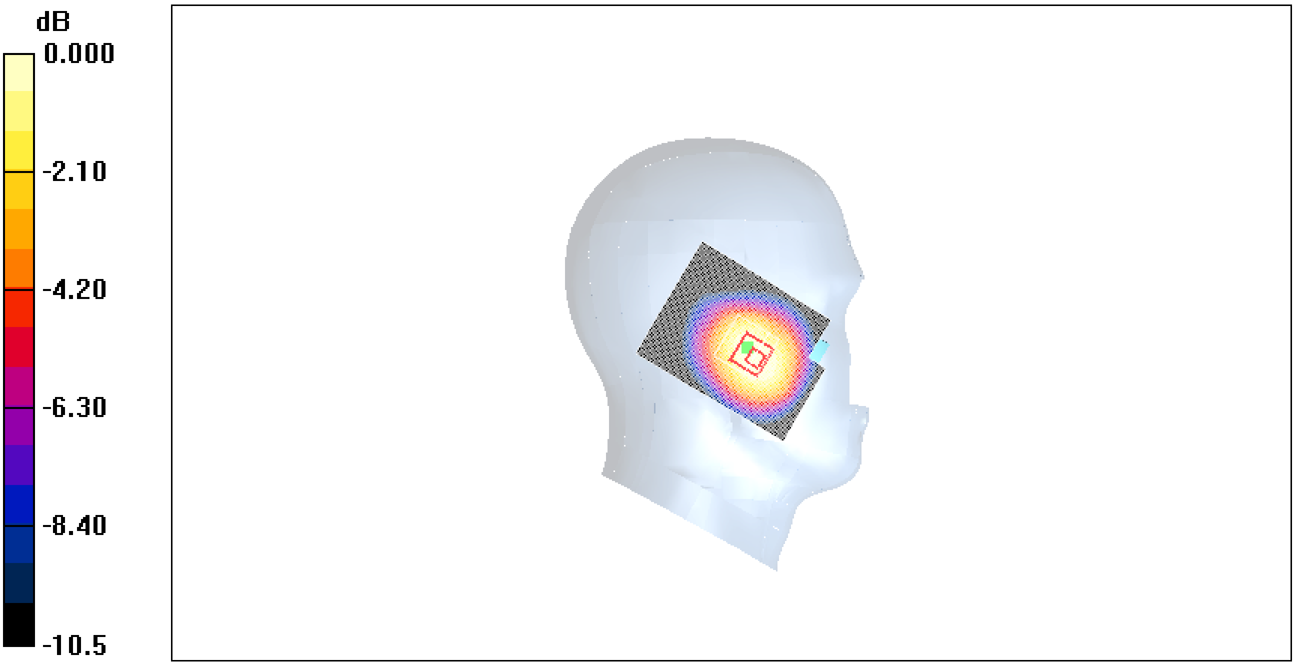
Fig. 1 850MHz CH251

850 Left Cheek Middle

Date/Time: 2010-5-20 8:21:40
Electronics: DAE4 Sn771
Medium: Head 850
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.888 mho/m; εr = 40.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid 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 (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.21 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.4 V/m; Power Drift = -0.012 dB
Peak SAR (extrapolated) = 1.47 W/kg
SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.787 mW/g
Maximum value of SAR (measured) = 1.12 mW/g



0 dB = 1.12mW/g

Fig. 2 850 MHz CH190

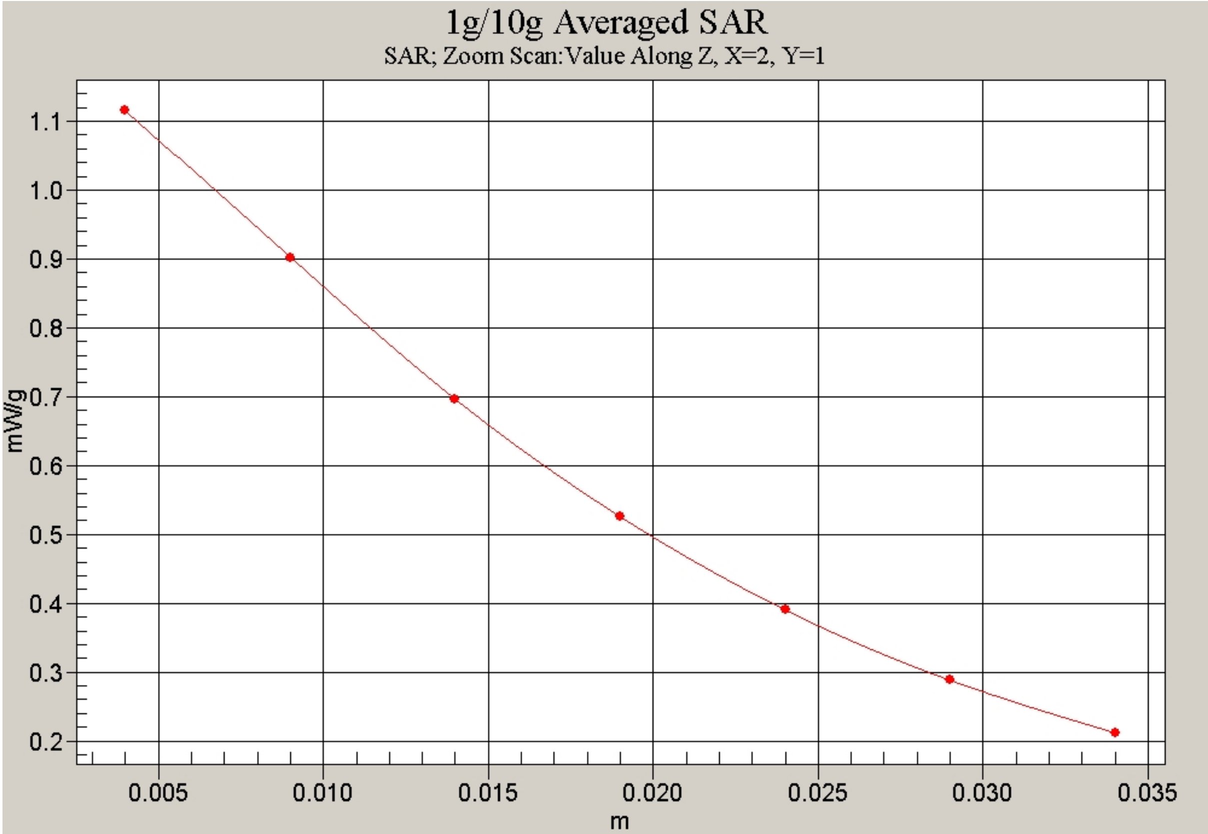
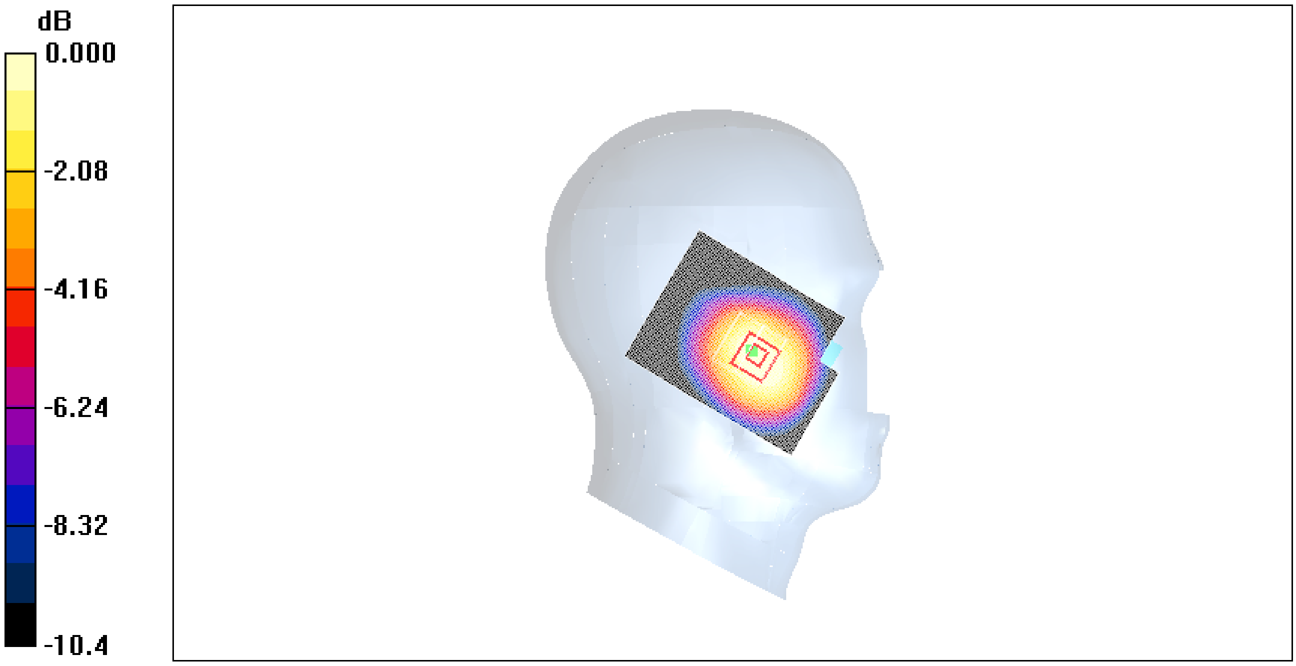


Fig. 2-1 Z-Scan at power reference point (850 MHz CH190)

850 Left Cheek Low
Date/Time: 2010-5-20 8:35:58
Electronics: DAE4 Sn771
Medium: Head 850
Medium parameters used: f = 825 MHz; σ = 0.876 mho/m; εr = 40.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°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) = 1.18 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.7 V/m; Power Drift = -0.048 dB
Peak SAR (extrapolated) = 1.47 W/kg
SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.782 mW/g
Maximum value of SAR (measured) = 1.12 mW/g



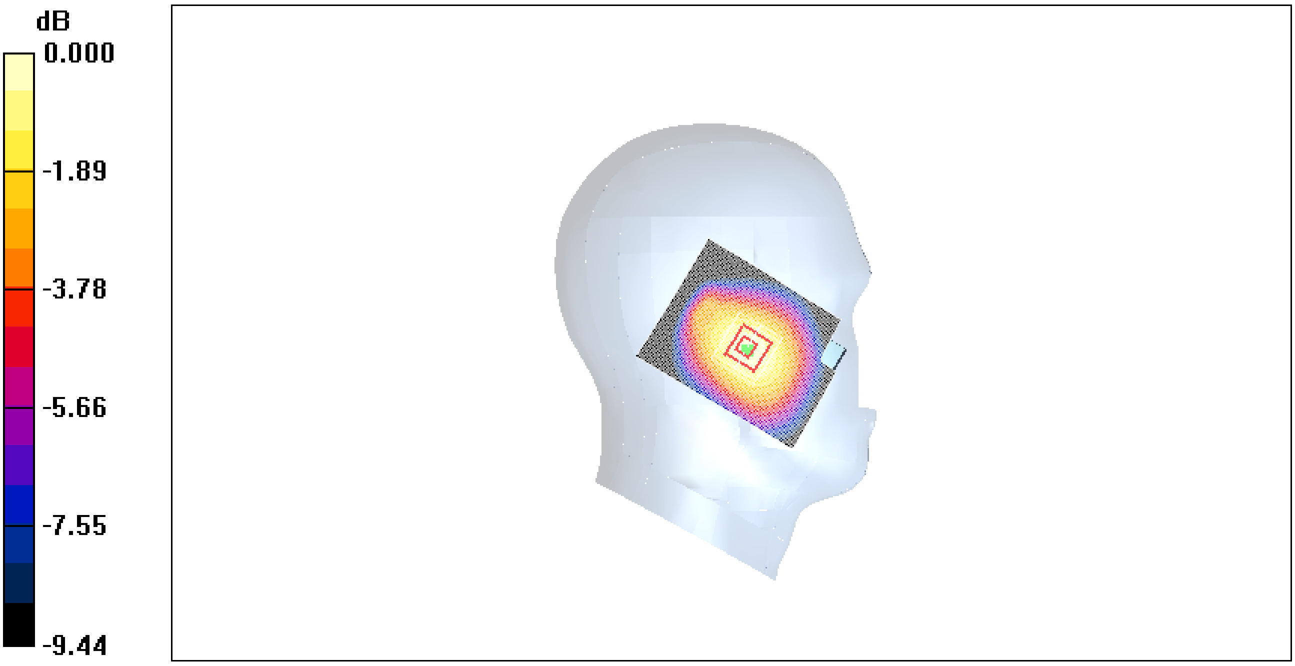
0 dB = 1.12mW/g

Fig. 3 850 MHz CH128

850 Left Tilt High
Date/Time: 2010-5-20 8:50:39
Electronics: DAE4 Sn771
Medium: Head 850
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.90 mho/m; εr = 40.2; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Tilt High/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.463 mW/g

Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.0 V/m; Power Drift = -0.031 dB
Peak SAR (extrapolated) = 0.587 W/kg
SAR(1 g) = 0.438 mW/g; SAR(10 g) = 0.316 mW/g
Maximum value of SAR (measured) = 0.465 mW/g



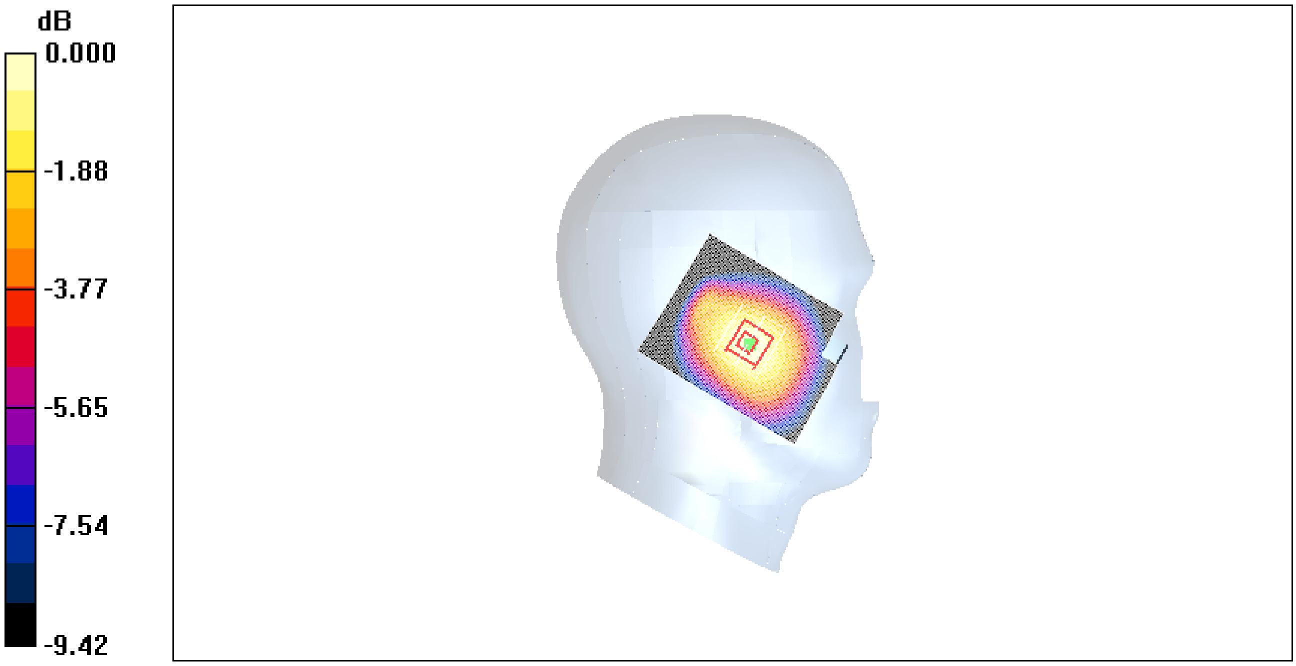
0 dB = 0.465mW/g

Fig.4 850 MHz CH251

850 Left Tilt Middle
Date/Time: 2010-5-20 9:04:53
Electronics: DAE4 Sn771
Medium: Head 850
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.888 mho/m; εr = 40.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid 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) = 0.495 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.9 V/m; Power Drift = -0.042 dB
Peak SAR (extrapolated) = 0.623 W/kg
SAR(1 g) = 0.467 mW/g; SAR(10 g) = 0.339 mW/g
Maximum value of SAR (measured) = 0.498 mW/g



0 dB = 0.498mW/g

Fig.5 850 MHz CH190

850 Left Tilt Low

Date/Time: 2010-5-20 9:19:10

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used: f = 825 MHz; σ = 0.876 mho/m; εr = 40.3; ρ = 1000 kg/m^3

Ambient Temperature:23.0°C Liquid Temperature: 22.5°C

Communication System: GSM 850 Frequency: 824.2 MHz Duty Cycle: 1:8.3

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

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

Maximum value of SAR (interpolated) = 0.496 mW/g

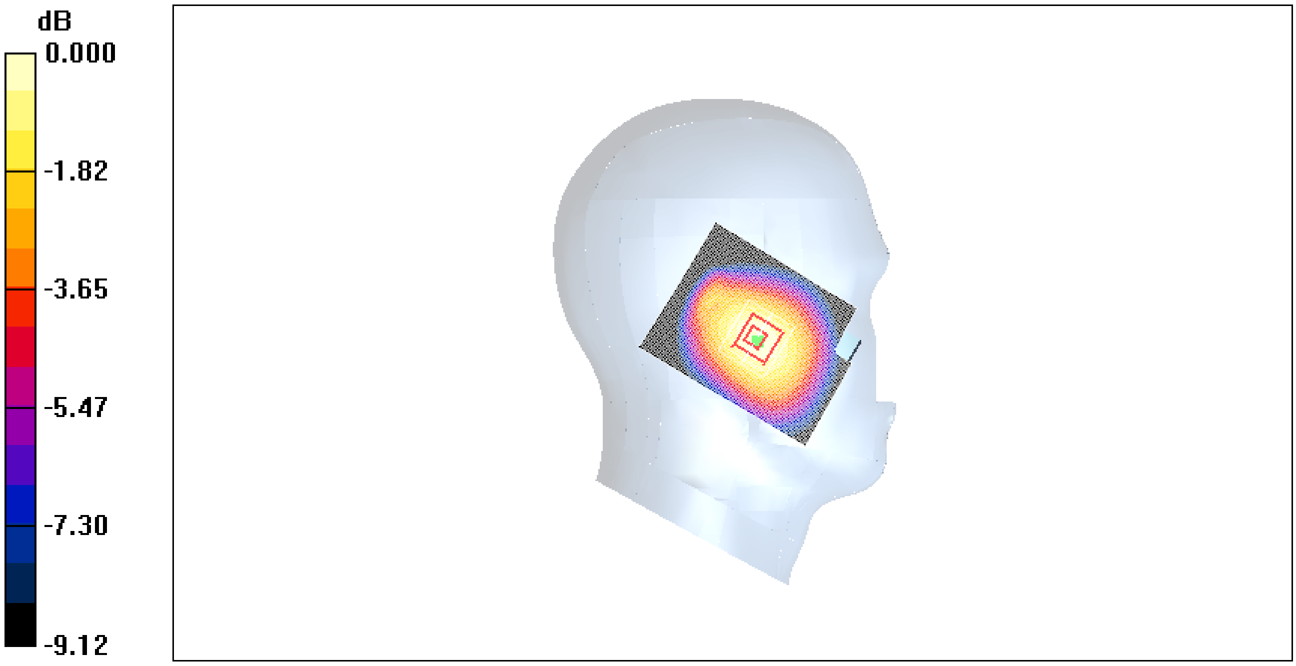
Tilt Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 18.4 V/m; Power Drift = -0.081 dB

Peak SAR (extrapolated) = 0.616 W/kg

SAR(1 g) = 0.468 mW/g; SAR(10 g) = 0.342 mW/g

Maximum value of SAR (measured) = 0.494 mW/g



0 dB = 0.494mW/g

Fig. 6 850 MHz CH128

850 Right Cheek High

Date/Time: 2010-5-20 9:34:02

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.90 mho/m; εr = 40.2; ρ = 1000 kg/m^3

Ambient Temperature:23.0°C Liquid Temperature: 22.5°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 (61x81x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 1.04 mW/g

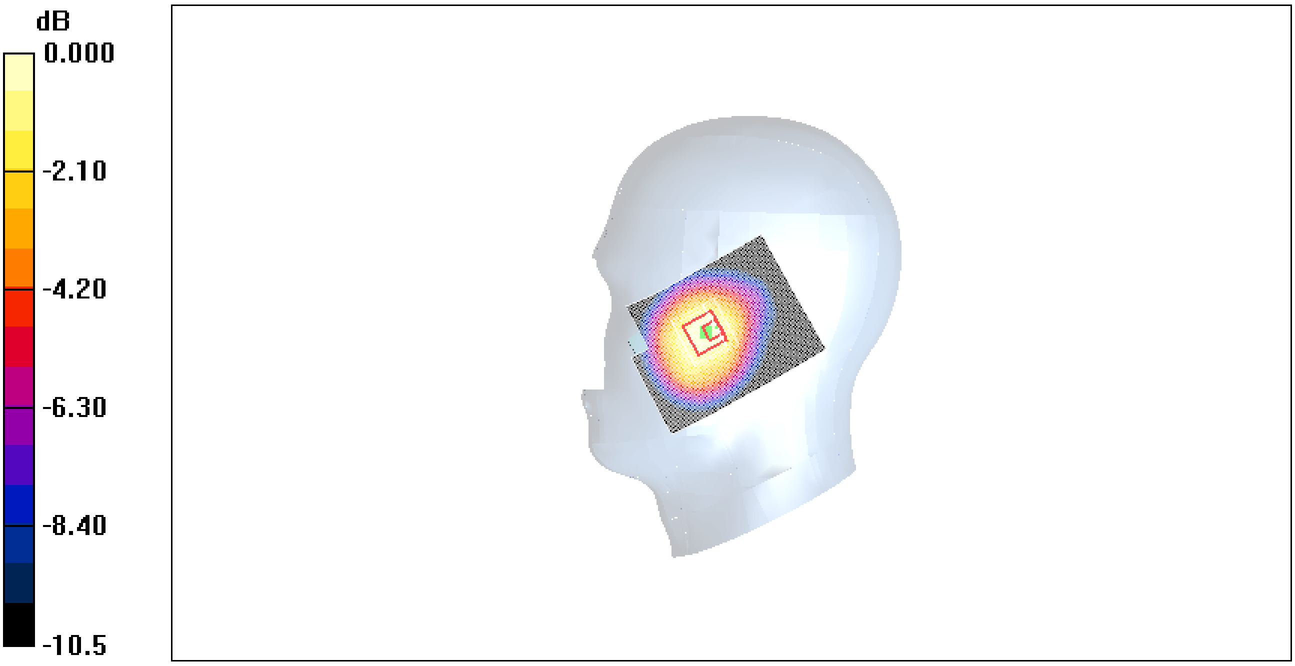
Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 12.9 V/m; Power Drift = -0.048 dB

Peak SAR (extrapolated) = 1.37 W/kg

SAR(1 g) = 0.954 mW/g; SAR(10 g) = 0.677 mW/g

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



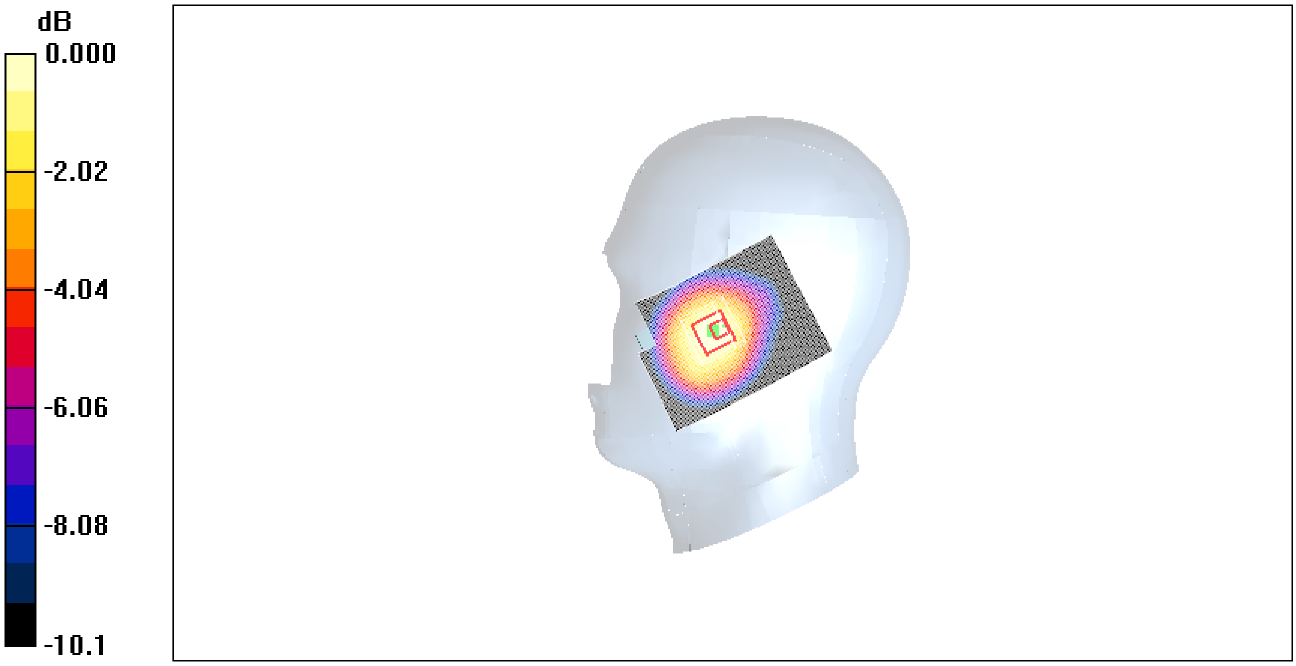
0 dB = 1.02mW/g

Fig. 7 850 MHz CH251

850 Right Cheek Middle
Date/Time: 2010-5-20 9:48:19
Electronics: DAE4 Sn771
Medium: Head 850
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.888 mho/m; εr = 40.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid 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 (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.05 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.5 V/m; Power Drift = -0.070 dB
Peak SAR (extrapolated) = 1.39 W/kg
SAR(1 g) = 0.981 mW/g; SAR(10 g) = 0.703 mW/g
Maximum value of SAR (measured) = 1.04 mW/g



0 dB = 1.04mW/g

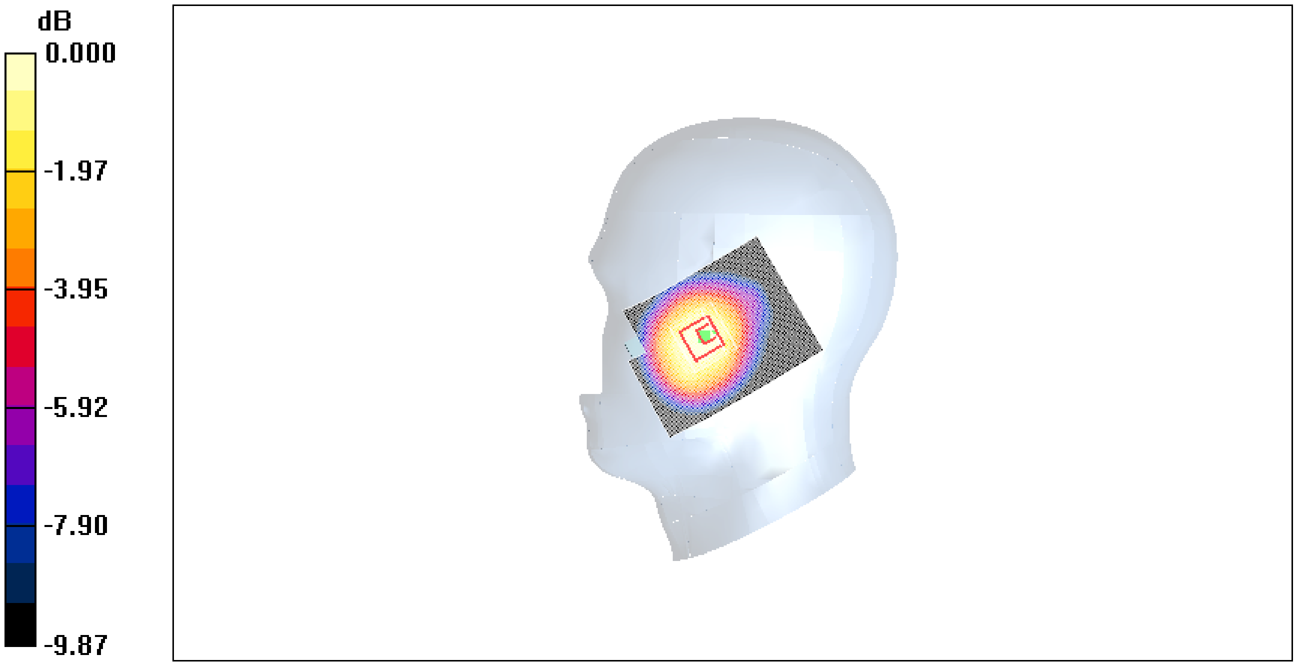
Fig. 8 850 MHz CH190

850 Right Cheek Low

Date/Time: 2010-5-20 10:02:35
Electronics: DAE4 Sn771
Medium: Head 850
Medium parameters used: f = 825 MHz; σ = 0.876 mho/m; εr = 40.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C   Liquid Temperature: 22.5°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) = 1.05 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.7 V/m; Power Drift = -0.038 dB
Peak SAR (extrapolated) = 1.32 W/kg
SAR(1 g) = 0.962 mW/g; SAR(10 g) = 0.697 mW/g
Maximum value of SAR (measured) = 1.00 mW/g



0 dB = 1.00mW/g

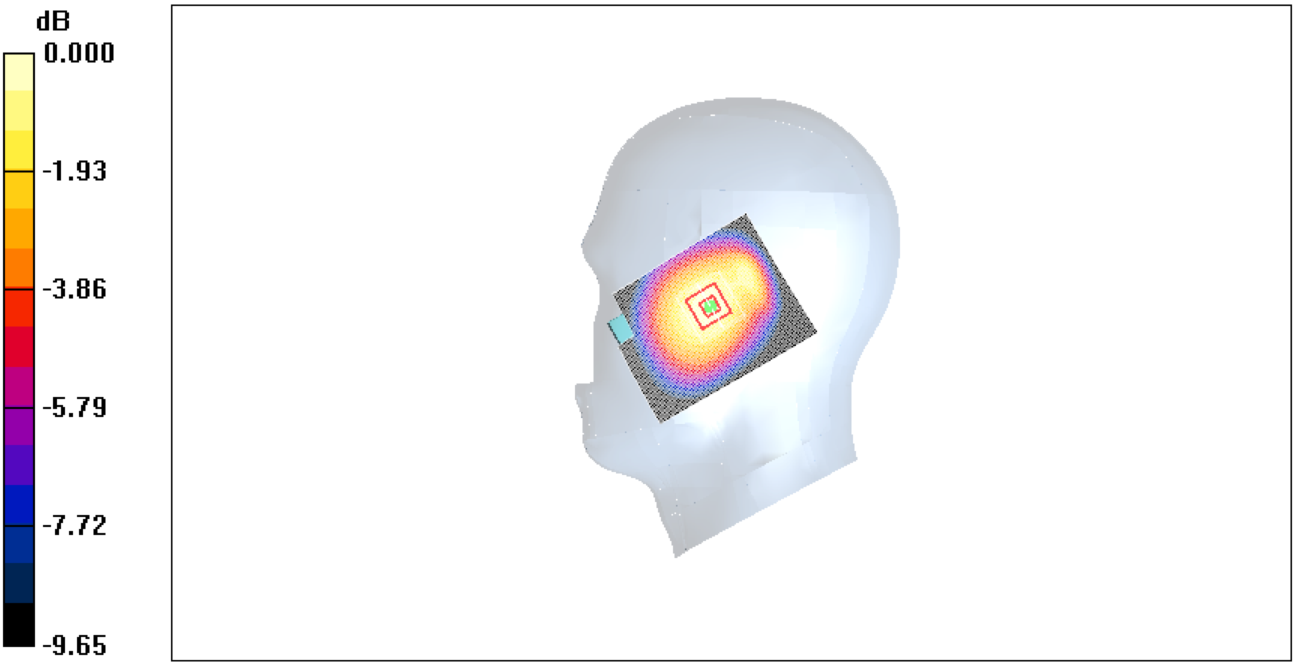
Fig. 9 850 MHz CH128

850 Right Tilt High

Date/Time: 2010-5-20 10:17:01
Electronics: DAE4 Sn771
Medium: Head 850
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.90 mho/m; εr = 40.2; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Tilt High/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.523 mW/g

Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.9 V/m; Power Drift = -0.141 dB
Peak SAR (extrapolated) = 0.660 W/kg
SAR(1 g) = 0.497 mW/g; SAR(10 g) = 0.357 mW/g
Maximum value of SAR (measured) = 0.531 mW/g



0 dB = 0.531mW/g

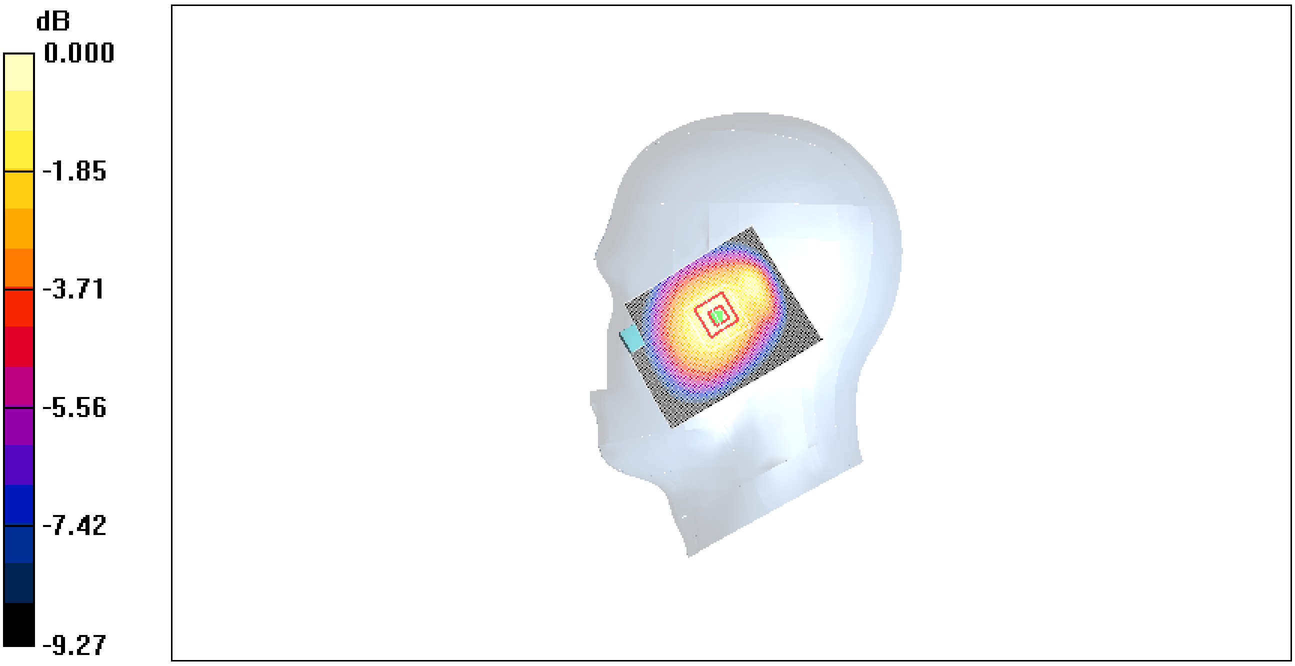
Fig.10 850 MHz CH251

850 Right Tilt Middle

Date/Time: 2010-5-20 10:31:22
Electronics: DAE4 Sn771
Medium: Head 850
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.888 mho/m; εr = 40.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid 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) = 0.527 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.1 V/m; Power Drift = -0.176 dB
Peak SAR (extrapolated) = 0.671 W/kg
SAR(1 g) = 0.505 mW/g; SAR(10 g) = 0.364 mW/g
Maximum value of SAR (measured) = 0.539 mW/g



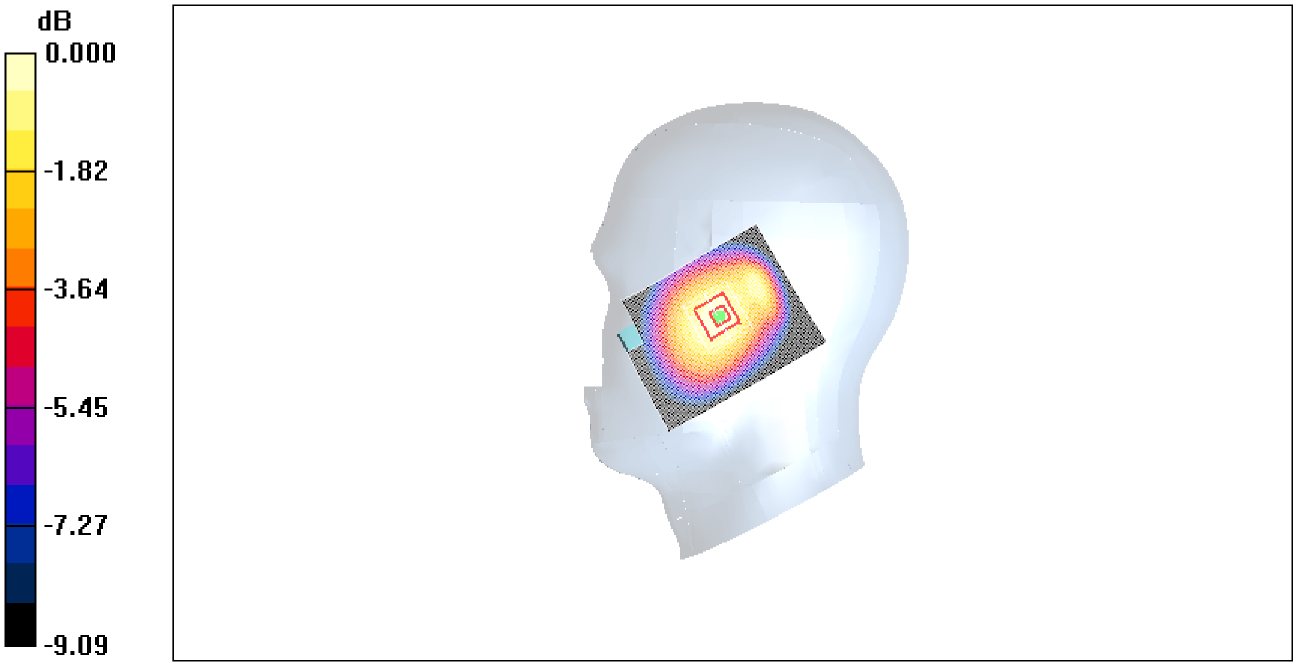
0 dB = 0.539mW/g

Fig.11 850 MHz CH190

850 Right Tilt Low
Date/Time: 2010-5-20 10:45:41
Electronics: DAE4 Sn771
Medium: Head 850
Medium parameters used: f = 825 MHz; σ = 0.876 mho/m; εr = 40.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 850 Frequency: 824.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Tilt Low/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.507 mW/g

Tilt Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.2 V/m; Power Drift = -0.135 dB
Peak SAR (extrapolated) = 0.633 W/kg
SAR(1 g) = 0.485 mW/g; SAR(10 g) = 0.353 mW/g
Maximum value of SAR (measured) = 0.515 mW/g



0 dB = 0.515mW/g

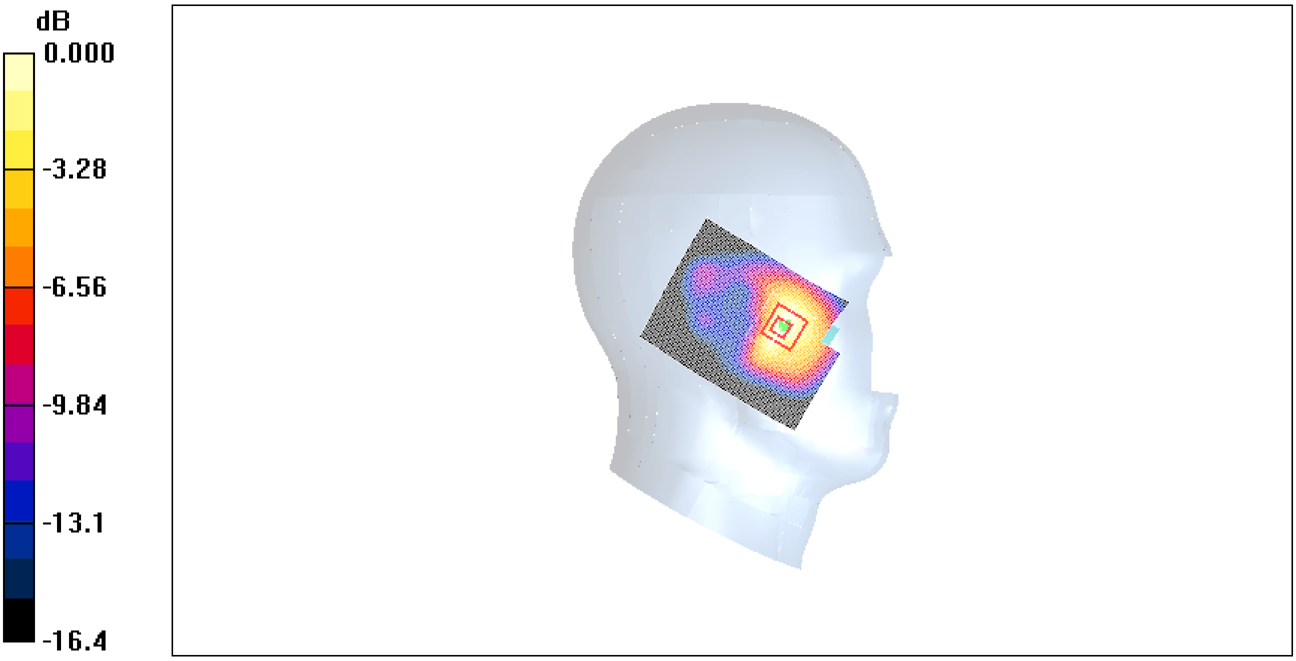
Fig. 12 850 MHz CH128

1900 Left Cheek High

Date/Time: 2010-5-22 8:13:21
Electronics: DAE4 Sn771
Medium: 1900 Head
Medium parameters used: f = 1910 MHz; σ = 1.42 mho/m; εr = 39.4; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1909.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Cheek High/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.919 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.05 V/m; Power Drift = 0.065 dB
Peak SAR (extrapolated) = 1.33 W/kg
SAR(1 g) = 0.807 mW/g; SAR(10 g) = 0.455 mW/g
Maximum value of SAR (measured) = 0.880 mW/g



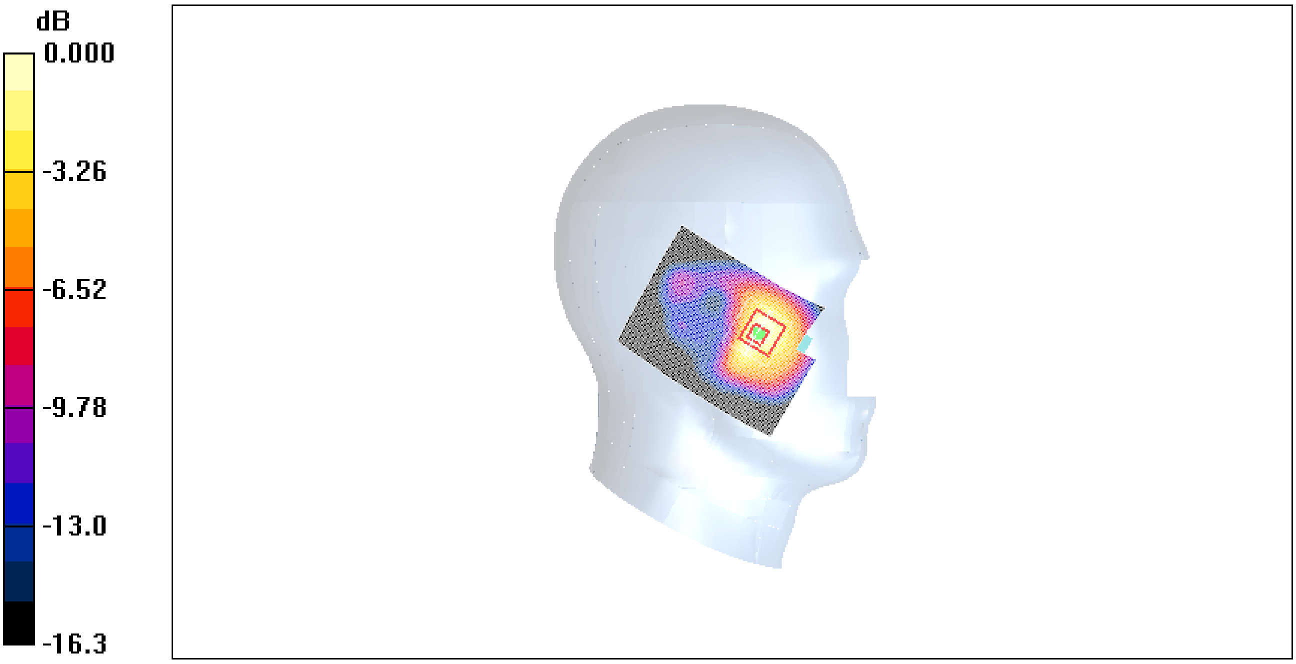
0 dB = 0.880mW/g

Fig. 13 1900 MHz CH810

1900 Left Cheek Middle
Date/Time: 2010-5-22 8:27:39
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.40 mho/m; εr = 39.5; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Cheek Middle/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.868 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.03 V/m; Power Drift = 0.062 dB
Peak SAR (extrapolated) = 1.26 W/kg
SAR(1 g) = 0.769 mW/g; SAR(10 g) = 0.434 mW/g
Maximum value of SAR (measured) = 0.841 mW/g



0 dB = 0.841mW/g

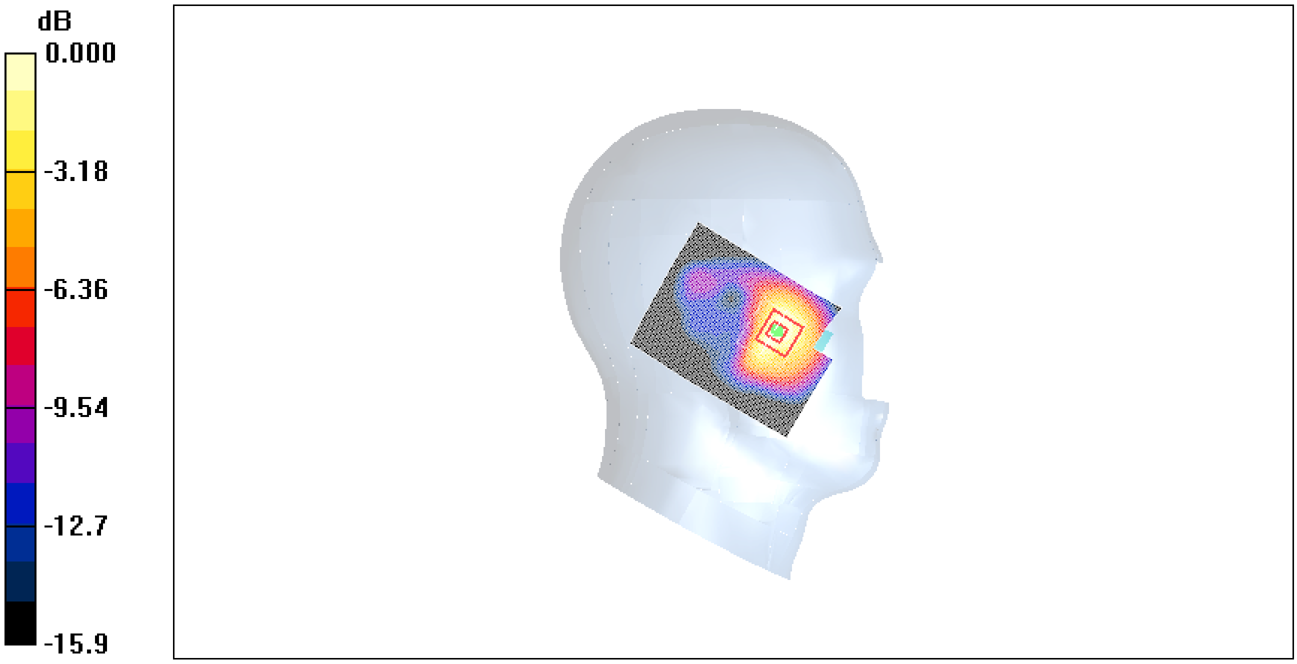
Fig. 14 1900 MHz CH661

1900 Left Cheek Low

Date/Time: 2010-5-22 8:42:02
Electronics: DAE4 Sn771
Medium: 1900 Head
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.37 mho/m; εr = 39.6; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1850.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Cheek Low/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.949 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.56 V/m; Power Drift = 0.034 dB
Peak SAR (extrapolated) = 1.39 W/kg
SAR(1 g) = 0.857 mW/g; SAR(10 g) = 0.484 mW/g
Maximum value of SAR (measured) = 0.931 mW/g



0 dB = 0.931mW/g

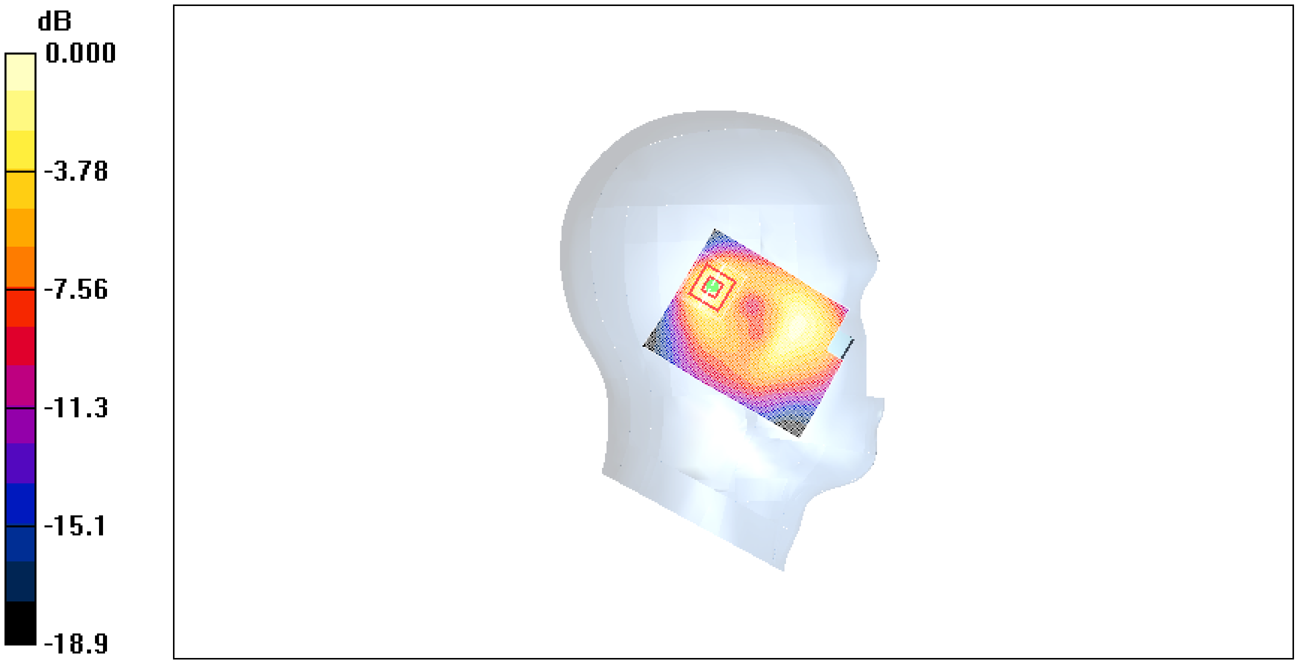
Fig. 15 1900 MHz CH512

1900 Left Tilt High

Date/Time: 2010-5-22 8:56:43
Electronics: DAE4 Sn771
Medium: 1900 Head
Medium parameters used: f = 1910 MHz; σ = 1.42 mho/m; εr = 39.4; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1909.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Tilt High/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.264 mW/g

Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.6 V/m; Power Drift = 0.074 dB
Peak SAR (extrapolated) = 0.393 W/kg
SAR(1 g) = 0.226 mW/g; SAR(10 g) = 0.117 mW/g
Maximum value of SAR (measured) = 0.260 mW/g



0 dB = 0.260mW/g

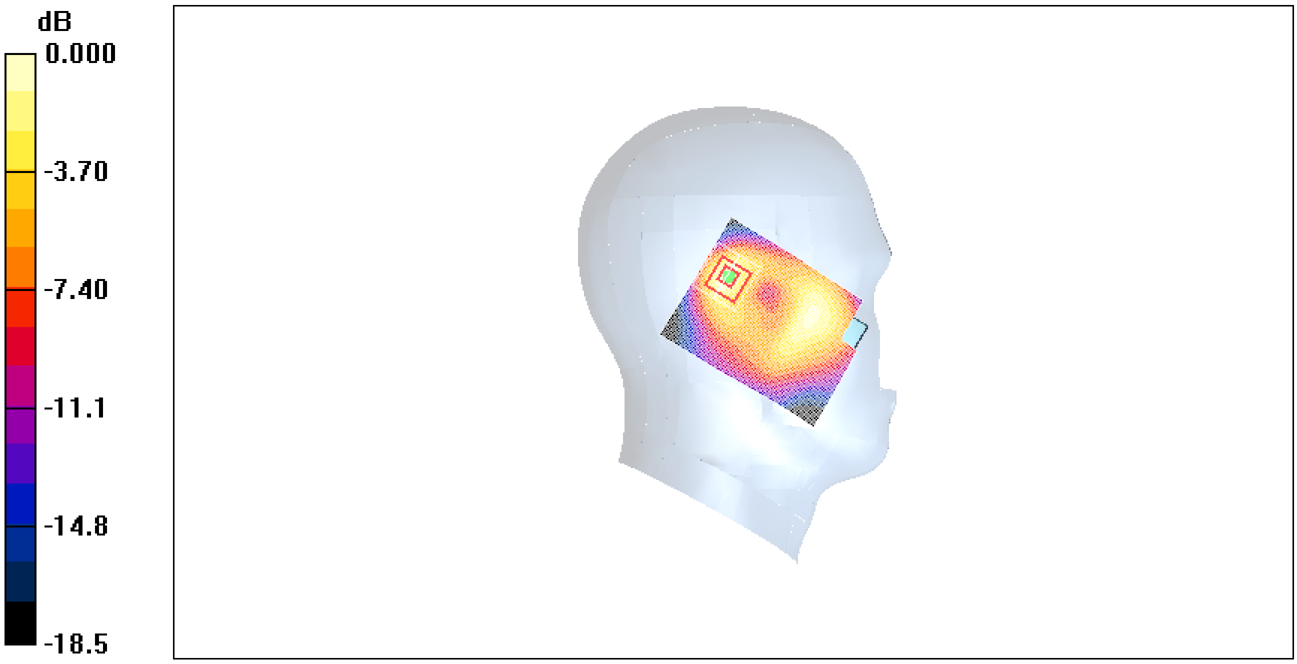
Fig.16 1900 MHz CH810

1900 Left Tilt Middle

Date/Time: 2010-5-22 9:11:14
Electronics: DAE4 Sn771
Medium: 1900 Head
Medium parameters used: f = 1880 MHz; σ = 1.40 mho/m; εr = 39.5; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C   Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Tilt Middle/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.247 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.7 V/m; Power Drift = 0.099 dB
Peak SAR (extrapolated) = 0.365 W/kg
SAR(1 g) = 0.215 mW/g; SAR(10 g) = 0.113 mW/g
Maximum value of SAR (measured) = 0.245 mW/g



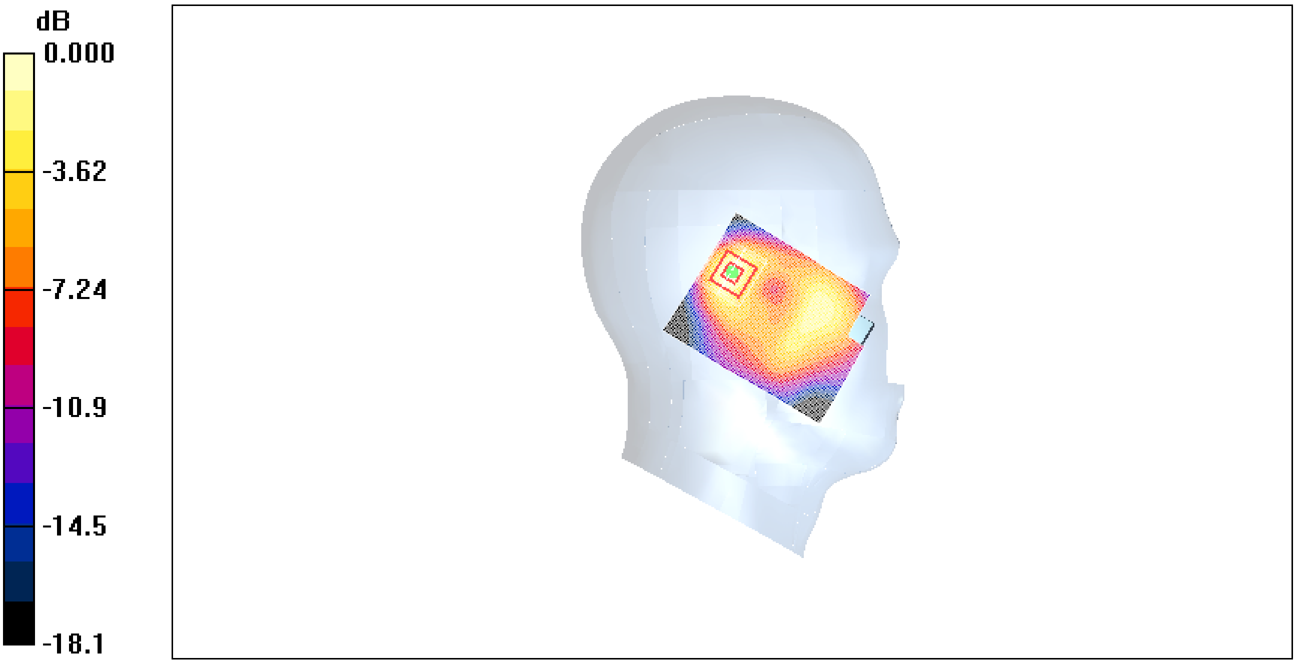
0 dB = 0.245mW/g

Fig. 17 1900 MHz CH661

1900 Left Tilt Low
Date/Time: 2010-5-22 9:25:32
Electronics: DAE4 Sn771
Medium: 1900 Head
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.37 mho/m; εr = 39.6; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1850.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Tilt Low/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.282 mW/g

Tilt Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.5 V/m; Power Drift = 0.147 dB
Peak SAR (extrapolated) = 0.401 W/kg
SAR(1 g) = 0.239 mW/g; SAR(10 g) = 0.129 mW/g
Maximum value of SAR (measured) = 0.273 mW/g



0 dB = 0.273mW/g

Fig. 18 1900 MHz CH512

1900 Right Cheek High

Date/Time: 2010-5-22 9:40:19

Electronics: DAE4 Sn771

Medium: 1900 Head

Medium parameters used: f = 1910 MHz; σ = 1.42 mho/m; εr = 39.4; ρ = 1000 kg/m^3

Ambient Temperature:23.0°C   Liquid Temperature: 22.5°C

Communication System: GSM 1900MHz Frequency: 1909.8 MHz Duty Cycle: 1:8.3

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

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

Maximum value of SAR (interpolated) = 1.21 mW/g

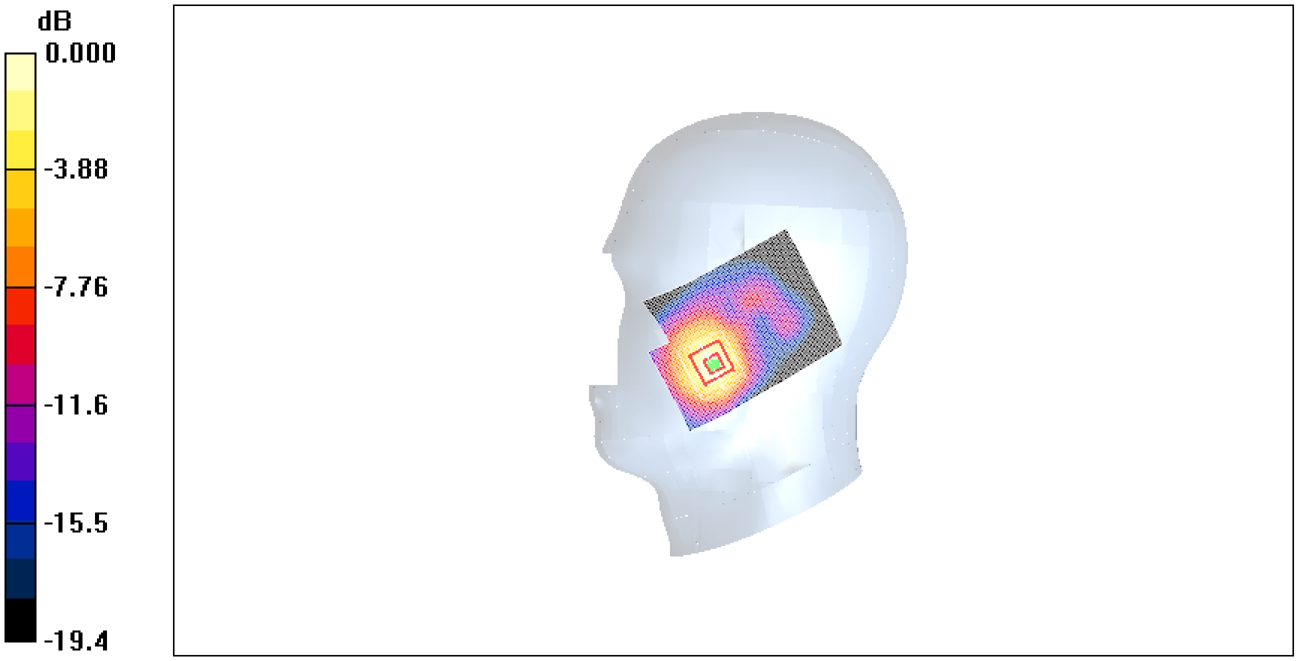
Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.43 V/m; Power Drift = -0.126 dB

Peak SAR (extrapolated) = 1.74 W/kg

SAR(1 g) = 1.11 mW/g; SAR(10 g) = 0.597 mW/g

Maximum value of SAR (measured) = 1.21 mW/g



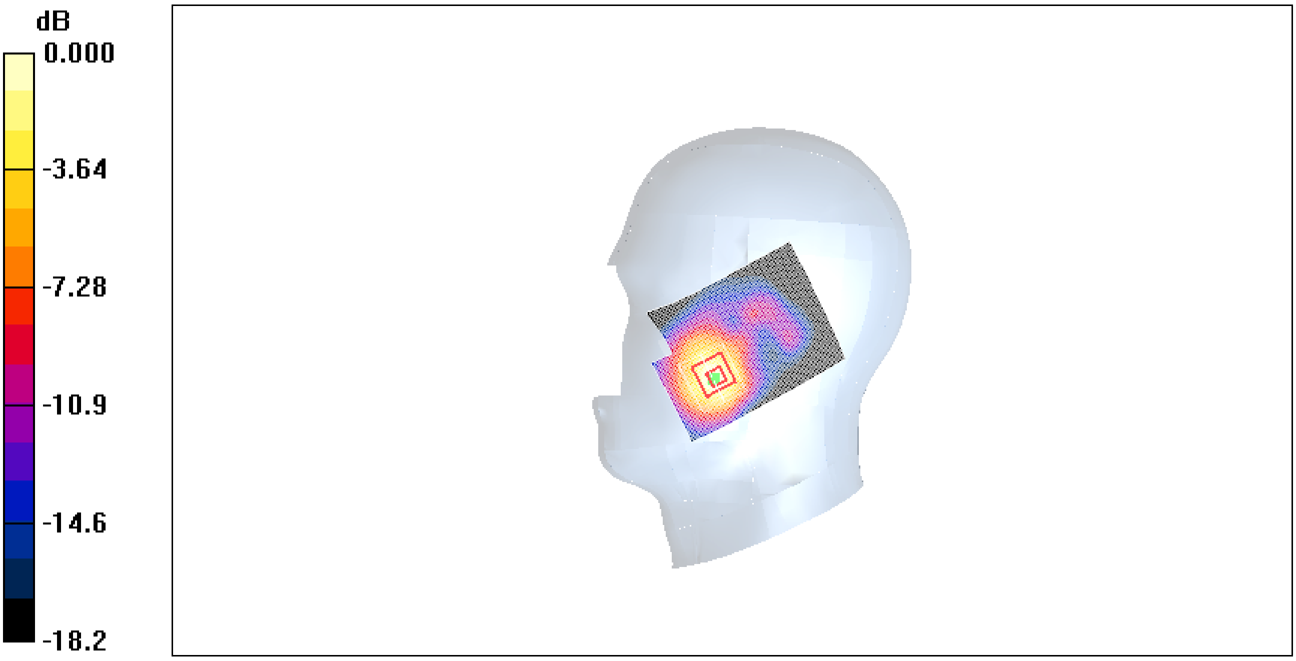
0 dB = 1.21mW/g

Fig. 19 1900 MHz CH810

1900 Right Cheek Middle
Date/Time: 2010-5-22 9:54:33
Electronics: DAE4 Sn771
Medium: 1900 Head
Medium parameters used: f = 1880 MHz; σ = 1.40 mho/m; εr = 39.5; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Cheek Middle/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.14 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.49 V/m; Power Drift = 0.073 dB
Peak SAR (extrapolated) = 1.59 W/kg
SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.563 mW/g
Maximum value of SAR (measured) = 1.10 mW/g



0 dB = 1.10mW/g

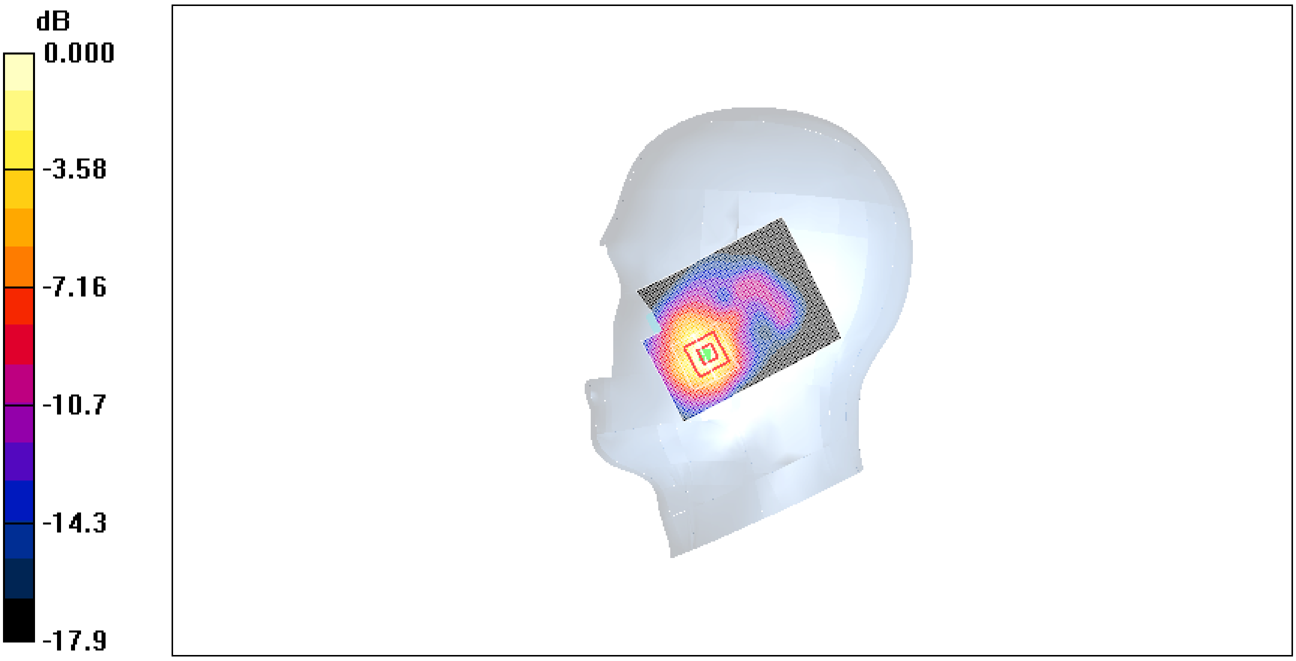
Fig. 20 1900 MHz CH661

1900 Right Cheek Low

Date/Time: 2010-5-22 10:08:51
Electronics: DAE4 Sn771
Medium: 1900 Head
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.37 mho/m; εr = 39.6; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1850.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Cheek Low/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.29 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.25 V/m; Power Drift = -0.105 dB
Peak SAR (extrapolated) = 1.79 W/kg
SAR(1 g) = 1.15 mW/g; SAR(10 g) = 0.627 mW/g
Maximum value of SAR (measured) = 1.26 mW/g



0 dB = 1.26mW/g

Fig. 21 1900 MHz CH512

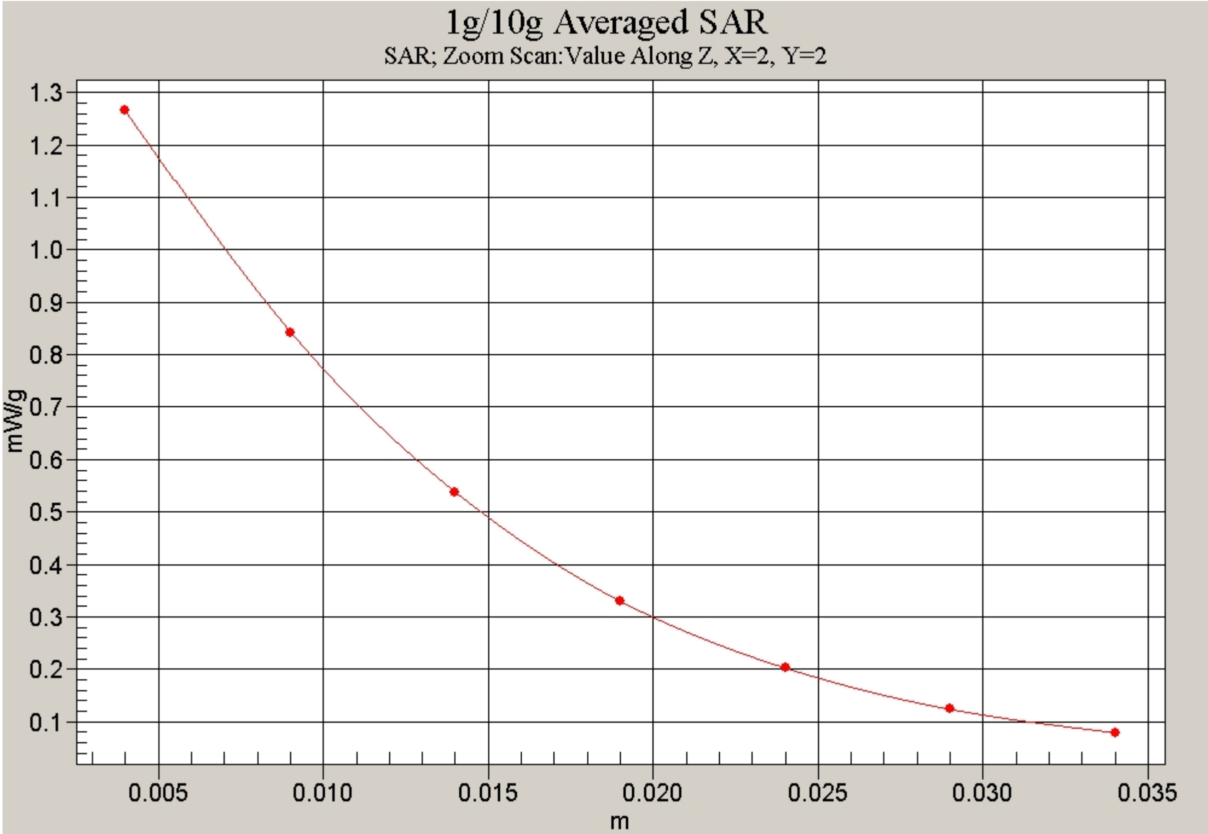
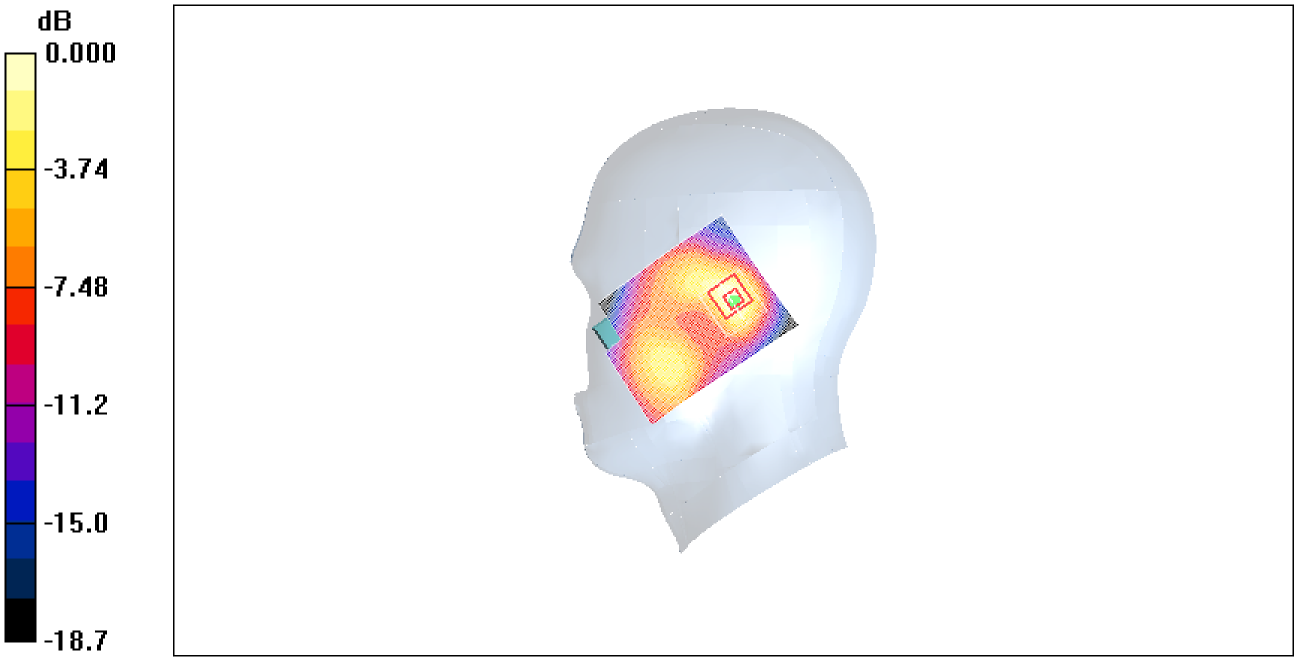


Fig. 21-1 Z-Scan at power reference point (1900 MHz CH512)

1900 Right Tilt High
Date/Time: 2010-5-22 10:23:37
Electronics: DAE4 Sn771
Medium: 1900 Head
Medium parameters used: f = 1910 MHz; σ = 1.42 mho/m; εr = 39.4; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1909.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Tilt High/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.227 mW/g

Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.2 V/m; Power Drift = 0.075 dB
Peak SAR (extrapolated) = 0.334 W/kg
SAR(1 g) = 0.196 mW/g; SAR(10 g) = 0.106 mW/g
Maximum value of SAR (measured) = 0.217 mW/g



0 dB = 0.217mW/g

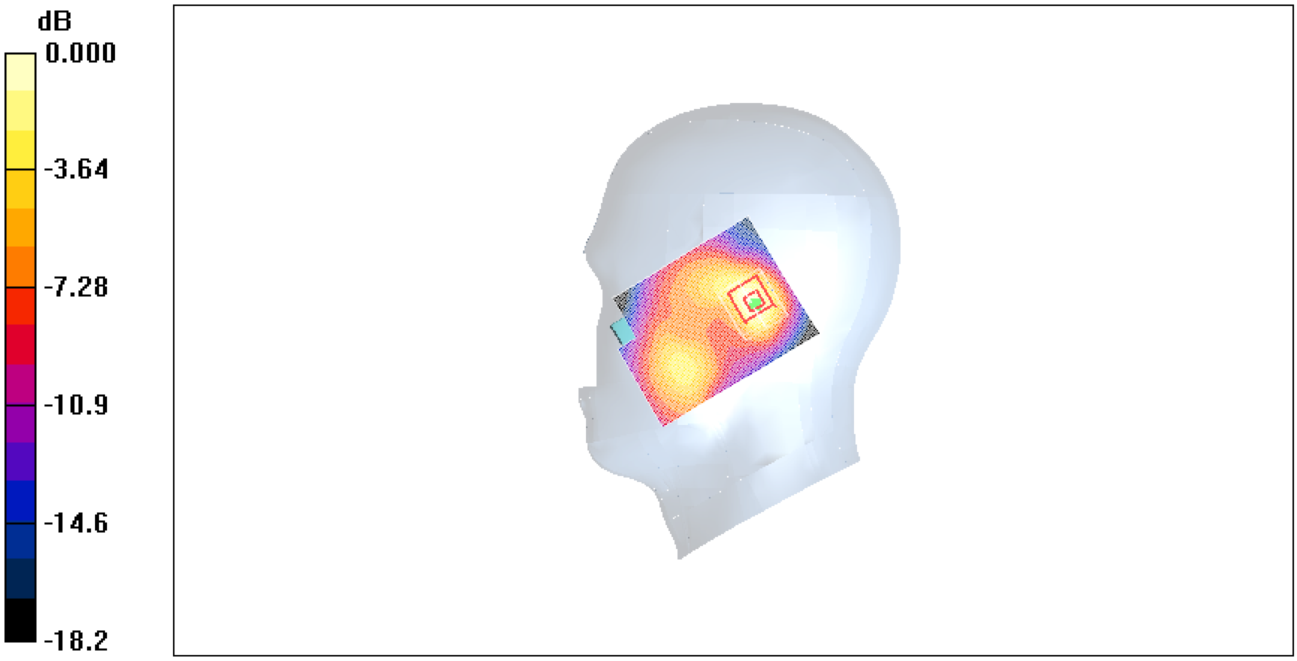
Fig. 22 1900 MHz CH810

1900 Right Tilt Middle

Date/Time: 2010-5-22 10:37:52
Electronics: DAE4 Sn771
Medium: 1900 Head
Medium parameters used: f = 1880 MHz; σ = 1.40 mho/m; εr = 39.5; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Tilt Middle/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.220 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.3 V/m; Power Drift = 0.079 dB
Peak SAR (extrapolated) = 0.318 W/kg
SAR(1 g) = 0.191 mW/g; SAR(10 g) = 0.105 mW/g
Maximum value of SAR (measured) = 0.211 mW/g



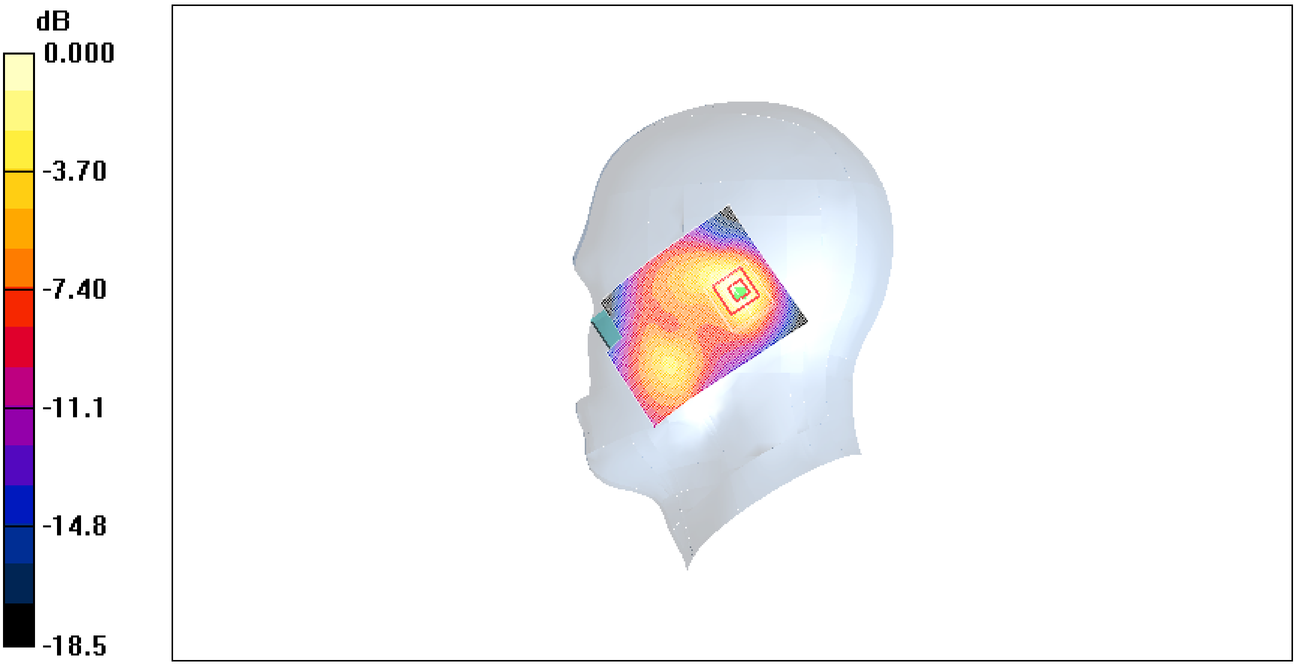
0 dB = 0.211mW/g

Fig.23 1900 MHz CH661

1900 Right Tilt Low
Date/Time: 2010-5-22 10:52:20
Electronics: DAE4 Sn771
Medium: 1900 Head
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.37 mho/m; εr = 39.6; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C   Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1850.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Tilt Low/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.265 mW/g

Tilt Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.9 V/m; Power Drift = -0.017 dB
Peak SAR (extrapolated) = 0.369 W/kg
SAR(1 g) = 0.229 mW/g; SAR(10 g) = 0.128 mW/g
Maximum value of SAR (measured) = 0.249 mW/g



0 dB = 0.249mW/g

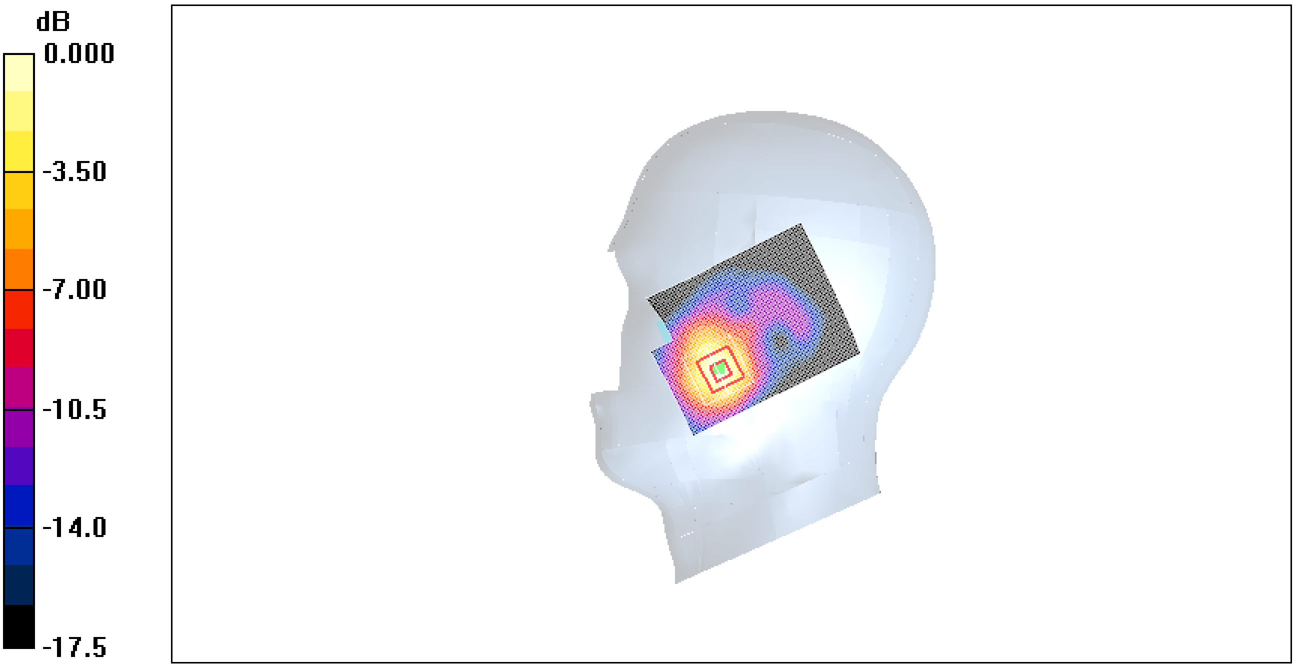
Fig.24 1900 MHz CH512

1900 Right Cheek Low with battery CAB30M0000C2

Date/Time: 2010-5-22 11:10:28
Electronics: DAE4 Sn771
Medium: 1900 Head
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.37 mho/m; εr = 39.6; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C   Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1850.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Cheek Low/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.23 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.99 V/m; Power Drift = -0.137 dB
Peak SAR (extrapolated) = 1.74 W/kg
SAR(1 g) = 1.13 mW/g; SAR(10 g) = 0.617 mW/g
Maximum value of SAR (measured) = 1.23 mW/g



0 dB = 1.23mW/g

Fig. 25 1900 MHz CH512

850 Body Towards Ground High with GPRS

Date/Time: 2010-5-20 13:42:14

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.96 mho/m; εr = 53.9; ρ = 1000 kg/m^3

Ambient Temperature:23.0°C Liquid 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 (61x81x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 1.01 mW/g

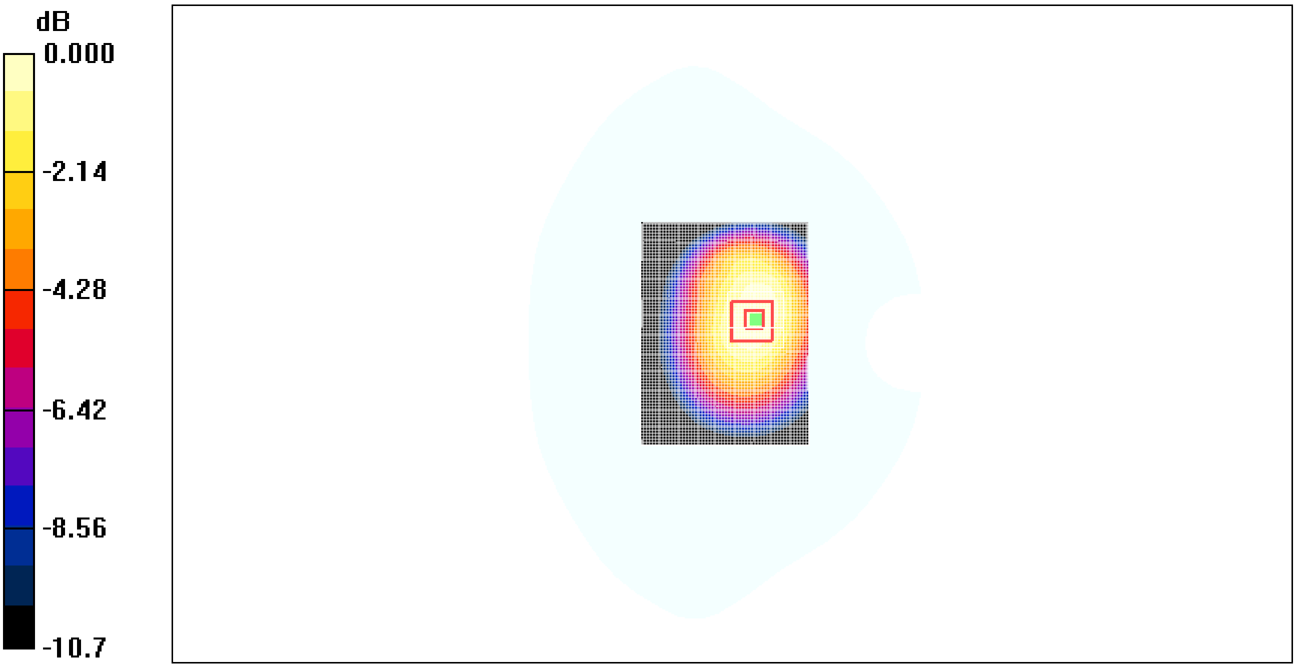
Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 27.3 V/m; Power Drift = 0.033 dB

Peak SAR (extrapolated) = 1.33 W/kg

SAR(1 g) = 0.961 mW/g; SAR(10 g) = 0.662 mW/g

Maximum value of SAR (measured) = 0.991 mW/g



0 dB = 0.991mW/g

Fig. 26 850 MHz CH251

850 Body Towards Ground Middle with GPRS

Date/Time: 2010-5-20 13:57:37

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.95 mho/m; εr = 54.0; ρ = 1000 kg/m^3

Ambient Temperature:23.0°C Liquid 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 (61x81x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 1.14 mW/g

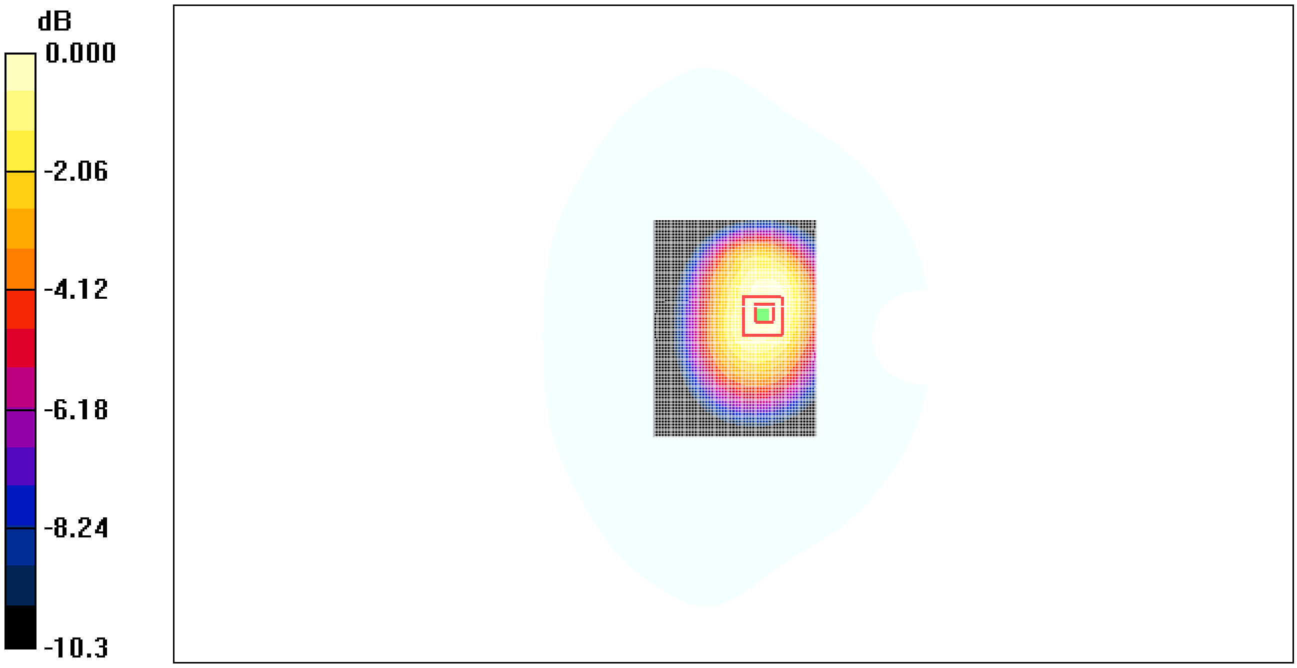
Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 29.1 V/m; Power Drift = -0.013 dB

Peak SAR (extrapolated) = 1.48 W/kg

SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.747 mW/g

Maximum value of SAR (measured) = 1.12 mW/g



0 dB = 1.12mW/g

Fig. 27 850 MHz CH190

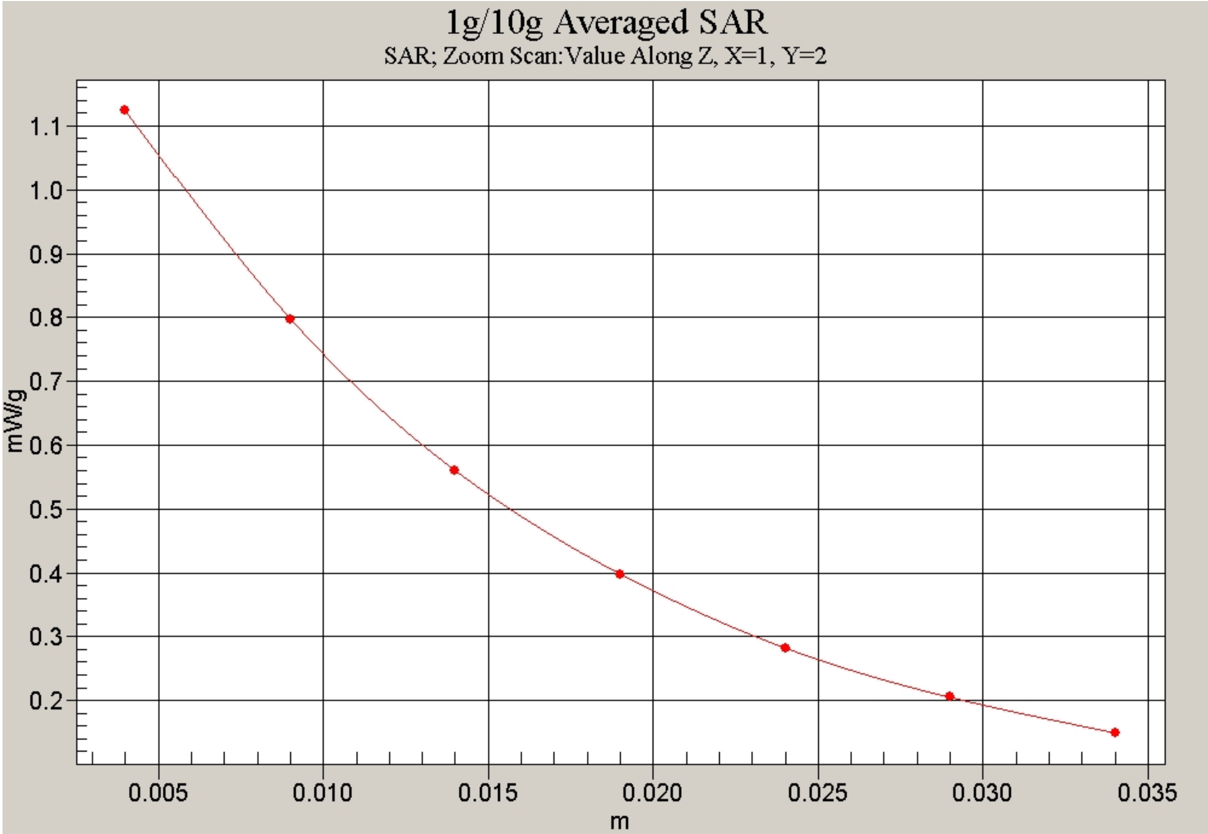


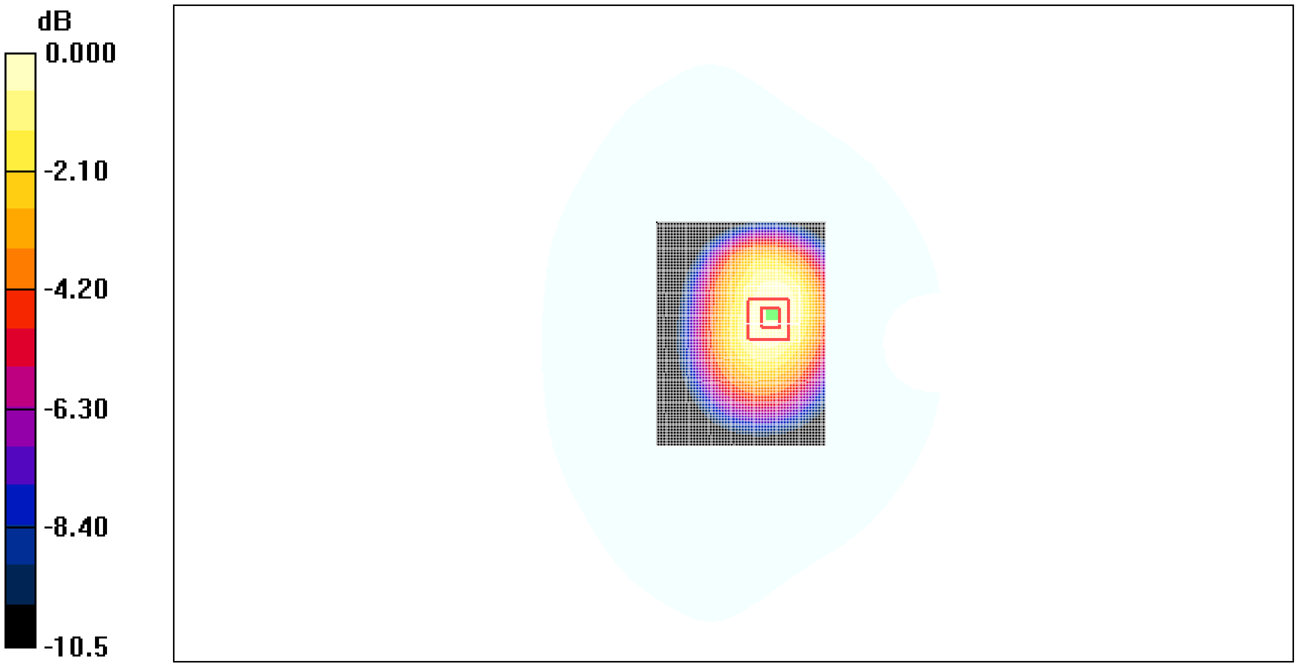
Fig. 27-1 Z-Scan at power reference point (850 MHz CH190)

850 Body Towards Ground Low with GPRS

Date/Time: 2010-5-20 14:12:56
Electronics: DAE4 Sn771
Medium: 850 Body
Medium parameters used: f = 825 MHz; σ = 0.933 mho/m; εr = 54.1; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid 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 (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.14 mW/g

Toward Ground Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.1 V/m; Power Drift = -0.031 dB
Peak SAR (extrapolated) = 1.47 W/kg
SAR(1 g) = 1.06 mW/g; SAR(10 g) = 0.740 mW/g
Maximum value of SAR (measured) = 1.10 mW/g



0 dB = 1.10mW/g

Fig. 28 850 MHz CH128

850 Body Towards Phantom High with GPRS

Date/Time: 2010-5-20 14:29:36

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.96 mho/m; εr = 53.9; ρ = 1000 kg/m^3

Ambient Temperature:23.0°C   Liquid 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 (61x81x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.738 mW/g

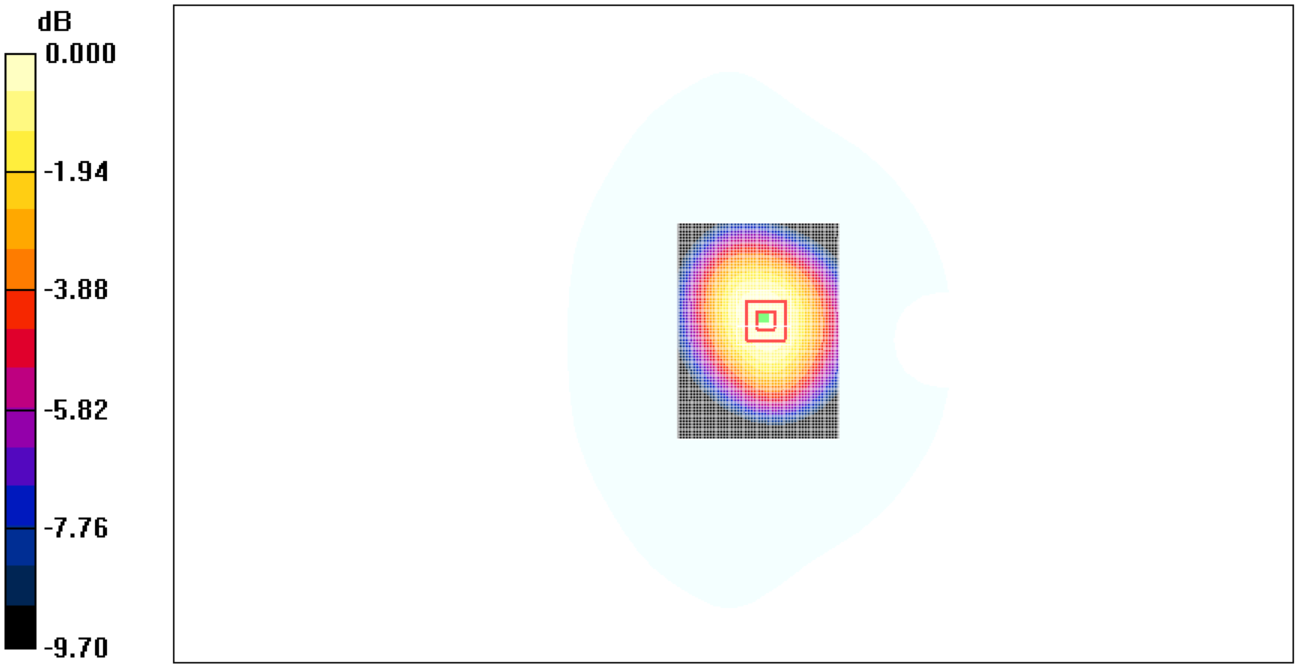
Toward Phantom High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 26.2 V/m; Power Drift = 0.005 dB

Peak SAR (extrapolated) = 0.903 W/kg

SAR(1 g) = 0.699 mW/g; SAR(10 g) = 0.504 mW/g

Maximum value of SAR (measured) = 0.726 mW/g



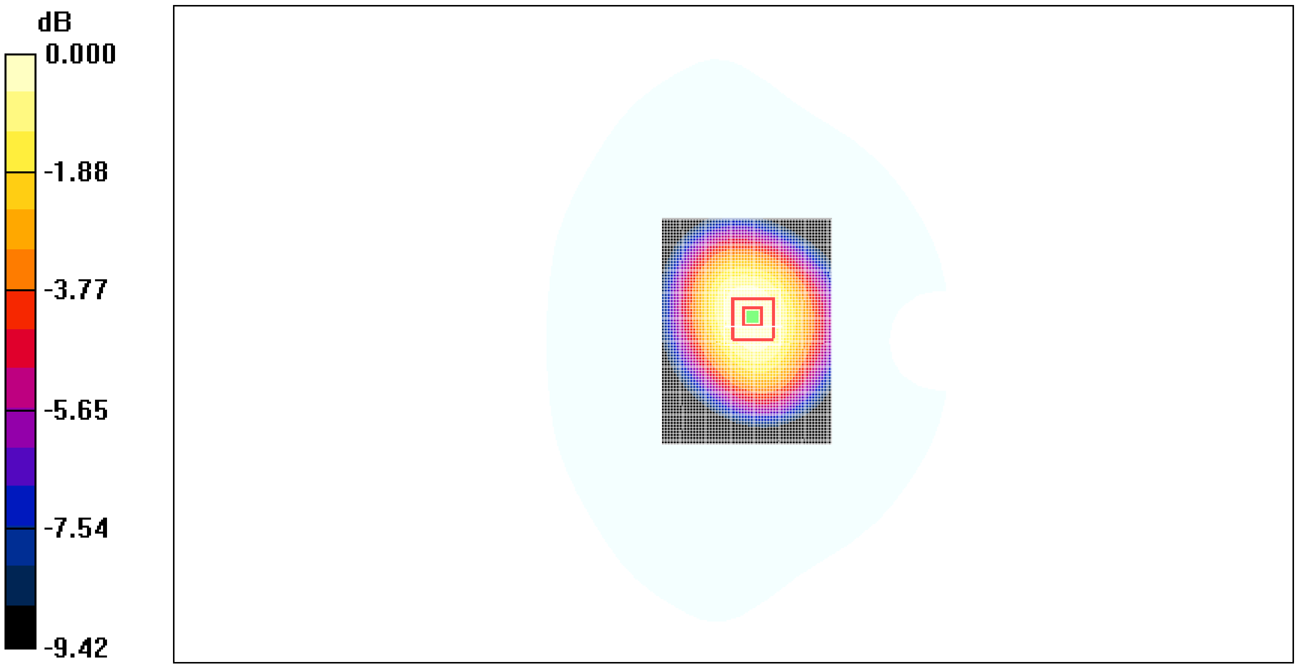
0 dB = 0.726mW/g

Fig. 29   850 MHz CH251

850 Body Towards Phantom Middle with GPRS
Date/Time: 2010-5-20 14:44:47
Electronics: DAE4 Sn771
Medium: 850 Body
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.95 mho/m; εr = 54.0; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid 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 Phantom Middle/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.882 mW/g

Toward Phantom Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 28.5 V/m; Power Drift = 0.016 dB
Peak SAR (extrapolated) = 1.09 W/kg
SAR(1 g) = 0.831 mW/g; SAR(10 g) = 0.600 mW/g
Maximum value of SAR (measured) = 0.856 mW/g



0 dB = 0.856mW/g

Fig. 30 850 MHz CH190

850 Body Towards Phantom Low with GPRS

Date/Time: 2010-5-20 15:00:25

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used: f = 825 MHz; σ = 0.933 mho/m; εr = 54.1; ρ = 1000 kg/m^3

Ambient Temperature:23.0^{o}C Liquid Temperature: 22.5^{o}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 Phantom Low/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.911 mW/g

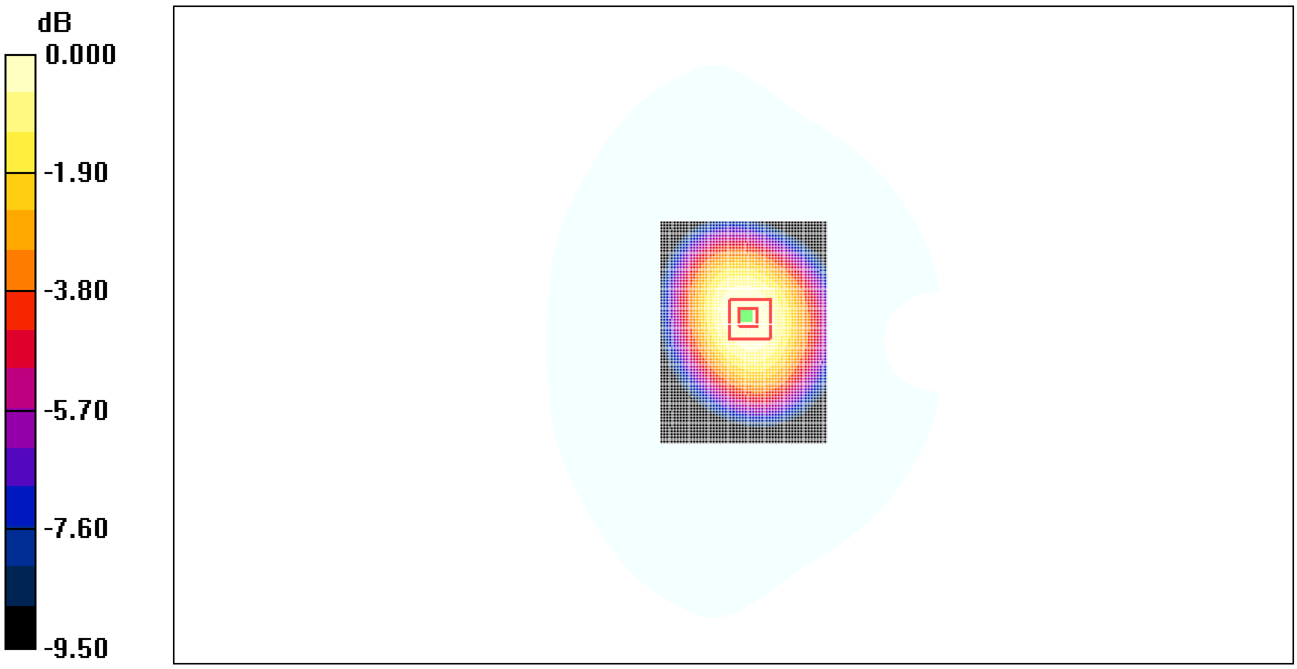
Toward Phantom Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 29.2 V/m; Power Drift = -0.024 dB

Peak SAR (extrapolated) = 1.11 W/kg

SAR(1 g) = 0.859 mW/g; SAR(10 g) = 0.621 mW/g

Maximum value of SAR (measured) = 0.886 mW/g



0 dB = 0.886mW/g

Fig. 31 850 MHz CH128

850 Body Towards Ground Middle with Headset

Date/Time: 2010-5-20 15:17:30

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.95 mho/m; εr = 54.0; ρ = 1000 kg/m^3

Ambient Temperature:23.0°C　　Liquid Temperature: 22.5°C

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

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

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

Maximum value of SAR (interpolated) = 0.679 mW/g

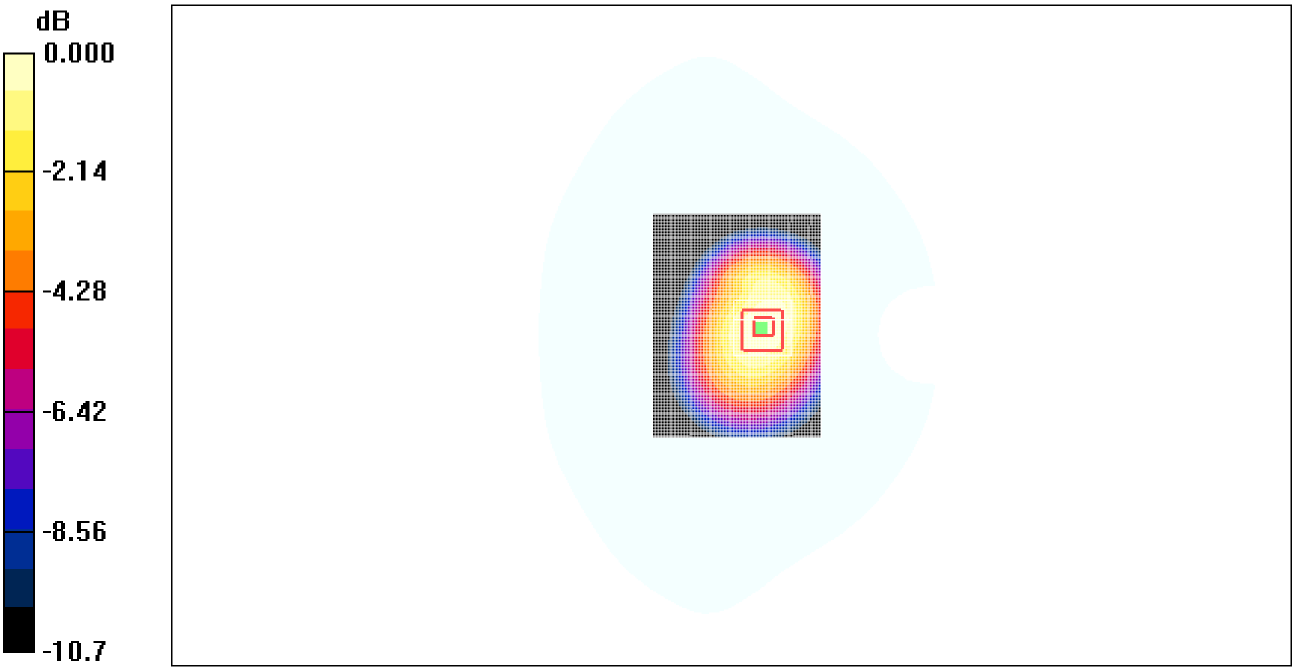
Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 23.7 V/m; Power Drift = -0.011 dB

Peak SAR (extrapolated) = 0.883 W/kg

SAR(1 g) = 0.632 mW/g; SAR(10 g) = 0.434 mW/g

Maximum value of SAR (measured) = 0.667 mW/g



0 dB = 0.667mW/g

Fig. 32　850 MHz CH190

1900 Body Towards Ground High with GPRS

Date/Time: 2010-5-22 13:45:08

Electronics: DAE4 Sn771

Medium: Body 1900 MHz

Medium parameters used: f = 1910 MHz; σ = 1.54 mho/m; εr = 51.7; ρ = 1000 kg/m^3

Ambient Temperature:23.0°C   Liquid Temperature: 22.5°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 (61x81x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.600 mW/g

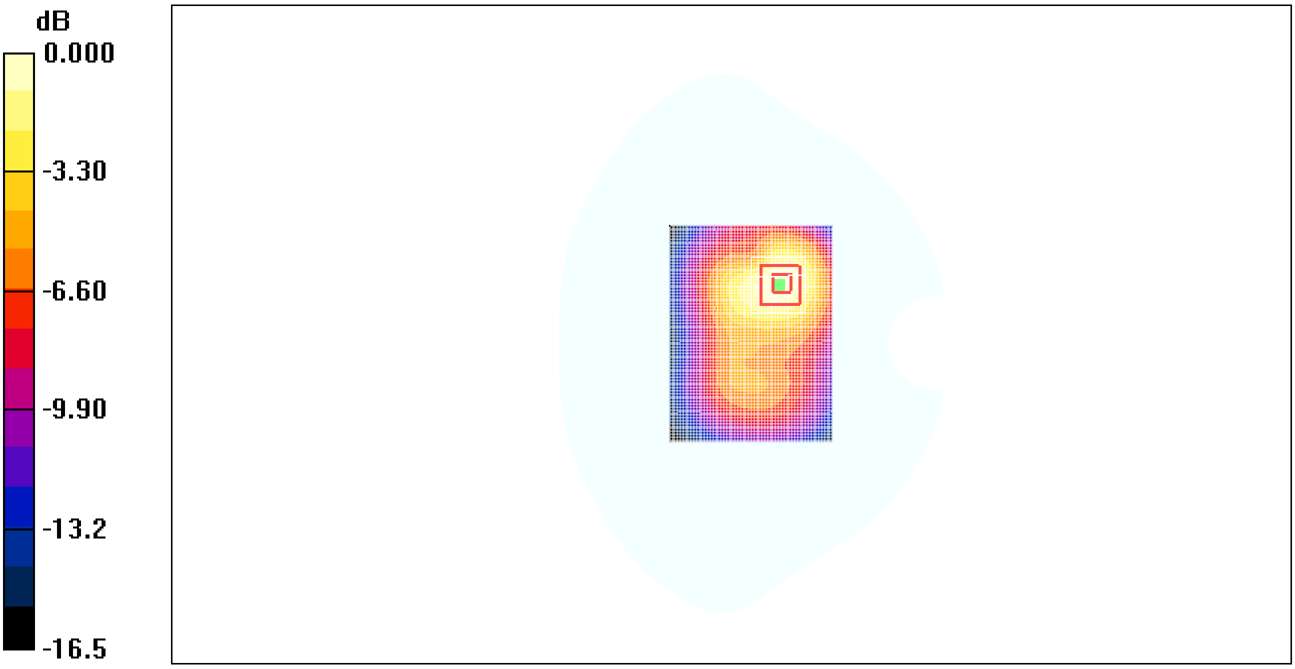
Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.3 V/m; Power Drift = 0.080 dB

Peak SAR (extrapolated) = 0.924 W/kg

SAR(1 g) = 0.545 mW/g; SAR(10 g) = 0.318 mW/g

Maximum value of SAR (measured) = 0.578 mW/g



0 dB = 0.578mW/g

Fig. 33 1900 MHz CH810

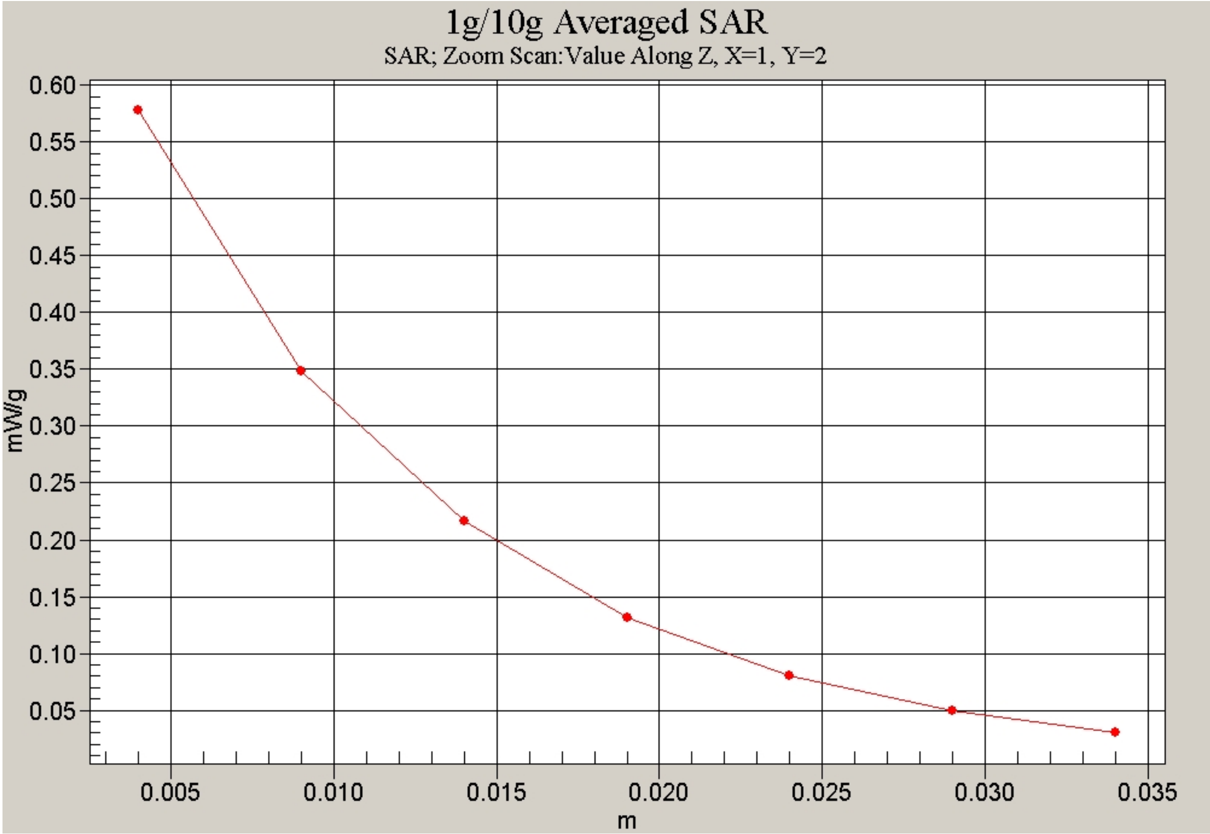


Fig. 33-1 Z-Scan at power reference point (1900 MHz CH810)

1900 Body Towards Ground Middle with GPRS

Date/Time: 2010-5-22 14:00:29

Electronics: DAE4 Sn771

Medium: Body 1900 MHz

Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; εr = 51.8; ρ = 1000 kg/m^3

Ambient Temperature:23.0°C Liquid Temperature: 22.5°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 (61x81x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.526 mW/g

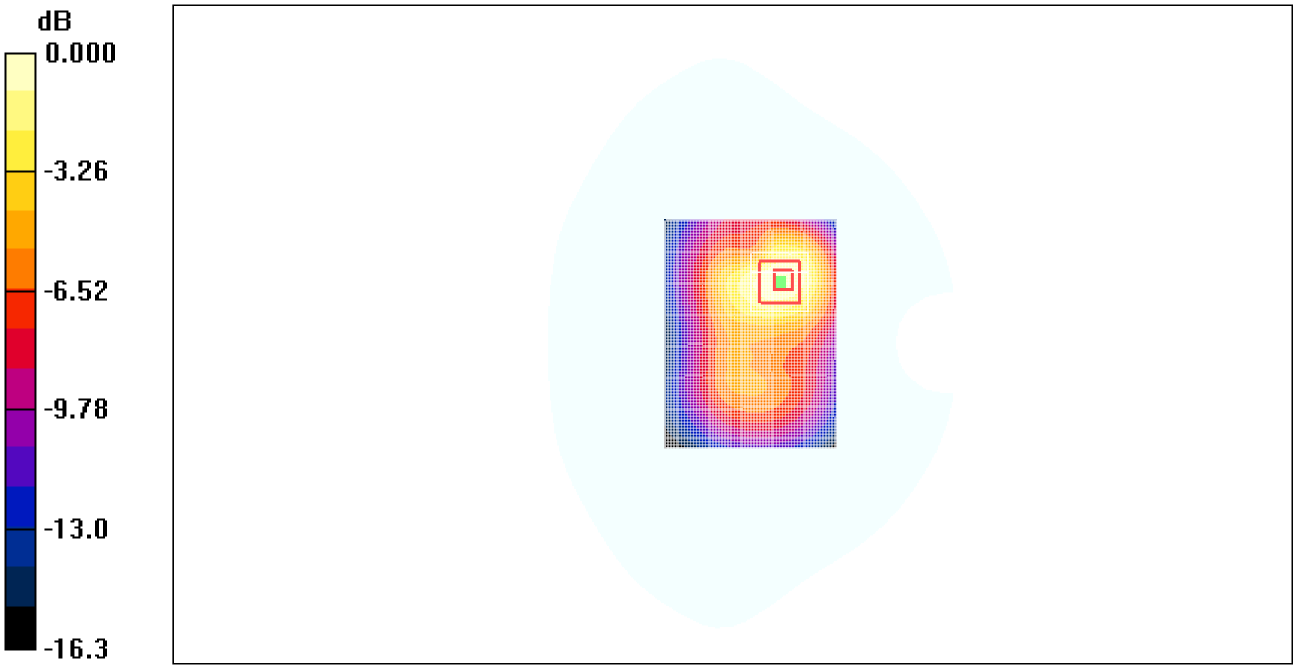
Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.71 V/m; Power Drift = -0.017 dB

Peak SAR (extrapolated) = 0.809 W/kg

SAR(1 g) = 0.478 mW/g; SAR(10 g) = 0.277 mW/g

Maximum value of SAR (measured) = 0.505 mW/g



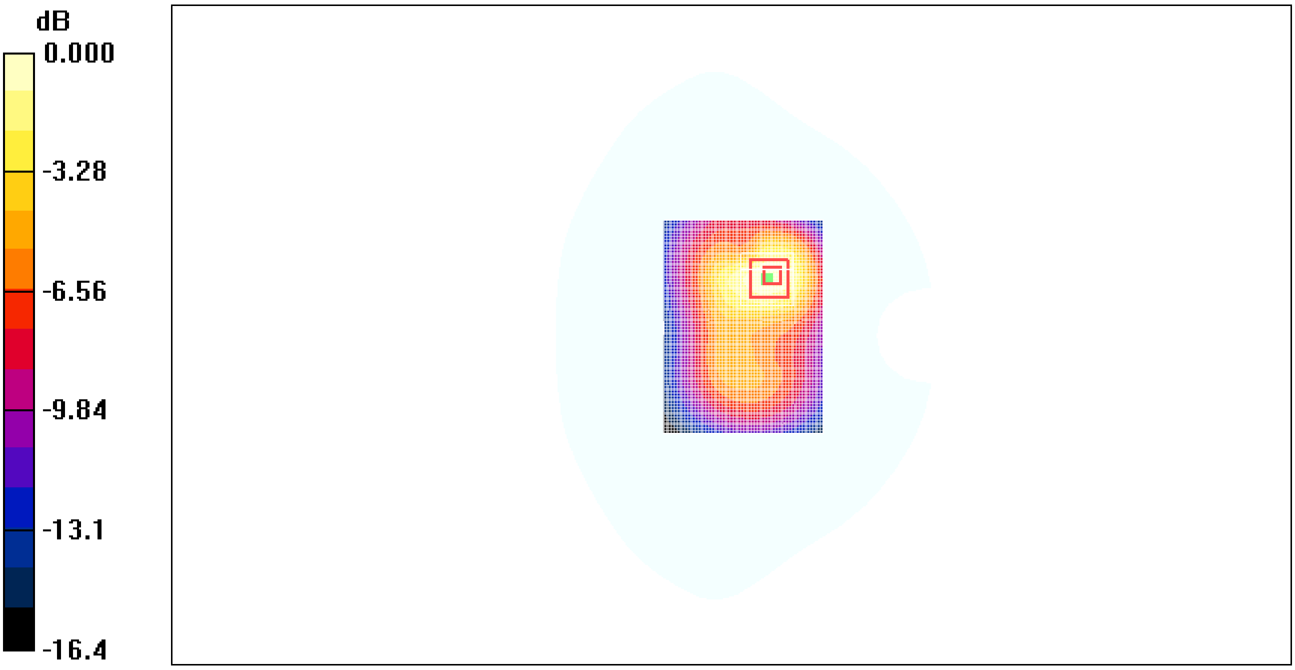
0 dB = 0.505mW/g

Fig. 34 1900 MHz CH661

1900 Body Towards Ground Low with GPRS
Date/Time: 2010-5-22 14:15:47
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.49 mho/m; εr = 51.8; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid 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 (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.543 mW/g

Toward Ground Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.1 V/m; Power Drift = 0.046 dB
Peak SAR (extrapolated) = 0.831 W/kg
SAR(1 g) = 0.493 mW/g; SAR(10 g) = 0.286 mW/g
Maximum value of SAR (measured) = 0.527 mW/g



0 dB = 0.527mW/g

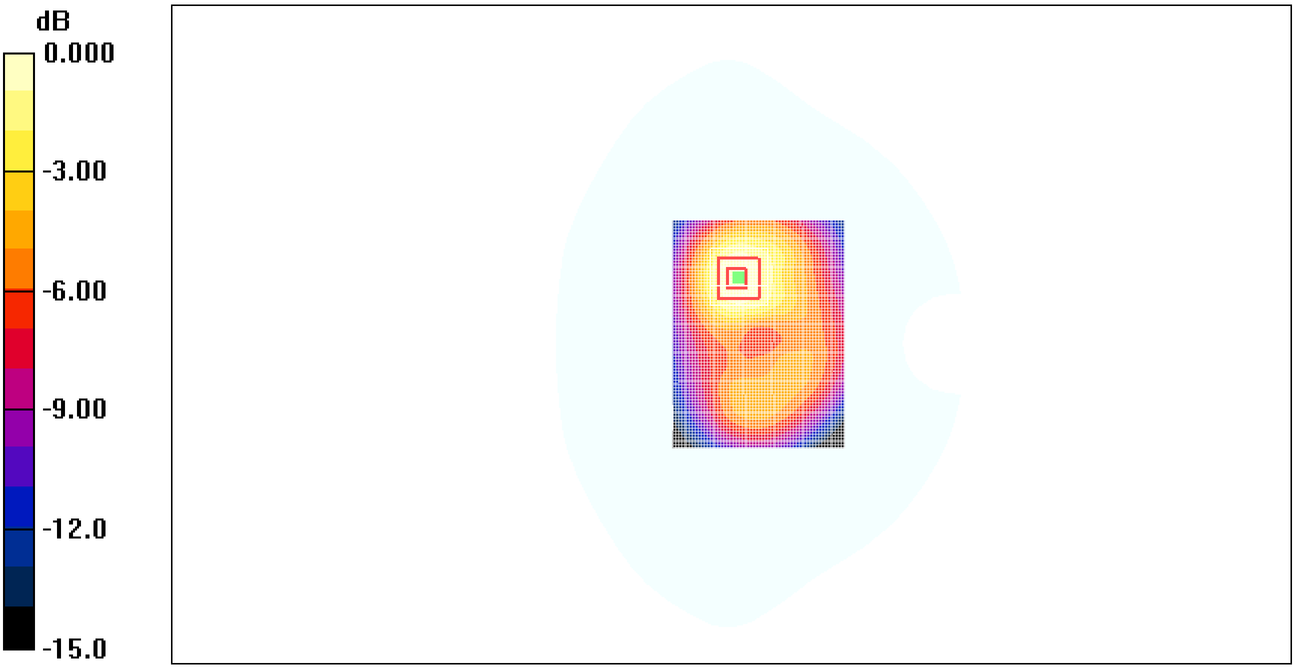
Fig. 35 1900 MHz CH512

1900 Body Towards Phantom High with GPRS

Date/Time: 2010-5-22 14:31:24
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1910 MHz; σ = 1.54 mho/m; εr = 51.7; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°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 Phantom High/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.431 mW/g

Toward Phantom High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.27 V/m; Power Drift = 0.051 dB
Peak SAR (extrapolated) = 0.633 W/kg
SAR(1 g) = 0.386 mW/g; SAR(10 g) = 0.228 mW/g
Maximum value of SAR (measured) = 0.393 mW/g



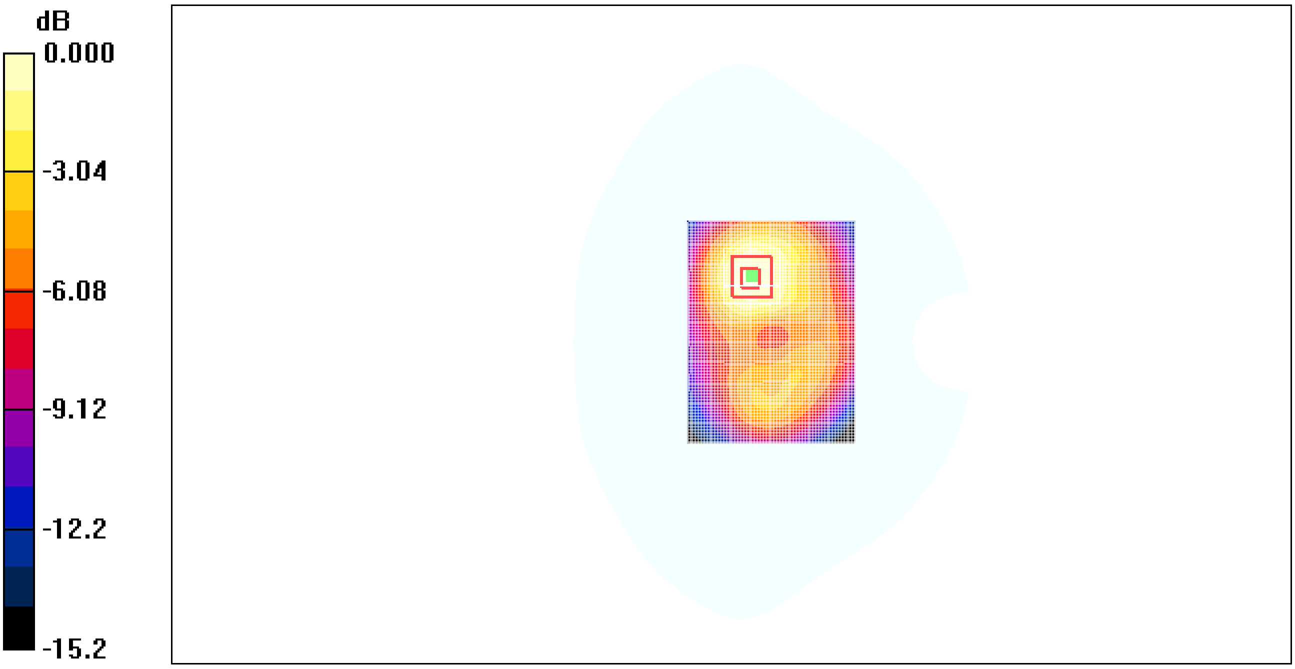
0 dB = 0.393mW/g

Fig. 36 1900 MHz CH810

1900 Body Towards Phantom Middle with GPRS
Date/Time: 2010-5-22 14:46:41
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; εr = 51.8; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz GPRS Frequency: 1880 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

Toward Phantom Middle/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.373 mW/g

Toward Phantom Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.12 V/m; Power Drift = 0.085 dB
Peak SAR (extrapolated) = 0.540 W/kg
SAR(1 g) = 0.331 mW/g; SAR(10 g) = 0.197 mW/g
Maximum value of SAR (measured) = 0.330 mW/g



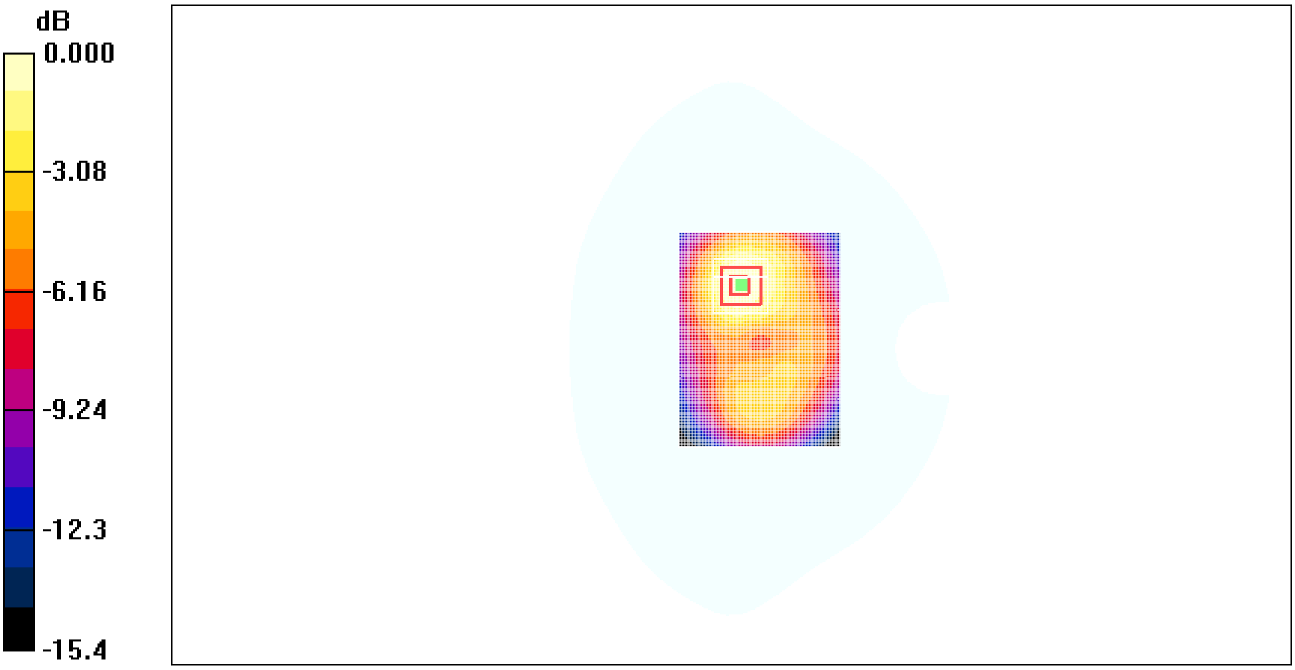
0 dB = 0.330mW/g

Fig. 37 1900 MHz CH661

1900 Body Towards Phantom Low with GPRS
Date/Time: 2010-5-22 15:02:07
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.49 mho/m; εr = 51.8; ρ = 1000 kg/m^3
Ambient Temperature:23.0^{o}C Liquid 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 (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.396 mW/g

Toward Phantom Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.06 V/m; Power Drift = -0.035 dB
Peak SAR (extrapolated) = 0.571 W/kg
SAR(1 g) = 0.353 mW/g; SAR(10 g) = 0.210 mW/g
Maximum value of SAR (measured) = 0.354 mW/g



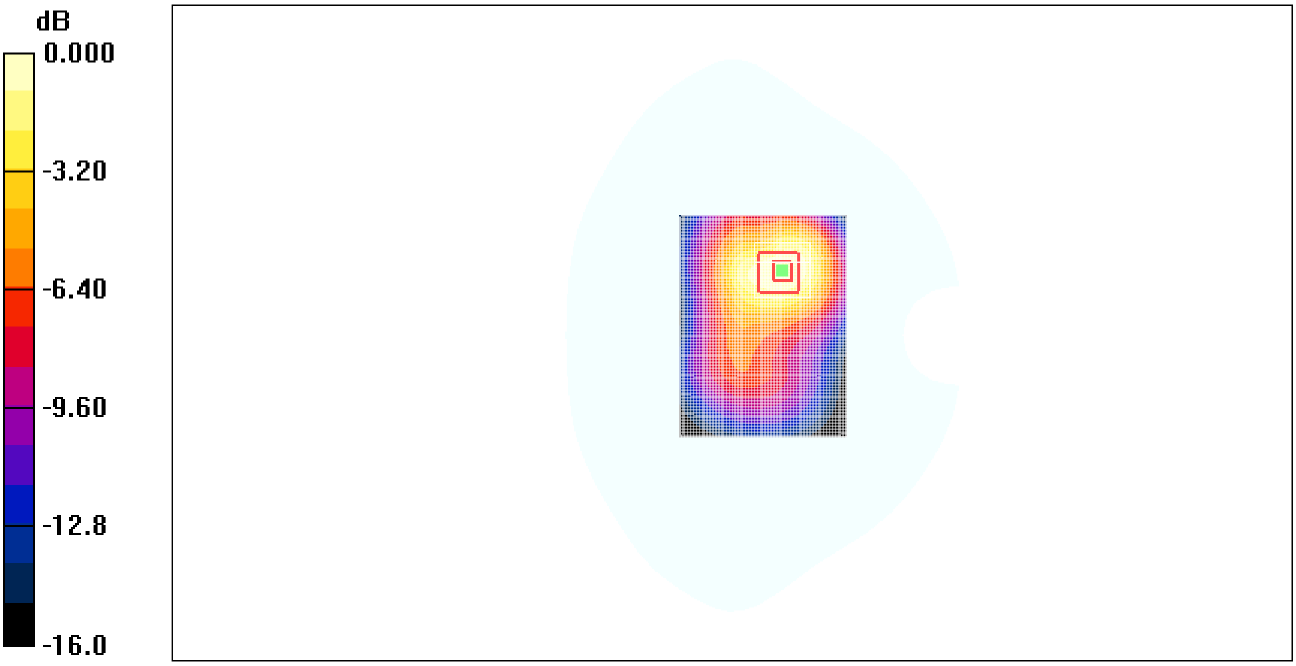
0 dB = 0.354mW/g

Fig. 38 1900 MHz CH512

1900 Body Towards Ground High with Headset
Date/Time: 2010-5-22 15:20:17
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1910 MHz; σ = 1.54 mho/m; εr = 51.7; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1909.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

Toward Ground High/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.490 mW/g

Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.12 V/m; Power Drift = 0.070 dB
Peak SAR (extrapolated) = 0.729 W/kg
SAR(1 g) = 0.436 mW/g; SAR(10 g) = 0.257 mW/g
Maximum value of SAR (measured) = 0.443 mW/g



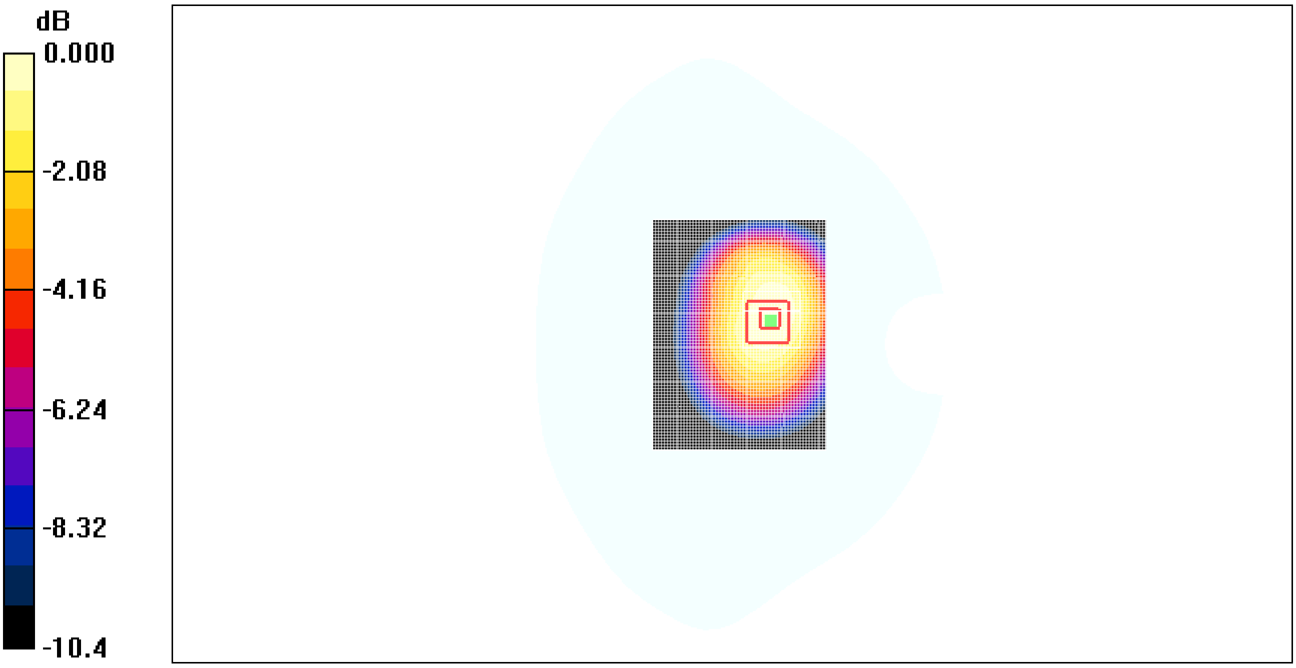
0 dB = 0.443mW/g

Fig. 39 1900 MHz CH810

850 Body Towards Ground Middle with GPRS with battery CAB30M0000C2
Date/Time: 2010-5-20 15:35:06
Electronics: DAE4 Sn771
Medium: 850 Body
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.95 mho/m; εr = 54.0; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid 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 (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.11 mW/g

Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 28.8 V/m; Power Drift = -0.022 dB
Peak SAR (extrapolated) = 1.48 W/kg
SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.736 mW/g
Maximum value of SAR (measured) = 1.09 mW/g



0 dB = 1.09mW/g

Fig. 40 850 MHz CH190

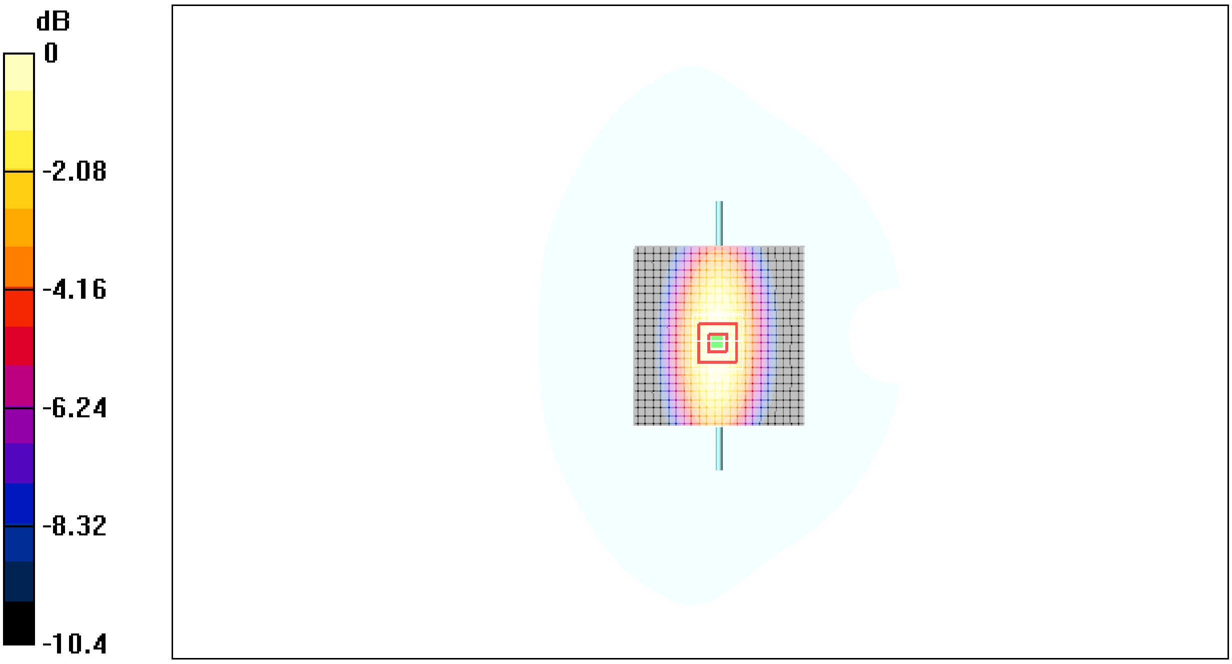
ANNEX D SYSTEM VALIDATION RESULTS

835MHz

Date/Time: 2010-5-20 7:22:13
Electronics: DAE4 Sn771
Medium: Head 850
Medium parameters used: f = 835 MHz; σ = 0.88 mho/m; ε_r = 40.3; 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) = 2.54 mW/g

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.7 V/m; Power Drift = 0.056 dB
Peak SAR (extrapolated) = 3.38 W/kg
SAR(1 g) = 2.31 mW/g; SAR(10 g) = 1.47 mW/g
Maximum value of SAR (measured) = 2.45 mW/g



0 dB = 2.45mW/g

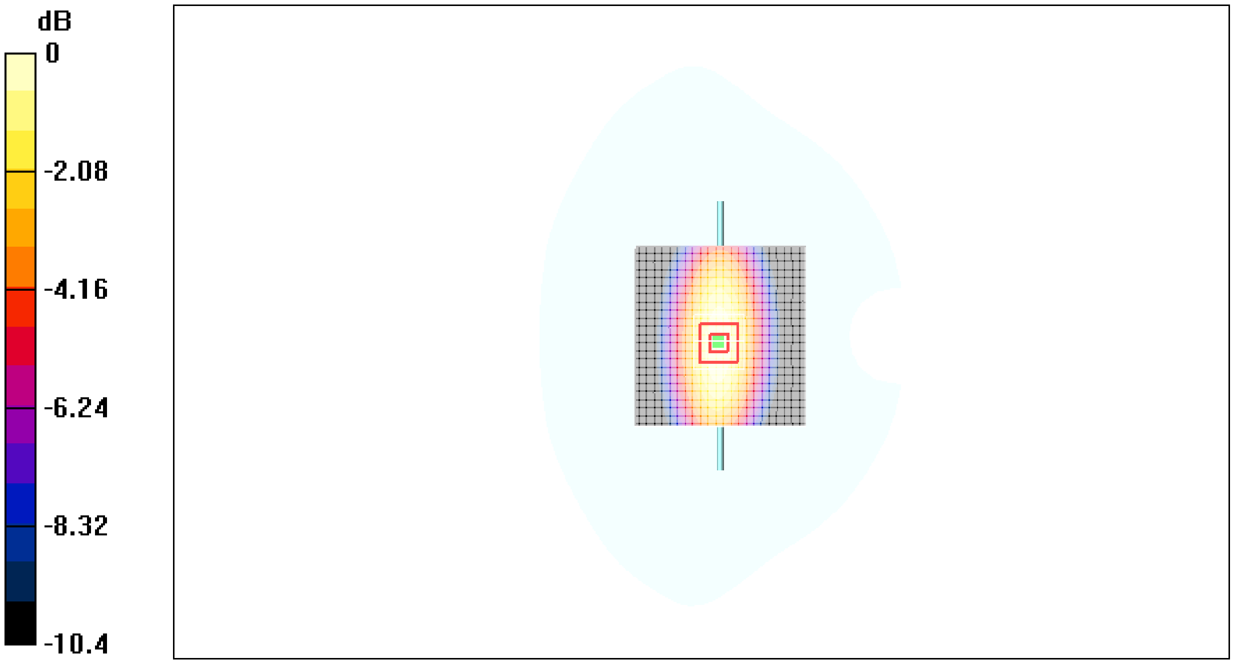
Fig.41 validation 835MHz 250mW

835MHz

Date/Time: 2010-5-20 13:14:47
Electronics: DAE4 Sn771
Medium: 850 Body
Medium parameters used: f = 835 MHz; σ = 0.94 mho/m; ε_r = 54.0; 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(6.22, 6.22, 6.22)

System Validation /Area Scan (101x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 2.61 mW/g

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.2 V/m; Power Drift = -0.071 dB
Peak SAR (extrapolated) = 3.35 W/kg
SAR(1 g) = 2.44 mW/g; SAR(10 g) = 1.53 mW/g
Maximum value of SAR (measured) = 2.53 mW/g



0 dB = 2.53mW/g

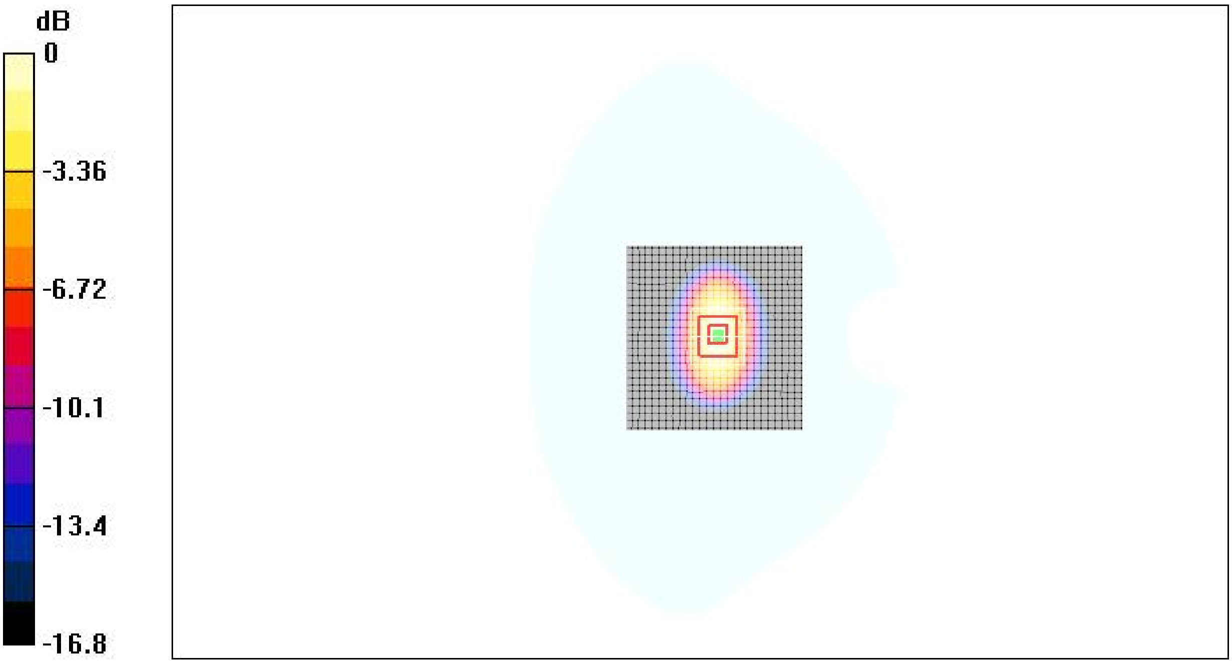
Fig.42 validation 835MHz 250mW

1900MHz

Date/Time: 2010-5-22 7:26:35
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.41 mho/m; ε_r = 39.5; 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) = 11.3 mW/g

System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 87.9 V/m; Power Drift = -0.039 dB
Peak SAR (extrapolated) = 14.8 W/kg
SAR(1 g) = 9.64 mW/g; SAR(10 g) = 4.85 mW/g
Maximum value of SAR (measured) = 10.3 mW/g



0 dB = 10.3mW/g

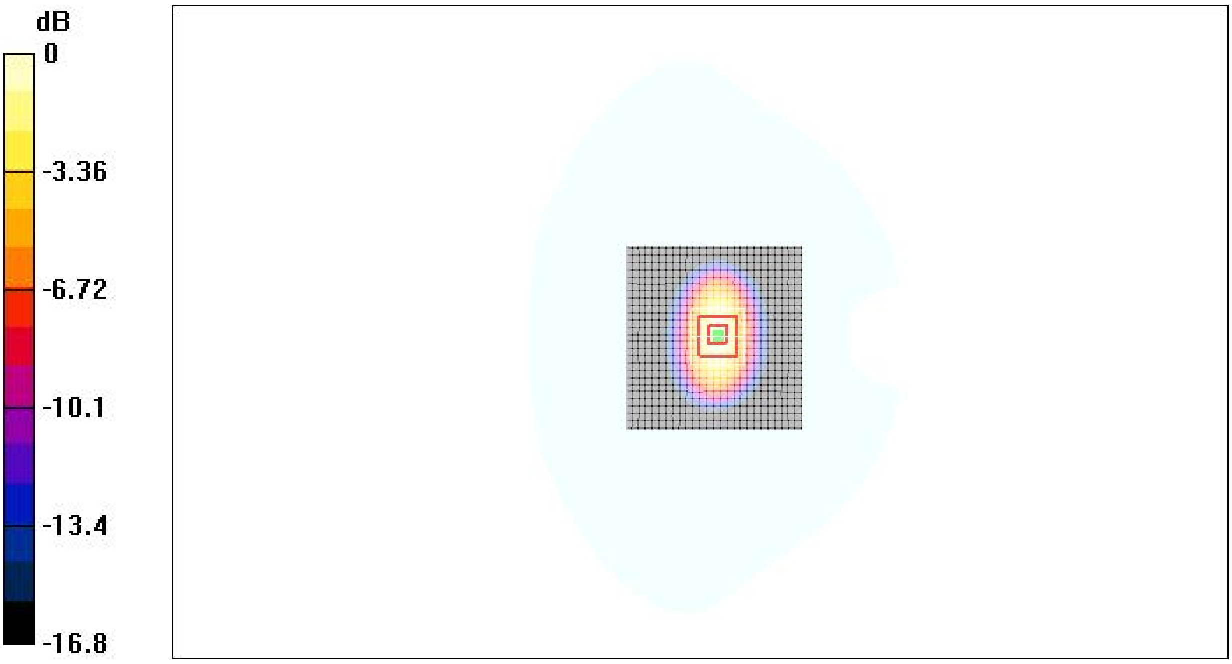
Fig.43 validation 1900MHz 250mW

1900MHz

Date/Time: 2010-5-22 13:16:20
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.53 mho/m; ε_r = 51.7; 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(4.68, 4.68, 4.68)

System Validation/Area Scan (101x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 11.5 mW/g

System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.4 V/m; Power Drift = 0.098 dB
Peak SAR (extrapolated) = 16.1 W/kg
SAR(1 g) = 10.3 mW/g; SAR(10 g) = 5.37 mW/g
Maximum value of SAR (measured) = 10.8 mW/g



0 dB = 10.8mW/g

Fig.44 validation 1900MHz 250mW

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
 Servizio svizzero di taratura
S Swiss Calibration Service

Accreditation No.: **SCS 108**

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

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
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ilac-MRA

SWISS CALIBRATION

S Schweizerischer Kalibrierdienst
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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]

NormX	1.14±10.1%	$\mu V/(V/m)^2$
NormY	1.23±10.1%	$\mu V/(V/m)^2$
NormZ	1.29±10.1%	$\mu V/(V/m)^2$

Diode Compression[B]

DCP X	94mV
DCP Y	95mV
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

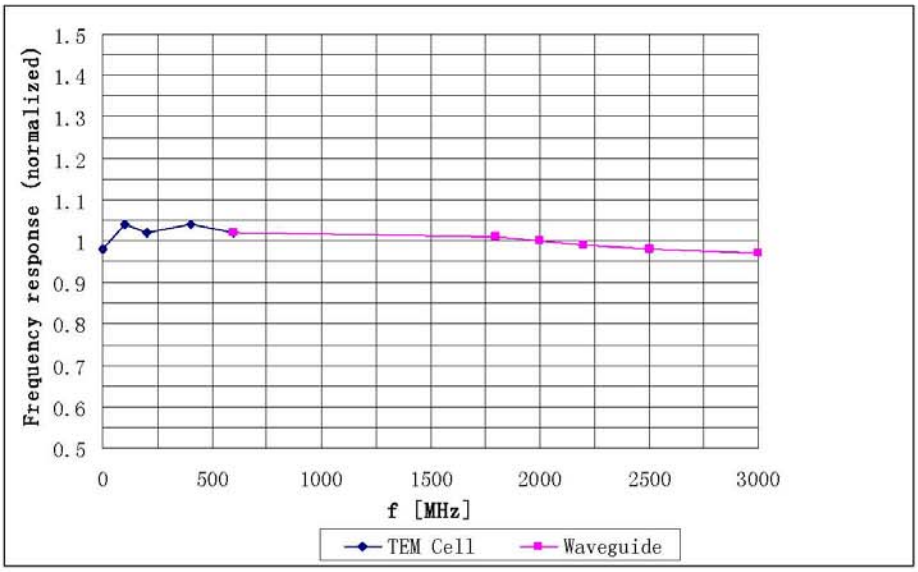
Sensor Offset

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.

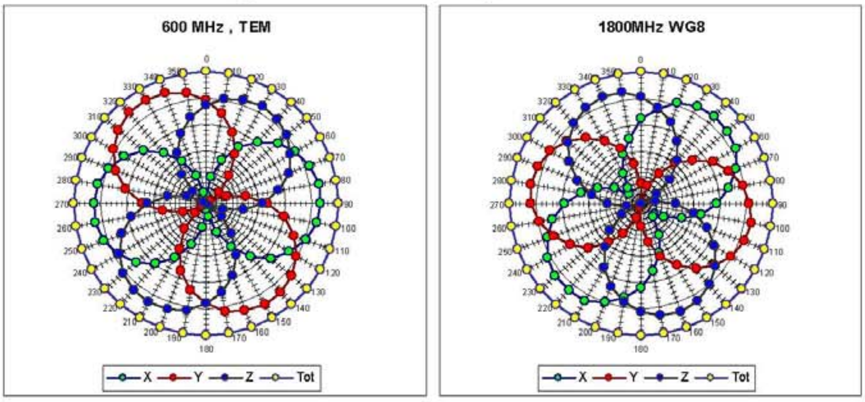
Frequency Response of E-Field

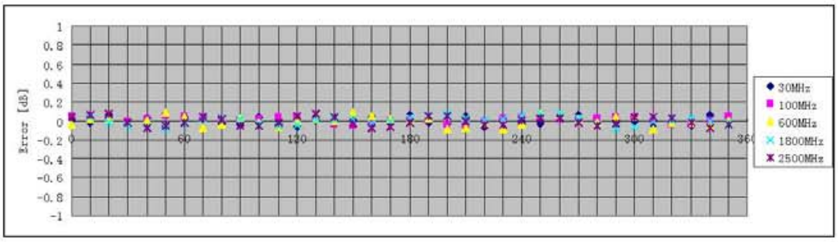


Uncertainty of Frequency Response of E-field: ±5.0% (k=2)

ES3DV3 SN: 3149 September 25, 2009

Receiving Pattern (ϕ), θ =0°

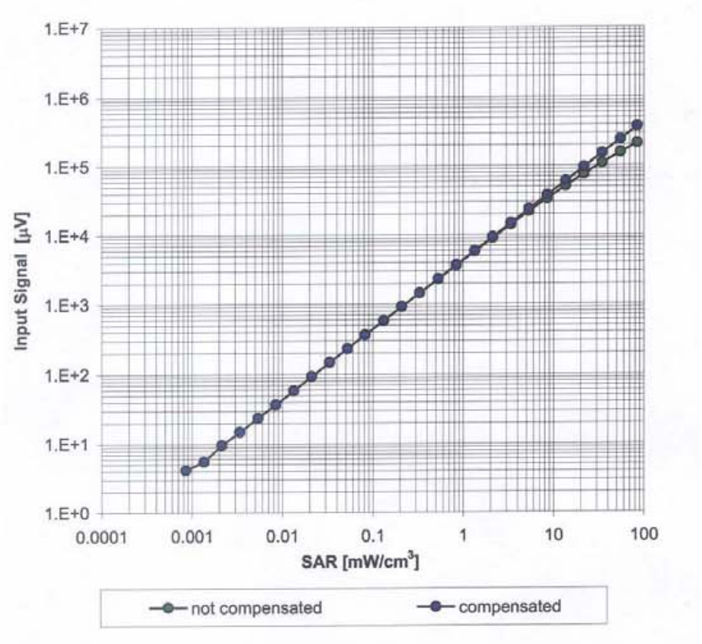


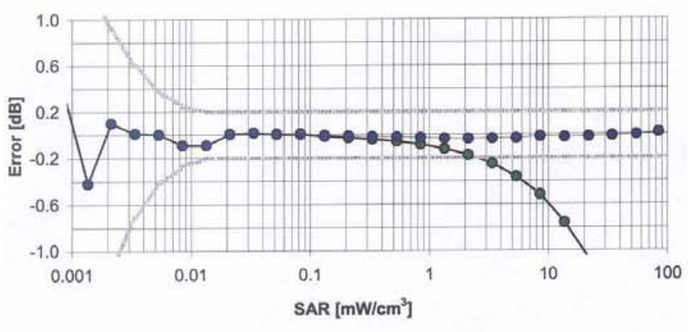


Uncertainty of Axial Isotropy Assessment: ±0.5% (k=2)

Dynamic Range f(SAR_{head})

(Waveguide: WG8, f = 1800 MHz)

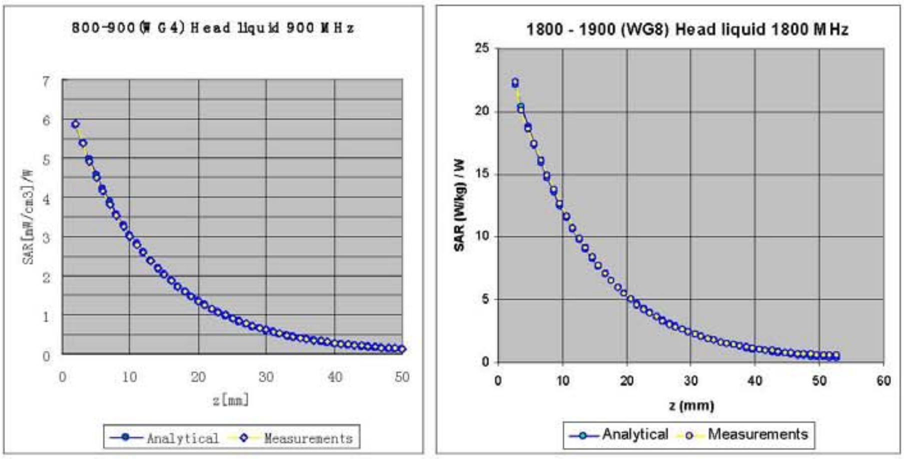




Uncertainty of Linearity Assessment: ±0.5% (k=2)

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.