



SAR TEST REPORT

No. 2010SAR00023

For

Motorola, Inc. (Mobile Devices Business)

GSM/GPRS 850/1900 dual-band mobile phone

WX290

With

Hardware Version: PIO

Software Version: V632

FCCID: IHDT56LY1

Issued Date: 2010-04-02



No. DAT-P-114/01-01

Note:

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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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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: March 28, 2010
Testing End Date: March 29, 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: Motorola, Inc. (Mobile Devices Business)
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2.2 Manufacturer Information

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Pudong, Shanghai, 201203, P.R.China
City: Shanghai
Postal Code: 201203
Country: P. R. China
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3 Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1 About EUT

EUT Description: GSM/GPRS 850/1900 dual-band mobile phone
Marketing Name: WX290
GSM Frequency Band: GSM 850 / PCS 1900

3.2 Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	012246000000195	PIO	V632

*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	CBA31B0AA0C1	\	BYD
AE2	Travel Adapter	CBA31B0AB0C1	\	BYD
AE3	Battery	CAB3130010C1	\	BYD
AE4	Battery	CAB3130000C1	B33796876AA	BYD
AE4	Stereo headset	CCB31B0A10C0	\	Shunda/Juwei
AE5	Stereo headset	CCB31B0A11C0	\	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.

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

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.

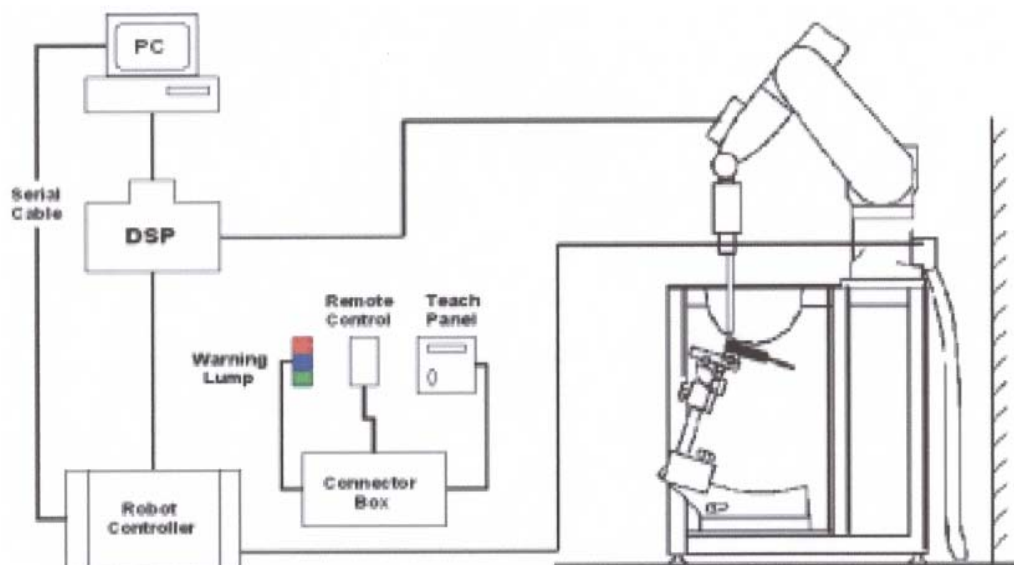
The EUT shall use its internal transmitter. The antenna(s), battery and accessories shall be those specified by the manufacturer. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output. If a wireless link is used, the antenna connected to the 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 $\pm 0.02\text{mm}$. 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 $\pm 10\%$. The spherical isotropy was evaluated and found to be better than $\pm 0.25\text{dB}$.

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



Picture 3: ES3DV3 E-field

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 μ W/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 $\pm 10\%$. The spherical isotropy was evaluated and found to be better than ± 0.25 dB. 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 below 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±0.1 mm
Filling Volume	Approx. 20 liters
Dimensions	810 x 1000 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 $\epsilon=41.5$ $\sigma=0.90$
MIXTURE %	FREQUENCY 1900MHz
Water	55.242
Glycol monobutyl	44.452
Salt	0.306
Dielectric Parameters Target Value	f=1900MHz $\epsilon=40.0$ $\sigma=1.40$

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 $\epsilon=55.2$ $\sigma=0.97$
MIXTURE %	FREQUENCY 1900MHz
Water	69.91
Glycol monobutyl	29.96
Salt	0.13
Dielectric Parameters Target Value	f=1900MHz $\epsilon=53.3$ $\sigma=1.52$

5.7 System Specifications

5.7.1 Robotic 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 surround 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 maximum 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)
	32.61	32.59	32.62
GSM 1900MHZ	Conducted Power (dBm)		
	Channel 810(1909.8MHz)	Channel 661(1880MHz)	Channel 512(1850.2MHz)
	29.35	29.83	30.53
GPRS 850MHZ	Conducted Power (dBm)		
	Channel 251(848.8MHz)	Channel 190(836.6MHz)	Channel 128(824.2MHz)
	30.17	30.09	30.03
GPRS 1900MHZ	Conducted Power (dBm)		
	Channel 810(1909.8MHz)	Channel 661(1880MHz)	Channel 512(1850.2MHz)
	26.54	27.02	27.72

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 40%.			
Liquid temperature during the test: 22.5°C			
Measurement Date : 850 MHz March 28, 2010 1900 MHz March 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	40.5	0.88
	1900 MHz	38.7	1.39

Table 5: 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 March 28, 2010 1900 MHz March 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	53.5	0.94
	1900 MHz	51.9	1.53

8.2 System Validation

Table 6: 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 March 28, 2010 1900 MHz March 29, 2010							
Liquid parameters	Dipole calibration Target value	Frequency		Permittivity ϵ		Conductivity σ (S/m)	
		835 MHz	1900 MHz	41.6	39.6	0.92	1.40
	Actural Measurement value	835 MHz	1900 MHz	40.6	38.7	0.86	1.39
		Frequency		Target value (W/kg)		Measured value (W/kg)	
Verification results		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	2.25	-3.25%	-5.46%
	1900 MHz	5.05	9.91	4.83	9.75	-4.36%	-1.61%

Table 7: 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 March 28, 2010 1900 MHz March 29, 2010								
Liquid parameters	Dipole calibration	Frequency		Permittivity ϵ		Conductivity σ (S/m)		
		835 MHz		54.5		0.97		
	Target value	1900 MHz		52.5		1.51		
		Actural Measurement value	835 MHz		53.6		0.92	
			1900 MHz		51.9		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	1.49	2.35	-5.10%	-2.49%	
	1900 MHz	5.24	10.4	5.21	10.1	-0.57%	-2.88%	

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 (CAB3130000C1)	0.659	0.935
Left hand, Touch cheek, Top frequency (CAB3130010C1)	0.689	0.976

Note: According to the values in the above table, the battery, CAB3130010C1, 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 (CAB3130000C1)	0.548	0.790
Body, Towards Ground, High frequency (CAB3130010C1)	0.566	0.812

Note: According to the values in the above table, the battery, CAB3130010C1, 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 CAB3130010C1

Limit of SAR (W/kg)	10 g Average	1 g Average	Power Drift (dB)
	2.0	1.6	
Test Case	Measurement Result (W/kg)		Power Drift (dB)
	10 g Average	1 g Average	
Left hand, Touch cheek, Top frequency (See Fig.1)	0.689	0.976	-0.120
Left hand, Touch cheek, Mid frequency (See Fig.2)	0.595	0.838	-0.122
Left hand, Touch cheek, Bottom frequency (See Fig.3)	0.564	0.791	0.060
Left hand, Tilt 15 Degree, Top frequency (See Fig.4)	0.265	0.367	-0.048
Left hand, Tilt 15 Degree, Mid frequency (See Fig.5)	0.256	0.353	-0.043
Left hand, Tilt 15 Degree, Bottom frequency (See Fig.6)	0.251	0.345	-0.026
Right hand, Touch cheek, Top frequency (See Fig.7)	0.626	0.904	0.070
Right hand, Touch cheek, Mid frequency (See Fig.8)	0.574	0.823	-0.017
Right hand, Touch cheek, Bottom frequency (See Fig.9)	0.541	0.775	-0.066
Right hand, Tilt 15 Degree, Top frequency (See Fig.10)	0.302	0.423	-0.002
Right hand, Tilt 15 Degree, Mid frequency (See Fig.11)	0.287	0.398	-0.014
Right hand, Tilt 15 Degree, Bottom frequency (See Fig.12)	0.275	0.380	-0.013

Table 11: SAR Values (1900MHz-Head) - with battery CAB3130010C1

Limit of SAR (W/kg)	10 g Average	1 g Average	Power Drift (dB)
	2.0	1.6	
Test Case	Measurement Result (W/kg)		Power Drift (dB)
	10 g Average	1 g Average	
Left hand, Touch cheek, Top frequency (See Fig.13)	0.435	0.719	-0.111
Left hand, Touch cheek, Mid frequency (See Fig.14)	0.514	0.844	0.009
Left hand, Touch cheek, Bottom frequency (See Fig.15)	0.577	0.940	-0.102
Left hand, Tilt 15 Degree, Top frequency (See Fig.16)	0.350	0.583	-0.038
Left hand, Tilt 15 Degree, Mid frequency (See Fig.17)	0.385	0.636	0.003
Left hand, Tilt 15 Degree, Bottom frequency (See Fig.18)	0.405	0.663	-0.024
Right hand, Touch cheek, Top frequency (See Fig.19)	0.445	0.729	-0.158
Right hand, Touch cheek, Mid frequency (See Fig.20)	0.504	0.823	-0.008
Right hand, Touch cheek, Bottom frequency (See Fig.21)	0.538	0.868	-0.060
Right hand, Tilt 15 Degree, Top frequency (See Fig.22)	0.325	0.541	0.105
Right hand, Tilt 15 Degree, Mid frequency (See Fig.23)	0.363	0.598	-0.160
Right hand, Tilt 15 Degree, Bottom frequency(See Fig.24)	0.383	0.628	0.113

Table 12: SAR Values (850MHz-Head) - with battery CAB3130000C1

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, High frequency (See Fig.25)	0.659	0.935	-0.106

Table 13: SAR Values (850MHz-Body) - with battery CAB3130010C1

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)	0.566	0.812	0.047
Body, Towards Ground, Mid frequency with GPRS (See Fig.27)	0.532	0.763	0.007
Body, Towards Ground, Bottom frequency with GPRS (See Fig.28)	0.503	0.719	0.063
Body, Towards Phantom, Top frequency with GPRS (See Fig.29)	0.412	0.587	-0.198
Body, Towards Phantom, Mid frequency with GPRS (See Fig.30)	0.374	0.533	0.000
Body, Towards Phantom, Bottom frequency with GPRS (See Fig.31)	0.352	0.501	0.044
Body, Towards Ground, Top frequency with Headset_CCB31B0A10C0 (See Fig.32)	0.525	0.755	-0.001
Body, Towards Ground, Top frequency with Headset_CCB31B0A11C0 (See Fig.33)	0.509	0.731	-0.006

Table 14: SAR Values (1900MHz-Body) - with battery CAB3130010C1

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.34)	0.395	0.680	-0.033
Body, Towards Ground, Mid frequency with GPRS (See Fig.35)	0.443	0.763	0.063
Body, Towards Ground, Bottom frequency with GPRS (See Fig.36)	0.438	0.754	0.033
Body, Towards Phantom, Top frequency with GPRS (See Fig.37)	0.221	0.359	-0.036

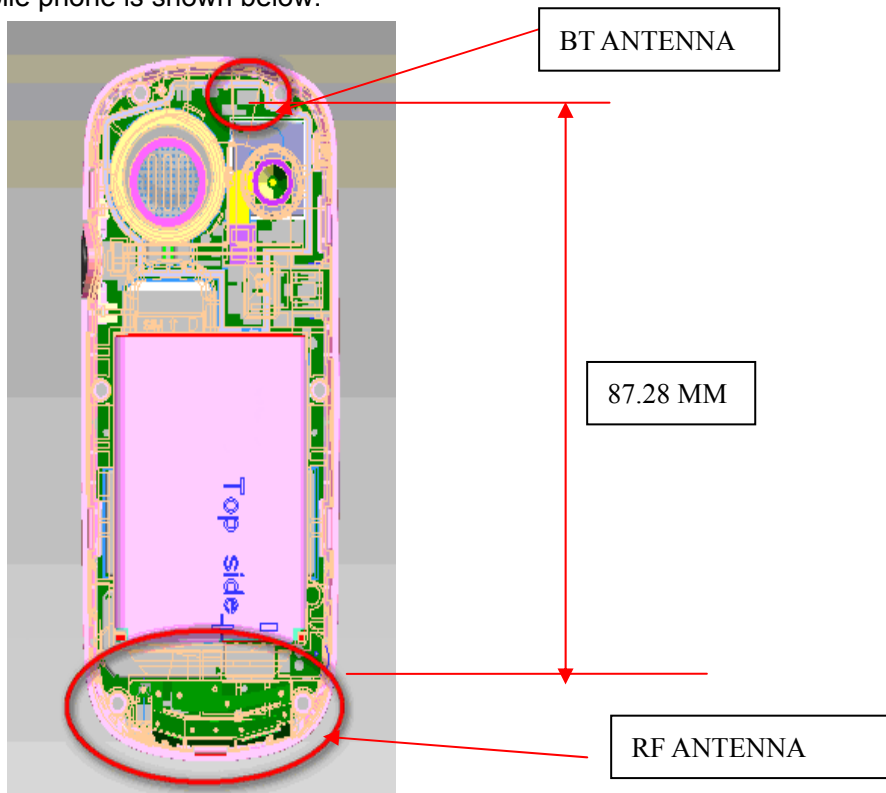
Body, Towards Phantom, Mid frequency with GPRS (See Fig.38)	0.262	0.420	-0.128
Body, Towards Phantom, Bottom frequency with GPRS (See Fig.39)	0.271	0.434	-0.024
Body, Towards Ground, Mid frequency with Headset_CCB31B0A10C0 (See Fig.40)	0.399	0.688	0.072
Body, Towards Ground, Mid frequency with Headset_CCB31B0A11C0 (See Fig.41)	0.383	0.659	-0.112

Table 15: SAR Values (850MHz-Body) - with battery CAB3130000C1

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 (See Fig.42)	0.548	0.790	-0.099

8.5 Summary of Measurement Results (Bluetooth function)

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



The output power of BT antenna is as following:

Channel	Ch 0 2402 MHz	Ch 39 2441 Mhz	Ch 78 2480 MHz
Peak Conducted Output Power(dBm)	-2.26	-0.96	-0.75

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 $\leq 2P_{Ref}$ and its antenna is $> 5\text{cm}$ from other antenna

8.6 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.

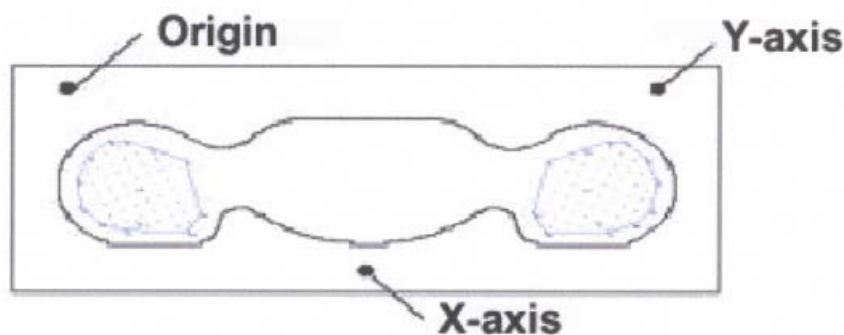
Step 3: Around this point, a volume of 30 mm x 30 mm x 30 mm was assessed by measuring 7 x 7x 7 points. On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

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.

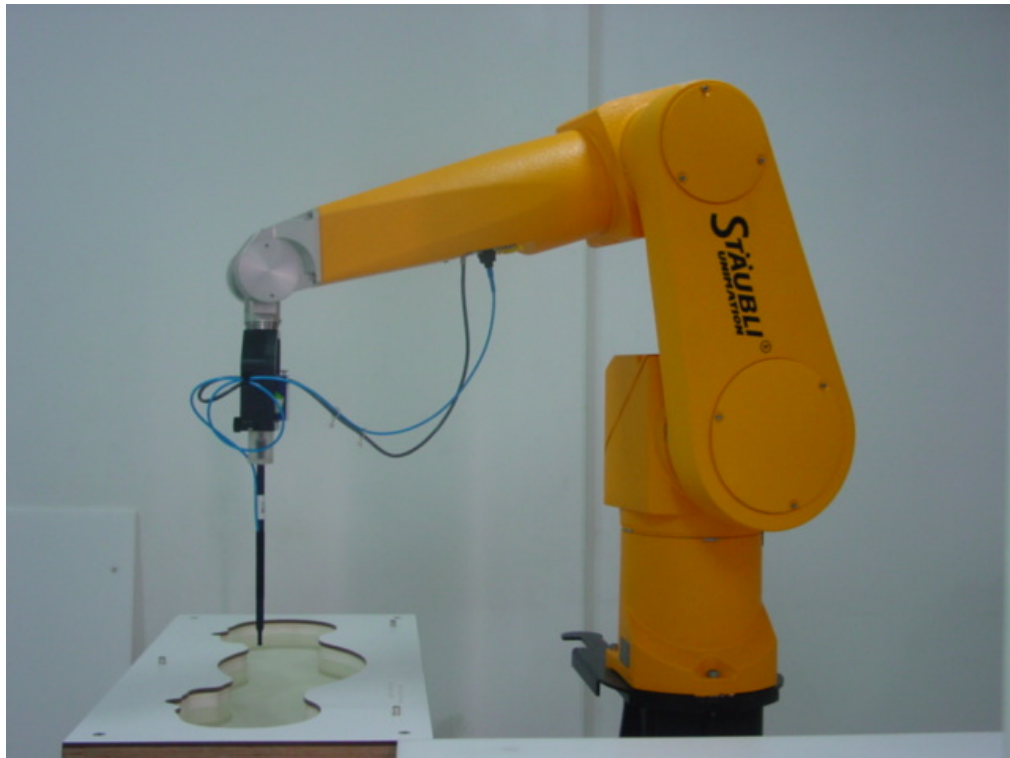
c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

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.

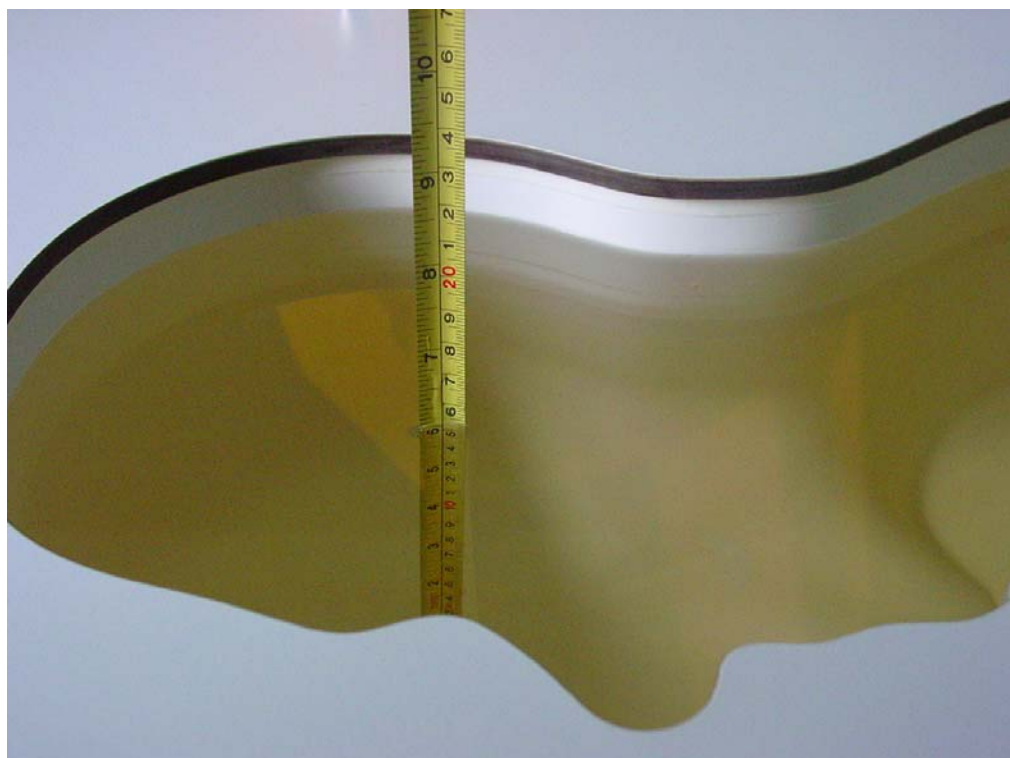


Picture A: SAR Measurement Points in Area Scan

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



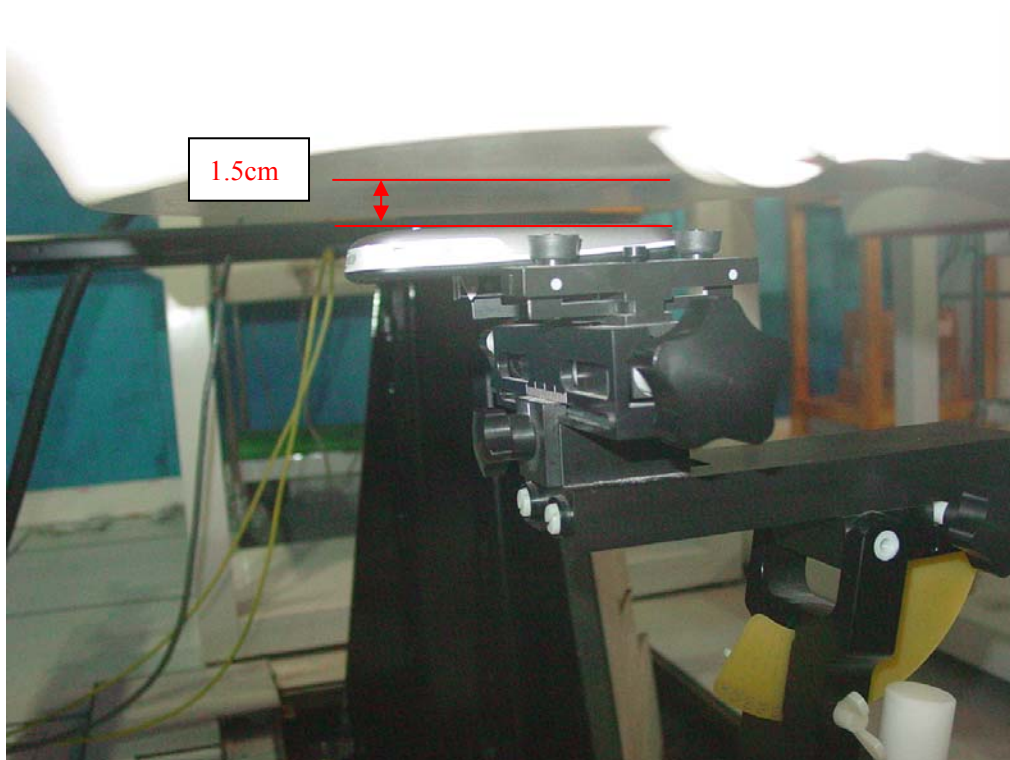
Picture B5: Left Hand Tilt 15° Position



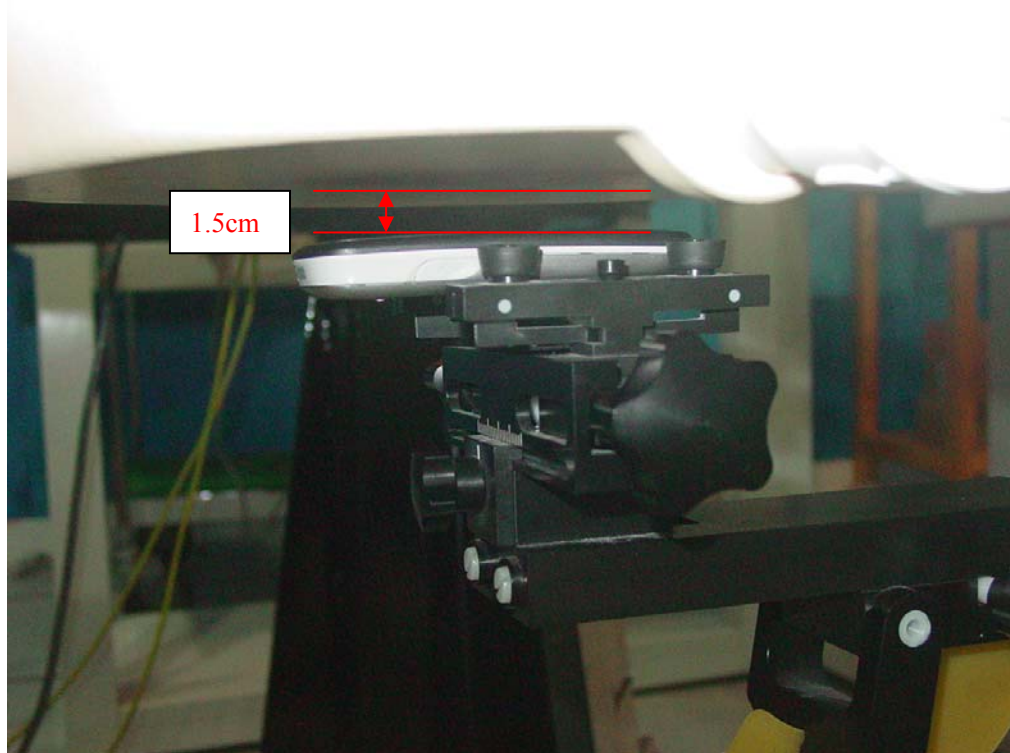
Picture B6: Right Hand Touch Cheek Position



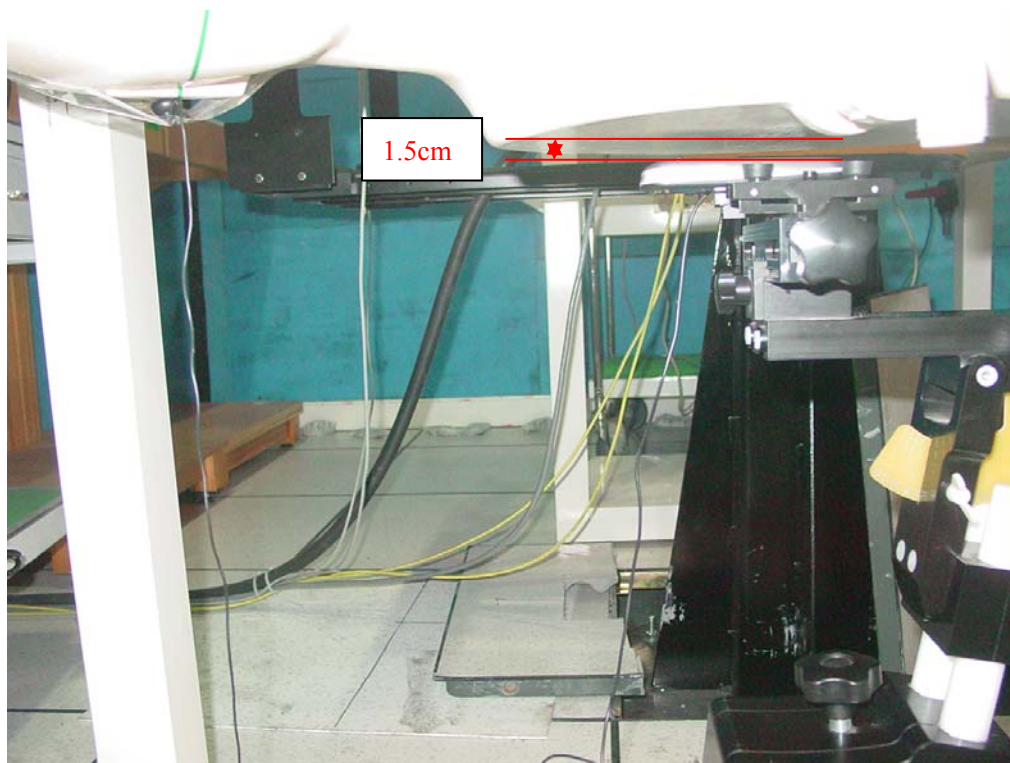
Picture B7: Right Hand Tilt 15° Position



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: 2010-3-28 8:06:23

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used (interpolated): $f = 848.8$ MHz; $\sigma = 0.88$ mho/m; $\epsilon_r = 40.5$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 1.05 mW/g

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

Reference Value = 9.61 V/m; Power Drift = -0.120 dB

Peak SAR (extrapolated) = 1.28 W/kg

SAR(1 g) = 0.976 mW/g; SAR(10 g) = 0.689 mW/g

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

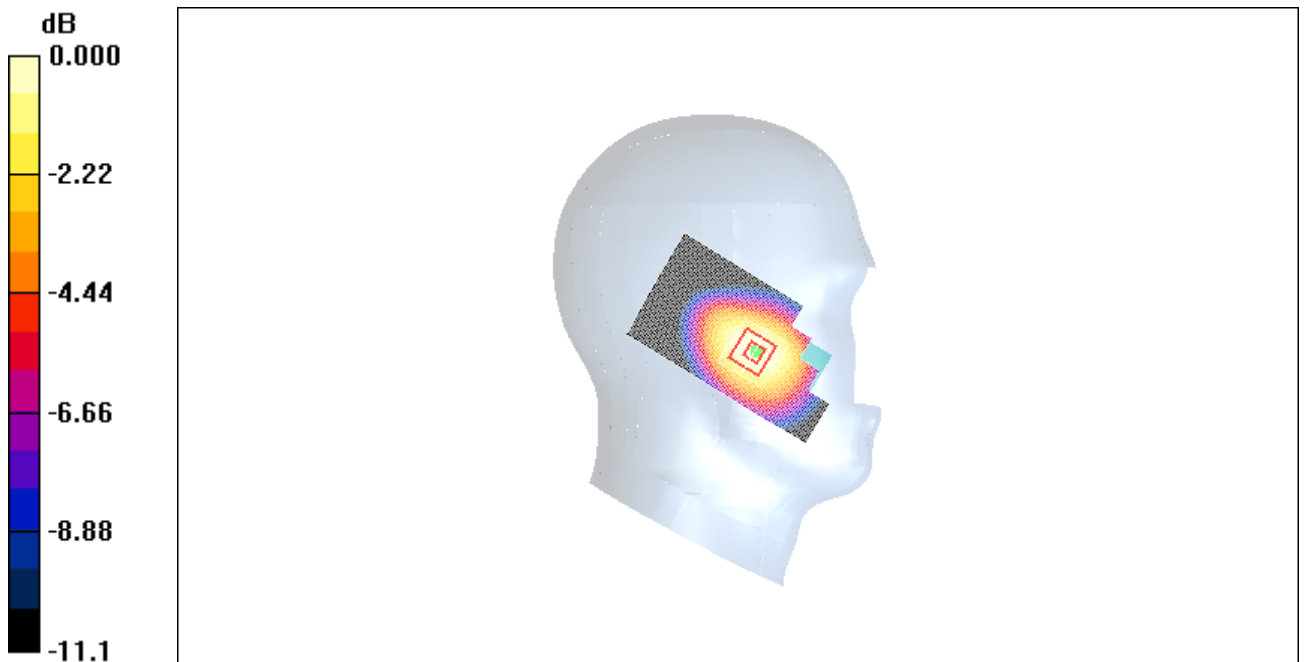


Fig. 1 850MHz CH251

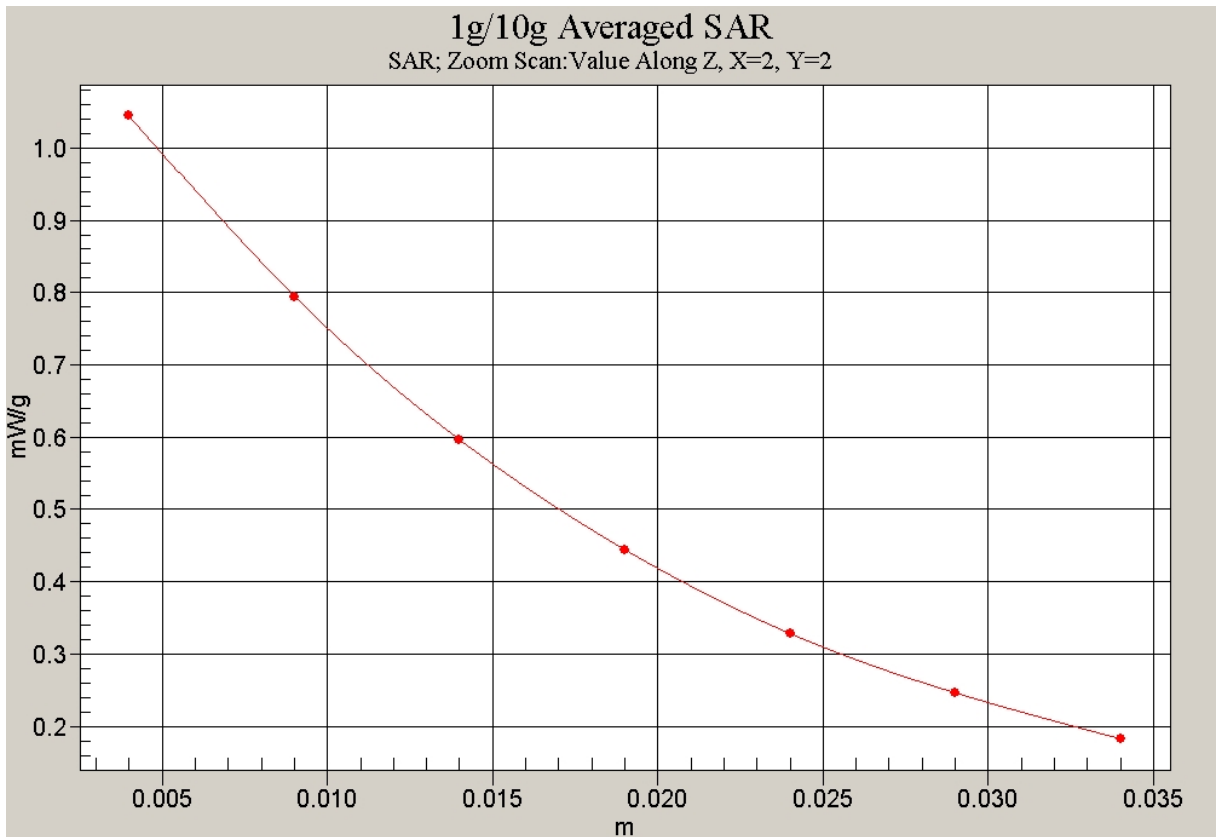


Fig. 1-1 Z-Scan at power reference point (850 MHz CH251)

850 Left Cheek Middle

Date/Time: 2010-3-28 8:20:38

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.868$ mho/m; $\epsilon_r = 40.6$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

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

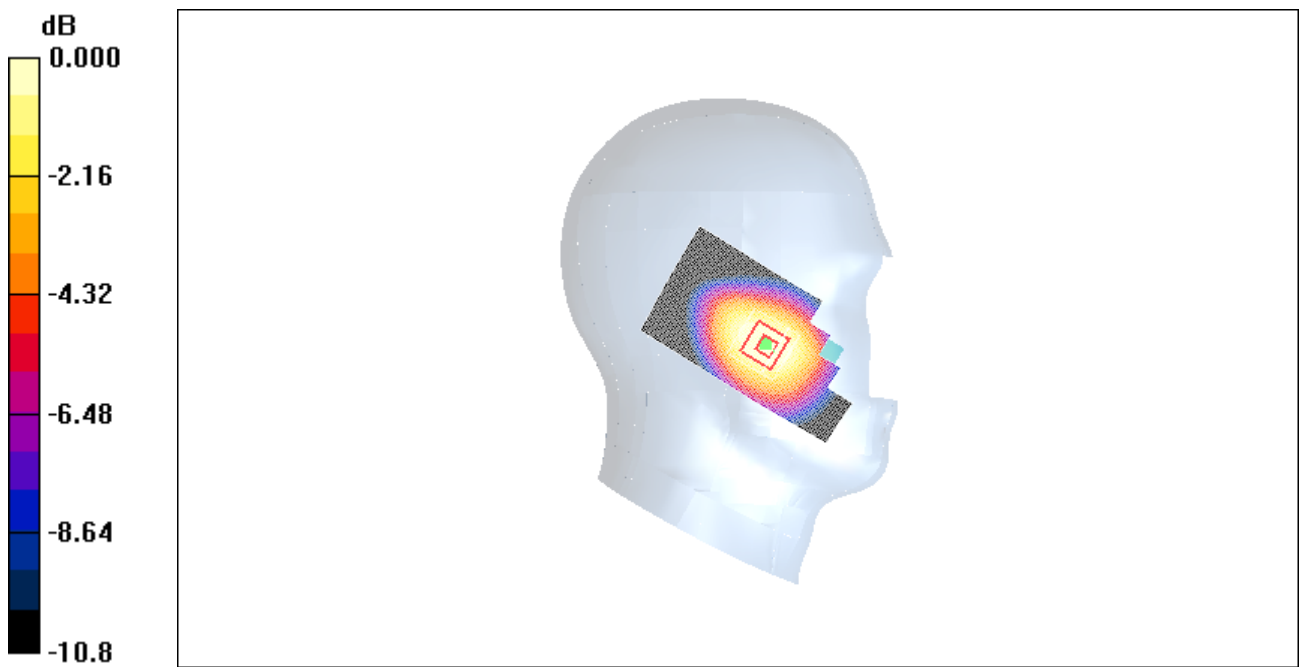
Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.34 V/m; Power Drift = -0.122 dB

Peak SAR (extrapolated) = 1.12 W/kg

SAR(1 g) = 0.838 mW/g; SAR(10 g) = 0.595 mW/g

Maximum value of SAR (measured) = 0.881 mW/g



0 dB = 0.881mW/g

Fig. 2 850 MHz CH190

850 Left Cheek Low

Date/Time: 2010-3-28 8:34:51

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used: $f = 825 \text{ MHz}$; $\sigma = 0.856 \text{ mho/m}$; $\epsilon_r = 40.6$; $\rho = 1000 \text{ kg/m}^3$

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 (51x91x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 0.851 mW/g

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

Reference Value = 9.04 V/m ; Power Drift = 0.060 dB

Peak SAR (extrapolated) = 1.02 W/kg

SAR(1 g) = 0.791 mW/g ; SAR(10 g) = 0.564 mW/g

Maximum value of SAR (measured) = 0.837 mW/g

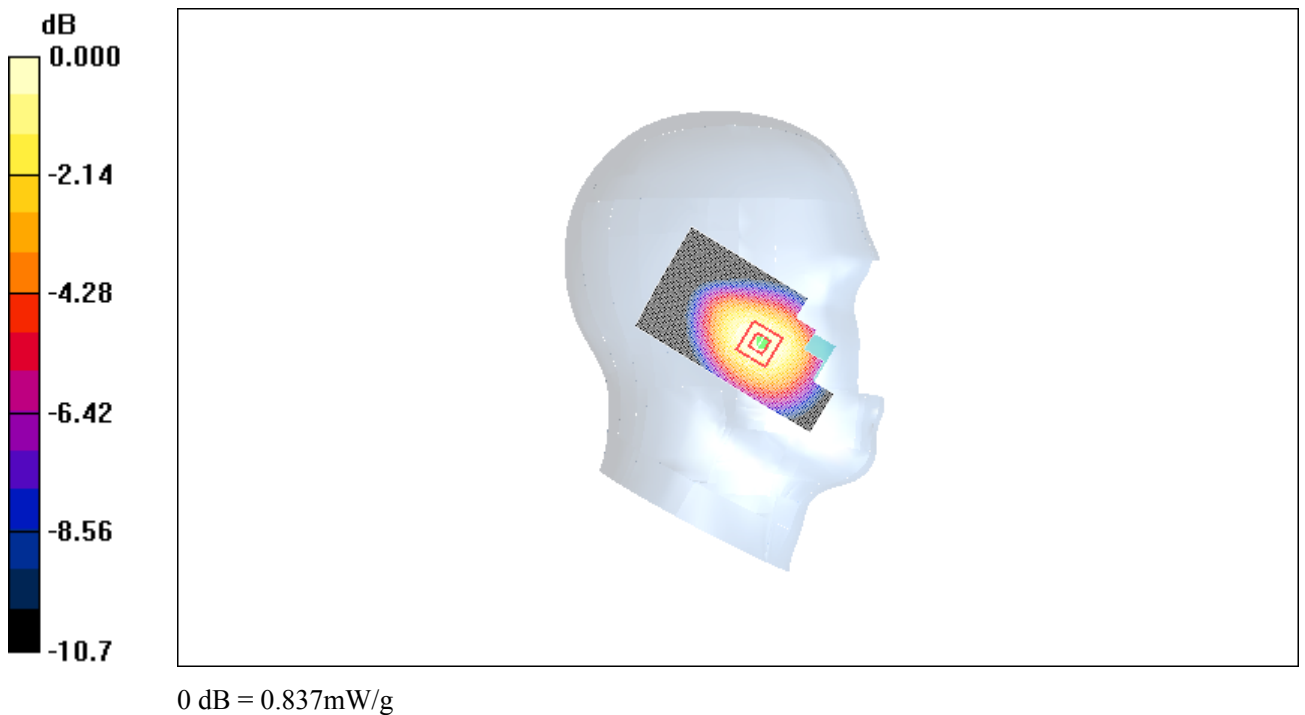


Fig. 3 850 MHz CH128

850 Left Tilt High

Date/Time: 2010-3-28 8:49:11

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used (interpolated): $f = 848.8$ MHz; $\sigma = 0.88$ mho/m; $\epsilon_r = 40.5$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.397 mW/g

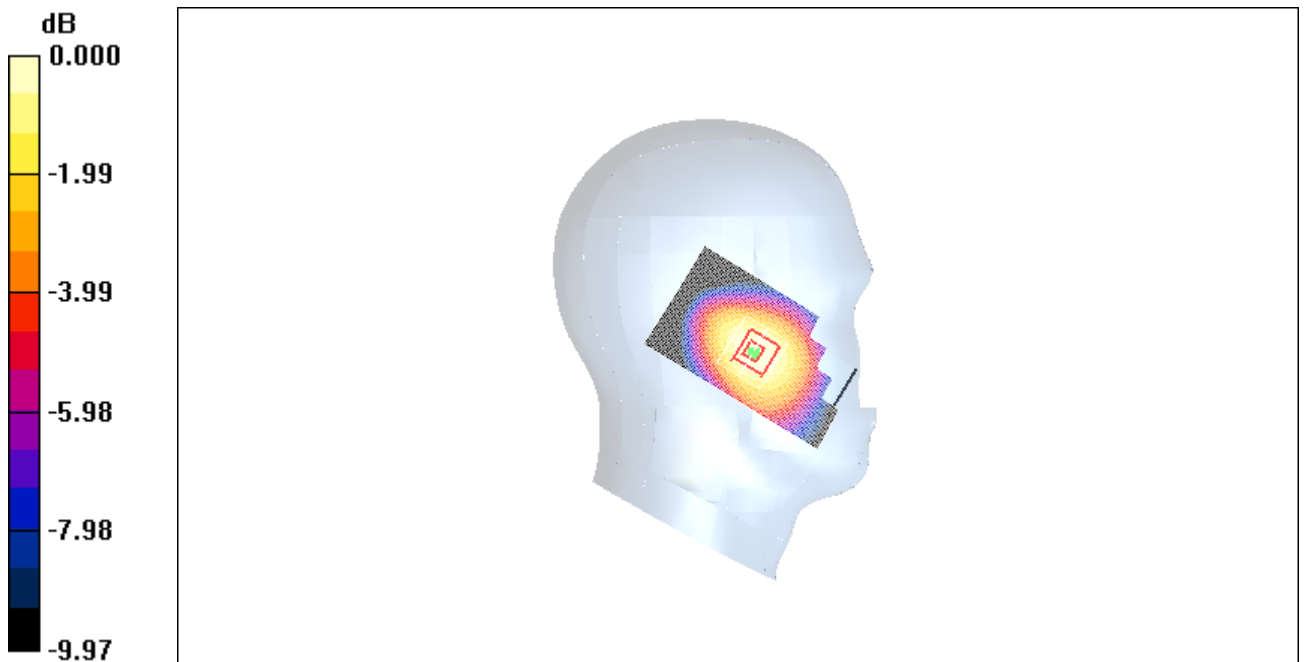
Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.7 V/m; Power Drift = -0.048 dB

Peak SAR (extrapolated) = 0.478 W/kg

SAR(1 g) = 0.367 mW/g; SAR(10 g) = 0.265 mW/g

Maximum value of SAR (measured) = 0.388 mW/g



0 dB = 0.388mW/g

Fig.4 850 MHz CH251

850 Left Tilt Middle

Date/Time: 2010-3-28 9:03:27

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.868$ mho/m; $\epsilon_r = 40.6$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.376 mW/g

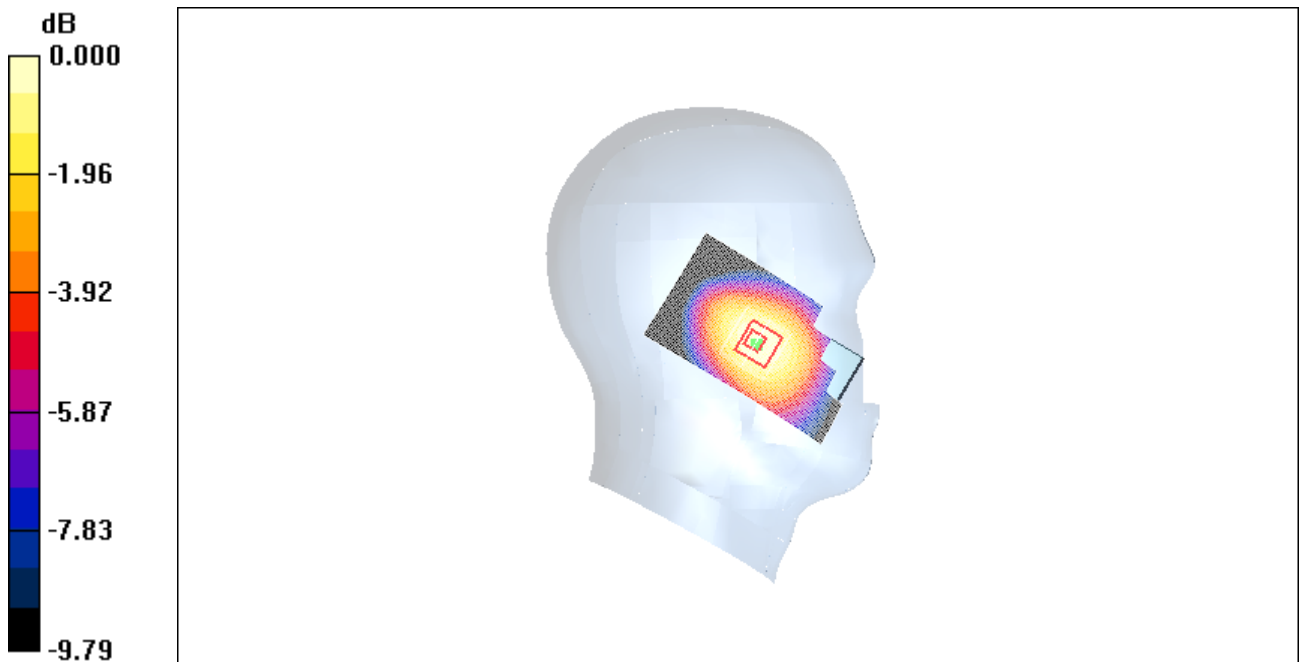
Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.6 V/m; Power Drift = -0.043 dB

Peak SAR (extrapolated) = 0.459 W/kg

SAR(1 g) = 0.353 mW/g; SAR(10 g) = 0.256 mW/g

Maximum value of SAR (measured) = 0.372 mW/g



0 dB = 0.372mW/g

Fig.5 850 MHz CH190

850 Left Tilt Low

Date/Time: 2010-3-28 9:17:33

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used: $f = 825 \text{ MHz}$; $\sigma = 0.856 \text{ mho/m}$; $\epsilon_r = 40.6$; $\rho = 1000 \text{ kg/m}^3$

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 (51x91x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 0.368 mW/g

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

Reference Value = 11.7 V/m ; Power Drift = -0.026 dB

Peak SAR (extrapolated) = 0.447 W/kg

SAR(1 g) = 0.345 mW/g ; SAR(10 g) = 0.251 mW/g

Maximum value of SAR (measured) = 0.365 mW/g

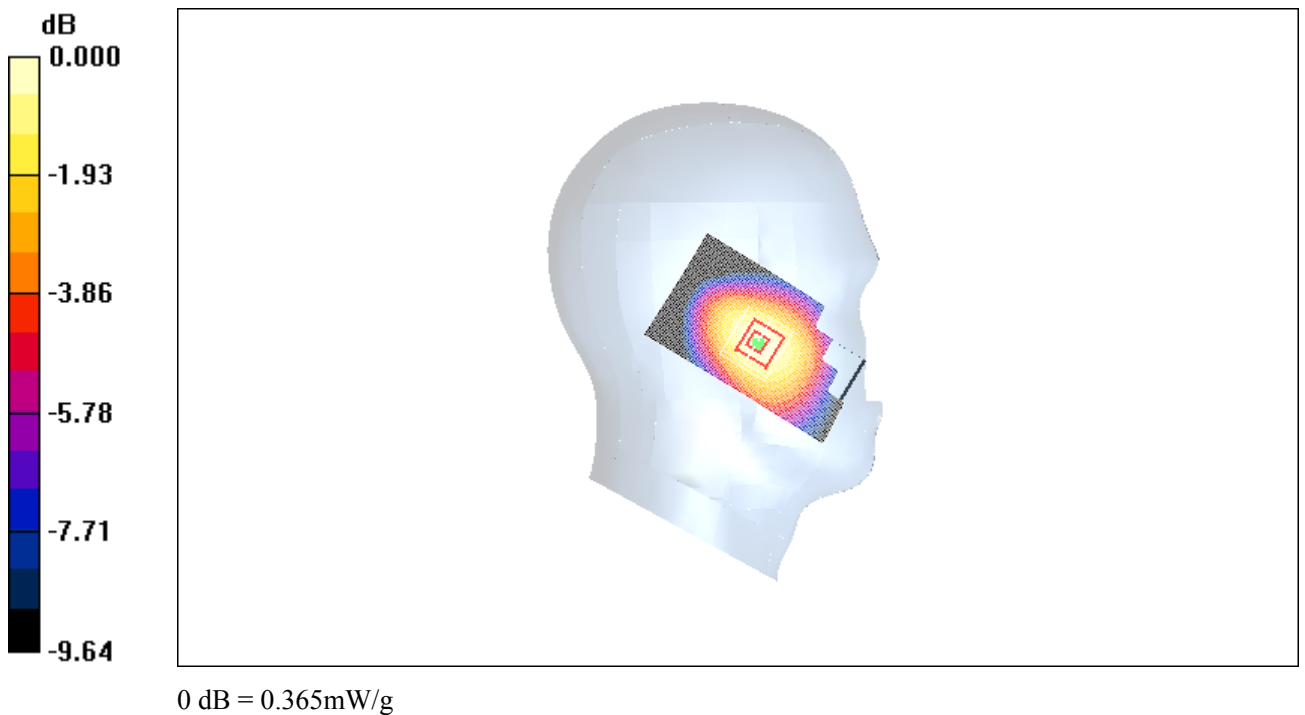


Fig. 6 850 MHz CH128

850 Right Cheek High

Date/Time: 2010-3-28 9:32:05

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used (interpolated): $f = 848.8$ MHz; $\sigma = 0.88$ mho/m; $\epsilon_r = 40.5$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.990 mW/g

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

Reference Value = 10.3 V/m; Power Drift = 0.070 dB

Peak SAR (extrapolated) = 1.21 W/kg

SAR(1 g) = 0.904 mW/g; SAR(10 g) = 0.626 mW/g

Maximum value of SAR (measured) = 0.962 mW/g



0 dB = 0.962mW/g

Fig. 7 850 MHz CH251

850 Right Cheek Middle

Date/Time: 2010-3-28 9:46:12

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.868$ mho/m; $\epsilon_r = 40.6$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.892 mW/g

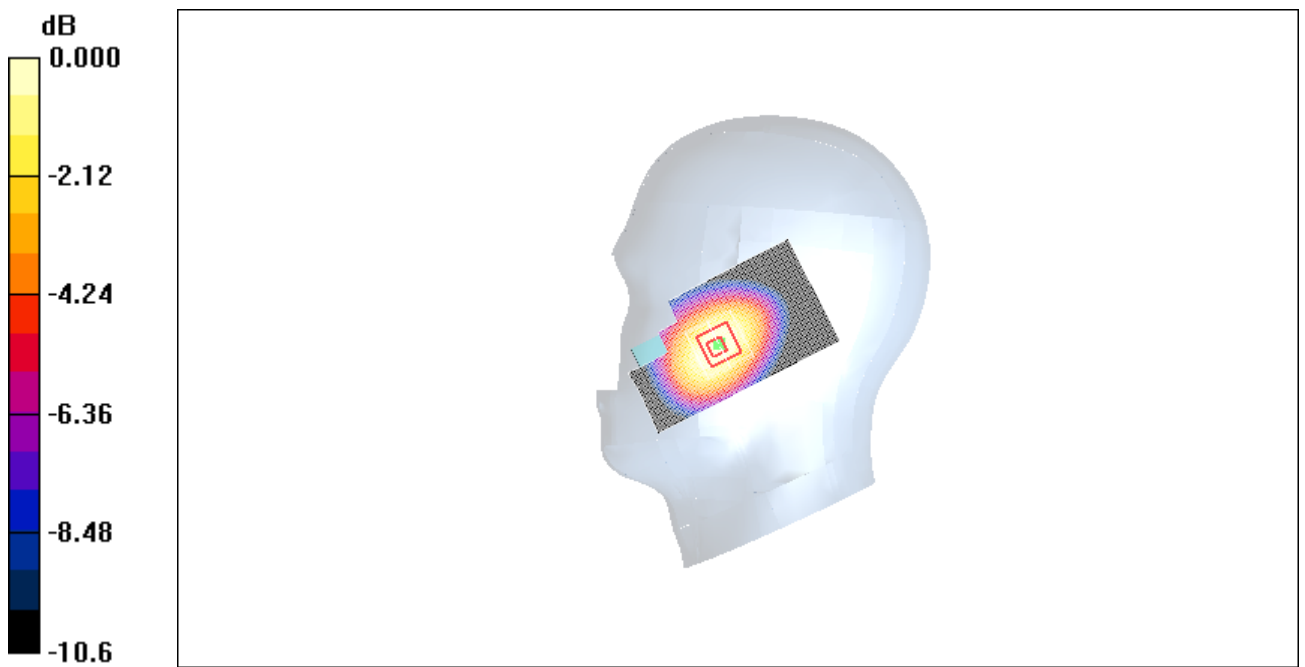
Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.1 V/m; Power Drift = -0.017 dB

Peak SAR (extrapolated) = 1.11 W/kg

SAR(1 g) = 0.823 mW/g; SAR(10 g) = 0.574 mW/g

Maximum value of SAR (measured) = 0.869 mW/g



0 dB = 0.869mW/g

Fig. 8 850 MHz CH190

850 Right Cheek Low

Date/Time: 2010-3-28 10:00:30

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used: $f = 825 \text{ MHz}$; $\sigma = 0.856 \text{ mho/m}$; $\epsilon_r = 40.6$; $\rho = 1000 \text{ kg/m}^3$

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 (51x91x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 0.835 mW/g

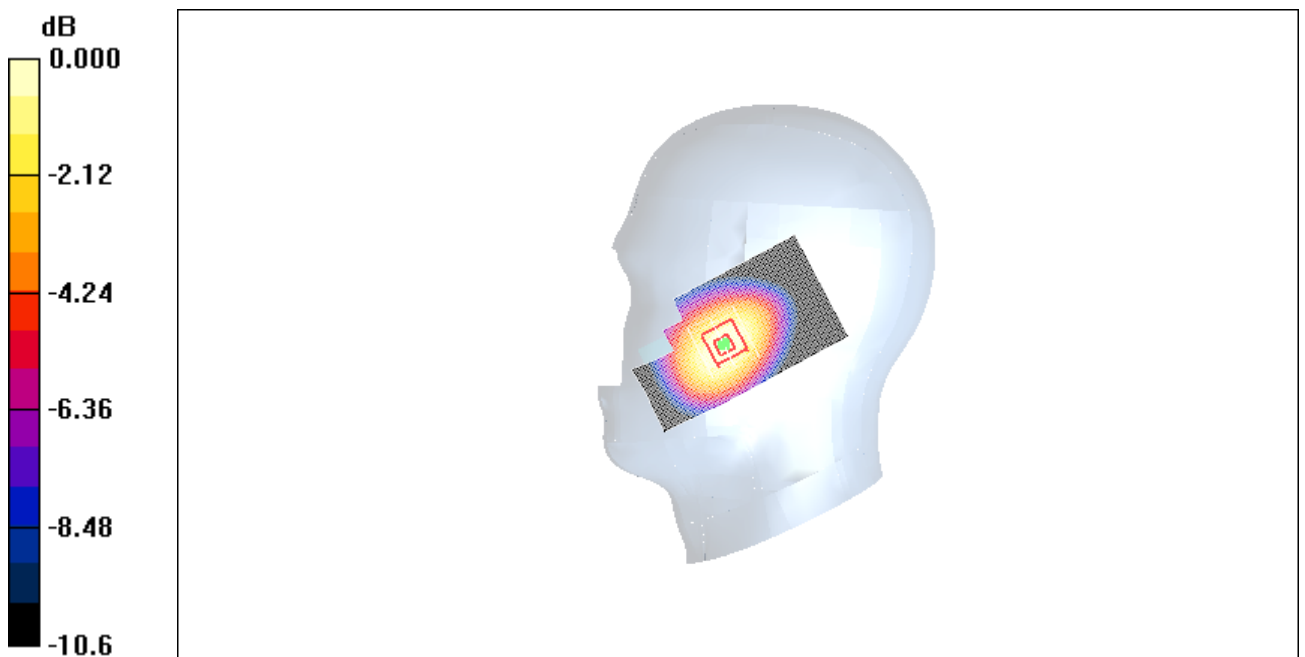
Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 9.88 V/m ; Power Drift = -0.066 dB

Peak SAR (extrapolated) = 1.04 W/kg

SAR(1 g) = 0.775 mW/g ; SAR(10 g) = 0.541 mW/g

Maximum value of SAR (measured) = 0.825 mW/g



0 dB = 0.825mW/g

Fig. 9 850 MHz CH128

850 Right Tilt High

Date/Time: 2010-3-28 10:15:02

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used (interpolated): $f = 848.8$ MHz; $\sigma = 0.88$ mho/m; $\epsilon_r = 40.5$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.449 mW/g

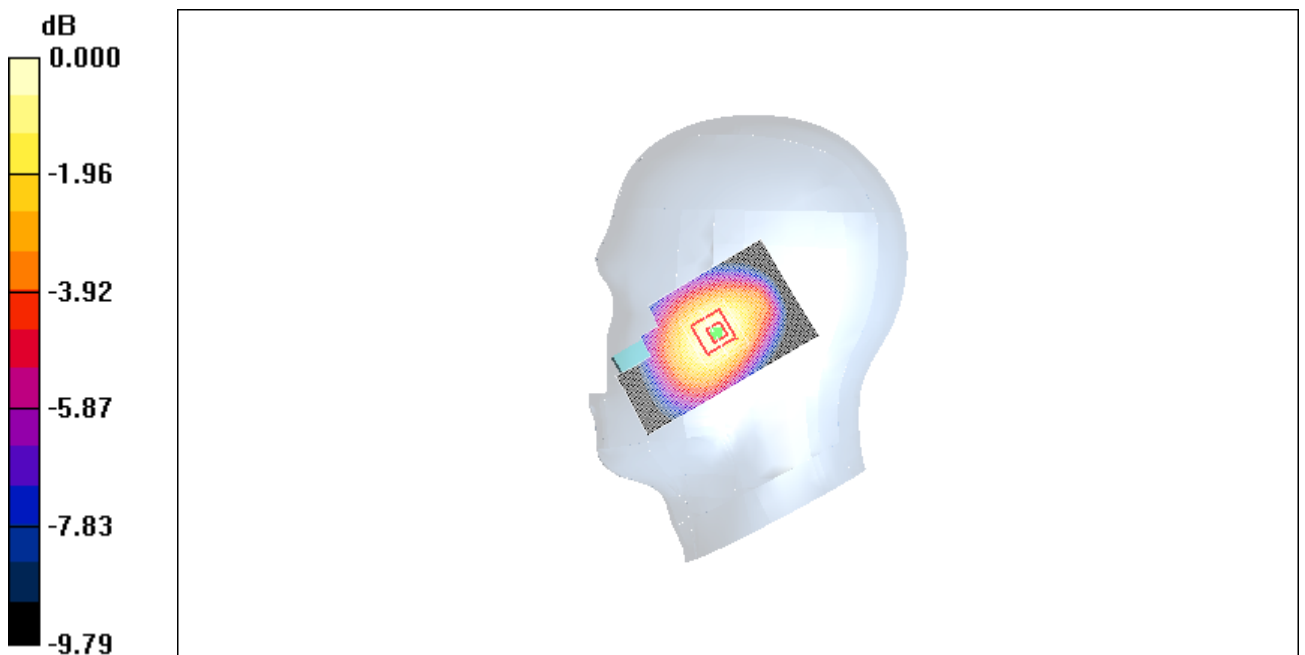
Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 14.1 V/m; Power Drift = -0.002 dB

Peak SAR (extrapolated) = 0.561 W/kg

SAR(1 g) = 0.423 mW/g; SAR(10 g) = 0.302 mW/g

Maximum value of SAR (measured) = 0.448 mW/g



0 dB = 0.448mW/g

Fig.10 850 MHz CH251

850 Right Tilt Middle

Date/Time: 2010-3-28 10:29:21

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.868$ mho/m; $\epsilon_r = 40.6$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.422 mW/g

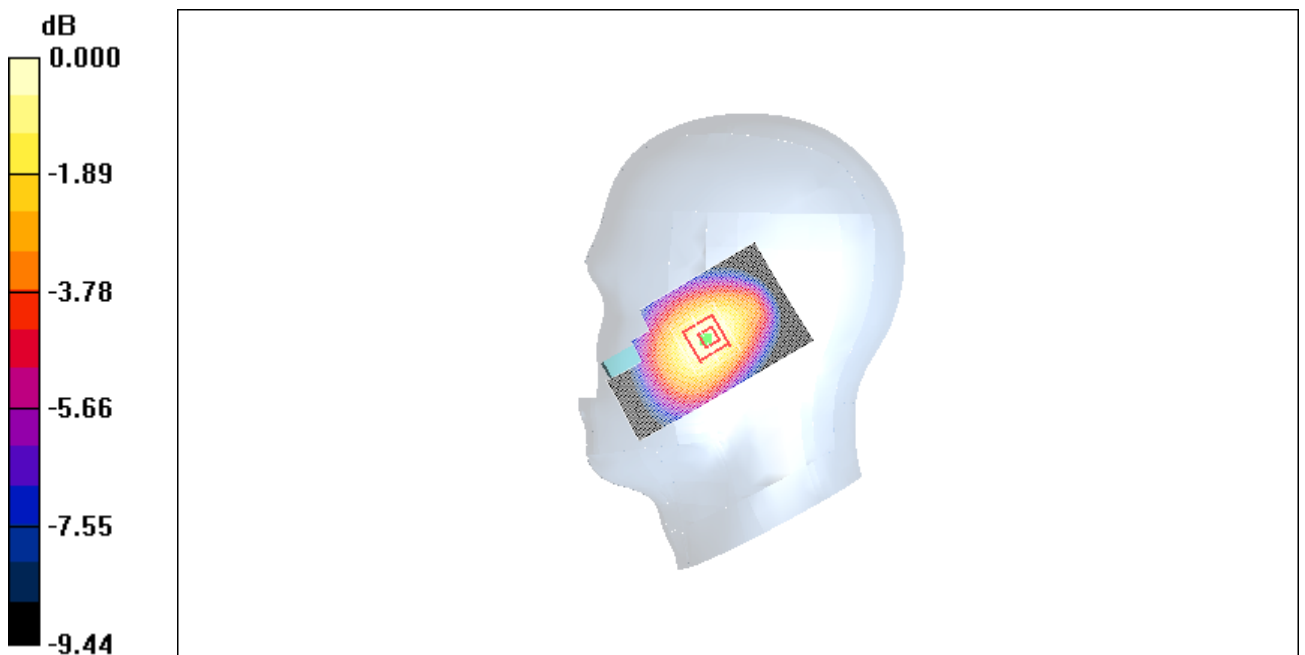
Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 13.9 V/m; Power Drift = -0.014 dB

Peak SAR (extrapolated) = 0.523 W/kg

SAR(1 g) = 0.398 mW/g; SAR(10 g) = 0.287 mW/g

Maximum value of SAR (measured) = 0.420 mW/g



0 dB = 0.420mW/g

Fig.11 850 MHz CH190

850 Right Tilt Low

Date/Time: 2010-3-28 10:43:35

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used: $f = 825 \text{ MHz}$; $\sigma = 0.856 \text{ mho/m}$; $\epsilon_r = 40.6$; $\rho = 1000 \text{ kg/m}^3$

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 (51x91x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 0.401 mW/g

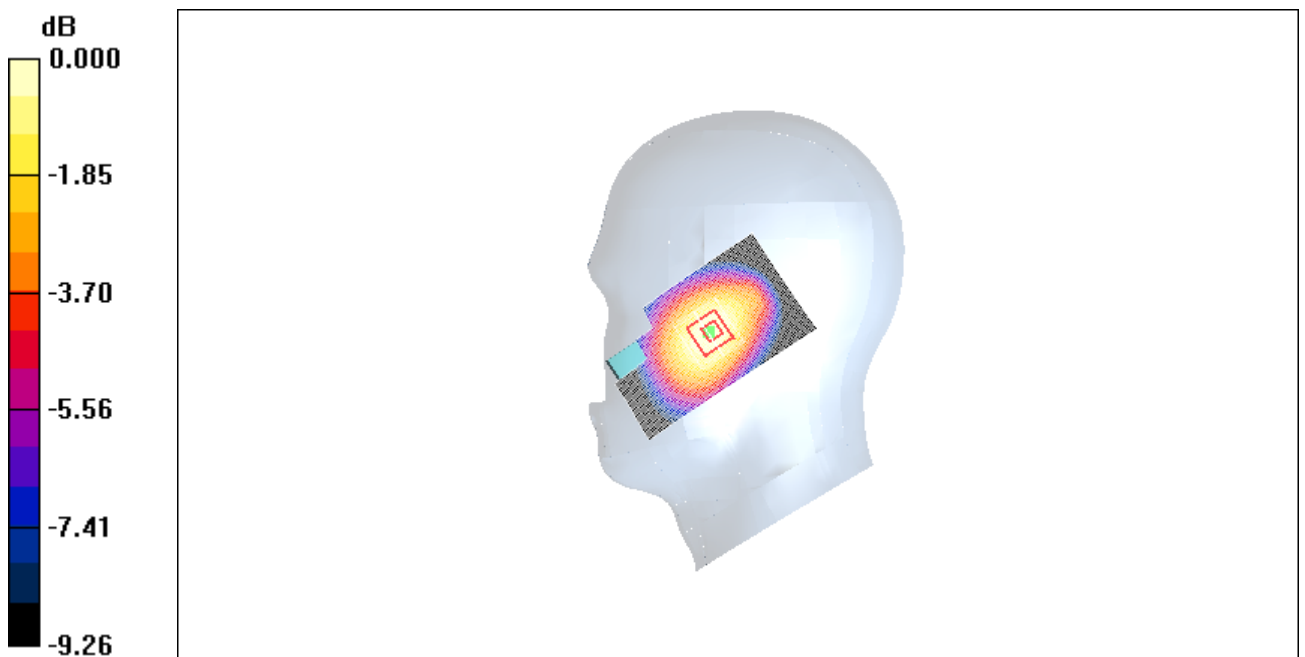
Tilt Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 13.8 V/m ; Power Drift = -0.013 dB

Peak SAR (extrapolated) = 0.492 W/kg

SAR(1 g) = 0.380 mW/g ; SAR(10 g) = 0.275 mW/g

Maximum value of SAR (measured) = 0.400 mW/g



0 dB = 0.400mW/g

Fig. 12 850 MHz CH128

1900 Left Cheek High

Date/Time: 2010-3-29 8:15:22

Electronics: DAE4 Sn771

Medium: 1900 Head

Medium parameters used: $f = 1910 \text{ MHz}$; $\sigma = 1.40 \text{ mho/m}$; $\epsilon_r = 38.6$; $\rho = 1000 \text{ kg/m}^3$

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 (51x91x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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

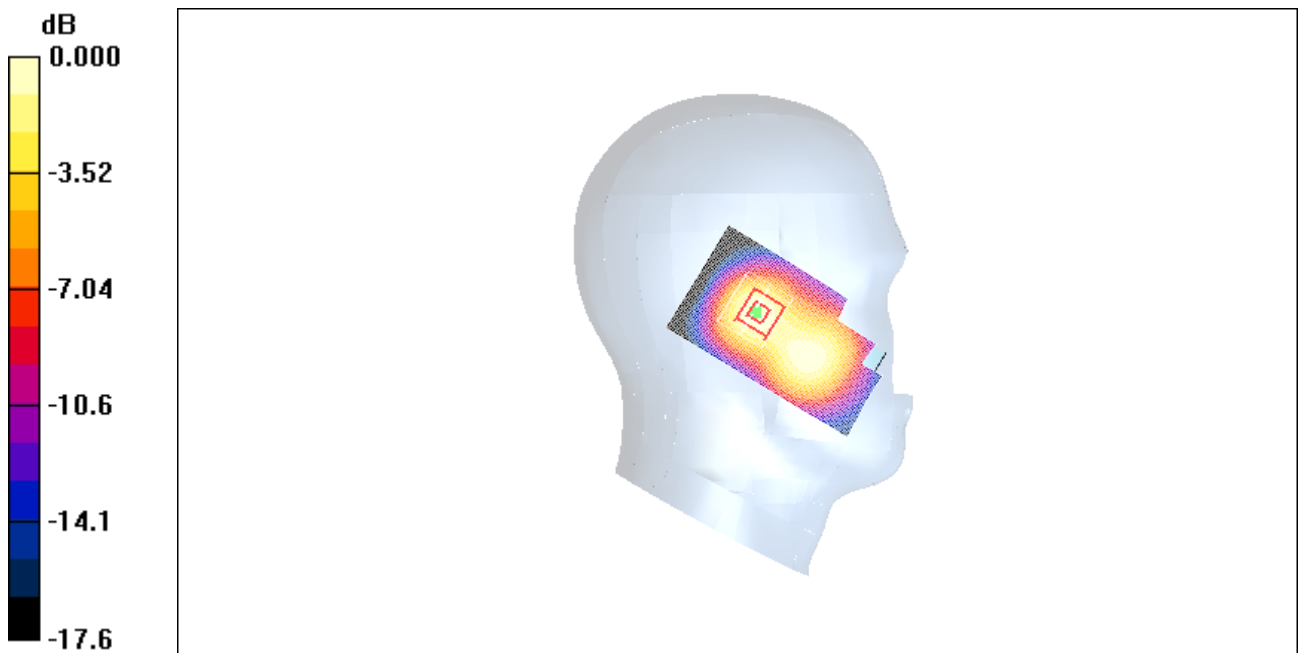
Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 12.7 V/m; Power Drift = -0.111 dB

Peak SAR (extrapolated) = 1.06 W/kg

SAR(1 g) = 0.719 mW/g; SAR(10 g) = 0.435 mW/g

Maximum value of SAR (measured) = 0.778 mW/g



0 dB = 0.778mW/g

Fig. 13 1900 MHz CH810

1900 Left Cheek Middle

Date/Time: 2010-3-29 8:29:40

Electronics: DAE4 Sn771

Medium: Head 1900 MHz

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.38$ mho/m; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.984 mW/g

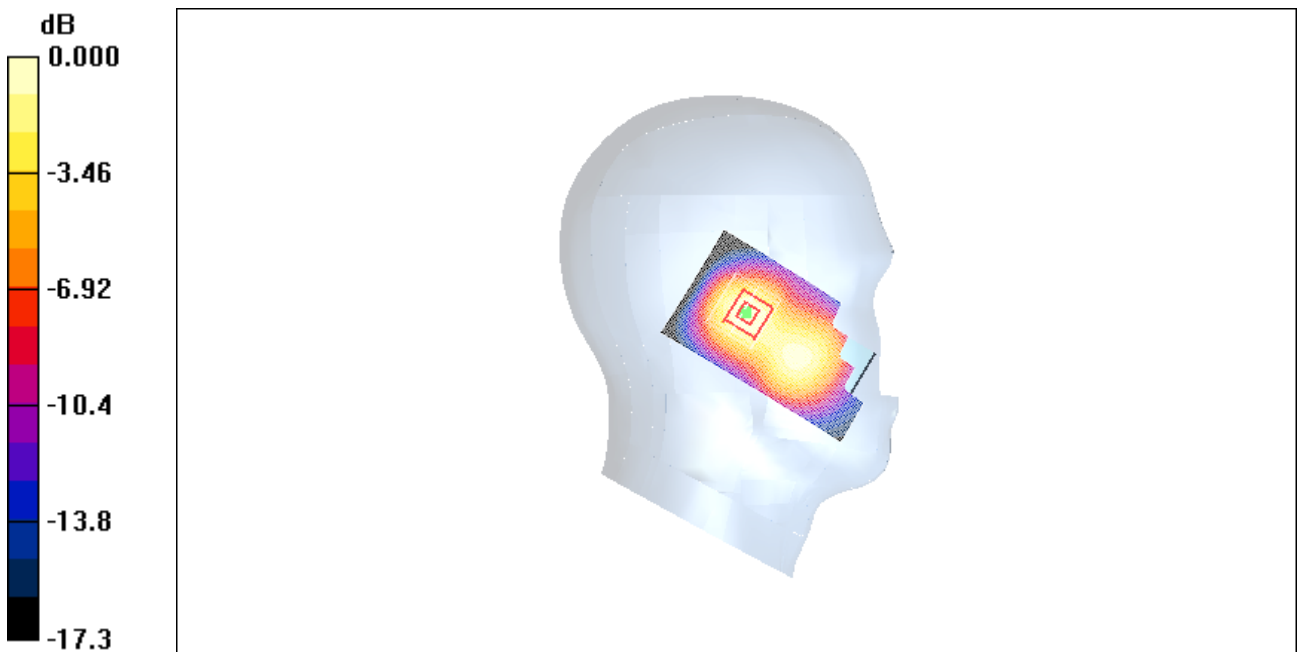
Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 13.0 V/m; Power Drift = 0.009 dB

Peak SAR (extrapolated) = 1.24 W/kg

SAR(1 g) = 0.844 mW/g; SAR(10 g) = 0.514 mW/g

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



0 dB = 0.911mW/g

Fig. 14 1900 MHz CH661

1900 Left Cheek Low

Date/Time: 2010-3-29 8:43:56

Electronics: DAE4 Sn771

Medium: 1900 Head

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.35$ mho/m; $\epsilon_r = 38.8$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 1.06 mW/g

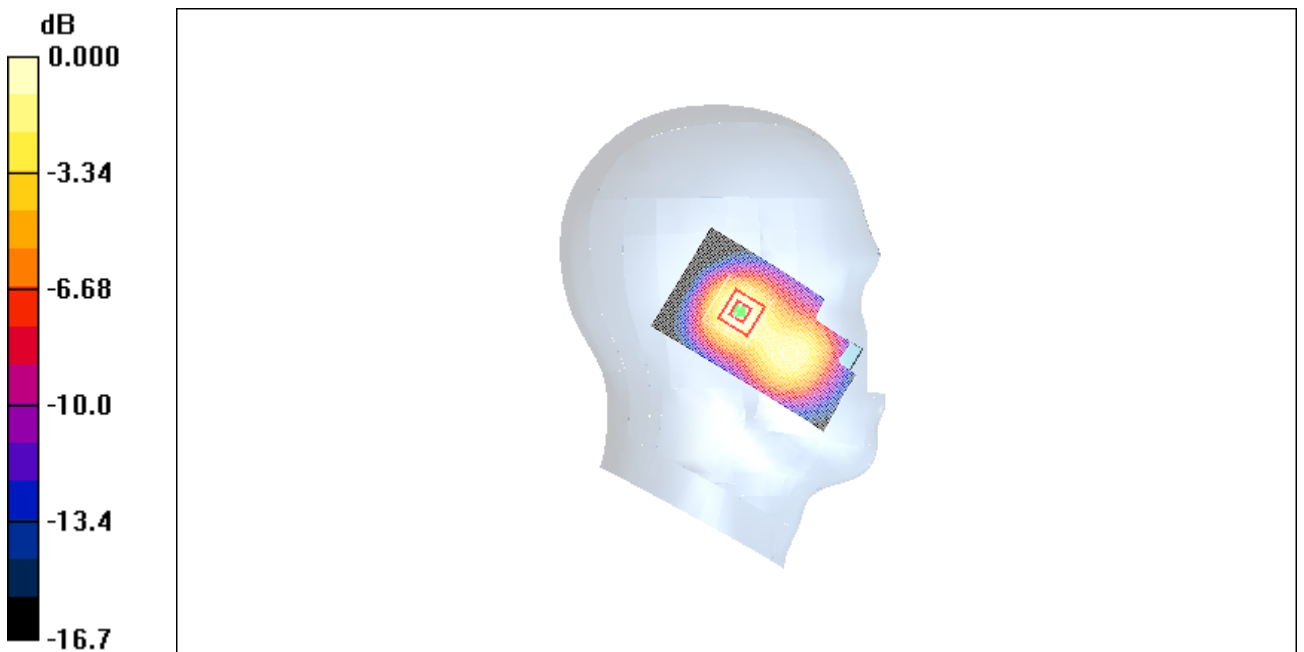
Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 13.8 V/m; Power Drift = -0.102 dB

Peak SAR (extrapolated) = 1.36 W/kg

SAR(1 g) = 0.940 mW/g; SAR(10 g) = 0.577 mW/g

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



0 dB = 1.02mW/g

Fig. 15 1900 MHz CH512

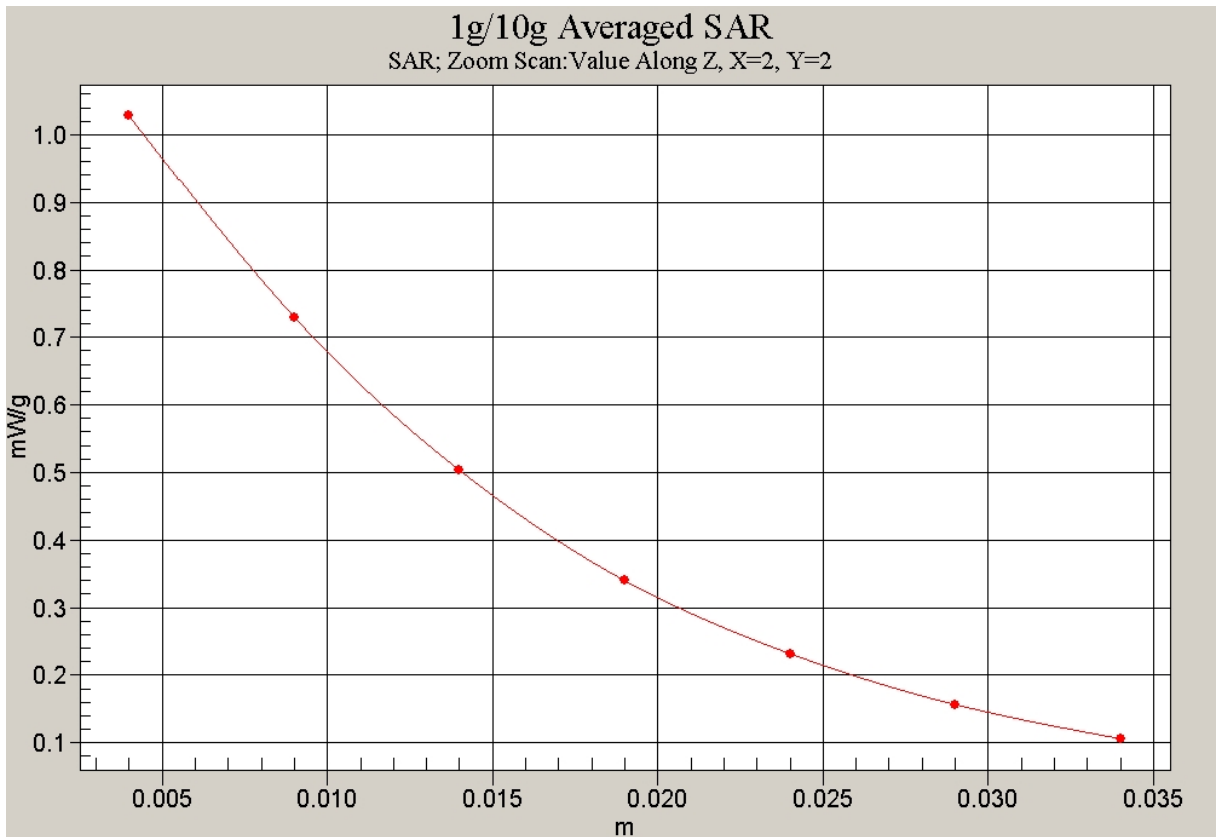


Fig. 15-1 Z-Scan at power reference point (1900 MHz CH512)

1900 Left Tilt High

Date/Time: 2010-3-29 8:58:17

Electronics: DAE4 Sn771

Medium: 1900 Head

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.40$ mho/m; $\epsilon_r = 38.6$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.716 mW/g

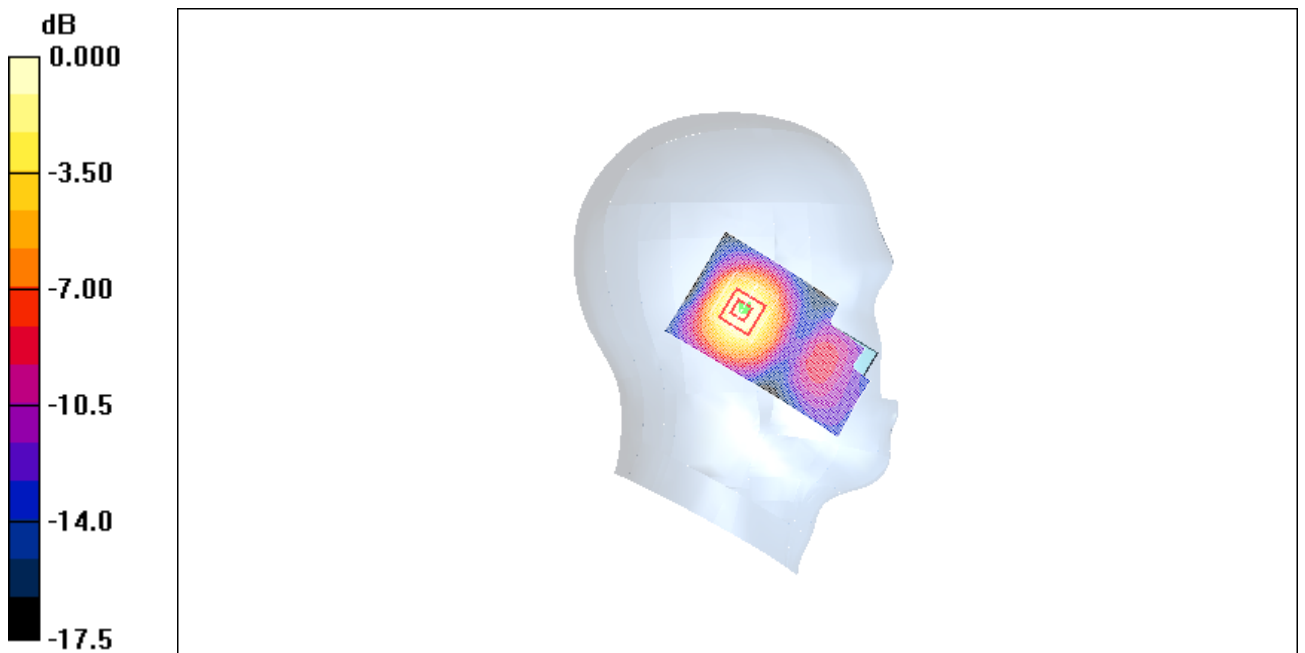
Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 16.2 V/m; Power Drift = -0.038 dB

Peak SAR (extrapolated) = 0.886 W/kg

SAR(1 g) = 0.583 mW/g; SAR(10 g) = 0.350 mW/g

Maximum value of SAR (measured) = 0.637 mW/g



0 dB = 0.637mW/g

Fig.16 1900 MHz CH810

1900 Left Tilt Middle

Date/Time: 2010-3-29 9:12:35

Electronics: DAE4 Sn771

Medium: 1900 Head

Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.38 \text{ mho/m}$; $\epsilon_r = 38.7$; $\rho = 1000 \text{ kg/m}^3$

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 (51x91x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 0.778 mW/g

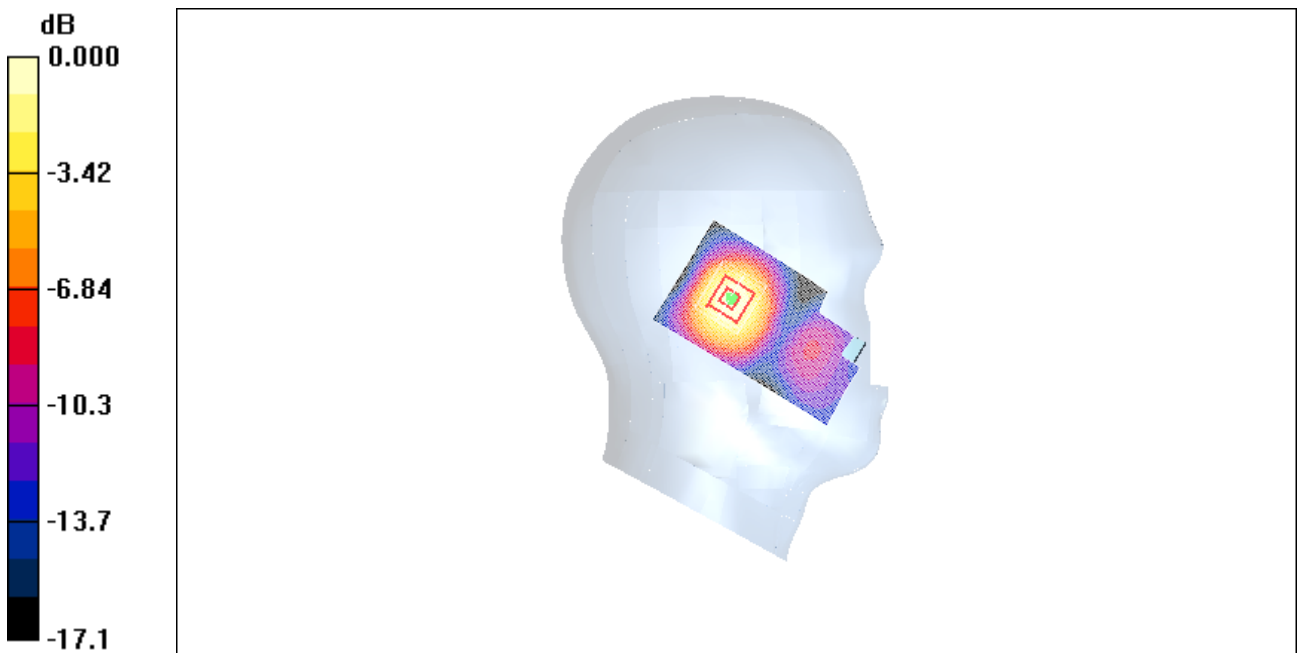
Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 16.8 V/m; Power Drift = 0.003 dB

Peak SAR (extrapolated) = 0.953 W/kg

SAR(1 g) = 0.636 mW/g; SAR(10 g) = 0.385 mW/g

Maximum value of SAR (measured) = 0.694 mW/g



0 dB = 0.694mW/g

Fig. 17 1900 MHz CH661

1900 Left Tilt Low

Date/Time: 2010-3-29 9:26:44

Electronics: DAE4 Sn771

Medium: 1900 Head

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.35$ mho/m; $\epsilon_r = 38.8$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.807 mW/g

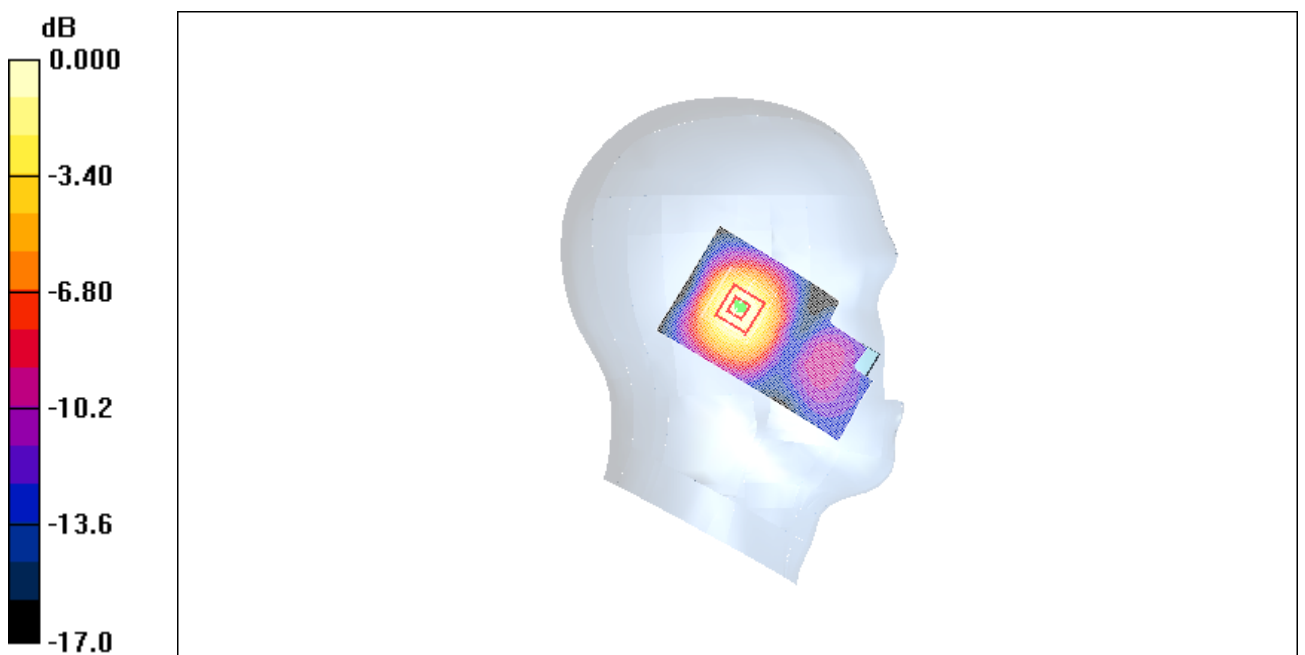
Tilt Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.3 V/m; Power Drift = -0.024 dB

Peak SAR (extrapolated) = 0.984 W/kg

SAR(1 g) = 0.663 mW/g; SAR(10 g) = 0.405 mW/g

Maximum value of SAR (measured) = 0.719 mW/g



0 dB = 0.719mW/g

Fig. 18 1900 MHz CH512

1900 Right Cheek High

Date/Time: 2010-3-29 9:41:39

Electronics: DAE4 Sn771

Medium: 1900 Head

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.40$ mho/m; $\epsilon_r = 38.6$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.869 mW/g

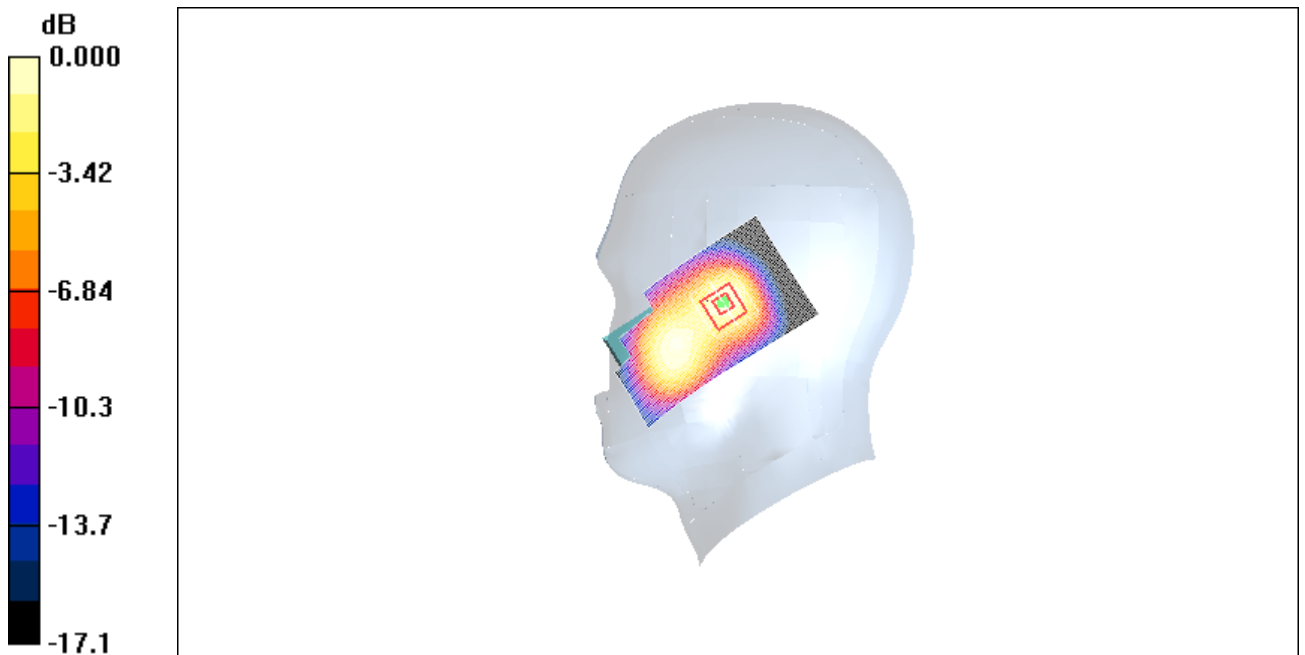
Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.75 V/m; Power Drift = -0.158 dB

Peak SAR (extrapolated) = 1.06 W/kg

SAR(1 g) = 0.729 mW/g; SAR(10 g) = 0.445 mW/g

Maximum value of SAR (measured) = 0.801 mW/g



0 dB = 0.801mW/g

Fig. 19 1900 MHz CH810

1900 Right Cheek Middle

Date/Time: 2010-3-29 9:55:51

Electronics: DAE4 Sn771

Medium: 1900 Head

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.38$ mho/m; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

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

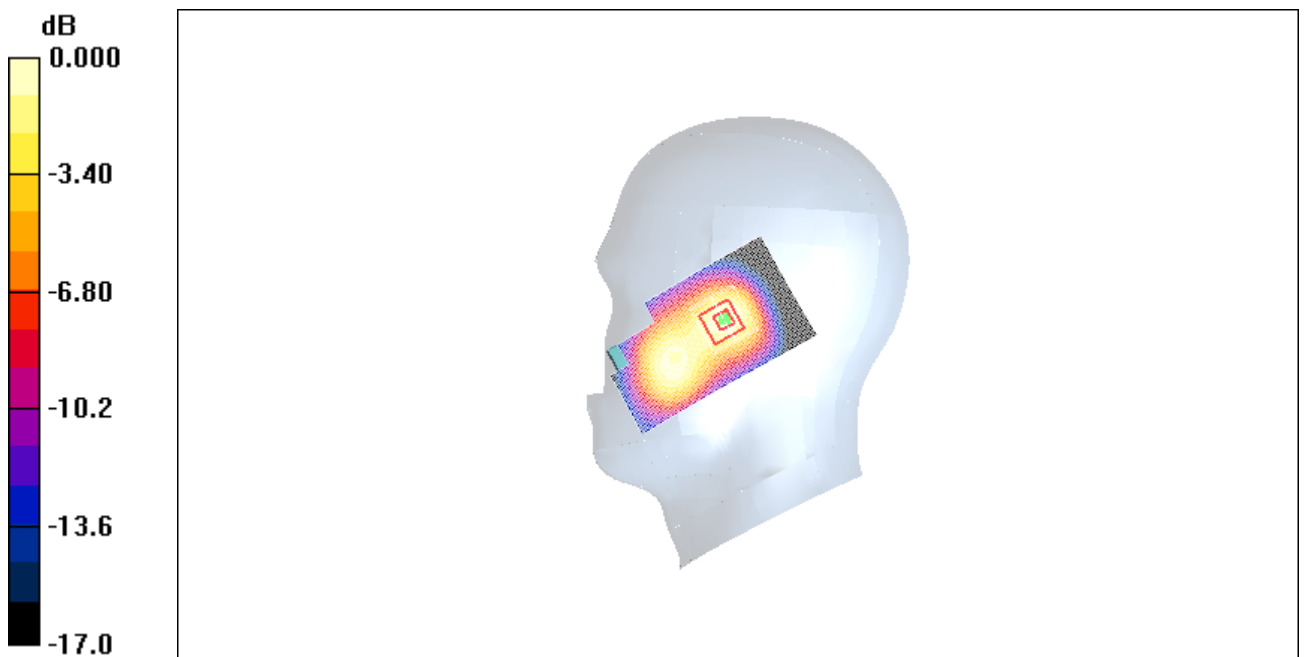
Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.66 V/m; Power Drift = -0.008 dB

Peak SAR (extrapolated) = 1.17 W/kg

SAR(1 g) = 0.823 mW/g; SAR(10 g) = 0.504 mW/g

Maximum value of SAR (measured) = 0.908 mW/g



0 dB = 0.908mW/g

Fig. 20 1900 MHz CH661

1900 Right Cheek Low

Date/Time: 2010-3-29 10:10:07

Electronics: DAE4 Sn771

Medium: 1900 Head

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.35$ mho/m; $\epsilon_r = 38.8$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

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

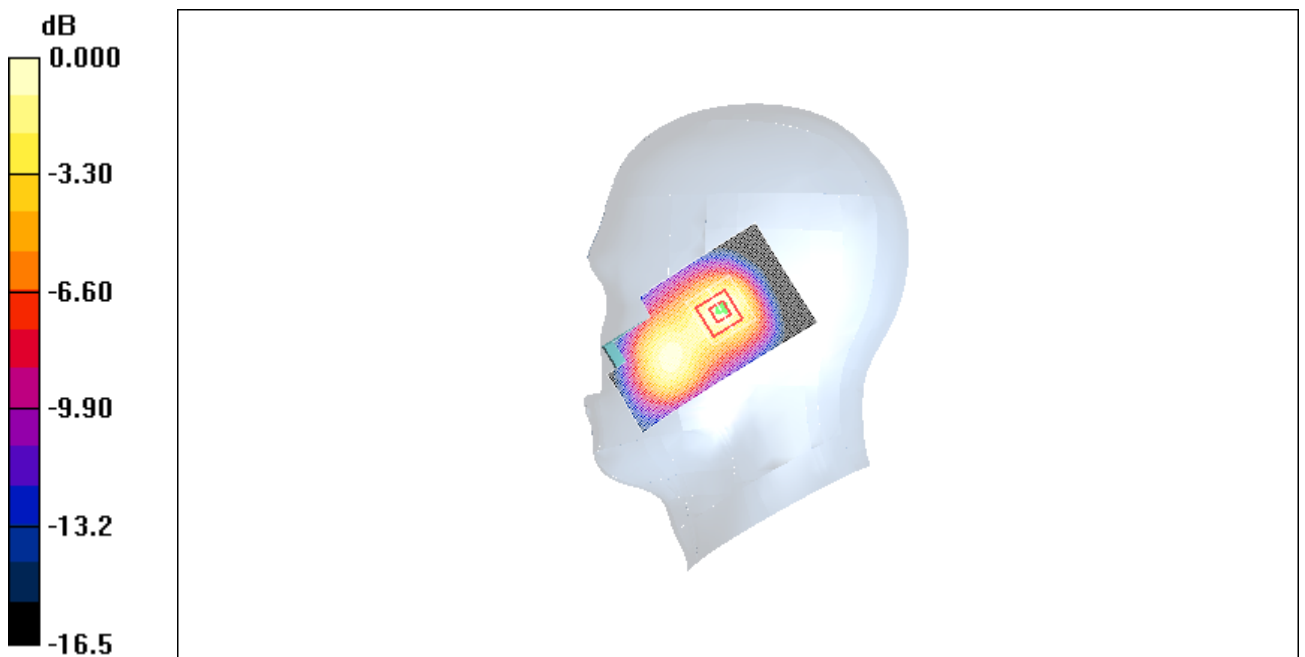
Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.93 V/m; Power Drift = -0.060 dB

Peak SAR (extrapolated) = 1.23 W/kg

SAR(1 g) = 0.868 mW/g; SAR(10 g) = 0.538 mW/g

Maximum value of SAR (measured) = 0.953 mW/g



0 dB = 0.953mW/g

Fig. 21 1900 MHz CH512

1900 Right Tilt High

Date/Time: 2010-3-29 10:24:36

Electronics: DAE4 Sn771

Medium: 1900 Head

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.40$ mho/m; $\epsilon_r = 38.6$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.666 mW/g

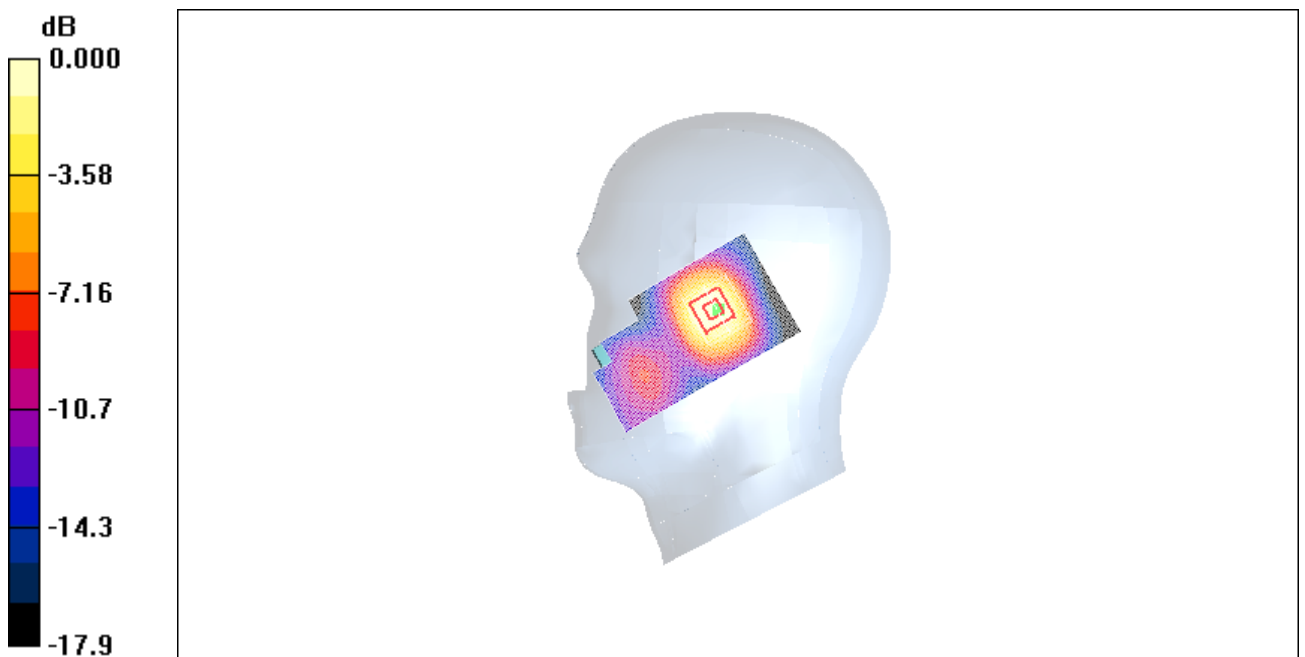
Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.92 V/m; Power Drift = 0.105 dB

Peak SAR (extrapolated) = 0.816 W/kg

SAR(1 g) = 0.541 mW/g; SAR(10 g) = 0.325 mW/g

Maximum value of SAR (measured) = 0.573 mW/g



0 dB = 0.573mW/g

Fig. 22 1900 MHz CH810

1900 Right Tilt Middle

Date/Time: 2010-3-29 10:38:52

Electronics: DAE4 Sn771

Medium: 1900 Head

Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.38 \text{ mho/m}$; $\epsilon_r = 38.7$; $\rho = 1000 \text{ kg/m}^3$

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 (51x91x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 0.729 mW/g

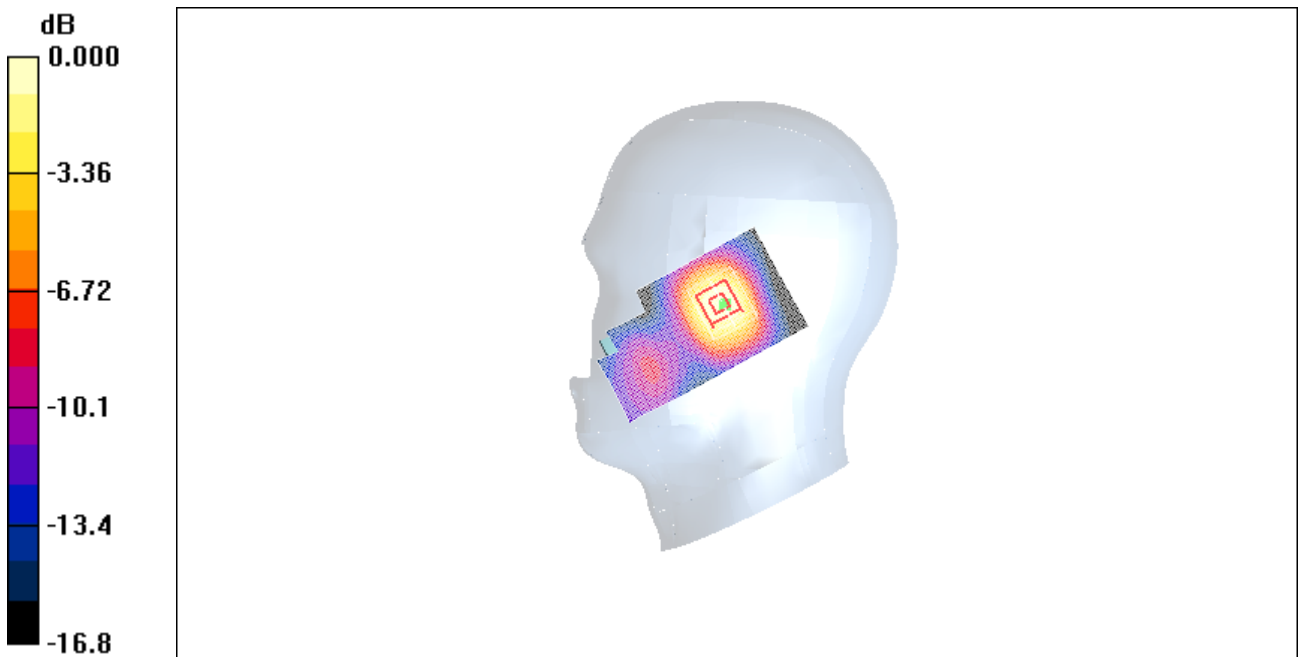
Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 10.7 V/m; Power Drift = -0.160 dB

Peak SAR (extrapolated) = 0.891 W/kg

SAR(1 g) = 0.598 mW/g; SAR(10 g) = 0.363 mW/g

Maximum value of SAR (measured) = 0.640 mW/g



0 dB = 0.640mW/g

Fig.23 1900 MHz CH661

1900 Right Tilt Low

Date/Time: 2010-3-29 10:53:11

Electronics: DAE4 Sn771

Medium: 1900 Head

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.35$ mho/m; $\epsilon_r = 38.8$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.752 mW/g

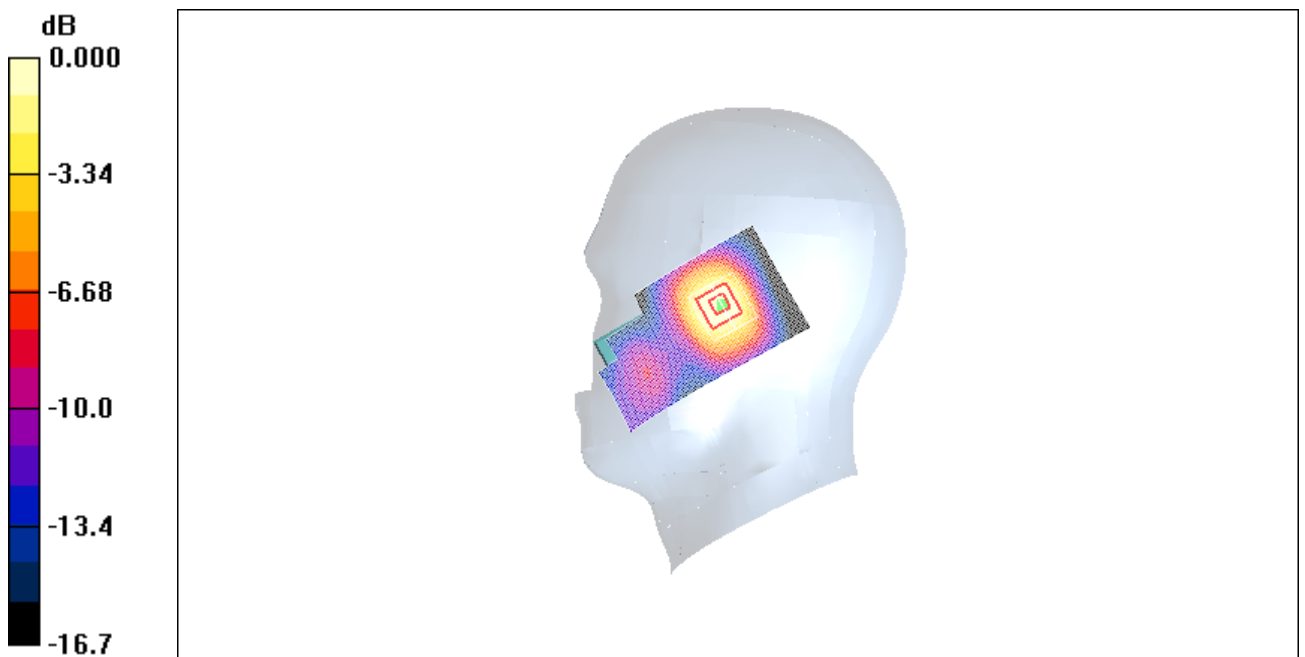
Tilt Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.8 V/m; Power Drift = 0.113 dB

Peak SAR (extrapolated) = 0.929 W/kg

SAR(1 g) = 0.628 mW/g; SAR(10 g) = 0.383 mW/g

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



0 dB = 0.667mW/g

Fig.24 1900 MHz CH512

850 Left Cheek High with battery CAB3130000C1

Date/Time: 2010-3-28 11:01:29

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used (interpolated): $f = 848.8$ MHz; $\sigma = 0.88$ mho/m; $\epsilon_r = 40.5$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

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

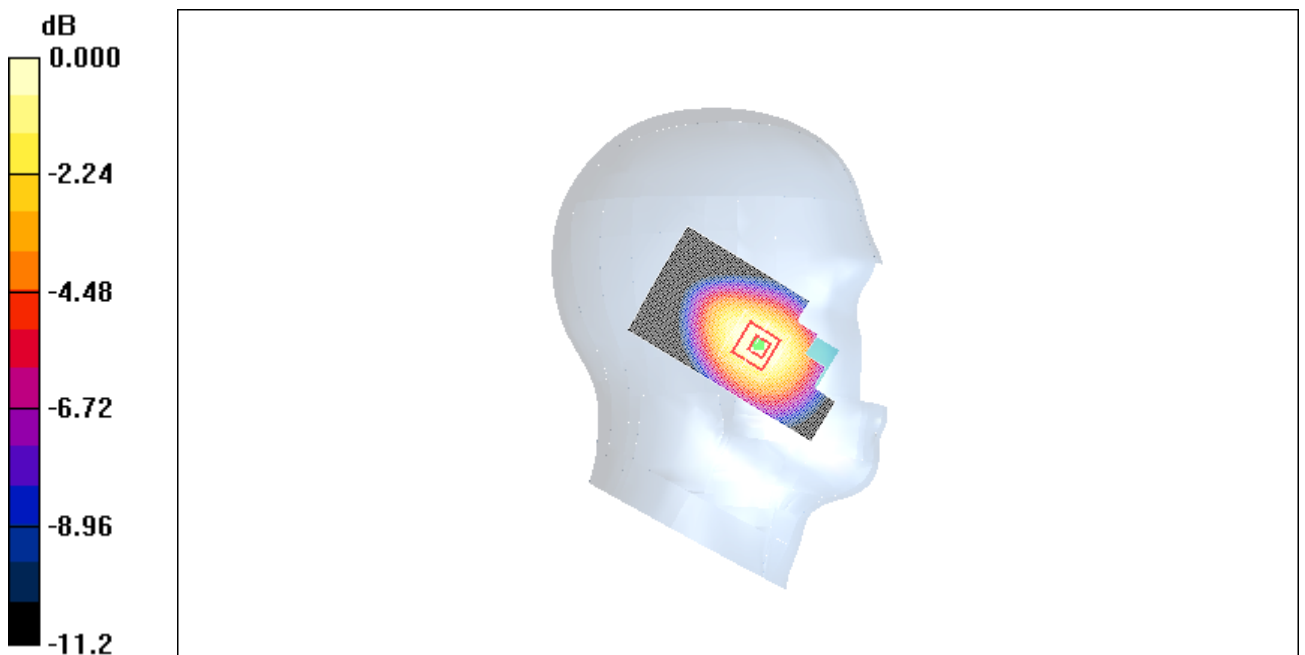
Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.2 V/m; Power Drift = -0.106 dB

Peak SAR (extrapolated) = 1.23 W/kg

SAR(1 g) = 0.935 mW/g; SAR(10 g) = 0.659 mW/g

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



0 dB = 0.985mW/g

Fig. 25 850MHz CH251

850 Body Towards Ground High with GPRS

Date/Time: 2010-3-28 13:52:08

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used (interpolated): $f = 848.8$ MHz; $\sigma = 0.94$ mho/m; $\epsilon_r = 53.5$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.875 mW/g

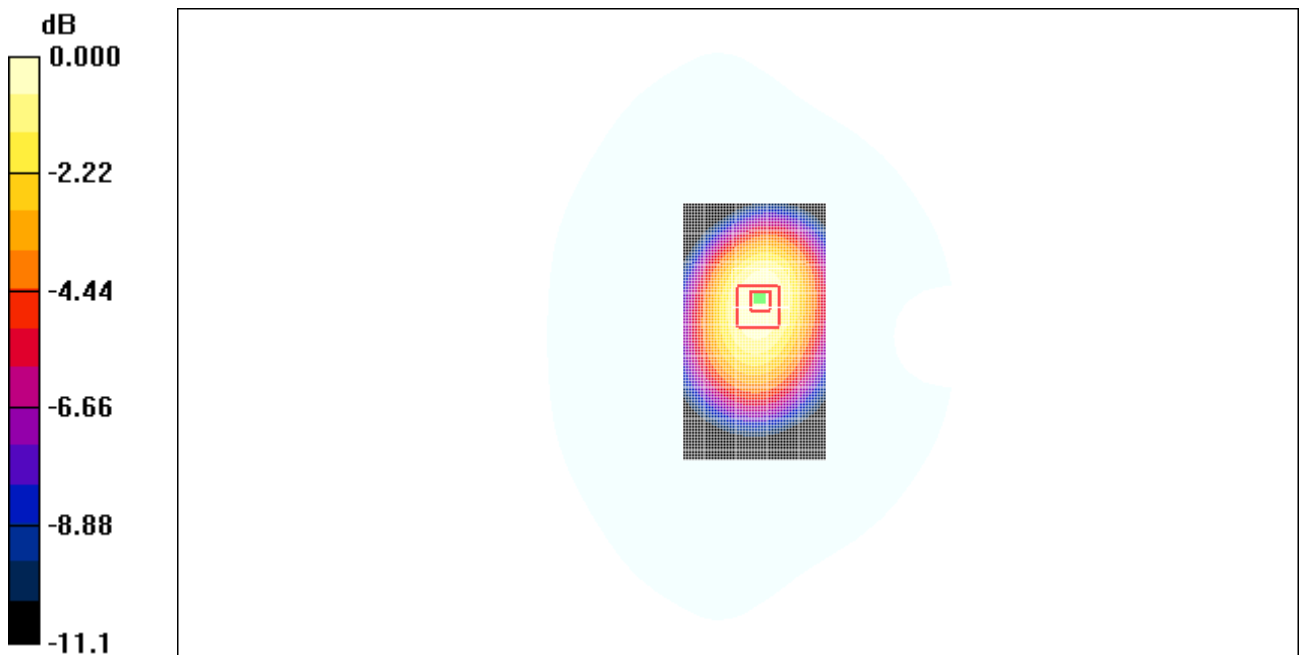
Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 26.7 V/m; Power Drift = 0.047 dB

Peak SAR (extrapolated) = 1.10 W/kg

SAR(1 g) = 0.812 mW/g; SAR(10 g) = 0.566 mW/g

Maximum value of SAR (measured) = 0.834 mW/g



0 dB = 0.834mW/g

Fig. 26 850 MHz CH251

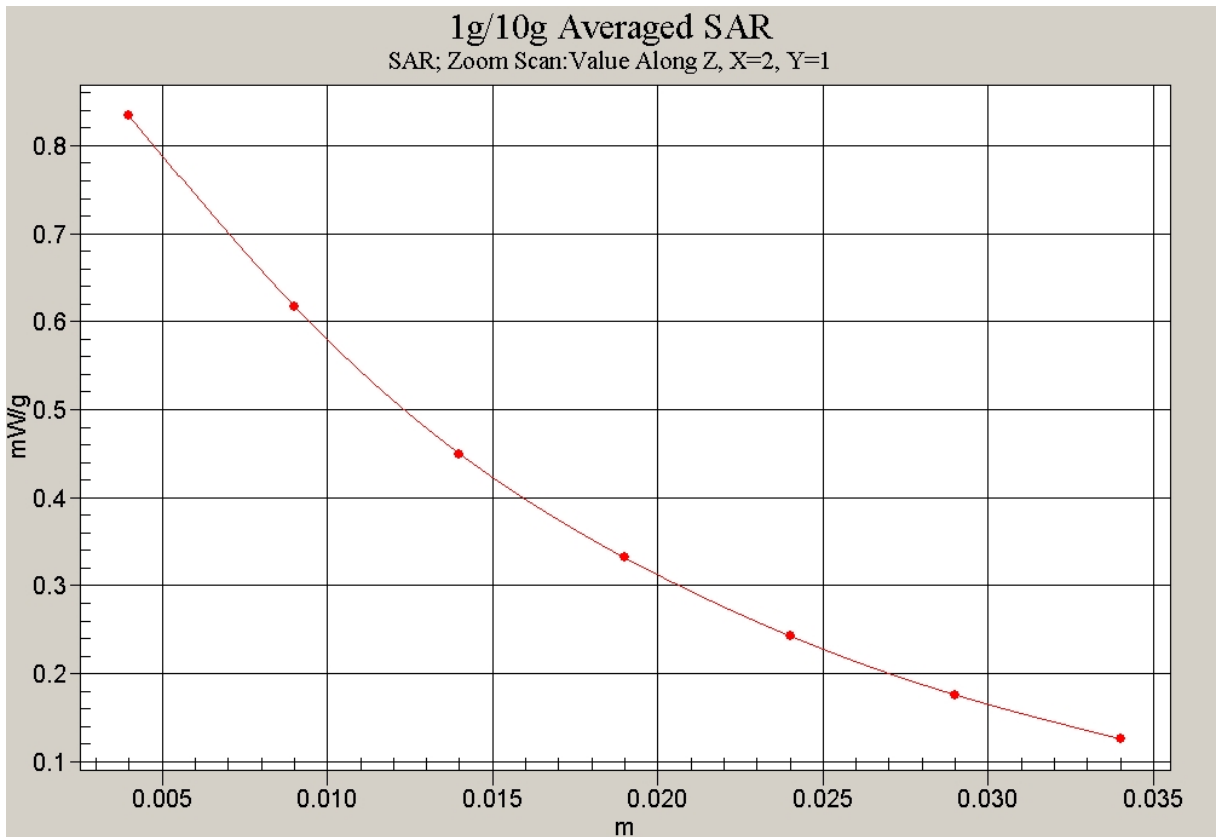


Fig. 26-1 Z-Scan at power reference point (850 MHz CH251)

850 Body Towards Ground Middle with GPRS

Date/Time: 2010-3-28 14:07:20

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.93$ mho/m; $\epsilon_r = 53.6$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.813 mW/g

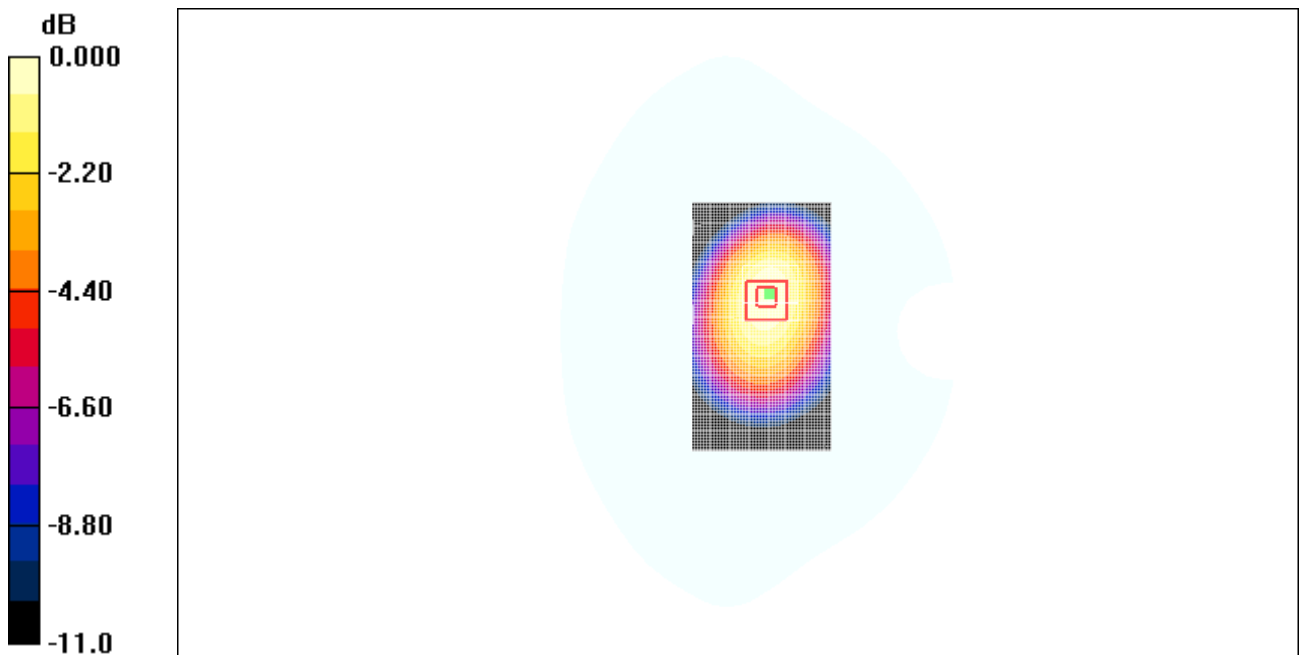
Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 26.0 V/m; Power Drift = 0.007 dB

Peak SAR (extrapolated) = 1.03 W/kg

SAR(1 g) = 0.763 mW/g; SAR(10 g) = 0.532 mW/g

Maximum value of SAR (measured) = 0.796 mW/g



0 dB = 0.796mW/g

Fig. 27 850 MHz CH190

850 Body Towards Ground Low with GPRS

Date/Time: 2010-3-28 14:22:36

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used: $f = 825$ MHz; $\sigma = 0.913$ mho/m; $\epsilon_r = 53.7$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.776 mW/g

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

Reference Value = 25.2 V/m; Power Drift = 0.063 dB

Peak SAR (extrapolated) = 0.963 W/kg

SAR(1 g) = 0.719 mW/g; SAR(10 g) = 0.503 mW/g

Maximum value of SAR (measured) = 0.749 mW/g

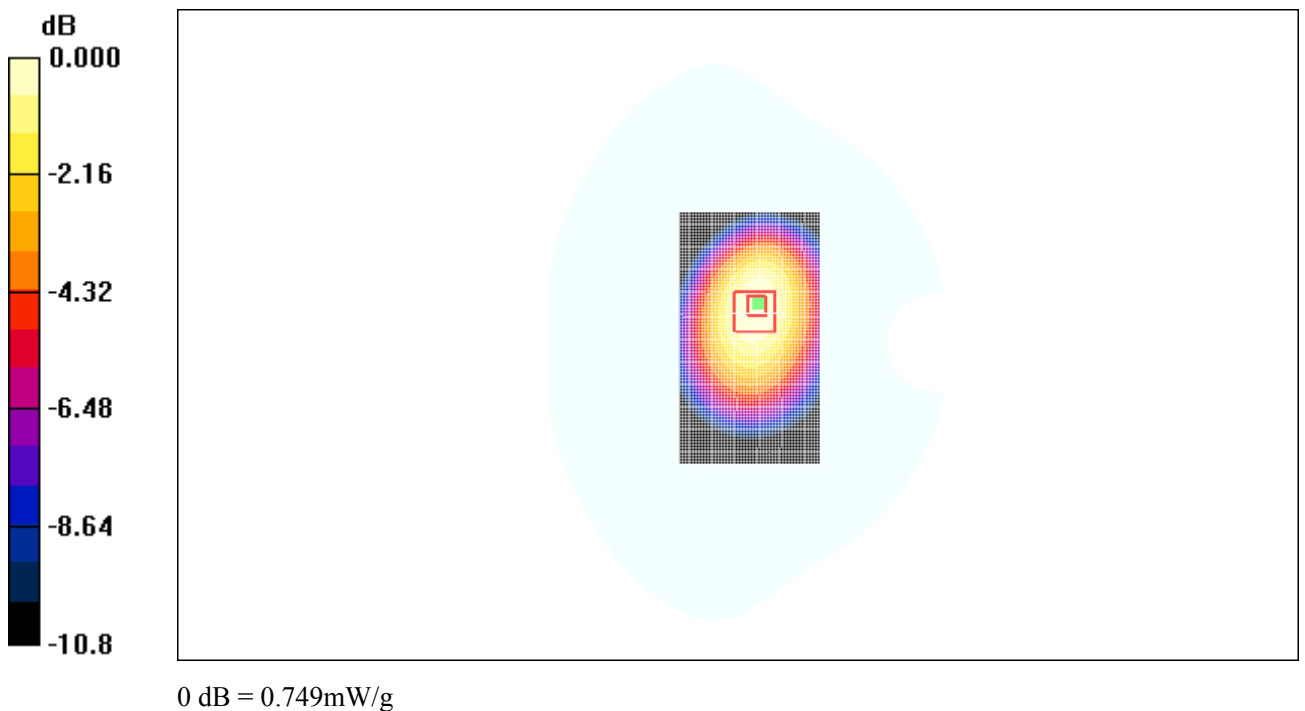


Fig. 28 850 MHz CH128

850 Body Towards Phantom High with GPRS

Date/Time: 2010-3-28 14:38:14

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used (interpolated): $f = 848.8$ MHz; $\sigma = 0.94$ mho/m; $\epsilon_r = 53.5$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.632 mW/g

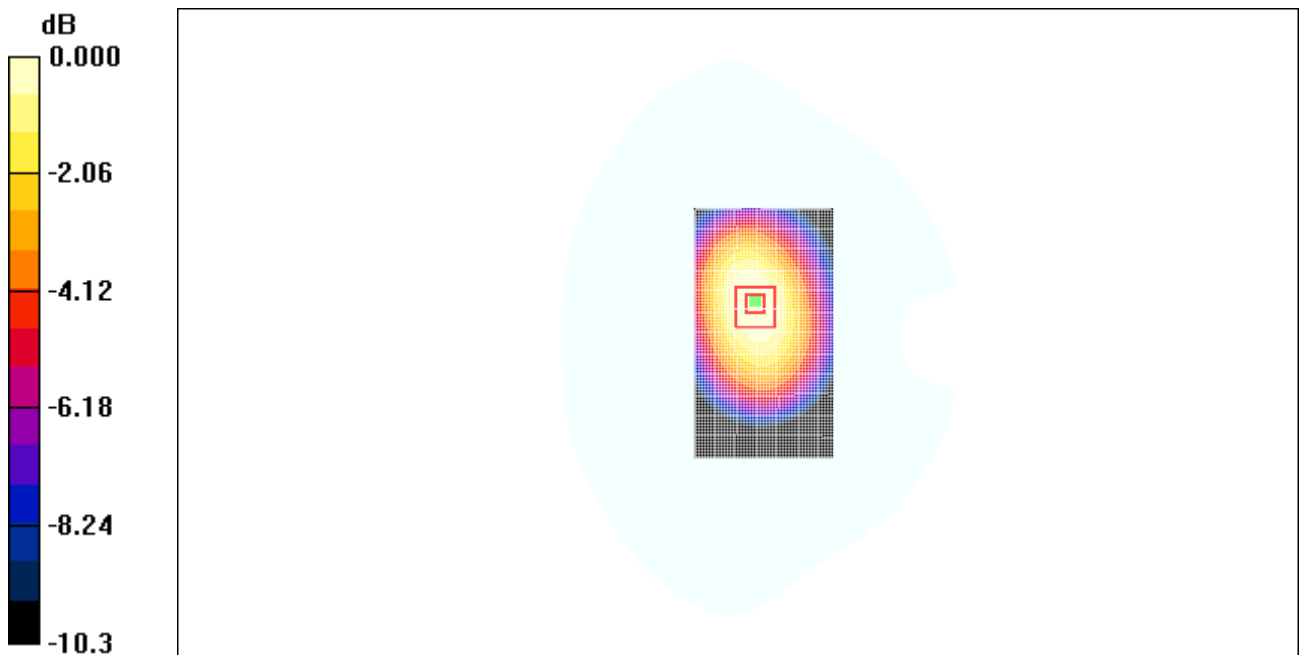
Toward Phantom High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 24.8 V/m; Power Drift = -0.198 dB

Peak SAR (extrapolated) = 0.786 W/kg

SAR(1 g) = 0.587 mW/g; SAR(10 g) = 0.412 mW/g

Maximum value of SAR (measured) = 0.603 mW/g



0 dB = 0.603mW/g

Fig. 29 850 MHz CH251

850 Body Towards Phantom Middle with GPRS

Date/Time: 2010-3-28 14:53:31

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.93$ mho/m; $\epsilon_r = 53.6$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.569 mW/g

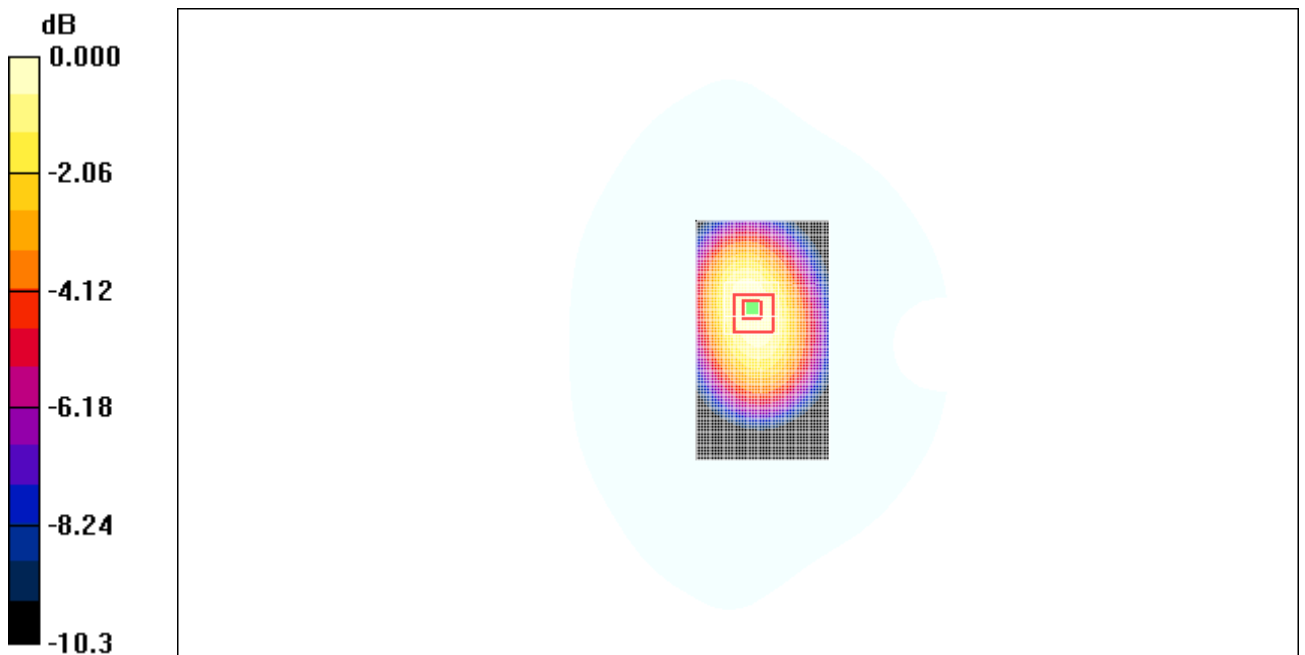
Toward Phantom Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 22.2 V/m; Power Drift = 0.000 dB

Peak SAR (extrapolated) = 0.719 W/kg

SAR(1 g) = 0.533 mW/g; SAR(10 g) = 0.374 mW/g

Maximum value of SAR (measured) = 0.548 mW/g



0 dB = 0.548mW/g

Fig. 30 850 MHz CH190

850 Body Towards Phantom Low with GPRS

Date/Time: 2010-3-28 15:08:53

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used: $f = 825 \text{ MHz}$; $\sigma = 0.913 \text{ mho/m}$; $\epsilon_r = 53.7$; $\rho = 1000 \text{ kg/m}^3$

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 Phantom Low/Area Scan (51x91x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 0.537 mW/g

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

Reference Value = 21.5 V/m ; Power Drift = 0.044 dB

Peak SAR (extrapolated) = 0.672 W/kg

SAR(1 g) = 0.501 mW/g ; SAR(10 g) = 0.352 mW/g

Maximum value of SAR (measured) = 0.517 mW/g

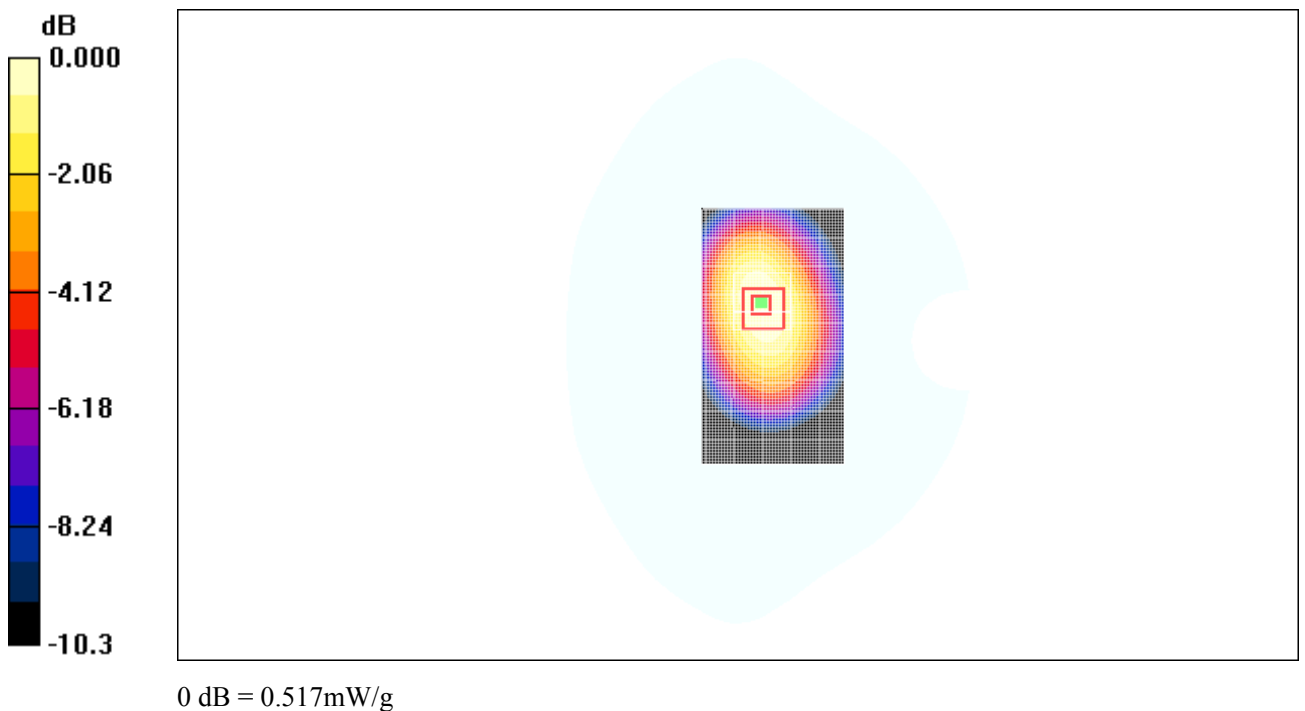


Fig. 31 850 MHz CH128

850 Body Towards Ground High with Headset__CCB31B0A10C0

Date/Time: 2010-3-28 15:26:01

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used (interpolated): $f = 848.8$ MHz; $\sigma = 0.94$ mho/m; $\epsilon_r = 53.5$; $\rho = 1000$ kg/m³

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(6.22, 6.22, 6.22)

Toward Ground High/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.811 mW/g

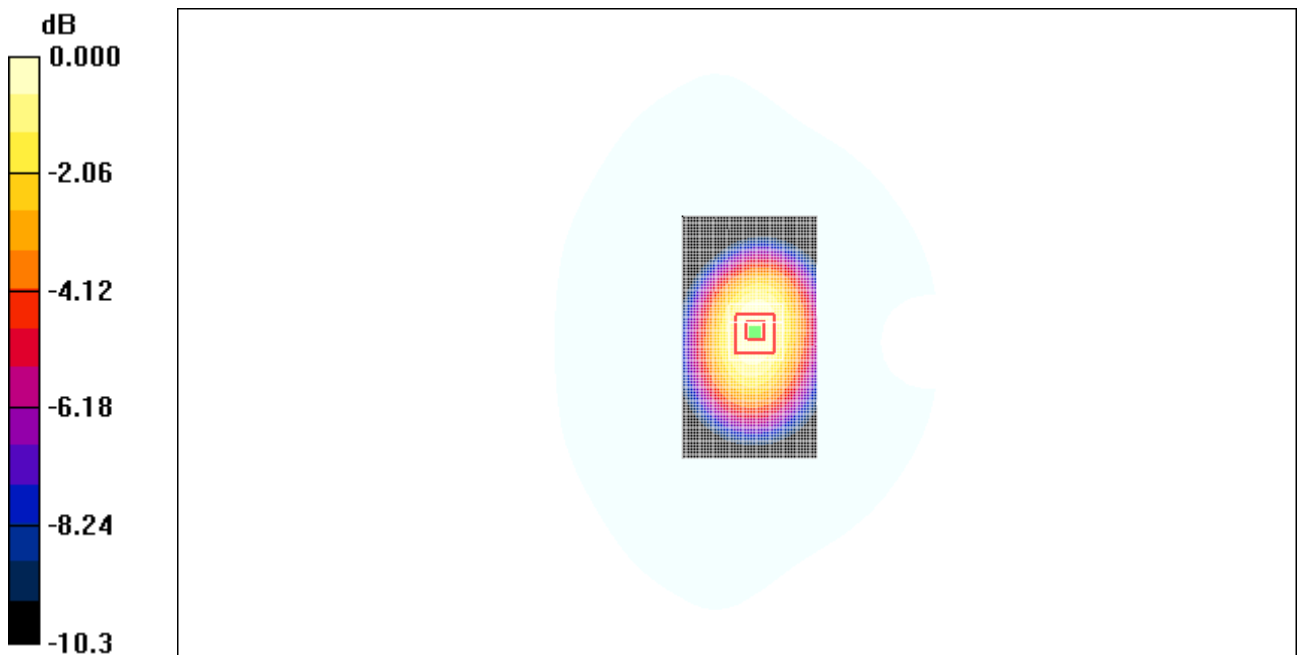
Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 27.8 V/m; Power Drift = -0.001 dB

Peak SAR (extrapolated) = 1.01 W/kg

SAR(1 g) = 0.755 mW/g; SAR(10 g) = 0.525 mW/g

Maximum value of SAR (measured) = 0.779 mW/g



0 dB = 0.779mW/g

Fig. 32 850 MHz CH251

850 Body Towards Ground High with Headset__CCB31B0A11C0

Date/Time: 2010-3-28 15:43:36

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used (interpolated): $f = 848.8$ MHz; $\sigma = 0.94$ mho/m; $\epsilon_r = 53.5$; $\rho = 1000$ kg/m³

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(6.22, 6.22, 6.22)

Toward Ground High/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.782 mW/g

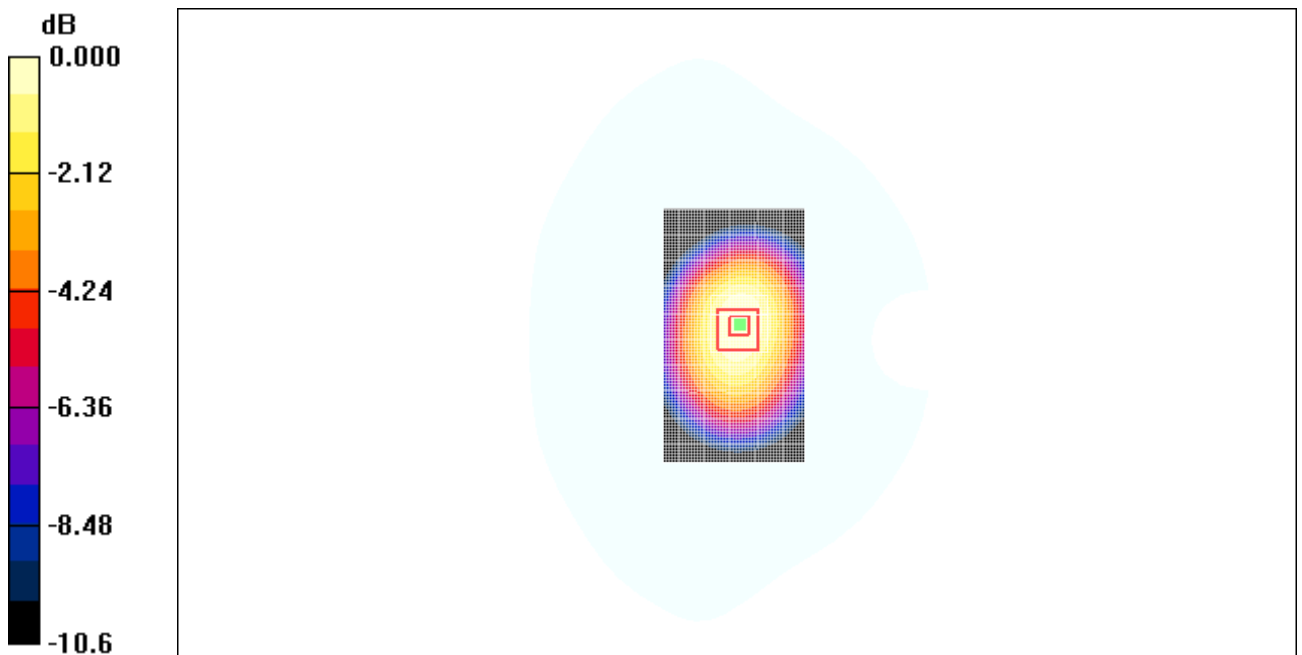
Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 27.1 V/m; Power Drift = -0.006 dB

Peak SAR (extrapolated) = 0.988 W/kg

SAR(1 g) = 0.731 mW/g; SAR(10 g) = 0.509 mW/g

Maximum value of SAR (measured) = 0.746 mW/g



0 dB = 0.746mW/g

Fig. 33 850 MHz CH251

1900 Body Towards Ground High with GPRS

Date/Time: 2010-3-29 13:51:21

Electronics: DAE4 Sn771

Medium: Body 1900 MHz

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 51.9$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.841 mW/g

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

Reference Value = 7.57 V/m; Power Drift = -0.033 dB

Peak SAR (extrapolated) = 1.13 W/kg

SAR(1 g) = 0.680 mW/g; SAR(10 g) = 0.395 mW/g

Maximum value of SAR (measured) = 0.688 mW/g

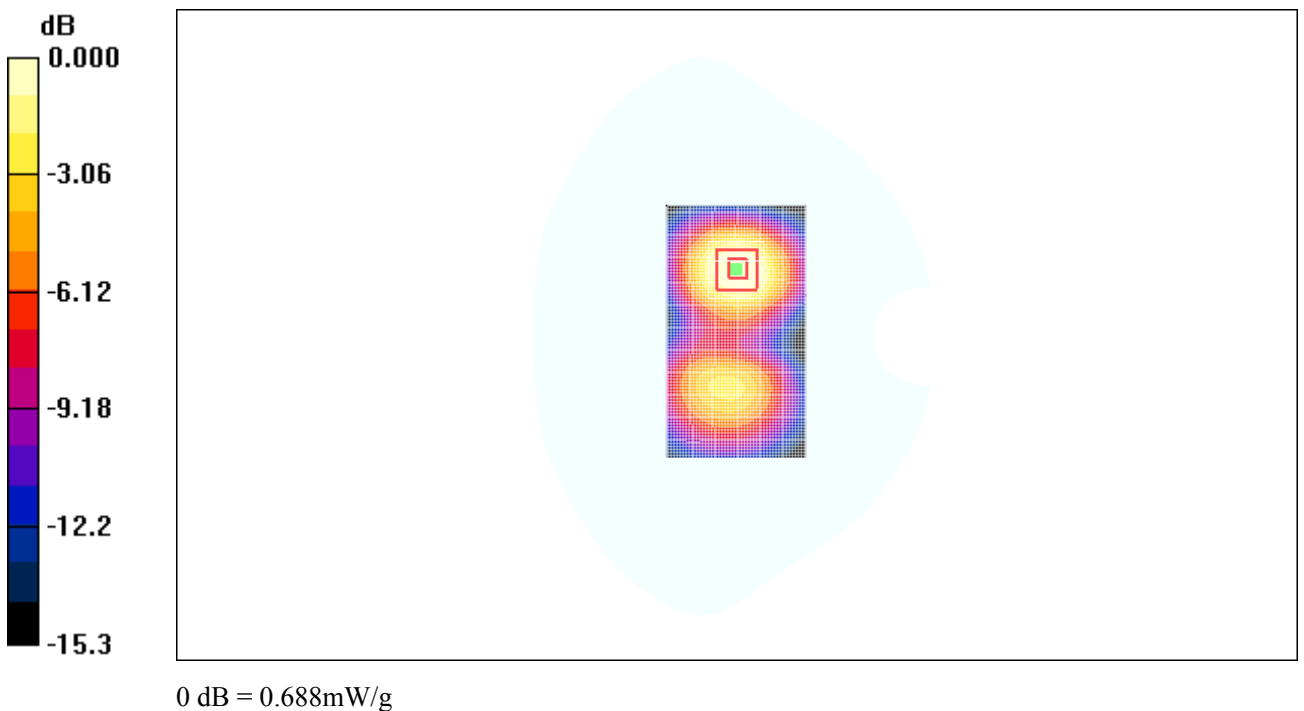


Fig. 34 1900 MHz CH810

1900 Body Towards Ground Middle with GPRS

Date/Time: 2010-3-29 14:06:35

Electronics: DAE4 Sn771

Medium: Body 1900 MHz

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 52.0$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.946 mW/g

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

Reference Value = 8.37 V/m; Power Drift = 0.063 dB

Peak SAR (extrapolated) = 1.26 W/kg

SAR(1 g) = 0.763 mW/g; SAR(10 g) = 0.443 mW/g

Maximum value of SAR (measured) = 0.775 mW/g

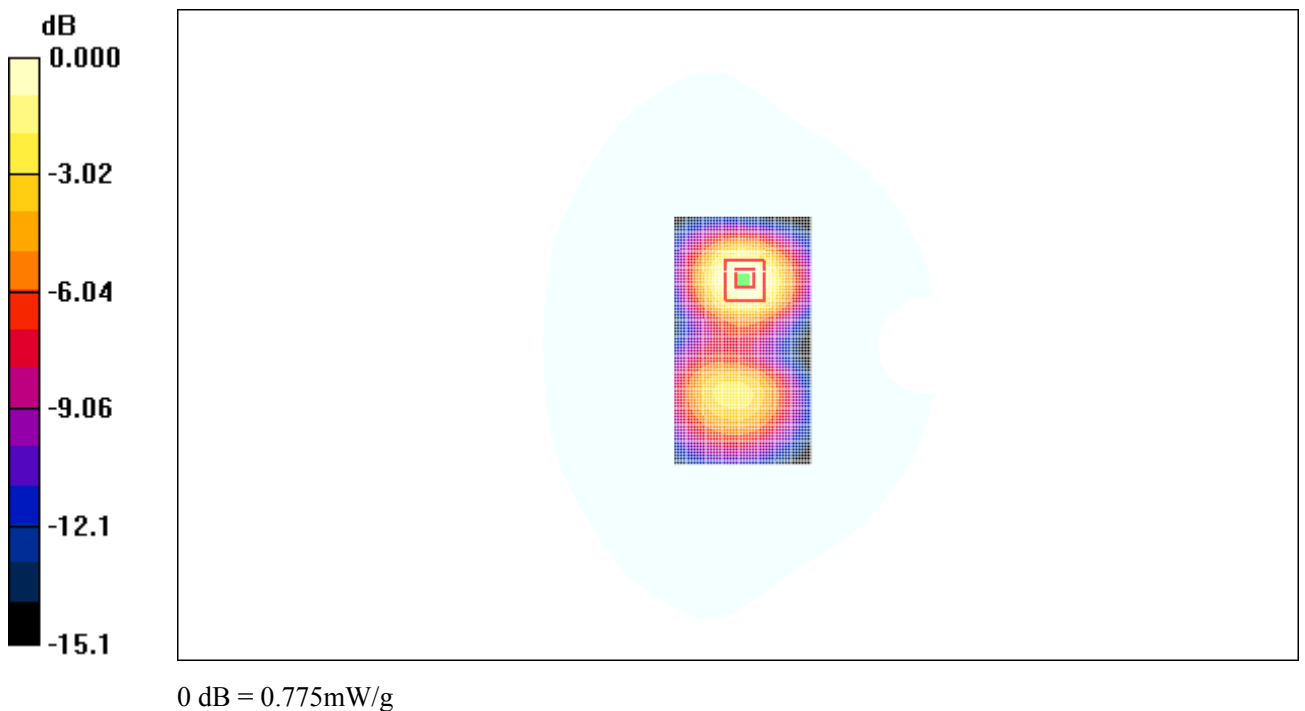


Fig. 35 1900 MHz CH661

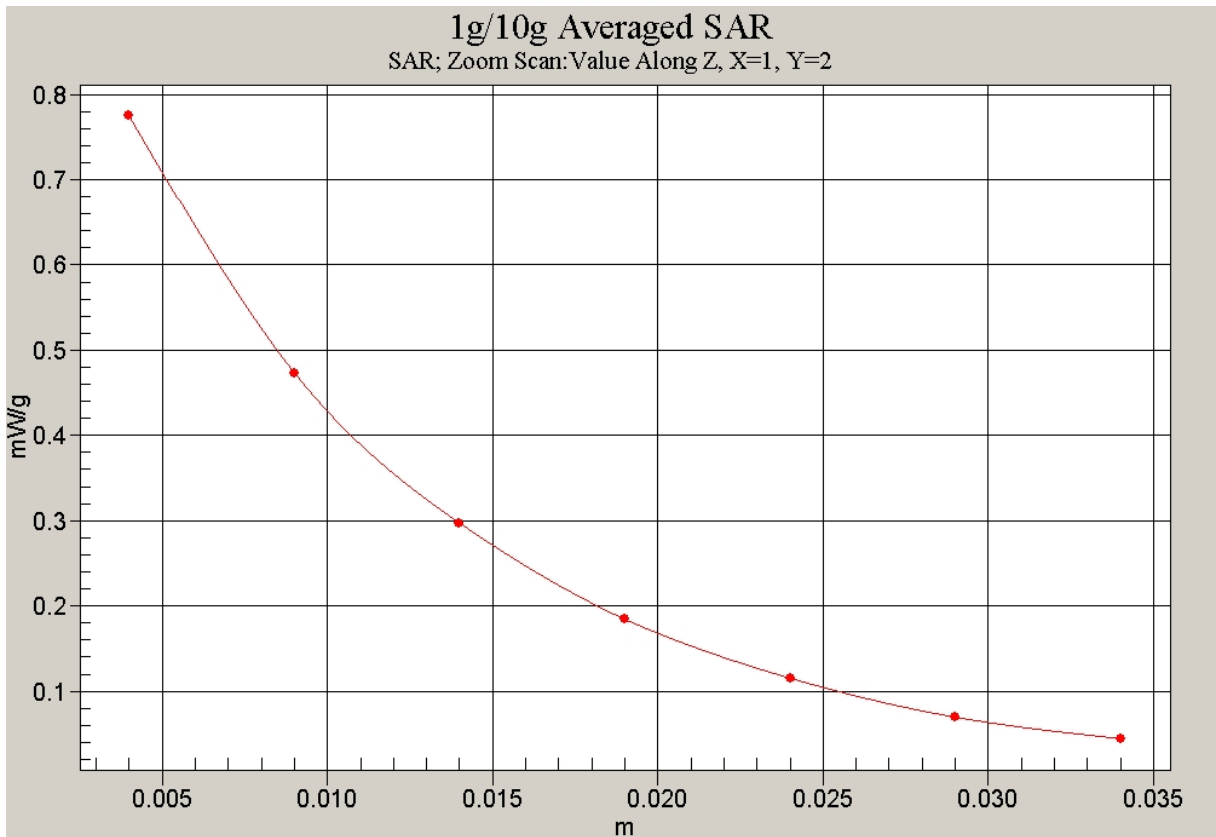


Fig. 35-1 Z-Scan at power reference point (1900 MHz CH661)

1900 Body Towards Ground Low with GPRS

Date/Time: 2010-3-29 14:21:49

Electronics: DAE4 Sn771

Medium: Body 1900 MHz

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.49$ mho/m; $\epsilon_r = 52.0$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

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

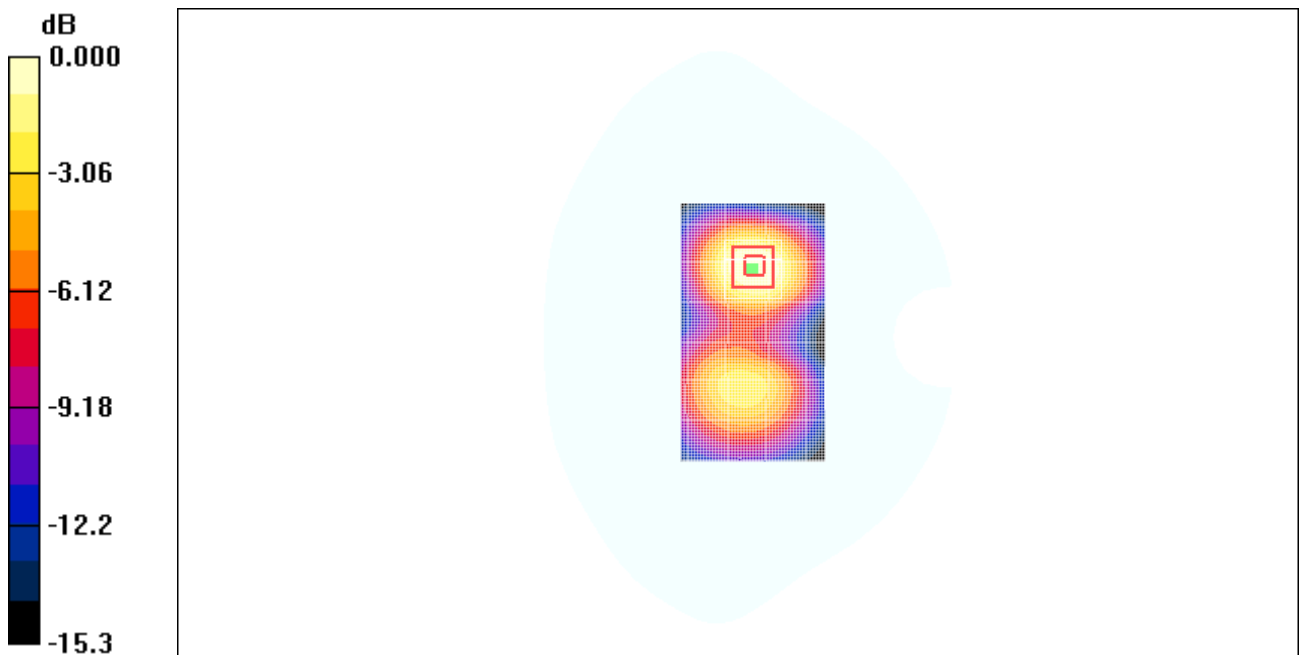
Toward Ground Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.04 V/m; Power Drift = 0.033 dB

Peak SAR (extrapolated) = 1.24 W/kg

SAR(1 g) = 0.754 mW/g; SAR(10 g) = 0.438 mW/g

Maximum value of SAR (measured) = 0.768 mW/g



0 dB = 0.768mW/g

Fig. 36 1900 MHz CH512

1900 Body Towards Phantom High with GPRS

Date/Time: 2010-3-29 14:37:20

Electronics: DAE4 Sn771

Medium: Body 1900 MHz

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 51.9$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.404 mW/g

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

Reference Value = 7.85 V/m; Power Drift = -0.036 dB

Peak SAR (extrapolated) = 0.561 W/kg

SAR(1 g) = 0.359 mW/g; SAR(10 g) = 0.221 mW/g

Maximum value of SAR (measured) = 0.360 mW/g

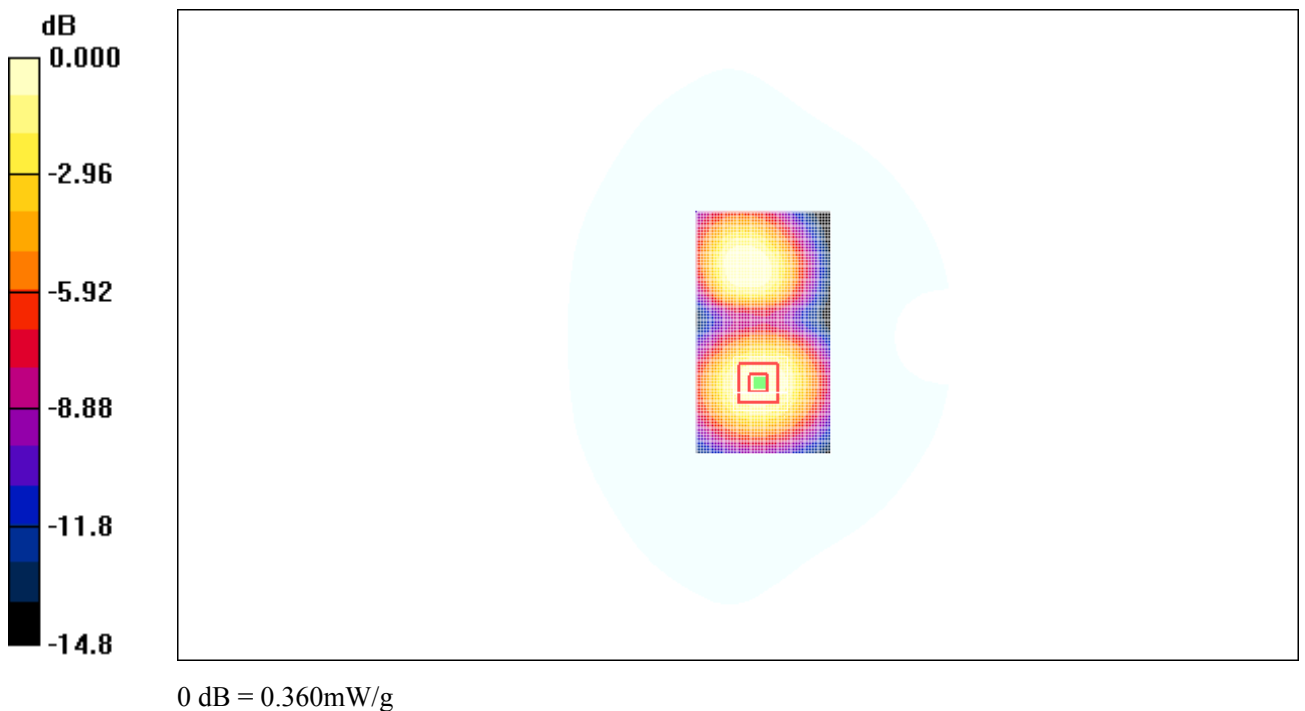


Fig. 37 1900 MHz CH810

1900 Body Towards Phantom Middle with GPRS

Date/Time: 2010-3-29 14:52:34

Electronics: DAE4 Sn771

Medium: Body 1900 MHz

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 52.0$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.470 mW/g

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

Reference Value = 8.99 V/m; Power Drift = -0.128 dB

Peak SAR (extrapolated) = 0.647 W/kg

SAR(1 g) = 0.420 mW/g; SAR(10 g) = 0.262 mW/g

Maximum value of SAR (measured) = 0.425 mW/g

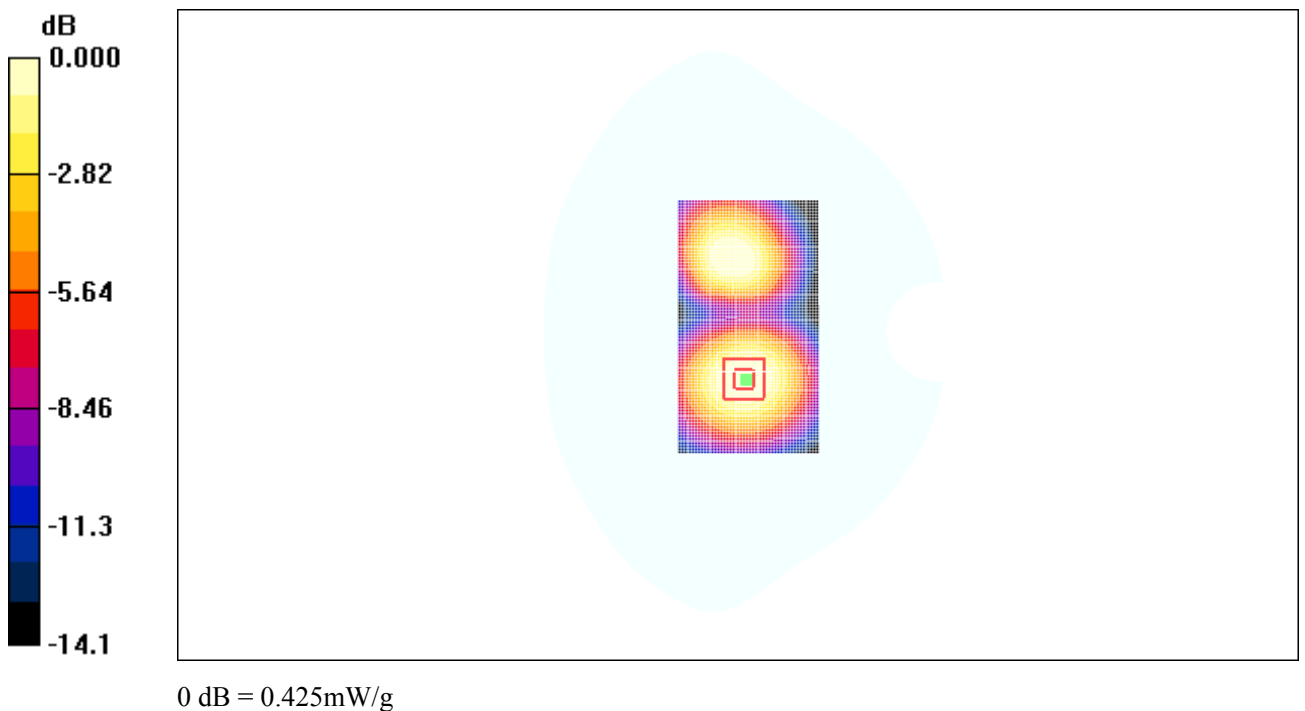


Fig. 38 1900 MHz CH661

1900 Body Towards Phantom Low with GPRS

Date/Time: 2010-3-29 15:07:54

Electronics: DAE4 Sn771

Medium: Body 1900 MHz

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.49$ mho/m; $\epsilon_r = 52.0$; $\rho = 1000$ kg/m³

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 Phantom Low/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.486 mW/g

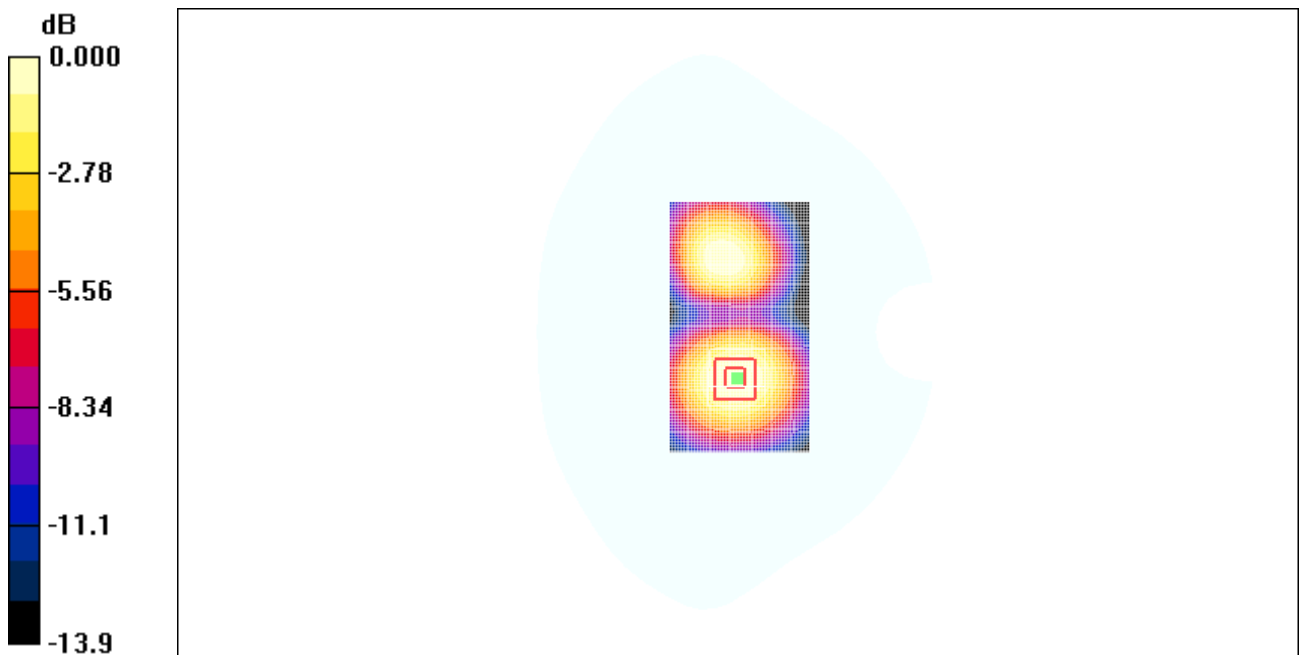
Toward Phantom Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.61 V/m; Power Drift = -0.024 dB

Peak SAR (extrapolated) = 0.665 W/kg

SAR(1 g) = 0.434 mW/g; SAR(10 g) = 0.271 mW/g

Maximum value of SAR (measured) = 0.439 mW/g



0 dB = 0.439mW/g

Fig. 39 1900 MHz CH512

1900 Body Towards Ground Middle with Headset__CCB31B0A10C0

Date/Time: 2010-3-29 15:24:13

Electronics: DAE4 Sn771

Medium: Body 1900 MHz

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 52.0$; $\rho = 1000$ kg/m³

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(4.68, 4.68, 4.68)

Toward Ground Middle/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.841 mW/g

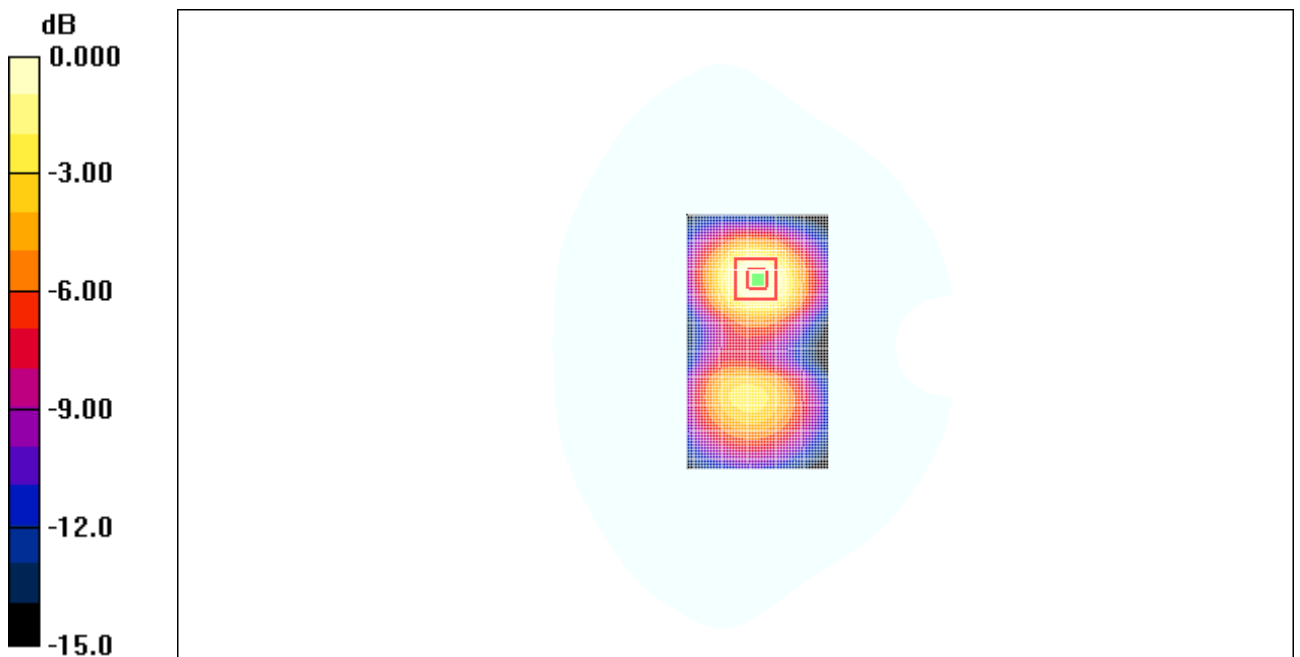
Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.50 V/m; Power Drift = 0.072 dB

Peak SAR (extrapolated) = 1.14 W/kg

SAR(1 g) = 0.688 mW/g; SAR(10 g) = 0.399 mW/g

Maximum value of SAR (measured) = 0.686 mW/g



0 dB = 0.686mW/g

Fig. 40 1900 MHz CH661

1900 Body Towards Ground Middle with Headset__CCB31B0A11C0

Date/Time: 2010-3-29 15:41:23

Electronics: DAE4 Sn771

Medium: Body 1900 MHz

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 52.0$; $\rho = 1000$ kg/m³

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(4.68, 4.68, 4.68)

Toward Ground Middle/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.812 mW/g

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

Reference Value = 8.71 V/m; Power Drift = -0.112 dB

Peak SAR (extrapolated) = 1.09 W/kg

SAR(1 g) = 0.659 mW/g; SAR(10 g) = 0.383 mW/g

Maximum value of SAR (measured) = 0.662 mW/g

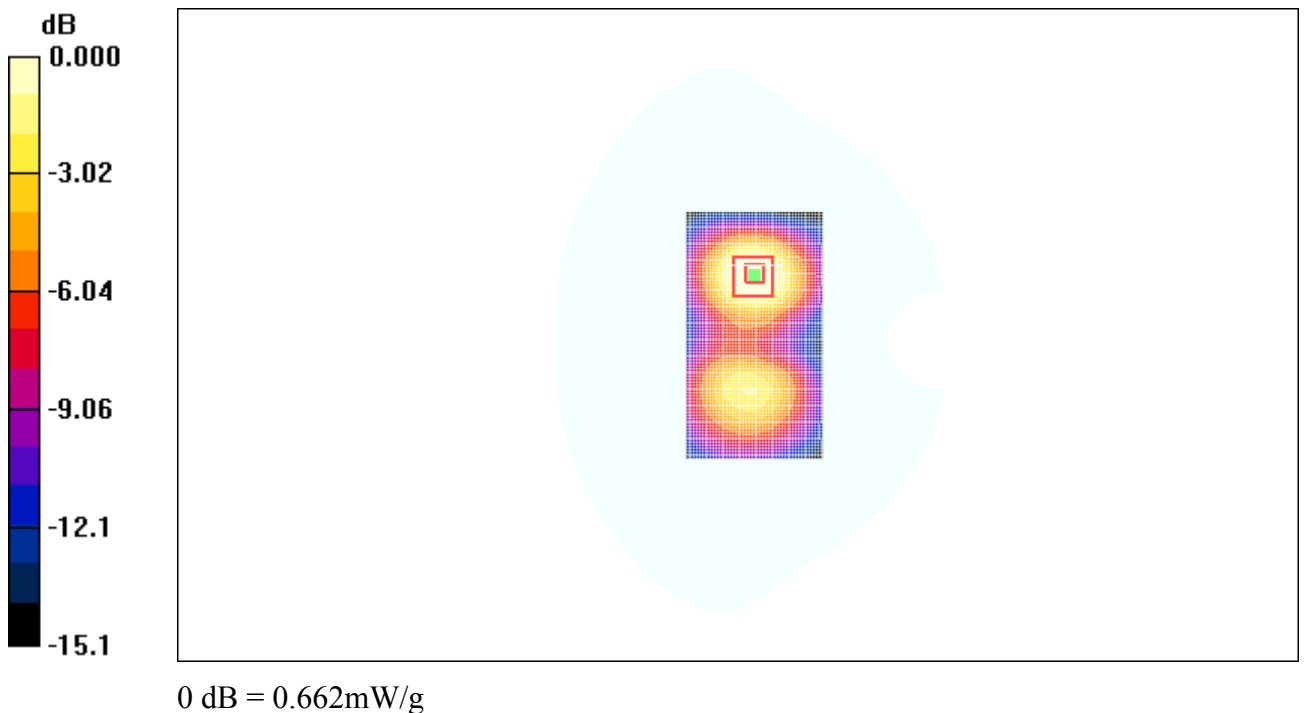


Fig. 41 1900 MHz CH661

850 Body Towards Ground High with GPRS with battery CAB3130000C1

Date/Time: 2010-3-28 16:02:40

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used (interpolated): $f = 848.8$ MHz; $\sigma = 0.94$ mho/m; $\epsilon_r = 53.5$; $\rho = 1000$ kg/m³

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 (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.856 mW/g

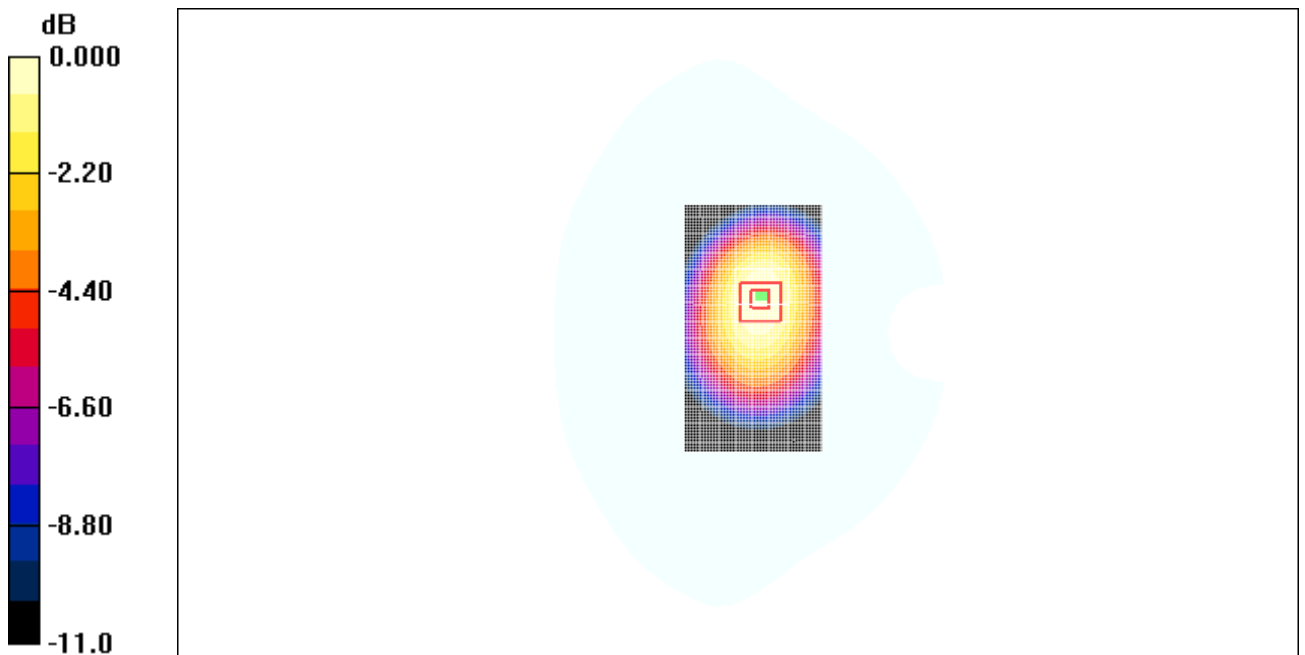
Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 26.4 V/m; Power Drift = -0.099 dB

Peak SAR (extrapolated) = 1.06 W/kg

SAR(1 g) = 0.790 mW/g; SAR(10 g) = 0.548 mW/g

Maximum value of SAR (measured) = 0.816 mW/g



0 dB = 0.816mW/g

Fig. 42 850 MHz CH251

ANNEX D SYSTEM VALIDATION RESULTS

835MHz

Date/Time: 2010-3-28 7:18:56

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.86 \text{ mho/m}$; $\epsilon_r = 40.6$; $\rho = 1000 \text{ kg/m}^3$

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: $dx=10\text{mm}$, $dy=10\text{mm}$
Maximum value of SAR (interpolated) = 2.47 mW/g

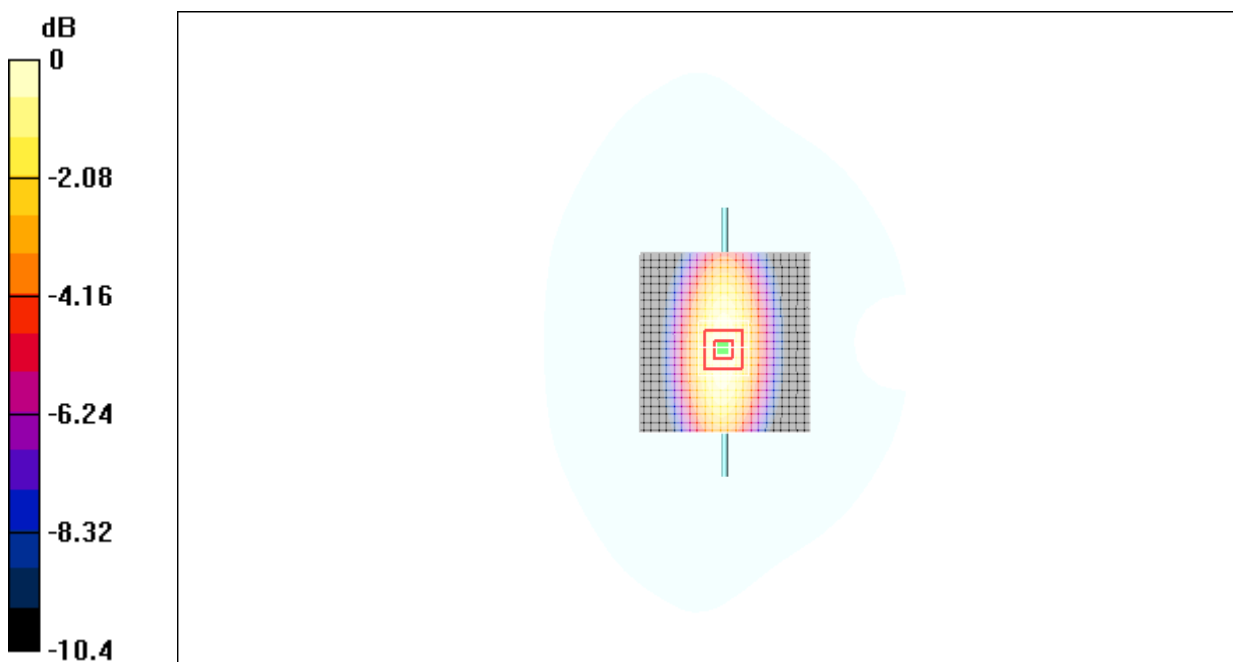
System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 53.2 V/m; Power Drift = -0.054 dB

Peak SAR (extrapolated) = 3.31 W/kg

SAR(1 g) = 2.25 mW/g; SAR(10 g) = 1.49 mW/g

Maximum value of SAR (measured) = 2.40 mW/g



0 dB = 2.40mW/g

Fig.43 validation 835MHz 250mW

835MHz

Date/Time: 2010-3-28 13:17:29

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.92 \text{ mho/m}$; $\epsilon_r = 53.6$; $\rho = 1000 \text{ kg/m}^3$

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: $dx=10\text{mm}$, $dy=10\text{mm}$
Maximum value of SAR (interpolated) = 2.55 mW/g

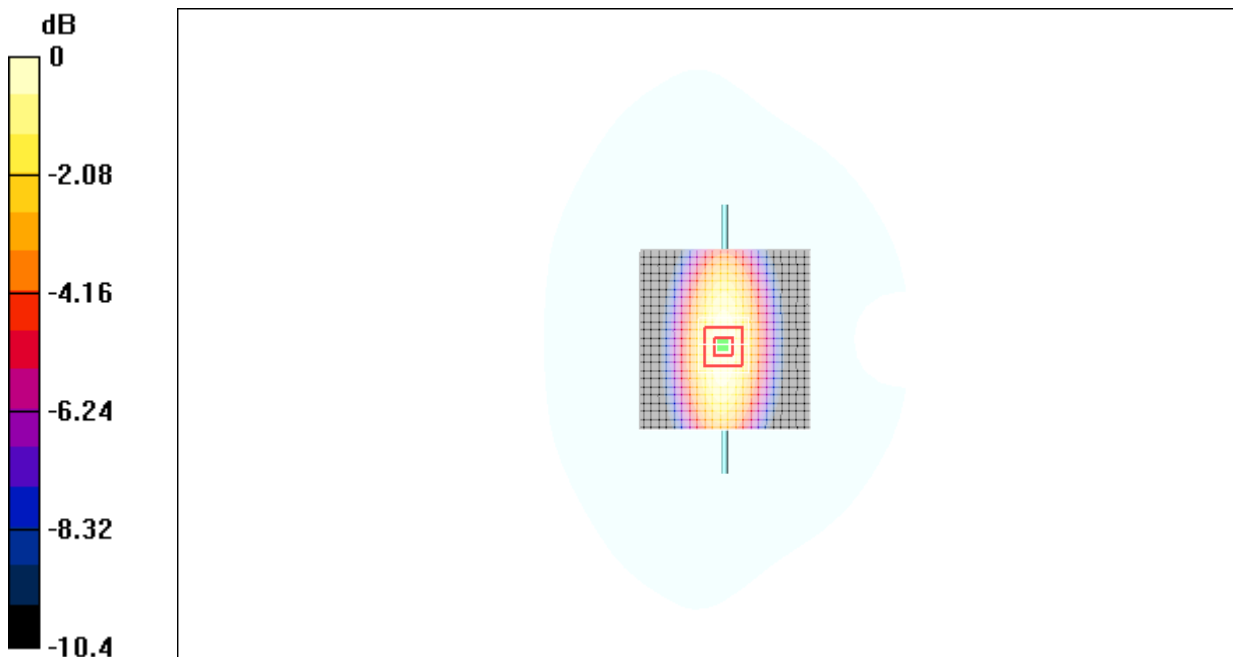
System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$,
 $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 51.5 V/m; Power Drift = 0.071 dB

Peak SAR (extrapolated) = 3.39 W/kg

SAR(1 g) = 2.35 mW/g; SAR(10 g) = 1.49 mW/g

Maximum value of SAR (measured) = 2.43 mW/g



0 dB = 2.43mW/g

Fig.44 validation 835MHz 250mW

1900MHz

Date/Time: 2010-3-29 7:32:04

Electronics: DAE4 Sn771

Medium: Head 1900 MHz

Medium parameters used: $f = 1900 \text{ MHz}$; $\sigma = 1.39 \text{ mho/m}$; $\epsilon_r = 38.7$; $\rho = 1000 \text{ kg/m}^3$

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: $dx=10\text{mm}$, $dy=10\text{mm}$
Maximum value of SAR (interpolated) = 11.4 mW/g

System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$,
 $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 90.2 V/m ; Power Drift = 0.038 dB

Peak SAR (extrapolated) = 15.1 W/kg

SAR(1 g) = 9.75 mW/g ; SAR(10 g) = 4.83 mW/g

Maximum value of SAR (measured) = 10.5 mW/g

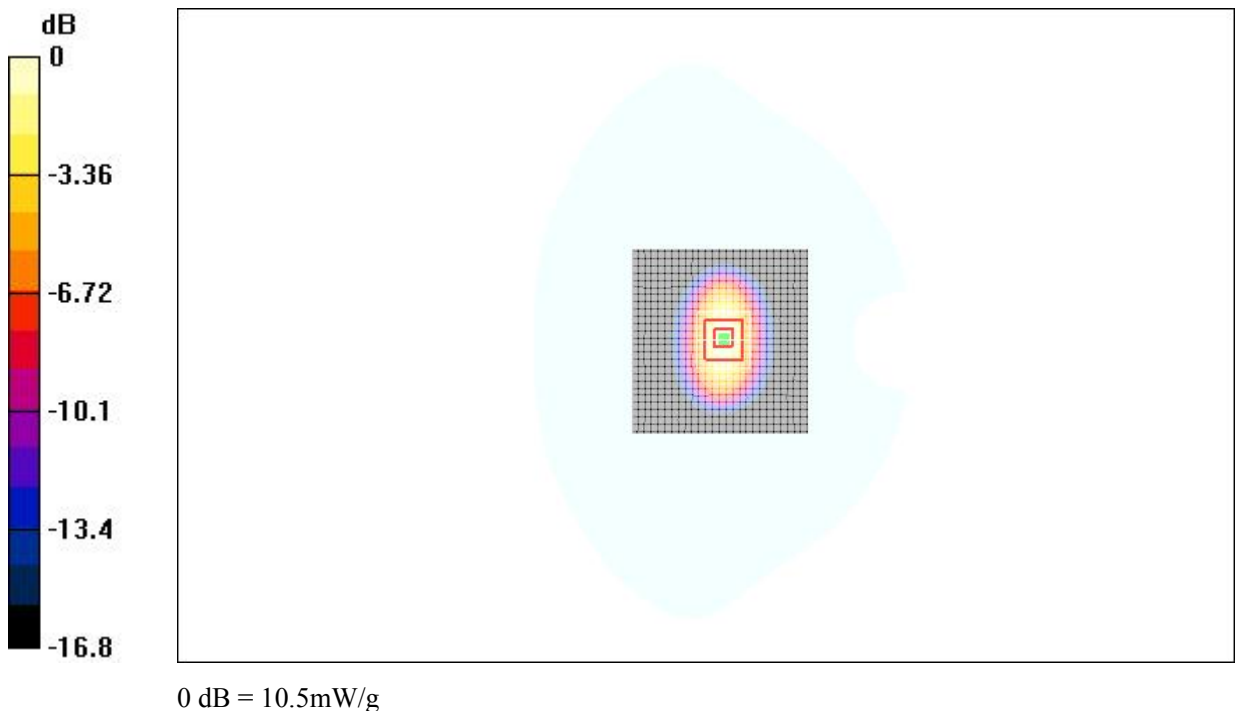


Fig.45 validation 1900MHz 250mW

1900MHz

Date/Time: 2010-3-29 13:20:03

Electronics: DAE4 Sn771

Medium: Body 1900 MHz

Medium parameters used: $f = 1900 \text{ MHz}$; $\sigma = 1.53 \text{ mho/m}$; $\epsilon_r = 51.9$; $\rho = 1000 \text{ kg/m}^3$

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: $dx=10\text{mm}$, $dy=10\text{mm}$
Maximum value of SAR (interpolated) = 11.3 mW/g

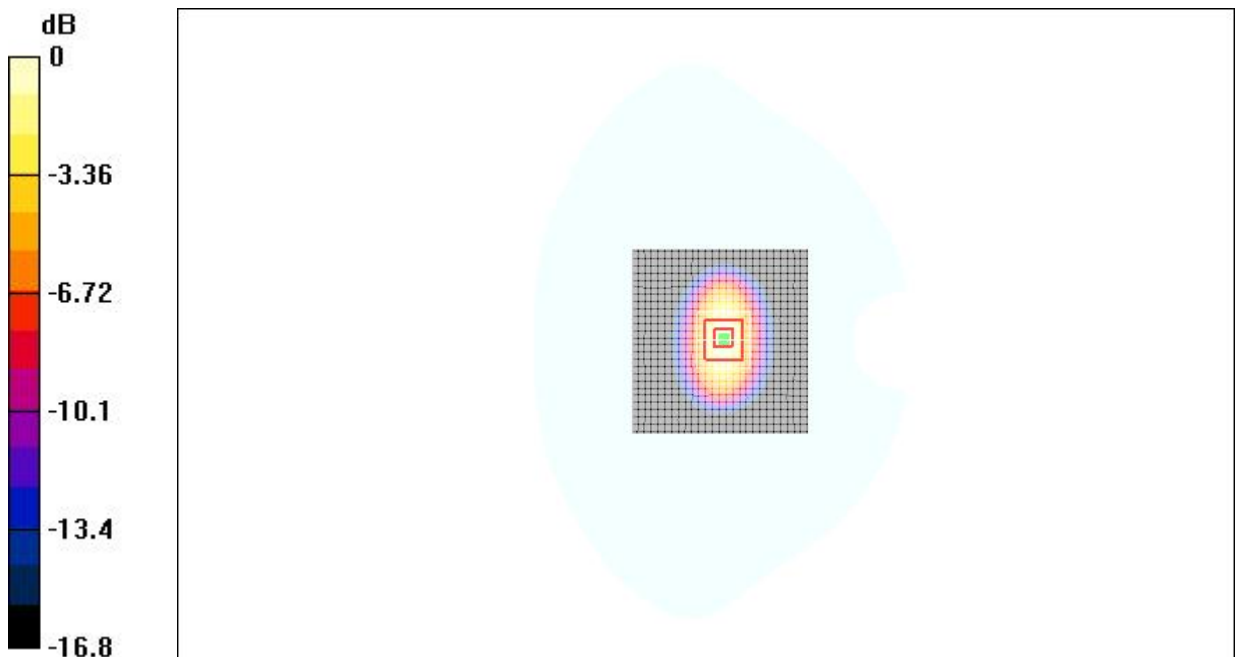
System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$,
 $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 91.3 V/m ; Power Drift = -0.069 dB

Peak SAR (extrapolated) = 16.0 W/kg

SAR(1 g) = 10.1 mW/g ; SAR(10 g) = 5.21 mW/g

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



0 dB = 10.8mW/g

Fig.46 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
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **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)°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	
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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
S 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**

Glossary:

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

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- **NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not effect the E^2 -field uncertainty inside TSL (see below *ConvF*).
- **NORM(f)_{x,y,z}** = NORM_{x,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*.
- **DCP_{x,y,z}**: DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- **ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM_{x,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.

ES3DV3 SN: 3149

September 25, 2009

Probe ES3DV3

SN: 3149

Manufactured: June 12, 2007

Calibrated: September 25, 2009

Calibrated for DASY4 System

ES3DV3 SN: 3149

September 25, 2009

DASY – Parameters of Probe: ES3DV3 SN:3149

Sensitivity in Free Space^A

Diode Compression^B

NormX	1.14±10.1%	$\mu V/(V/m)^2$	DCP X	94mV
NormY	1.23±10.1%	$\mu V/(V/m)^2$	DCP Y	95mV
NormZ	1.29±10.1%	$\mu V/(V/m)^2$	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 distribution Corresponds to a coverage probability of approximately 95%.

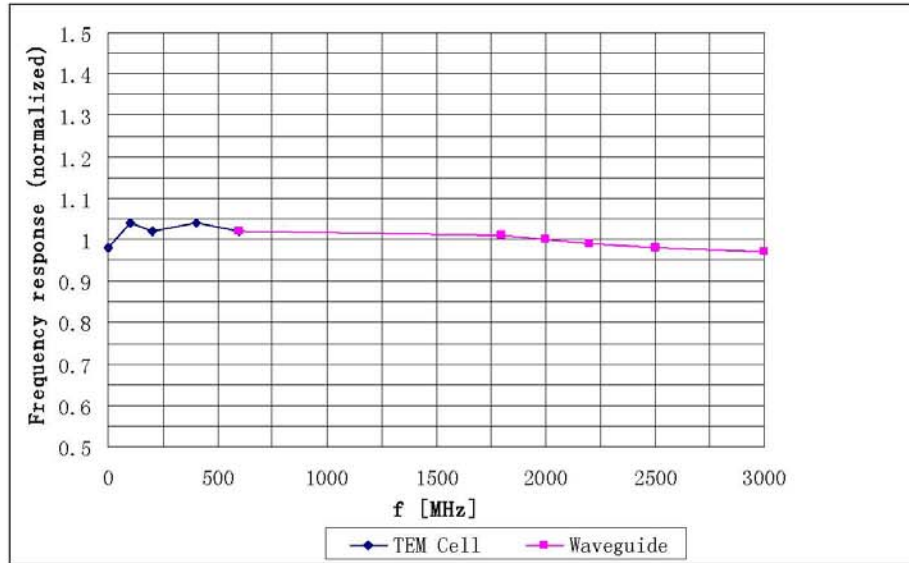
^A The uncertainties of NormX,Y,Z do not affect the E^2 -field uncertainty inside TSL (see Page 8).

^B Numerical linearization parameter: uncertainty not required.

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Frequency Response of E-Field



Uncertainty of Frequency Response of E-field: $\pm 5.0\%$ (k=2)