



# SAR TEST REPORT

No. 2010SAR00068

For

**TCT Mobile Limited**

**GSM850/PCS1900 dual band Mobile Phone**

**U10 Faces B&W No FM US**

**OT-104A**

With

**Hardware Version: PIO**

**Software Version: V76G**

**FCCID: RAD144**

**Issued Date: 2010-08-11**



**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

No. 52, Huayuan Bei Road, Haidian District, Beijing, P. R. China 100191.

Tel:+86(0)10-62304633-2079, Fax:+86(0)10-62304793 Email:welcome@emcite.com. [www.emcite.com](http://www.emcite.com)

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## 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: March 11, 2010  
Testing End Date: August 2, 2010

### 1.4 Signature



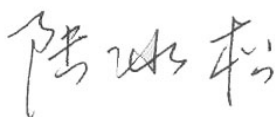
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Lin Xiaojun  
(Prepared this test report)



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Sun Qian  
(Reviewed this test report)



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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  
Telephone: 0086-21-61460890  
Fax: 0086-21-61460602

### 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  
Telephone: 0086-21-61460890  
Fax: 0086-21-61460602

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

#### 3.1 About EUT

EUT Description: GSM850/PCS1900 dual band Mobile Phone  
 Model Name: U10 Faces B&W No FM US  
 Marketing Name: OT-104A  
 GSM Frequency Band: GSM 850/GSM 1900

#### 3.2 Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	012396000010643	PIO	V76G

\*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	CAB2170000C2	BAK2009092500194	BAK
AE4	Battery	CAB2170000C1	B273960877A	BYD

\*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:** 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.

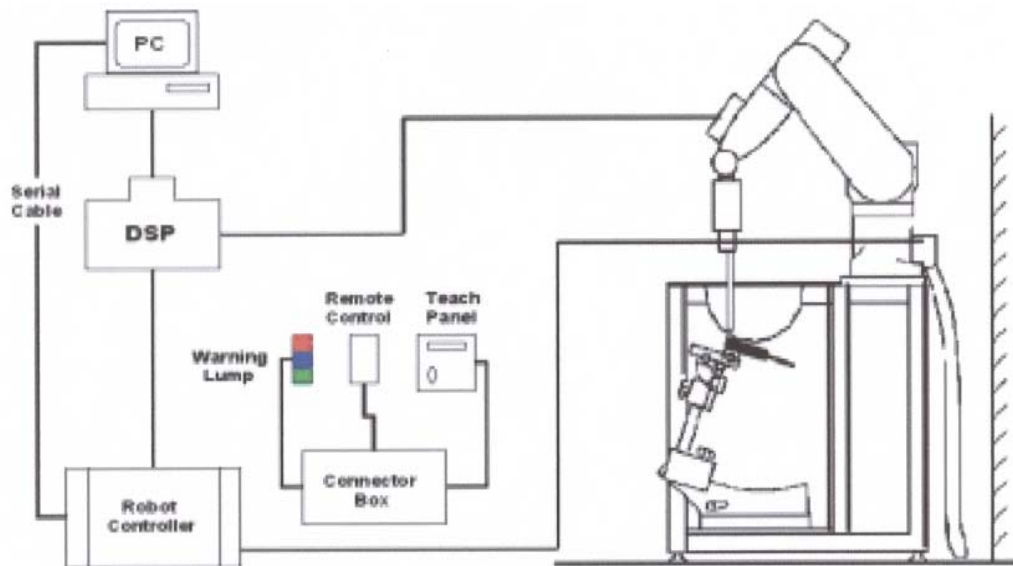
The EUT shall use its internal transmitter. The antenna(s), battery and accessories shall be those specified by the manufacturer. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output. If a wireless link is used, the antenna connected to the 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  $\pm 0.02\text{mm}$ . 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:  $\pm 0.2$  dB (30 MHz to 4 GHz)

Directivity       $\pm 0.2$  dB in HSL (rotation around probe axis)  
 $\pm 0.3$  dB in tissue material (rotation normal to probe axis)

Dynamic Range      5  $\mu$ W/g to > 100 mW/g; Linearity:  $\pm 0.2$  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  $\pm 0.25$ 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:  $\Delta t$  = Exposure time (30 seconds),  
 $C$  = Heat capacity of tissue (brain or muscle),  
 $\Delta T$  = Temperature increase due to RF exposure.

Or

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

Where:

$\sigma$  = Simulated tissue conductivity,  
 $\rho$  = Tissue density ( $\text{kg/m}^3$ ).



**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 repeatably positioned according to the FCC and CENELEC specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom).

### 5.5.2 Phantom

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

Shell Thickness	2±0.1 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:**  $\pm 0.02$  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 $\Omega$
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 and ERP 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 850	Measured Power (dBm)		
	128	190	251
32.06	32.05	32.03	
DCS1900	Measured Power (dBm)		
	512	661	810
29.63	29.58	29.54	

#### 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 8 to Table 13 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 41%. Liquid temperature during the test: 22.5°C			
/	Frequency	Permittivity $\epsilon$	Conductivity $\sigma$ (S/m)
Target value	850 MHz	41.5	0.90
	1900 MHz	40.0	1.40
Measurement value (Average of 10 tests)	850 MHz (March 11, 2010)	40.6	0.92
	1900 MHz (March 12, 2010)	39.5	1.43
	850 MHz (August 2, 2010)	41.2	0.90

**Table 5: Dielectric Performance of Body Tissue Simulating Liquid**

Measurement is made at temperature 23.0 °C and relative humidity 41%. Liquid temperature during the test: 22.5°C			
/	Frequency	Permittivity $\epsilon$	Conductivity $\sigma$ (S/m)
Target value	850 MHz	55.2	0.97
	1900 MHz	53.3	1.52
Measurement value (Average of 10 tests)	850 MHz (March 11, 2010)	54.1	0.95
	1900 MHz (March 12, 2010)	51.8	1.53
	850 MHz (August 2, 2010)	54.8	0.96

### 8.2 System Validation

**Table 6: System Validation of Head**

Measurement is made at temperature 23.0 °C and relative humidity 41%. Liquid temperature during the test: 22.5°C				
Liquid parameters	Dipole calibration Target value	Frequency	Permittivity $\epsilon$	Conductivity $\sigma$ (S/m)
		835 MHz	41.6	0.92
	1900 MHz	39.6	1.40	
	Actural Measurement value	835 MHz (March 11, 2010)	40.7	0.90
		1900 MHz (March 12, 2010)	39.5	1.43
		835 MHz (August 2, 2010)	41.3	0.89

	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
Verification results	835 MHz (March 11, 2010)	1.54	2.38	1.57	2.31	1.95%	-2.94%
	1900 MHz (March 12, 2010)	5.05	9.91	4.87	9.76	-3.56%	-1.51%
	835 MHz (August 2, 2010)	1.54	2.38	1.58	2.40	2.60%	0.84%

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 41%. Liquid temperature during the test: 22.5°C							
Liquid parameters	Dipole calibration Target value	Frequency	Permittivity $\epsilon$	Conductivity $\sigma$ (S/m)			
		835 MHz	54.5	0.97			
		1900 MHz	52.5	1.51			
	Actural Measurement value	835 MHz (March 11, 2010)	54.2	0.93			
		1900 MHz (March 12, 2010)	51.8	1.53			
		835 MHz (August 2, 2010)	55.0	0.95			
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 (March 11, 2010)	1.57	2.41	1.56	2.50	-0.64%	3.73%
	1900 MHz (March 12, 2010)	5.24	10.4	5.19	10.4	-0.95%	0.00%
	835 MHz (August 2, 2010)	1.57	2.41	1.59	2.45	1.27%	1.66%

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

### 8.3 Summary of Measurement Results

According to the client request, we use the data of report, No.2010SAR00016, for table 8 to table 11 and perform the measurement of new battery and new headset in the position of having maximum value for head and body (see table 12 and 13).

**Table 8: SAR Values (850MHz-Head)**

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)	0.690	0.999	0.002
Left hand, Touch cheek, Mid frequency (See Fig.2)	0.682	0.980	0.005
Left hand, Touch cheek, Bottom frequency (See Fig.3)	0.619	0.886	-0.120
Left hand, Tilt 15 Degree, Top frequency (See Fig.4)	0.263	0.364	-0.070
Left hand, Tilt 15 Degree, Mid frequency (See Fig.5)	0.273	0.374	-0.098
Left hand, Tilt 15 Degree, Bottom frequency (See Fig.6)	0.247	0.338	0.022
Right hand, Touch cheek, Top frequency (See Fig.7)	0.749	1.1	-0.138
Right hand, Touch cheek, Mid frequency (See Fig.8)	0.718	1.06	-0.170
Right hand, Touch cheek, Bottom frequency (See Fig.9)	0.647	0.947	-0.044
Right hand, Tilt 15 Degree, Top frequency (See Fig.10)	0.296	0.413	-0.038
Right hand, Tilt 15 Degree, Mid frequency (See Fig.11)	0.313	0.435	-0.041
Right hand, Tilt 15 Degree, Bottom frequency (See Fig.12)	0.286	0.396	-0.052

**Table 9: SAR Values (1900MHz-Head)**

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)	0.333	0.548	0.039
Left hand, Touch cheek, Mid frequency (See Fig.14)	0.363	0.595	0.016
Left hand, Touch cheek, Bottom frequency (See Fig.15)	0.369	0.603	0.090
Left hand, Tilt 15 Degree, Top frequency (See Fig.16)	0.235	0.389	0.023
Left hand, Tilt 15 Degree, Mid frequency (See Fig.17)	0.247	0.406	0.004
Left hand, Tilt 15 Degree, Bottom frequency (See Fig.18)	0.236	0.386	-0.031
Right hand, Touch cheek, Top frequency (See Fig.19)	0.381	0.636	-0.136
Right hand, Touch cheek, Mid frequency (See Fig.20)	0.406	0.668	0.097
Right hand, Touch cheek, Bottom frequency (See Fig.21)	0.399	0.649	-0.197
Right hand, Tilt 15 Degree, Top frequency (See Fig.22)	0.238	0.394	0.023
Right hand, Tilt 15 Degree, Mid frequency (See Fig.23)	0.243	0.397	0.000
Right hand, Tilt 15 Degree, Bottom frequency(See Fig.24)	0.221	0.357	0.120

**Table 10: SAR Values (850MHz-Body)**

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.25)	0.466	0.680	-0.084
Body, Towards Ground, Mid frequency (See Fig.26)	0.504	0.735	-0.048
Body, Towards Ground, Bottom frequency (See Fig.27)	0.449	0.654	0.026
Body, Towards Phantom, Top frequency (See Fig.28)	0.394	0.571	-0.039
Body, Towards Phantom, Mid frequency (See Fig.29)	0.420	0.610	-0.038
Body, Towards Phantom, Bottom frequency (See Fig.30)	0.357	0.515	-0.026

**Table 11: SAR Values (1900MHz-Body)**

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.31)	0.245	0.426	-0.107
Body, Towards Ground, Mid frequency (See Fig.32)	0.253	0.441	0.028
Body, Towards Ground, Bottom frequency (See Fig.33)	0.237	0.409	-0.020
Body, Towards Phantom, Top frequency (See Fig.34)	0.142	0.230	0.031
Body, Towards Phantom, Mid frequency (See Fig.35)	0.163	0.263	0.082
Body, Towards Phantom, Bottom frequency (See Fig.36)	0.170	0.271	0.026

**Table 12: SAR Values (850MHz-Head with battery CAB2170000C1)**

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, Top frequency (See Fig.37)	0.748	1.08	0.021

**Table 13: SAR Values (850MHz-Body with battery CAB2170000C1)**

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.38)	0.496	0.714	-0.092

### 8.4 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	1	1	3.5	$\infty$
3	– axial isotropy of the probe	B	4.7	R	$\sqrt{3}$	0.5	4.3	$\infty$
4	– hemisphere isotropy of the probe	B	9.4	R	$\sqrt{3}$			
5	– space resolution	B	0	R	$\sqrt{3}$	1	0	$\infty$
6	– boundary effect	B	11.0	R	$\sqrt{3}$	1	6.4	$\infty$
7	– probe linearity	B	4.7	R	$\sqrt{3}$	1	2.7	$\infty$
8	– detection limit	B	1.0	R	$\sqrt{3}$	1	0.6	$\infty$
9	– readout electronics	B	1.0	N	1	1	1.0	$\infty$



10	– RF Ambient Conditions	B	3.0	R	$\sqrt{3}$	1	1.73	$\infty$
11	– Probe Positioner Mechanical Tolerance	B	0.4	R	$\sqrt{3}$	1	0.2	$\infty$
12	– Probe Positioning with respect to Phantom Shell	B	2.9	R	$\sqrt{3}$	1	1.7	$\infty$
13	– Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	B	3.9	R	$\sqrt{3}$	1	2.3	$\infty$
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	$\infty$
Phantom and Tissue Parameters								
17	– Phantom Uncertainty (shape and thickness tolerances)	B	1.0	R	$\sqrt{3}$	1	0.6	$\infty$
18	– liquid conductivity (deviation from target)	B	5.0	R	$\sqrt{3}$	0.6	1.7	$\infty$
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	$\infty$
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 14: List of Main Instruments**

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	HP 8753E	US38433212	August 29,2009	One year
02	Power meter	NRVD	101253	September 4, 2009	One year
03	Power sensor	NRV-Z5	100333		
04	Signal Generator	E4433B	US37230472	September 3, 2009	One Year
05	Amplifier	VTL5400	0505	No Calibration Requested	
06	BTS	CMU 200	113312	August 10, 2010	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.

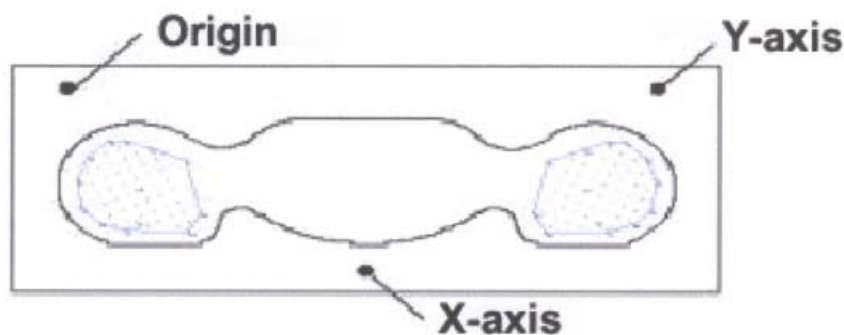
Step 3: Around this point, a volume of 30 mm x 30 mm x 30 mm was assessed by measuring 7 x 7x 7 points. On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

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.

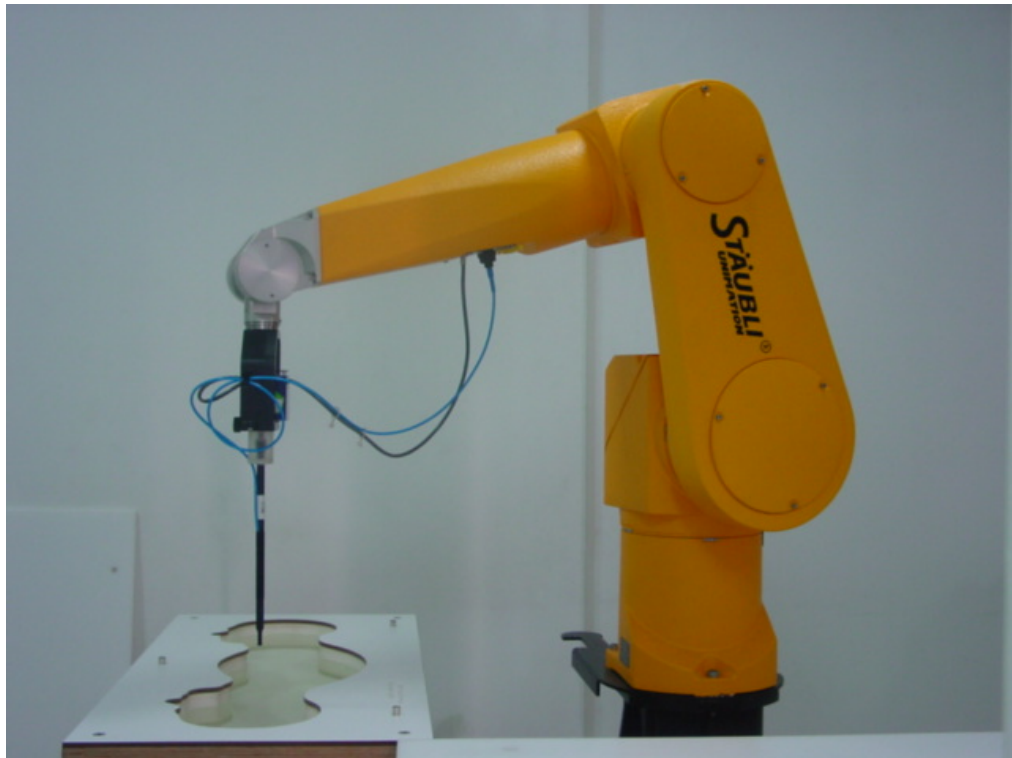
c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

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.

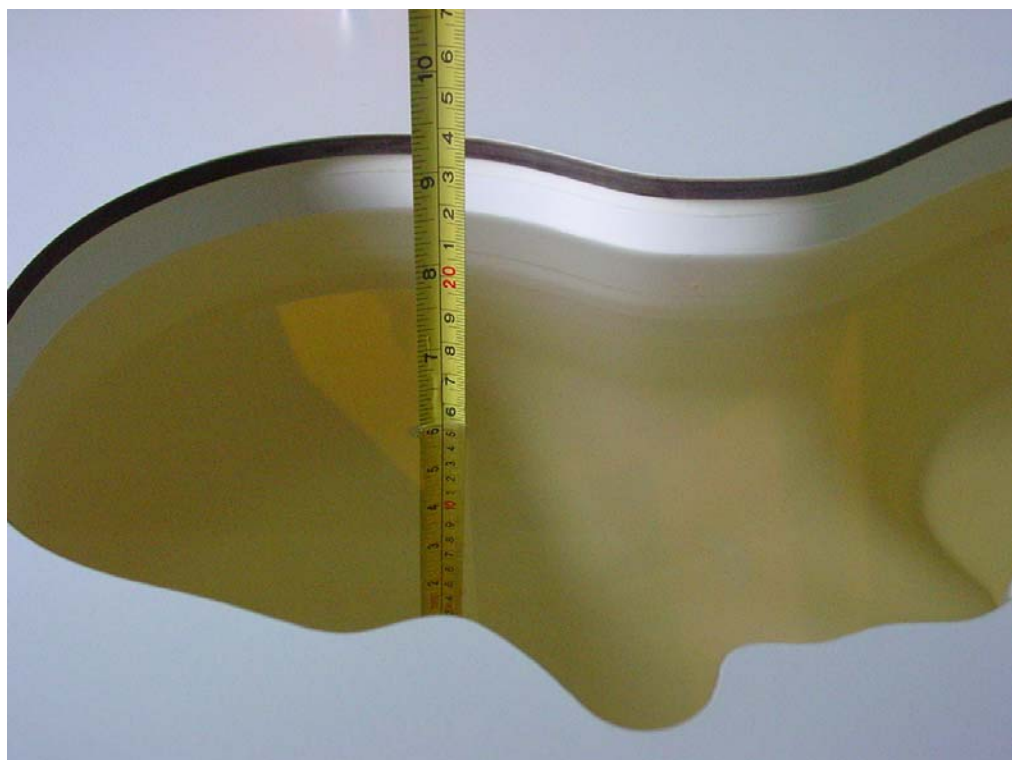


Picture A: SAR Measurement Points in Area Scan

## 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**

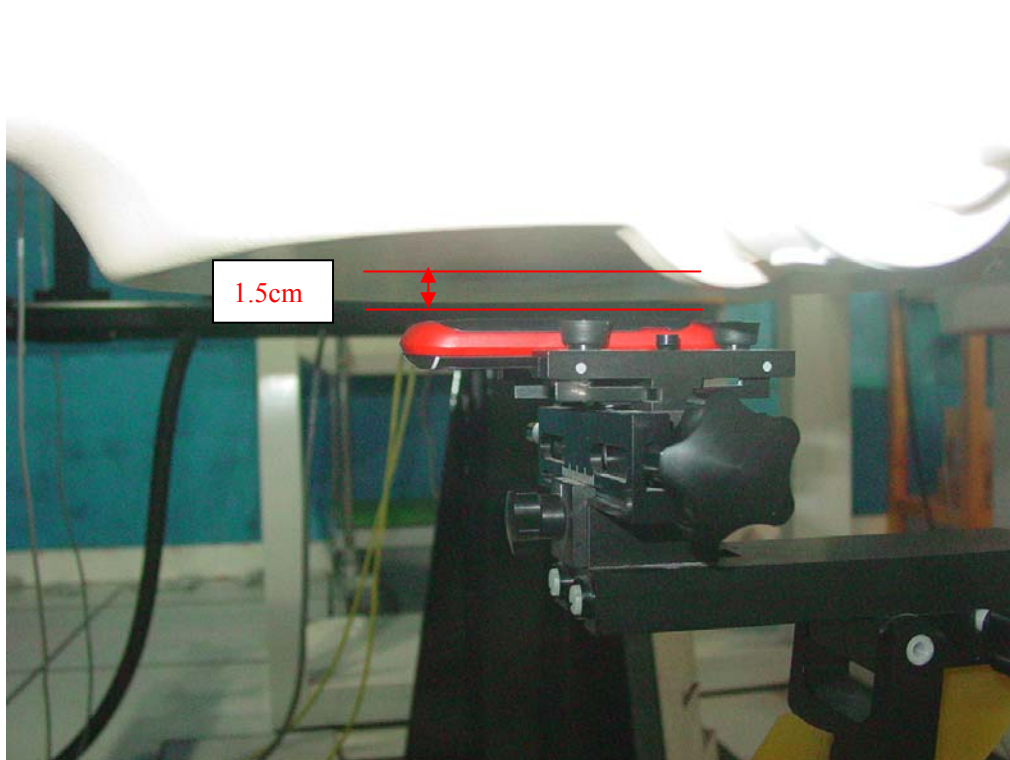




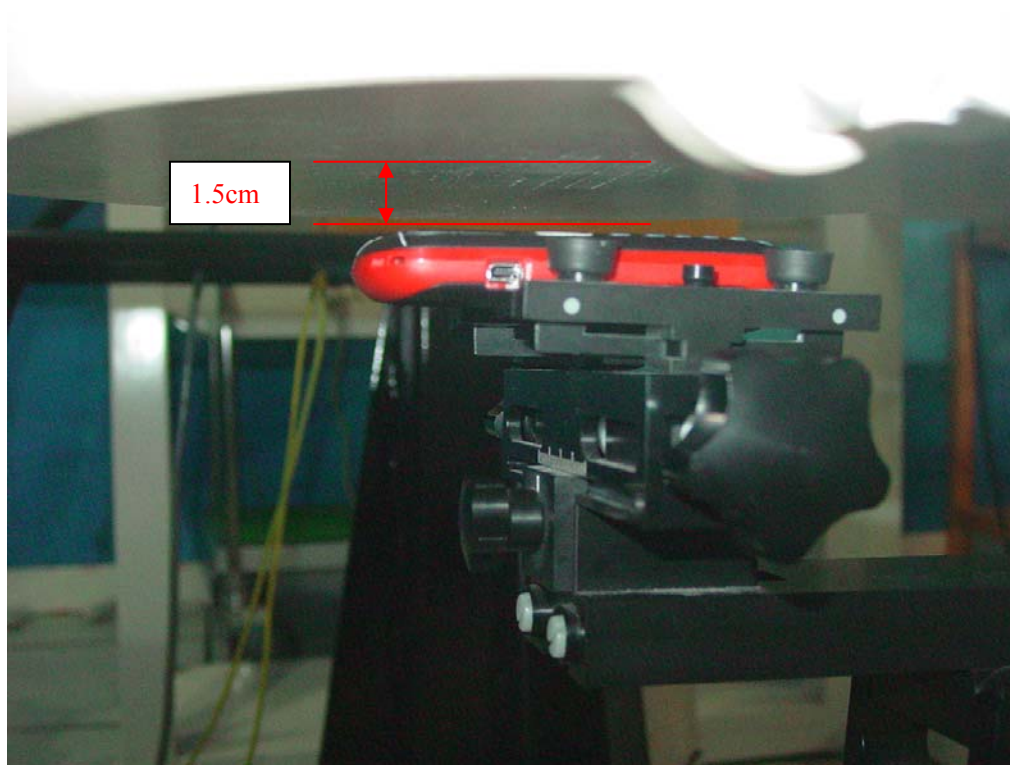
**Picture B6: Right Hand Touch Cheek Position**



**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)**



## ANNEX C GRAPH RESULTS

### 850 Left Cheek High

Date/Time: 2010-3-11 8:14:28

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used (interpolated):  $f = 848.8$  MHz;  $\sigma = 0.92$  mho/m;  $\epsilon_r = 40.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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) = 1.08 mW/g

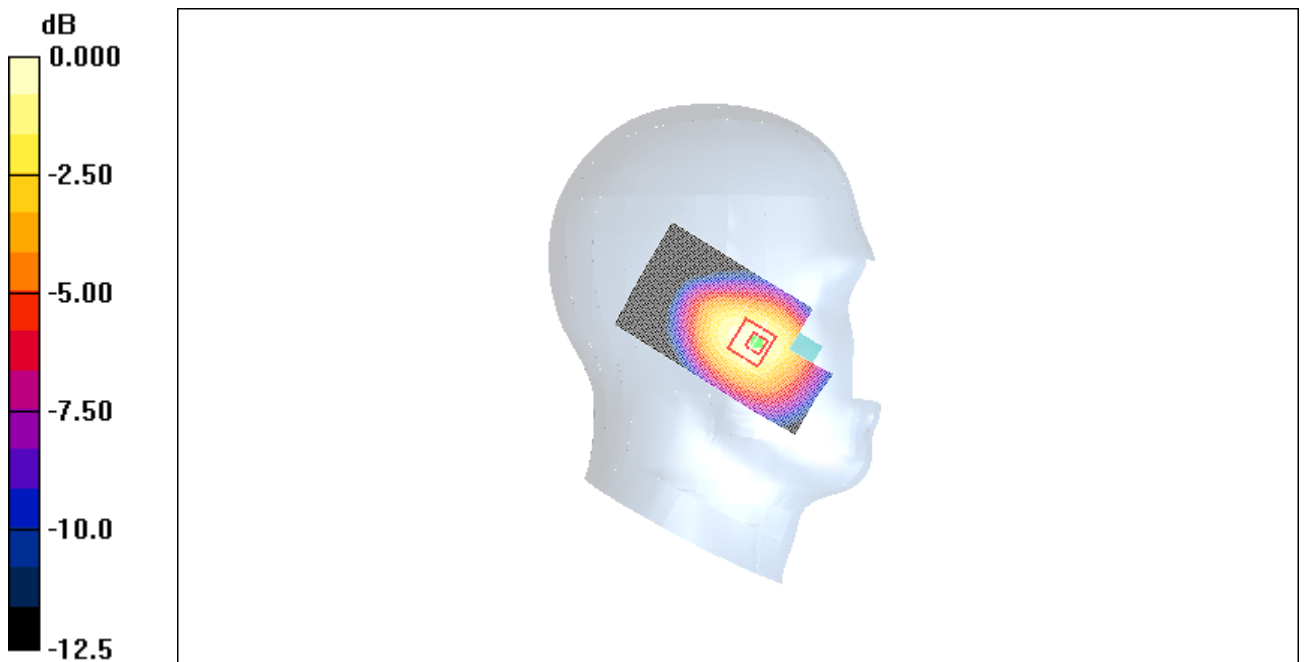
**Cheek High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.76 V/m; Power Drift = 0.002 dB

Peak SAR (extrapolated) = 1.37 W/kg

**SAR(1 g) = 0.999 mW/g; SAR(10 g) = 0.690 mW/g**

Maximum value of SAR (measured) = 1.07 mW/g



0 dB = 1.07mW/g

**Fig. 1 850MHz CH251**

**850 Left Cheek Middle**

Date/Time: 2010-3-11 8:28:41

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used (interpolated):  $f = 836.6$  MHz;  $\sigma = 0.908$  mho/m;  $\epsilon_r = 40.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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) = 1.07 mW/g

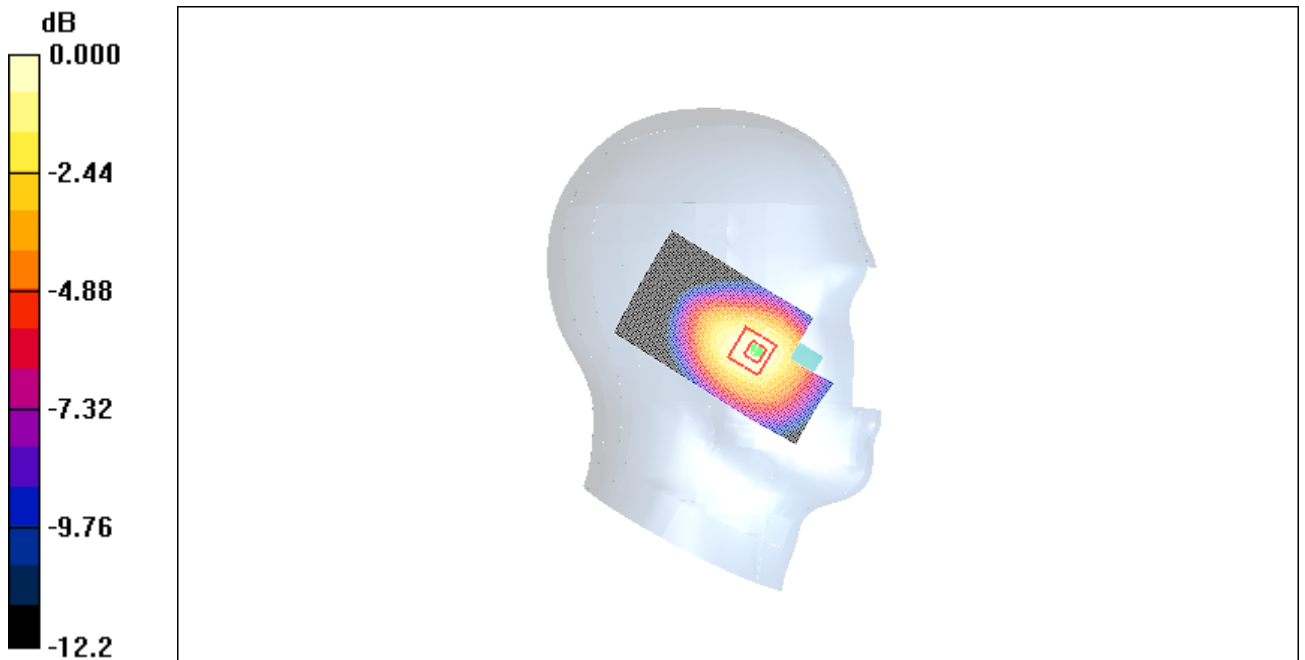
**Cheek Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.87 V/m; Power Drift = 0.005 dB

Peak SAR (extrapolated) = 1.33 W/kg

**SAR(1 g) = 0.980 mW/g; SAR(10 g) = 0.682 mW/g**

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



0 dB = 1.05mW/g

**Fig. 2 850 MHz CH190**

### 850 Left Cheek Low

Date/Time: 2010-3-11 8:42:55

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used:  $f = 825 \text{ MHz}$ ;  $\sigma = 0.896 \text{ mho/m}$ ;  $\epsilon_r = 40.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $23.0^\circ\text{C}$       Liquid Temperature:  $22.5^\circ\text{C}$

Communication System: GSM 850 Frequency:  $824.2 \text{ MHz}$  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) =  $0.973 \text{ mW/g}$

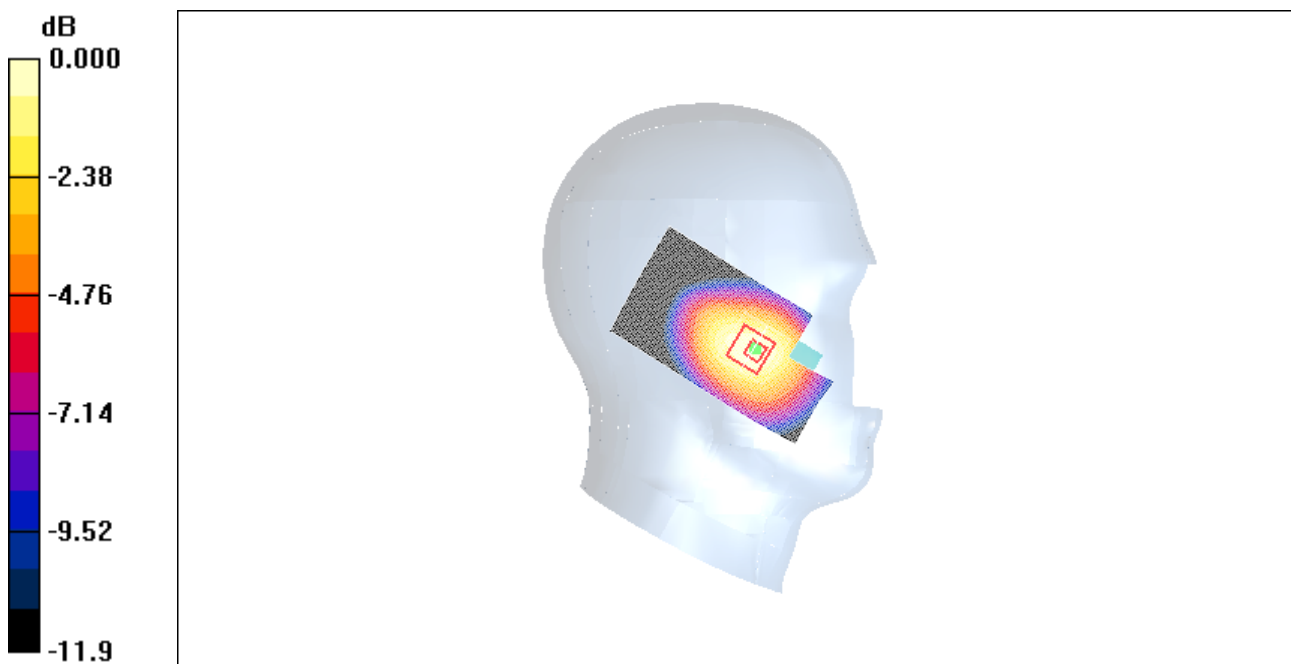
**Cheek Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $9.67 \text{ V/m}$ ; Power Drift =  $-0.120 \text{ dB}$

Peak SAR (extrapolated) =  $1.21 \text{ W/kg}$

**SAR(1 g) =  $0.886 \text{ mW/g}$ ; SAR(10 g) =  $0.619 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.940 \text{ mW/g}$



0 dB =  $0.940\text{mW/g}$

**Fig. 3 850 MHz CH128**

**850 Left Tilt High**

Date/Time: 2010-3-11 8:57:11

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used (interpolated):  $f = 848.8$  MHz;  $\sigma = 0.92$  mho/m;  $\epsilon_r = 40.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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) = 0.390 mW/g

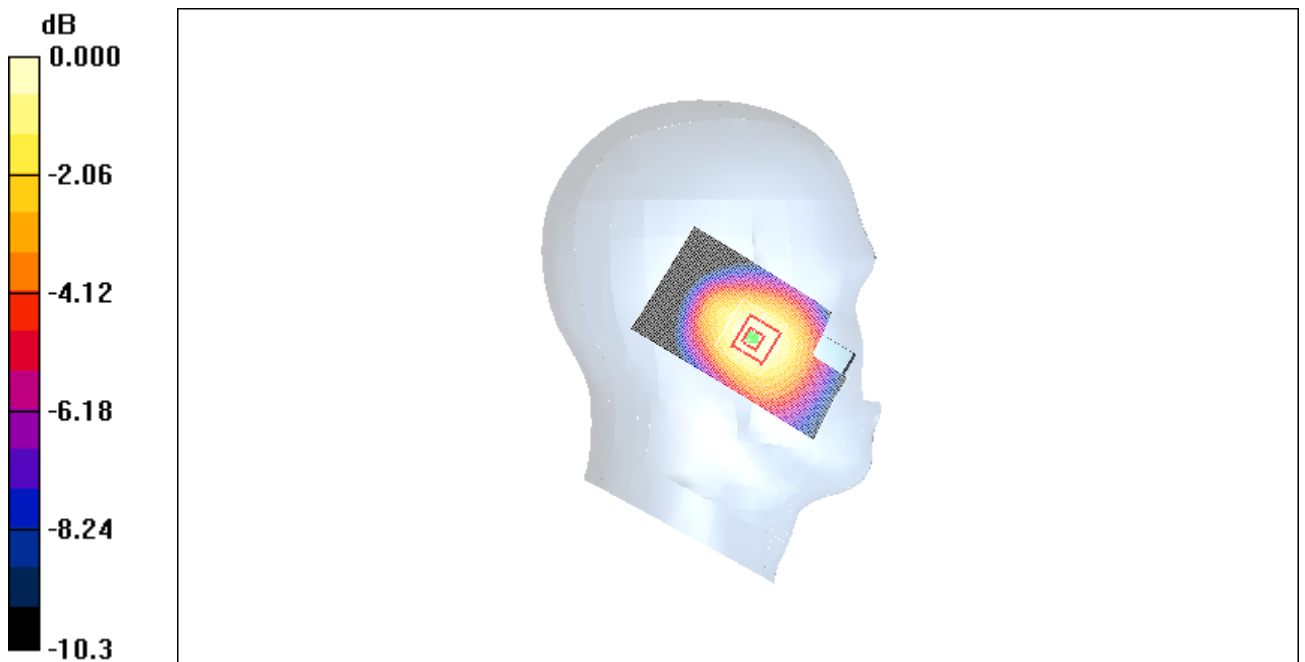
**Tilt High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.4 V/m; Power Drift = -0.070 dB

Peak SAR (extrapolated) = 0.477 W/kg

**SAR(1 g) = 0.364 mW/g; SAR(10 g) = 0.263 mW/g**

Maximum value of SAR (measured) = 0.387 mW/g



0 dB = 0.387mW/g

**Fig.4 850 MHz CH251**

**850 Left Tilt Middle**

Date/Time: 2010-3-11 9:11:23

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used (interpolated):  $f = 836.6$  MHz;  $\sigma = 0.908$  mho/m;  $\epsilon_r = 40.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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) = 0.404 mW/g

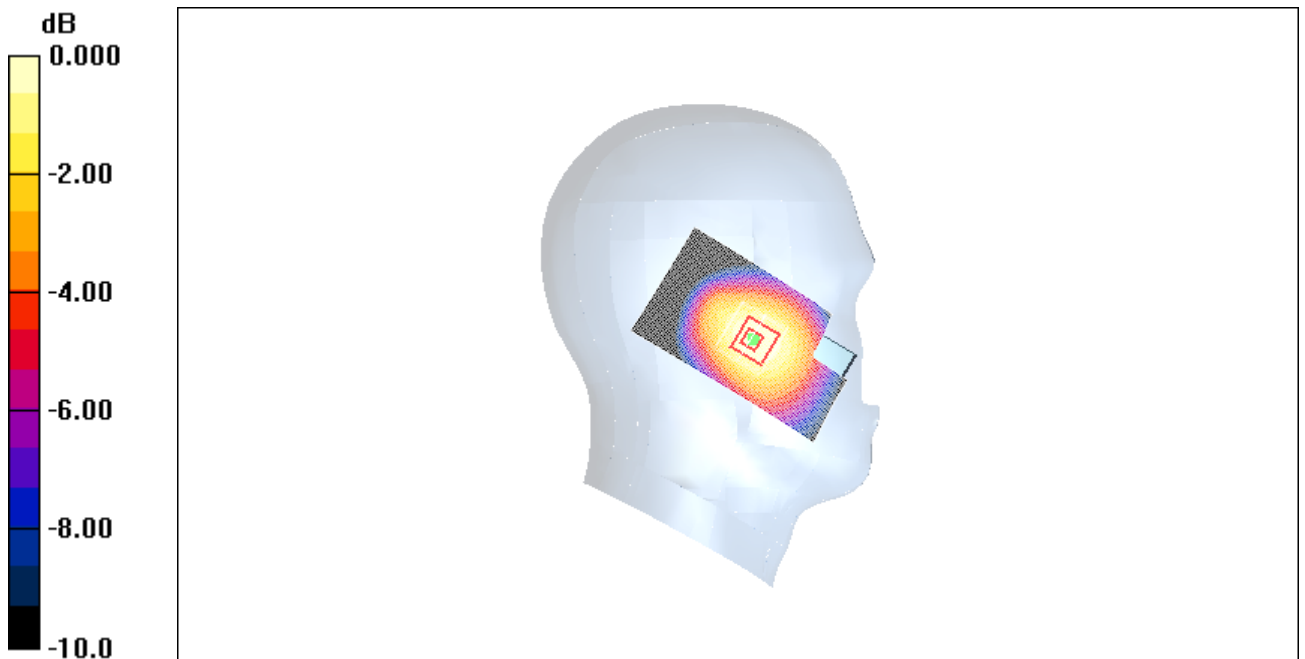
**Tilt Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.7 V/m; Power Drift = -0.098 dB

Peak SAR (extrapolated) = 0.484 W/kg

**SAR(1 g) = 0.374 mW/g; SAR(10 g) = 0.273 mW/g**

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



0 dB = 0.397mW/g

**Fig.5 850 MHz CH190**

**850 Left Tilt Low**

Date/Time: 2010-3-11 9:25:36

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used:  $f = 825 \text{ MHz}$ ;  $\sigma = 0.896 \text{ mho/m}$ ;  $\epsilon_r = 40.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $23.0^\circ\text{C}$       Liquid Temperature:  $22.5^\circ\text{C}$

Communication System: GSM 850 Frequency:  $824.2 \text{ MHz}$  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) =  $0.360 \text{ mW/g}$

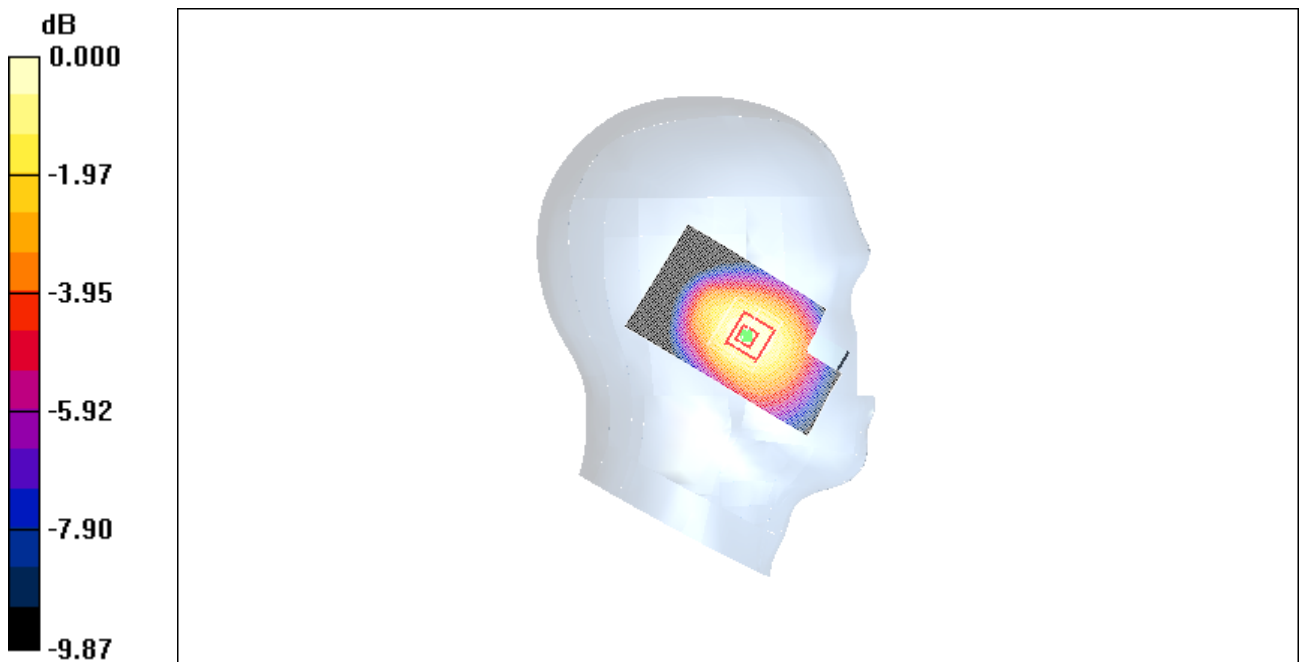
**Tilt Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $11.2 \text{ V/m}$ ; Power Drift =  $0.022 \text{ dB}$

Peak SAR (extrapolated) =  $0.438 \text{ W/kg}$

**SAR(1 g) =  $0.338 \text{ mW/g}$ ; SAR(10 g) =  $0.247 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.358 \text{ mW/g}$



0 dB =  $0.358\text{mW/g}$

**Fig. 6 850 MHz CH128**

### 850 Right Cheek High

Date/Time: 2010-3-11 9:40:03

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used (interpolated):  $f = 848.8$  MHz;  $\sigma = 0.92$  mho/m;  $\epsilon_r = 40.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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) = 1.21 mW/g

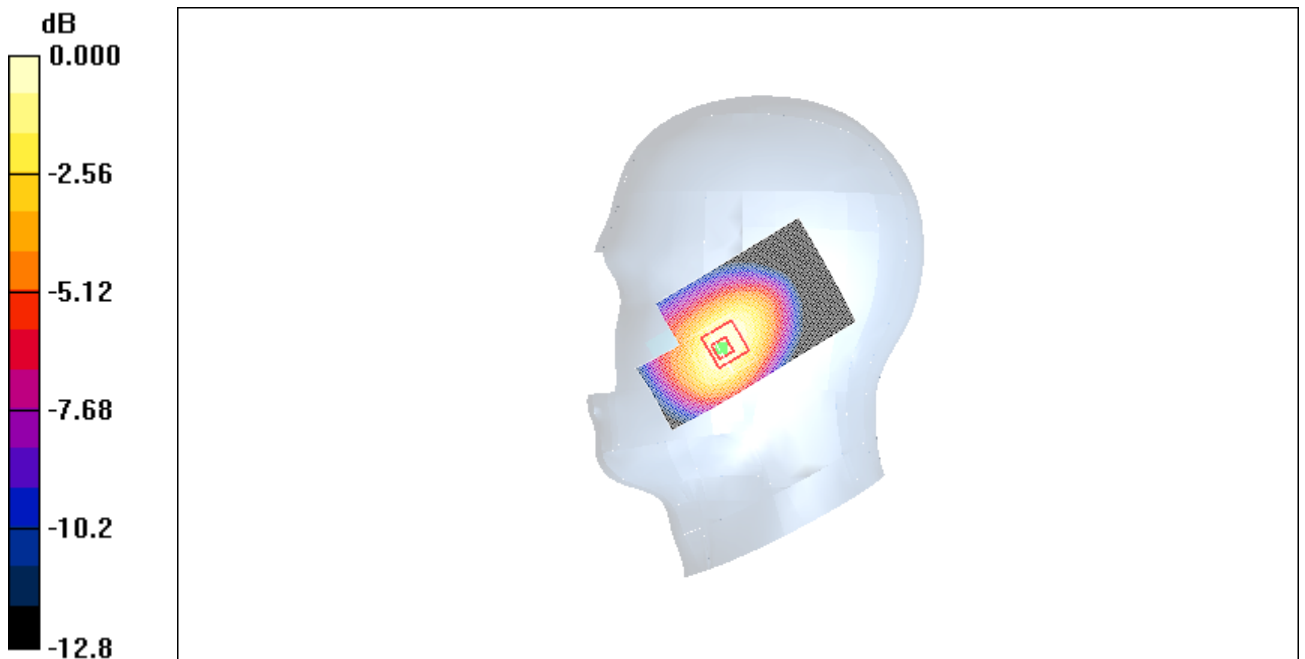
**Cheek High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.9 V/m; Power Drift = -0.138 dB

Peak SAR (extrapolated) = 1.61 W/kg

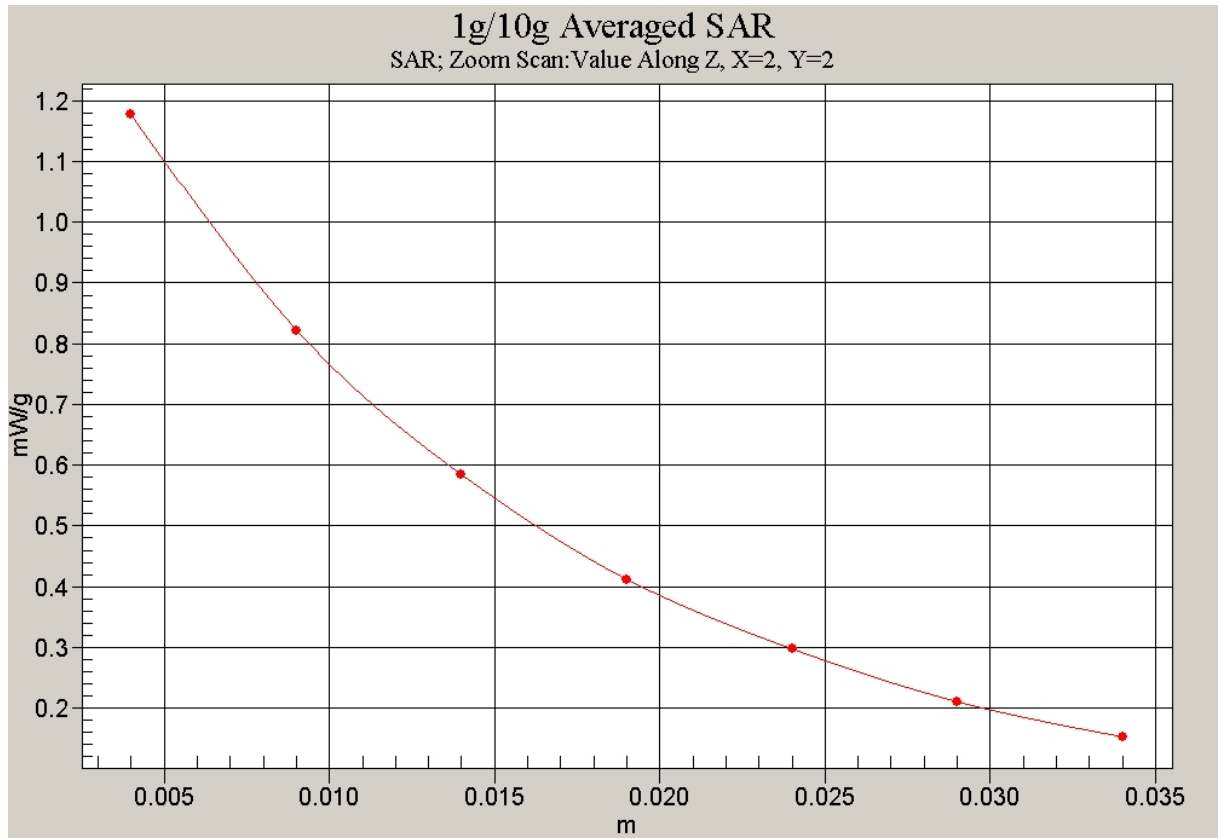
**SAR(1 g) = 1.1 mW/g; SAR(10 g) = 0.749 mW/g**

Maximum value of SAR (measured) = 1.18 mW/g



0 dB = 1.18mW/g

**Fig. 7 850 MHz CH251**



**Fig. 7-1 Z-Scan at power reference point (850 MHz CH251)**



**850 Right Cheek Middle**

Date/Time: 2010-3-11 9:54:10

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used (interpolated):  $f = 836.6$  MHz;  $\sigma = 0.908$  mho/m;  $\epsilon_r = 40.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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) = 1.15 mW/g

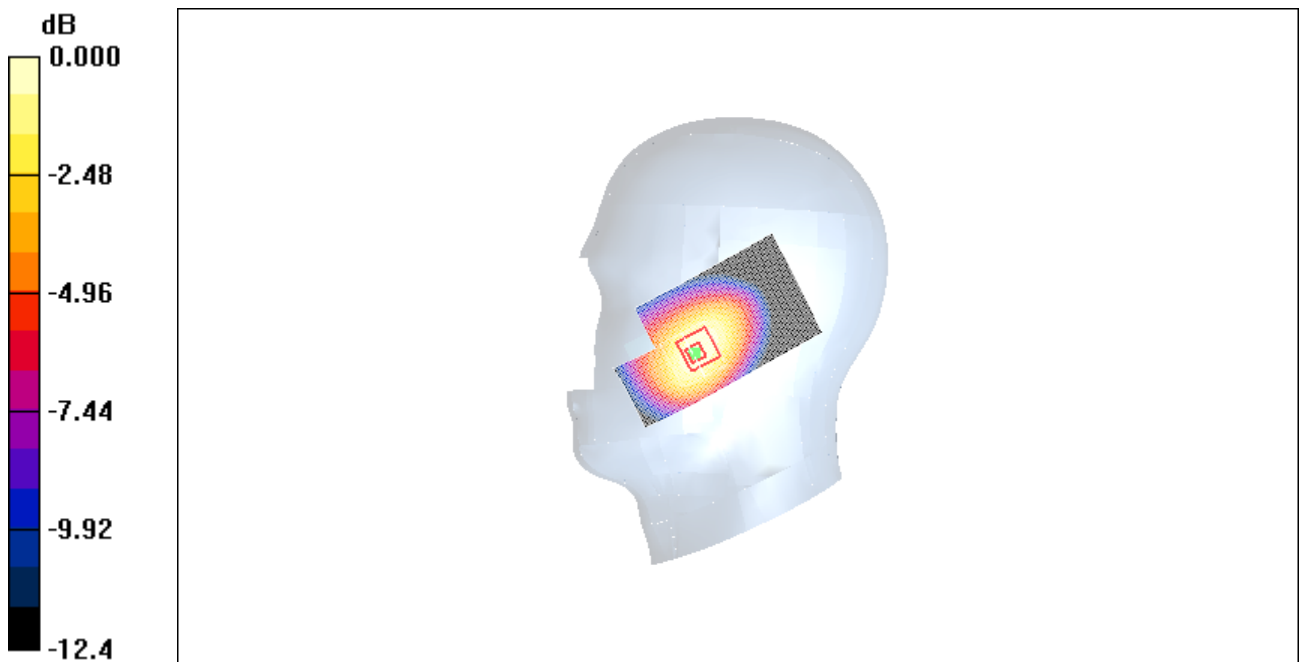
**Cheek Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.4 V/m; Power Drift = -0.170 dB

Peak SAR (extrapolated) = 1.52 W/kg

**SAR(1 g) = 1.06 mW/g; SAR(10 g) = 0.718 mW/g**

Maximum value of SAR (measured) = 1.13 mW/g



0 dB = 1.13mW/g

**Fig. 8    850 MHz CH190**

**850 Right Cheek Low**

Date/Time: 2010-3-11 10:08:24

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used:  $f = 825 \text{ MHz}$ ;  $\sigma = 0.896 \text{ mho/m}$ ;  $\epsilon_r = 40.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $23.0^\circ\text{C}$       Liquid Temperature:  $22.5^\circ\text{C}$

Communication System: GSM 850 Frequency:  $824.2 \text{ MHz}$  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) =  $1.03 \text{ mW/g}$

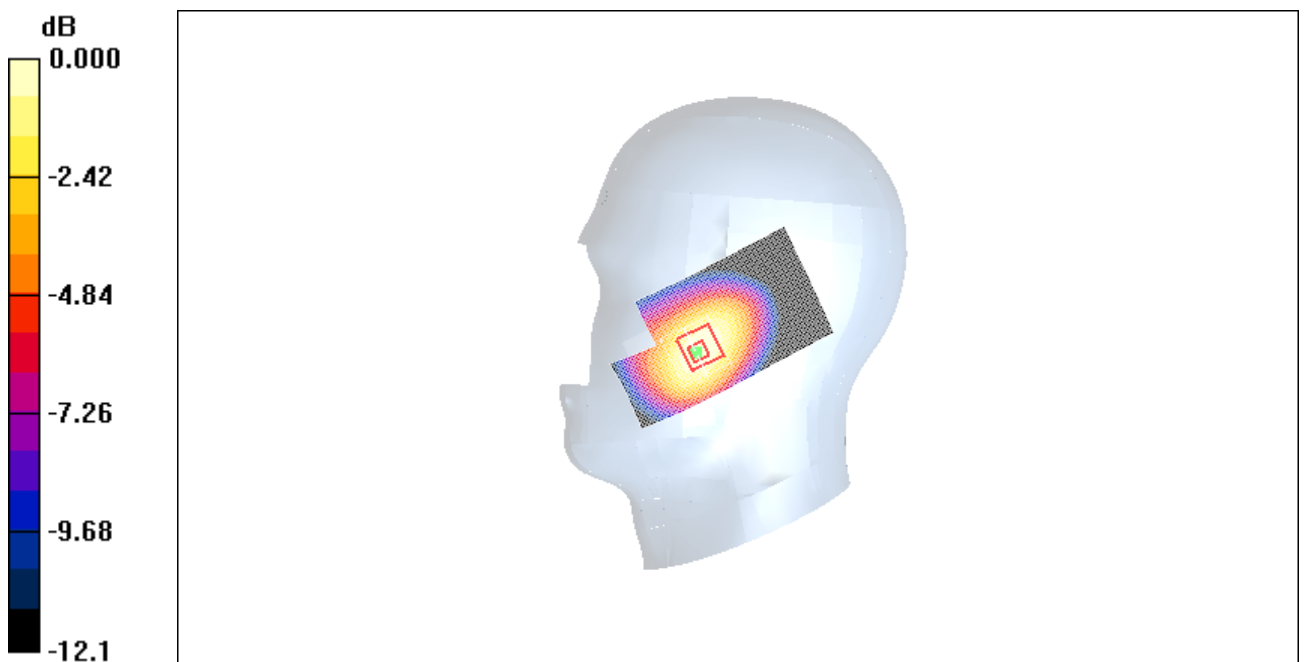
**Cheek Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $9.72 \text{ V/m}$ ; Power Drift =  $-0.044 \text{ dB}$

Peak SAR (extrapolated) =  $1.37 \text{ W/kg}$

**SAR(1 g) =  $0.947 \text{ mW/g}$ ; SAR(10 g) =  $0.647 \text{ mW/g}$**

Maximum value of SAR (measured) =  $1.01 \text{ mW/g}$



0 dB =  $1.01\text{mW/g}$

**Fig. 9    850 MHz CH128**

**850 Right Tilt High**

Date/Time: 2010-3-11 10:22:37

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used (interpolated):  $f = 848.8$  MHz;  $\sigma = 0.92$  mho/m;  $\epsilon_r = 40.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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) = 0.442 mW/g

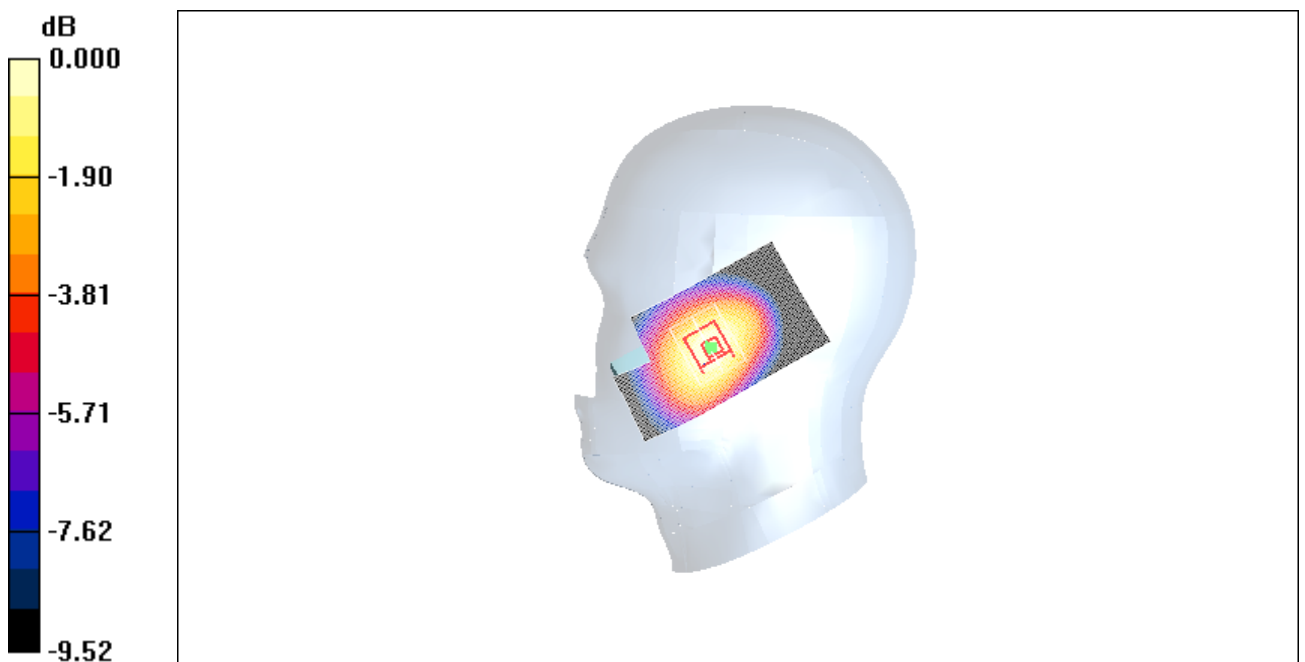
**Tilt High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 12.3 V/m; Power Drift = -0.038 dB

Peak SAR (extrapolated) = 0.539 W/kg

**SAR(1 g) = 0.413 mW/g; SAR(10 g) = 0.296 mW/g**

Maximum value of SAR (measured) = 0.437 mW/g



0 dB = 0.437mW/g

**Fig.10    850 MHz CH251**

**850 Right Tilt Middle**

Date/Time: 2010-3-11 10:36:59

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used (interpolated):  $f = 836.6$  MHz;  $\sigma = 0.908$  mho/m;  $\epsilon_r = 40.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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) = 0.466 mW/g

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

Reference Value = 12.8 V/m; Power Drift = -0.041 dB

Peak SAR (extrapolated) = 0.573 W/kg

**SAR(1 g) = 0.435 mW/g; SAR(10 g) = 0.313 mW/g**

Maximum value of SAR (measured) = 0.460 mW/g



0 dB = 0.460mW/g

**Fig.11 850 MHz CH190**

**850 Right Tilt Low**

Date/Time: 2010-3-11 10:51:25

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used:  $f = 825 \text{ MHz}$ ;  $\sigma = 0.896 \text{ mho/m}$ ;  $\epsilon_r = 40.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $23.0^\circ\text{C}$       Liquid Temperature:  $22.5^\circ\text{C}$

Communication System: GSM 850 Frequency:  $824.2 \text{ MHz}$  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) =  $0.424 \text{ mW/g}$

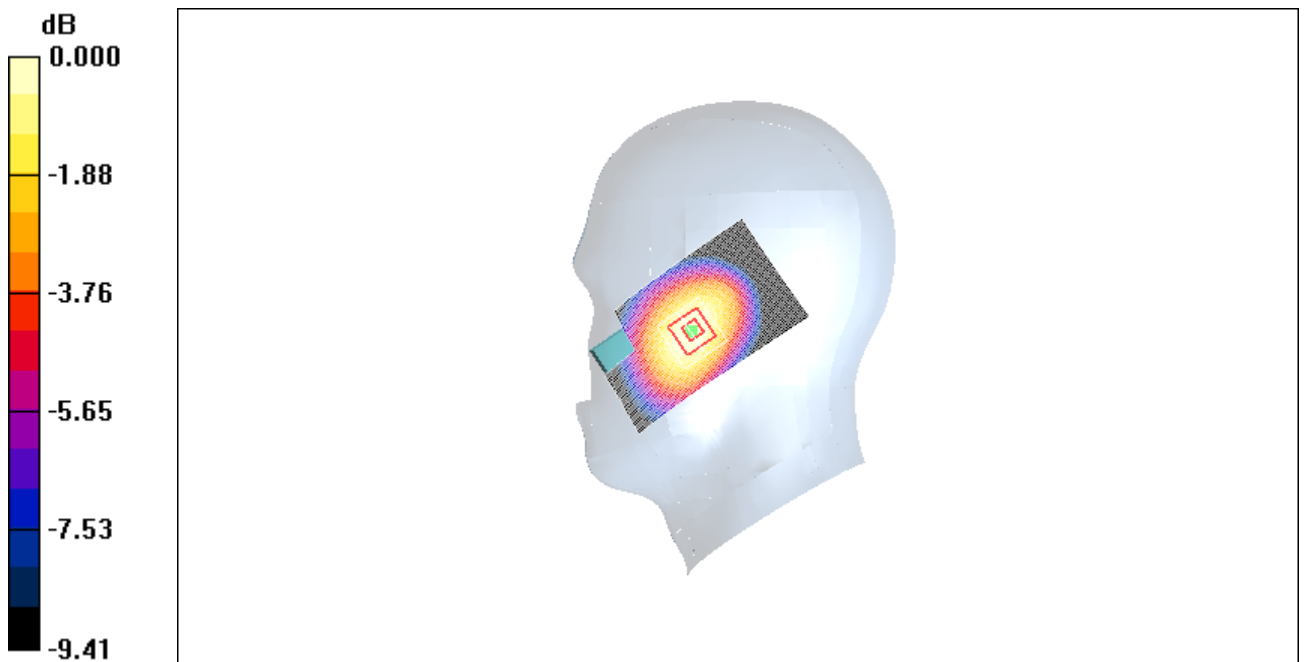
**Tilt Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $12.4 \text{ V/m}$ ; Power Drift =  $-0.052 \text{ dB}$

Peak SAR (extrapolated) =  $0.519 \text{ W/kg}$

**SAR(1 g) =  $0.396 \text{ mW/g}$ ; SAR(10 g) =  $0.286 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.420 \text{ mW/g}$



0 dB =  $0.420\text{mW/g}$

**Fig. 12 850 MHz CH128**

**1900 Left Cheek High**

Date/Time: 2010-3-12 8:15:47

Electronics: DAE4 Sn771

Medium: 1900 Head

Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.44$  mho/m;  $\epsilon_r = 39.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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) = 0.644 mW/g

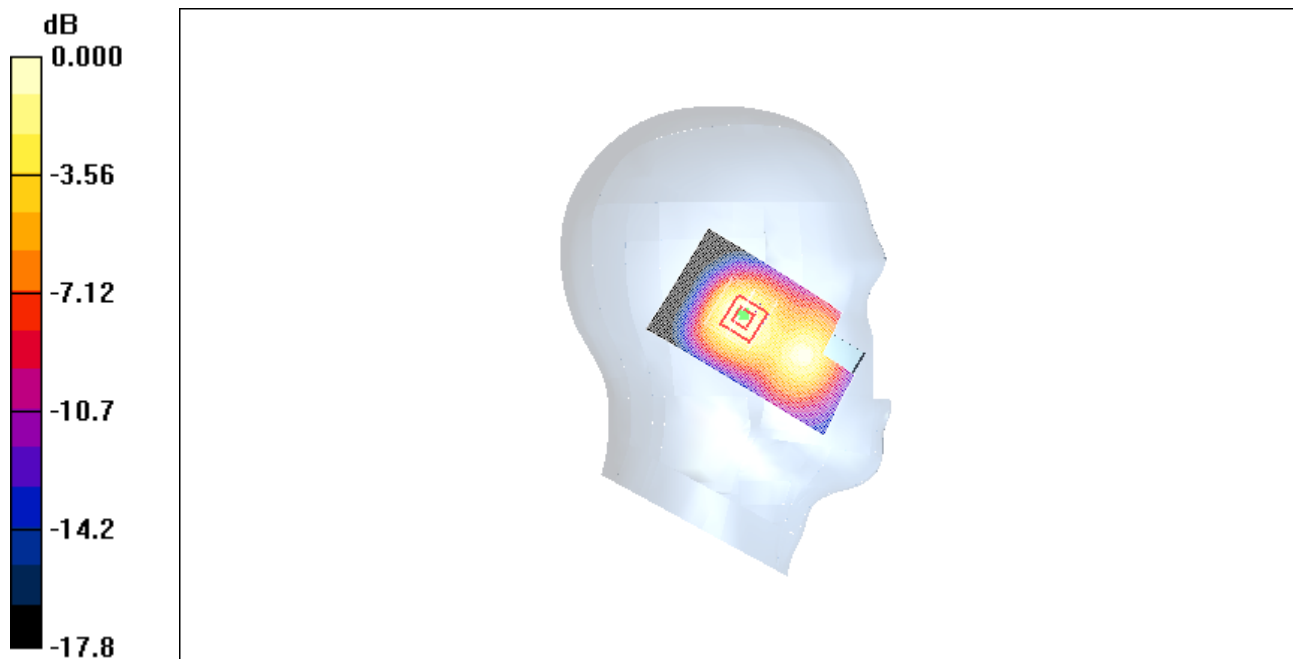
**Cheek High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.9 V/m; Power Drift = 0.039 dB

Peak SAR (extrapolated) = 0.813 W/kg

**SAR(1 g) = 0.548 mW/g; SAR(10 g) = 0.333 mW/g**

Maximum value of SAR (measured) = 0.587 mW/g



0 dB = 0.587mW/g

**Fig. 13 1900 MHz CH810**

**1900 Left Cheek Middle**

Date/Time: 2010-3-12 8:30:00

Electronics: DAE4 Sn771

Medium: Head 1900 MHz

Medium parameters used:  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.42 \text{ mho/m}$ ;  $\epsilon_r = 39.5$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $23.0^\circ\text{C}$       Liquid Temperature:  $22.5^\circ\text{C}$

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:  $dx=10\text{mm}$ ,  $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 0.705 mW/g

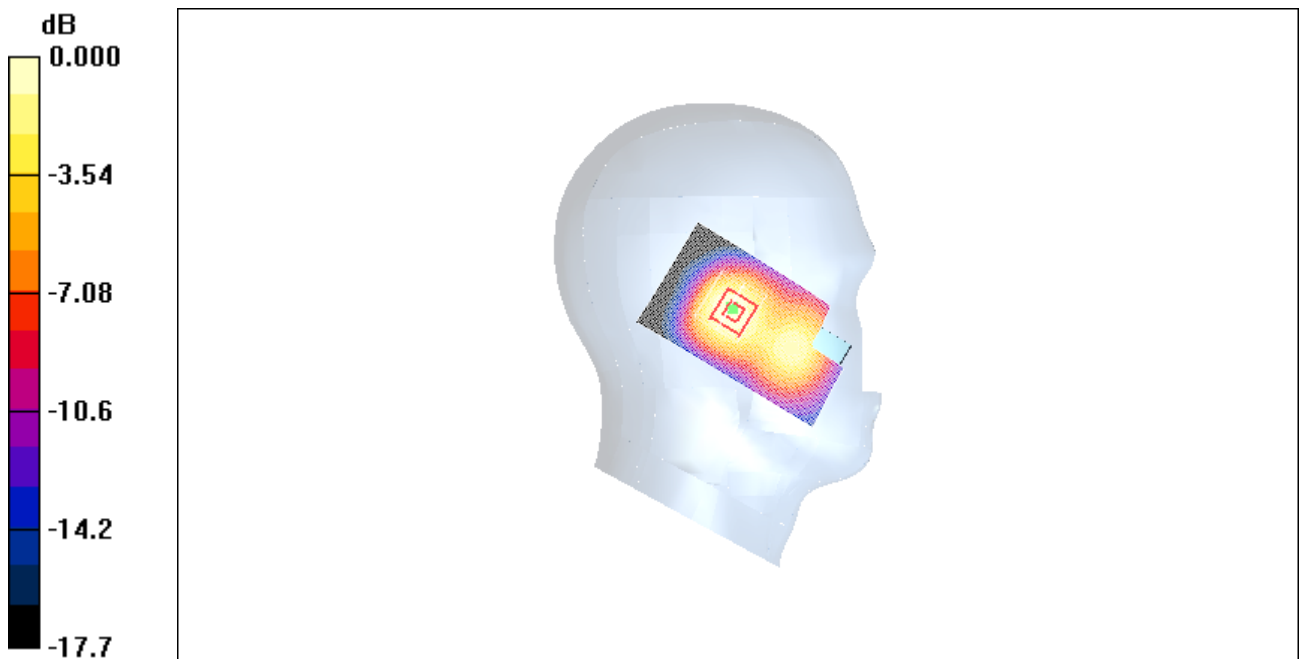
**Cheek Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 11.4 V/m; Power Drift = 0.016 dB

Peak SAR (extrapolated) = 0.877 W/kg

**SAR(1 g) = 0.595 mW/g; SAR(10 g) = 0.363 mW/g**

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



0 dB = 0.637mW/g

**Fig. 14 1900 MHz CH661**

**1900 Left Cheek Low**

Date/Time: 2010-3-12 8:44:13

Electronics: DAE4 Sn771

Medium: 1900 Head

Medium parameters used (interpolated):  $f = 1850.2$  MHz;  $\sigma = 1.39$  mho/m;  $\epsilon_r = 39.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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) = 0.710 mW/g

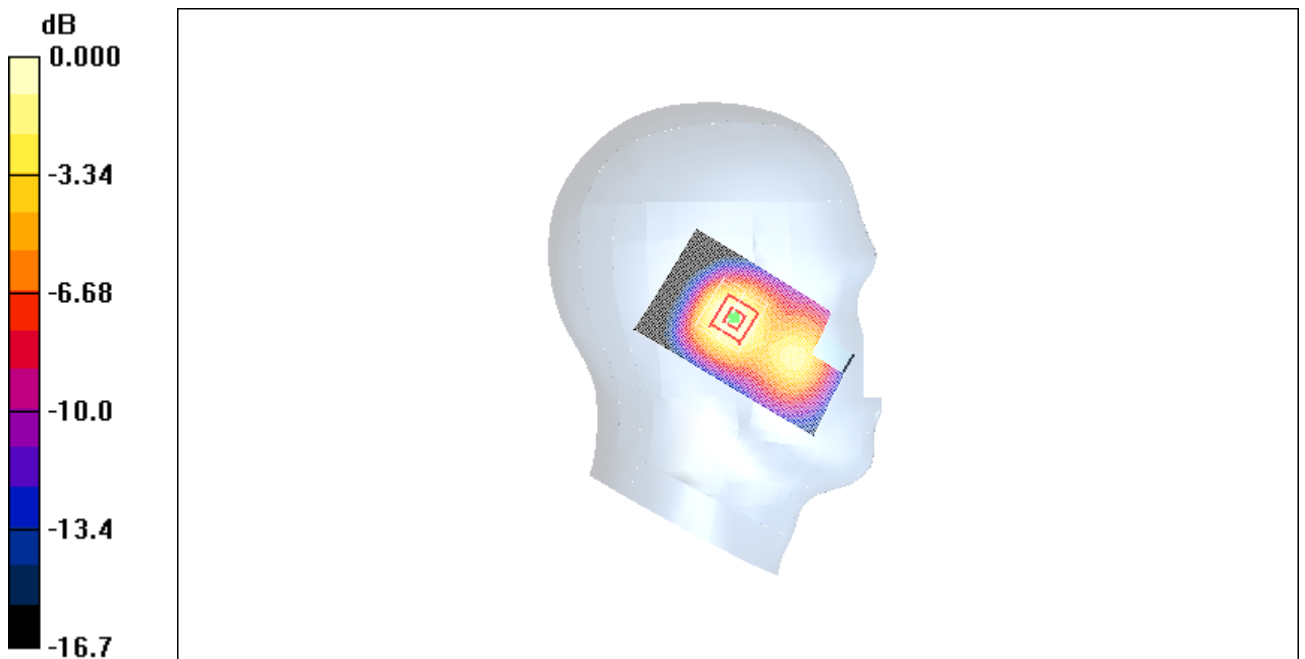
**Cheek Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.1 V/m; Power Drift = 0.090 dB

Peak SAR (extrapolated) = 0.890 W/kg

**SAR(1 g) = 0.603 mW/g; SAR(10 g) = 0.369 mW/g**

Maximum value of SAR (measured) = 0.651 mW/g



0 dB = 0.651mW/g

**Fig. 15 1900 MHz CH512**



**1900 Left Tilt High**

Date/Time: 2010-3-12 8:58:29

Electronics: DAE4 Sn771

Medium: 1900 Head

Medium parameters used:  $f = 1910 \text{ MHz}$ ;  $\sigma = 1.44 \text{ mho/m}$ ;  $\epsilon_r = 39.4$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $23.0^\circ\text{C}$       Liquid Temperature:  $22.5^\circ\text{C}$

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:  $dx=10\text{mm}$ ,  $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 0.477 mW/g

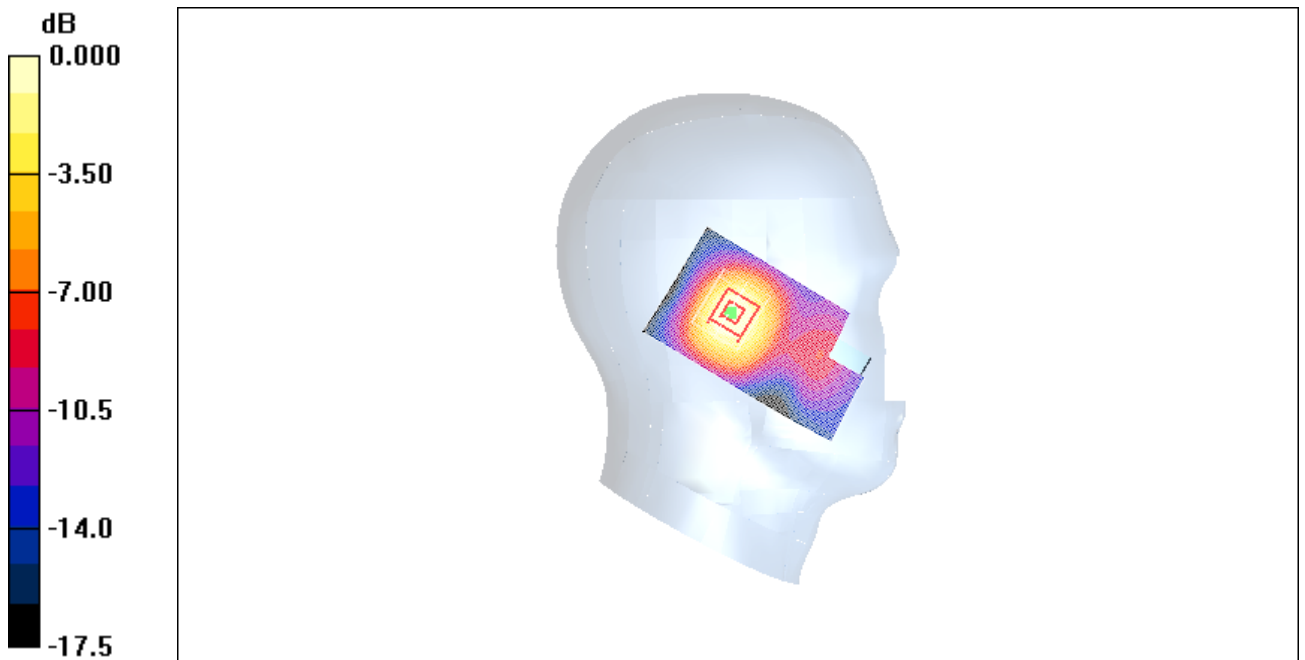
**Tilt High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 13.4 V/m; Power Drift = 0.023 dB

Peak SAR (extrapolated) = 0.589 W/kg

**SAR(1 g) = 0.389 mW/g; SAR(10 g) = 0.235 mW/g**

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



0 dB = 0.422mW/g

**Fig.16 1900 MHz CH810**

**1900 Left Tilt Middle**

Date/Time: 2010-3-12 9:12:43

Electronics: DAE4 Sn771

Medium: 1900 Head

Medium parameters used:  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.42 \text{ mho/m}$ ;  $\epsilon_r = 39.5$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $23.0^\circ\text{C}$       Liquid Temperature:  $22.5^\circ\text{C}$

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) = 0.496 mW/g

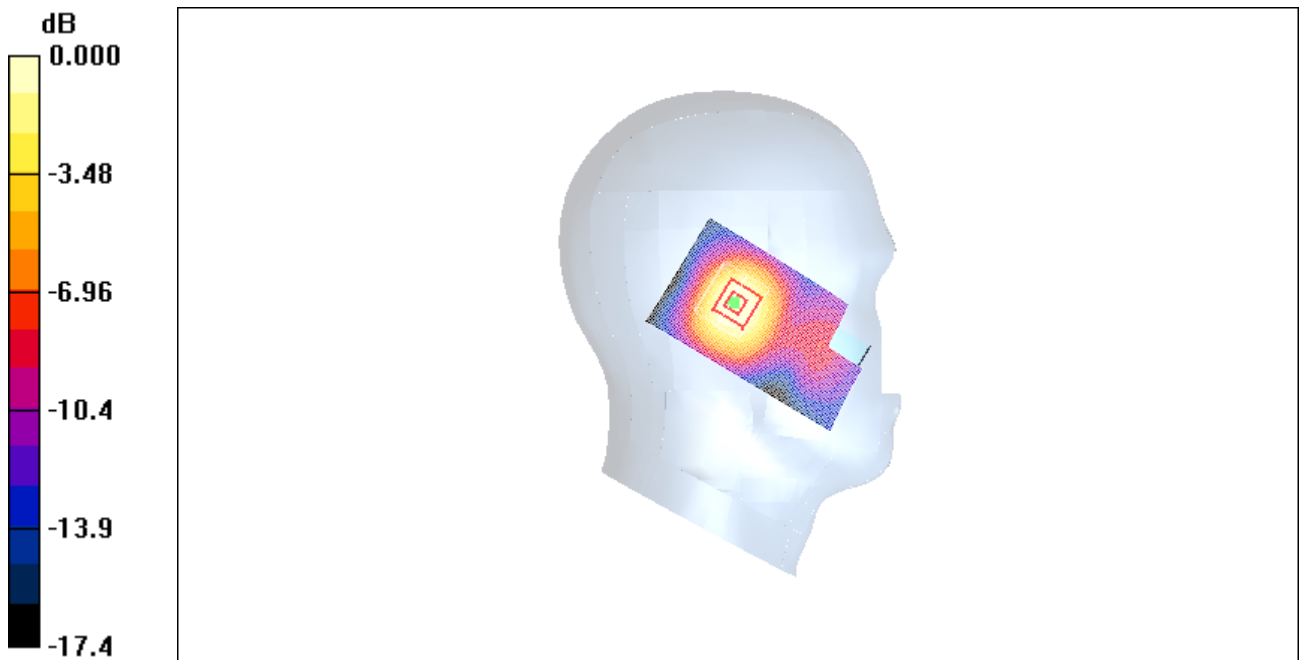
**Tilt Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 13.5 V/m; Power Drift = 0.004 dB

Peak SAR (extrapolated) = 0.610 W/kg

**SAR(1 g) = 0.406 mW/g; SAR(10 g) = 0.247 mW/g**

Maximum value of SAR (measured) = 0.436 mW/g



0 dB = 0.436mW/g

**Fig. 17 1900 MHz CH661**

**1900 Left Tilt Low**

Date/Time: 2010-3-12 9:26:56

Electronics: DAE4 Sn771

Medium: 1900 Head

Medium parameters used (interpolated):  $f = 1850.2$  MHz;  $\sigma = 1.39$  mho/m;  $\epsilon_r = 39.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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) = 0.470 mW/g

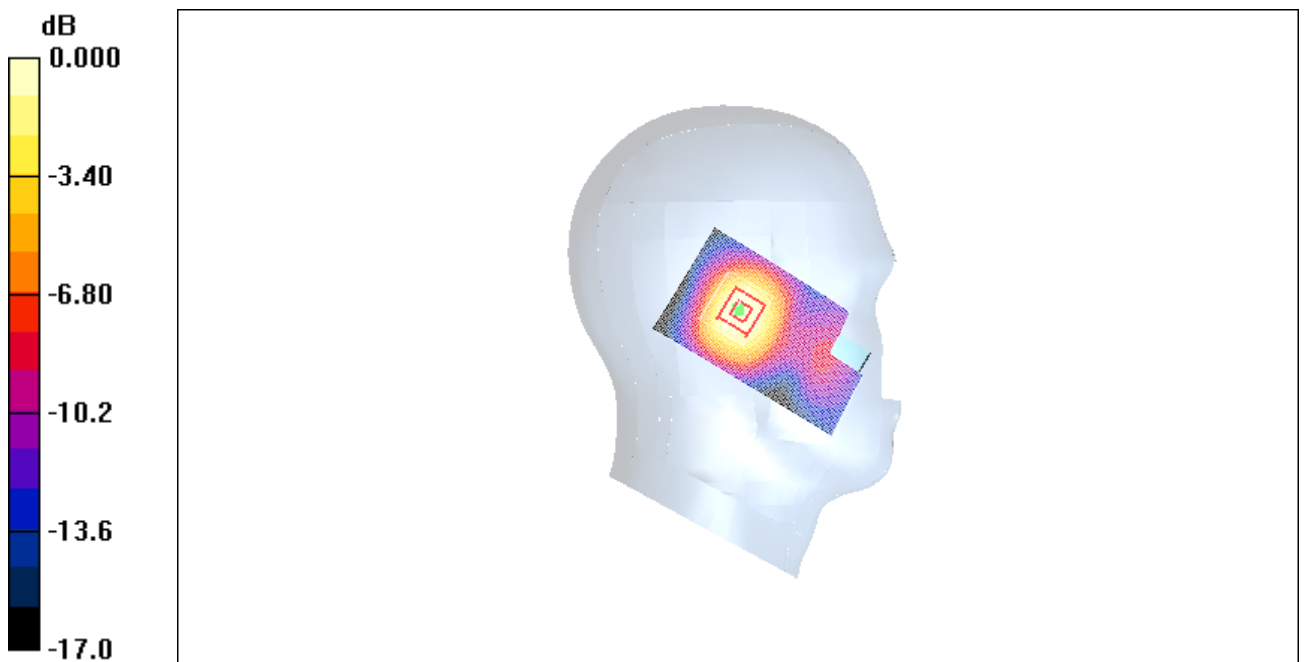
**Tilt Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 13.1 V/m; Power Drift = -0.031 dB

Peak SAR (extrapolated) = 0.579 W/kg

**SAR(1 g) = 0.386 mW/g; SAR(10 g) = 0.236 mW/g**

Maximum value of SAR (measured) = 0.411 mW/g



0 dB = 0.411mW/g

**Fig. 18 1900 MHz CH512**

**1900 Right Cheek High**

Date/Time: 2010-3-12 9:41:10

Electronics: DAE4 Sn771

Medium: 1900 Head

Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.44$  mho/m;  $\epsilon_r = 39.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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) = 0.825 mW/g

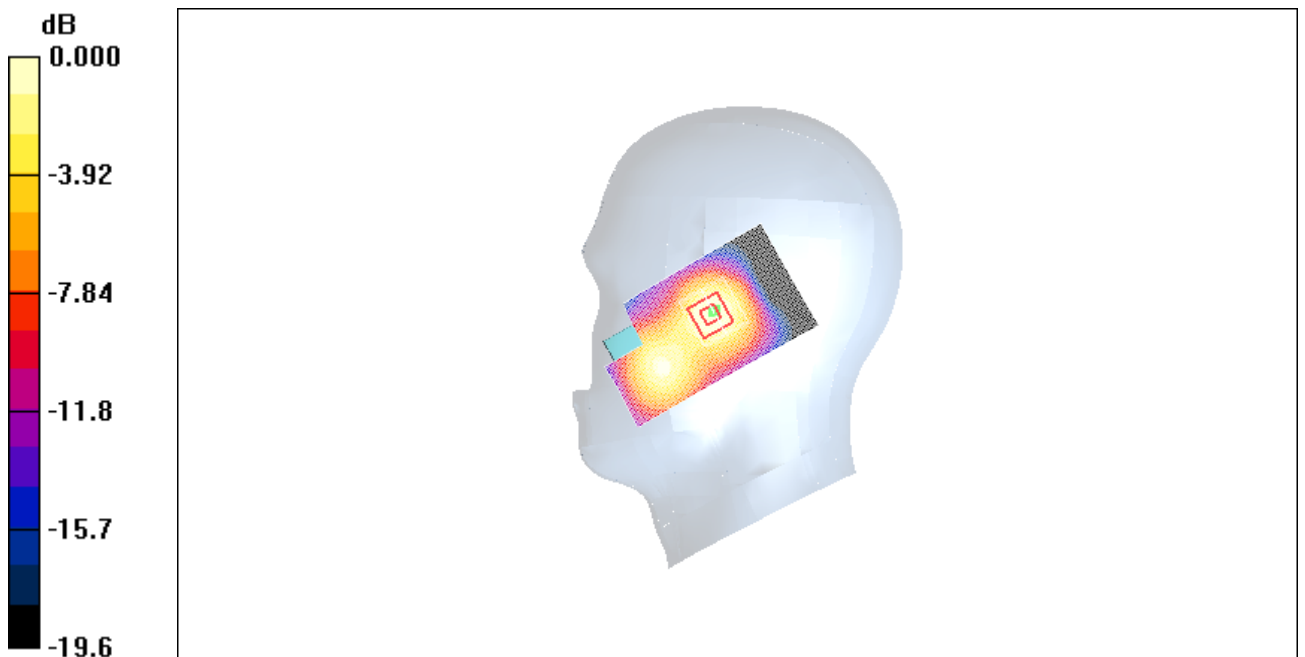
**Cheek High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.51 V/m; Power Drift = -0.136 dB

Peak SAR (extrapolated) = 0.950 W/kg

**SAR(1 g) = 0.636 mW/g; SAR(10 g) = 0.381 mW/g**

Maximum value of SAR (measured) = 0.681 mW/g



0 dB = 0.681mW/g

**Fig. 19 1900 MHz CH810**

**1900 Right Cheek Middle**

Date/Time: 2010-3-12 9:55:27

Electronics: DAE4 Sn771

Medium: 1900 Head

Medium parameters used:  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.42 \text{ mho/m}$ ;  $\epsilon_r = 39.5$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $23.0^\circ\text{C}$       Liquid Temperature:  $22.5^\circ\text{C}$

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:  $dx=10\text{mm}$ ,  $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 0.804 mW/g

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

Reference Value = 6.41 V/m; Power Drift = 0.097 dB

Peak SAR (extrapolated) = 0.973 W/kg

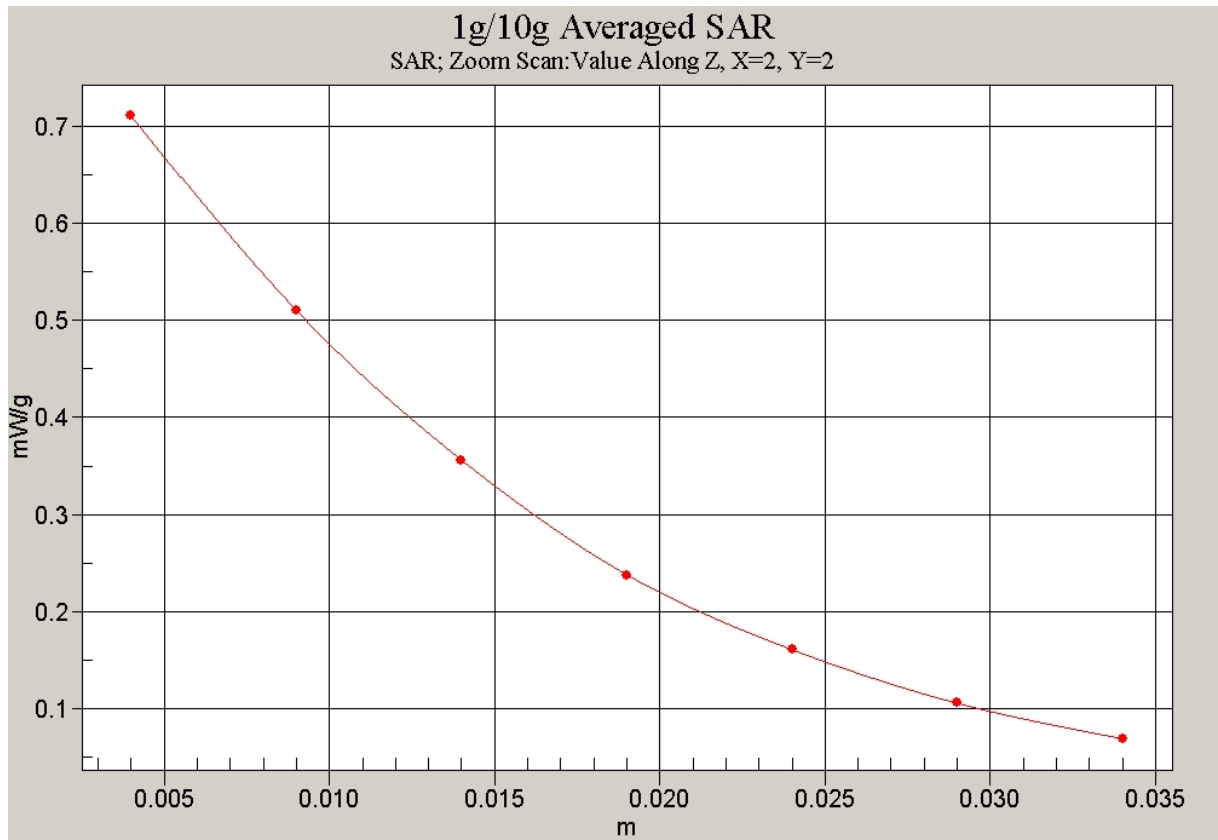
**SAR(1 g) = 0.668 mW/g; SAR(10 g) = 0.406 mW/g**

Maximum value of SAR (measured) = 0.711 mW/g



0 dB = 0.711mW/g

**Fig. 20 1900 MHz CH661**



**Fig. 20-1 Z-Scan at power reference point (1900 MHz CH661)**

**1900 Right Cheek Low**

Date/Time: 2010-3-12 10:09:39

Electronics: DAE4 Sn771

Medium: 1900 Head

Medium parameters used (interpolated):  $f = 1850.2$  MHz;  $\sigma = 1.39$  mho/m;  $\epsilon_r = 39.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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) = 0.775 mW/g

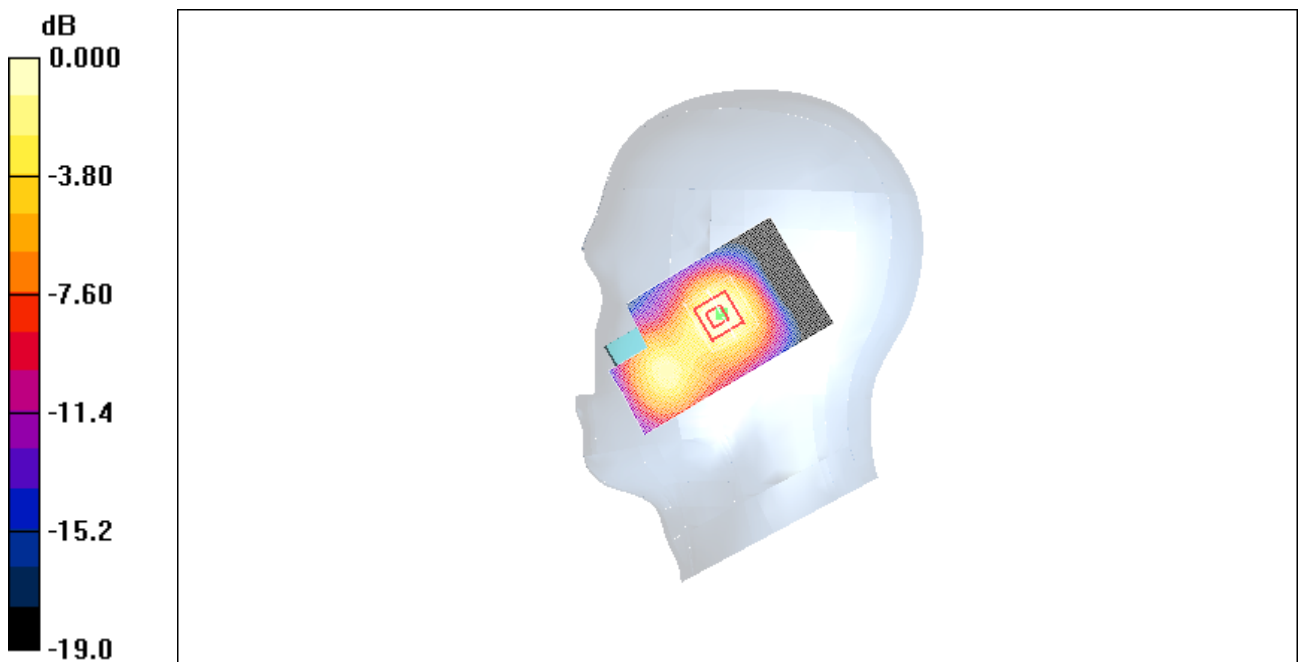
**Cheek Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.35 V/m; Power Drift = -0.197 dB

Peak SAR (extrapolated) = 0.937 W/kg

**SAR(1 g) = 0.649 mW/g; SAR(10 g) = 0.399 mW/g**

Maximum value of SAR (measured) = 0.689 mW/g



0 dB = 0.689mW/g

**Fig. 21 1900 MHz CH512**

**1900 Right Tilt High**

Date/Time: 2010-3-12 10:24:01

Electronics: DAE4 Sn771

Medium: 1900 Head

Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.44$  mho/m;  $\epsilon_r = 39.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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) = 0.480 mW/g

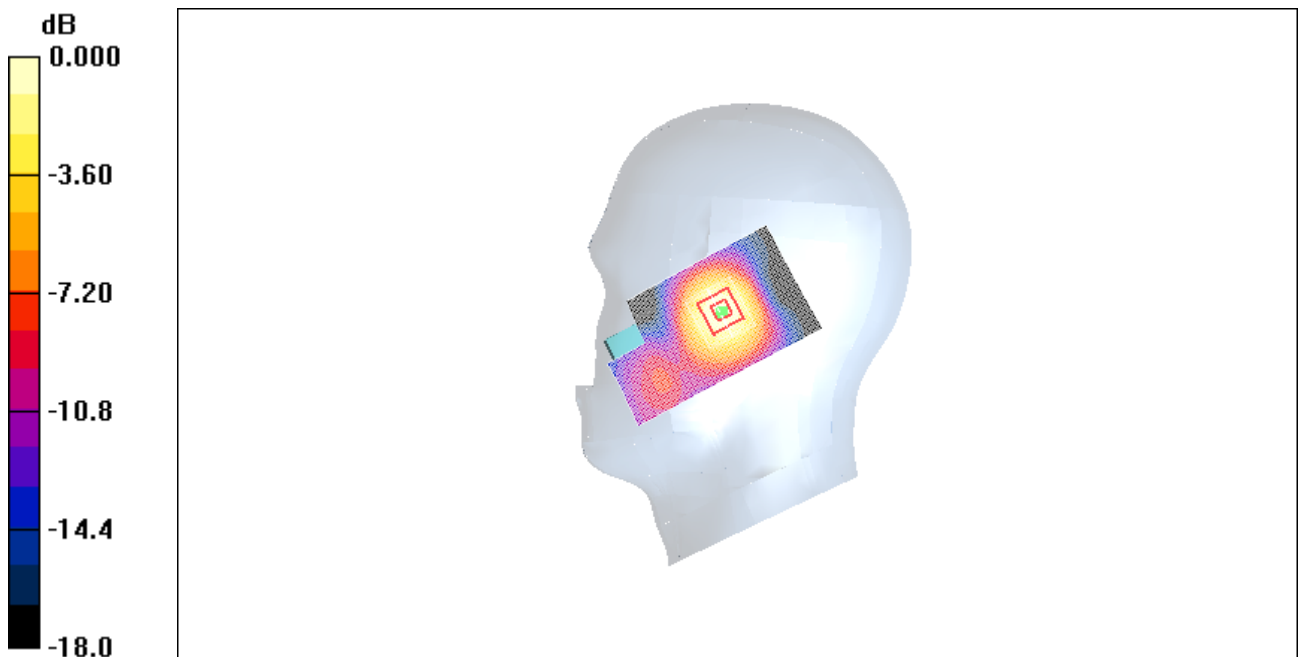
**Tilt High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.84 V/m; Power Drift = 0.023 dB

Peak SAR (extrapolated) = 0.592 W/kg

**SAR(1 g) = 0.394 mW/g; SAR(10 g) = 0.238 mW/g**

Maximum value of SAR (measured) = 0.426 mW/g



0 dB = 0.426mW/g

**Fig. 22 1900 MHz CH810**



**1900 Right Tilt Middle**

Date/Time: 2010-3-12 10:38:09

Electronics: DAE4 Sn771

Medium: 1900 Head

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.42$  mho/m;  $\epsilon_r = 39.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.490 mW/g

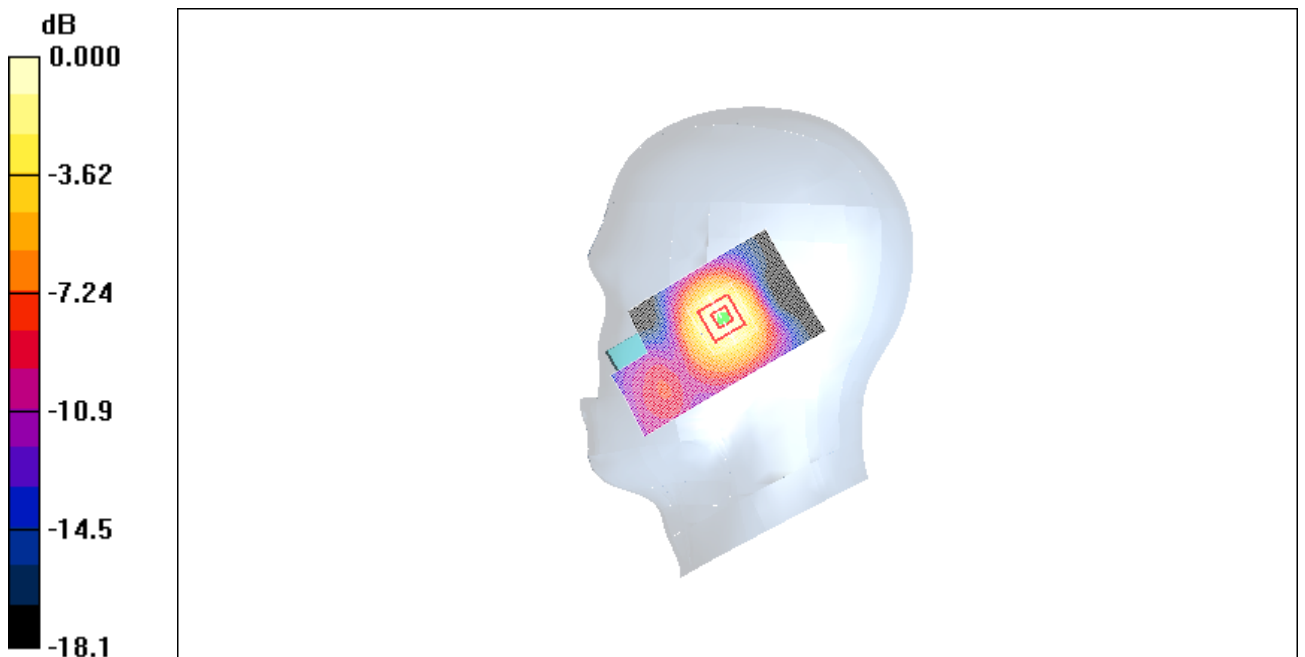
**Tilt Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.86 V/m; Power Drift = 0.000 dB

Peak SAR (extrapolated) = 0.590 W/kg

**SAR(1 g) = 0.397 mW/g; SAR(10 g) = 0.243 mW/g**

Maximum value of SAR (measured) = 0.428 mW/g



0 dB = 0.428mW/g

**Fig.23 1900 MHz CH661**

**1900 Right Tilt Low**

Date/Time: 2010-3-12 10:52:17

Electronics: DAE4 Sn771

Medium: 1900 Head

Medium parameters used (interpolated):  $f = 1850.2$  MHz;  $\sigma = 1.39$  mho/m;  $\epsilon_r = 39.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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) = 0.437 mW/g

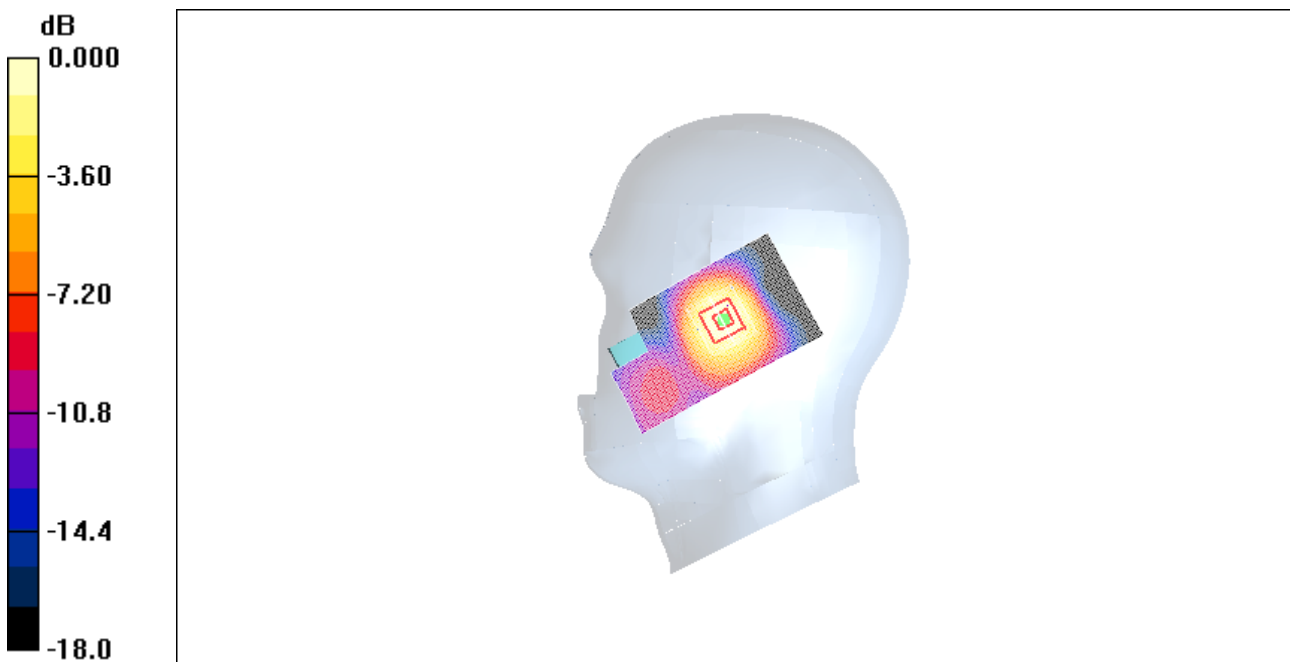
**Tilt Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.54 V/m; Power Drift = 0.120 dB

Peak SAR (extrapolated) = 0.525 W/kg

**SAR(1 g) = 0.357 mW/g; SAR(10 g) = 0.221 mW/g**

Maximum value of SAR (measured) = 0.384 mW/g



0 dB = 0.384mW/g

**Fig.24 1900 MHz CH512**

### 850 Body Towards Ground High

Date/Time: 2010-3-11 13:53:46

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used (interpolated):  $f = 848.8$  MHz;  $\sigma = 0.95$  mho/m;  $\epsilon_r = 54.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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) = 0.723 mW/g

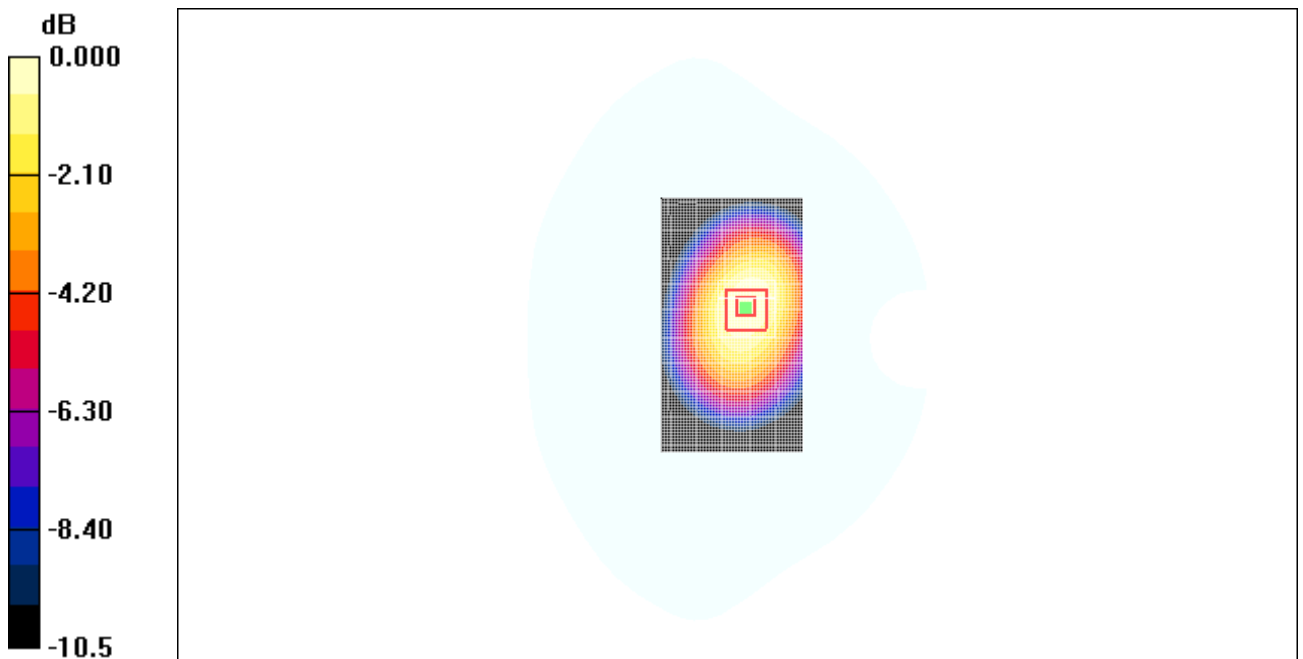
**Toward Ground High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 23.8 V/m; Power Drift = -0.084 dB

Peak SAR (extrapolated) = 0.933 W/kg

**SAR(1 g) = 0.680 mW/g; SAR(10 g) = 0.466 mW/g**

Maximum value of SAR (measured) = 0.704 mW/g



0 dB = 0.704mW/g

Fig. 25 850 MHz CH251

### 850 Body Towards Ground Middle

Date/Time: 2010-3-11 14:09:07

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used (interpolated):  $f = 836.6$  MHz;  $\sigma = 0.94$  mho/m;  $\epsilon_r = 54.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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

Maximum value of SAR (interpolated) = 0.783 mW/g

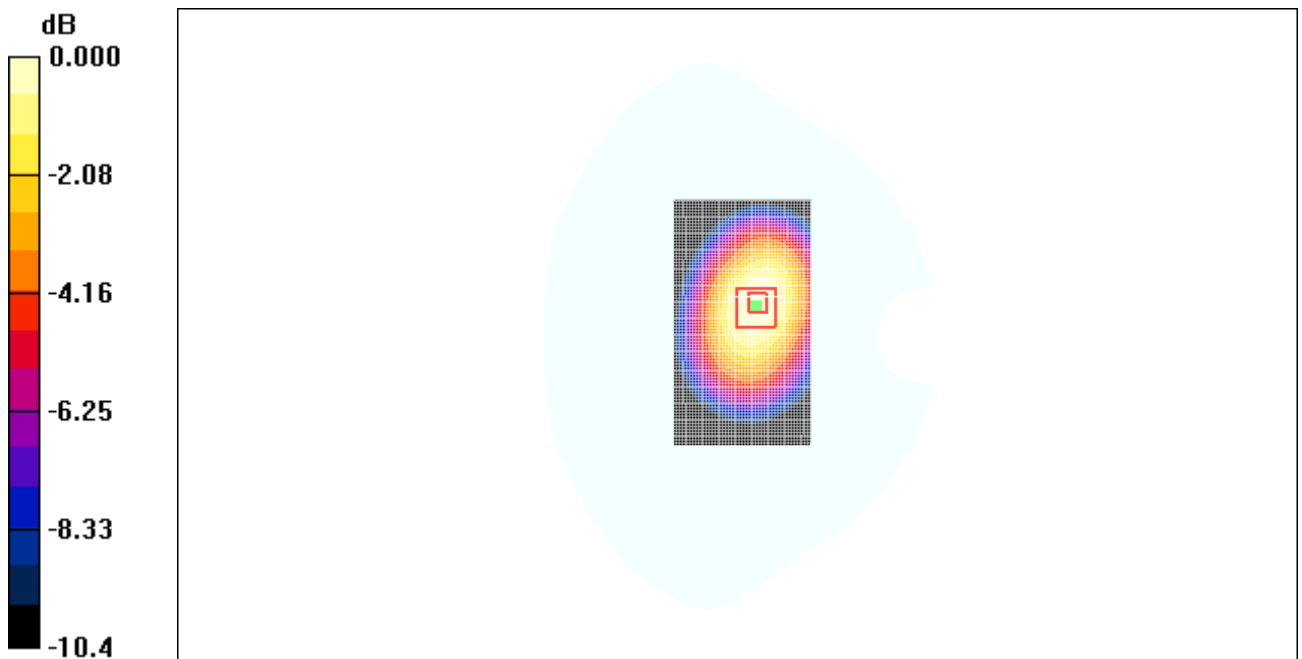
**Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 24.6 V/m; Power Drift = -0.048 dB

Peak SAR (extrapolated) = 1.01 W/kg

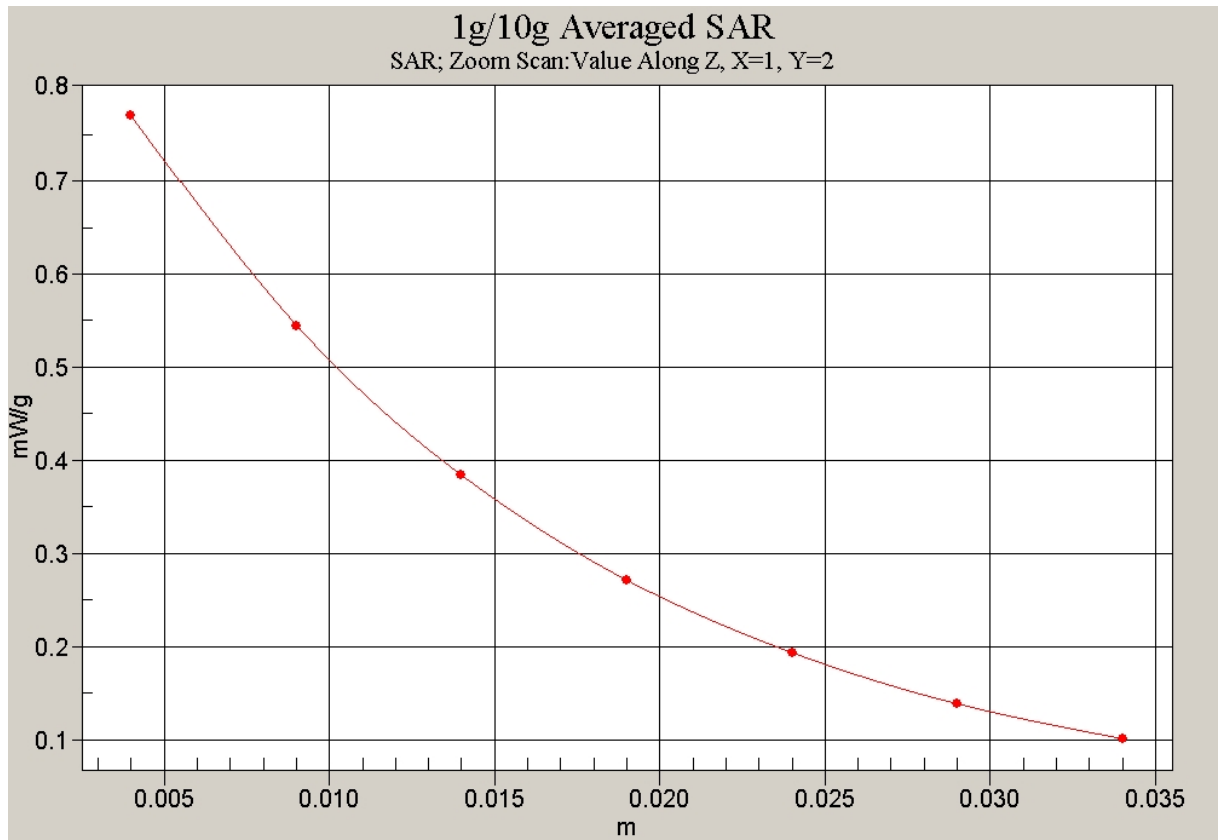
**SAR(1 g) = 0.735 mW/g; SAR(10 g) = 0.504 mW/g**

Maximum value of SAR (measured) = 0.770 mW/g



0 dB = 0.770mW/g

Fig. 26 850 MHz CH190



**Fig. 26-1 Z-Scan at power reference point (850 MHz CH190)**

### 850 Body Towards Ground Low

Date/Time: 2010-3-11 14:24:21

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used:  $f = 825 \text{ MHz}$ ;  $\sigma = 0.923 \text{ mho/m}$ ;  $\epsilon_r = 54.3$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $23.0^\circ\text{C}$       Liquid Temperature:  $22.5^\circ\text{C}$

Communication System: GSM 850 Frequency:  $824.2 \text{ MHz}$  Duty Cycle: 1:8.3

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

**Toward Ground Low/Area Scan (51x91x1):** Measurement grid:  $dx=10\text{mm}$ ,  $dy=10\text{mm}$   
Maximum value of SAR (interpolated) =  $0.695 \text{ mW/g}$

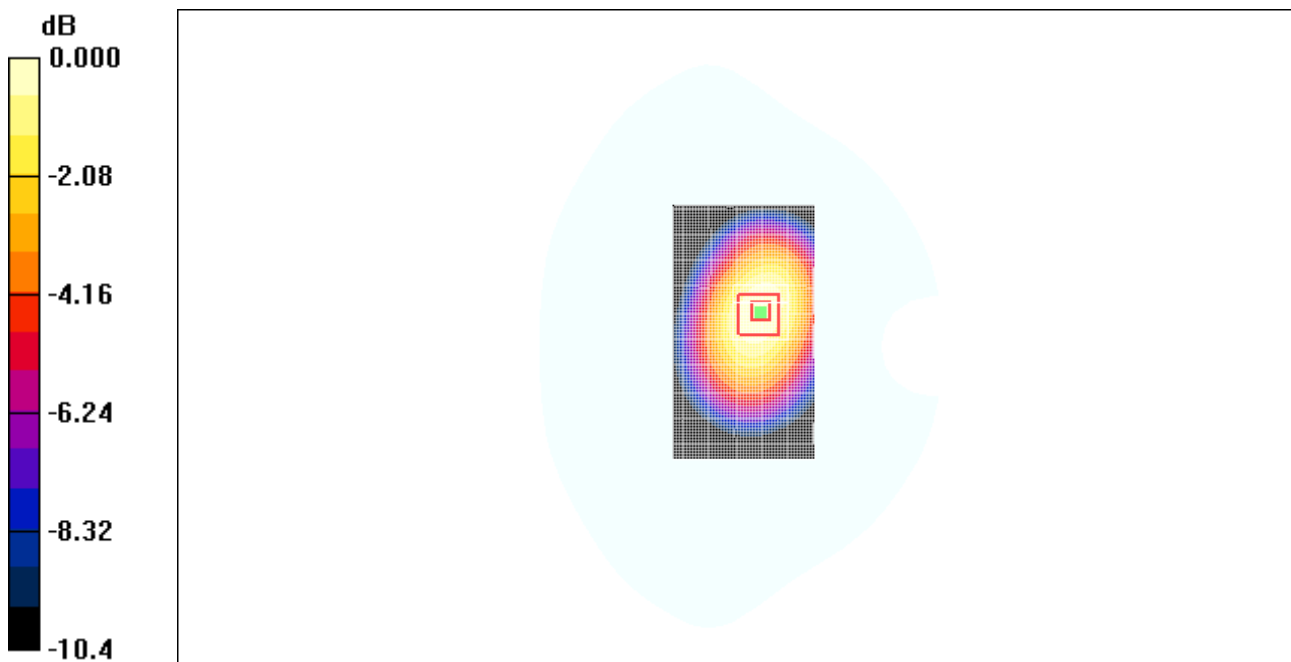
**Toward Ground Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value =  $23.1 \text{ V/m}$ ; Power Drift =  $0.026 \text{ dB}$

Peak SAR (extrapolated) =  $0.901 \text{ W/kg}$

**SAR(1 g) =  $0.654 \text{ mW/g}$ ; SAR(10 g) =  $0.449 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.672 \text{ mW/g}$



0 dB =  $0.672\text{mW/g}$

**Fig. 27 850 MHz CH128**

### 850 Body Towards Phantom High

Date/Time: 2010-3-11 14:39:45

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used (interpolated):  $f = 848.8$  MHz;  $\sigma = 0.95$  mho/m;  $\epsilon_r = 54.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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

Maximum value of SAR (interpolated) = 0.604 mW/g

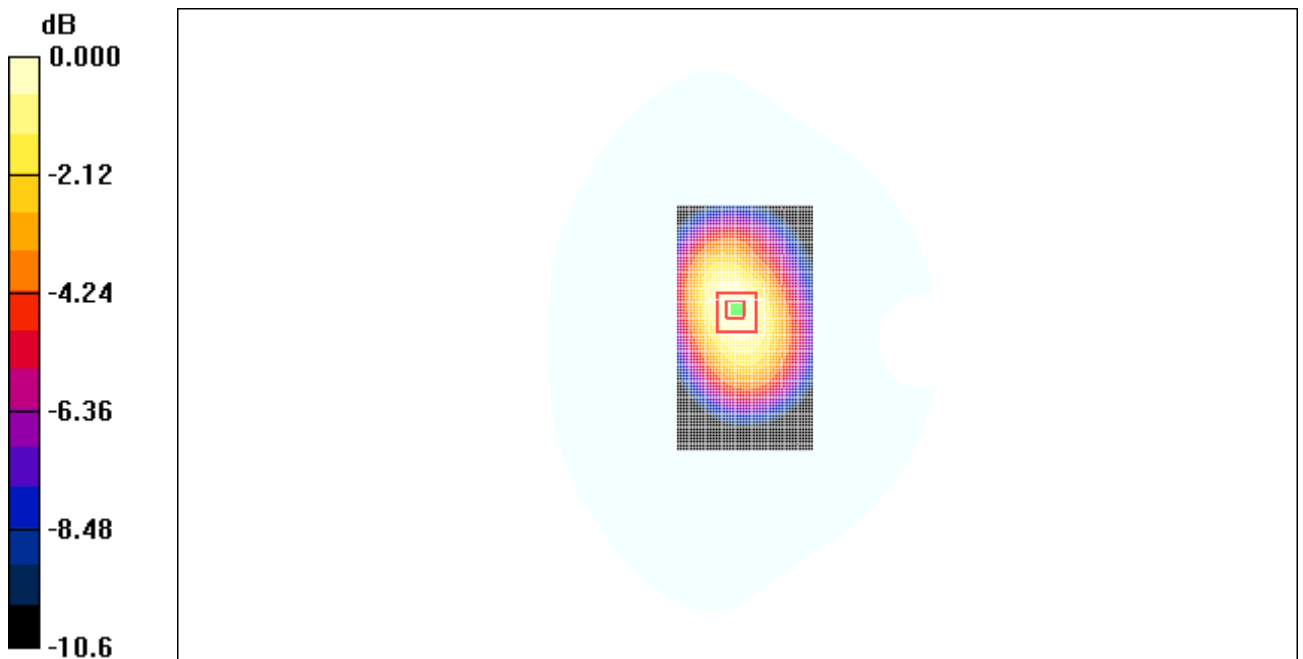
**Toward Phantom High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 22.6 V/m; Power Drift = -0.039 dB

Peak SAR (extrapolated) = 0.789 W/kg

**SAR(1 g) = 0.571 mW/g; SAR(10 g) = 0.394 mW/g**

Maximum value of SAR (measured) = 0.594 mW/g



0 dB = 0.594mW/g

Fig. 28 850 MHz CH251

### 850 Body Towards Phantom Middle

Date/Time: 2010-3-11 14:55:01

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used (interpolated):  $f = 836.6$  MHz;  $\sigma = 0.94$  mho/m;  $\epsilon_r = 54.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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

Maximum value of SAR (interpolated) = 0.645 mW/g

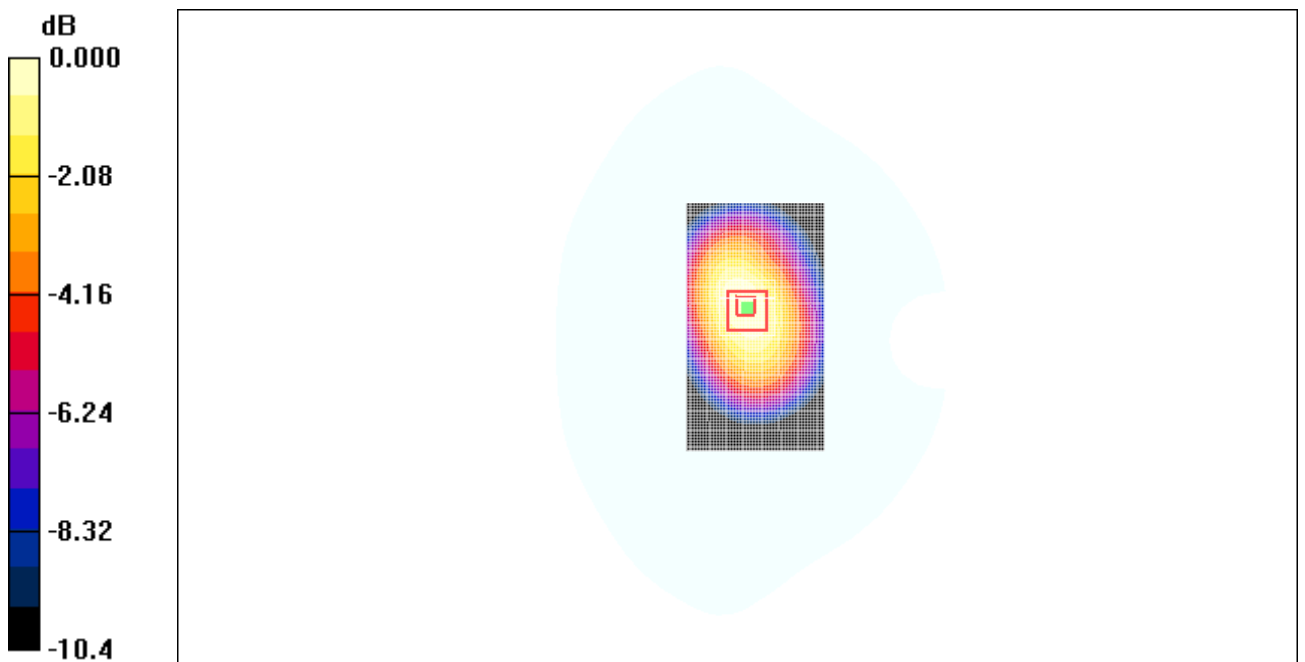
**Toward Phantom Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 23.4 V/m; Power Drift = -0.038 dB

Peak SAR (extrapolated) = 0.839 W/kg

**SAR(1 g) = 0.610 mW/g; SAR(10 g) = 0.420 mW/g**

Maximum value of SAR (measured) = 0.636 mW/g



0 dB = 0.636mW/g

Fig. 29 850 MHz CH190



**850 Body Towards Phantom Low**

Date/Time: 2010-3-11 15:10:18

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used:  $f = 825 \text{ MHz}$ ;  $\sigma = 0.923 \text{ mho/m}$ ;  $\epsilon_r = 54.3$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $23.0^\circ\text{C}$       Liquid Temperature:  $22.5^\circ\text{C}$

Communication System: GSM 850 Frequency:  $824.2 \text{ MHz}$  Duty Cycle: 1:8.3

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) =  $0.551 \text{ mW/g}$

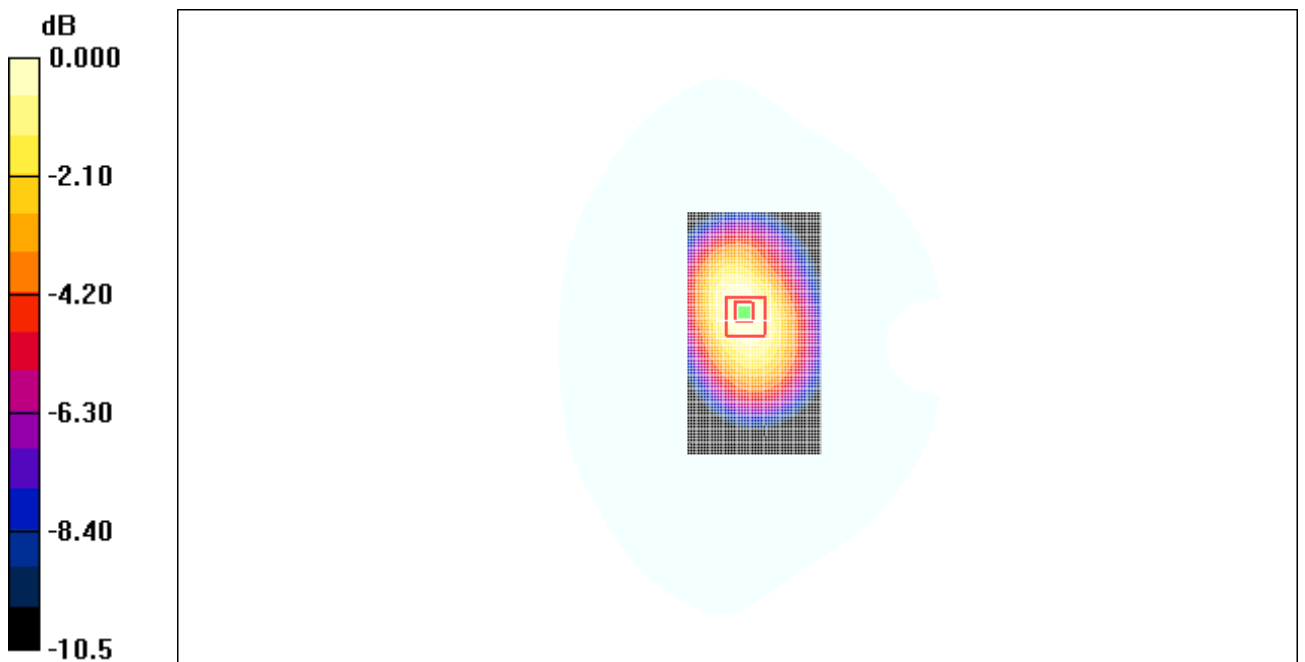
**Toward Phantom Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  
 $dz=5\text{mm}$

Reference Value =  $21.5 \text{ V/m}$ ; Power Drift =  $-0.026 \text{ dB}$

Peak SAR (extrapolated) =  $0.702 \text{ W/kg}$

**SAR(1 g) =  $0.515 \text{ mW/g}$ ; SAR(10 g) =  $0.357 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.533 \text{ mW/g}$



0 dB =  $0.533\text{mW/g}$

**Fig. 30 850 MHz CH128**

**1900 Body Towards Ground High**

Date/Time: 2010-3-12 13:42:06

Electronics: DAE4 Sn771

Medium: Body 1900 MHz

Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.54$  mho/m;  $\epsilon_r = 51.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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 (51x91x1):** Measurement grid: dx=10mm, dy=10mm  
Maximum value of SAR (interpolated) = 0.501 mW/g

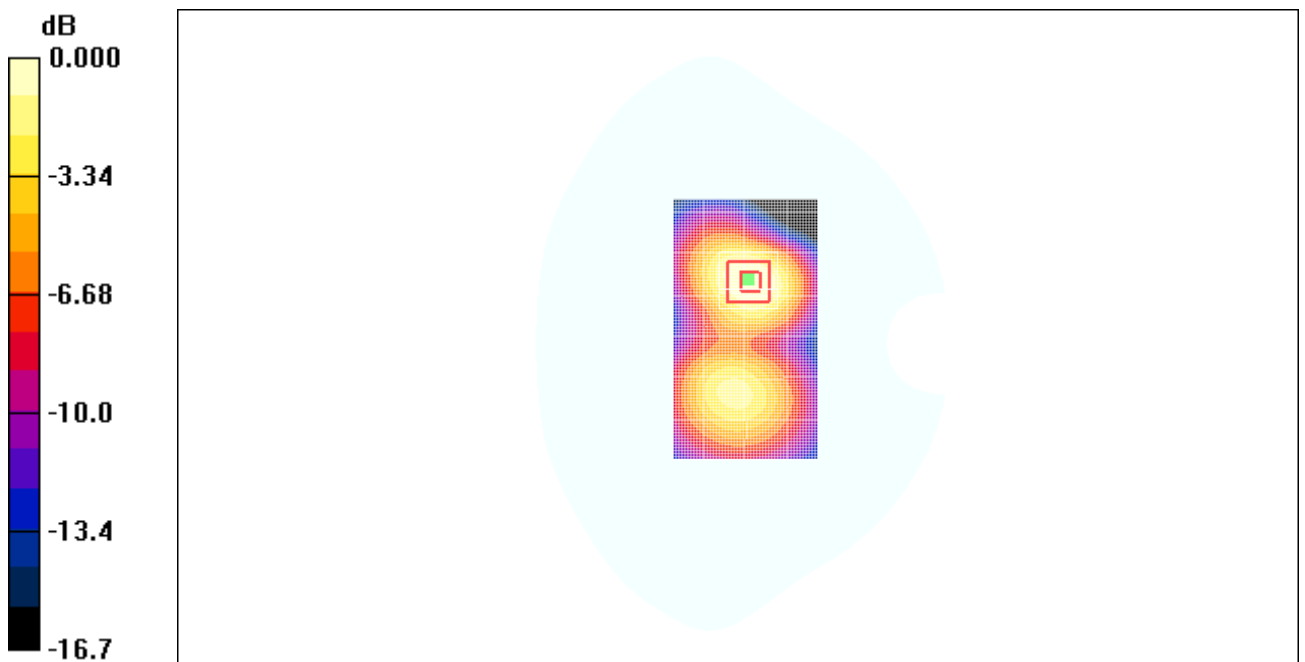
**Toward Ground High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.02 V/m; Power Drift = -0.107 dB

Peak SAR (extrapolated) = 0.713 W/kg

**SAR(1 g) = 0.426 mW/g; SAR(10 g) = 0.245 mW/g**

Maximum value of SAR (measured) = 0.430 mW/g



0 dB = 0.430mW/g

**Fig. 31 1900 MHz CH810**

**1900 Body Towards Ground Middle**

Date/Time: 2010-3-12 13:57:20

Electronics: DAE4 Sn771

Medium: Body 1900 MHz

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.51$  mho/m;  $\epsilon_r = 51.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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) = 0.517 mW/g

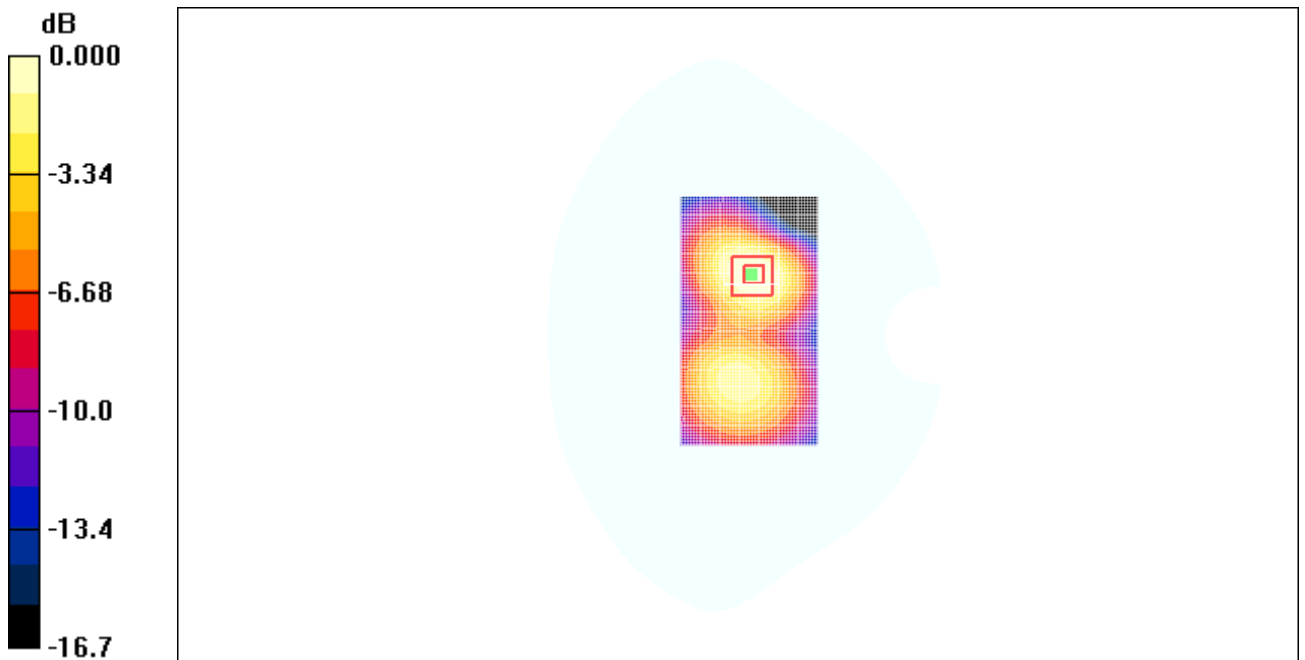
**Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.73 V/m; Power Drift = 0.028 dB

Peak SAR (extrapolated) = 0.734 W/kg

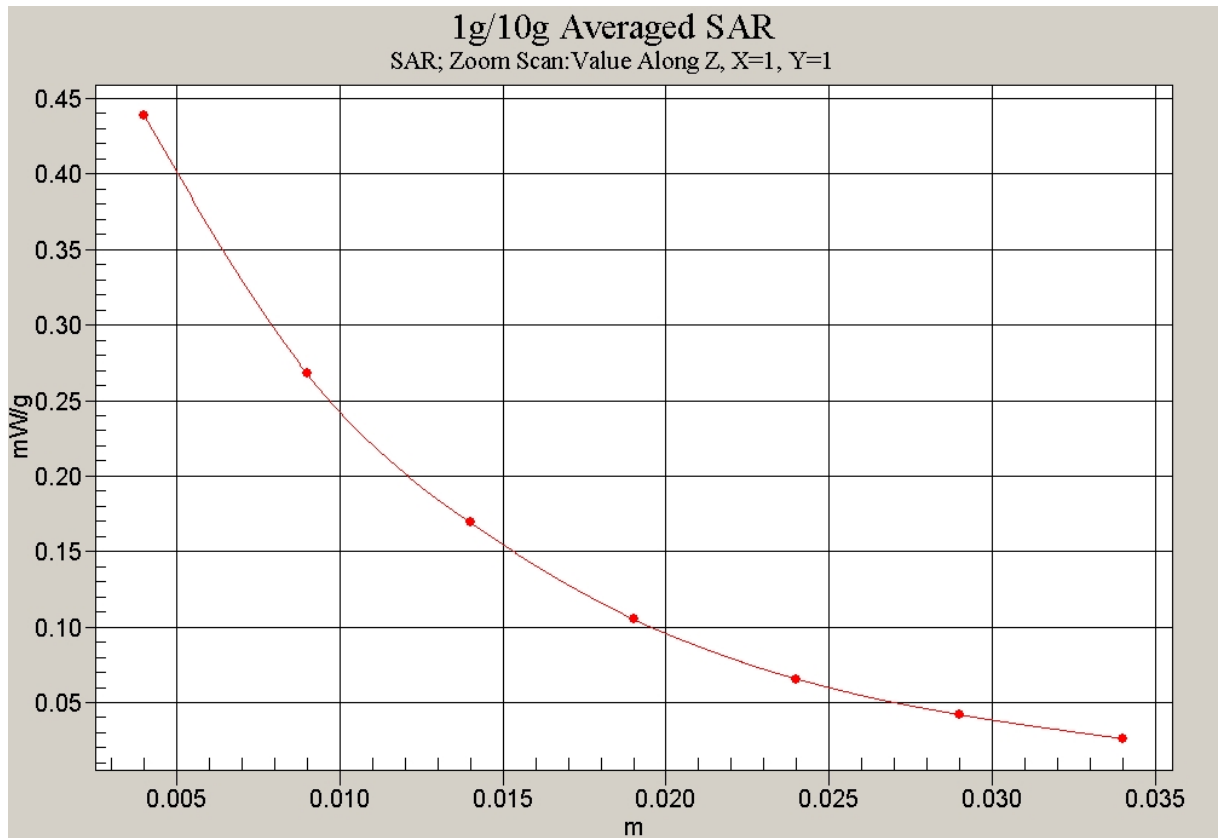
**SAR(1 g) = 0.441 mW/g; SAR(10 g) = 0.253 mW/g**

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



0 dB = 0.439mW/g

**Fig. 32 1900 MHz CH661**



**Fig. 32-1 Z-Scan at power reference point (1900 MHz CH661)**

**1900 Body Towards Ground Low**

Date/Time: 2010-3-12 14:12:35

Electronics: DAE4 Sn771

Medium: Body 1900 MHz

Medium parameters used (interpolated):  $f = 1850.2$  MHz;  $\sigma = 1.49$  mho/m;  $\epsilon_r = 51.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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(4.68, 4.68, 4.68)

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

Maximum value of SAR (interpolated) = 0.476 mW/g

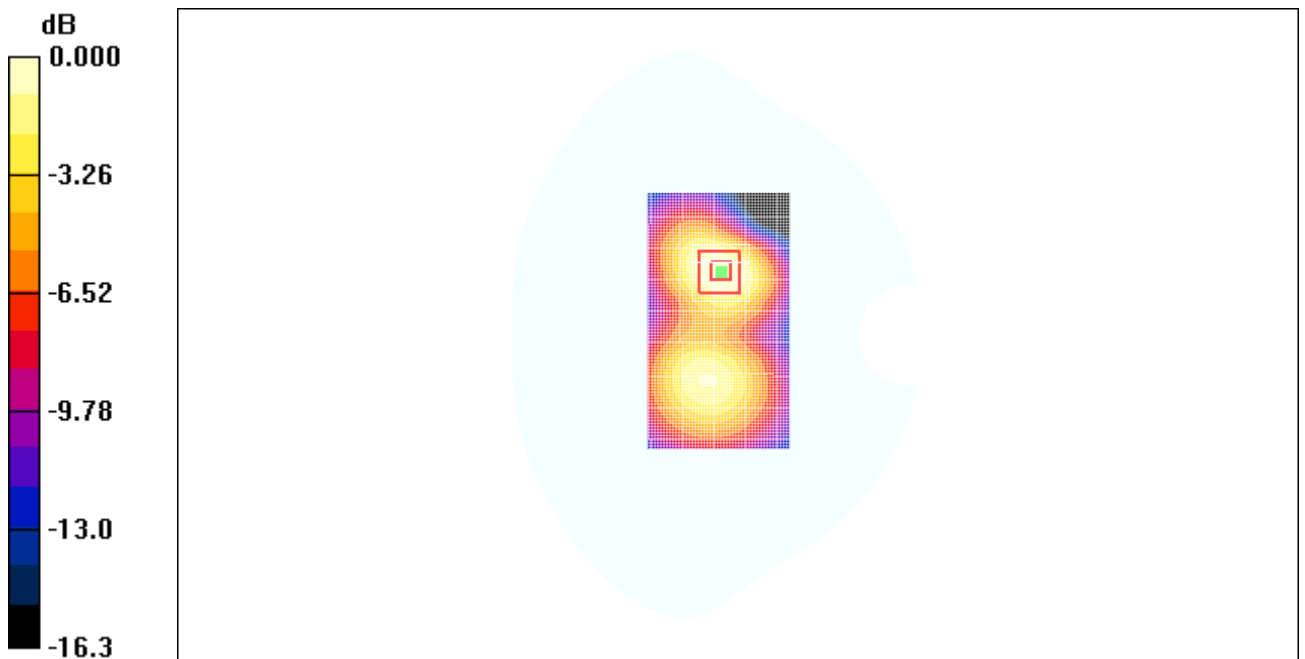
**Toward Ground Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.46 V/m; Power Drift = -0.020 dB

Peak SAR (extrapolated) = 0.677 W/kg

**SAR(1 g) = 0.409 mW/g; SAR(10 g) = 0.237 mW/g**

Maximum value of SAR (measured) = 0.413 mW/g



0 dB = 0.413mW/g

**Fig. 33 1900 MHz CH512**

**1900 Body Towards Phantom High**

Date/Time: 2010-3-12 14:27:53

Electronics: DAE4 Sn771

Medium: Body 1900 MHz

Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.54$  mho/m;  $\epsilon_r = 51.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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 Phantom High/Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm  
Maximum value of SAR (interpolated) = 0.260 mW/g

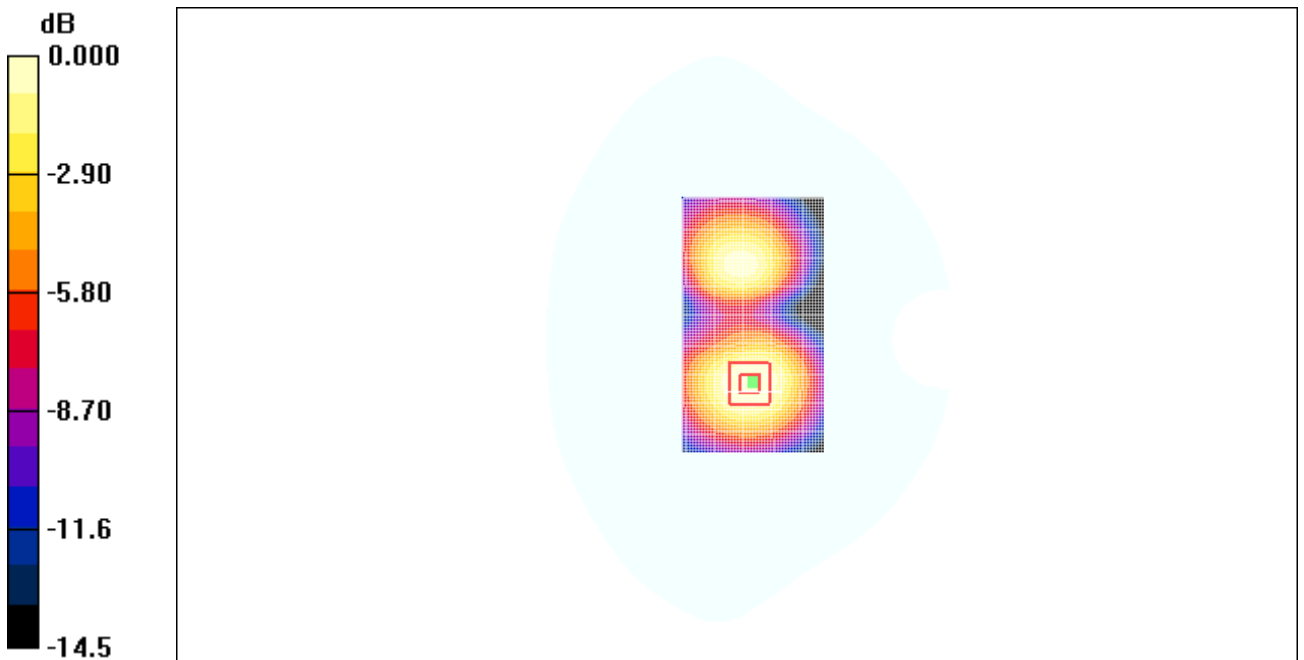
**Toward Phantom High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.25 V/m; Power Drift = 0.031 dB

Peak SAR (extrapolated) = 0.358 W/kg

**SAR(1 g) = 0.230 mW/g; SAR(10 g) = 0.142 mW/g**

Maximum value of SAR (measured) = 0.237 mW/g



0 dB = 0.237mW/g

**Fig. 34 1900 MHz CH810**

### 1900 Body Towards Phantom Middle

Date/Time: 2010-3-12 14:43:05

Electronics: DAE4 Sn771

Medium: Body 1900 MHz

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.51$  mho/m;  $\epsilon_r = 51.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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

Maximum value of SAR (interpolated) = 0.295 mW/g

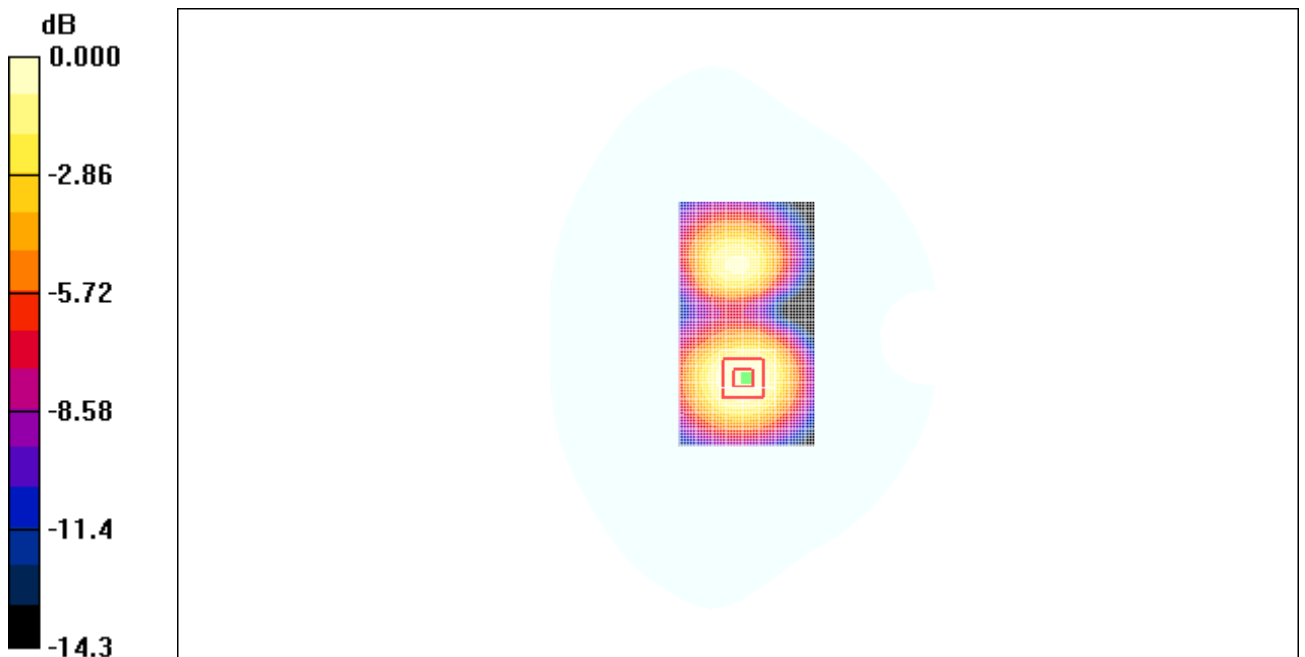
**Toward Phantom Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.28 V/m; Power Drift = 0.082 dB

Peak SAR (extrapolated) = 0.404 W/kg

**SAR(1 g) = 0.262 mW/g; SAR(10 g) = 0.163 mW/g**

Maximum value of SAR (measured) = 0.267 mW/g



0 dB = 0.267mW/g

Fig. 35 1900 MHz CH661

**1900 Body Towards Phantom Low**

Date/Time: 2010-3-12 14:58:24

Electronics: DAE4 Sn771

Medium: Body 1900 MHz

Medium parameters used (interpolated):  $f = 1850.2$  MHz;  $\sigma = 1.49$  mho/m;  $\epsilon_r = 51.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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(4.68, 4.68, 4.68)

**Toward Phantom Low/Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm  
Maximum value of SAR (interpolated) = 0.300 mW/g

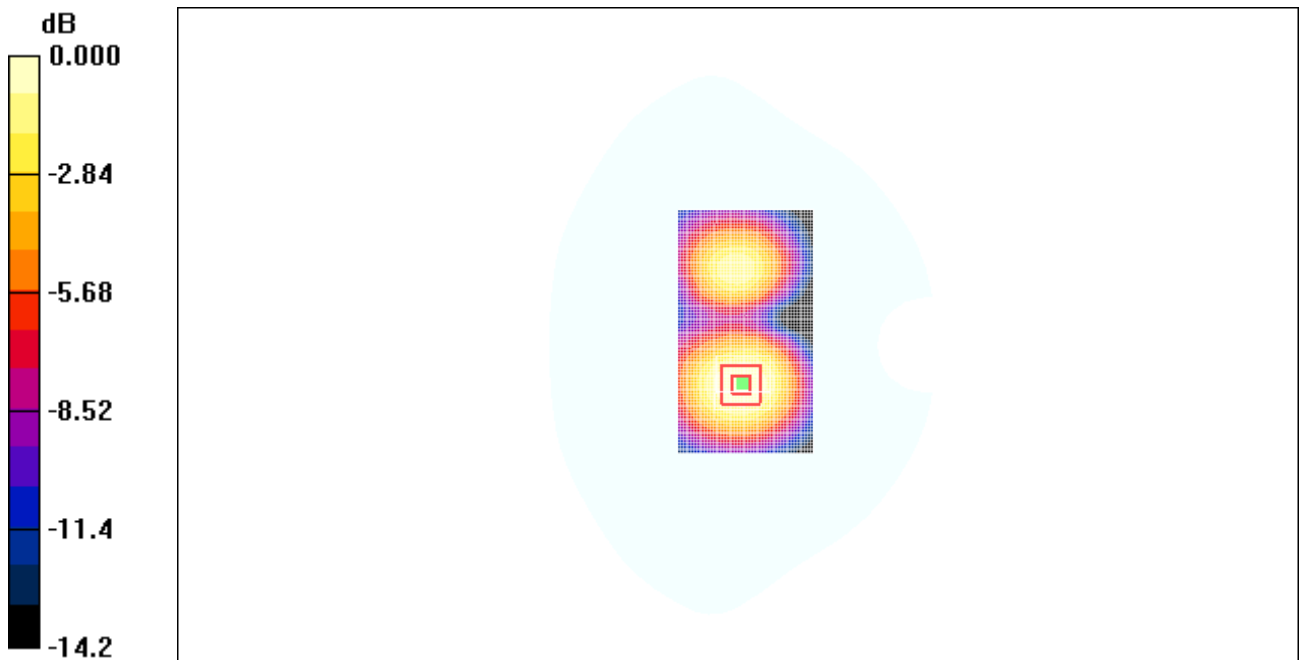
**Toward Phantom Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.98 V/m; Power Drift = 0.026 dB

Peak SAR (extrapolated) = 0.414 W/kg

**SAR(1 g) = 0.271 mW/g; SAR(10 g) = 0.170 mW/g**

Maximum value of SAR (measured) = 0.277 mW/g



0 dB = 0.277mW/g

**Fig. 36 1900 MHz CH512**



**850 Right Cheek High with battery CAB2170000C1**

Date/Time: 2010-8-2 8:01:16

Electronics: DAE4 Sn771

Medium: Head GSM900

Medium parameters used (interpolated):  $f = 848.8$  MHz;  $\sigma = 0.92$  mho/m;  $\epsilon_r = 41.0$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 23°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) = 1.18 mW/g

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

Reference Value = 7.81 V/m; Power Drift = 0.021 dB

Peak SAR (extrapolated) = 1.47 W/kg

**SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.748 mW/g**

Maximum value of SAR (measured) = 1.15 mW/g



**Fig. 37 850 MHz CH251**

**850 Body Toward Ground Middle with battery CAB2170000C1**

Date/Time: 2010-8-2 8:49:12

Electronics: DAE4 Sn771

Medium: 900 Body

Medium parameters used (interpolated):  $f = 836.6$  MHz;  $\sigma = 0.95$  mho/m;  $\epsilon_r = 55.0$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 23°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 (51x91x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.773 mW/g

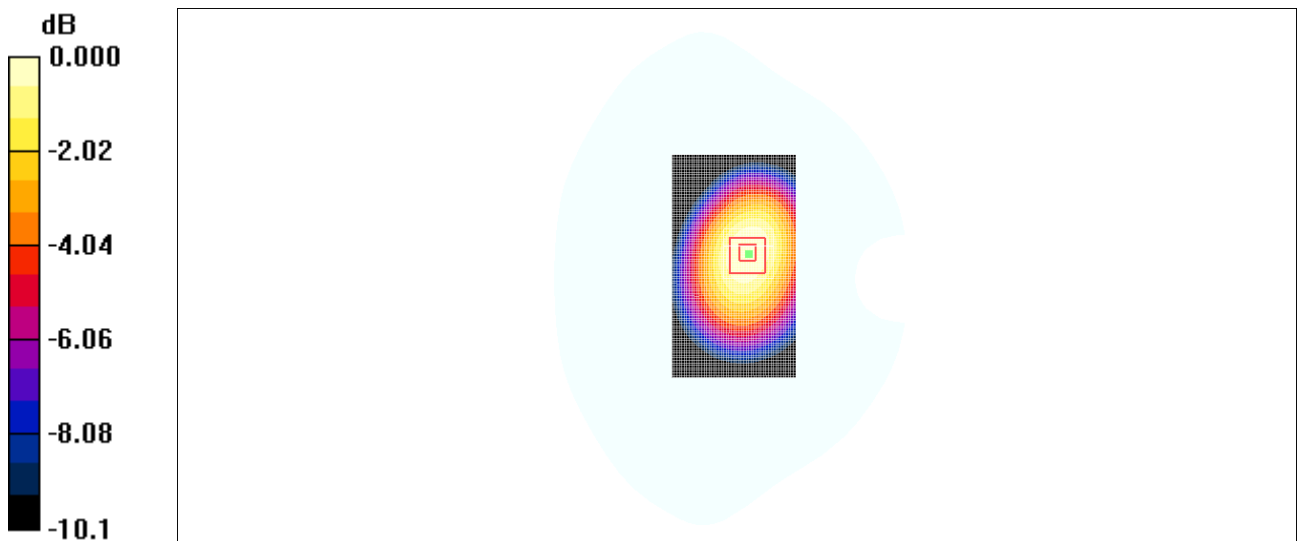
**Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 25.1 V/m; Power Drift = -0.092 dB

Peak SAR (extrapolated) = 0.980 W/kg

**SAR(1 g) = 0.714 mW/g; SAR(10 g) = 0.496 mW/g**

Maximum value of SAR (measured) = 0.733 mW/g



0 dB = 0.733mW/g

**Fig. 38 850 MHz CH190**

## ANNEX D SYSTEM VALIDATION RESULTS

### 835MHz

Date/Time: 2010-3-11 7:25:09

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.90 \text{ mho/m}$ ;  $\epsilon_r = 40.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $23.0^\circ\text{C}$       Liquid Temperature:  $22.5^\circ\text{C}$

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) = 2.51 mW/g

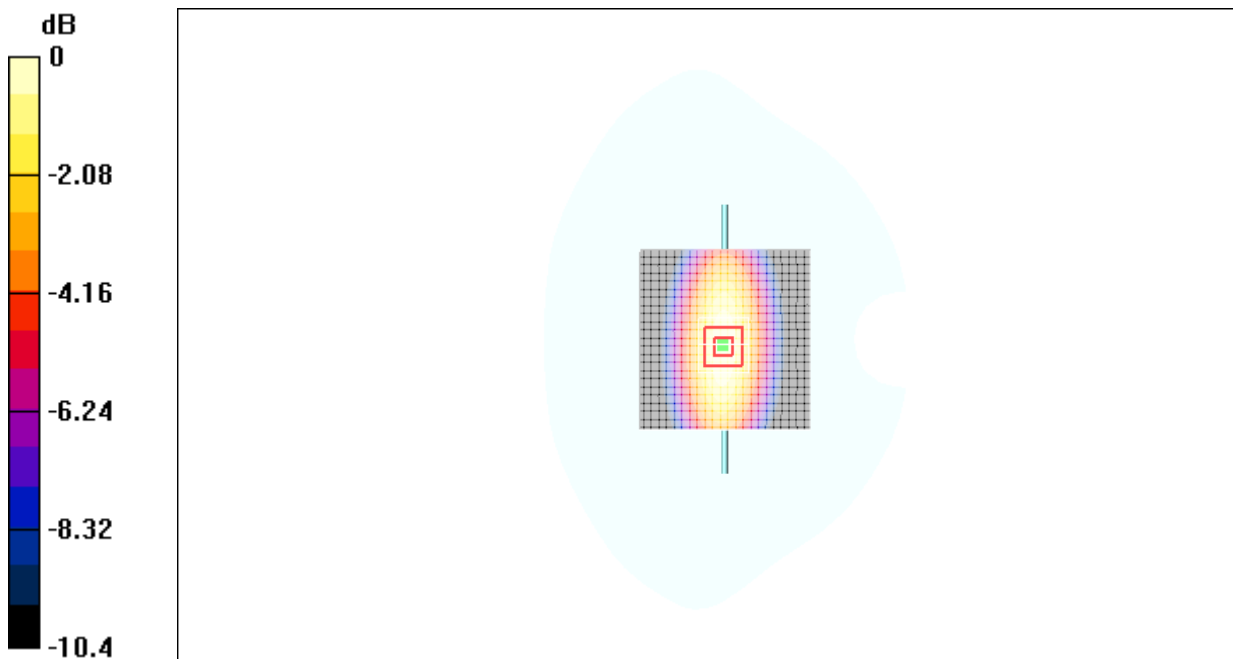
**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 54.1 V/m; Power Drift = -0.054 dB

Peak SAR (extrapolated) = 3.36 W/kg

**SAR(1 g) = 2.31 mW/g; SAR(10 g) = 1.57 mW/g**

Maximum value of SAR (measured) = 2.42 mW/g



0 dB = 2.42mW/g

**Fig.39 validation 835MHz 250mW**

## 835MHz

Date/Time: 2010-8-2 14:19:45

Electronics: DAE4 Sn771

Medium: Head 850

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.89 \text{ mho/m}$ ;  $\epsilon_r = 41.3$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $23.0^\circ\text{C}$       Liquid Temperature:  $22.5^\circ\text{C}$

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) = 2.65 mW/g

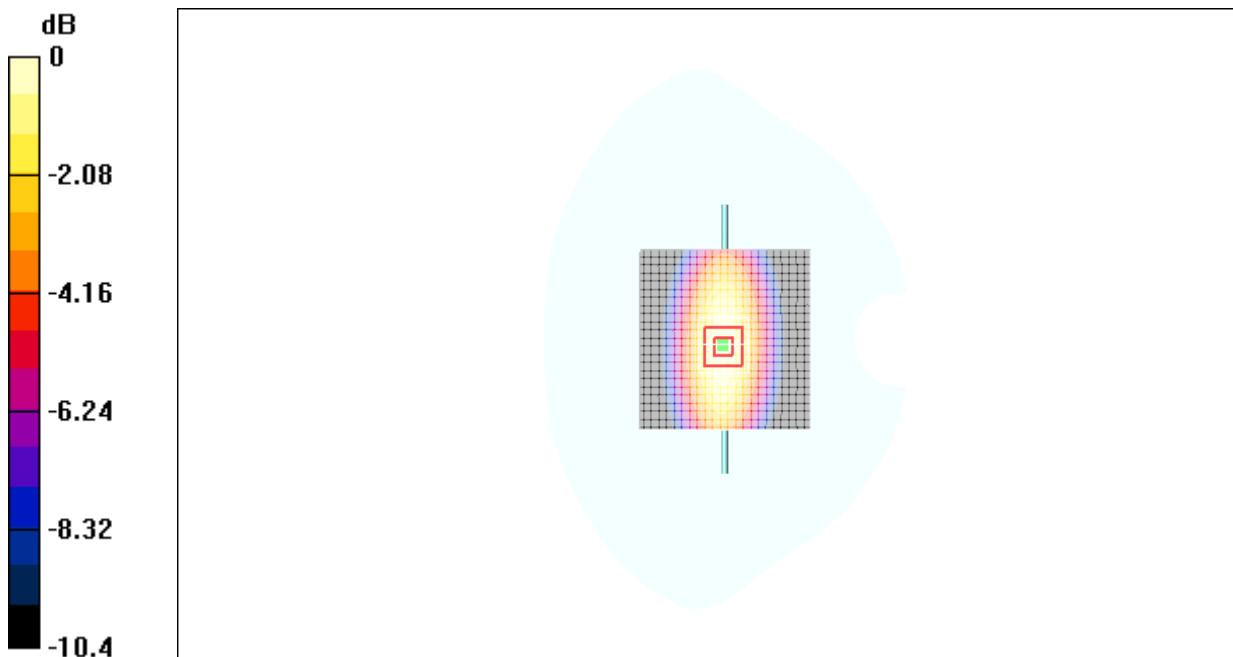
**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  
 $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 54.9 V/m; Power Drift = 0.023 dB

Peak SAR (extrapolated) = 3.49 W/kg

**SAR(1 g) = 2.40 mW/g; SAR(10 g) = 1.58 mW/g**

Maximum value of SAR (measured) = 2.57 mW/g



0 dB = 2.57mW/g

**Fig.40 validation 835MHz 250mW**

## 835MHz

Date/Time: 2010-3-11 13:11:34

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.93 \text{ mho/m}$ ;  $\epsilon_r = 54.2$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $23.0^\circ\text{C}$       Liquid Temperature:  $22.5^\circ\text{C}$

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) =  $2.71 \text{ mW/g}$

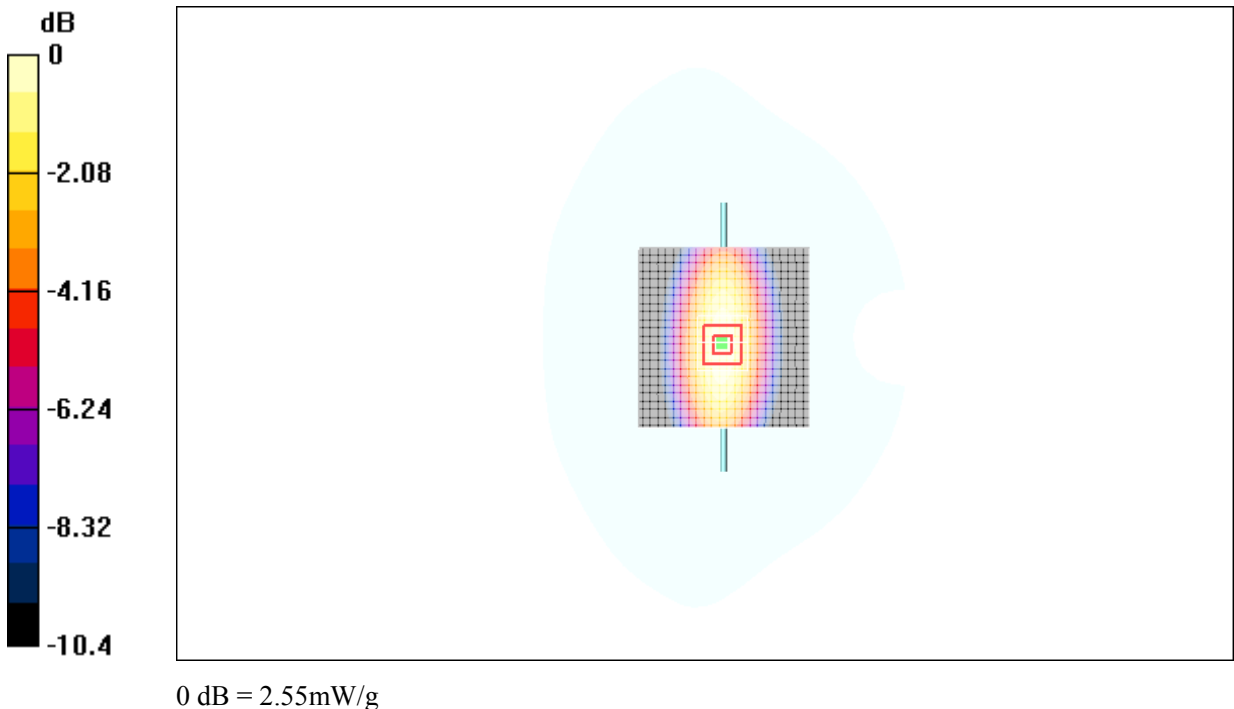
**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  
 $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $53.1 \text{ V/m}$ ; Power Drift =  $0.024 \text{ dB}$

Peak SAR (extrapolated) =  $3.49 \text{ W/kg}$

**SAR(1 g) =  $2.50 \text{ mW/g}$ ; SAR(10 g) =  $1.56 \text{ mW/g}$**

Maximum value of SAR (measured) =  $2.58 \text{ mW/g}$



**Fig.41 validation 835MHz 250mW**

## 835MHz

Date/Time: 2010-8-2 20:06:27

Electronics: DAE4 Sn771

Medium: 850 Body

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.95 \text{ mho/m}$ ;  $\epsilon_r = 55.0$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $23.0^\circ\text{C}$       Liquid Temperature:  $22.5^\circ\text{C}$

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) = 2.66 mW/g

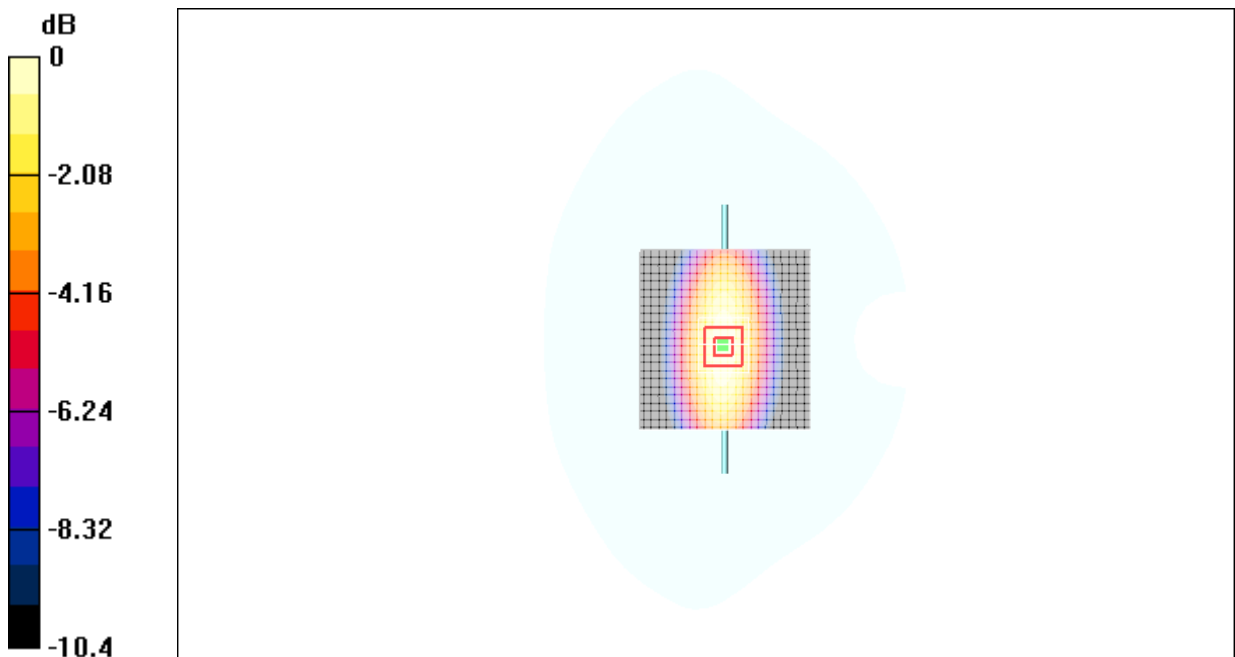
**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  
 $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 52.3 V/m; Power Drift = 0.015 dB

Peak SAR (extrapolated) = 3.56 W/kg

**SAR(1 g) = 2.45 mW/g; SAR(10 g) = 1.59 mW/g**

Maximum value of SAR (measured) = 2.52 mW/g



0 dB = 2.52mW/g

**Fig.42 validation 835MHz 250mW**