SAR TEST REPORT for FCC

No. 2010SAR00089

For

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

GSM quad bands and TD-SCDMA dual bands mobile phone

AAK-7880001-BV

With

Hardware Version: A

Software Version: R1AC002

SEMC ID: AAK-7880001-BV

Industry Canada ID: 4170B-A7880001

FCCID: PY7A7880001

Issued Date: 2010-09-12

Deutscher Akkreditierungs Rat

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

Note:

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

Test Laboratory:

TMC Beijing, Telecommunication Metrology Center of MIIT

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

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

TABLE OF CONTENT

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:	+86-10-62304633

1.2 Testing Environment

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

Ambient noise is checked and found very low and in compliance with requirement of standards.
Reflection of surrounding objects is minimized and in compliance with requirement of standards.

1.3 Project Data

Project Leader:	Qi Dianyuan
Test Engineer:	Lin Xiaojun
Testing Start Date:	August 24, 2010
Testing End Date:	August 26, 2010

1.4 Signature

Lin Xiaojun
(Prepared this test report)

Qi Dianyuan
(Reviewed this test report)

Xiao Li
Deputy Director of the laboratory
(Approved this test report)

2 General Information

2.1 Statement of Compliance

The SAR values found for the AAK-7880001-BV Mobile Phone are below the maximum recommended levels of 1.6 W/Kg as averaged over any 1g tissue according to the FCC rule, the ANSI C95.1-1999.

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

The measurement together with the test system set-up is described in chapter 5 of this test report.

A detailed description of the equipment under test can be found in chapter 3 of this test report.

2.2 Applicant Information

Company Name:	Sony Ericsson Mobile Communications(China) Co., Ltd.
Address /Post:	1/F, China Digital Kingdom Building, No.1 North Road, Wangjing, Chaoyang District, Beijing, China
City:	Beijing
Postal Code:	/
Country:	China
Contact:	Ma, Gang
Email:	gang.song@sonyericsson.com
Telephone:	+86-10-58656312
Fax:	+86-10-58656750

2.3 Manufacturer Information

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

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

3.1 About EUT

Description:	GSM quad bands and TD-SCDMA dual bands mobile phone
Model:	AAK-7880001-BV
Tested mode(s):	GSM, PCS, Bluetooth, WiFi
GPRS Multislot Class:	10
GPRS capability Class:	B
EGPRS Multislot Class:	10
Test device Production information:	Production unit
Device type:	Portable device
Antenna type:	Integrated antenna
Accessories/Body-worn configurations:	Headset

3.2 Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	004402140216098 / 004402140223326	A	R1AC002

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

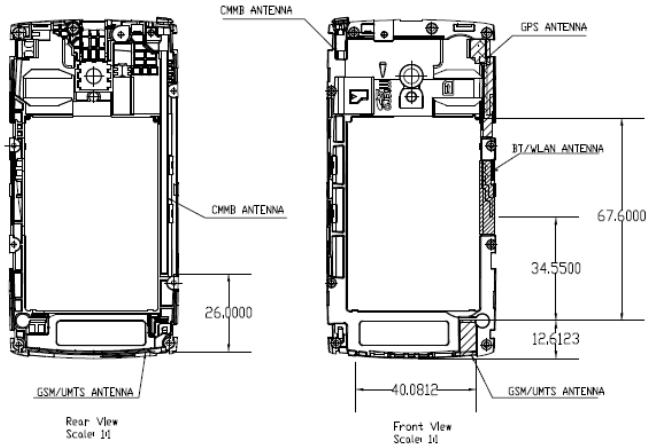
3.3 Internal Identification of AE used during the test

AE ID*	Description	Model	SN	Manufacturer
AE1	Travel Adapter	CAA-0002001-BV	/	Sony Ericsson
AE2	Battery	BST-39	/	Sony Ericsson
AE3	Headset	CCA-0002013	/	Sony Ericsson
AE4	BT Headset	DDA-0002005	/	Sony Ericsson

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

3.4 Antenna description

There are four antennae in the EUT, GSM/UMTS antenna, BT/WiFi antenna, GPS antenna and CMMB antenna.



Antenna dimension:

Max length: 43mm

Max width: 13mm

4 CHARACTERISTICS OF THE TEST

4.1 Applicable Limit Regulations

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

4.2 Applicable Measurement Standards

IEEE 1528–2003: Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques.
OET Bulletin 65 (Edition 97-01) and Supplement C(Edition 01-01): Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits.
KDB648474 D01 SAR Handsets Multi Xmiter and Ant, v01r05: SAR Evaluation Considerations for Handsets with Multiple Transmitters and Antennas.
KDB248227: SAR measurement procedures for 802.112abg transmitters.
KDB 941225 D03 SAR Test Reduction GSM_GPRS_EDGE v01: Recommended SAR Test Reduction Procedures for GSM/GPRS/EDGE.

5 OPERATIONAL CONDITIONS DURING TEST

5.1 Schematic Test Configuration

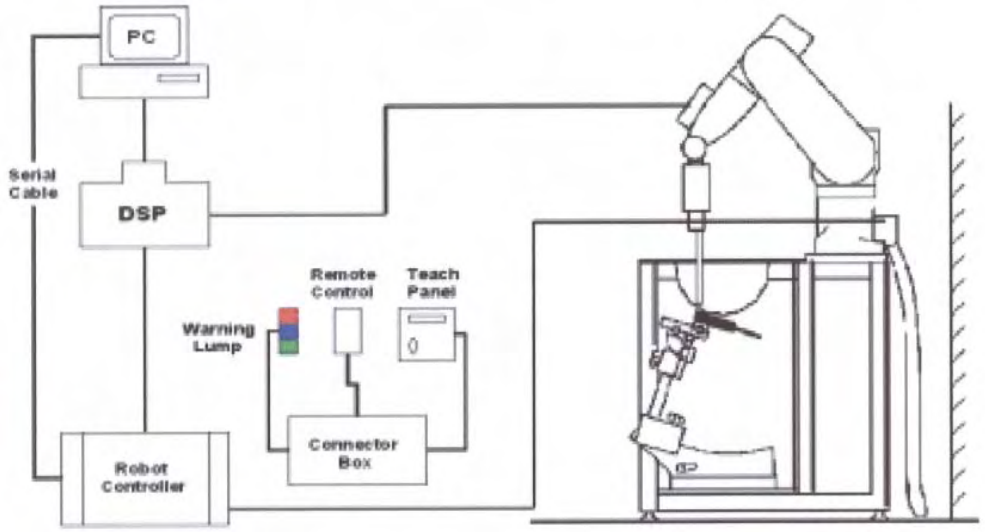
For the SAR tests at GSM 850 and PCS 1900, a communication link is set up with a System Simulator (SS) by air link. The EUT is commanded to operate at maximum transmitting power.

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

5.2 SAR Measurement Set-up

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

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



Picture 1: SAR Lab Test Measurement Set-up

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

5.3 Dasy4 E-field Probe System

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

ES3DV3 Probe Specification

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

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

Picture 2: ES3DV3 E-field Probe

Picture3:ES3DV3 E-field probe

5.4 E-field Probe Calibration

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

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

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

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

Where: Δt = Exposure time (30 seconds),
C = Heat capacity of tissue (brain or muscle),
ΔT = Temperature increase due to RF exposure.

Or

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

Where:
σ = Simulated tissue conductivity,
ρ = Tissue density (kg/m^3).

Picture 4: Device Holder

5.5 Other Test Equipment

5.5.1 Device Holder for Transmitters

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

5.5.2 Phantom

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

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

Picture 5: Generic Twin Phantom

5.6 Equivalent Tissues

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

Table 1. Composition of the Head Tissue Equivalent Matter

MIXTURE %	FREQUENCY 850MHz
Water	41.45
Sugar	56.0
Salt	1.45
Preventol	0.1
Cellulose	1.0
Dielectric Parameters Target Value	f=850MHz ε=41.5 σ=0.90
MIXTURE %	FREQUENCY 1900MHz
Water	55.242
Glycol monobutyl	44.452
Salt	0.306
Dielectric Parameters Target Value	f=1900MHz ε=40.0 σ=1.40
MIXTURE %	FREQUENCY 2450MHz
Water	58.79
Glycol monobutyl	41.15
Salt	0.06
Dielectric Parameters Target Value	f=2450MHz ε=39.2 σ=1.80

Table 2. Composition of the Body Tissue Equivalent Matter

MIXTURE %	FREQUENCY 850MHz
Water	52.5
Sugar	45.0
Salt	1.4
Preventol	0.1
Cellulose	1.0
Dielectric Parameters Target Value	f=850MHz ε=55.2 σ=0.97
MIXTURE %	FREQUENCY 1900MHz
Water	69.91
Glycol monobutyl	29.96
Salt	0.13
Dielectric Parameters Target Value	f=1900MHz ε=53.3 σ=1.52
MIXTURE %	FREQUENCY 2450MHz
Water	72.60
Glycol monobutyl	27.22
Salt	0.18
Dielectric Parameters Target Value	f=2450MHz ε=52.7 σ=1.95

5.7 System Specifications

Specifications

Positioner: Stäubli Unimation Corp. Robot Model: RX90L

Repeatability: ±0.02 mm

No. of Axis: 6

Data Acquisition Electronic (DAE) System

Cell Controller

Processor: Pentium III

Clock Speed: 800 MHz

Operating System: Windows 2000

Data Converter

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

Software: DASY4 software

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

6 CONDUCTED OUTPUT POWER MEASUREMENT

6.1 Summary

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

6.2 Conducted Power

6.2.1 Measurement Methods

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

6.2.2 Measurement result

Table 3: Conducted Power Measurement Results

GSM 850MHz Speech	Conducted Power (dBm)		
	Channel 128 (824.2MHz)	Channel 190 (836.6MHz)	Channel 251 (848.8MHz)
Measured Power Level	32.8	32.9	33.0
Product Max Power Level	33.0	33.0	33.0
GSM 850MHz GPRS(GMSK)	Conducted Power (dBm)		
	Channel 128 (824.2MHz)	Channel 190 (836.6MHz)	Channel 251 (848.8MHz)
Measured Power Level	32.8	32.9	32.9
Product Max Power Level	33.0	33.0	33.0
GSM 850MHz EGPRS(GMSK)	Conducted Power (dBm)		
	Channel 128 (824.2MHz)	Channel 190 (836.6MHz)	Channel 251 (848.8MHz
Measured Power Level	32.8	32.8	32.9
Product Max Power Level	33.0	33.0	33.0

GSM 1900MHz Speech	Conducted Power (dBm)		
	Channel 512 (1850.2MHz)	Channel 661 (1880MHz)	Channel 810 (1909.8MHz)
Measured Power Level	29.8	30.0	29.8
Product Max Power Level	30.0	30.0	30.0
GSM 1900MHz GPRS(GMSK)	Conducted Power (dBm)		
	Channel 512 (1850.2MHz)	Channel 661 (1880MHz)	Channel 810 (1909.8MHz)
Measured Power Level	29.8	30.0	29.8
Product Max Power Level	30.0	30.0	30.0
GSM 1900MHz EGPRS(GMSK)	Conducted Power (dBm)		
	Channel 512 (1850.2MHz)	Channel 661 (1880MHz)	Channel 810 (1909.8MHz)
Measured Power Level	29.8	30.0	29.8
Product Max Power Level	30.0	30.0	30.0

Note: Accroding to **KDB 941225 D03 SAR Test Reduction GSM_GPRS_EDGE v01**, when SAR test for EDGE or EGPRS mode is necessary, GMSK modulation should be used to minimize SAR measurement error. So the conducted power for EGPRS was measured with GMSK modulation.

6.2.3 Power Drift

To control the output power stability during the SAR test, DASY4 system calculates the power drift by measuring the E-field at the same location at the beginning and at the end of the measurement for each test position. These drift values can be found in Table 8 to Table 13 labeled as: (Power Drift [dB]). This ensures that the power drift during one measurement is within 5%.

7 TEST RESULTS

7.1 Dielectric Performance

Table 4: Dielectric Performance of Head Tissue Simulating Liquid

Measurement is made at temperature 23.0 °C and relative humidity 42%. Liquid temperature during the test: 22.5°C Measurement Date : 850 MHz **Aug 24, 2010** 1900 MHz **Aug 25, 2010** 2450 MHz **Aug 26, 2010**			
/	**Frequency**	**Permittivity ε**	**Conductivity σ (S/m)**
Target value	850 MHz	41.5	0.90
	1900 MHz	40.0	1.40
	2450 MHz	39.2	1.80
Measurement value (Average of 10 tests)	850 MHz	40.2	0.89
	1900 MHz	39.3	1.39
	2450 MHz	39.4	1.81

Table 5: Dielectric Performance of Body Tissue Simulating Liquid

Measurement is made at temperature 23.0 °C and relative humidity 42%. Liquid temperature during the test: 22.5°C Measurement Date : 850 MHz **Aug 24, 2010** 1900 MHz **Aug 25, 2010** 2450 MHz **Aug 26, 2010**			
/	**Frequency**	**Permittivity ε**	**Conductivity σ (S/m)**
Target value	850 MHz	55.2	0.97
	1900 MHz	53.3	1.52
	2450 MHz	52.7	1.95
Measurement value (Average of 10 tests)	850 MHz	54.2	0.96
	1900 MHz	51.5	1.53
	2450 MHz	51.9	1.96

7.2 System Validation

Table 6: System Validation of Head

Measurement is made at temperature 23.0 °C and relative humidity 42%. Liquid temperature during the test: 22.5°C Measurement Date : 850 MHz **Aug 24, 2010** 1900 MHz **Aug 25, 2010** 2450 MHz **Aug 26, 2010**							
Liquid parameters	Dipole calibration Target value	**Frequency**		**Permittivity ε**		**Conductivity σ (S/m)**	
		835 MHz		39.9		0.88	
		1900 MHz		38.9		1.38	
		2450 MHz		40.5		1.85	
	Actural Measurement value	835 MHz		40.3		0.87	
		1900 MHz		39.3		1.39	
		2450 MHz		39.4		1.81	
Verification results	**Frequency**	**Target value (W/kg)**		**Measured value (W/kg)**		**Deviation**	
		10 g Average	**1 g Average**	**10 g Average**	**1 g Average**	**10 g Average**	**1 g Average**
	835 MHz	1.54	2.38	1.51	2.31	-1.95%	-2.94%
	1900 MHz	5.05	9.91	4.86	9.62	-3.76%	-2.93%
	2450 MHz	5.91	13.07	5.76	12.7	-2.54%	-2.83%

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 42%. Liquid temperature during the test: 22.5°C Measurement Date : 850 MHz **Aug 24, 2010** 1900 MHz **Aug 25, 2010** 2450 MHz **Aug 26, 2010**				
Liquid parameters	Dipole calibration Target value	**Frequency**	**Permittivity ε**	**Conductivity σ (S/m)**
		835 MHz	54.5	0.97
		1900 MHz	52.5	1.51
		2450 MHz	51.8	1.93

	Actural Measurement value	835 MHz		54.3		0.94
		1900 MHz		51.5		1.53
		2450 MHz		51.9		1.96
Verification results	**Frequency**	**Target value (W/kg)**		**Measured value (W/kg)**		**Deviation**	
		10 g Average	**1 g Average**	**10 g Average**	**1 g Average**	**10 g Average**	**1 g Average**
	835 MHz	1.57	2.41	1.52	2.31	-3.18%	-4.15%
	1900 MHz	5.24	10.4	5.06	10.1	-3.44%	-2.88%
	2450 MHz	5.82	12.78	5.95	13.0	2.23%	1.72%

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

7.3 Summary of Measurement Results

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

Table 8: SAR Values (Head, GSM 850 MHz Band)

Limit of SAR (W/kg)	**1 g Average**	**Power Drift (dB)**
	1.6	
Test Case	**Measurement**	
	1 g Average	
Left hand, Touch cheek, High frequency (See Fig.1)	0.503	0.174
Left hand, Touch cheek, Mid frequency (See Fig.2)	0.400	-0.183
Left hand, Touch cheek, Low frequency (See Fig.3)	0.319	-0.061
Left hand, Tilt 15 Degree, Mid frequency (See Fig.4)	0.210	-0.196
Right hand, Touch cheek, High frequency (See Fig.5)	0.497	-0.163
Right hand, Touch cheek, Mid frequency (See Fig.6)	0.384	0.009
Right hand, Touch cheek, Low frequency (See Fig.7)	0.295	-0.131
Right hand, Tilt 15 Degree, Mid frequency (See Fig.8)	0.212	-0.192

Table 9: SAR Values (Body, GSM 850 MHz Band)

Limit of SAR (W/kg)	**1 g Average**	**Power Drift (dB)**
	1.6	
Test Case	**Measurement Result (W/kg)**	
	1 g Average	
Body, Towards Ground, High frequency with GPRS (See Fig.9)	1.14	0.023
Body, Towards Ground, Mid frequency with GPRS (See Fig.10)	0.917	0.173
Body, Towards Ground, Low frequency with GPRS (See Fig.11)	0.691	0.108

Body, Towards Ground, High frequency with EGPRS (See Fig.12)	1.08	0.128
Body, Towards Ground, Mid frequency with EGPRS (See Fig.13)	0.884	-0.024
Body, Towards Ground, Low frequency with EGPRS (See Fig.14)	0.673	-0.006
Body, Towards Ground, High frequency with Headset (See Fig.15)	0.296	-0.021
Body, Towards Ground, High frequency with BT Headset (See Fig.16)	0.353	-0.026
Body, Towards Phantom, High frequency with GPRS (See Fig.17)	1.04	0.089
Body, Towards Phantom, Mid frequency with GPRS (See Fig.18)	0.854	0.188
Body, Towards Phantom, Low frequency with GPRS (See Fig.19)	0.607	-0.196

Table 10: SAR Values (Head, PCS 1900 MHz Band)

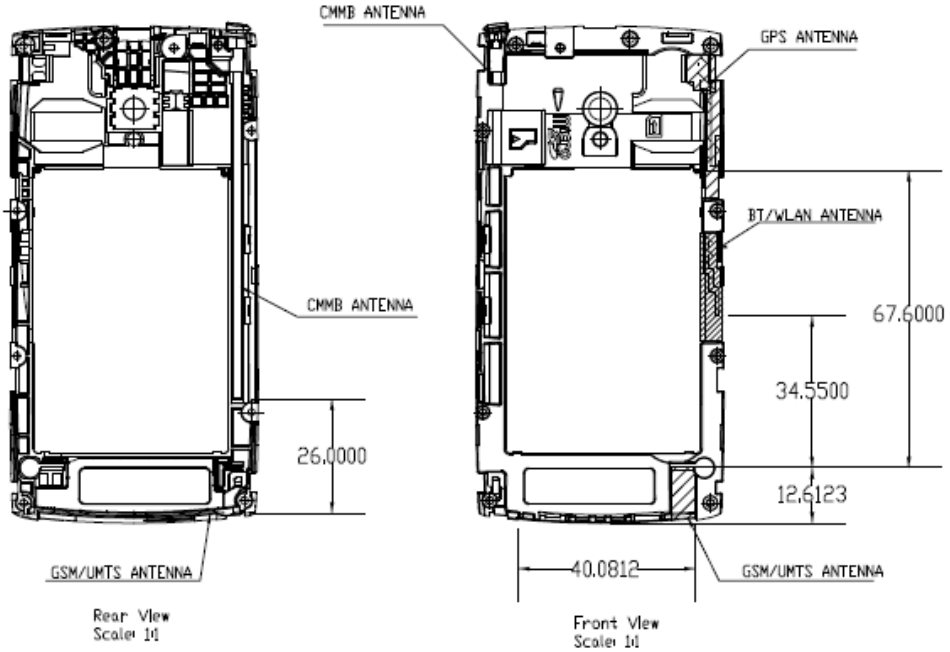
Limit of SAR (W/kg)	**1 g Average**	**Power Drift (dB)**
	1.6	
Test Case	**Measurement**	
	1 g Average	
Left hand, Touch cheek, High frequency (See Fig.20)	0.772	0.103
Left hand, Touch cheek, Mid frequency (See Fig.21)	0.787	0.112
Left hand, Touch cheek, Low frequency (See Fig.22)	0.718	0.183
Left hand, Tilt 15 Degree, Mid frequency (See Fig.23)	0.212	0.087
Right hand, Touch cheek, High frequency (See Fig.24)	0.434	0.105
Right hand, Touch cheek, Mid frequency (See Fig.25)	0.451	-0.138
Right hand, Touch cheek, Low frequency (See Fig.26)	0.404	0.125
Right hand, Tilt 15 Degree, Mid frequency (See Fig.27)	0.199	0.045

Table 11: SAR Values (Body, PCS 1900 MHz Band)

Limit of SAR (W/kg)	**1 g Average**	**Power Drift (dB)**
	1.6	
Test Case	**Measurement Result (W/kg)**	
	1 g Average	
Body, Towards Ground, High frequency with GPRS (See Fig.28)	0.502	-0.011
Body, Towards Ground, Mid frequency with GPRS (See Fig.29)	0.508	-0.010
Body, Towards Ground, Low frequency with GPRS (See Fig.30)	0.428	0.135
Body, Towards Ground, Mid frequency with EGPRS (See Fig.31)	0.499	0.116
Body, Towards Ground, Mid frequency with Headset (See Fig.32)	0.260	-0.144
Body, Towards Ground, Mid frequency with BT Headset (See Fig.33)	0.276	-0.124
Body,Towards Phantom, Mid frequency with GPRS (See Fig.34)	0.429	-0.007

7.4 Summary of Measurement Results (Bluetooth and WiFi function)

The distance between BT/WiFi antenna and GSM/UMTS antenna is ＞2.5cm and ＜5cm. The location of the antennas inside mobile phone is shown below:



The output power of BT antenna is 3.2mW. According to the output power measurement result and the distance between the two antennas, we can draw the conclusion that: stand-alone SAR and simultaneous transmission SAR are not required for BT transmitter, because the output power of BT transmitter is $\leqslant P_{Ref}$ and its antenna is ＞2.5cm and ＜5cm from GSM/UMTS antenna

The average conducted power for WiFi is as following:

802.11b（dBm）

Channel\data rate	1Mbps	2Mbps	5.5Mbps	11Mbps
1	16.7	16.7	16.7	16.7
6	16.6	16.6	16.5	16.5
11	16.1	16.0	15.9	16.0

802.11g（dBm）

Channel\data rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
1	13.5	13.5	13.5	13.5	13.4	13.5	13.5	13.5
6	13.4	13.4	13.4	13.4	13.3	13.3	13.3	13.4
11	13.6	13.5	13.6	13.5	13.5	13.4	13.4	13.4

The peak conducted power for WiFi is as following:

802.11b（dBm）

Channel\data rate	1Mbps	2Mbps	5.5Mbps	11Mbps
1	19.5	19.3	19.0	19.0
6	19.1	19.2	18.9	18.9
11	18.7	18.6	18.3	18.4

802.11g（dBm）

Channel\data rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
1	22.4	23.0	23.6	23.2	22.3	22.4	23.6	22.5
6	21.6	23.2	22.6	23.3	22.1	22.8	22.8	22.6
11	22.7	22.8	22.6	23.5	22.1	22.8	22.9	22.6

According to the conducted power measurement result, we can draw the conclusion that: stand-alone SAR for WiFi should be performed. Then, simultaneous transmission SAR for WiFi is considered with measurement results of GSM and WiFi.

SAR is not required for 802.11g channels if the output power is less than 0.25dB higher than that measured on the corresponding 802.11b channels, and for each frequency band, testing at higher data rates and higher order modulations is not required when the maximum average output power for each of these configurations is less than 0.25dB higher than those measured at the lowest data rate. According to the above conducted power, the EUT should be tested for “802.11b, 1Mbps, channel 1”.

Table 12: SAR Values (WIFI 802.b - Head)

Limit of SAR (W/kg)	**1 g Average**	**Power Drift (dB)**
	1.6	
Test Case	**Measurement**	
	1 g Average	
Left hand, Touch cheek, 1Mbps, channel 6 (See Fig.35)	0.407	-0.041
Left hand, Tilt 15 Degree, 1Mbps, channel 6 (See Fig.36)	0.112	0.030
Left hand, Touch cheek, 1Mbps, channel 11 (See Fig.37)	0.446	-0.102
Left hand, Touch cheek, 1Mbps, channel 1 (See Fig.38)	0.301	0.197
Right hand, Touch cheek, 1Mbps, channel 6 (See Fig.39)	0.347	0.105
Right hand, Tilt 15 Degree, 1Mbps, channel 6(See Fig.40)	0.124	0.111
Right hand, Touch cheek, 1Mbps, channel 11 (See Fig.41)	0.445	0.185
Right hand, Touch cheek, 1Mbps, channel 1 (See Fig.42)	0.305	0.191

Table 13: SAR Values (WIFI 802.b - Body)

Limit of SAR (W/kg)	**1 g Average**	**Power Drift (dB)**
	1.6	
Test Case	**Measurement Result (W/kg)**	
	1 g Average	
Toward Ground, 1Mbps,channel 11 (See Fig.43)	0.040	0.165
Toward Ground, 1Mbps,channel 6 (See Fig.44)	0.047	-0.136
Toward Ground, 1Mbps,channel 1 (See Fig.45)	0.041	0.133
Toward Phantom, 1Mbps,channel 6 (See Fig.46)	0.029	-0.119

According to the above tables, the sum of SAR values for GSM and WiFi ＜1.6W/kg. So simultaneous transmission SAR are not required for WiFi transmitter.

7.5 Conclusion

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

The maximum SAR values are obtained at the case of **GSM 850 MHz Band, Body, Towards Ground, High frequency with GPRS (Table 9)**, and the value are: **1.14(1g).**

7.6 Statements

The test cases listed in section 7.3 and 7.4 of this report for the EUT specified in section 3 were performed by TMC according to the standards or reference documents in section 4.
The EUT met all applicable requirements of the standards or reference documents in section 4.
This report only deals with the GPRS, EGPRS, Bluetooth and WLAN functions among the features described in section 3.1. TD-SCDMA and CMMB TV receiver functions are not within the scope of FCC certification.

8 Measurement Uncertainty

No.	Error Description	Type	Tolerance (±%)	Probability Distribution	Divisor	c_i	Standard Uncertainty (%) u_i' (%)	Degree of freedom V_{eff} or v_i
1	System repeatability	A	0.5	N	1	1	0.5	9
	Measurement system							
2	—probe calibration	B	3.5	N	1	1	3.5	∞
3	—axial isotropy of the probe	B	4.7	R	$\sqrt{3}$	0.5	4.3	∞
4	—hemisphere isotropy of the probe	B	9.4	R	$\sqrt{3}$			
5	—space resolution	B	0	R	$\sqrt{3}$	1	0	∞
6	—boundary effect	B	11.0	R	$\sqrt{3}$	1	6.4	∞
7	—probe linearity	B	4.7	R	$\sqrt{3}$	1	2.7	∞
8	—detection limit	B	1.0	R	$\sqrt{3}$	1	0.6	∞

9	—readout electronics	B	1.0	N	1	1	1.0	∞
10	—RF Ambient Conditions	B	3.0	R	$\sqrt{3}$	1	1.73	∞
11	— Probe Positioner Mechanical Tolerance	B	0.4	R	$\sqrt{3}$	1	0.2	∞
12	— Probe Positioning with respect to Phantom Shell	B	2.9	R	$\sqrt{3}$	1	1.7	∞
13	—Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	B	3.9	R	$\sqrt{3}$	1	2.3	∞
	Test sample Related							
14	—Test Sample Positioning	A	4.9	N	1	1	4.9	5
15	—Device Holder	A	6.1	N	1	1	6.1	5
16	—Output Power Variation - SAR drift measurement	B	5.0	R	$\sqrt{3}$	1	2.9	∞
	Phantom and Tissue Parameters							
17	— Phantom Uncertainty (shape and thickness tolerances)	B	1.0	R	$\sqrt{3}$	1	0.6	∞
18	— liquid conductivity (deviation from target)	B	5.0	R	$\sqrt{3}$	0.6	1.7	∞
19	— liquid conductivity (measurement error)	A	0.23	N	1	1	0.23	9
20	-liquid permittivity (deviation from target)	B	5.0	R	$\sqrt{3}$	0.6	1.7	∞
21	— liquid permittivity (measurement error)	A	0.46	N	1	1	0.46	9
Combined standard uncertainty		$u_c^{'} = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$		/			12.2	88.7
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$		N	k=2		24.4	/

9 MAIN TEST INSTRUMENTS

Table 14: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	HP 8753E	US38433212	August 29,2009	One year
02	Power meter	NRVD	101253	September 4, 2009	One year
03	Power sensor	NRV-Z5	100333		
04	Signal Generator	E4433B	US37230472	September 3, 2009	One Year
05	Amplifier	VTL5400	0505	No Calibration Requested	
06	BTS	CMU 200	113312	August 10, 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
11	Dipole Validation Kit	IndexSAR IXD-245	40102	October, 2008	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.

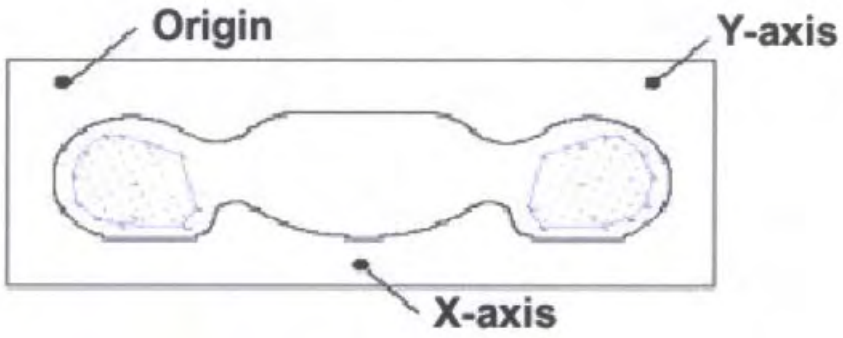
Step 3: Around this point, a volume of 30 mm x 30 mm x 30 mm was assessed by measuring 7 x 7x 7 points. On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

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.

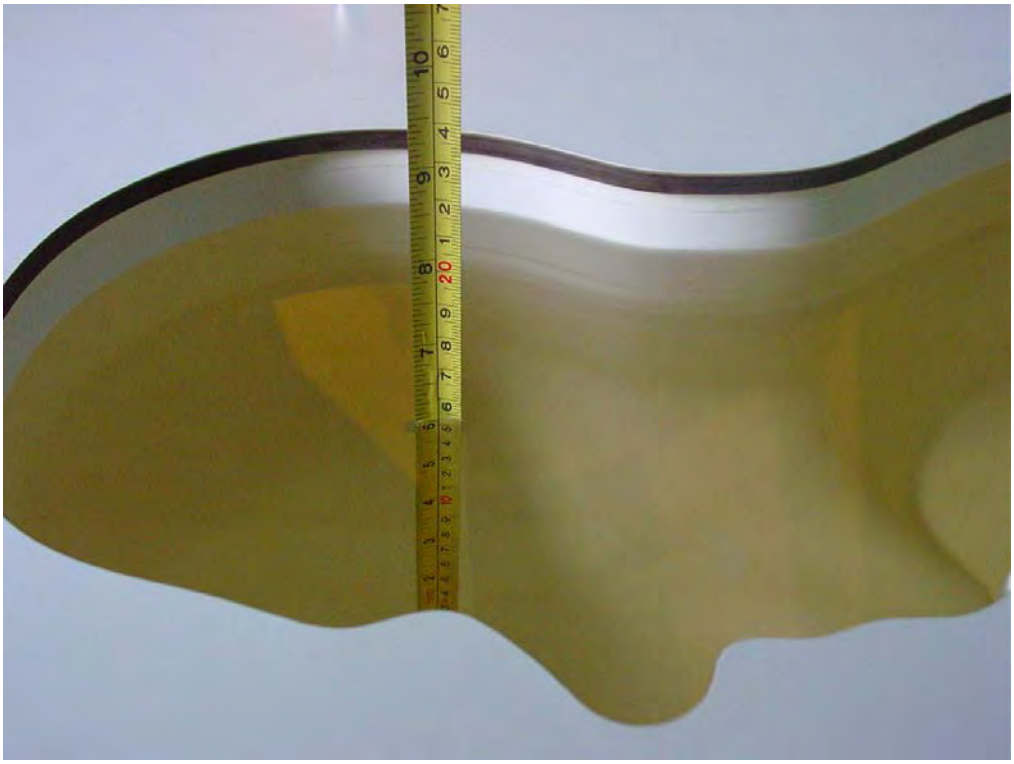
Step 4: Re-measurement the SAR value at the same location as in Step 1. If the value changed by more than 5%, the evaluation is repeated.



Picture A: SAR Measurement Points in Area Scan

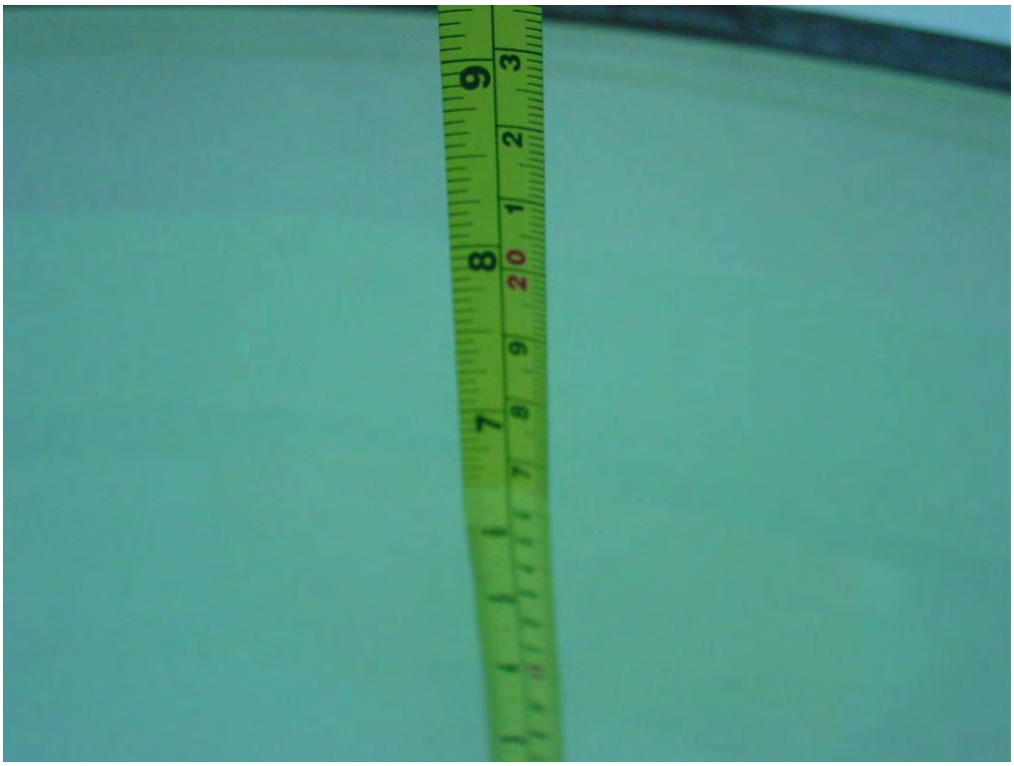
ANNEX B TEST LAYOUT

Picture B1: Specific Absorption Rate Test Layout



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

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



Picture B4 Liquid depth in the Flat Phantom (2450MHz)

ANNEX C GRAPH RESULTS

850 Left Cheek High

Date/Time: 2010-8-24 8:37:03
Electronics: DAE4 Sn771
Medium: 850 HEAD
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.89 mho/m; εr = 40.2; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Cheek High/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.531 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.61 V/m; Power Drift = 0.174 dB
Peak SAR (extrapolated) = 0.690 W/kg
SAR(1 g) = 0.503 mW/g; SAR(10 g) = 0.356 mW/g
Maximum value of SAR (measured) = 0.533 mW/g

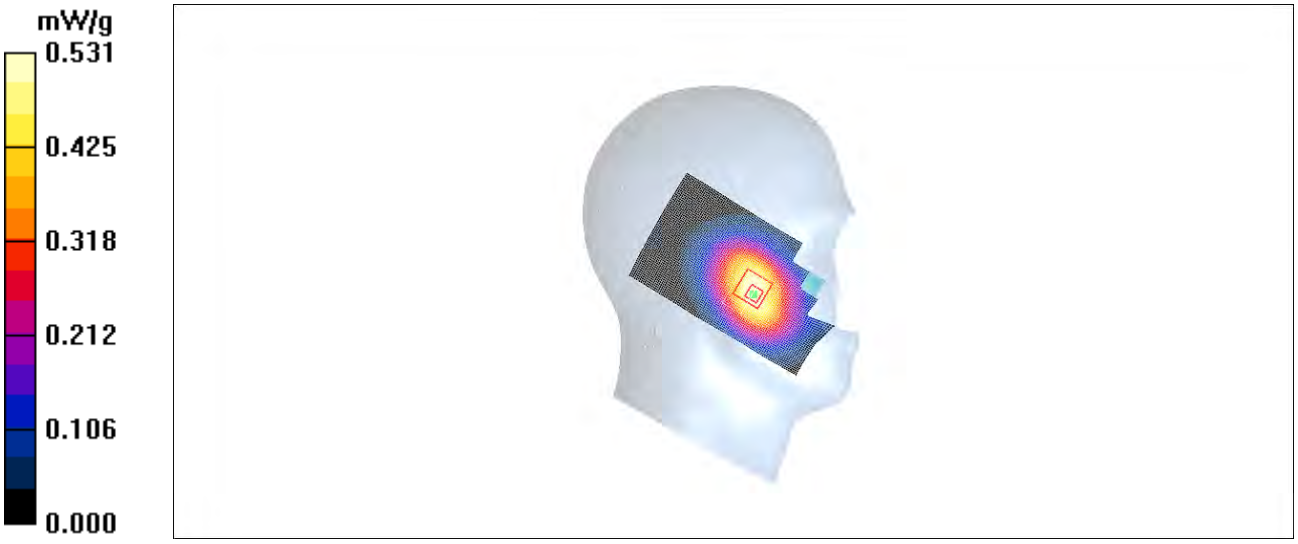


Fig. 1 850MHz CH251

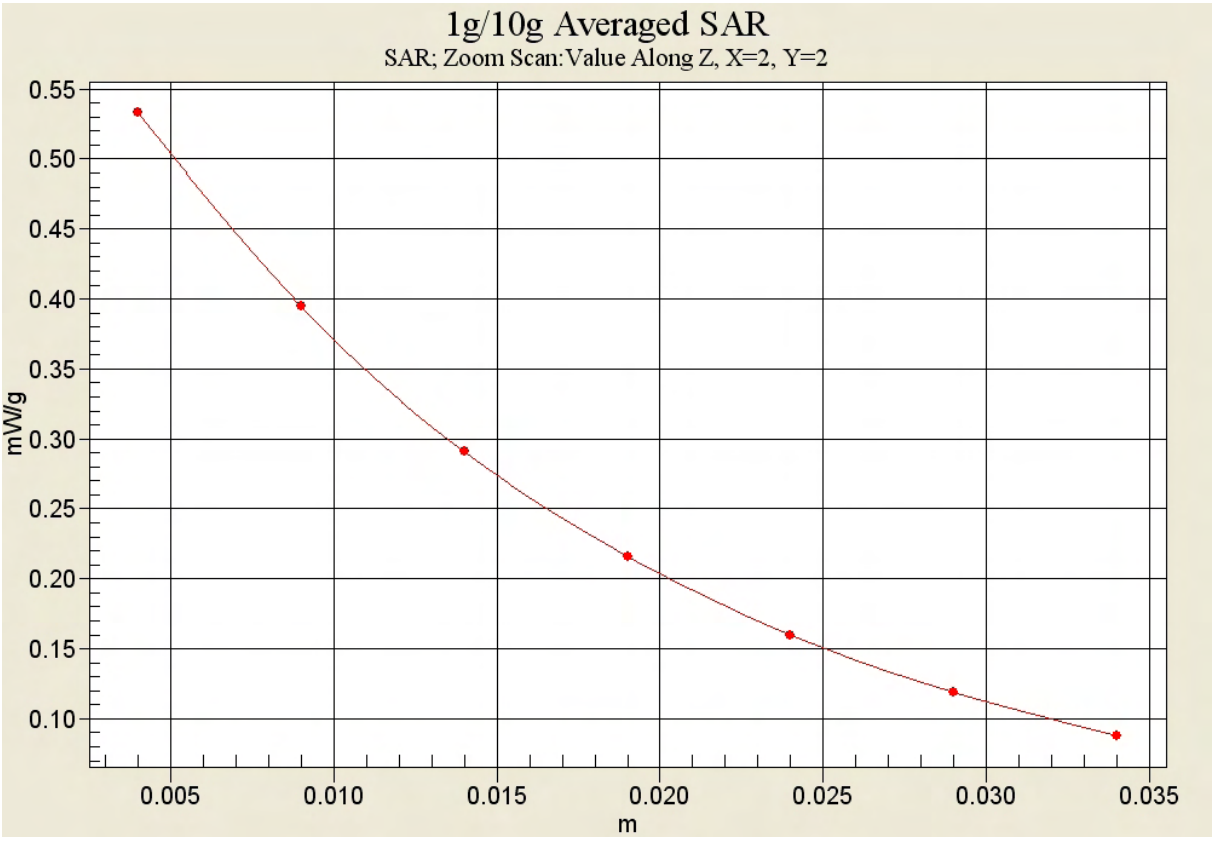


Fig.1-1 Z-Scan at power reference point (850 MHz CH251)

850 Left Cheek Middle

Date/Time: 2010-8-24 8:08:24
Electronics: DAE4 Sn771
Medium: 850 HEAD
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.878 mho/m; εr = 40.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 Frequency: 836.6 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.438 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.31 V/m; Power Drift = -0.183 dB
Peak SAR (extrapolated) = 0.543 W/kg
SAR(1 g) = 0.400 mW/g; SAR(10 g) = 0.285 mW/g
Maximum value of SAR (measured) = 0.421 mW/g

Fig. 2 850 MHz CH190

850 Left Cheek Low

Date/Time: 2010-8-24 8:51:20
Electronics: DAE4 Sn771
Medium: 850 HEAD
Medium parameters used: f = 825 MHz; σ = 0.866 mho/m; εr = 40.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0^{o}C Liqiud Temperature: 22.5^{o}C
Communication System: GSM 850 Frequency: 824.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Cheek Low/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.338 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.33 V/m; Power Drift = -0.061 dB
Peak SAR (extrapolated) = 0.439 W/kg
SAR(1 g) = 0.319 mW/g; SAR(10 g) = 0.227 mW/g
Maximum value of SAR (measured) = 0.337 mW/g

Fig. 3 850 MHz CH128

850 Left Tilt Middle

Date/Time: 2010-8-24 8:22:41
Electronics: DAE4 Sn771
Medium: 850 HEAD
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.878 mho/m; εr = 40.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 Frequency: 836.6 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.221 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.73 V/m; Power Drift = -0.196 dB
Peak SAR (extrapolated) = 0.265 W/kg
SAR(1 g) = 0.210 mW/g; SAR(10 g) = 0.158 mW/g
Maximum value of SAR (measured) = 0.221 mW/g

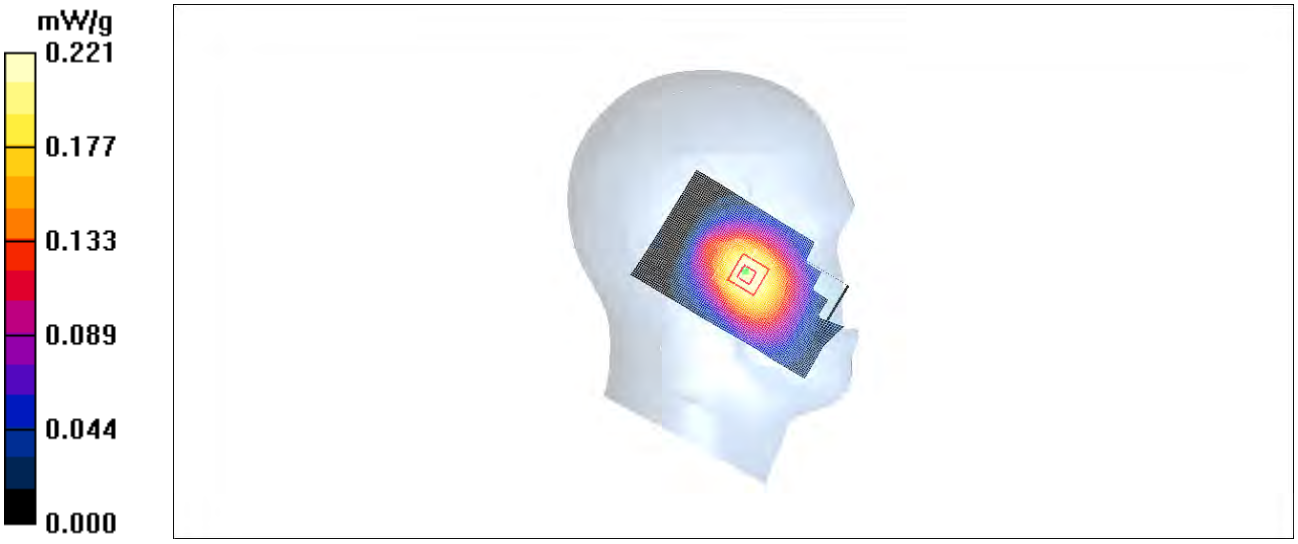


Fig. 4 850 MHz CH190

850 Right Cheek High

Date/Time: 2010-8-24 9:34:35
Electronics: DAE4 Sn771
Medium: 850 HEAD
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.89 mho/m; εr = 40.2; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Cheek High/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.532 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.36 V/m; Power Drift = -0.163 dB
Peak SAR (extrapolated) = 0.624 W/kg
SAR(1 g) = 0.497 mW/g; SAR(10 g) = 0.366 mW/g
Maximum value of SAR (measured) = 0.522 mW/g

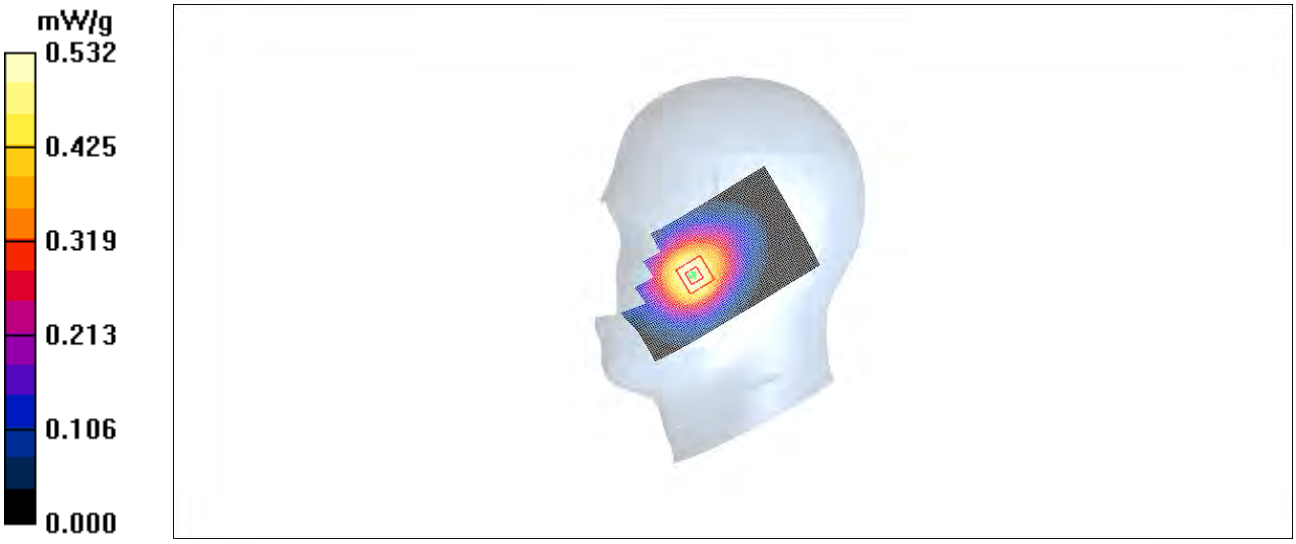


Fig. 5 850MHz CH251

850 Right Cheek Middle

Date/Time: 2010-8-24 9:05:57
Electronics: DAE4 Sn771
Medium: 850 HEAD
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.878 mho/m; εr = 40.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 Frequency: 836.6 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.406 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.21 V/m; Power Drift = 0.009 dB
Peak SAR (extrapolated) = 0.480 W/kg
SAR(1 g) = 0.384 mW/g; SAR(10 g) = 0.283 mW/g
Maximum value of SAR (measured) = 0.405 mW/g

Fig. 6 850 MHz CH190

850 Right Cheek Low

Date/Time: 2010-8-24 9:48:55
Electronics: DAE4 Sn771
Medium: 850 HEAD
Medium parameters used: f = 825 MHz; σ = 0.866 mho/m; εr = 40.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud 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 (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.310 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.42 V/m; Power Drift = -0.131 dB
Peak SAR (extrapolated) = 0.372 W/kg
SAR(1 g) = 0.295 mW/g; SAR(10 g) = 0.218 mW/g
Maximum value of SAR (measured) = 0.310 mW/g

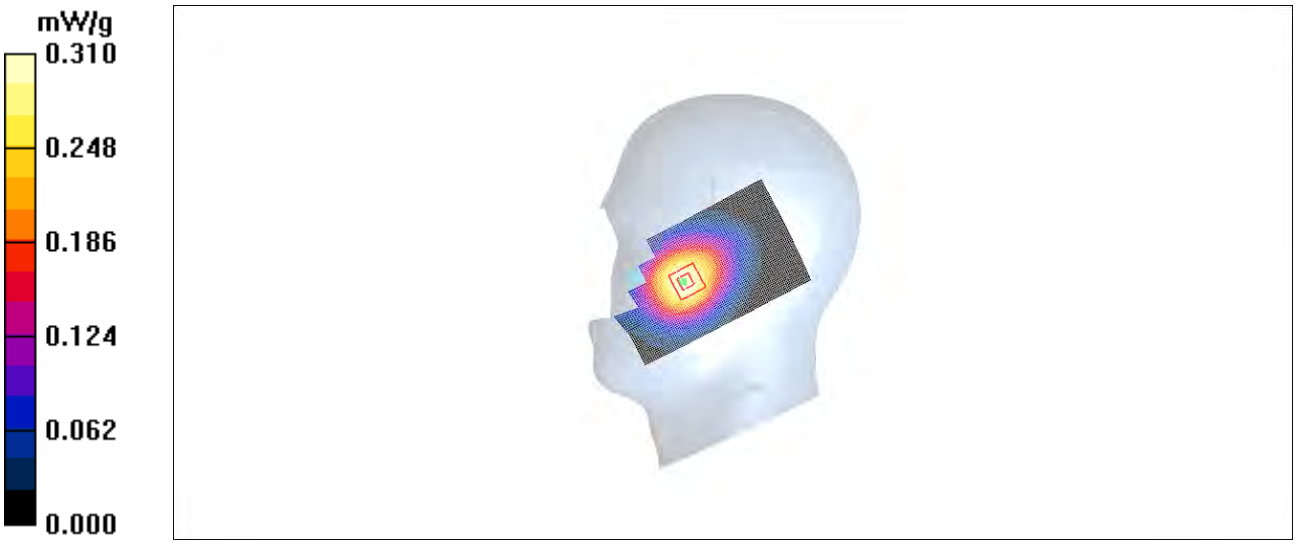


Fig. 7 850 MHz CH128

850 Right Tilt Middle

Date/Time: 2010-8-24 9:20:19
Electronics: DAE4 Sn771
Medium: 850 HEAD
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.878 mho/m; εr = 40.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 Frequency: 836.6 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.228 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 = -0.192 dB
Peak SAR (extrapolated) = 0.270 W/kg
SAR(1 g) = 0.212 mW/g; SAR(10 g) = 0.158 mW/g
Maximum value of SAR (measured) = 0.224 mW/g

Fig. 8 850 MHz CH190

850 Body Towards Ground High with GPRS

Date/Time: 2010-8-24 13:40:21
Electronics: DAE4 Sn771
Medium: 850 Body
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.96 mho/m; εr = 54.2; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 GPRS Frequency: 848.8 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

Toward Ground High/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.20 mW/g

Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 32.9 V/m; Power Drift = 0.023 dB
Peak SAR (extrapolated) = 1.47 W/kg
SAR(1 g) = 1.14 mW/g; SAR(10 g) = 0.831 mW/g
Maximum value of SAR (measured) = 1.20 mW/g

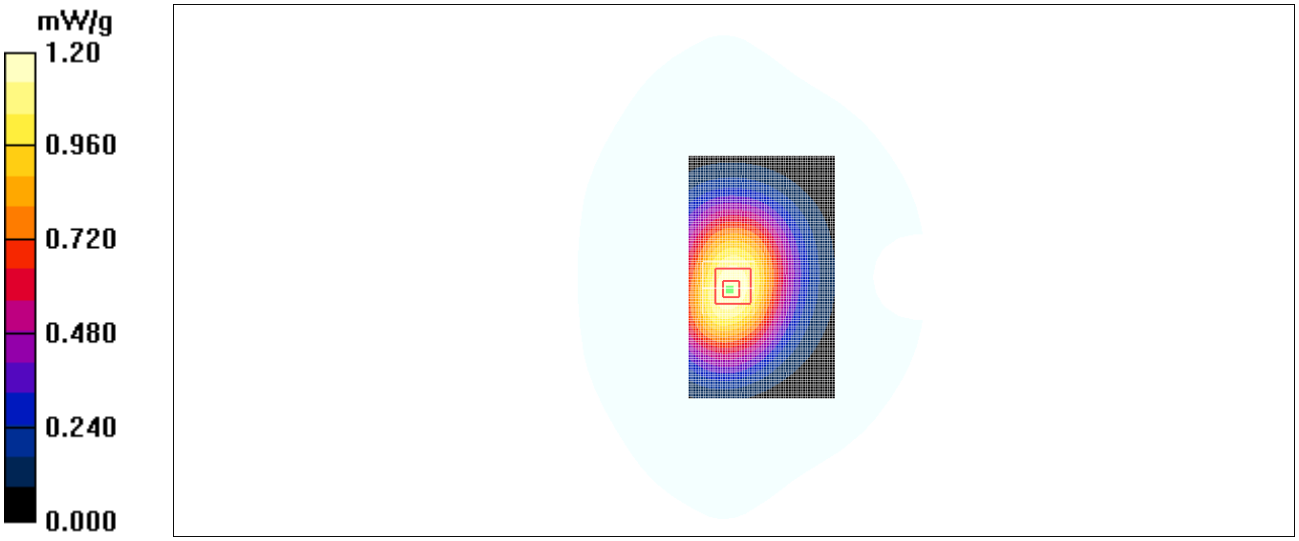


Fig. 9 850 MHz CH251

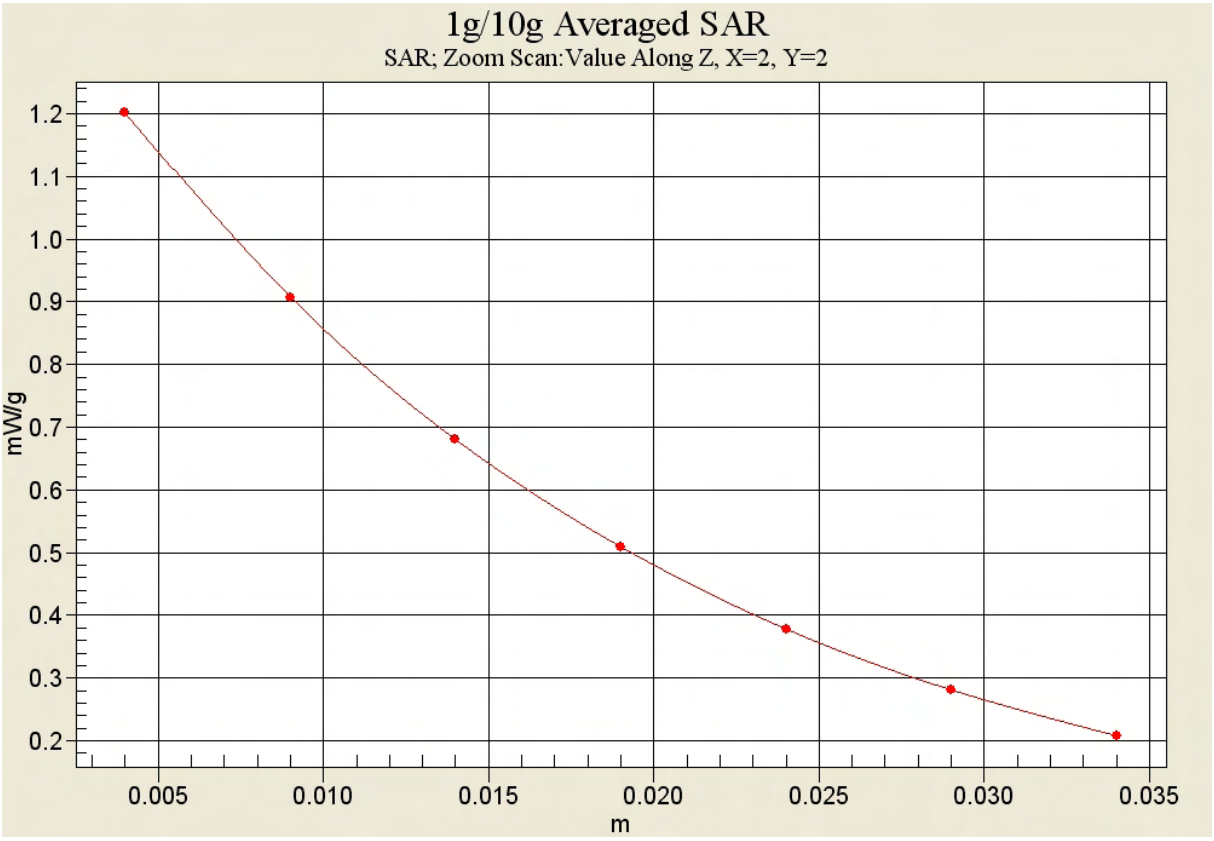


Fig. 9-1 Z-Scan at power reference point (850 MHz CH251)

850 Body Towards Ground Middle with GPRS

Date/Time: 2010-8-24 13:55:53
Electronics: DAE4 Sn771
Medium: 850 Body
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.95 mho/m; εr = 54.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 GPRS Frequency: 836.6 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

Toward Ground Middle/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.976 mW/g

Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.0 V/m; Power Drift = 0.173 dB
Peak SAR (extrapolated) = 1.18 W/kg
SAR(1 g) = 0.917 mW/g; SAR(10 g) = 0.673 mW/g
Maximum value of SAR (measured) = 0.964 mW/g

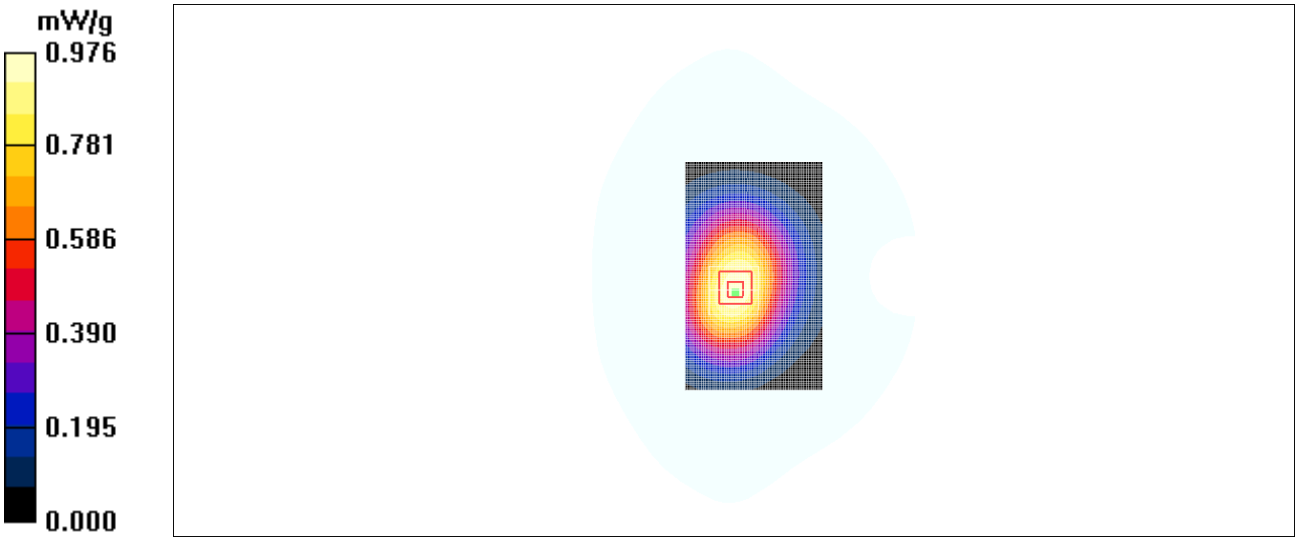


Fig. 10 850 MHz CH190

850 Body Towards Ground Low with GPRS

Date/Time: 2010-8-24 14:11:27
Electronics: DAE4 Sn771
Medium: 850 Body
Medium parameters used (interpolated): f = 825 MHz; σ = 0.933 mho/m; εr = 54.4; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 GPRS Frequency: 824.2 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

Toward Ground Low/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.737 mW/g

Toward Ground Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 27.0 V/m; Power Drift = 0.108 dB
Peak SAR (extrapolated) = 0.896 W/kg
SAR(1 g) = 0.691 mW/g; SAR(10 g) = 0.511 mW/g
Maximum value of SAR (measured) = 0.724 mW/g

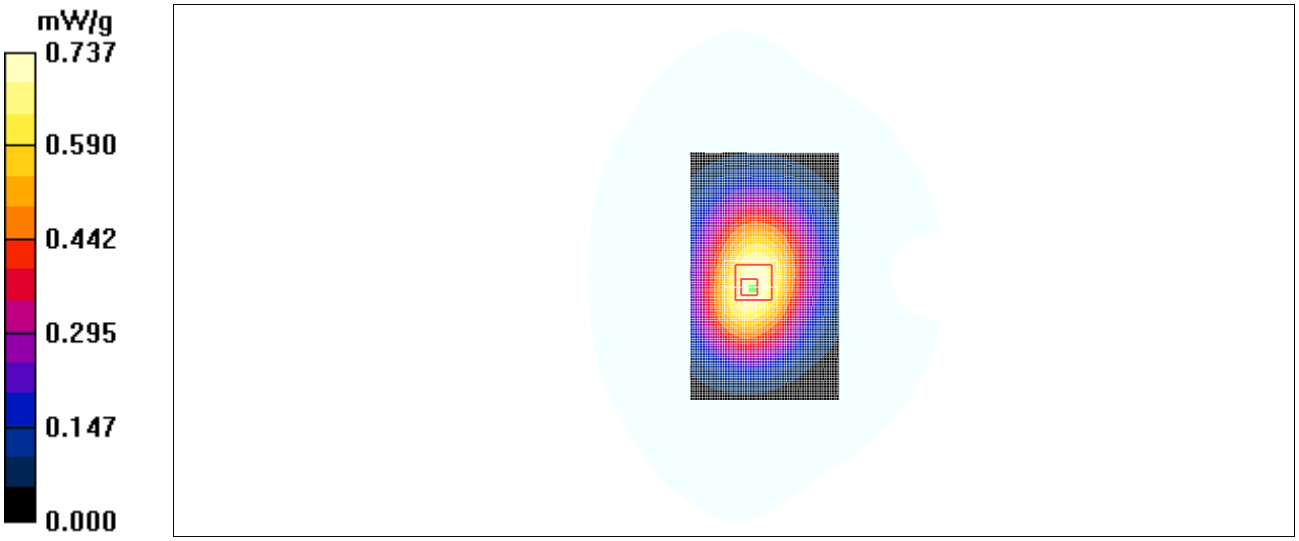


Fig. 11 850 MHz CH128

850 Body Towards Ground High with EGPRS

Date/Time: 2010-8-24 14:26:50
Electronics: DAE4 Sn771
Medium: 850 Body
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.96 mho/m; εr = 54.2; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 GPRS Frequency: 848.8 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

Toward Ground High/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.16 mW/g

Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 32.5 V/m; Power Drift = 0.128 dB
Peak SAR (extrapolated) = 1.40 W/kg
SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.786 mW/g
Maximum value of SAR (measured) = 1.15 mW/g

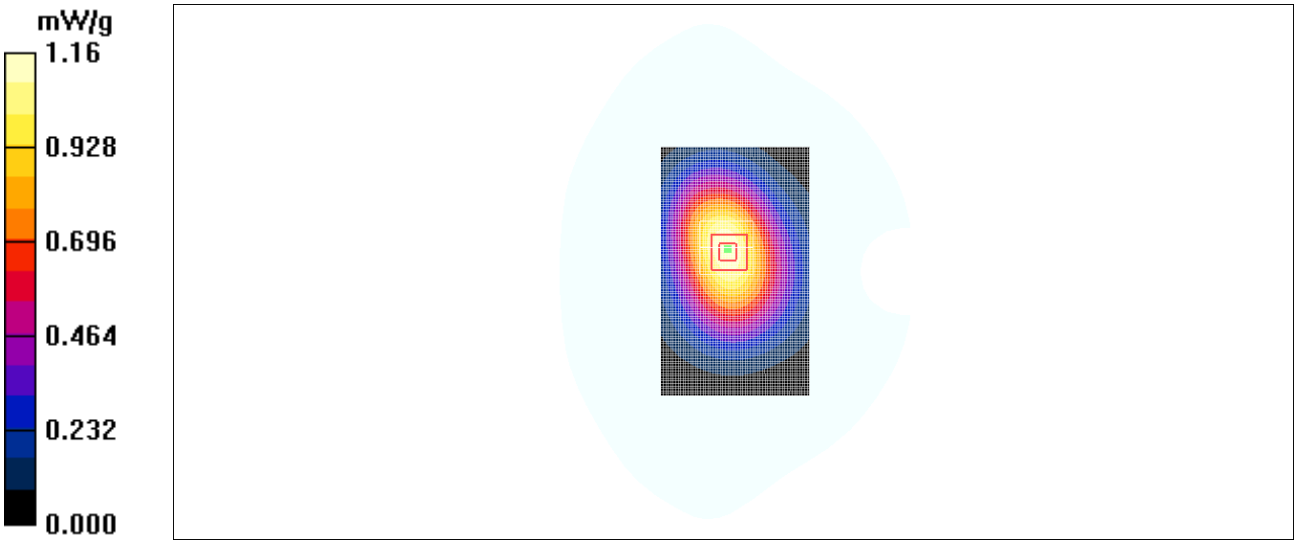


Fig. 12 850 MHz CH251

850 Body Towards Ground Middle with EGPRS

Date/Time: 2010-8-24 14:42:19
Electronics: DAE4 Sn771
Medium: 850 Body
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.95 mho/m; εr = 54.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 GPRS Frequency: 836.6 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

Toward Ground Middle/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.945 mW/g

Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.8 V/m; Power Drift = -0.024 dB
Peak SAR (extrapolated) = 1.14 W/kg
SAR(1 g) = 0.884 mW/g; SAR(10 g) = 0.642 mW/g
Maximum value of SAR (measured) = 0.928 mW/g

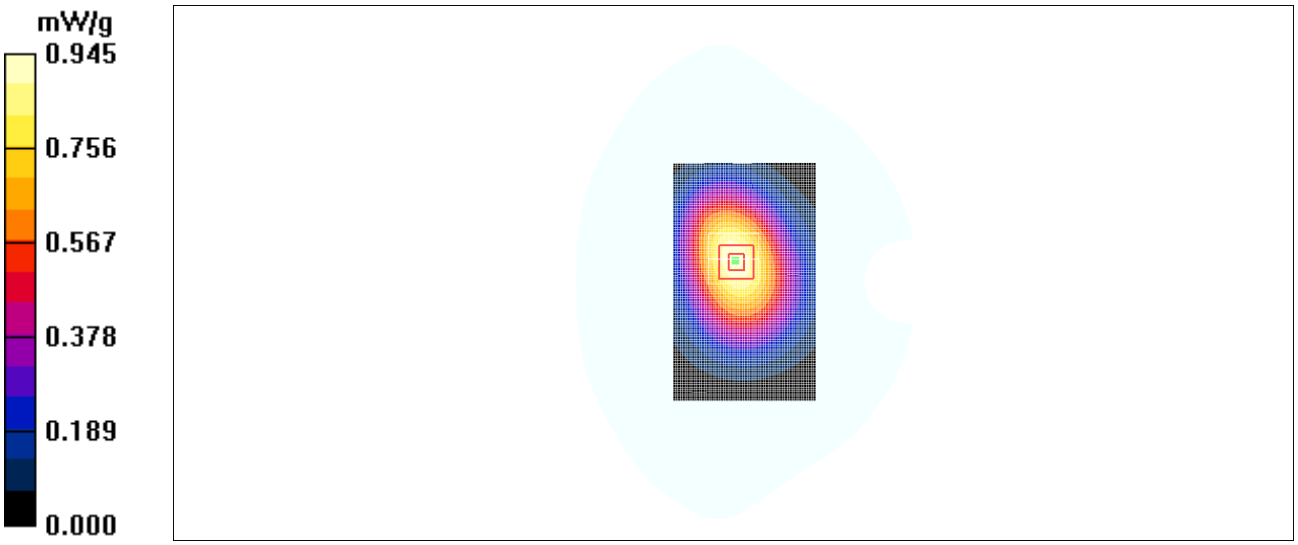


Fig. 13 850 MHz CH190

850 Body Towards Ground Low with EGPRS

Date/Time: 2010-8-24 14:57:44
Electronics: DAE4 Sn771
Medium: 850 Body
Medium parameters used (interpolated): f = 825 MHz; σ = 0.933 mho/m; εr = 54.4; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 GPRS Frequency: 824.2 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

Toward Ground Low/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.710 mW/g

Toward Ground Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 25.8 V/m; Power Drift = -0.006 dB
Peak SAR (extrapolated) = 0.872 W/kg
SAR(1 g) = 0.673 mW/g; SAR(10 g) = 0.488 mW/g
Maximum value of SAR (measured) = 0.711 mW/g

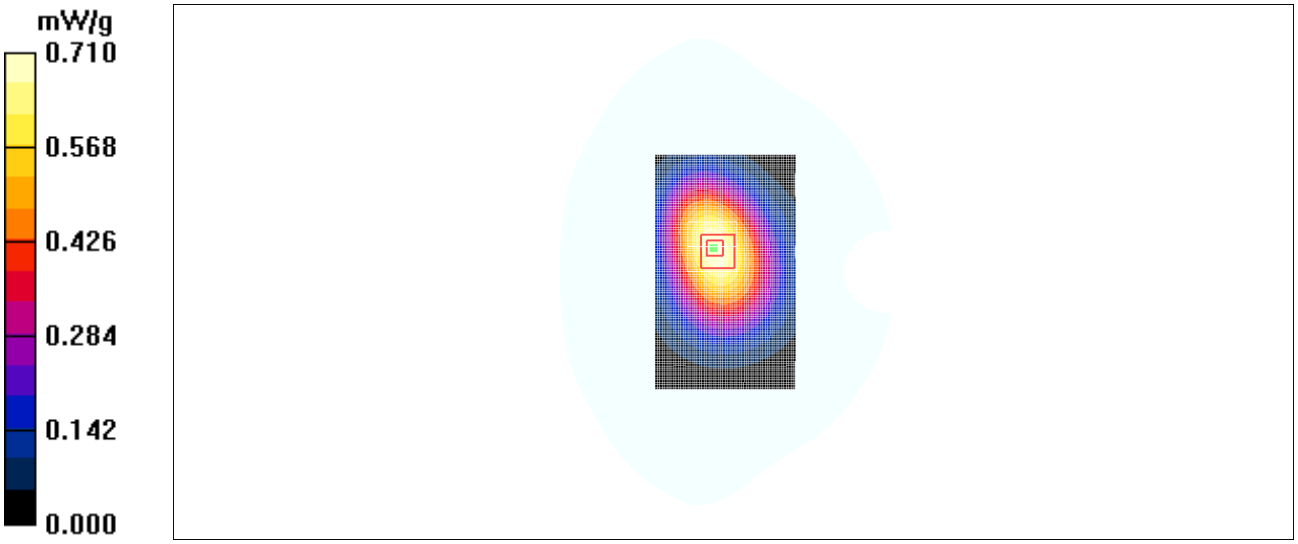


Fig. 14 850 MHz CH128

850 Body Towards Ground High with Headset

Date/Time: 2010-8-24 15:17:01
Electronics: DAE4 Sn771
Medium: 850 Body
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.96 mho/m; εr = 54.2; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

Toward Ground High/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.312 mW/g

Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.6 V/m; Power Drift = -0.021 dB
Peak SAR (extrapolated) = 0.389 W/kg
SAR(1 g) = 0.296 mW/g; SAR(10 g) = 0.214 mW/g
Maximum value of SAR (measured) = 0.313 mW/g

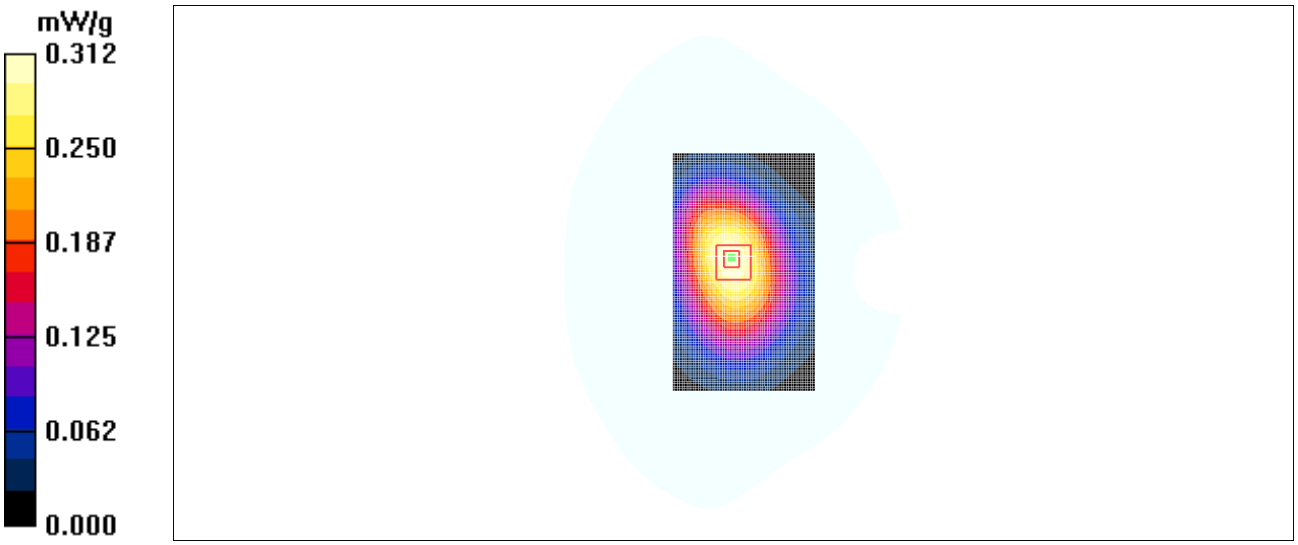


Fig. 15 850 MHz CH251

850 Body Towards Ground High with BT Headset

Date/Time: 2010-8-24 15:33:29
Electronics: DAE4 Sn771
Medium: 850 Body
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.96 mho/m; εr = 54.2; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

Toward Ground High/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.374 mW/g

Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.6 V/m; Power Drift = -0.026 dB
Peak SAR (extrapolated) = 0.456 W/kg
SAR(1 g) = 0.353 mW/g; SAR(10 g) = 0.257 mW/g
Maximum value of SAR (measured) = 0.372 mW/g

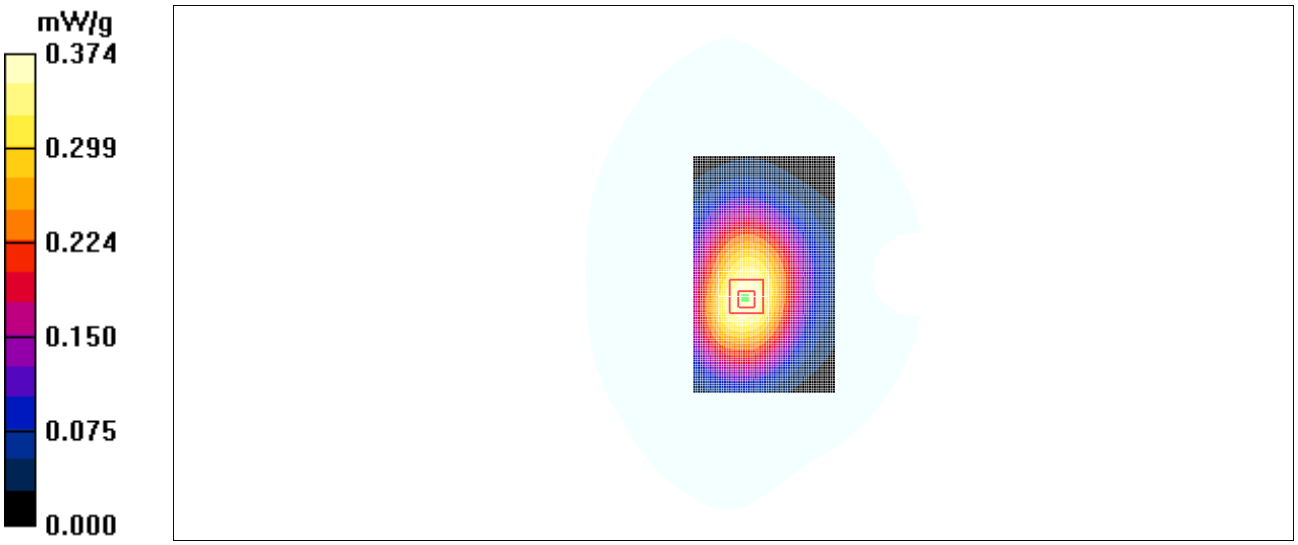


Fig. 16 850 MHz CH251

850 Body Towards Phantom High with GPRS

Date/Time: 2010-8-24 15:50:13
Electronics: DAE4 Sn771
Medium: 850 Body
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.96 mho/m; εr = 54.2; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 GPRS Frequency: 848.8 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

Toward Phantom High/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.10 mW/g

Toward Phantom High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 33.3 V/m; Power Drift = 0.089 dB
Peak SAR (extrapolated) = 1.35 W/kg
SAR(1 g) = 1.04 mW/g; SAR(10 g) = 0.758 mW/g
Maximum value of SAR (measured) = 1.10 mW/g

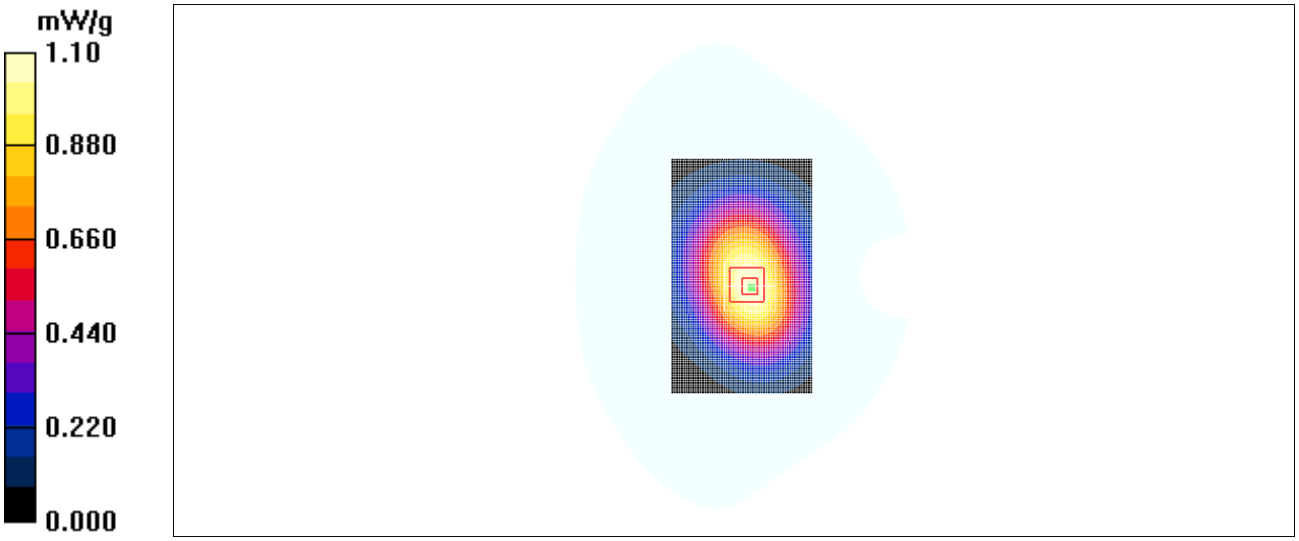


Fig. 17 850 MHz CH251

850 Body Towards Phantom Middle with GPRS

Date/Time: 2010-8-24 16:05:40
Electronics: DAE4 Sn771
Medium: 850 Body
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.95 mho/m; εr = 54.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 GPRS Frequency: 836.6 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

Toward Phantom Middle/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.908 mW/g

Toward Phantom Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.3 V/m; Power Drift = 0.188 dB
Peak SAR (extrapolated) = 1.12 W/kg
SAR(1 g) = 0.854 mW/g; SAR(10 g) = 0.619 mW/g
Maximum value of SAR (measured) = 0.909 mW/g

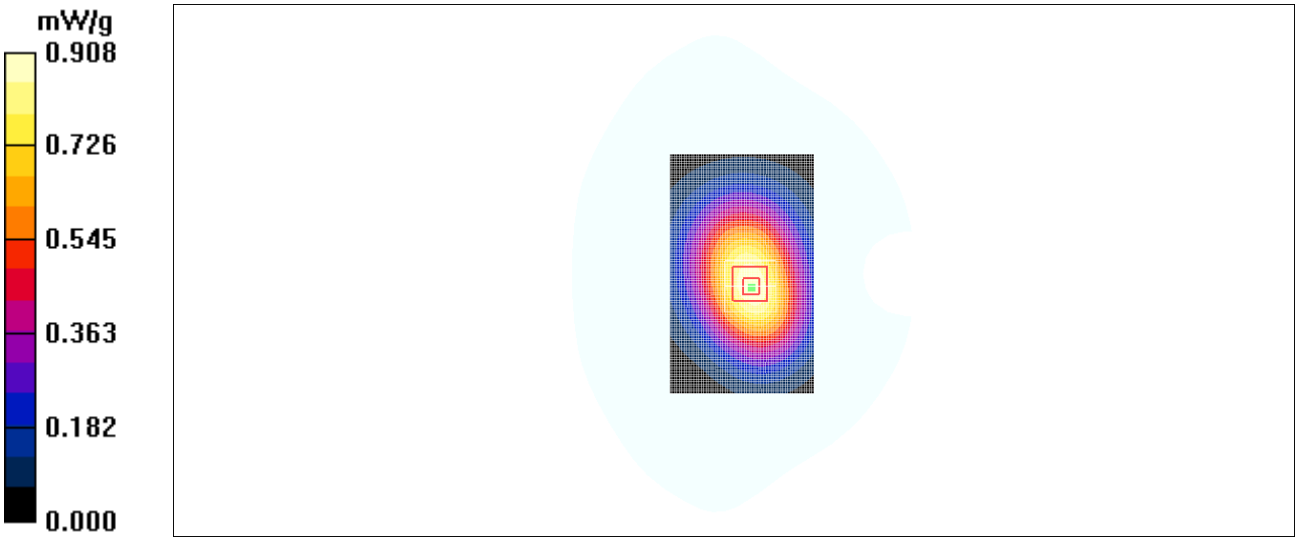


Fig. 18 850 MHz CH190

850 Body Towards Phantom Low with GPRS
Date/Time: 2010-8-24 16:21:07
Electronics: DAE4 Sn771
Medium: 850 Body
Medium parameters used (interpolated): f = 825 MHz; σ = 0.933 mho/m; εr = 54.4; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 850 GPRS Frequency: 824.2 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

Toward Phantom Low/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.672 mW/g

Toward Phantom Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 25.8 V/m; Power Drift = -0.196 dB
Peak SAR (extrapolated) = 0.798 W/kg
SAR(1 g) = 0.607 mW/g; SAR(10 g) = 0.441 mW/g
Maximum value of SAR (measured) = 0.641 mW/g

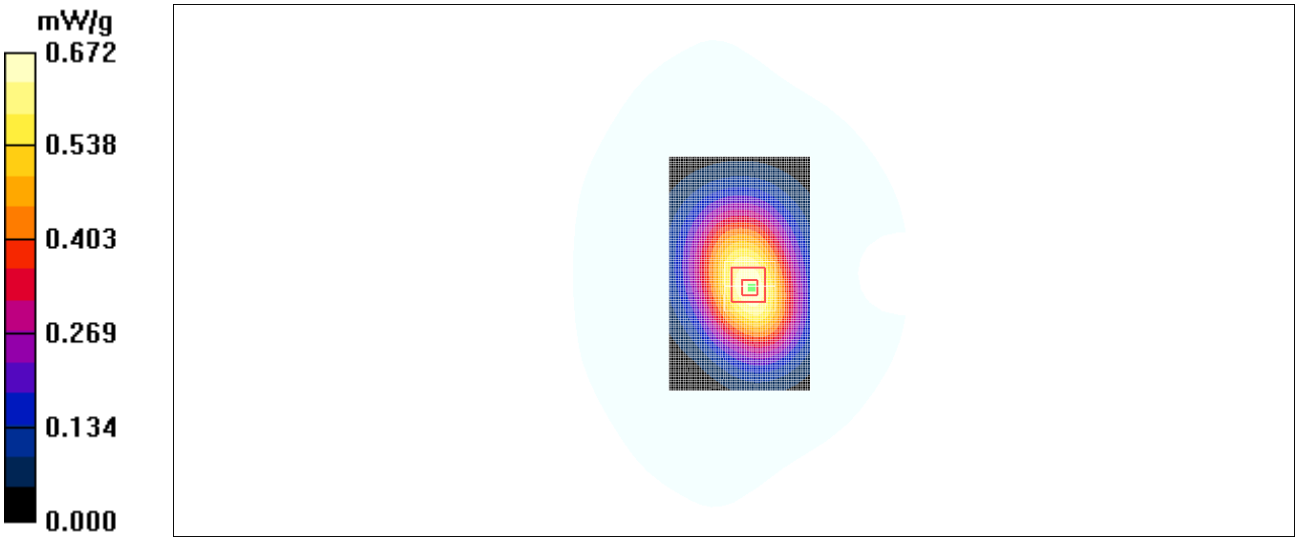


Fig. 19 850 MHz CH128

1900 Left Cheek High

Date/Time: 2010-8-25 8:40:19
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1910 MHz; σ = 1.40 mho/m; εr = 39.2; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz new Frequency: 1909.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Cheek High/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.861 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.15 V/m; Power Drift = 0.103 dB
Peak SAR (extrapolated) = 1.26 W/kg
SAR(1 g) = 0.772 mW/g; SAR(10 g) = 0.442 mW/g
Maximum value of SAR (measured) = 0.842 mW/g

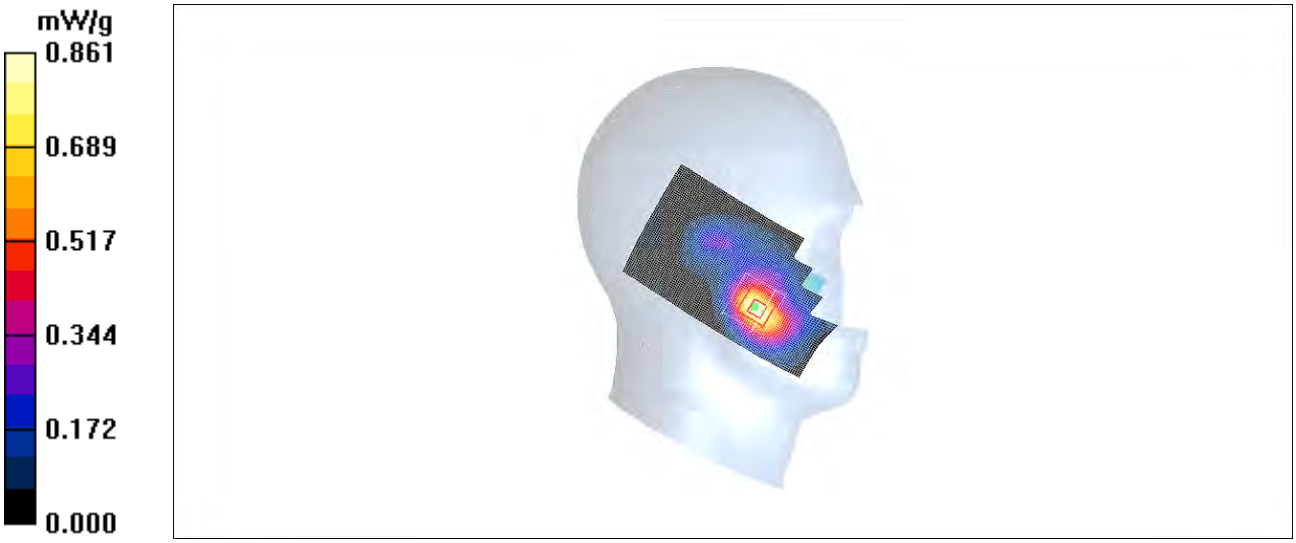


Fig. 20 1900 MHz CH810

1900 Left Cheek Middle

Date/Time: 2010-8-25 8:11:32
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.38 mho/m; εr = 39.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz new Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.879 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.74 V/m; Power Drift = 0.112 dB
Peak SAR (extrapolated) = 1.27 W/kg
SAR(1 g) = 0.787 mW/g; SAR(10 g) = 0.452 mW/g
Maximum value of SAR (measured) = 0.873 mW/g

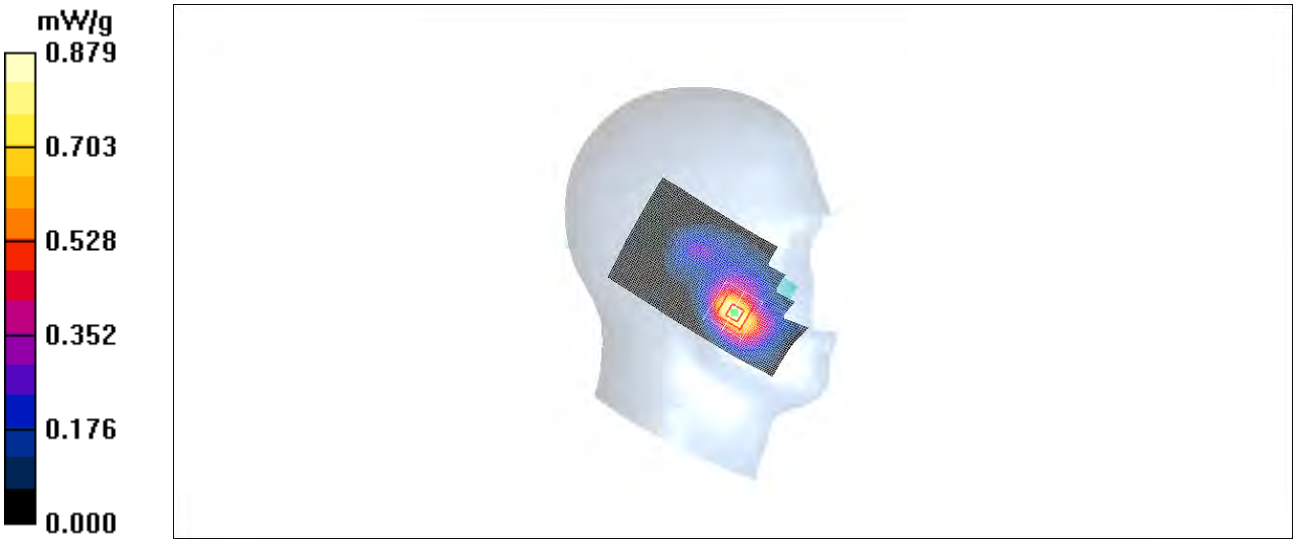


Fig. 21 1900 MHz CH661

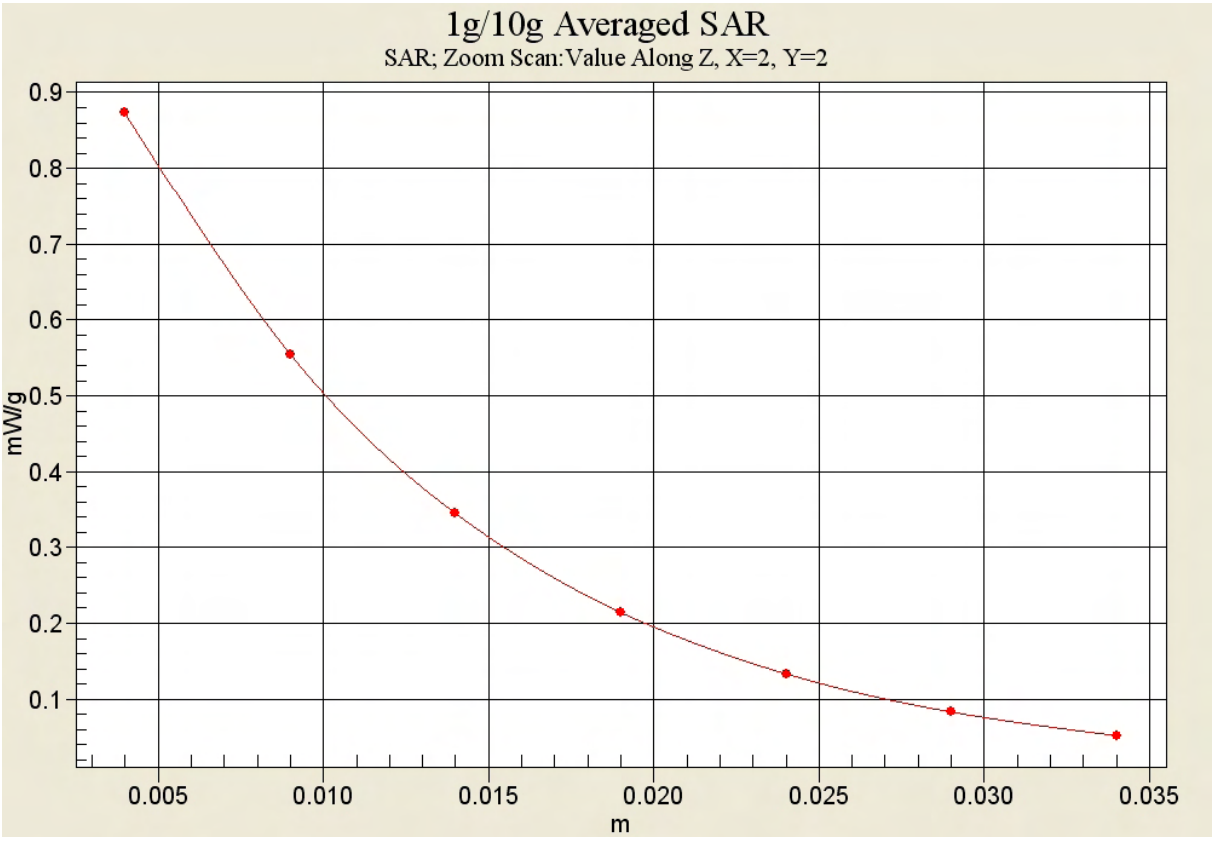


Fig. 22-1 Z-Scan at power reference point (1900 MHz CH661)

1900 Left Cheek Low

Date/Time: 2010-8-25 8:54:38
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.35 mho/m; εr = 39.4; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz new Frequency: 1850.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Cheek Low/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.794 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.96 V/m; Power Drift = 0.183 dB
Peak SAR (extrapolated) = 1.16 W/kg
SAR(1 g) = 0.718 mW/g; SAR(10 g) = 0.413 mW/g
Maximum value of SAR (measured) = 0.801 mW/g

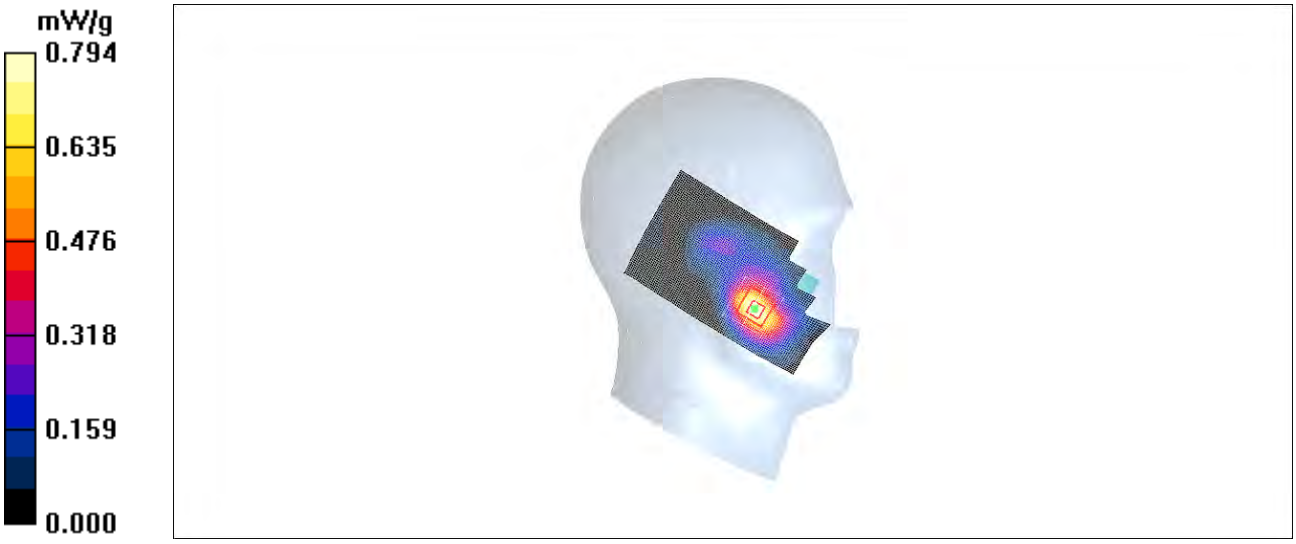


Fig. 22 1900 MHz CH512

1900 Left Tilt Middle
Date/Time: 2010-8-25 8:25:56
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.38 mho/m; εr = 39.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz new Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.251 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.75 V/m; Power Drift = 0.087 dB
Peak SAR (extrapolated) = 0.312 W/kg
SAR(1 g) = 0.212 mW/g; SAR(10 g) = 0.131 mW/g
Maximum value of SAR (measured) = 0.229 mW/g

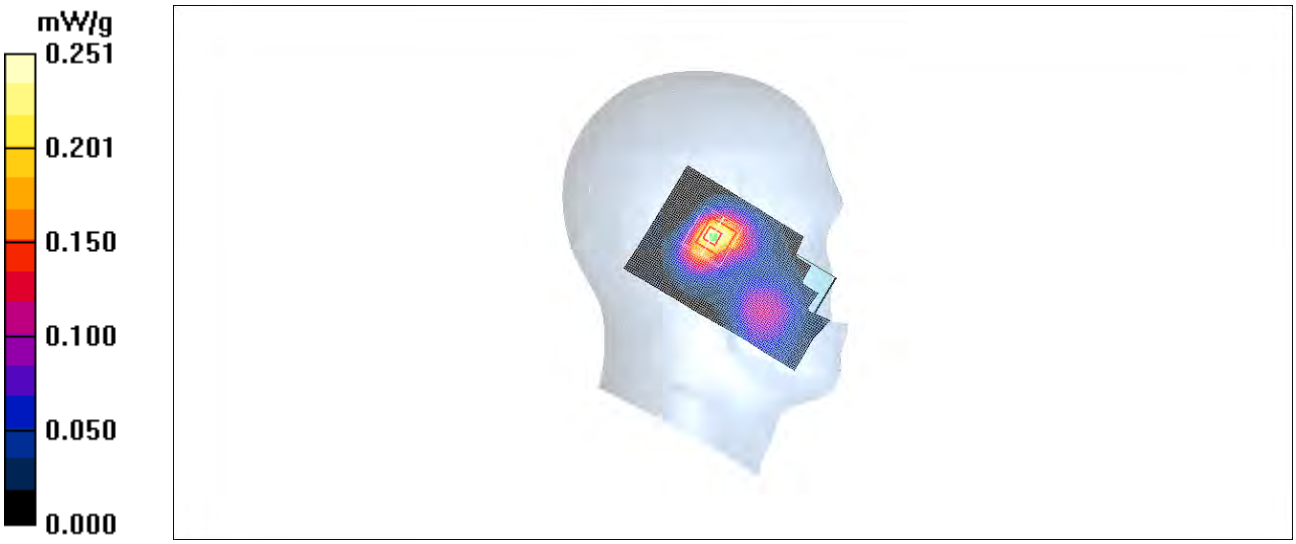


Fig. 23 1900 MHz CH661

1900 Right Cheek High

Date/Time: 2010-8-25 9:37:57
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1910 MHz; σ = 1.40 mho/m; εr = 39.2; ρ = 1000 kg/m^3
Ambient Temperature:23.0^{o}C Liqiud Temperature: 22.5^{o}C
Communication System: GSM 1900MHz new Frequency: 1909.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Cheek High/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.473 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.11 V/m; Power Drift = 0.105 dB
Peak SAR (extrapolated) = 0.638 W/kg
SAR(1 g) = 0.434 mW/g; SAR(10 g) = 0.276 mW/g
Maximum value of SAR (measured) = 0.456 mW/g

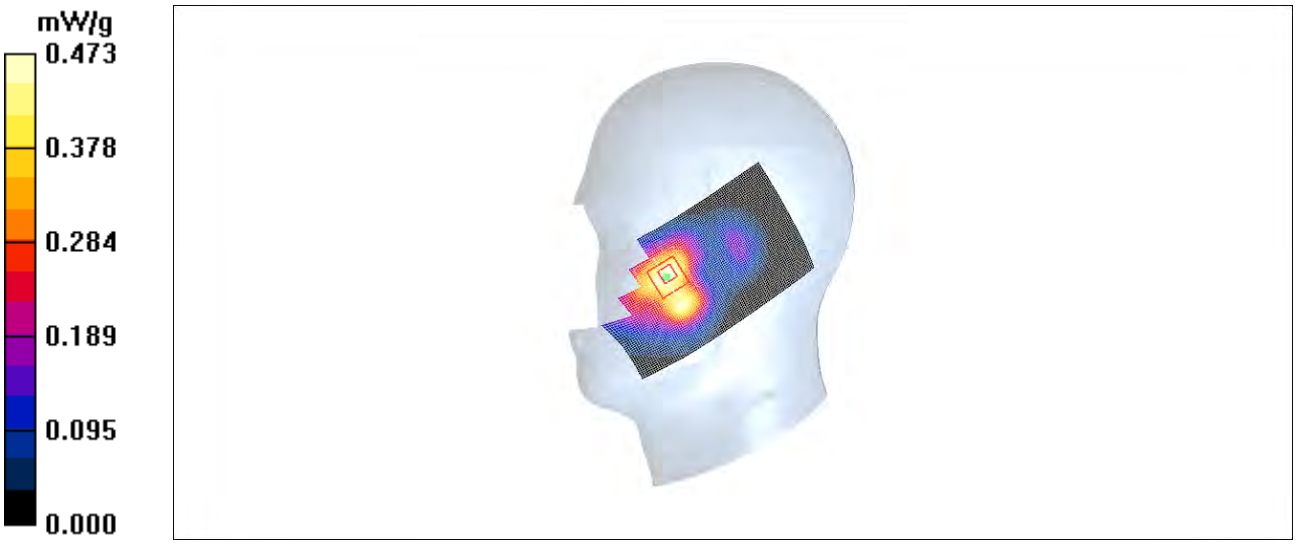


Fig. 24 1900 MHz CH810

1900 Right Cheek Middle

Date/Time: 2010-8-25 9:09:11
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.38 mho/m; εr = 39.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz new Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.483 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.28 V/m; Power Drift = -0.138 dB
Peak SAR (extrapolated) = 0.659 W/kg
SAR(1 g) = 0.451 mW/g; SAR(10 g) = 0.287 mW/g
Maximum value of SAR (measured) = 0.478 mW/g

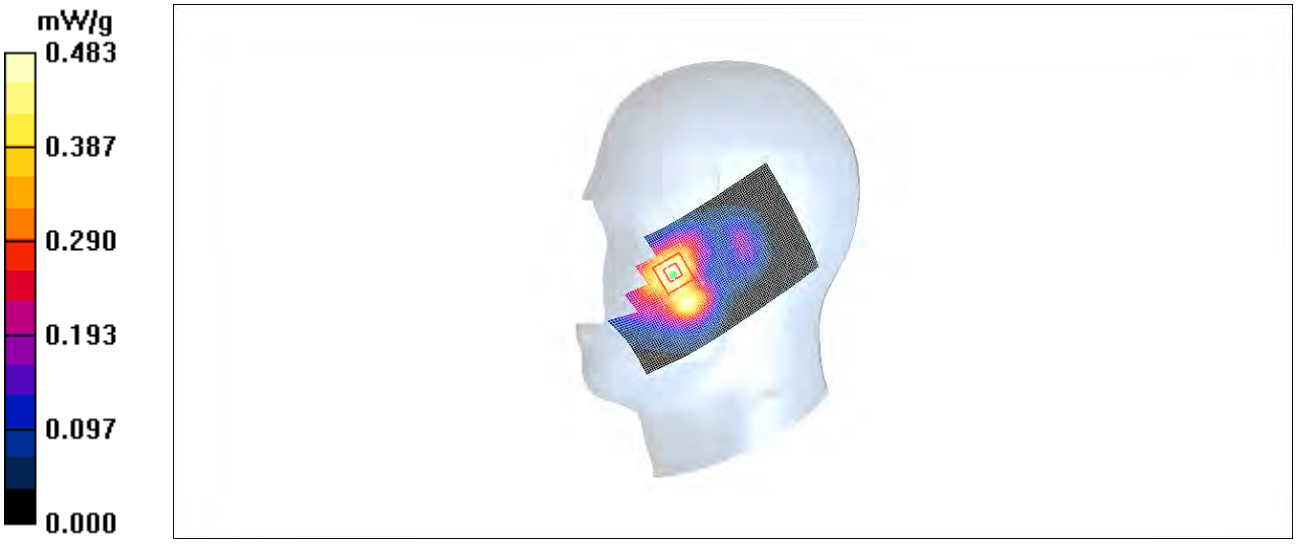


Fig. 25 1900 MHz CH661

1900 Right Cheek Low

Date/Time: 2010-8-25 9:52:24
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.35 mho/m; εr = 39.4; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz new Frequency: 1850.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Cheek Low/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.440 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.37 V/m; Power Drift = 0.125 dB
Peak SAR (extrapolated) = 0.579 W/kg
SAR(1 g) = 0.404 mW/g; SAR(10 g) = 0.260 mW/g
Maximum value of SAR (measured) = 0.427 mW/g

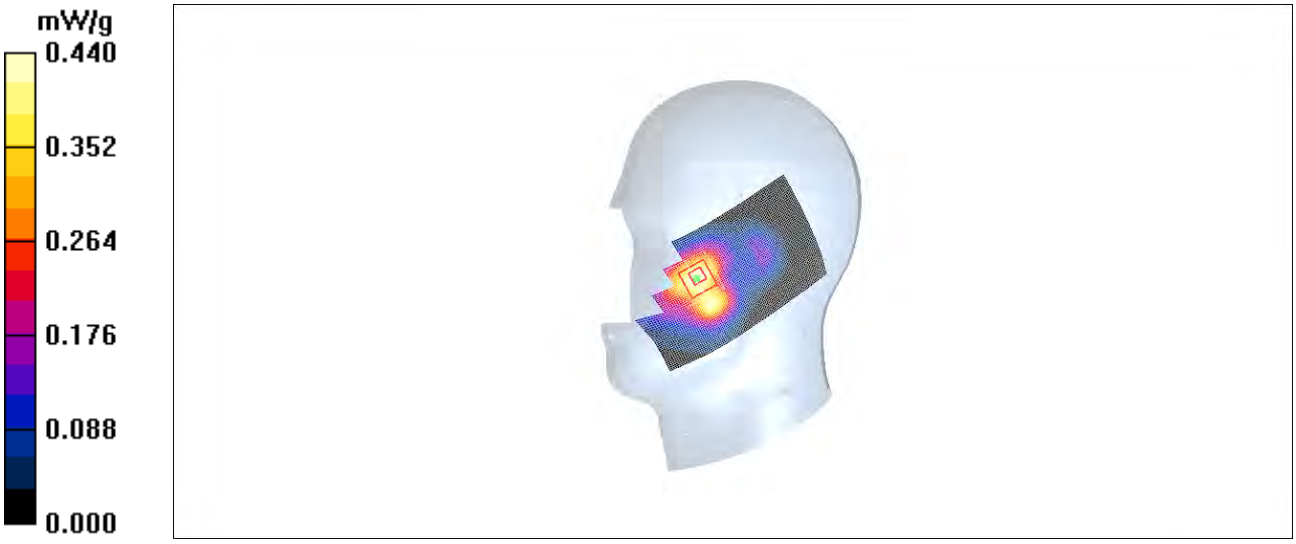


Fig. 26 1900 MHz CH512

1900 Right Tilt Middle
Date/Time: 2010-8-25 9:23:36
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.38 mho/m; εr = 39.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz new Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.227 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.04 V/m; Power Drift = 0.045 dB
Peak SAR (extrapolated) = 0.303 W/kg
SAR(1 g) = 0.199 mW/g; SAR(10 g) = 0.118 mW/g
Maximum value of SAR (measured) = 0.218 mW/g

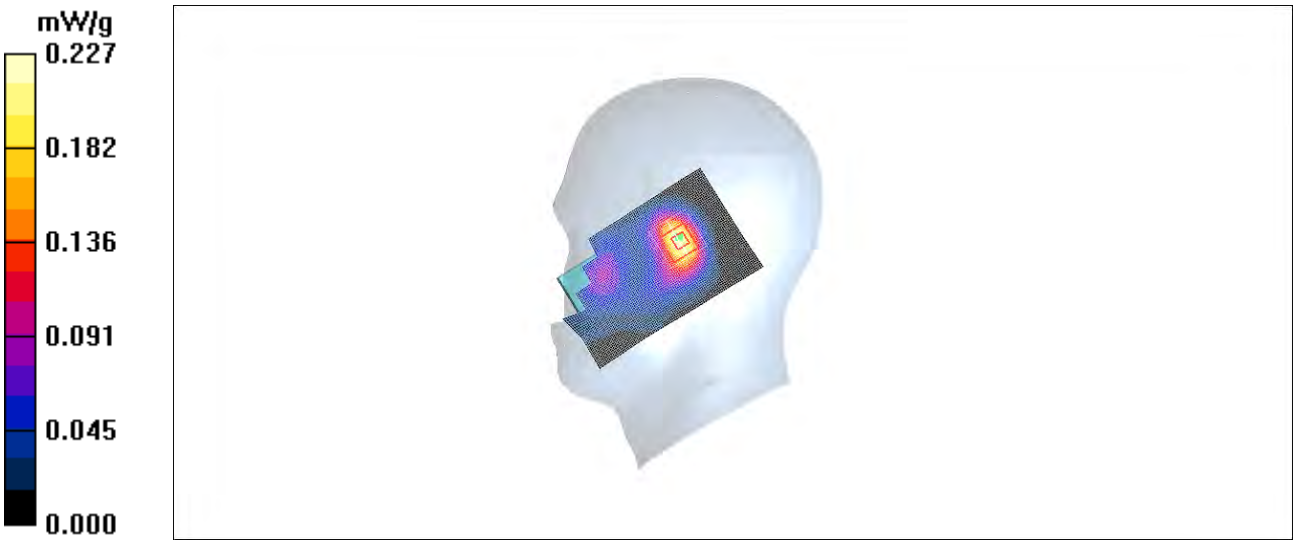


Fig.27 1900 MHz CH661

1900 Body Towards Ground High with GPRS

Date/Time: 2010-8-25 13:42:09
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1910 MHz; σ = 1.54 mho/m; εr = 51.5; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud 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 (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.560 mW/g

Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.38 V/m; Power Drift = -0.011 dB
Peak SAR (extrapolated) = 0.813 W/kg
SAR(1 g) = 0.502 mW/g; SAR(10 g) = 0.313 mW/g
Maximum value of SAR (measured) = 0.540 mW/g

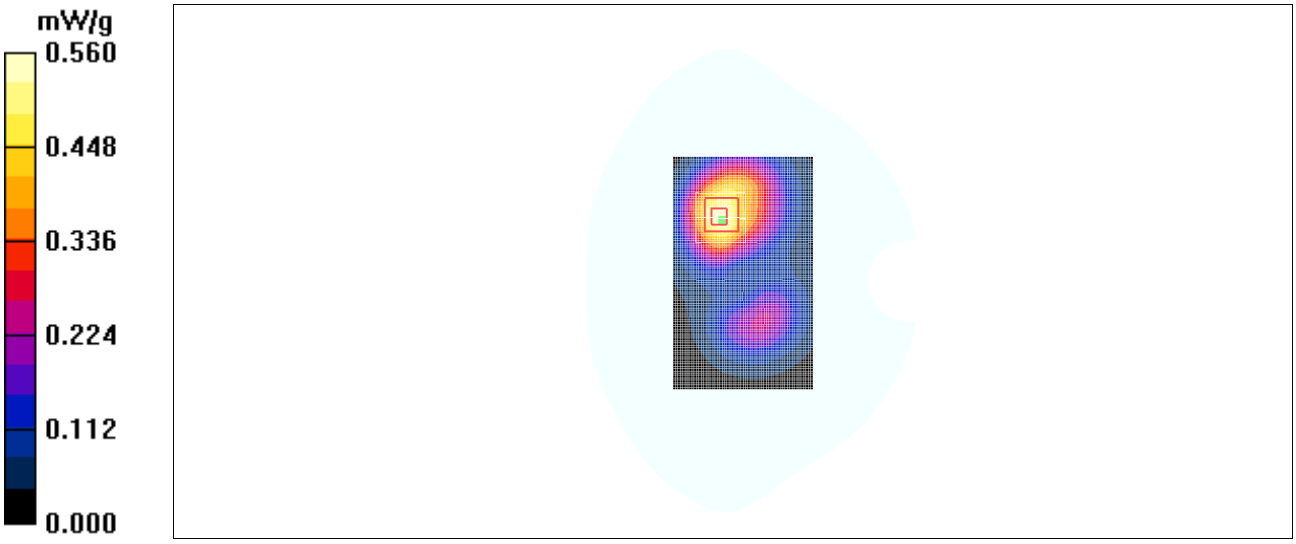


Fig. 28 1900 MHz CH810

1900 Body Towards Ground Middle with GPRS

Date/Time: 2010-8-25 13:57:22
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; εr = 51.6; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud 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 (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.557 mW/g

Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.75 V/m; Power Drift = -0.010 dB
Peak SAR (extrapolated) = 0.823 W/kg
SAR(1 g) = 0.508 mW/g; SAR(10 g) = 0.312 mW/g
Maximum value of SAR (measured) = 0.546 mW/g

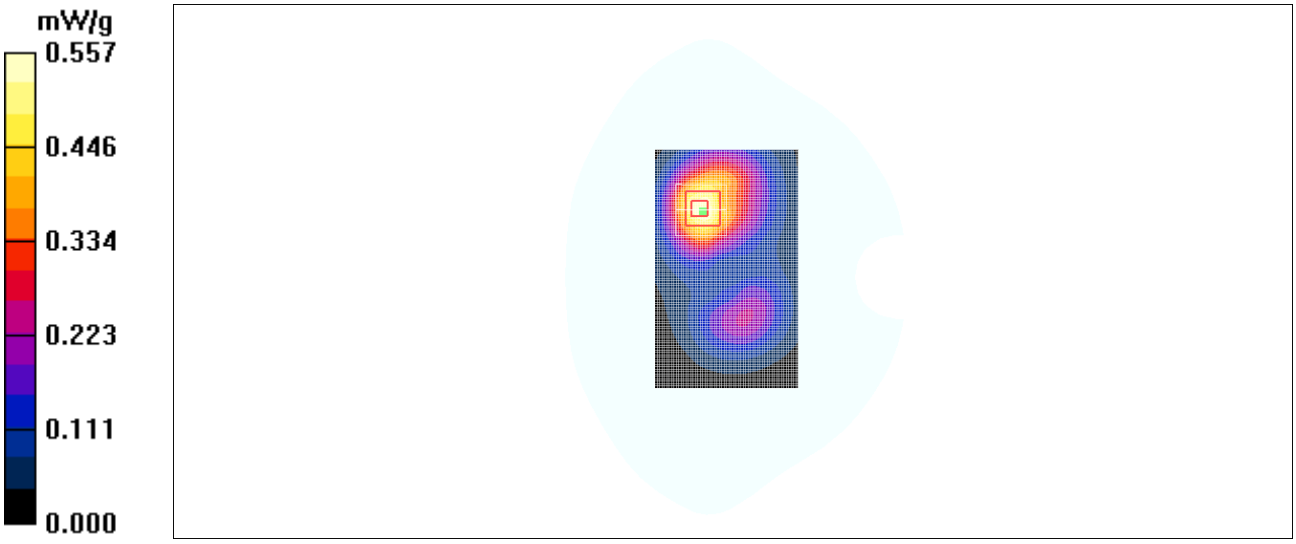


Fig. 29 1900 MHz CH661

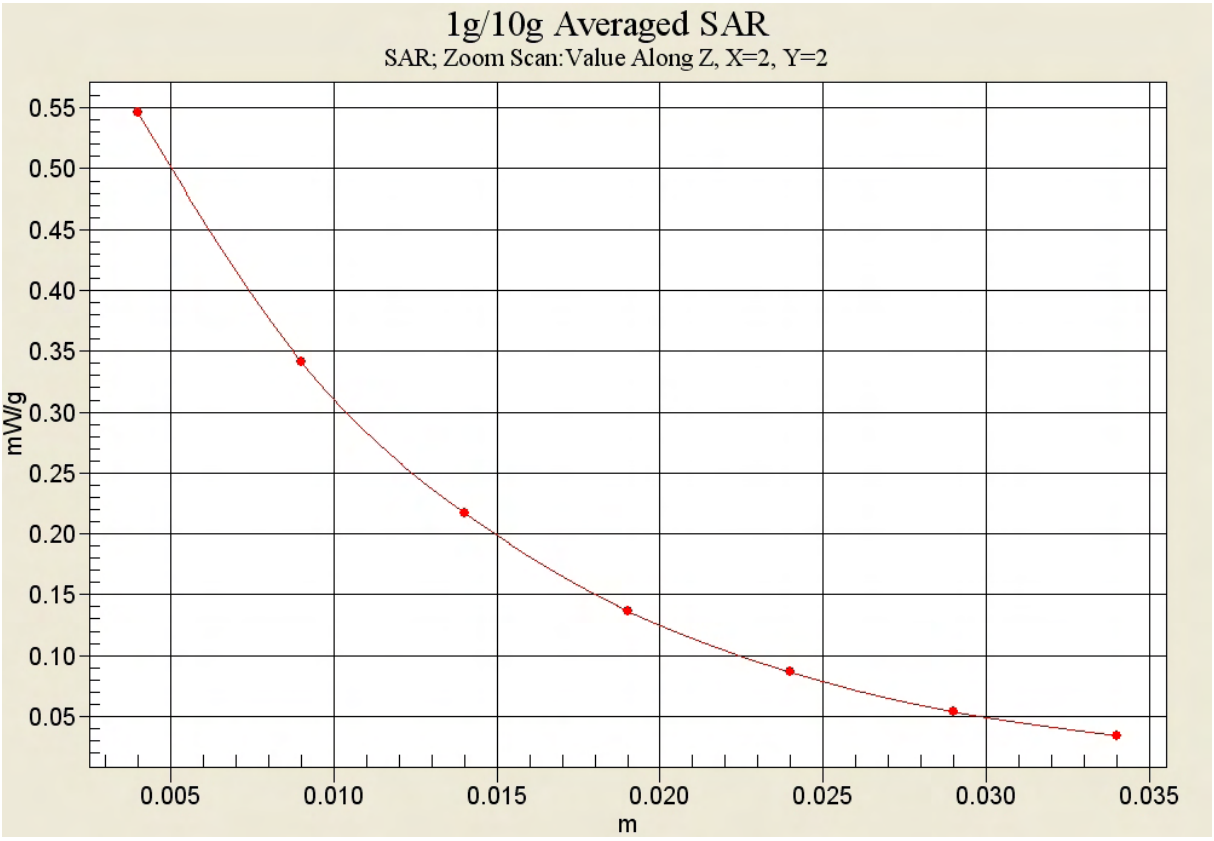


Fig. 29-1 Z-Scan at power reference point (1900 MHz CH661)

1900 Body Towards Ground Low with GPRS

Date/Time: 2010-8-25 14:12:41
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.49 mho/m; εr = 51.6; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz GPRS Frequency: 1850.2 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

Toward Ground Low/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.473 mW/g

Toward Ground Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.99 V/m; Power Drift = 0.135 dB
Peak SAR (extrapolated) = 0.688 W/kg
SAR(1 g) = 0.428 mW/g; SAR(10 g) = 0.263 mW/g
Maximum value of SAR (measured) = 0.462 mW/g

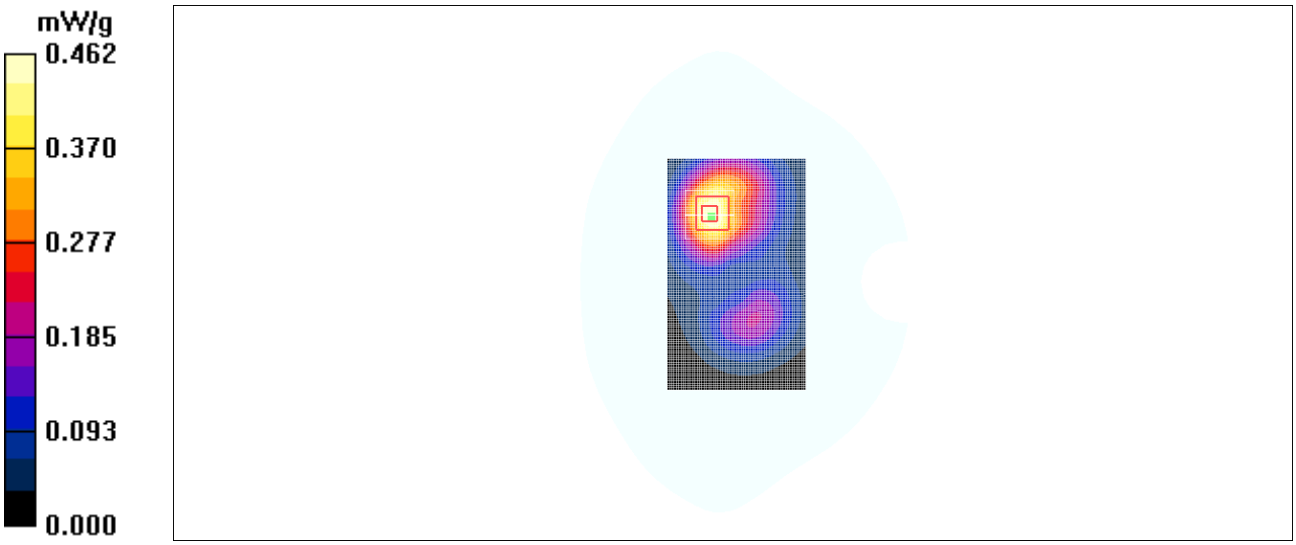


Fig. 30 1900 MHz CH512

1900 Body Towards Ground Middle with EGPRS

Date/Time: 2010-8-25 14:29:07
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; εr = 51.6; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud 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 (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.533 mW/g

Toward Ground Middle/Zoom Scan (4x4x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.82 V/m; Power Drift = 0.116 dB
Peak SAR (extrapolated) = 0.827 W/kg
SAR(1 g) = 0.499 mW/g; SAR(10 g) = 0.307 mW/g
Maximum value of SAR (measured) = 0.525 mW/g

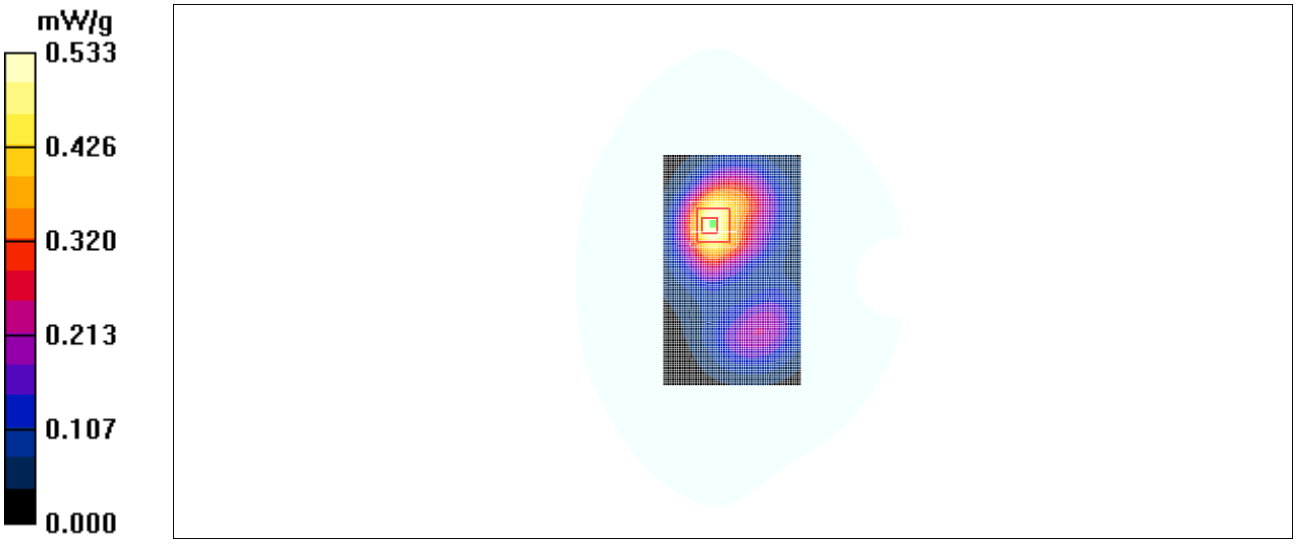


Fig. 31 1900 MHz CH512

1900 Body Towards Ground Middle with Headset

Date/Time: 2010-8-25 14:45:38
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; εr = 51.6; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud 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 (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.283 mW/g

Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.52 V/m; Power Drift = -0.144 dB
Peak SAR (extrapolated) = 0.425 W/kg
SAR(1 g) = 0.260 mW/g; SAR(10 g) = 0.160 mW/g
Maximum value of SAR (measured) = 0.275 mW/g

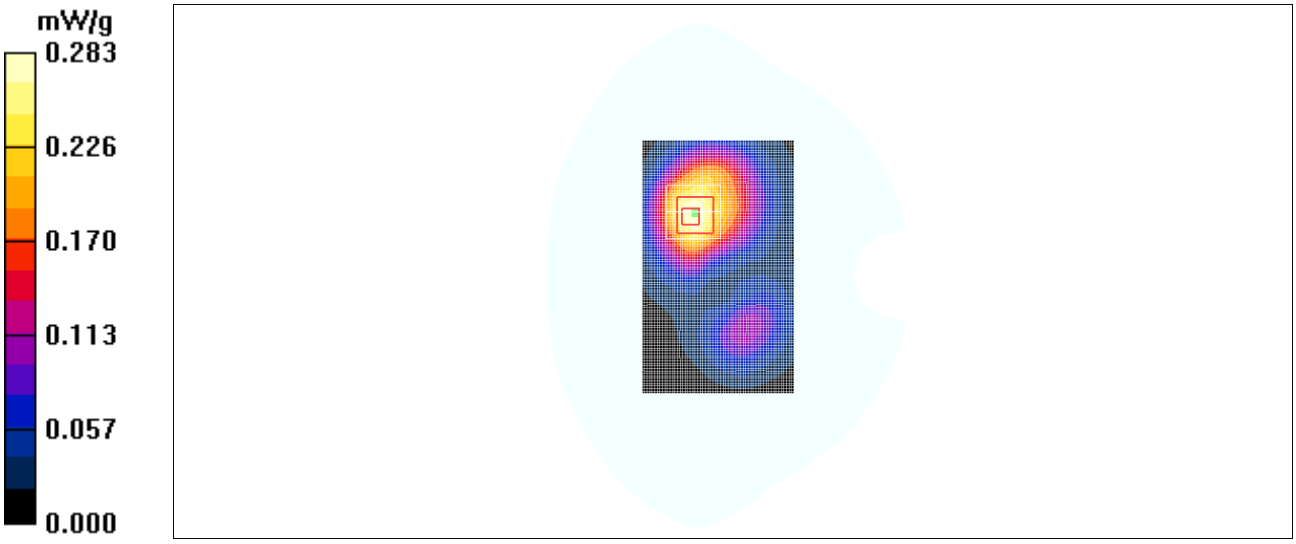


Fig. 32 1900 MHz CH512

1900 Body Towards Ground Middle with BT Headset

Date/Time: 2010-8-25 15:02:30
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; εr = 51.6; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud 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 (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.302 mW/g

Toward Ground Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.96 V/m; Power Drift = -0.124 dB
Peak SAR (extrapolated) = 0.445 W/kg
SAR(1 g) = 0.276 mW/g; SAR(10 g) = 0.171 mW/g
Maximum value of SAR (measured) = 0.292 mW/g

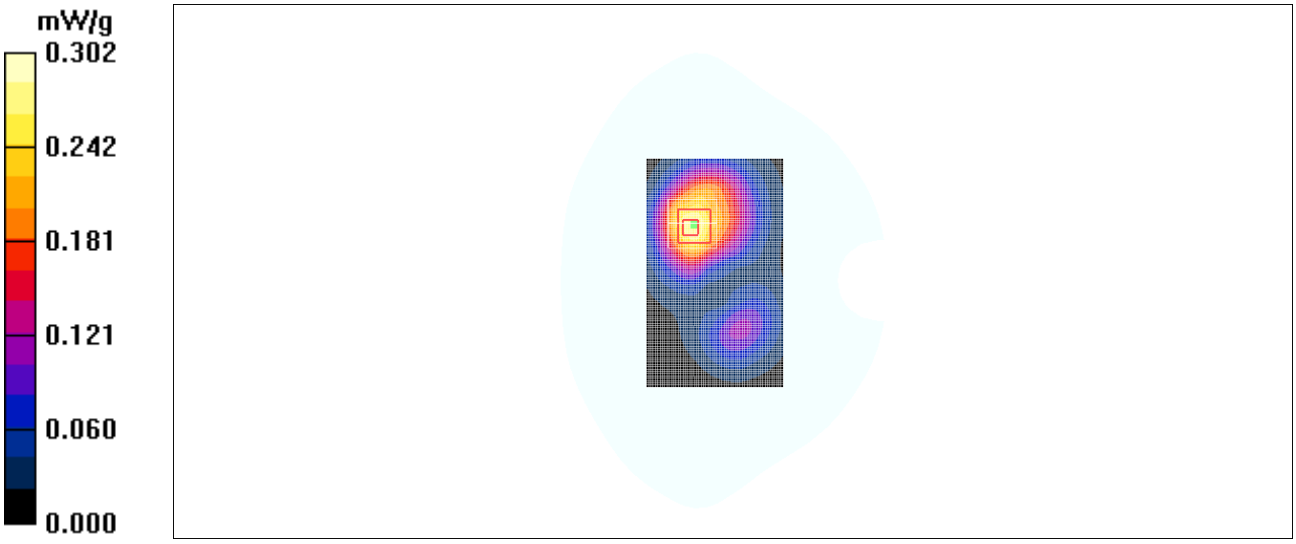


Fig. 33 1900 MHz CH512

1900 Body Towards Phantom Middle with GPRS

Date/Time: 2010-8-25 15:19:27
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; εr = 51.6; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liqiud 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 (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.510 mW/g

Toward Phantom Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.80 V/m; Power Drift = -0.007 dB
Peak SAR (extrapolated) = 0.684 W/kg
SAR(1 g) = 0.429 mW/g; SAR(10 g) = 0.255 mW/g
Maximum value of SAR (measured) = 0.483 mW/g

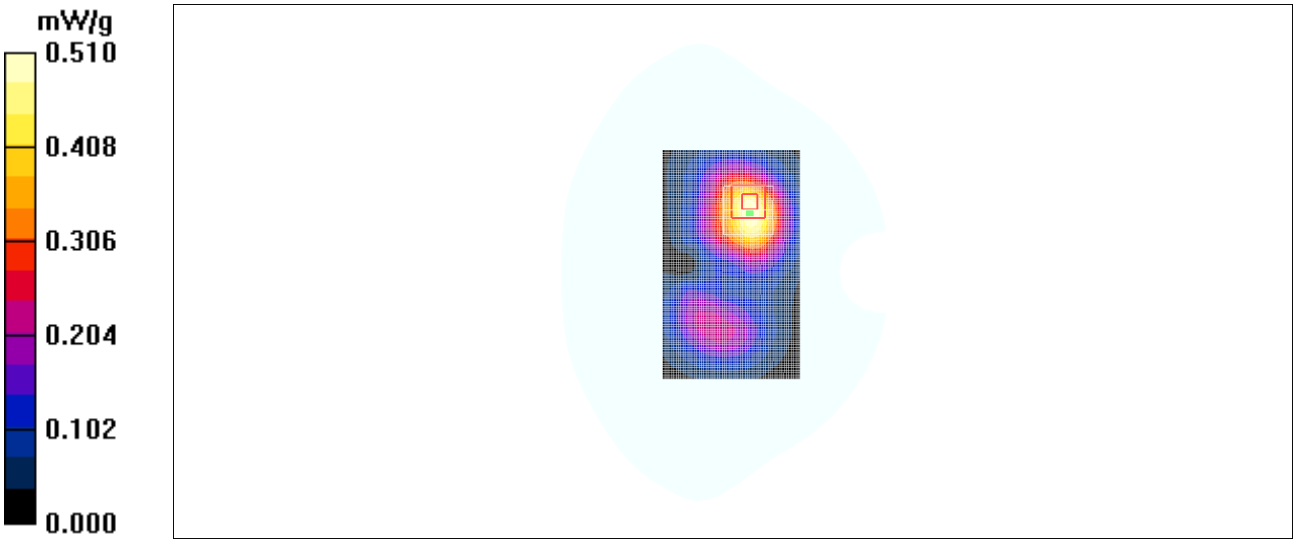


Fig.34 1900 MHz CH512

WiFi 802.11b 1Mbps Left Cheek Channel 6
Date/Time: 2010-8-26 8:09:17
Electronics: DAE4 Sn771
Medium: Head 2450 MHz
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.80 mho/m; εr = 39.5; ρ = 1000 kg/m^3
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WLan 2450 Frequency: 2437 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN3617 ConvF(7.19, 7.19, 7.19)

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.489 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.67 V/m; Power Drift = -0.041 dB
Peak SAR (extrapolated) = 0.867 W/kg
SAR(1 g) = 0.407 mW/g; SAR(10 g) = 0.193 mW/g
Maximum value of SAR (measured) = 0.438 mW/g

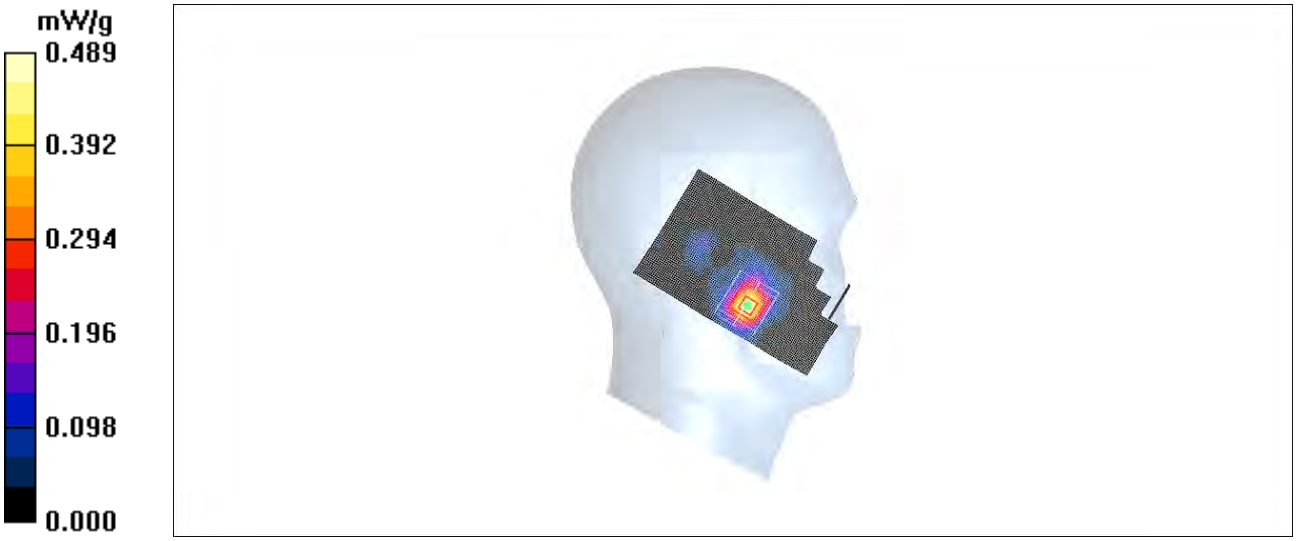


Fig.35 802.11b 1Mbps CH6

WiFi 802.11b 1Mbps Left Tilt Channel 6
Date/Time: 2010-8-26 8:23:36
Electronics: DAE4 Sn771
Medium: Head 2450 MHz
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.80 mho/m; εr = 39.5; ρ = 1000 kg/m^3
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WLan 2450 Frequency: 2437 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN3617 ConvF(7.19, 7.19, 7.19)

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.136 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.20 V/m; Power Drift = 0.030 dB
Peak SAR (extrapolated) = 0.222 W/kg
SAR(1 g) = 0.112 mW/g; SAR(10 g) = 0.050 mW/g
Maximum value of SAR (measured) = 0.134 mW/g

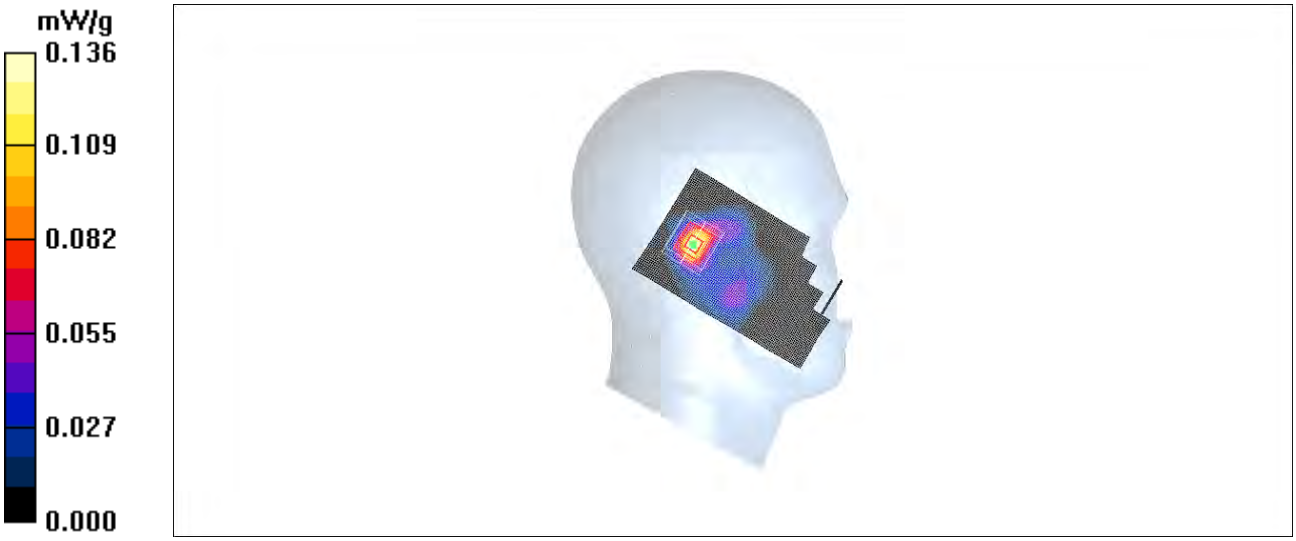


Fig.36 802.11b 1Mbps CH6

WiFi 802.11b 1Mbps Left Cheek Channel 11
Date/Time: 2010-8-26 11:15:23
Electronics: DAE4 Sn771
Medium: Head 2450 MHz
Medium parameters used (interpolated): f = 2462 MHz; σ = 1.83 mho/m; εr = 39.4; ρ = 1000 kg/m^3
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WLan 2450 Frequency: 2462 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN3617 ConvF(7.19, 7.19, 7.19)

Cheek High/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.533 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.76 V/m; Power Drift = -0.102 dB
Peak SAR (extrapolated) = 0.932 W/kg
SAR(1 g) = 0.446 mW/g; SAR(10 g) = 0.213 mW/g
Maximum value of SAR (measured) = 0.484 mW/g

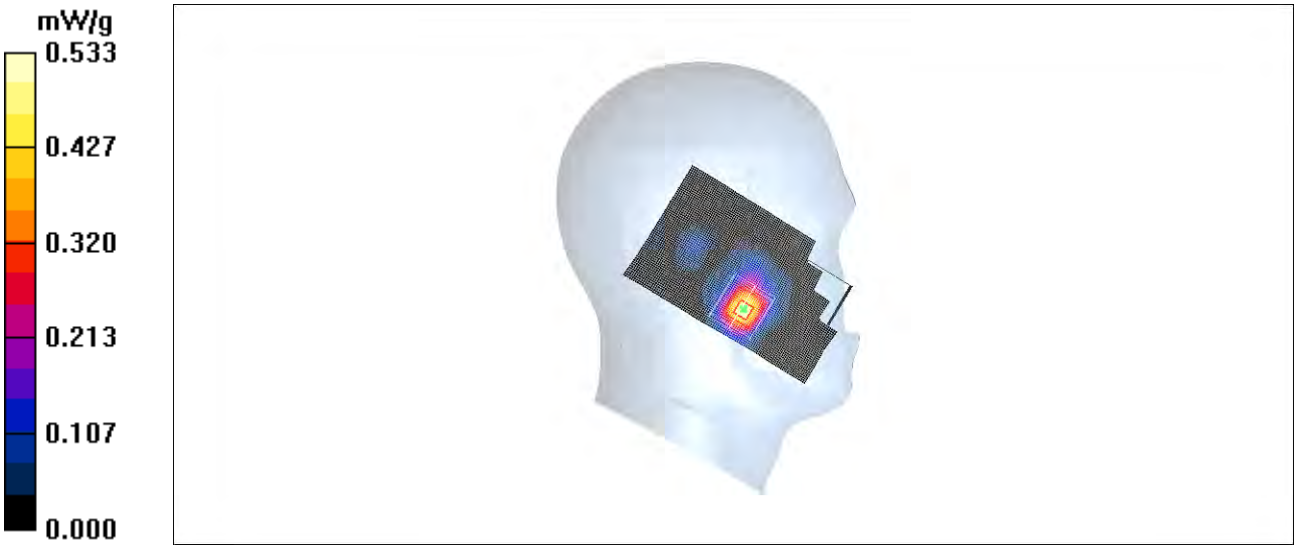


Fig.37 802.11b 1Mbps CH11

WiFi 802.11b 1Mbps Left Cheek Channel 1
Date/Time: 2010-8-26 8:52:30
Electronics: DAE4 Sn771
Medium: Head 2450 MHz
Medium parameters used (interpolated): f = 2412 MHz; σ = 1.78 mho/m; εr = 39.6; ρ = 1000 kg/m^3
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WLan 2450 Frequency: 2412 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN3617 ConvF(7.19, 7.19, 7.19)

Cheek Low/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.358 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.33 V/m; Power Drift = 0.197 dB
Peak SAR (extrapolated) = 0.637 W/kg
SAR(1 g) = 0.301 mW/g; SAR(10 g) = 0.142 mW/g
Maximum value of SAR (measured) = 0.327 mW/g

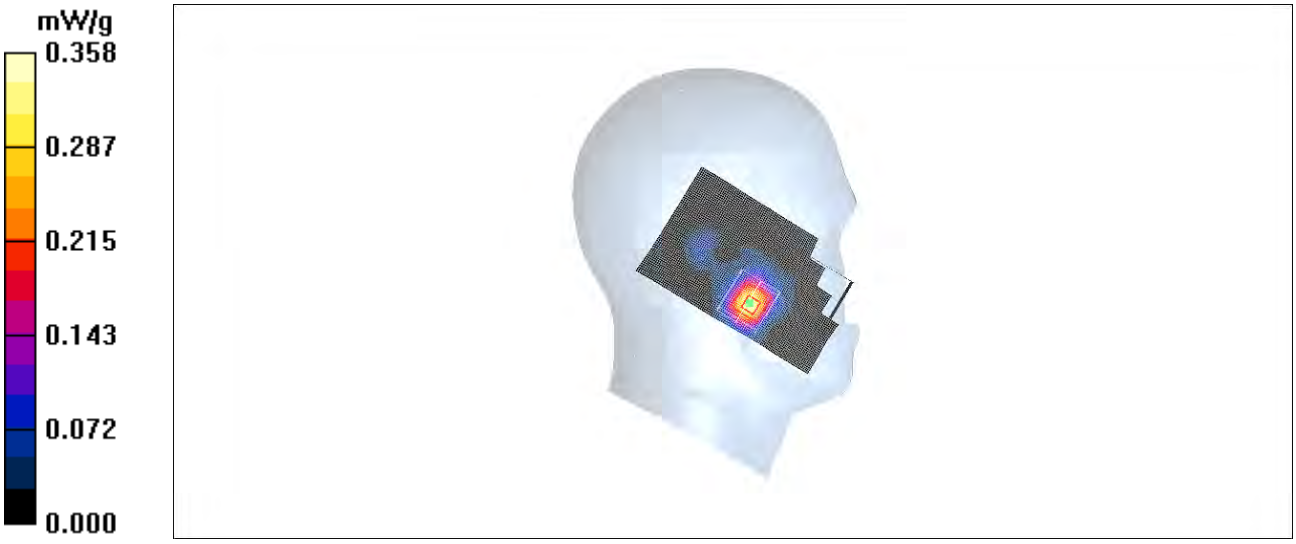


Fig.38 802.11b 1Mbps CH1

WiFi 802.11b 1Mbps Right Cheek Channel 6
Date/Time: 2010-8-26 9:07:28
Electronics: DAE4 Sn771
Medium: Head 2450 MHz
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.80 mho/m; εr = 39.5; ρ = 1000 kg/m^3
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WLan 2450 Frequency: 2437 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN3617 ConvF(7.19, 7.19, 7.19)

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.399 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.23 V/m; Power Drift = 0.105 dB
Peak SAR (extrapolated) = 0.783 W/kg
SAR(1 g) = 0.347 mW/g; SAR(10 g) = 0.160 mW/g
Maximum value of SAR (measured) = 0.383 mW/g

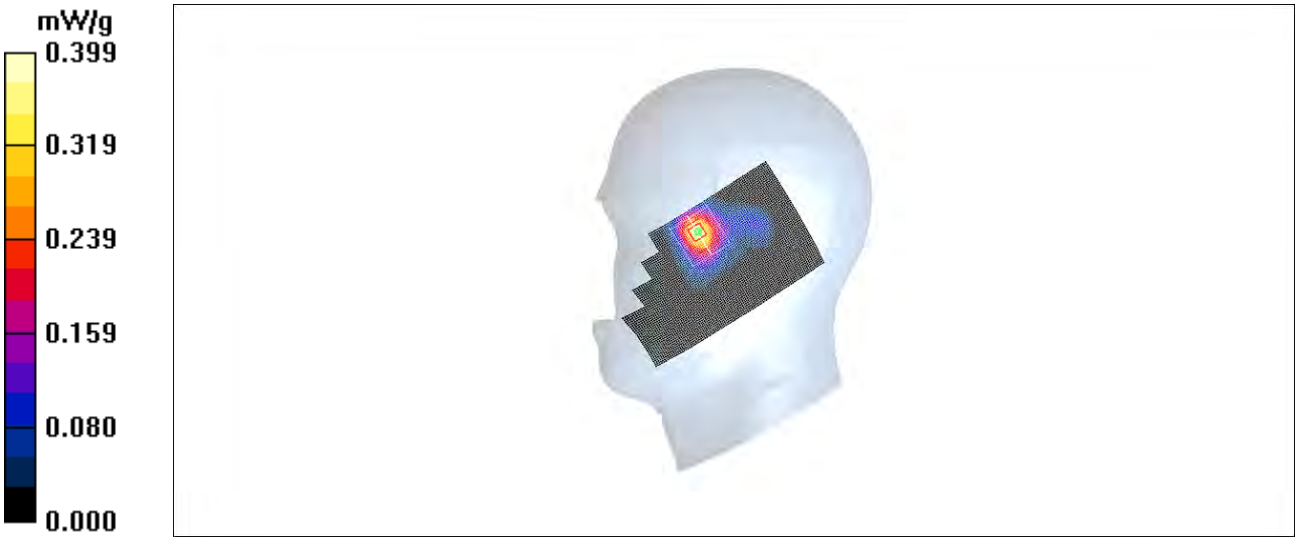


Fig.39 802.11b 1Mbps CH6

WiFi 802.11b 1Mbps Right Tilt Channel 6
Date/Time: 2010-8-26 9:21:46
Electronics: DAE4 Sn771
Medium: Head 2450 MHz
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.80 mho/m; εr = 39.5; ρ = 1000 kg/m^3
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WLan 2450 Frequency: 2437 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN3617 ConvF(7.19, 7.19, 7.19)

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.160 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.94 V/m; Power Drift = 0.111 dB
Peak SAR (extrapolated) = 0.257 W/kg
SAR(1 g) = 0.124 mW/g; SAR(10 g) = 0.056 mW/g
Maximum value of SAR (measured) = 0.149 mW/g

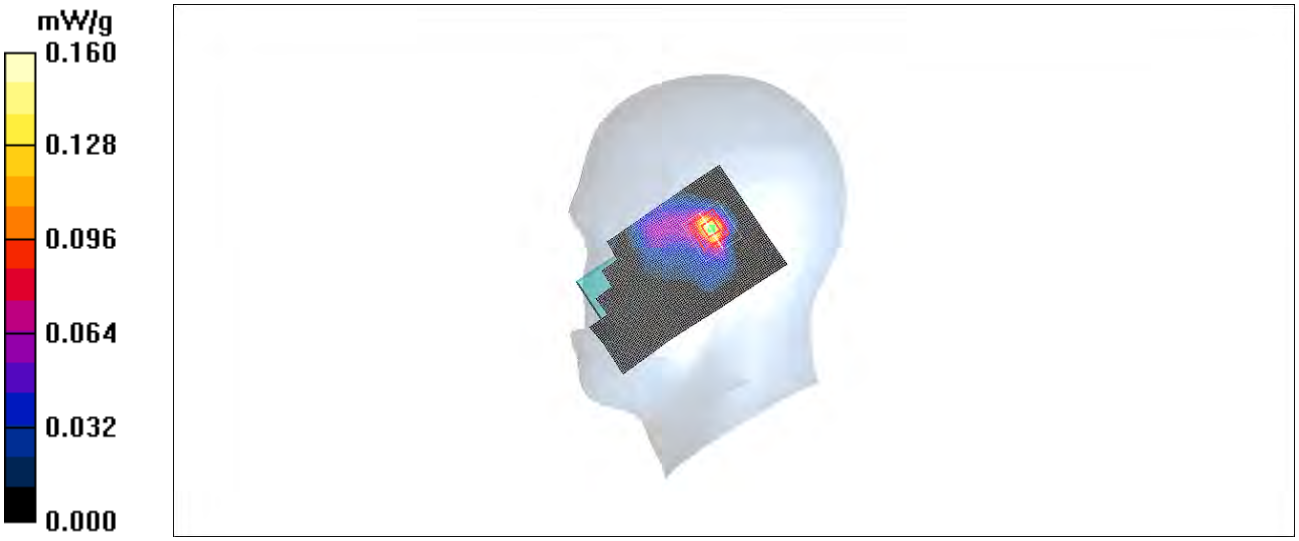


Fig.40 802.11b 1Mbps CH6

WiFi 802.11b 1Mbps Right Cheek Channel 11
Date/Time: 2010-8-26 11:30:35
Electronics: DAE4 Sn771
Medium: Head 2450 MHz
Medium parameters used (interpolated): f = 2462 MHz; σ = 1.83 mho/m; εr = 39.4; ρ = 1000 kg/m^3
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WLan 2450 Frequency: 2462 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN3617 ConvF(7.19, 7.19, 7.19)

Cheek High/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.528 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.39 V/m; Power Drift = 0.185 dB
Peak SAR (extrapolated) = 0.987 W/kg
SAR(1 g) = 0.445 mW/g; SAR(10 g) = 0.209 mW/g
Maximum value of SAR (measured) = 0.477 mW/g

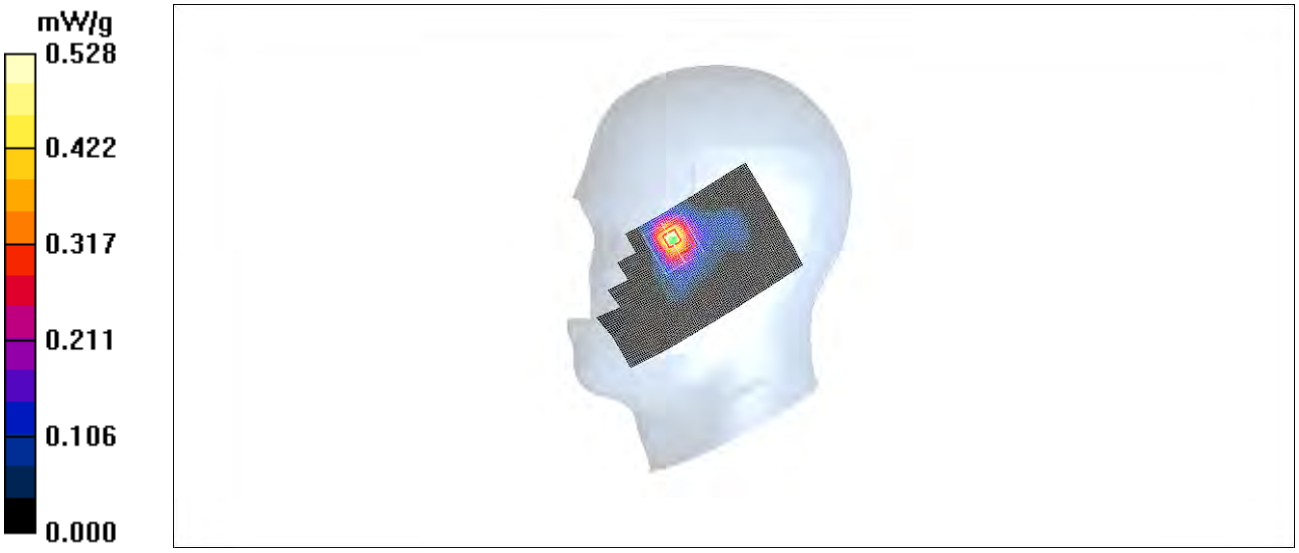


Fig.41 802.11b 1Mbps CH11

WiFi 802.11b 1Mbps Right Cheek Channel 1
Date/Time: 2010-8-26 9:50:34
Electronics: DAE4 Sn771
Medium: Head 2450 MHz
Medium parameters used (interpolated): f = 2412 MHz; σ = 1.78 mho/m; εr = 39.6; ρ = 1000 kg/m^3
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WLan 2450 Frequency: 2412 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN3617 ConvF(7.19, 7.19, 7.19)

Cheek Low/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.358 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.07 V/m; Power Drift = 0.191 dB
Peak SAR (extrapolated) = 0.677 W/kg
SAR(1 g) = 0.305 mW/g; SAR(10 g) = 0.140 mW/g
Maximum value of SAR (measured) = 0.335 mW/g

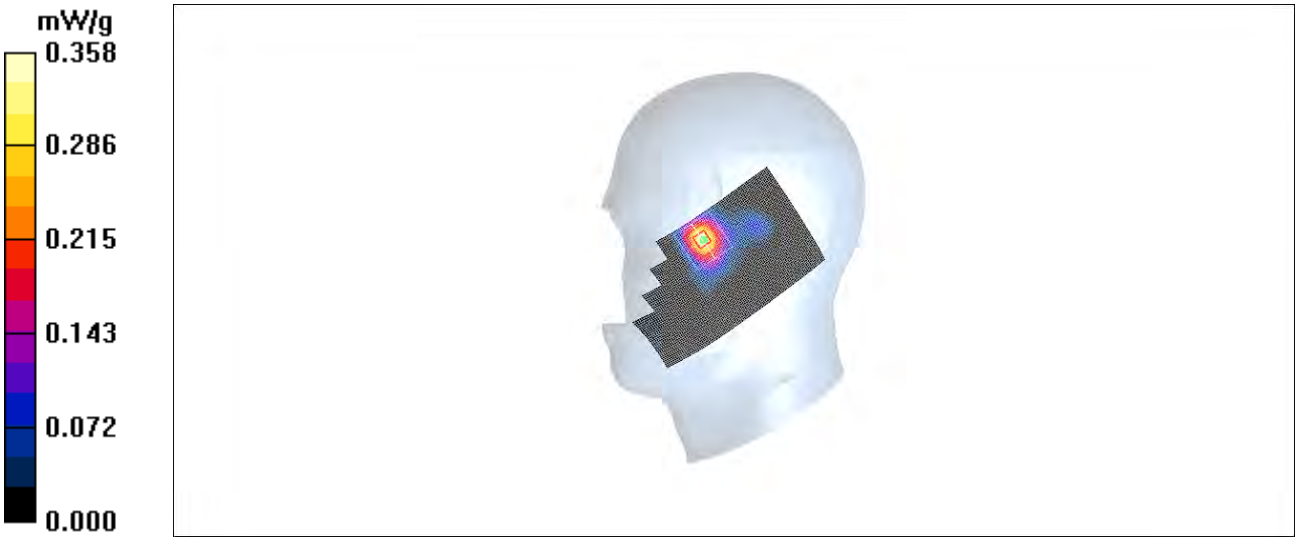


Fig.42 802.11b 1Mbps CH1

WiFi 802.11b 1Mbps Toward Ground Channel 11
Date/Time: 2010-8-26 13:39:27
Electronics: DAE4 Sn771
Medium: Body 2450 MHz
Medium parameters used (interpolated): f = 2462 MHz; σ = 1.98 mho/m; εr = 51.8; ρ = 1000 kg/m^3
Ambient Temperature:23.0oC Liquid Temperature: 22.5°C
Communication System: WLan 2450 Frequency: 2462 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN3617 ConvF(6.88, 6.88, 6.88)

Toward Ground High/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.045 mW/g

Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.97 V/m; Power Drift = 0.165 dB
Peak SAR (extrapolated) = 0.078 W/kg
SAR(1 g) = 0.040 mW/g; SAR(10 g) = 0.024 mW/g
Maximum value of SAR (measured) = 0.042 mW/g

Toward Ground High/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.97 V/m; Power Drift = 0.165 dB
Peak SAR (extrapolated) = 0.094 W/kg
SAR(1 g) = 0.038 mW/g; SAR(10 g) = 0.023 mW/g
Maximum value of SAR (measured) = 0.052 mW/g

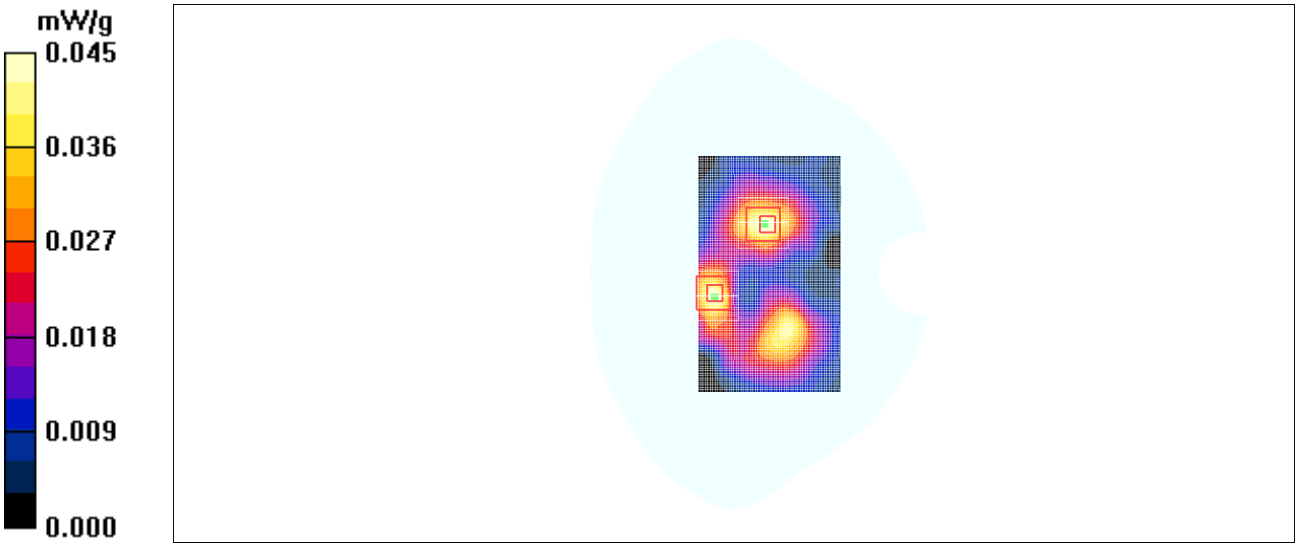


Fig.43 802.11b 1Mbps CH11

WiFi 802.11b 1Mbps Toward Ground Channel 6
Date/Time: 2010-8-26 13:54:49
Electronics: DAE4 Sn771
Medium: Body 2450 MHz
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.94 mho/m; εr = 51.9; ρ = 1000 kg/m^3
Ambient Temperature:23.0oC Liquid Temperature: 22.5°C
Communication System: WLan 2450 Frequency: 2437 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN3617 ConvF(6.88, 6.88, 6.88)

Toward Ground Middle/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.049 mW/g

Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.15 V/m; Power Drift = -0.136 dB
Peak SAR (extrapolated) = 0.081 W/kg
SAR(1 g) = 0.047 mW/g; SAR(10 g) = 0.024 mW/g
Maximum value of SAR (measured) = 0.055 mW/g

Toward Ground Middle/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.15 V/m; Power Drift = -0.136 dB
Peak SAR (extrapolated) = 0.054 W/kg
SAR(1 g) = 0.031 mW/g; SAR(10 g) = 0.019 mW/g
Maximum value of SAR (measured) = 0.034 mW/g

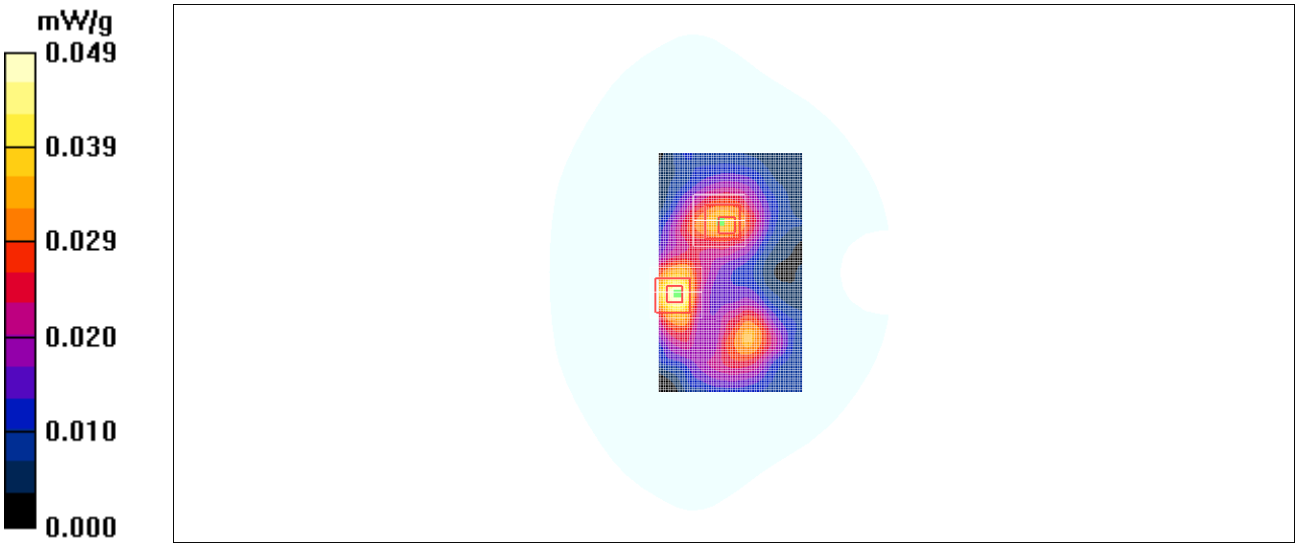


Fig.44 802.11b 1Mbps CH6

WiFi 802.11b 1Mbps Toward Ground Channel 1
Date/Time: 2010-8-26 14:10:33
Electronics: DAE4 Sn771
Medium: Body 2450 MHz
Medium parameters used (interpolated): f = 2412 MHz; σ = 1.92 mho/m; εr = 52.0; ρ = 1000 kg/m^3
Ambient Temperature:23.0oC Liquid Temperature: 22.5°C
Communication System: WLan 2450 Frequency: 2412 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN3617 ConvF(6.88, 6.88, 6.88)

Toward Ground Low/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.048 mW/g

Toward Ground Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.50 V/m; Power Drift = 0.133 dB
Peak SAR (extrapolated) = 0.065 W/kg
SAR(1 g) = 0.041 mW/g; SAR(10 g) = 0.019 mW/g
Maximum value of SAR (measured) = 0.050 mW/g

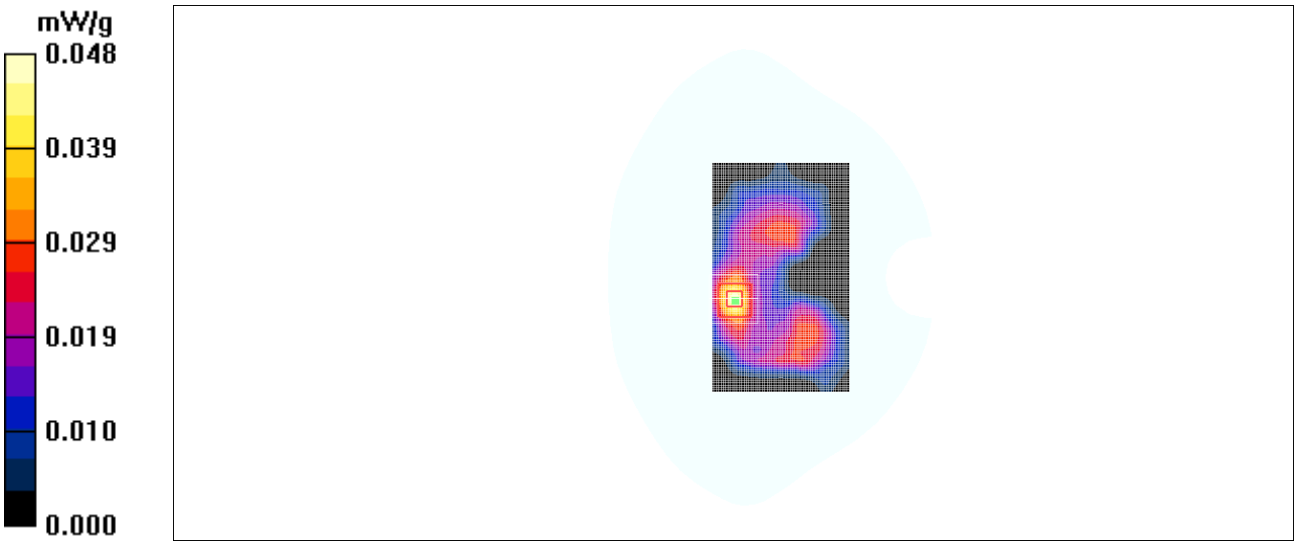


Fig.45 802.11b 1Mbps CH1

WiFi 802.11b 1Mbps Toward Phantom Channel 6
Date/Time: 2010-8-26 14:26:48
Electronics: DAE4 Sn771
Medium: Body 2450 MHz
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.94 mho/m; εr = 51.9; ρ = 1000 kg/m^3
Ambient Temperature:23.0oC Liquid Temperature: 22.5°C
Communication System: WLan 2450 Frequency: 2437 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN3617 ConvF(6.88, 6.88, 6.88)

Toward Phantom Middle/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.032 mW/g

Toward Phantom Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.88 V/m; Power Drift = -0.119 dB
Peak SAR (extrapolated) = 0.045 W/kg
SAR(1 g) = 0.029 mW/g; SAR(10 g) = 0.014 mW/g
Maximum value of SAR (measured) = 0.034 mW/g

Toward Phantom Middle/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.88 V/m; Power Drift = -0.119 dB
Peak SAR (extrapolated) = 0.044 W/kg
SAR(1 g) = 0.017 mW/g; SAR(10 g) = 0.00959 mW/g
Maximum value of SAR (measured) = 0.020 mW/g

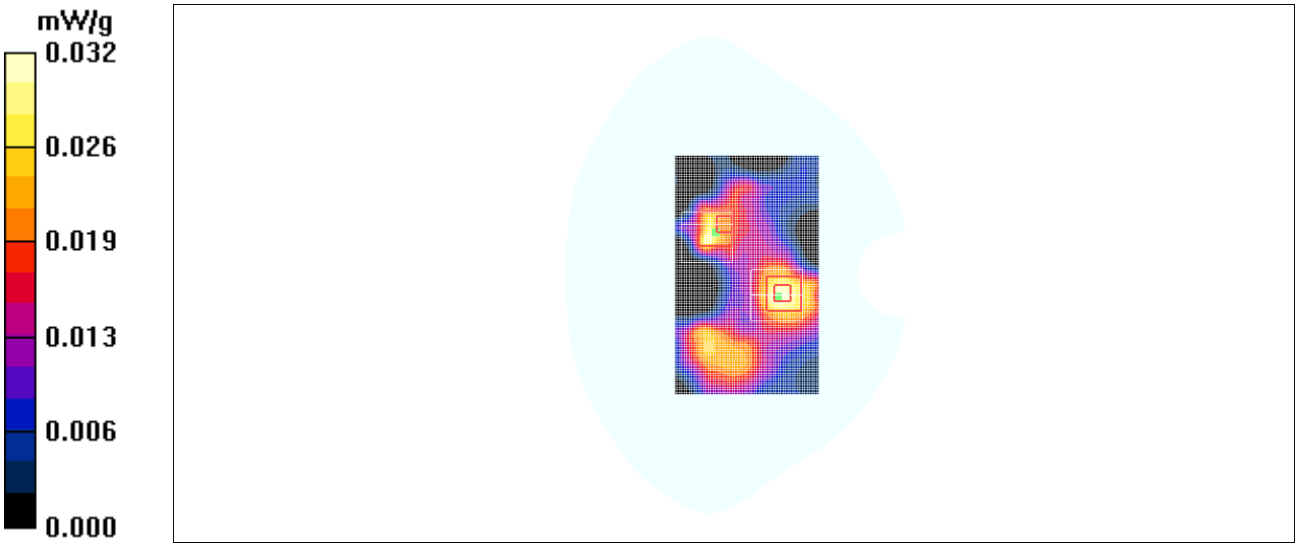


Fig.46 802.11b 1Mbps CH6

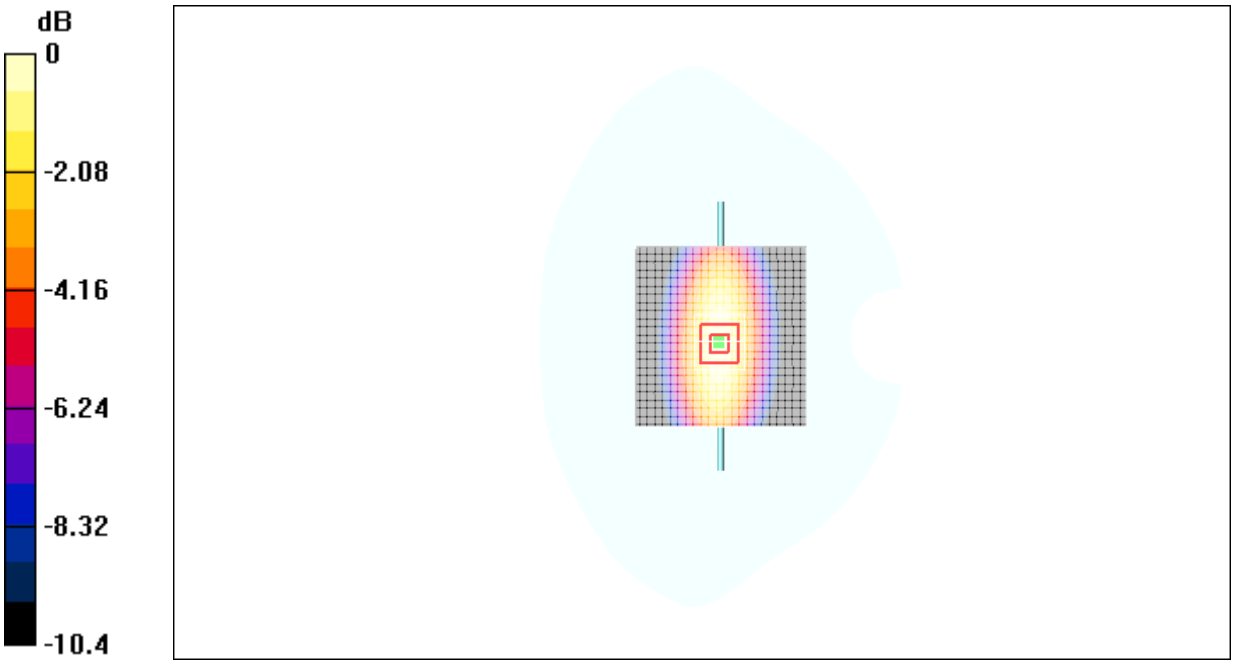
ANNEX D SYSTEM VALIDATION RESULTS

835MHz

Date/Time: 2010-8-24 7:26:17
Electronics: DAE4 Sn771
Medium: Head 850
Medium parameters used: f = 835 MHz; σ = 0.87 mho/m; ε_r = 40.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

System Validation /Area Scan (101x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 2.53 mW/g

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.5 V/m; Power Drift = 0.063 dB
Peak SAR (extrapolated) = 3.39 W/kg
SAR(1 g) = 2.31 mW/g; SAR(10 g) = 1.51 mW/g
Maximum value of SAR (measured) = 2.44 mW/g



0 dB = 2.44mW/g

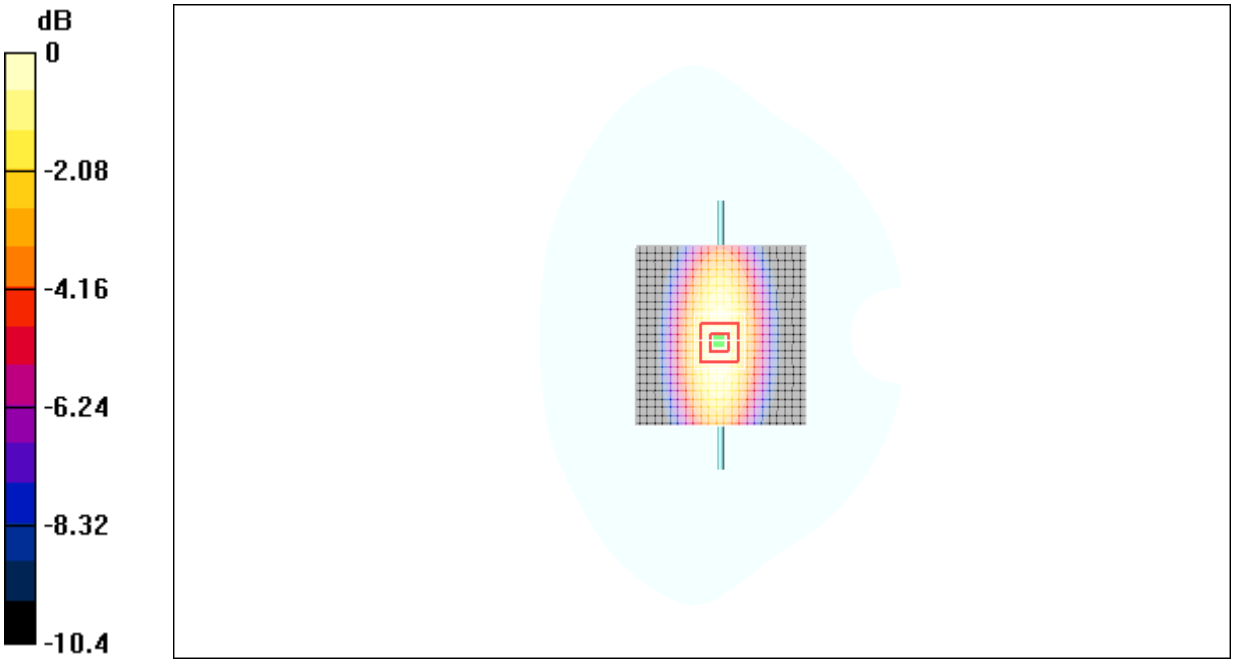
Fig.47 validation 835MHz 250mW

835MHz

Date/Time: 2010-8-24 13:15:34
Electronics: DAE4 Sn771
Medium: 850 Body
Medium parameters used: f = 835 MHz; σ = 0.94 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

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

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 50.6V/m; Power Drift = -0.048 dB
Peak SAR (extrapolated) = 3.32 W/kg
SAR(1 g) = 2.31 mW/g; SAR(10 g) = 1.52 mW/g
Maximum value of SAR (measured) = 2.37 mW/g



0 dB = 2.37mW/g

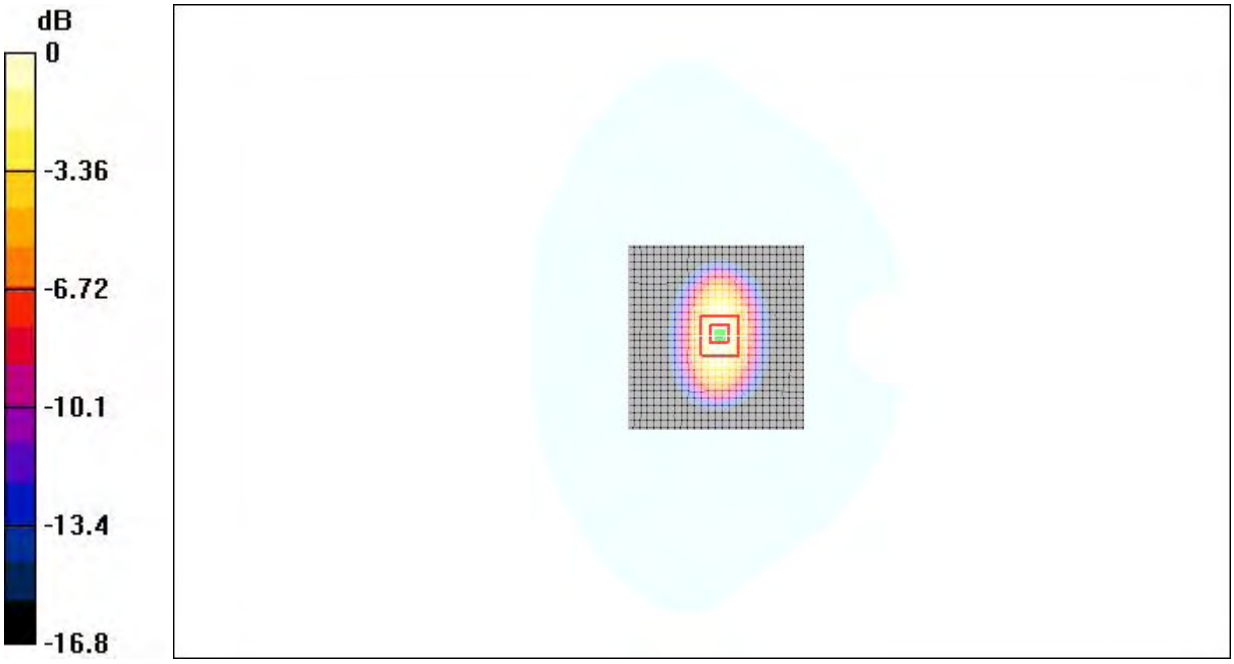
Fig.48 validation 835MHz 250mW

1900MHz

Date/Time: 2010-8-25 7:29:24
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.39 mho/m; ε_r = 39.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

System Validation/Area Scan (101x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 11.1 mW/g

System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.1 V/m; Power Drift = 0.094 dB
Peak SAR (extrapolated) = 14.8 W/kg
SAR(1 g) = 9.62 mW/g; SAR(10 g) = 4.86 mW/g
Maximum value of SAR (measured) = 10.2 mW/g



0 dB = 10.2mW/g

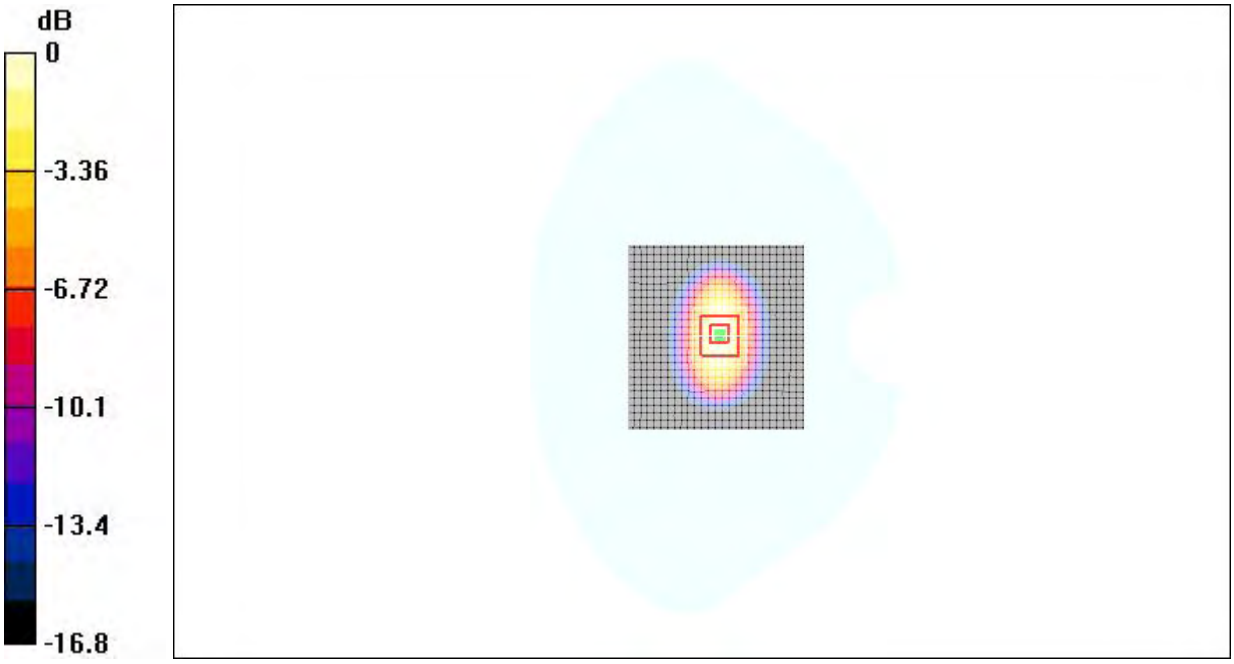
Fig.49 validation 1900MHz 250mW

1900MHz

Date/Time: 2010-8-25 13:17:06
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.53 mho/m; ε_r = 51.5; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

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

System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 90.6 V/m; Power Drift = -0.077 dB
Peak SAR (extrapolated) = 16.0 W/kg
SAR(1 g) = 10.1 mW/g; SAR(10 g) = 5.06 mW/g
Maximum value of SAR (measured) = 10.5 mW/g



0 dB = 10.5mW/g

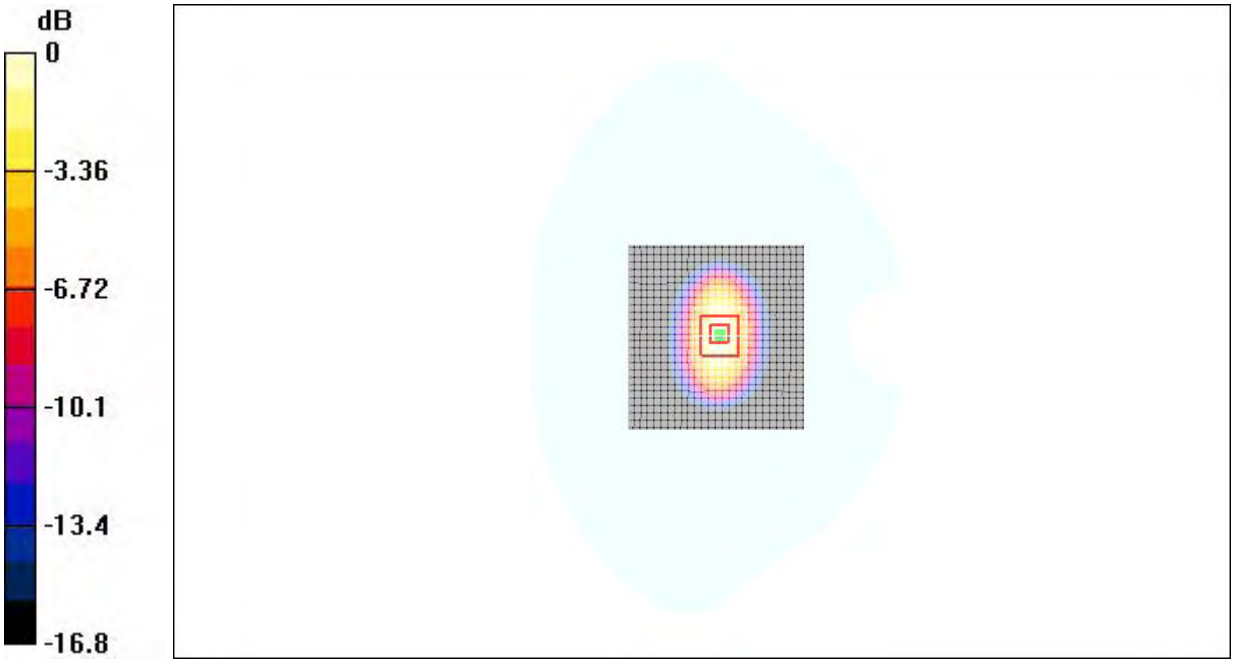
Fig.50 validation 1900MHz 250mW

2450MHz

Date/Time: 2010-8-26 7:25:32
Electronics: DAE4 Sn771
Medium: Head 2450
Medium parameters used: f = 2450 MHz; σ = 1.81 mho/m; ε_r = 39.4; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: CW Frequency: 2450 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN3617 ConvF(7.19, 7.19, 7.19)

System Validation/Area Scan (101x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 14.3 mW/g

System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 85.2 V/m; Power Drift = 0.102 dB
Peak SAR (extrapolated) = 18.6 W/kg
SAR(1 g) = 12.7 mW/g; SAR(10 g) = 5.76 mW/g
Maximum value of SAR (measured) = 14.0 mW/g



0 dB = 14.0mW/g

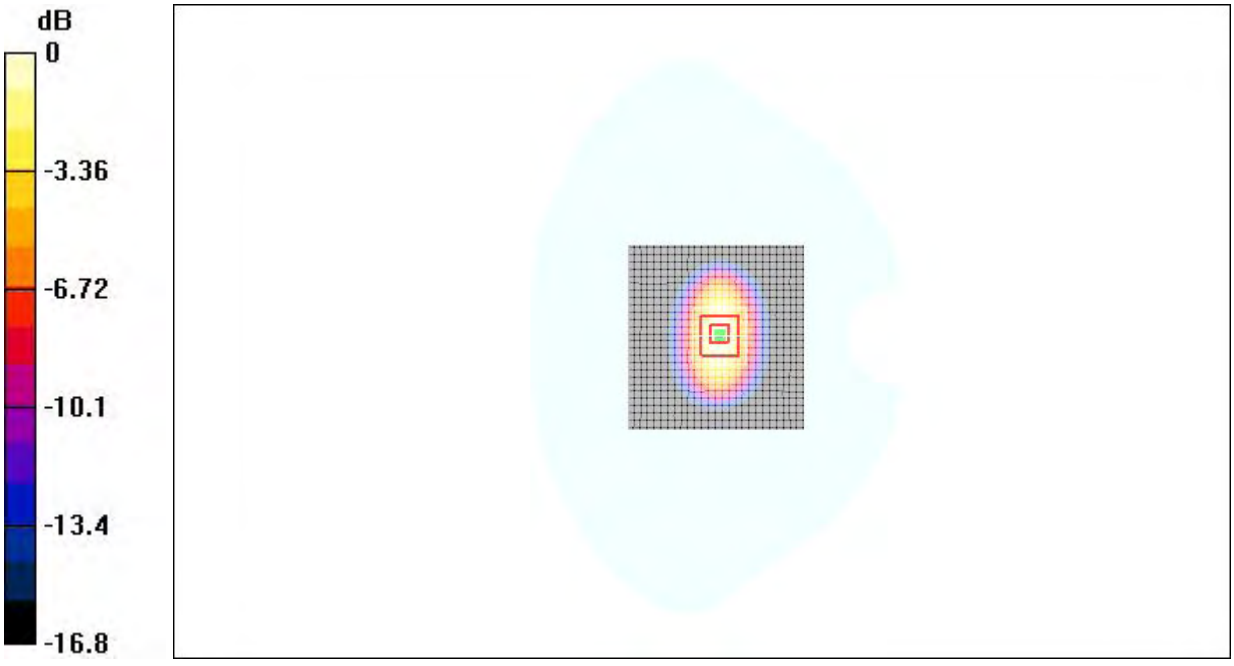
Fig.51 validation 2450MHz 250mW

2450MHz

Date/Time: 2010-8-26 13:15:19
Electronics: DAE4 Sn771
Medium: Body 2450
Medium parameters used: f = 2450 MHz; σ = 1.96 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3
Ambient Temperature:23.0oC Liquid Temperature: 22.5^{o}C
Communication System: CW Frequency: 2450 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN3617 ConvF(6.88, 6.88, 6.88)

System Validation/Area Scan (101x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 15.9 mW/g

System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 83.2 V/m; Power Drift = 0.043 dB
Peak SAR (extrapolated) = 24.4 W/kg
SAR(1 g) = 13.0 mW/g; SAR(10 g) = 5.95 mW/g
Maximum value of SAR (measured) = 14.5 mW/g



0 dB = 14.5mW/g

Fig.52 validation 2450MHz 250mW

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

Appendix to test report no. 2010SAR00089

Calibration certificate and Test positions