SAR TEST REPORT

No. 2012SAR00102

For

Sony Mobile Communications AB

GSM 850/900/1800/1900 quad bands and CDMA2000 850/1900 dual bands mobile phone

Type number: PM-0150-BV

Marketing name: LT25c

With

Hardware Version: A

Software Version: 9.0.E.0.32

FCC ID: PY7PM-0150

Issued Date: 2012-10-23

Deutscher Akkreditierungs Rat

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

Note:

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

Test Laboratory:

TMC Beijing, Telecommunication Metrology Center of MIIT

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Revision Version

Report Number	Revision	Date	Memo
2012SAR00102	00	2012-09-20	Initial creation of test report
2012SAR00102	01	2012-10-11	**Update the report as below:** 1. Remove the test of Bluetooth 2. Add some measurements for body with 15mm 3. Add the serial number of DUT 4. Replace the photos of liquid depth 5. Update the explanation for simultaneous transmission 6. Add the temperature of ambient and liquid in the SAR value tables 7. Add the number of timeslots for GPRS and EGPRS in each of the relevant SAR tables 8. Add the scale in each of body test position photos to show the separation distance 9. Add the description that how to control the phone to transmit WLAN
2012SAR00102	02	2012-10-12	Add the IMEI and SN of the sample tested for WLAN conducted power
2012SAR00102	03	2012-10-22	Add the calculated SAR values in test results tables
2012SAR00102	04	2012-10-23	Add the calculated SAR values in table 2.1 and calculating formula at the beginning of chapter 14

TABLE OF CONTENT

1 Test Laboratory

1.1 Testing Location

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

1.2 Testing Environment

Temperature:	18°C~25 °C,
Relative humidity:	30%~ 70%
Ground system resistance:	< 0.5 Ω
Ambient noise & Reflection:	< 0.012 W/kg

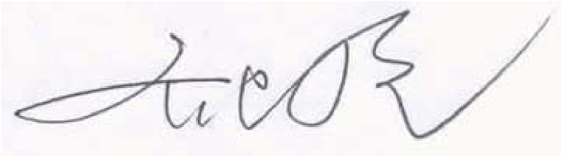
1.3 Project Data

Project Leader:	Qi Dianyuan
Test Engineer:	Lin Xiaojun
Testing Start Date:	September 6, 2012
Testing End Date:	October 11, 2012

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 Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for Sony Mobile Communications (China) Co. Ltd GSM 850/900/1800/1900 quad bands and CDMA2000 850/1900 dual bands mobile phone PM-0150-BV / LT25c are as follows (with expanded uncertainty 18.2%)

Table 2.1: Max. SAR Values (1g)

Band	Position	Measured SAR (1g) (W/kg)	Calculated SAR (1g) (W/kg)
GSM 850	Head	0.884	0.91
	Body	1.13	1.17
GSM 1900	Head	0.363	0.40
	Body	0.554	0.60
CDMA 835	Head	0.784	0.81
	Body	0.893	0.93
CDMA 1900	Head	0.996	1.01
	Body	1.17	1.18

The SAR values found for the Mobile Phone are below the maximum recommended levels of 1.6 W/Kg as averaged over any 1g tissue according to 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. 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 7 of this test report. A detailed description of the equipment under test can be found in chapter 3 of this test report.
The maximum SAR value is obtained at the case of **(Table 2.1),** and the measured values are**: 1.17 (1g)**, the calculated values are**: 1.18 (1g).**

3 Client Information

3.1 Applicant Information

Company Name:	Sony Mobile Communications (China) Co. Ltd
Address /Post:	Sony Mobile R&D Center, No. 16, Guangshun South Street, Chaoyang District
City:	Beijing
Postal Code:	100102
Country:	China
Contact Person:	Ma, Gang
Telephone:	+86-10-58656312
Fax:	+86-10-58659049

3.2 Manufacturer Information

Company Name:	Sony Mobile Communications AB
Address /Post:	Nya Vattentornet, 22188 Lund, Sweden
City:	Lund
Postal Code:	22188
Country:	Sweden
Contact Person:	Nordlof, Anders
Telephone:	+46-10-802 3919
Fax:	+46-10-800 2441

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

4.1 About EUT

Description:	GSM 850/900/1800/1900 quad bands and CDMA2000 850/1900 dual bands mobile phone
Type:	PM-0150-BV
Marketing name:	LT25c
Operating mode(s):	GSM 850/900/1800/1900, CDMA2000(Band Class 0/1), BT, Wi-Fi
Tested Tx Frequency:	825 – 848.8 MHz (GSM 850) 1850.2 – 1910 MHz (GSM 1900) 824.7 – 848.31 MHz (CDMA 835) 1851.25 – 1908.75 MHz (CDMA 1900)
GPRS Multislot Class:	12
GPRS capability Class:	B
EGPRS Multislot Class:	12
Test device Production information:	Production unit
Device type:	Portable device
Antenna type:	Integrated antenna
Accessories/Body-worn configurations:	Headset
Hotspot mode:	Support simultaneous transmission of hotspot and voice(or data)
Form factor:	12.9cm×6.5cm
Antenna dimension:	
Max length	10.9mm
Max width	58.4mm

4.2 Internal Identification of EUT used during the test

EUT ID*	IMEI	SN	HW Version	SW Version
EUT1	004402145895540	CB5A1KFHWJ	A	9.0.E.0.32
EUT2	004402145895409	CB5A1KF4H3	A	9.0.E.0.32
EUT3	004402145896332	CB5A1KF4M2	A	s_atp_tsubasa_CT_1_0_8_c

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

Note: It is performed to test SAR with the EUT (004402145895540), conducted power of main antenna with the EUT (004402145895409) and conducted power of WLAN antenna with the EUT (004402145896332).

4.3 Internal Identification of AE used during the test

AE ID*	Description	Model	SN	Manufacturer
AE1	Battery	BA800	\	Sony Ericsson
AE2	Headset	CCA-0004018	\	Sony Ericsson

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

5 TEST METHODOLOGY

5.1 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.

5.2 Applicable Measurement Standards

IC RSS-102 ISSUE4: Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)

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.

KDB941225：SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities

6 Specific Absorption Rate (SAR)

6.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

6.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$SAR = \frac{d}{dt}\left(\frac{dW}{dm}\right) = \frac{d}{dt}\left(\frac{dW}{\rho dv}\right)$$

SAR is expressed in units of Watts per kilogram (W/kg)
SAR measurement can be either related to the temperature elevation in tissue by

$$SAR = c\left(\frac{\delta T}{\delta t}\right)$$

Where: C is the specific head capacity, δT is the temperature rise and δt is the exposure duration, or related to the electrical field in the tissue by

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

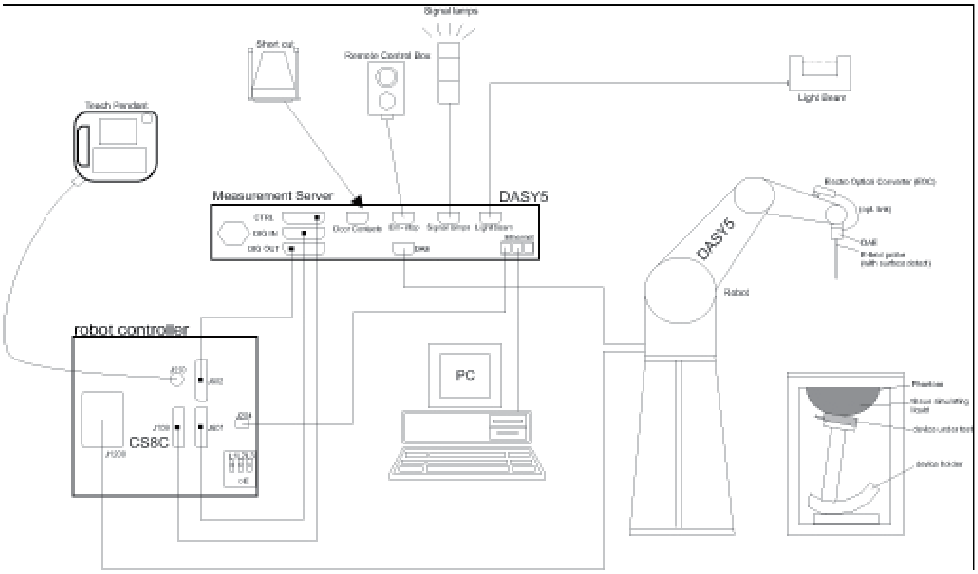
Where: σ is the conductivity of the tissue, ρ is the mass density of tissue and E is the RMS electrical field strength.

However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

7 SAR MEASUREMENT SETUP

7.1 Measurement Set-up

The Dasy4 or DASY5 system for performing compliance tests is illustrated above graphically. This system consists of the following items:



Picture 1 SAR Lab Test Measurement Set-up

- A standard high precision 6-axis robot (Stäubli TX=RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP and the DASY4 or DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as
- warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

7.2 Dasy4 or DASY5 E-field Probe System

The SAR measurements were conducted with the dosimetric probe designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multifiber line ending at the front of the probe tip. It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY4 or DASY5 software reads the reflection durning a software approach and looks for the maximum using 2nd ord curve fitting. The approach is stopped at reaching the maximum.

Probe Specifications:

Model: ES3DV3, EX3DV4
Frequency Range: 10MHz — 6.0GHz(EX3DV4)
10MHz — 4GHz(ES3DV3)
Calibration: In head and body simulating tissue at Frequencies from 835 up to 5800MHz
Linearity: ± 0.2 dB(30 MHz to 6 GHz) for EX3DV4
± 0.2 dB(30 MHz to 4 GHz) for ES3DV3
Dynamic Range: 10 mW/kg — 100W/kg
Probe Length: 330 mm
Probe Tip Length: 20 mm
Body Diameter: 12 mm
Tip Diameter: 2.5 mm (3.9 mm for ES3DV3)
Tip-Center: 1 mm (2.0mm for ES3DV3)
Application: SAR Dosimetry Testing
Compliance tests of mobile phones
Dosimetry in strong gradient fields

Picture 2 Near-field Probe

Picture 3 E-field Probe

7.3 E-field Probe Calibration

Each E-Probe/Probe Amplifier combination has unique calibration parameters. A TEM cell calibration procedure is conducted to determine the proper amplifier settings to enter in the probe parameters. The amplifier settings are determined for a given frequency by subjecting the probe to a known E-field density (1 mW/cm^2) using an RF Signal generator, TEM cell, and RF Power Meter.

The free space E-field from amplified probe outputs is determined in a test chamber. This calibration can be performed in a TEM cell if the frequency is below 1 GHz and inn a waveguide or other methodologies 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 until the three channels show the maximum reading. The power density readings equates to 1 mW/ cm^2.

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The E-field in the medium correlates with the temperature rise in the 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.

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

Where:

σ = Simulated tissue conductivity,

ρ = Tissue density (kg/m^3).

7.4 Other Test Equipment

7.4.1 Data Acquisition Electronics(DAE)

The data acquisition electronics consist 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 with a control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information, as well as an optical uplink for commands and the clock.

The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Picture4: DAE

7.4.2 Robot

The SPEAG DASY system uses the high precision robots (DASY4: RX90XL; DASY5: RX160L) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability 0.02mm)
- High reliability (industrial design)
- Low maintenance costs (virtually maintenance free due to direct drive gears; no belt drives)
- Jerk-free straight movements (brushless synchron motors; no stepper motors)
- Low ELF interference (motor control fields shielded via the closed metallic construction shields)

Picture 5 DASY 4

Picture 6 DASY 5

7.4.3 Measurement Server

The Measurement server is based on a PC/104 CPU broad with CPU (dasy4: 166 MHz, Intel Pentium; DASY5: 400 MHz, Intel Celeron), chipdisk (DASY4: 32 MB; DASY5: 128MB), RAM (DASY4: 64 MB, DASY5: 128MB). The necessary circuits for communication with the DAE electronic box, as well as the 16 bit AD converter system for optical detection and digital I/O interface are contained on the DASY I/O broad, which is directly connected to the PC/104 bus of the CPU broad.

The measurement server performs all real-time data evaluation of field measurements and surface detection, controls robot movements and handles safety operation. The PC operating system cannot interfere with these time critical processes. All connections are supervised by a watchdog, and disconnection of any of the cables to the measurement server will automatically disarm the robot and disable all program-controlled robot movements. Furthermore, the measurement server is equipped with an expansion port which is reserved for future applications. Please note that this expansion port does not have a standardized pinout, and therefore only devices provided by SPEAG can be connected. Devices from any other supplier could seriously damage the measurement server.

Picture 7 Server for DASY 4

Picture 8 Server for DASY 5

7.4.4 Device Holder for Phantom

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5mm distance, a positioning uncertainty of ±0.5mm would produce a SAR uncertainty of ±20%. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.

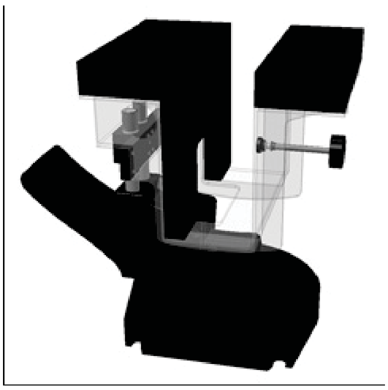
The DASY device holder is designed to cope with the different positions given in the standard. It has two scales for device rotation (with respect to the body axis) and device inclination (with respect to the line between the ear reference points). The rotation centers for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.

The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity ε =3 and loss tangent δ =0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

<Laptop Extension Kit>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the Mounting Device in place of the phone positioner. The extension is fully compatible with the Twin-SAM and ELI phantoms.

Picture 9-1: Device Holder



Picture 9-2: Laptop Extension Kit

7.4.5 Phantom

The SAM Twin Phantom V4.0 is constructed of a fiberglass shell integrated in a table. The shape of the shell is based on data from an anatomical study designed to

Represent the 90th percentile of the population. The phantom enables the dissymmetric evaluation of SAR for both left and right handed handset usage, as well as body-worn usage using the flat phantom region. 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. The shell phantom has a 2mm shell thickness (except the ear region where shell thickness increases to 6 mm).

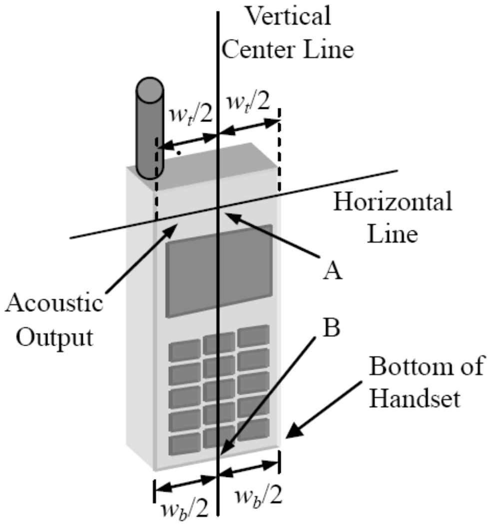
Shell Thickness: 2 ± 0. 2 mm
Filling Volume: Approx. 25 liters
Dimensions: 810 x l000 x 500 mm (H x L x W)
Available: Special

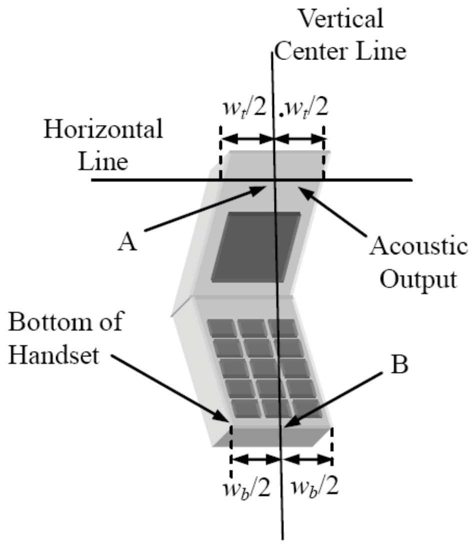
Picture 10: SAM Twin Phantom

8. Position of the wireless device in relation to the phantom

8.1 General considerations

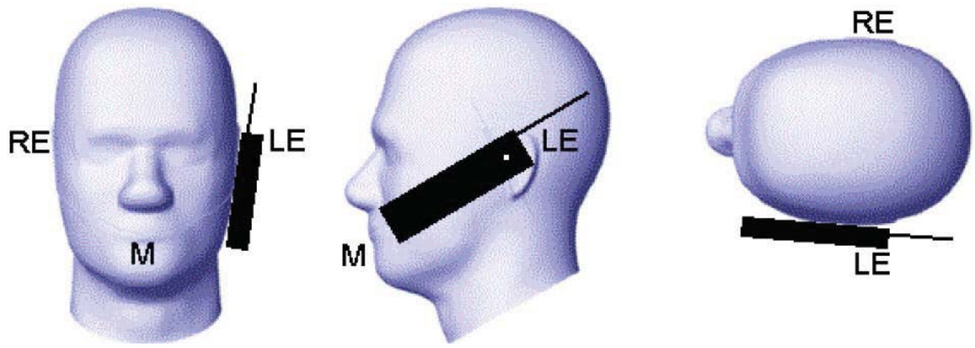
This standard specifies two handset test positions against the head phantom – the “cheek” position and the “tilt” position.



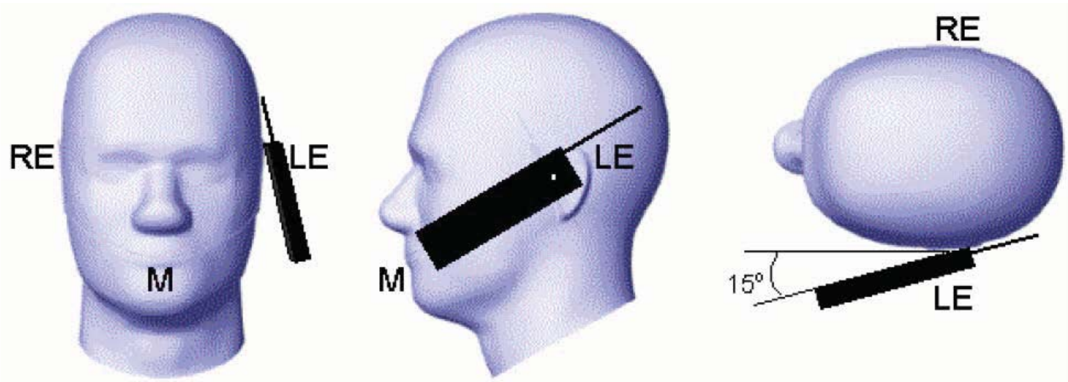


w_t	Width of the handset at the level of the acoustic
w_b	Width of the bottom of the handset
A	Midpoint of the width w_t of the handset at the level of the acoustic output
B	Midpoint of the width w_b of the bottom of the handset

Picture 11-a Typical “fixed” case handset **Picture 11-b Typical “clam-shell” case handset**



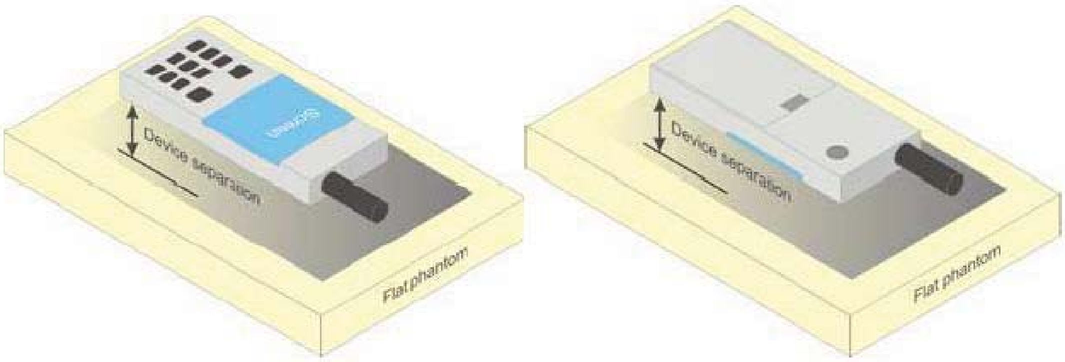
Picture 12 Cheek position of the wireless device on the left side of SAM



Picture 13 Tilt position of the wireless device on the left side of SAM

8.2 Body-worn device

A typical example of a body-worn device is a mobile phone, wireless enabled PDA or other battery operated wireless device with the ability to transmit while mounted on a person's body using a carry accessory approved by the wireless device manufacturer.

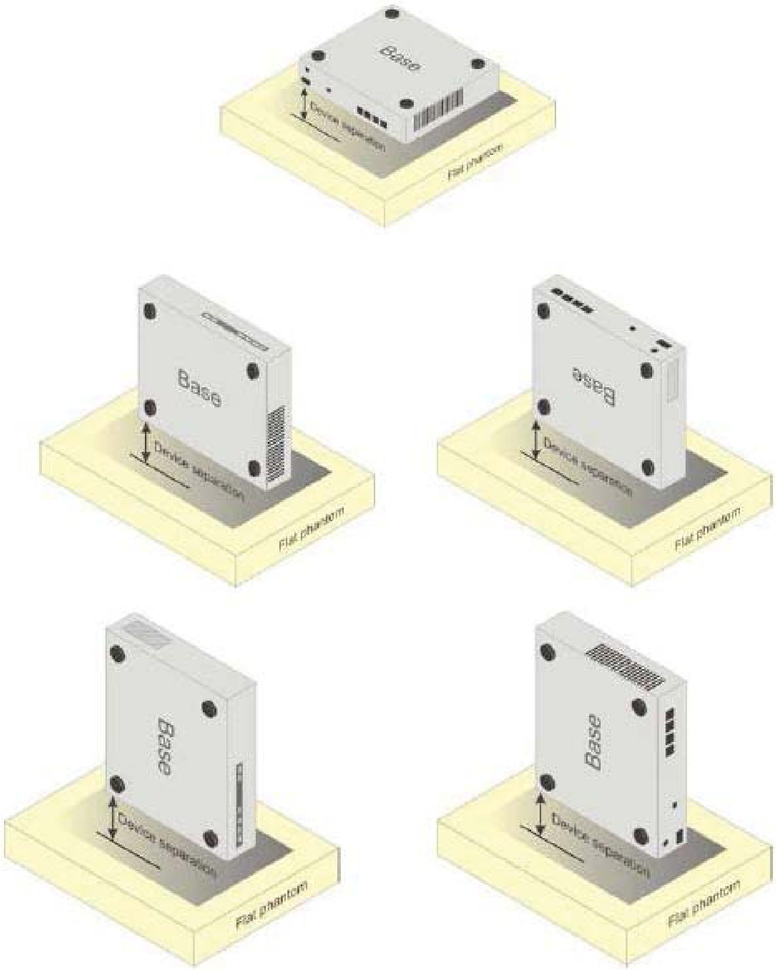


Picture 14 Test positions for body-worn devices

8.3 Desktop device

A typical example of a desktop device is a wireless enabled desktop computer placed on a table or desk when used.

The DUT shall be positioned at the distance and in the orientation to the phantom that corresponds to the intended use as specified by the manufacturer in the user instructions. For devices that employ an external antenna with variable positions, tests shall be performed for all antenna positions specified. Picture 16 show positions for desktop device SAR tests. If the intended use is not specified, the device shall be tested directly against the flat phantom.



Picture 15 Test positions for desktop devices

8.4 DUT Setup Photos

Picture 16

9 Tissue Simulating Liquids

9.1 Equivalent Tissues

The liquid used for the frequency range of 800-3000 MHz consisted of water, sugar, salt, preventol, glycol monobutyl and Cellulose. The liquid has been previously proven to be suited for worst-case. The Table 2 shows the detail solution. It's satisfying the latest tissue dielectric parameters requirements proposed by the IEEE 1528 and IEC 62209.

Table 9.1: Composition of the Tissue Equivalent Matter

Frequency (MHz)	835 Head	835 Body	1900 Head	1900 Body
Ingredients (% by weight)				
Water	41.45	52.5	55.242	69.91
Sugar	56.0	45.0	\	\
Salt	1.45	1.4	0.306	0.13
Preventol	0.1	0.1	\	\
Cellulose	1.0	1.0	\	\
Glycol Monobutyl	\	\	44.452	29.96
Dielectric Parameters Target Value	ε=41.5 σ=0.90	ε=55.2 σ=0.97	ε=40.0 σ=1.40	ε=53.3 σ=1.52

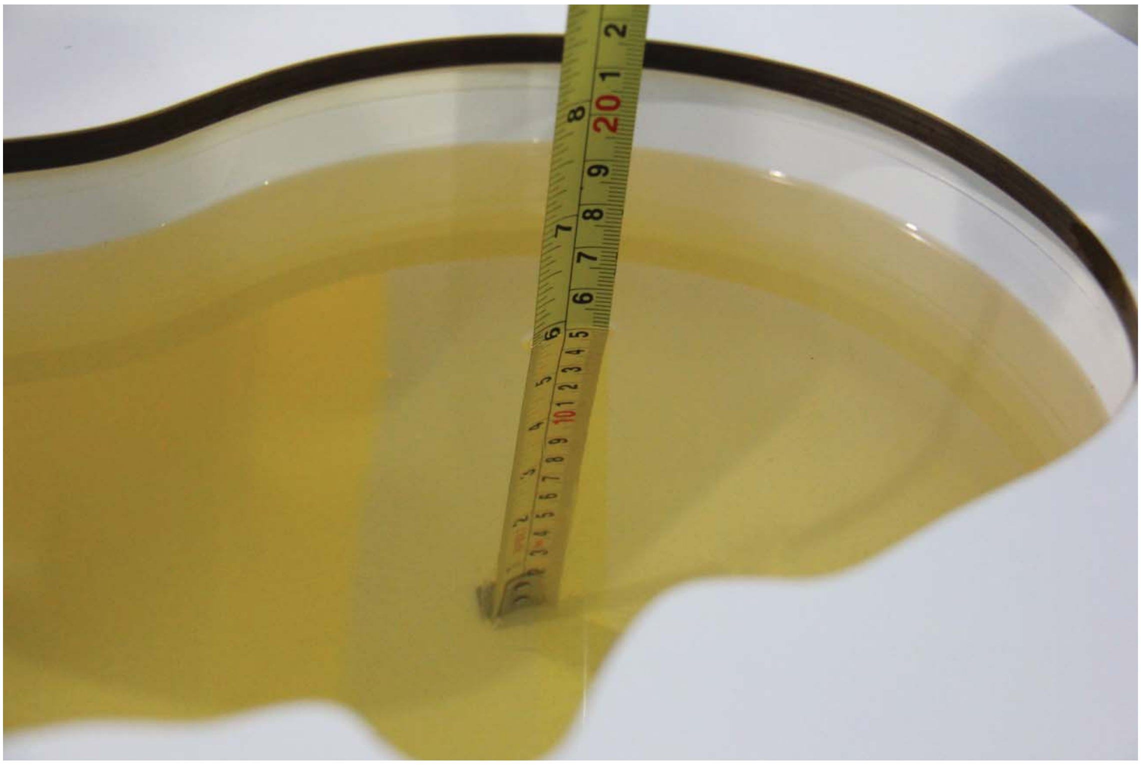
Table 9.2: Targets for tissue simulating liquid

Frequency (MHz)	Liquid Type	Conductivity (σ)	± 5% Range	Permittivity (ε)	± 5% Range
835	Head	0.90	0.86～0.95	41.5	39.4～43.6
835	Body	0.97	0.92～1.02	55.2	52.4～58.0
1900	Head	1.40	1.33～1.47	40.0	38.0～42.0
1900	Body	1.52	1.44～1.60	53.3	50.6～56.0

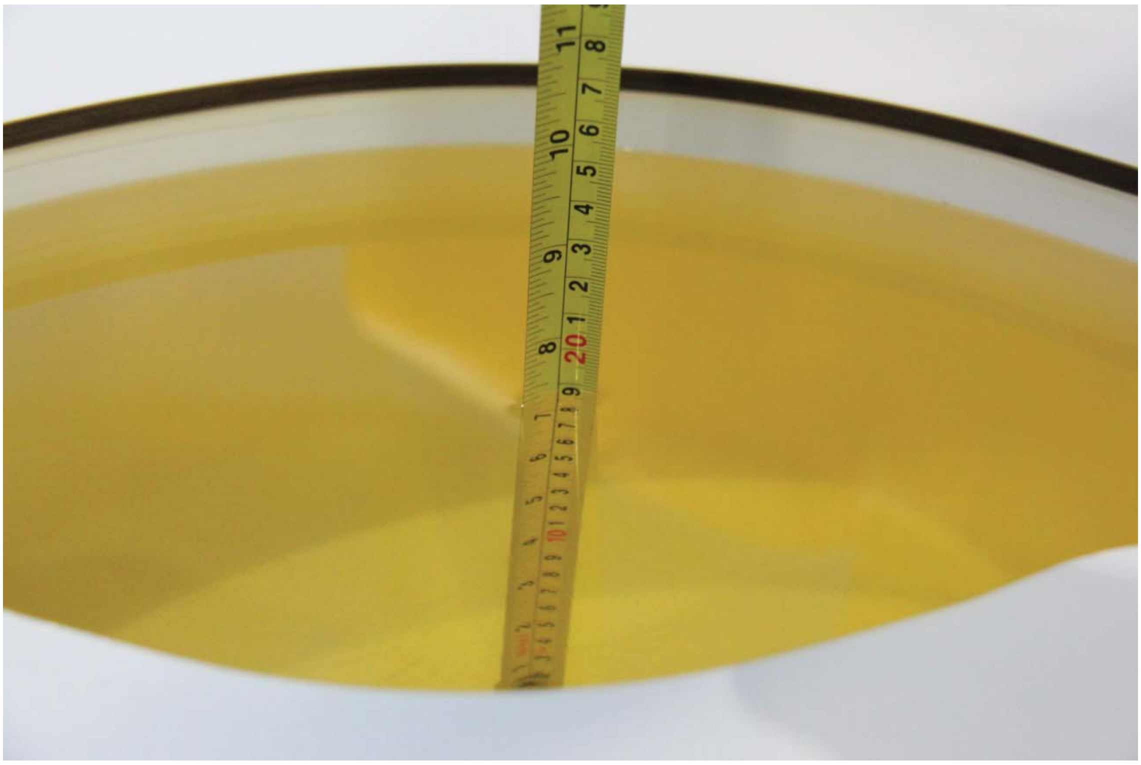
9.2 Dielectric Performance

Table 9.3: Dielectric Performance of Tissue Simulating Liquid

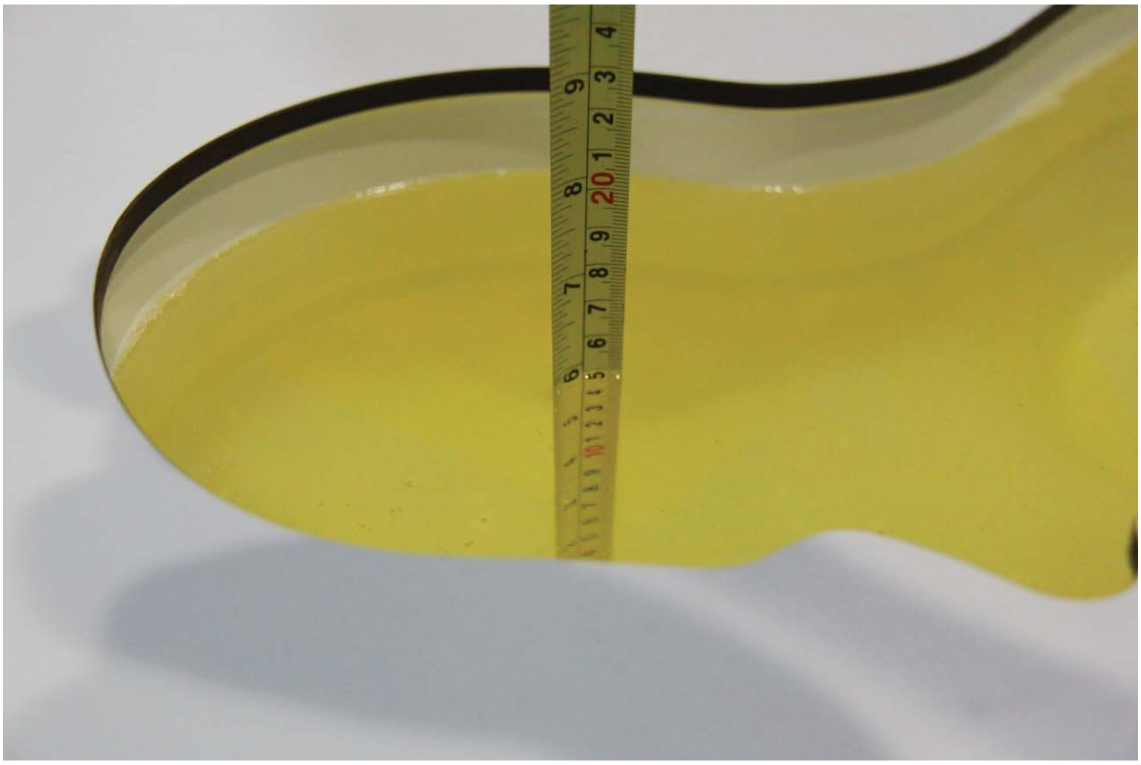
/	Type	Frequency	Permittivity ε	Conductivity σ (S/m)
Measurement value	Head	835 MHz (2012-09-06)	41.43	0.895
	Body	835 MHz (2012-09-06)	55.08	0.939
	Head	1900 MHz (2012-09-07)	39.25	1.413
	Body	1900 MHz (2012-09-07)	54.42	1.545
	Body	835 MHz (2012-10-10)	55.71	0.988
	Body	1900 MHz (2012-10-10)	53.92	1.492



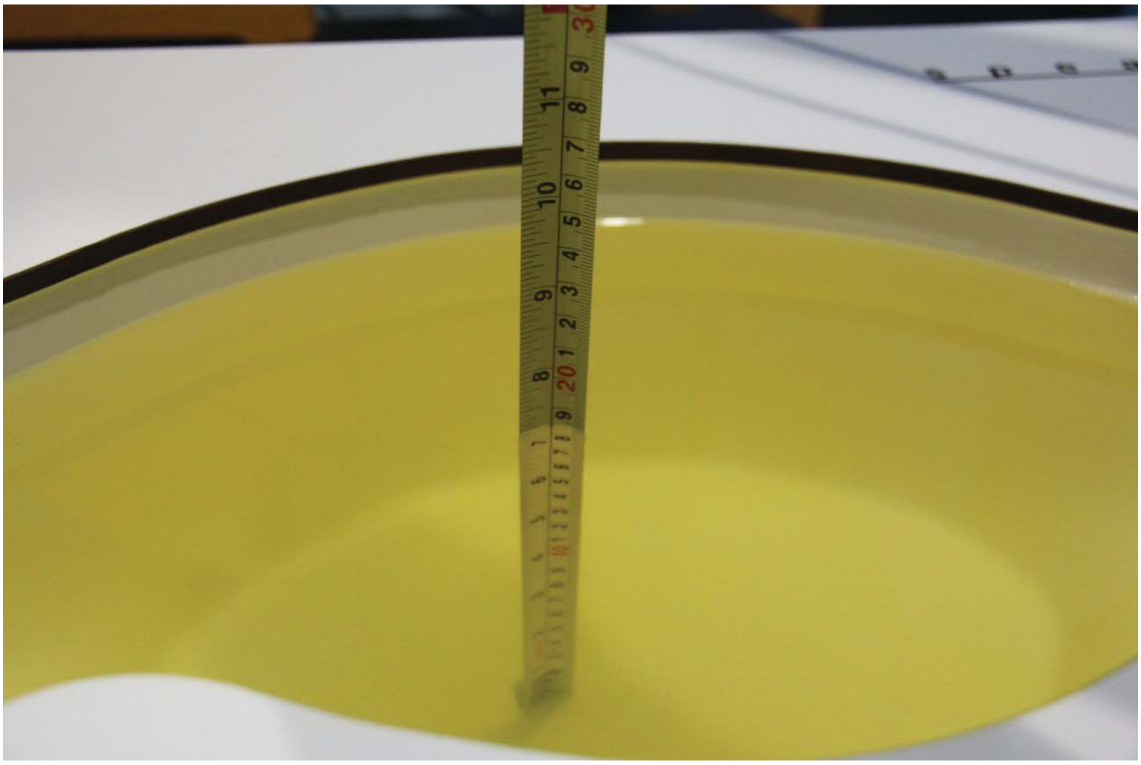
Picture 17-1: Liquid depth in the Head Phantom (850 MHz)



Picture 17-2: Liquid depth in the Flat Phantom (850 MHz)



Picture 17-3 Liquid depth in the Head Phantom (1900MHz)



Picture 17-4 Liquid depth in the Flat Phantom (1900MHz)

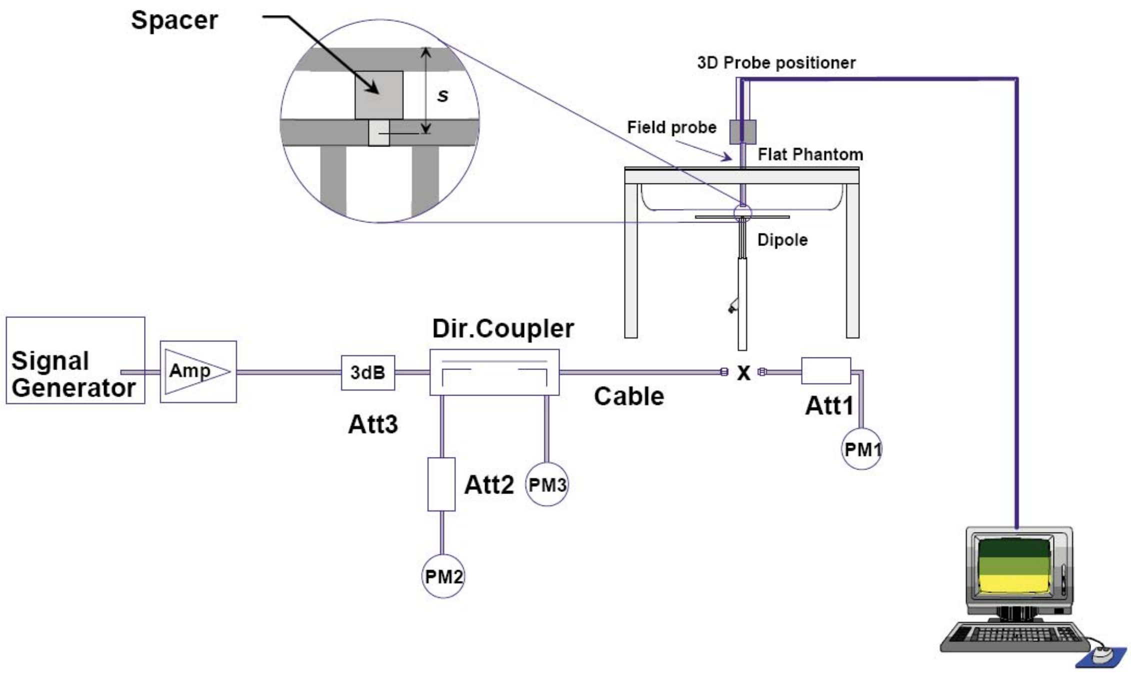
10 System Validation

10.1 System Validation

Each DASY system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the DASY software, enable the user to conduct the system performace check and system validation. System validation kit includes a dipole, tripod holder to fix it underneath the flat phantom and a corresponding distance holder.

10.2 System Setup

In the simplified setup for system evaluation, the DUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The equipment setup is shown below:



Picture 18 System Setup for System Evaluation

The output power on dipole port must be calibrated to 24 dBm (250mW) before dipole is connected.

Picture 19 Photo of Dipole Setup

Table 10.1: System Validation of Head

Measurement Date : 835 MHz **September 6, 2012** 1900 MHz **September 7, 2012**							
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	6.07	9.30	6.12	9.40	0.82%	1.08%
	1900 MHz	20.6	39.1	20.24	38.60	-1.75%	-1.28%

Table 10.2: System Validation of Body

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 (2012-09-06)	6.20	9.36	6.44	9.68	3.87%	3.42%
	1900 MHz (2012-09-07)	21.3	39.9	21.52	40.40	1.03%	1.25%
	835 MHz (2012-10-10)	6.20	9.36	6.24	9.52	0.65%	1.71%
	1900 MHz (2012-10-10)	21.3	39.9	21.68	40.80	1.78%	2.26%
	835 MHz (2012-10-11)	6.20	9.36	6.32	9.60	1.94%	2.56%
	1900 MHz (2012-10-11)	21.3	39.9	21.64	40.80	1.60%	2.26%

11 Measurement Procedures

11.1 Tests to be performed

In order to determine the highest value of the peak spatial-average SAR of a handset, all device positions, configurations and operational modes shall be tested for each frequency band according to steps 1 to 3 below. A flowchart of the test process is shown in Picture 20.

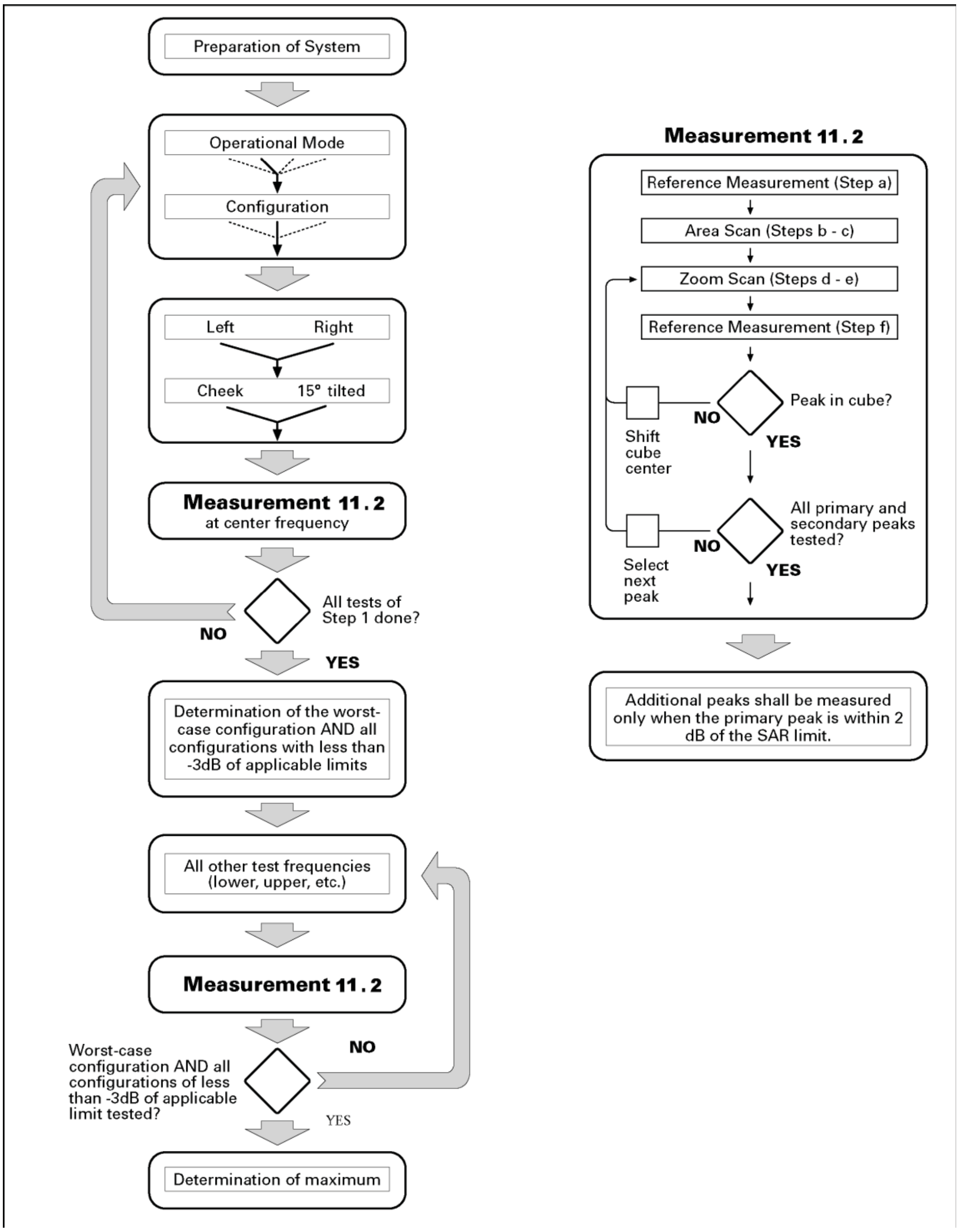
Step 1: The tests described in 11.2 shall be performed at the channel that is closest to the centre of the transmit frequency band (f_c) for:

a) all device positions (cheek and tilt, for both left and right sides of the SAM phantom, as described in Chapter 8),
b) all configurations for each device position in a), e.g., antenna extended and retracted, and
c) all operational modes, e.g., analogue and digital, for each device position in a) and configuration in b) in each frequency band.

If more than three frequencies need to be tested according to 11.1 (i.e., N_c > 3), then all frequencies, configurations and modes shall be tested for all of the above test conditions.

Step 2: For the condition providing highest peak spatial-average SAR determined in Step 1, perform all tests described in 11.2 at all other test frequencies (i.e., lowest and highest frequencies). Then, perform all tests described in 11.2 at all other conditions (i.e., EGPRS and headset) in the position of highest peak spatial-average SAR. In addition, for all other conditions (device position, configuration and operational mode) where the peak spatial-average SAR value determined in Step 1 is within 3 dB of the applicable SAR limit, it is recommended that all other test frequencies shall be tested as well.

Step 3: Examine all data to determine the highest value of the peak spatial-average SAR found in Steps 1 to 2.



Picture 20 Block diagram of the tests to be performed

11.2 Measurement procedure

The following procedure shall be performed for each of the test conditions (see Picture 20) described in 11.1:

a) Measure the local SAR at a test point within 8 mm or less in the normal direction from the inner surface of the phantom.

b) Measure the two-dimensional SAR distribution within the phantom (area scan procedure). The boundary of the measurement area shall not be closer than 20 mm from the phantom side walls. The distance between the measurement points should enable the detection of the location of local maximum with an accuracy of better than half the linear dimension of the tissue cube after interpolation. A maximum grip spacing of 20 mm for frequencies below 3 GHz and (60/f [GHz]) mm for frequencies of 3GHz and greater is recommended. The maximum distance between the geometrical centre of the probe detectors and the inner surface of the phantom shall be 5 mm for frequencies below 3 GHz and δ ln(2)/2 mm for frequencies of 3 GHz and greater, where δ is the plane wave skin depth and ln(x) is the natural logarithm. The maximum variation of the sensor-phantom surface shall be ±1 mm for frequencies below 3 GHz and ±0.5 mm for frequencies of 3 GHz and greater. At all measurement points the angle of the probe with respect to the line normal to the surface should be less than 5° . If this cannot be achieved for a measurement distance to the phantom inner surface shorter than the probe diameter, additional uncertainty evaluation is needed.

c) From the scanned SAR distribution, identify the position of the maximum SAR value, in addition identify the positions of any local maxima with SAR values within 2 dB of the maximum value that are not within the zoom-scan volume; additional peaks shall be measured only when the primary peak is within 2 dB of the SAR limit. This is consistent with the 2 dB threshold already stated;

d) Measure the three-dimensional SAR distribution at the local maxima locations identified in step c). The horizontal grid step shall be (24/f[GHz]) mm or less but not more than 8 mm. The minimum zoom size of 30 mm by 30 mm and 30 mm for frequencies below 3 GHz. For higher frequencies, the minimum zoom size of 22 mm by 22 mm and 22 mm. The grip step in the vertical direction shall be (8-f[GHz]) mm or less but not more than 5 mm, if uniform spacing is used. If variable spacing is used in the vertical direction, the maximum spacing between the two closest measured points to the phantom shell shall be (12 / f[GHz]) mm or less but not more than 4 mm, and the spacing between father points shall increase by an incremental factor not exceeding 1.5. When variable spacing is used, extrapolation routines shall be tested with the same spacing as used in measurements. The maximum distance between the geometrical centre of the probe detectors and the inner surface of the phantom shall be 5 mm for frequencies below 3 GHz and δ ln(2)/2 mm for frequencies of 3 GHz and greater, where δ is the plane wave skin depth and ln(x) is the natural logarithm. Separate grids shall be centered on each of the local SAR maxima found in step c). Uncertainties due to field distortion between the media boundary and the dielectric enclosure of the probe should also be minimized, which is achieved is the distance between the phantom surface and physical tip of the probe is larger than probe tip diameter. Other methods may utilize correction procedures for these boundary effects that enable high precision measurements closer than half the probe diameter. For all measurement points, the angle of the probe with respect to the flat phantom surface shall be less than 5° . If this cannot be achieved an additional uncertainty evaluation is needed.

e) Use post processing(e.g. interpolation and extrapolation) procedures to determine the local SAR values at the spatial resolution needed for mass averaging.

11.3 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 14.2 to Table 14.9 labeled as: (Power Drift [dB]). This ensures that the power drift during one measurement is within 5%.

12 Conducted Output Power

12.1 GSM Measurement result

During the process of testing, the EUT was controlled via Agilent Digital Radio Communication tester (E5515C) to ensure the maximum power transmission and proper modulation. This result contains conducted output power for the EUT. In all cases, the measured peak output power should be greater and within 5% than EMI measurement.

Table 12.1: The conducted power measurement results for GSM850/1900

GSM 850MHZ	Conducted Power (dBm)		
	Channel 251(848.8MHz)	Channel 190(836.6MHz)	Channel 128(824.2MHz)
	33.34	33.36	33.36
GSM 1900MHZ	Conducted Power (dBm)		
	Channel 810(1909.8MHz)	Channel 661(1880MHz)	Channel 512(1850.2MHz)
	30.17	30.10	30.09

Table 12.2: The conducted power measurement results for GPRS and EGPRS

GSM 850 GPRS	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	251	**190**	**128**		**251**	**190**	**128**
1 Txslot	33.27	33.29	33.30	-9.03dB	24.24	24.26	24.27
2 Txslots	31.22	31.23	31.28	-6.02dB	25.20	25.21	25.26
3Txslots	29.49	29.49	29.54	-4.26dB	**25.23**	**25.23**	**25.28**
4 Txslots	27.36	27.40	27.46	-3.01dB	24.35	24.39	24.45
GSM 850 EGPRS	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	251	**190**	**128**		**251**	**190**	**128**
1 Txslot	33.25	33.29	33.27	-9.03dB	24.22	24.26	24.24
2 Txslots	31.20	31.21	31.27	-6.02dB	25.18	25.19	25.25
3Txslots	29.46	29.49	29.53	-4.26dB	**25.20**	**25.23**	**25.27**
4 Txslots	27.35	27.40	27.46	-3.01dB	24.34	24.39	24.45
PCS1900 GPRS	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	810	**661**	**512**		**810**	**661**	**512**
1 Txslot	30.09	30.02	30.01	-9.03dB	21.06	20.99	20.98
2 Txslots	28.23	28.16	28.08	-6.02dB	**22.21**	**22.14**	**22.06**
3Txslots	26.31	26.26	26.18	-4.26dB	22.05	22.00	21.92
4 Txslots	24.70	24.57	24.54	-3.01dB	21.69	21.56	21.53
PCS1900 EGPRS	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	810	**661**	**512**		**810**	**661**	**512**
1 Txslot	30.07	30.02	30.02	-9.03dB	21.04	20.99	20.99
2 Txslots	28.24	28.18	28.08	-6.02dB	**22.22**	**22.16**	**22.06**
3Txslots	26.30	26.25	26.18	-4.26dB	22.04	21.99	21.92
4 Txslots	24.70	24.56	24.54	-3.01dB	21.69	21.55	21.53

NOTES:

1) Division Factors

To average the power, the division factor is as follows:

1TX-slot = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

According to the conducted power as above, the body measurements are performed with 3Txslots for GSM850 and 2Txslots for GSM1900.

Note: According to the KDB941225 D03, "when SAR tests for EDGE or EGPRS mode is necessary, GMSK modulation should be used". So the conducted power is measured with GMSK for GPRS and EGPRS.

12.2 CDMA Measurement result

Table 12.3: The conducted Power for CDMA835/1900

	Conducted Power (dBm)		
CDMA 835MHz RC3	Channel777(848.31MHz)	Channel384(836.52MHz)	Channel1013(824.7MHz)
	24.65	24.70	24.58
CDMA 835MHz RC1	Channel777(848.31MHz)	Channel384(836.52MHz)	Channel1013(824.7MHz)
	24.61	24.69	24.57
CDMA 835MHz SO32 (FCH)	Channel777(848.31MHz)	Channel384(836.52MHz)	Channel1013(824.7MHz)
	24.62	24.74	24.55
CDMA 835MHz SO32 (FCH+SCH_0)	Channel777(848.31MHz)	Channel384(836.52MHz)	Channel1013(824.7MHz)
	24.59	24.70	24.49
EVDO 835MHz Rev.0	Channel777(848.31MHz)	Channel384(836.52MHz)	Channel1013(824.7MHz)
	24.4	24.1	24
EVDO 835MHz Rev.A	Channel777(848.31MHz)	Channel384(836.52MHz)	Channel1013(824.7MHz)
	24.3	24.1	23.6
	Conducted Power (dBm)		
CDMA 1900MHz RC3	Channel1175(1908.75MHz)	Channel 600(1880MHz)	Channel25(1851.25MHz)
	24.65	24.48	24.72
CDMA 1900MHz RC1	Channel1175(1908.75MHz)	Channel 600(1880MHz)	Channel25(1851.25MHz)
	24.52	24.44	24.71
CDMA 1900MHz SO32 (FCH)	Channel1175(1908.75MHz)	Channel 600(1880MHz)	Channel25(1851.25MHz)
	24.59	24.45	24.77
CDMA 1900MHz SO32 (FCH+SCH_0)	Channel1175(1908.75MHz)	Channel 600(1880MHz)	Channel25(1851.25MHz)
	24.58	24.46	24.76
EVDO 1900MHz Rev.0	Channel1175(1908.75MHz)	Channel 600(1880MHz)	Channel25(1851.25MHz)
	23.9	23.9	23.7
EVDO 1900MHz Rev.A	Channel1175(1908.75MHz)	Channel 600(1880MHz)	Channel25(1851.25MHz)
	23.8	23.6	23.5

According to the KDB 941225 D01 and the conducted power above, the SAR for head exposure configurations is measured in RC3 with the DUT configured to transmit at full rate using Loopback Service Option SO55. The SAR for body exposure configurations is measured in RC3 with the DUT configured using SO32.

12.3 WiFi and Bluetooth Measurement result

The output power of Bluetooth antenna is 3.08mW.

In order to testing the conducted power of WLAN, the DUT is controlled to transmit WLAN TX as maximum power by the terminal software installed on the PC. The procedure how to control is presented as blew:

1. Connect DUT and PC via the USB cable and check the port is opened.
2. Input the command "WLPU" to power on WLAN.
3. Input the command "WTFD" to firmware download.
4. Input the WBTX command to start transmit (i.e., WBTX=1,0,1,1500,25,0,12).
5. Input the command "WIDL" to stop transmit.
6. Input the command "WLPD" to power off WLAN.

The average conducted power for WiFi is as following:

802.11b（dBm）

Channel\data rate	1Mbps	2Mbps	5.5Mbps	11Mbps
1	11.83	11.78	11.69	11.51
6	11.93	11.90	11.42	11.31
11	11.81	11.72	11.52	11.26

802.11g（dBm）

Channel\data rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
1	11.67	11.64	11.66	11.58	11.52	11.43	11.26	11.32
6	11.72	11.71	11.67	11.60	11.54	11.49	11.31	11.41
11	11.51	11.50	11.47	11.40	11.35	11.29	11.11	11.21

20M 802.11n（dBm）

Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
1	10.97	10.88	10.81	10.77	10.63	10.50	10.46	10.48
6	10.86	11.78	11.74	10.66	10.56	10.43	10.37	10.43
11	10.61	10.54	10.48	10.46	10.34	10.23	10.19	10.22

The peak conducted power for WiFi is as following:

802.11b（dBm）

Channel\data rate	1Mbps	2Mbps	5.5Mbps	11Mbps
1	15.65	15.89	16.95	18.52
6	/	/	/	18.67
11	/	/	/	18.49

802.11g（dBm）

Channel\data rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
1	20.23	20.28	20.06	20.09	20.17	20.23	20.34	20.08
6	/	/	/	/	/	/	20.48	/
11	/	/	/	/	/	/	20.35	/

20M 802.11n（dBm）

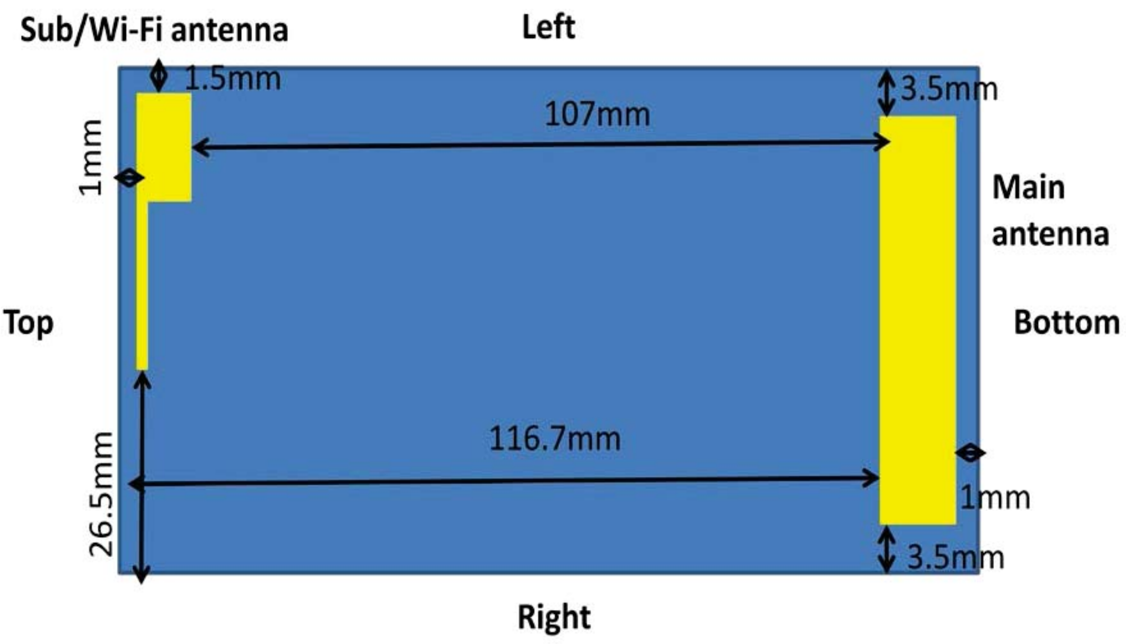
Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
1	19.54	19.17	19.27	19.63	19.61	19.47	19.52	19.60
6	/	/	/	19.68	/	/	/	/
11	/	/	/	19.48	/	/	/	/

13 Simultaneous TX SAR Considerations

13.1 Introduction

The following procedures adopted from “FCC SAR Considerations for Cell Phones with Multiple Transmitters” are applicable to handsets with built-in unlicensed transmitters such as 802.11 a/b/g and Bluetooth devices which may simultaneously transmit with the licensed transmitter.
For this device, the BT and WiFi can transmit simultaneous with other transmitters.

13.2 Transmit Antenna Separation Distances



Picture 21 Antenna Locations

13.3 Simultaneous Transmission for EUT

Table 13.1: Summary of Transmitters

Band/Mode	F(GHz)	60/f power threshold (mW)	RF output power (mW)
2.4GHz WLAN 802.11 b/g/n	2.45	24.5	15.6
Bluetooth	2.441	24.6	3.08

Note: According to the KDB 648474 D01, the BT/WiFi antenna is＞5.0cm from the main antenna, so the power threshold is = $2 \cdot P_{Ref} = 60/f$(GHz).

According to the conducted power measurement result and the above table, we can draw the conclusion that: stand-alone SAR and simultaneous transmission SAR for BT/WiFi should not be performed, because the BT/WiFi antenna is＞5.0cm from the main antenna and the output power of BT/WiFi is less than the power threshold respectively.

Table 13.2 SAR Evaluation Requirements for Multiple Transmitter Handsets

<table>
<tr><th></th><th>Individual Transmitter</th><th>Simultaneous Transmission</th></tr>
<tr><td>Licensed Transmitters</td><td>Routine evaluation required</td><td rowspan="2">SAR not required:
Unlicensed only
○ when stand-alone 1-g SAR is not required and antenna is ≥ 5 cm from other antennas
Licensed & Unlicensed
○ when the sum of the 1-g SAR is $<$ 1.6 W/kg for all simultaneous transmitting antennas
○ when SAR to peak location separation ratio of simultaneous transmitting antenna pair is $<$ 0.3
SAR required:
Licensed & Unlicensed
antenna pairs with SAR to peak location separation ratio ≥ 0.3; test is only required for the configuration that results in the highest SAR in stand-alone configuration for each wireless mode and exposure condition
Note: simultaneous transmission exposure conditions for head and body can be different for different style phones; therefore, different test requirements may apply</td></tr>
<tr><td>Unlicensed Transmitters</td><td>When there is no simultaneous transmission –
○ output ≤ 60/f: SAR not required
○ output $>$ 60/f: stand-alone SAR required
When there is simultaneous transmission –
Stand-alone SAR not required when
○ output ≤ $2 \cdot P_{Ref}$ and antenna is ≥ 5.0 cm from other antennas
○ output ≤ P_{Ref} and antenna is ≥ 2.5 cm from other antennas
○ output ≤ P_{Ref} and antenna is $<$ 2.5 cm from other antennas, each with either output power ≤ P_{Ref} or 1-g SAR $<$ 1.2 W/kg
Otherwise stand-alone SAR is required
When stand-alone SAR is required
○ test SAR on highest output channel for each wireless mode and exposure condition
○ if SAR for highest output channel is $>$ 50% of SAR limit, evaluate all channels according to normal procedures</td></tr>
</table>

14 SAR Test Result

The calculated SAR is obtained by the following formula:

$$SAR_{Calculated} = SAR_{Measured} \times 10^{(P_{Target} - P_{Measured})/10}$$

Where P_{Target} is the power of manufacturing upper limit;

$P_{Measured}$ is the measured power in chapter 12.

Table 14.1: Duty Cycle

	Duty Cycle
Speech for GSM850/1900	1 : 8.3
GPRS&EGPRS for GSM850	1 : 2.67
GPRS&EGPRS for GSM1900	1 : 4
CDMA 835/1900	1 : 1

Table 14.2: SAR Values (GSM 850 MHz Band - Head)

Ambient Temperature: 22.7 °C Liquid Temperature: 22.2 °C							
Frequency		Mode/Band	Side	Test Position	Measured SAR (1g) (W/kg)	Calculated SAR (1g) (W/kg)	Power Drift(dB)
MHz	Ch.						
848.8	251	Speech	Left	Touch	0.677	0.70	-0.04
836.6	190	Speech	Left	Touch	0.717	0.74	0.05
824.2	128	Speech	Left	Touch	0.689	0.71	0.14
836.6	190	Speech	Left	Tilt	0.489	0.51	0.00
848.8	251	Speech	Right	Touch	0.841	0.87	-0.01
836.6	190	Speech	Right	Touch	0.884	0.91	0.03
824.2	128	Speech	Right	Touch	0.843	0.87	-0.11
836.6	190	Speech	Right	Tilt	0.572	0.59	-0.05

Table 14.3: SAR Values (GSM 850 MHz Band - Body)

Ambient Temperature: 22.7 °C Liquid Temperature: 22.2 °C								
Frequency		Mode(number of timeslots)	Service/Headset	Test Position	Spacing (mm)	Measured SAR (1g) (W/kg)	Calculated SAR (1g) (W/kg)	Power Drift(dB)
MHz	Ch.							
848.8	251	GPRS (3)	\	Phantom	10	1	1.04	-0.10
836.6	190	GPRS (3)	\	Phantom	10	1.09	1.13	-0.05
824.2	128	GPRS (3)	\	Phantom	10	1.04	1.07	-0.09
848.8	251	GPRS (3)	\	Ground	10	0.976	1.01	-0.04
836.6	190	GPRS (3)	\	Ground	10	1.13	1.17	0.07
824.2	128	GPRS (3)	\	Ground	10	1.08	1.11	-0.11
848.8	251	GPRS (3)	\	Left	10	0.781	0.81	-0.10
836.6	190	GPRS (3)	\	Left	10	0.880	0.91	0.02
824.2	128	GPRS (3)	\	Left	10	0.867	0.89	-0.01
848.8	251	GPRS (3)	\	Right	10	0.714	0.74	-0.02

836.6	190	GPRS (3)	\	Right	10	0.814	0.84	-0.16
824.2	128	GPRS (3)	\	Right	10	0.848	0.87	-0.10
824.2	128	GPRS (3)	\	Bottom	10	0.188	0.19	-0.06
848.8	251	EGPRS (3)	\	Ground	10	1.03	1.08	-0.08
836.6	190	EGPRS (3)	\	Ground	10	1.13	1.17	-0.06
824.2	128	EGPRS (3)	\	Ground	10	1.1	1.13	-0.17
848.8	251	GPRS (3)	\	Ground	15	0.825	0.86	-0.06
836.6	190	GPRS (3)	\	Ground	15	0.904	0.94	-0.18
824.2	128	GPRS (3)	\	Ground	15	0.935	0.96	-0.04
836.6	190	Speech	Headset: CCA-0004018	Ground	15	0.660	0.68	-0.11

Table 14.4: SAR Values (GSM 1900 MHz Band - Head)

Ambient Temperature: 22.6 °C Liquid Temperature: 22.1 °C							
Frequency		Mode/Band	Side	Test Position	Measured SAR (1g) (W/kg)	Calculated SAR (1g) (W/kg)	Power Drift(dB)
MHz	Ch.						
1909.8	810	Speech	Left	Touch	0.249	0.27	0.05
1880	661	Speech	Left	Touch	0.260	0.29	0.08
1850.2	512	Speech	Left	Touch	0.268	0.29	0.05
1880	661	Speech	Left	Tilt	0.205	0.22	0.00
1909.8	810	Speech	Right	Touch	0.354	0.38	0.03
1880	661	Speech	Right	Touch	0.357	0.39	0.17
1850.2	512	Speech	Right	Touch	0.363	0.40	0.15
1880	661	Speech	Right	Tilt	0.128	0.14	0.18

Table 14.5: SAR Values (GSM 1900 MHz Band - Body)

Ambient Temperature: 22.6 °C Liquid Temperature: 22.1 °C								
Frequency		Mode(number of timeslots)	Service/Headset	Test Position	Spacing (mm)	Measured SAR (1g) (W/kg)	Calculated SAR (1g) (W/kg)	Power Drift(dB)
MHz	Ch.							
1909.8	810	GPRS (2)	/	Phantom	10	0.272	0.29	-0.14
1909.8	810	GPRS (2)	/	Ground	10	0.401	0.42	-0.09
1880	661	GPRS (2)	/	Ground	10	0.506	0.54	-0.11
1850.2	512	GPRS (2)	/	Ground	10	0.554	0.60	0.00
1909.8	810	GPRS (2)	/	Left	10	0.106	0.11	-0.19
1909.8	810	GPRS (2)	/	Right	10	0.181	0.19	0.01
1909.8	810	GPRS (2)	/	Bottom	10	0.158	0.17	0.15
1850.2	512	EGPRS (2)	/	Ground	10	0.523	0.57	-0.19
1850.2	512	GPRS (2)	/	Ground	15	0.290	0.32	0.02
1850.2	512	Speech	Headset: CCA-0004018	Ground	15	0.176	0.19	-0.15

Table 14.6: SAR Values (CDMA 835 MHz Band - Head)

Ambient Temperature: 22.7 °C Liquid Temperature: 22.2 °C							
Frequency		Mode/Band	Side	Test Position	Measured SAR (1g) (W/kg)	Calculated SAR (1g) (W/kg)	Power Drift(dB)
MHz	Ch.						
848.31	777	RC3/SO55	Left	Touch	0.687	0.71	0.18
836.52	384	RC3/SO55	Left	Touch	0.612	0.63	0.08
824.7	1013	RC3/SO55	Left	Touch	0.647	0.68	0.17
836.52	384	RC3/SO55	Left	Tilt	0.411	0.42	-0.11
848.31	777	RC3/SO55	Right	Touch	0.784	0.81	0.13
836.52	384	RC3/SO55	Right	Touch	0.725	0.74	0.14
824.7	1013	RC3/SO55	Right	Touch	0.745	0.78	0.11
836.52	384	RC3/SO55	Right	Tilt	0.392	0.40	-0.00

Table 14.7: SAR Values (CDMA 835 MHz Band - Body)

Ambient Temperature: 22.7 °C Liquid Temperature: 22.2 °C								
Frequency		Mode/Band	Service/Headset	Test Position	Spacing (mm)	Measured SAR (1g) (W/kg)	Calculated SAR (1g) (W/kg)	Power Drift(dB)
MHz	Ch.							
848.31	777	RC3/SO32	/	Phantom	10	0.754	0.79	-0.05
848.31	777	RC3/SO32	/	Ground	10	0.893	0.93	-0.17
836.52	384	RC3/SO32	/	Ground	10	0.863	0.88	-0.01
824.7	1013	RC3/SO32	/	Ground	10	0.814	0.86	0.04
848.31	777	RC3/SO32	/	Left	10	0.525	0.55	-0.03
848.31	777	RC3/SO32	/	Right	10	0.693	0.72	-0.07
848.31	777	RC3/SO32	/	Bottom	10	0.234	0.24	-0.18
848.31	777	RC3/SO32	/	Ground	15	0.675	0.70	-0.06
848.31	777	RC3/SO55	Headset: CCA-0004018	Ground	15	0.521	0.54	-0.14

Table 14.8: SAR Values (CDMA 1900 MHz Band - Head)

Ambient Temperature: 22.6 °C Liquid Temperature: 22.1 °C							
Frequency		Mode/Band	Side	Test Position	Measured SAR (1g) (W/kg)	Calculated SAR (1g) (W/kg)	Power Drift(dB)
MHz	Ch.						
1908.75	1175	RC3/SO55	Left	Touch	0.720	0.75	0.19
1880	600	RC3/SO55	Left	Touch	0.588	0.63	0.16
1851.25	25	RC3/SO55	Left	Touch	0.749	0.76	-0.18
1880	600	RC3/SO55	Left	Tilt	0.455	0.49	-0.05
1908.75	1175	RC3/SO55	Right	Touch	0.915	0.95	-0.17
1880	600	RC3/SO55	Right	Touch	0.756	0.81	0.18
1851.25	25	RC3/SO55	Right	Touch	0.996	1.01	0.06
1880	600	RC3/SO55	Right	Tilt	0.276	0.30	0.07

Table 14.9: SAR Values (CDMA 1900 MHz Band - Body)

Ambient Temperature: 22.6 °C Liquid Temperature: 22.1 °C								
Frequency		Mode/Band	Service/Headset	Test Position	Spacing (mm)	Measured SAR (1g) (W/kg)	Calculated SAR (1g) (W/kg)	Power Drift(dB)
MHz	Ch.							
1908.75	1175	RC3/SO32	/	Phantom	10	0.753	0.79	-0.17
1908.75	1175	RC3/SO32	/	Ground	10	0.857	0.90	-0.01
1880	600	RC3/SO32	/	Ground	10	0.878	0.95	-0.11
1851.25	25	RC3/SO32	/	Ground	10	1.17	1.18	-0.17
1908.75	1175	RC3/SO32	/	Left	10	0.220	0.23	0.04
1908.75	1175	RC3/SO32	/	Right	10	0.453	0.48	-0.13
1908.75	1175	RC3/SO32	/	Bottom	10	0.324	0.34	0.14
1851.25	25	RC3/SO32	/	Ground	15	0.665	0.67	-0.05
1851.25	25	RC3/SO55	Headset: CCA-0004018	Ground	15	0.504	0.51	0.07

15 Measurement Uncertainty

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	5.5	N	1	1	1	5.5	5.5	∞
2	Isotropy	B	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	N	1	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	∞
10	RF ambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	∞
11	Probe positioned mech. restrictions	B	0.4	R	$\sqrt{3}$	1	1	0.2	0.2	∞
12	Probe positioning with respect to phantom shell	B	2.9	R	$\sqrt{3}$	1	1	1.7	1.7	∞
13	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
Test sample related										
14	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71

15	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
16	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞
Phantom and set-up										
17	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
18	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
19	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
20	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
21	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521
Combined standard uncertainty		$u_c' = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$						9.25	9.12	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						18.5	18.2	

16 MAIN TEST INSTRUMENTS

Table 16.1: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	E5071C	MY46110673	February 14, 2012	One year
02	Power meter	NRVD	102083	September 11, 2012	One year
03	Power sensor	NRV-Z5	100595		
04	Signal Generator	E4438C	MY49070393	November 12, 2011	One Year
05	Amplifier	VTL5400	0505	No Calibration Requested	
06	BTS	8960	MY48365192	November 17, 2011	One year
07	E-field Probe	SPEAG ES3DV3	3149	April 24, 2012	One year
08	DAE	SPEAG DAE4	771	November 20, 2011	One year
09	Dipole Validation Kit	SPEAG D835V2	443	May 03, 2012	One year
10	Dipole Validation Kit	SPEAG D1900V2	541	May 09, 2012	One year

END OF REPORT BODY

ANNEX A GRAPH RESULTS

850 Left Cheek High

Date: 2012-9-6
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.909 mho/m; εr = 41.209; ρ = 1000 kg/m^3
Ambient Temperature: 22.7°C Liquid Temperature: 22.2°C
Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

Cheek High/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.713 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.056 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.941 mW/g
SAR(1 g) = 0.677 mW/g; SAR(10 g) = 0.489 mW/g
Maximum value of SAR (measured) = 0.713 mW/g

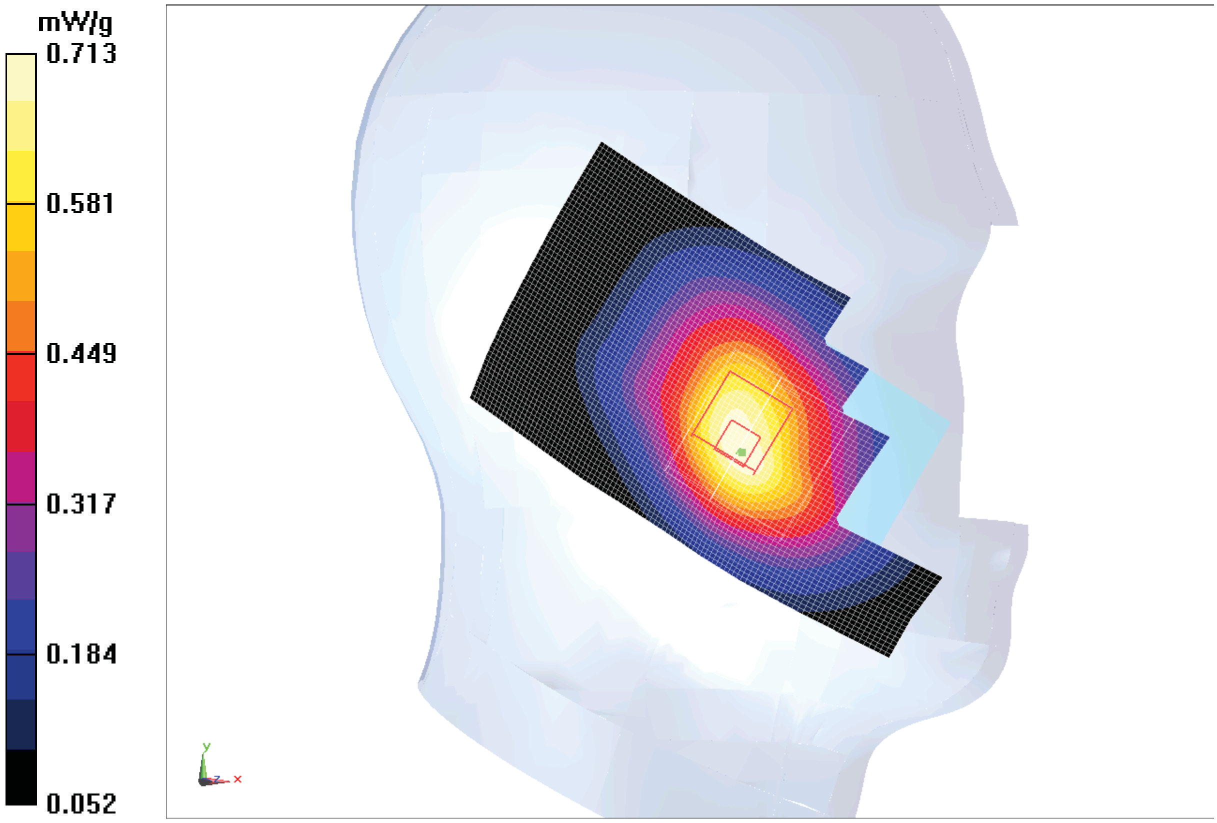


Fig. 1 850MHz CH251

850 Left Cheek Middle

Date: 2012-9-6

Electronics: DAE4 Sn771

Medium: Head 850 MHz

Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.896 mho/m; εr = 41.4; ρ = 1000 kg/m3

Ambient Temperature: 22.7°C   Liquid Temperature: 22.2°C

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

Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.760 mW/g

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

Reference Value = 9.174 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.984 mW/g

SAR(1 g) = 0.717 mW/g; SAR(10 g) = 0.520 mW/g

Maximum value of SAR (measured) = 0.750 mW/g

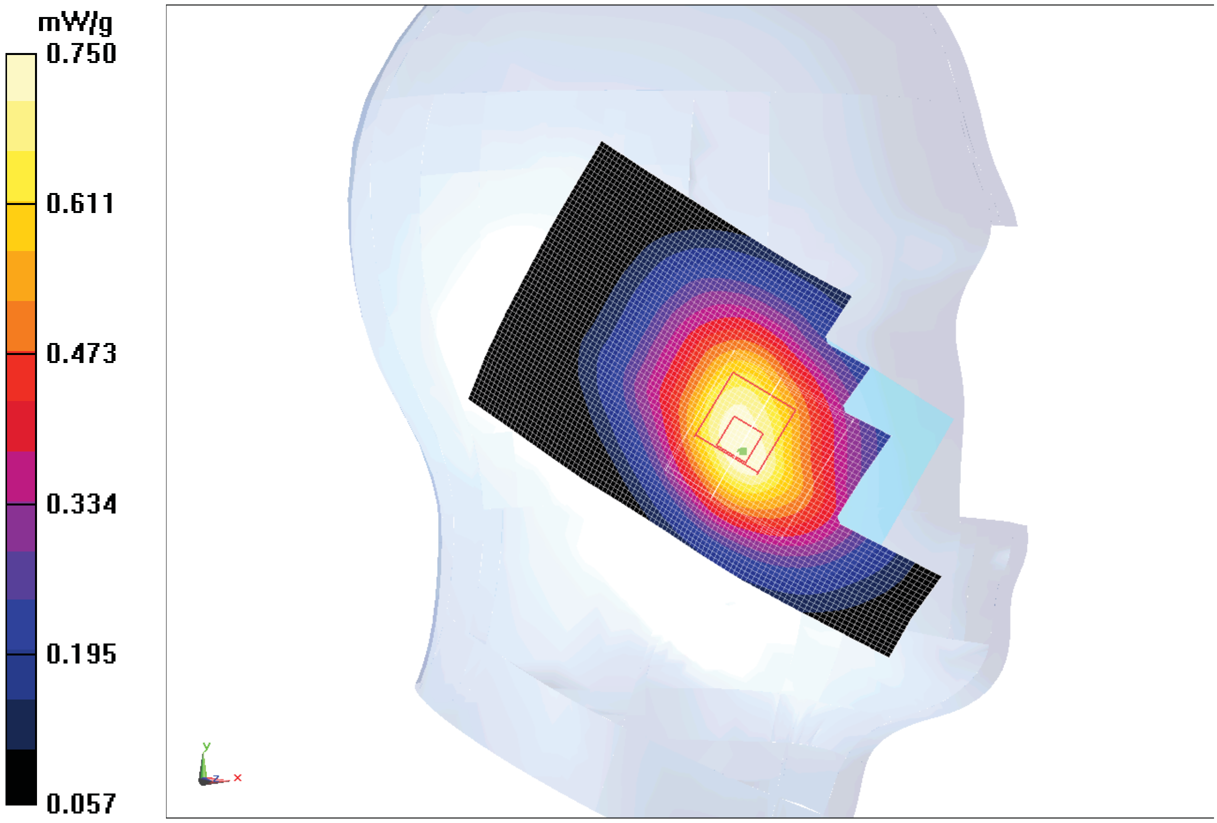


Fig. 2 850 MHz CH190

850 Left Cheek Low

Date: 2012-9-6

Electronics: DAE4 Sn771

Medium: Head 850 MHz

Medium parameters used: f = 825 MHz; σ = 0.887 mho/m; εr = 41.604; ρ = 1000 kg/m^3

Ambient Temperature: 22.7°C   Liquid Temperature: 22.2°C

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

Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

Cheek Low/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.739 mW/g

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

Reference Value = 9.073 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 0.953 mW/g

SAR(1 g) = 0.689 mW/g; SAR(10 g) = 0.503 mW/g

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

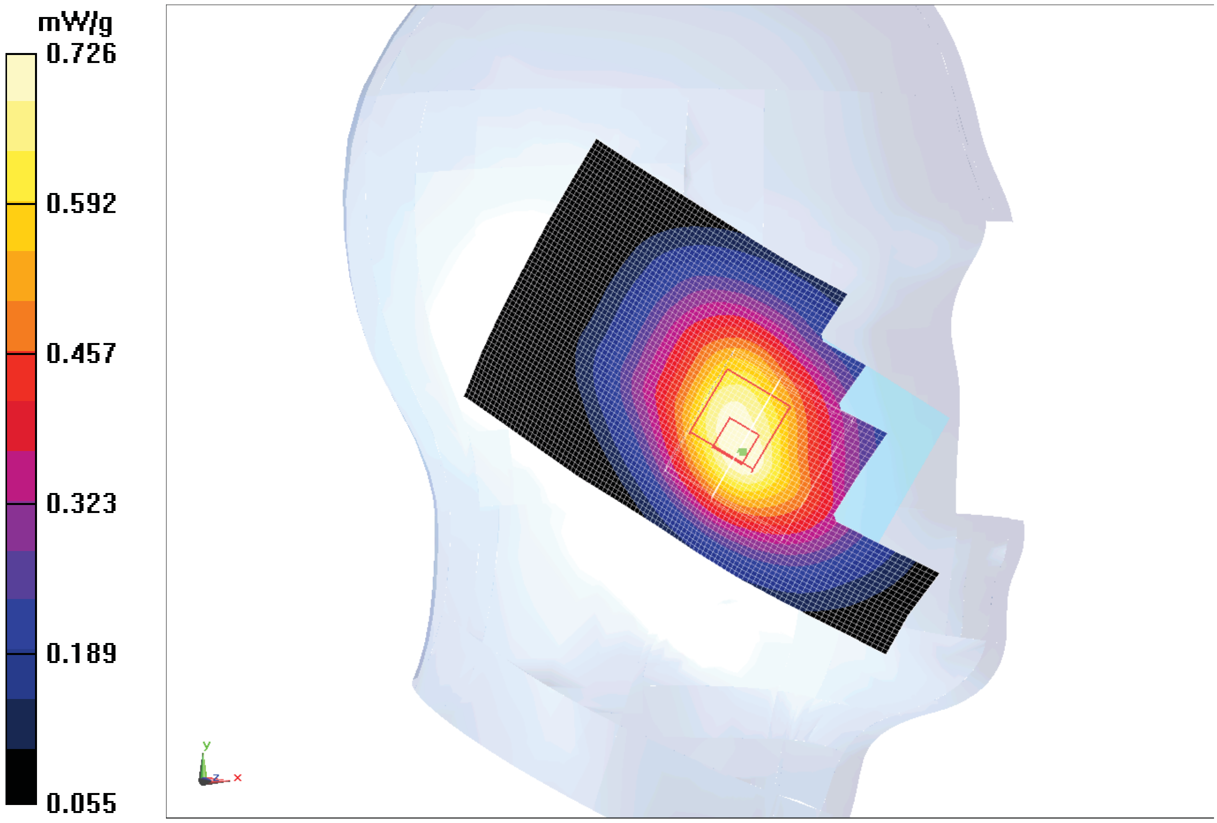


Fig. 3 850 MHz CH128

850 Left Tilt Middle
Date: 2012-9-6
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.896 mho/m; εr = 41.4; ρ = 1000 kg/m3
Ambient Temperature: 22.7°C　　Liquid Temperature: 22.2°C
Communication System: GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.507 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.814 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.596 mW/g
SAR(1 g) = 0.489 mW/g; SAR(10 g) = 0.377 mW/g
Maximum value of SAR (measured) = 0.510 mW/g

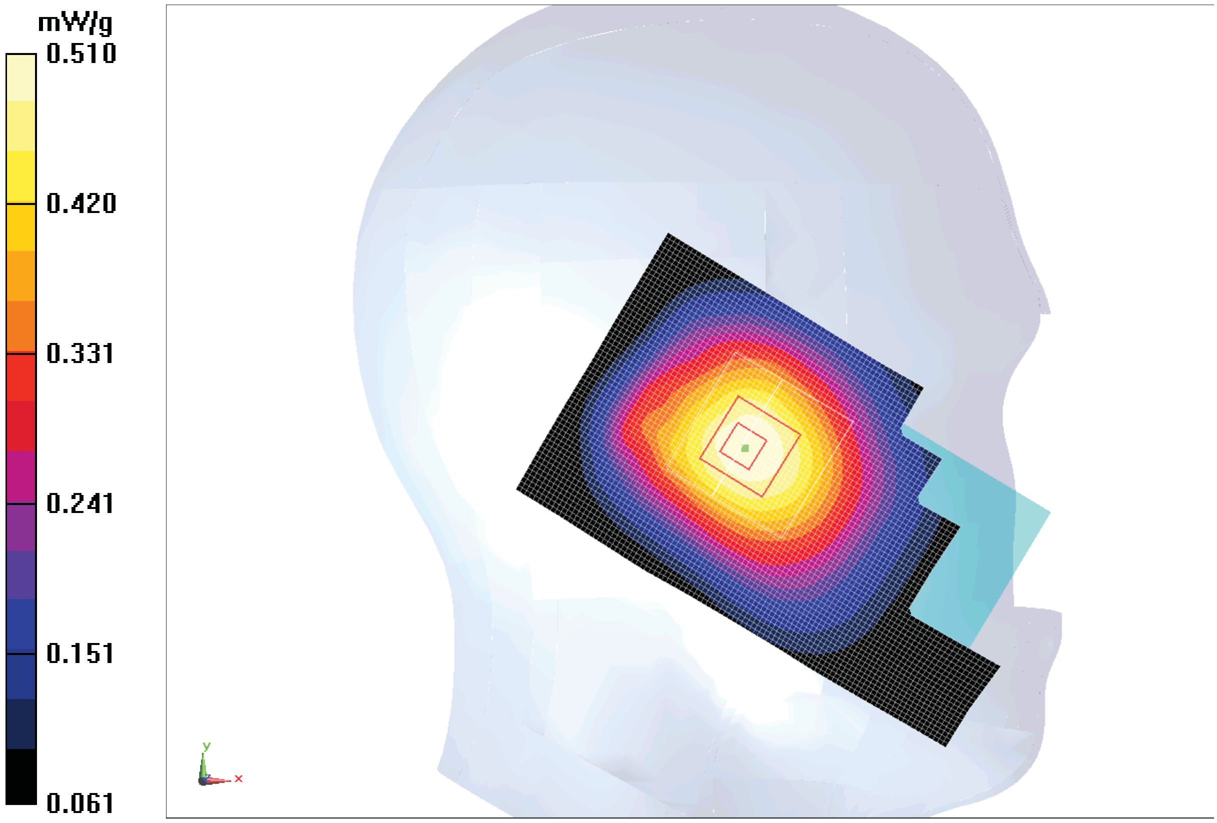


Fig.4 850 MHz CH190

850 Right Cheek High
Date: 2012-9-6
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.909 mho/m; εr = 41.209; ρ = 1000 kg/m^3
Ambient Temperature: 22.7°C   Liquid Temperature: 22.2°C
Communication System: GSM; Frequency: 848.8 MHz; Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

Cheek High/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.884 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.963 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.051 mW/g
SAR(1 g) = 0.841 mW/g; SAR(10 g) = 0.633 mW/g
Maximum value of SAR (measured) = 0.877 mW/g

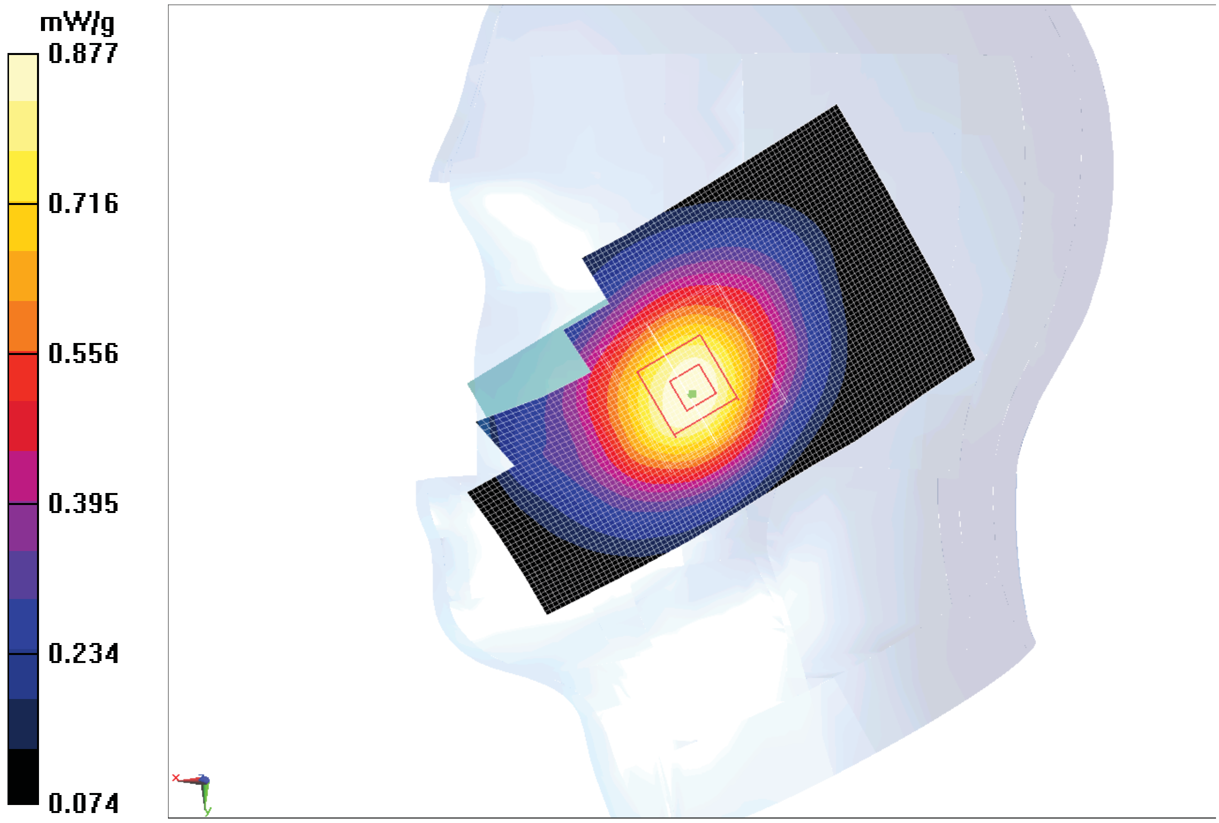


Fig. 5   850 MHz CH251

850 Right Cheek Middle
Date: 2012-9-6
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.896 mho/m; εr = 41.4; ρ = 1000 kg/m3
Ambient Temperature: 22.7°C   Liquid Temperature: 22.2°C
Communication System: GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.933 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.424 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.100 mW/g
SAR(1 g) = 0.884 mW/g; SAR(10 g) = 0.668 mW/g
Maximum value of SAR (measured) = 0.930 mW/g

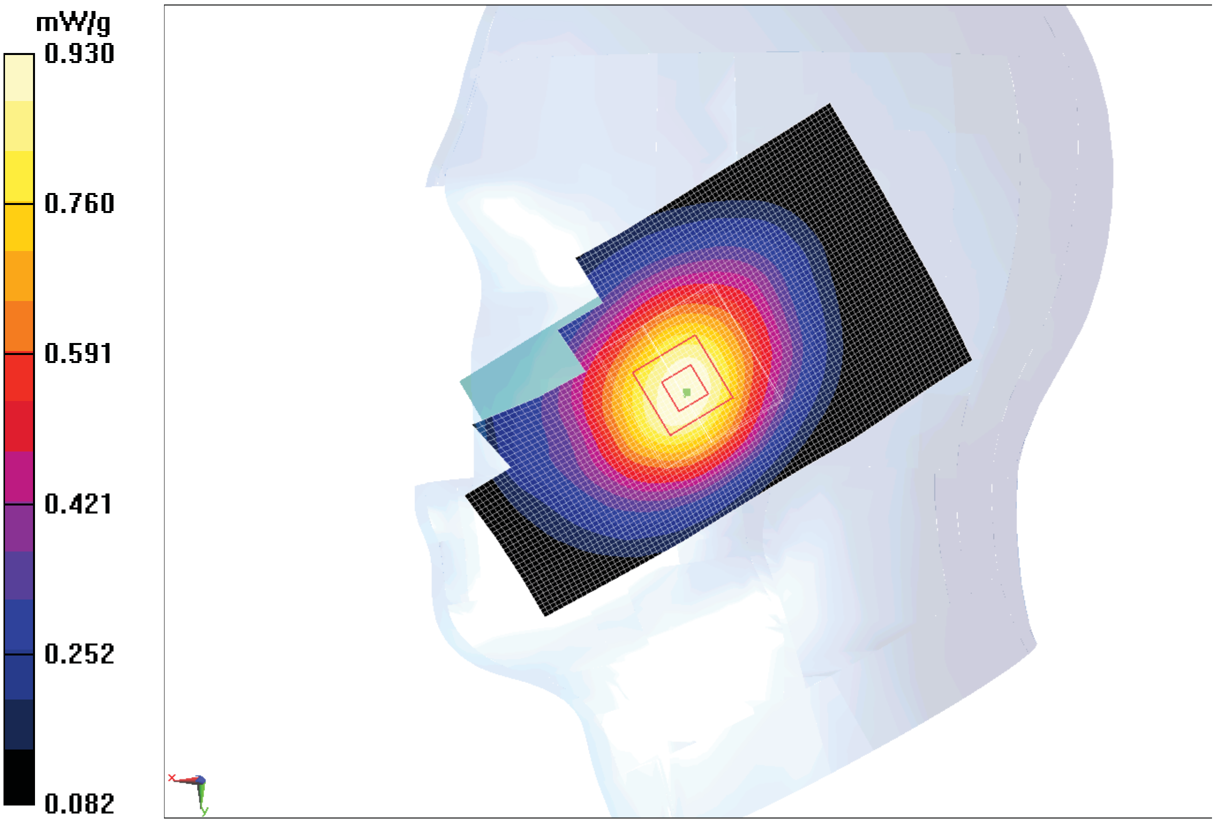


Fig. 6 850 MHz CH190

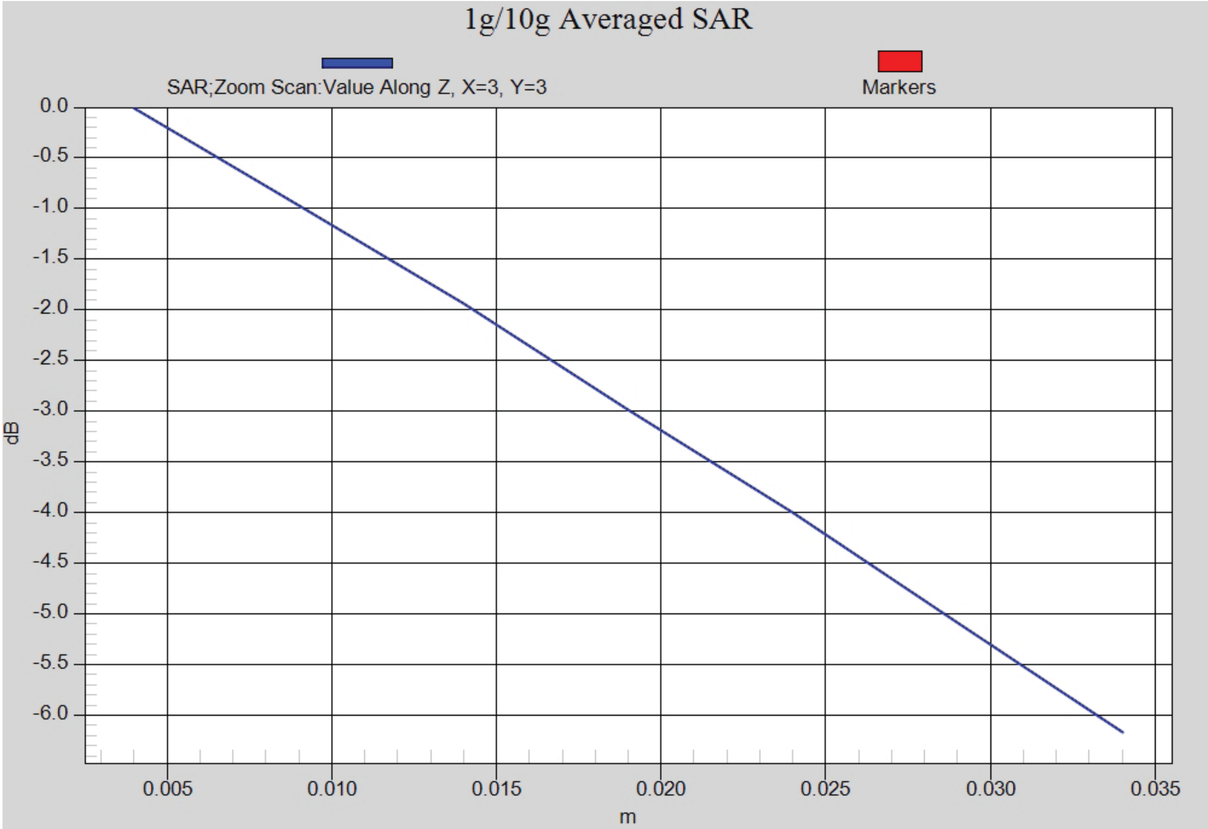


Fig. 6-1 Z-Scan at power reference point (850 MHz CH190)

850 Right Cheek Low

Date: 2012-9-6
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used: f = 825 MHz; σ = 0.887 mho/m; εr = 41.604; ρ = 1000 kg/m3
Ambient Temperature: 22.7°C   Liquid Temperature: 22.2°C
Communication System: GSM; Frequency: 824.2 MHz; Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

Cheek Low/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.894 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.504 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 1.046 mW/g
SAR(1 g) = 0.843 mW/g; SAR(10 g) = 0.639 mW/g
Maximum value of SAR (measured) = 0.873 mW/g

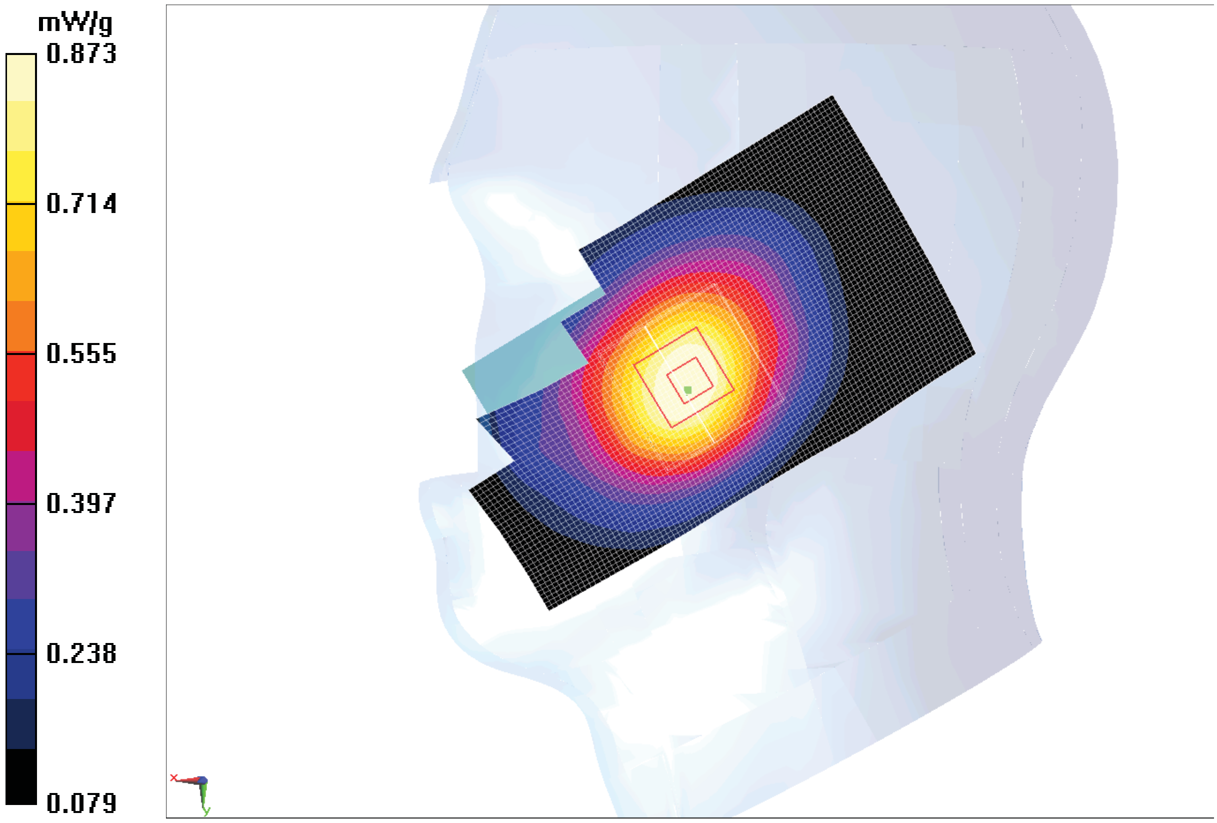


Fig. 7   850 MHz CH128

850 Right Tilt Middle
Date: 2012-9-6
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.896 mho/m; εr = 41.4; ρ = 1000 kg/m3
Ambient Temperature: 22.7°C Liquid Temperature: 22.2°C
Communication System: GSM 850 Frequency: 836.6 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.601 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.487 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.700 mW/g
SAR(1 g) = 0.572 mW/g; SAR(10 g) = 0.438 mW/g
Maximum value of SAR (measured) = 0.599 mW/g

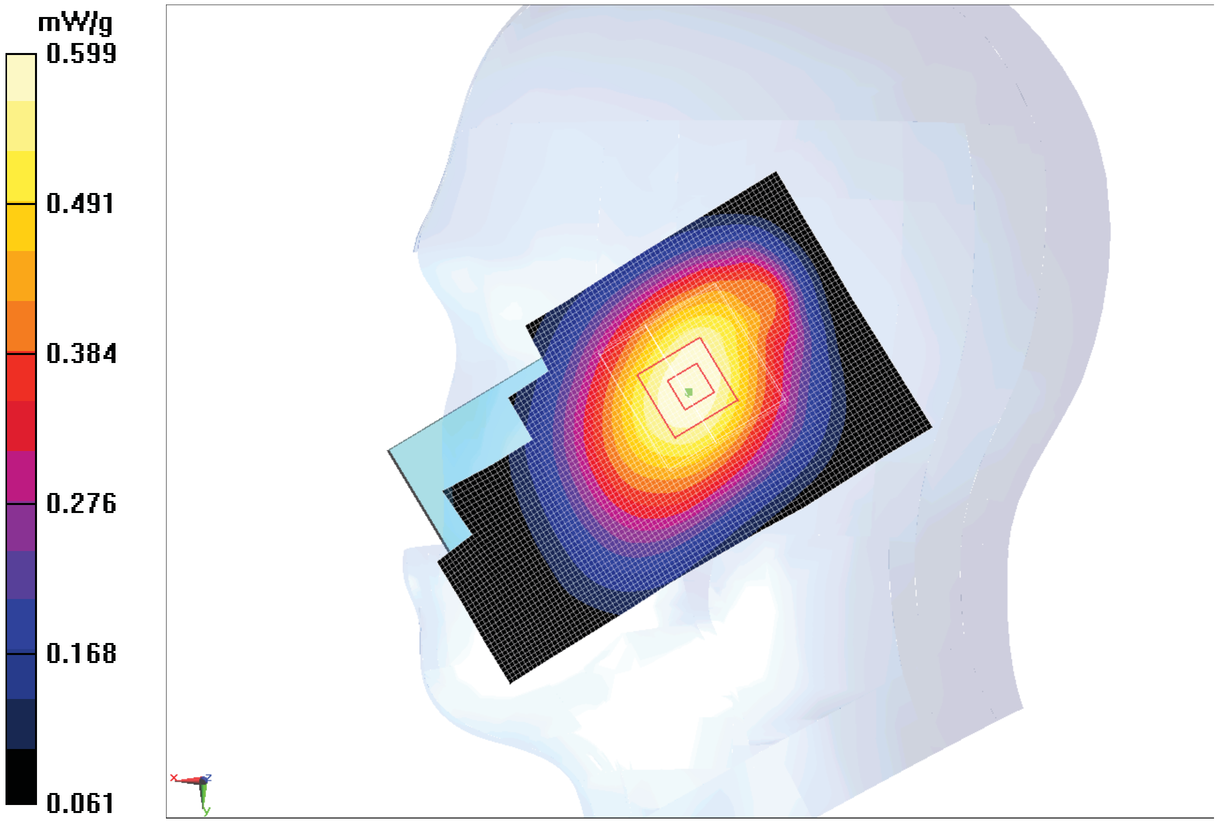


Fig.8 850 MHz CH190

850 Body Towards Phantom High with GPRS

Date: 2012-9-6
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.95 mho/m; εr = 54.937; ρ = 1000 kg/m^3
Ambient Temperature: 22.7^{o}C Liquid Temperature: 22.2^{o}C
Communication System: GSM 850 GPRS Frequency: 848.8 MHz Duty Cycle: 1:2.67
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Toward Phantom High/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.04 mW/g

Toward Phantom High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 31.659 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 1.282 mW/g
SAR(1 g) = 1 mW/g; SAR(10 g) = 0.730 mW/g
Maximum value of SAR (measured) = 1.02 mW/g

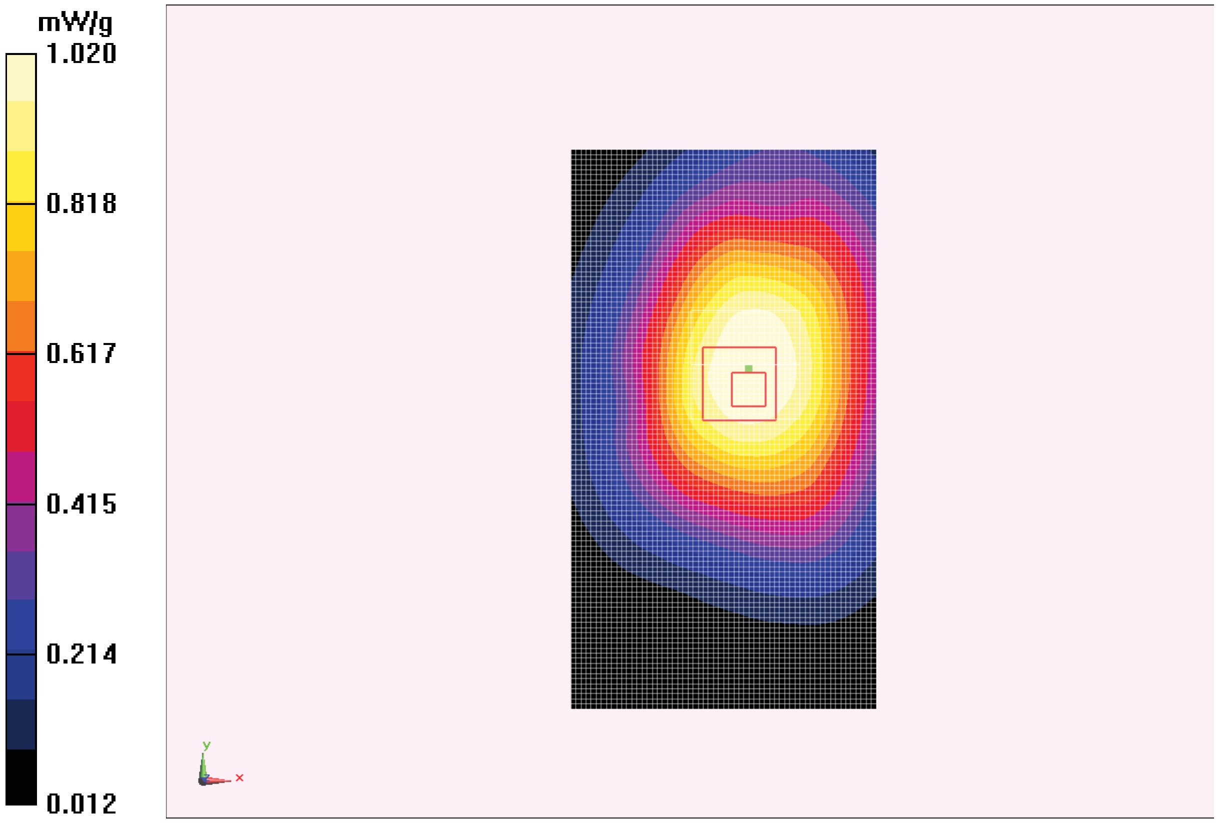


Fig. 9 850 MHz CH251

850 Body Towards Phantom Middle with GPRS
Date: 2012-9-6
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.94 mho/m; εr = 55.061; ρ = 1000 kg/m^3
Ambient Temperature: 22.7^{o}C Liquid Temperature: 22.2^{o}C
Communication System: GSM 850 GPRS Frequency: 836.6 MHz Duty Cycle: 1:2.67
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Toward Phantom Middle/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.15 mW/g

Toward Phantom Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 32.690 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.339 mW/g
SAR(1 g) = 1.09 mW/g; SAR(10 g) = 0.846 mW/g
Maximum value of SAR (measured) = 1.13 mW/g

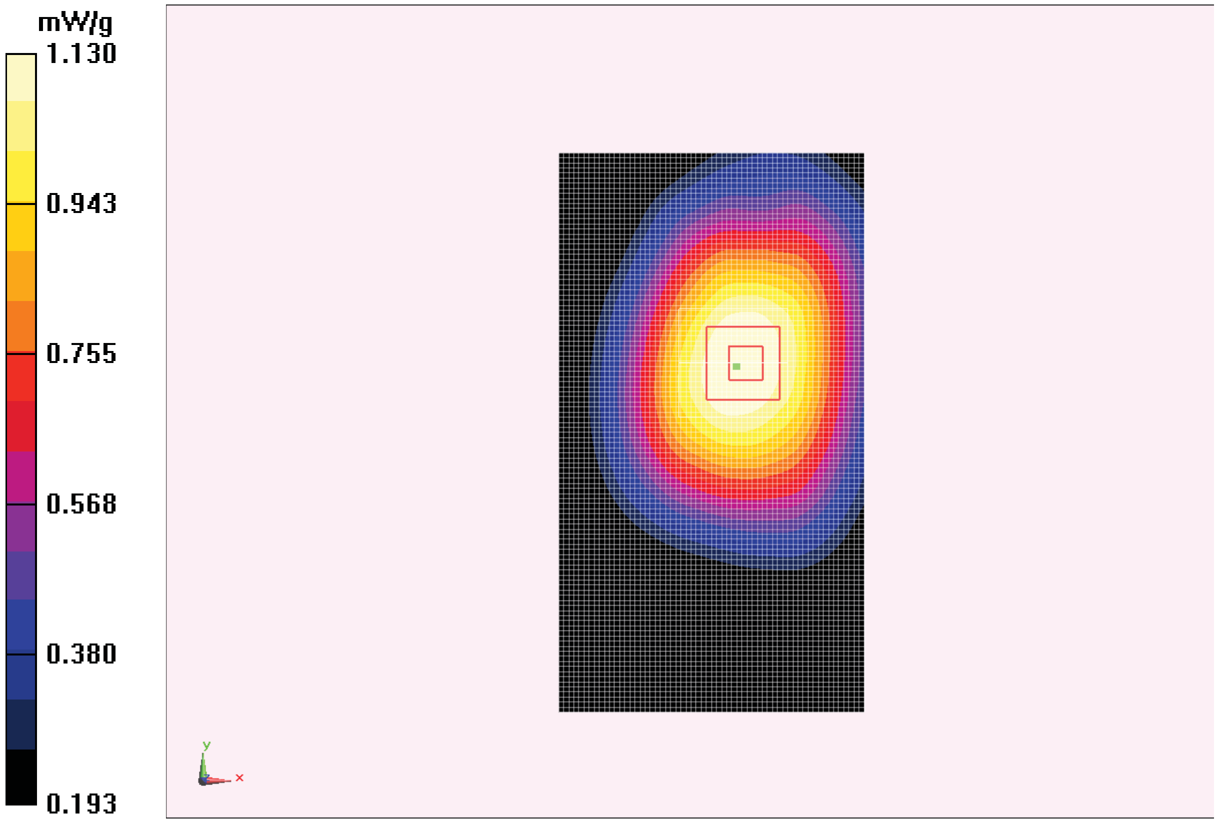


Fig. 10 850 MHz CH190

850 Body Towards Phantom Low with GPRS
Date: 2012-9-6
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used: f = 825 MHz; σ = 0.929 mho/m; εr = 55.196; ρ = 1000 kg/m^3
Ambient Temperature: 22.7°C Liquid Temperature: 22.2°C
Communication System: GSM 850 GPRS Frequency: 824.2 MHz Duty Cycle: 1:2.67
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Toward Phantom Low/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.09 mW/g

Toward Phantom Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 33.381 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.279 mW/g
SAR(1 g) = 1.04 mW/g; SAR(10 g) = 0.809 mW/g
Maximum value of SAR (measured) = 1.09 mW/g

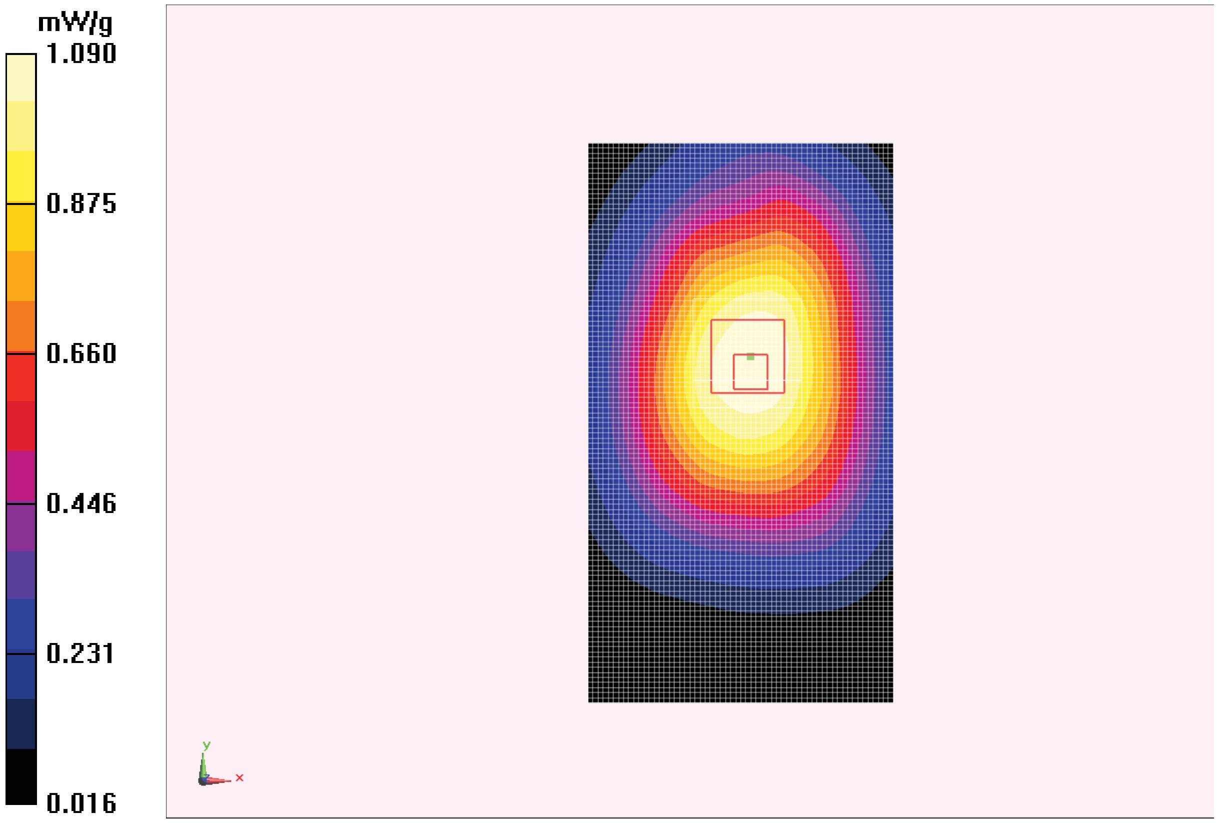


Fig. 11 850 MHz CH128

850 Body Towards Ground High with GPRS

Date: 2012-9-6
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.95 mho/m; εr = 54.937; ρ = 1000 kg/m^3
Ambient Temperature: 22.7°C   Liquid Temperature: 22.2°C
Communication System: GSM 850 GPRS Frequency: 848.8 MHz Duty Cycle: 1:2.67
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Toward Ground High/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.03 mW/g

Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 32.980 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.204 mW/g
SAR(1 g) = 0.976 mW/g; SAR(10 g) = 0.740 mW/g
Maximum value of SAR (measured) = 1.03 mW/g

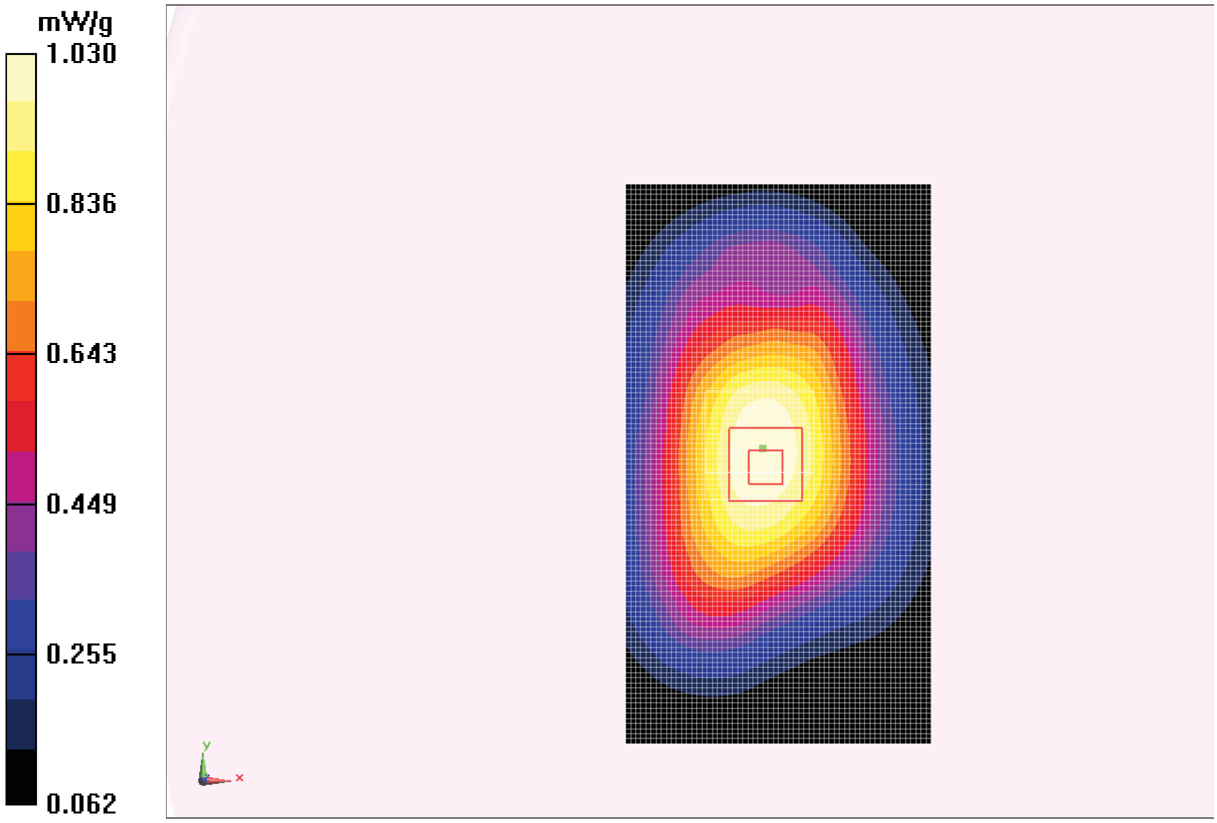


Fig. 12 850 MHz CH251

850 Body Towards Ground Middle with GPRS
Date: 2012-9-6
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.94 mho/m; εr = 55.061; ρ = 1000 kg/m^3
Ambient Temperature: 22.7°C Liquid Temperature: 22.2°C
Communication System: GSM 850 GPRS Frequency: 836.6 MHz Duty Cycle: 1:2.67
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Toward Ground Middle/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.21 mW/g

Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.023 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.418 mW/g
SAR(1 g) = 1.13 mW/g; SAR(10 g) = 0.870 mW/g
Maximum value of SAR (measured) = 1.18 mW/g

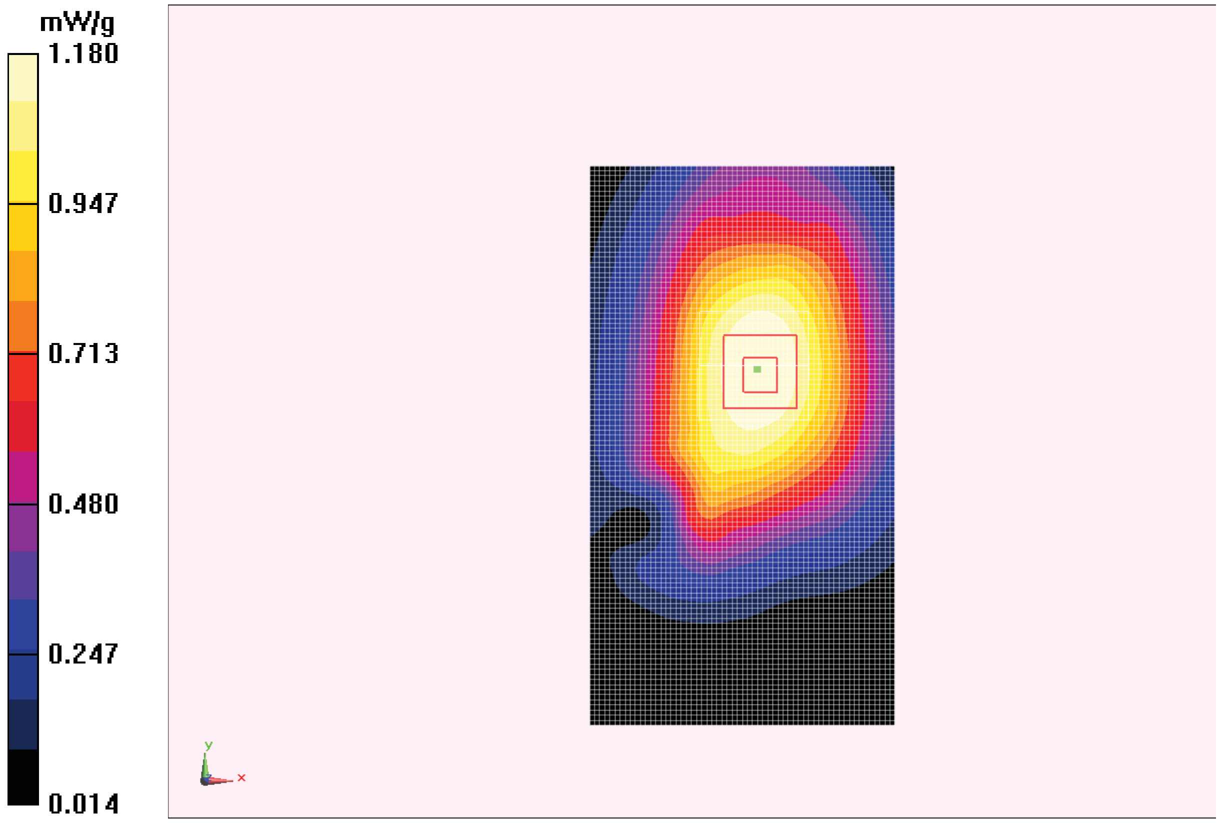


Fig. 13 850 MHz CH190

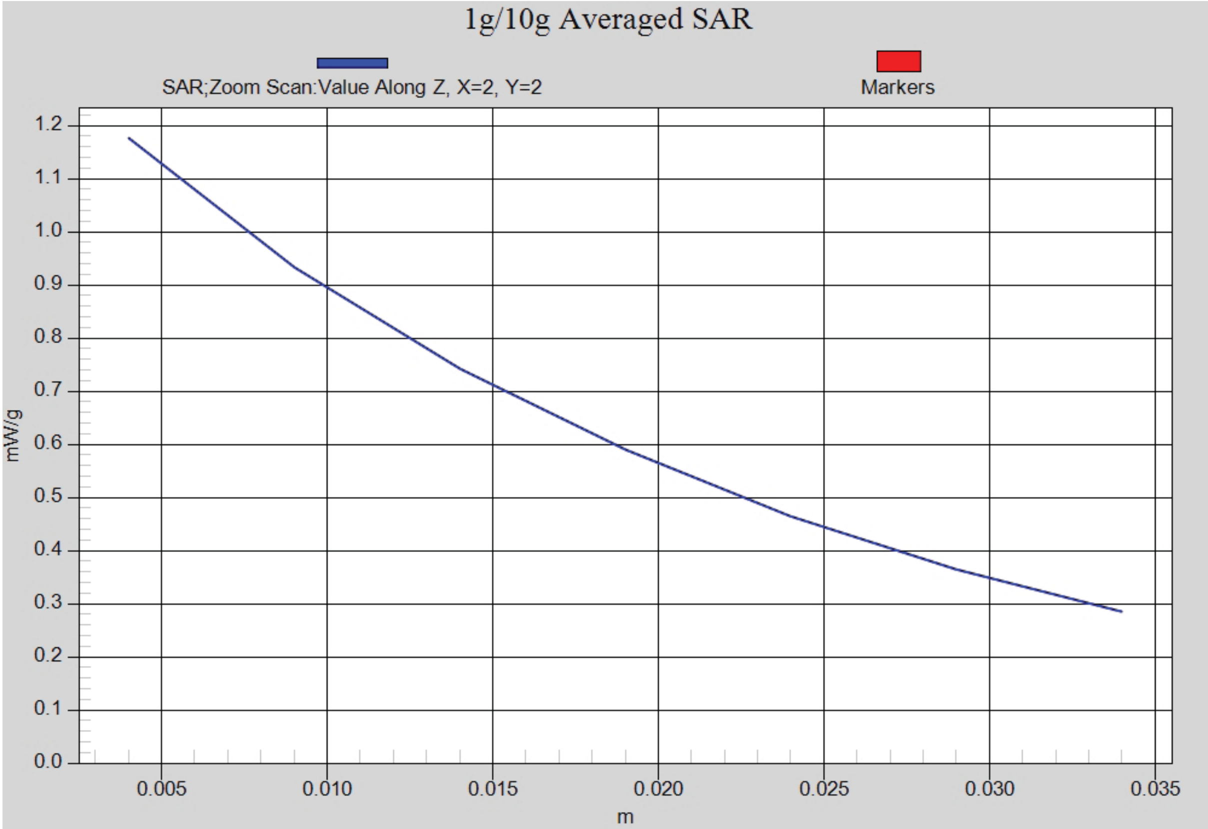


Fig. 13-1 Z-Scan at power reference point (850 MHz CH190)

850 Body Towards Ground Low with GPRS
Date: 2012-9-6
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used: f = 825 MHz; σ = 0.929 mho/m; εr = 55.196; ρ = 1000 kg/m^3
Ambient Temperature: 22.7°C Liquid Temperature: 22.2°C
Communication System: GSM 850 GPRS Frequency: 824.2 MHz Duty Cycle: 1:2.67
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Toward Ground Low/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.15 mW/g

Toward Ground Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 35.700 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 1.665 mW/g
SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.829 mW/g
Maximum value of SAR (measured) = 1.12 mW/g

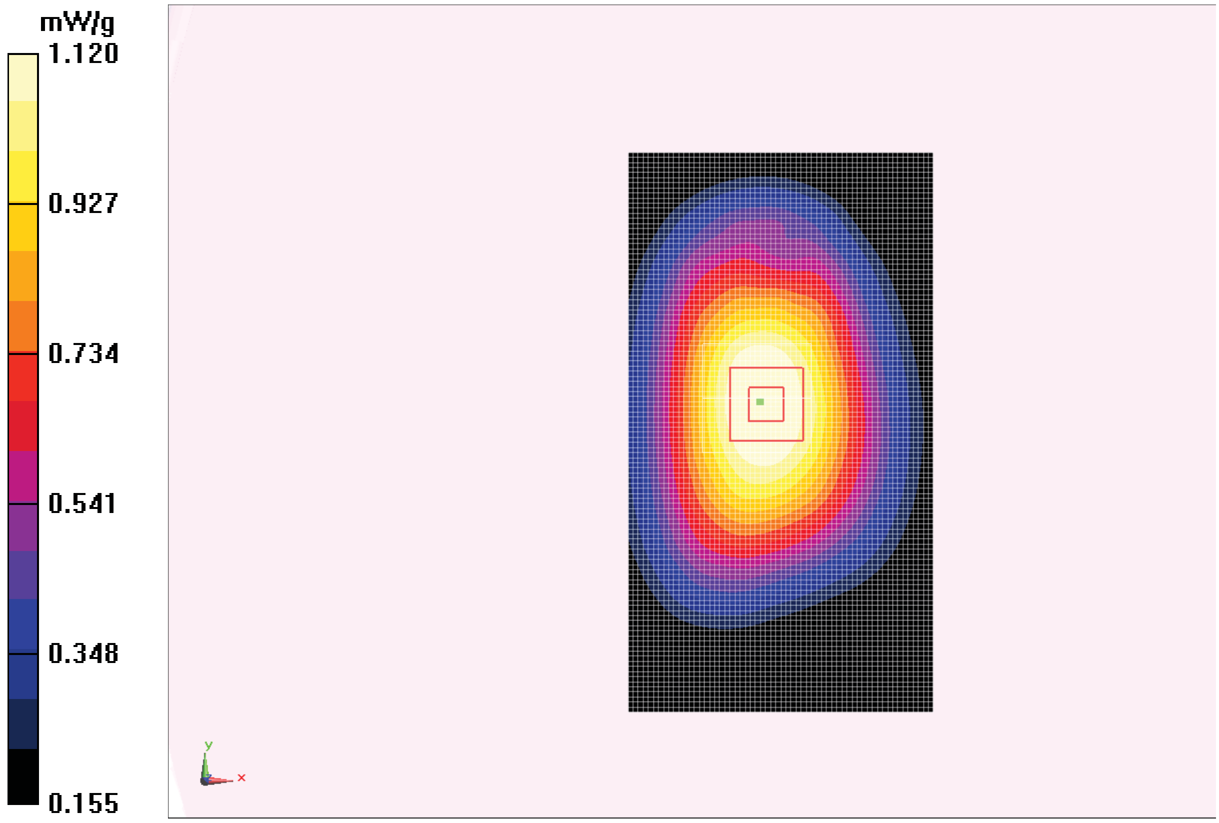


Fig. 14 850 MHz CH128

850 Body Left Side High with GPRS

Date: 2012-9-6
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.95 mho/m; εr = 54.937; ρ = 1000 kg/m^3
Ambient Temperature: 22.7°C Liquid Temperature: 22.2°C
Communication System: GSM 850 GPRS Frequency: 848.8 MHz Duty Cycle: 1:2.67
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Left Side High/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.871 mW/g

Left Side High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.676 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 1.067 mW/g
SAR(1 g) = 0.781 mW/g; SAR(10 g) = 0.549 mW/g
Maximum value of SAR (measured) = 0.830 mW/g

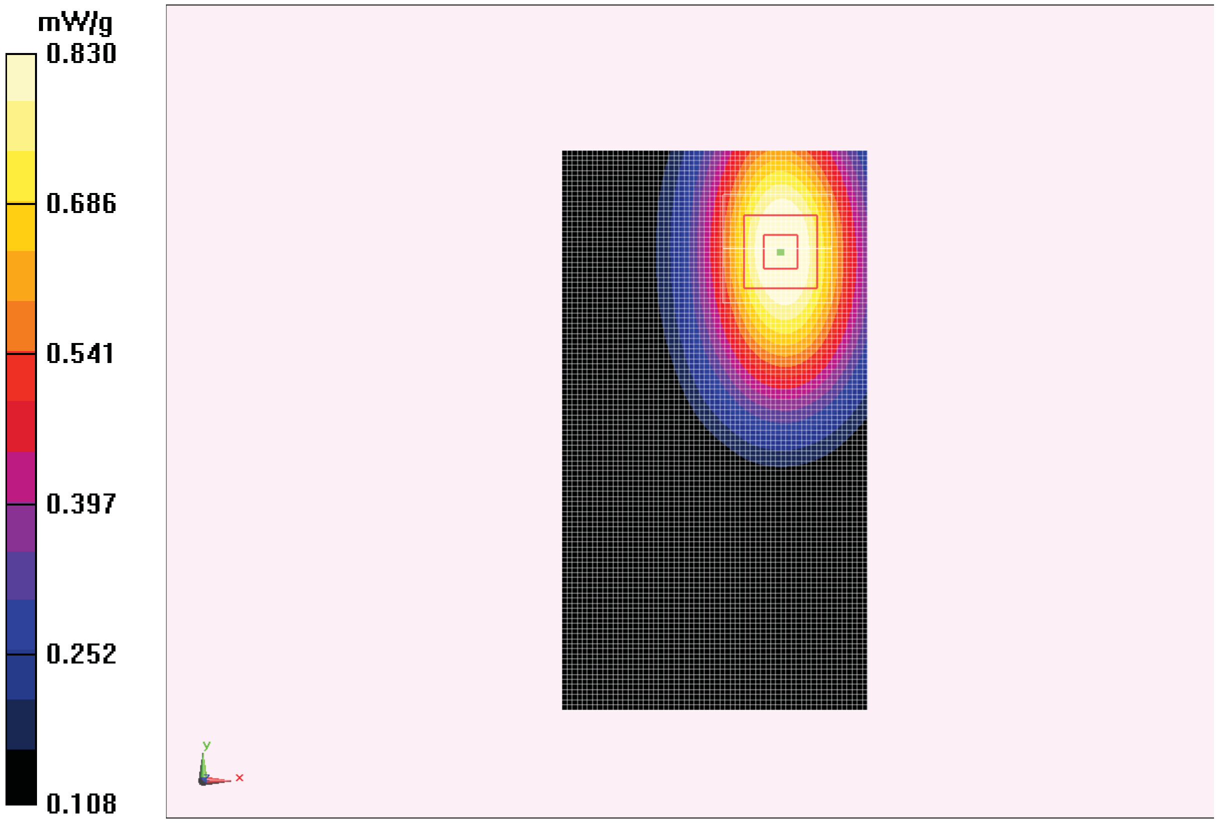


Fig. 15 850 MHz CH251

850 Body Left Side Middle with GPRS
Date: 2012-9-6
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.94 mho/m; εr = 55.061; ρ = 1000 kg/m^3
Ambient Temperature: 22.7^{o}C Liquid Temperature: 22.2^{o}C
Communication System: GSM 850 GPRS Frequency: 836.6 MHz Duty Cycle: 1:2.67
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Left Side Middle/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.920 mW/g

Left Side Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.311 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.206 mW/g
SAR(1 g) = 0.880 mW/g; SAR(10 g) = 0.621 mW/g
Maximum value of SAR (measured) = 0.938 mW/g

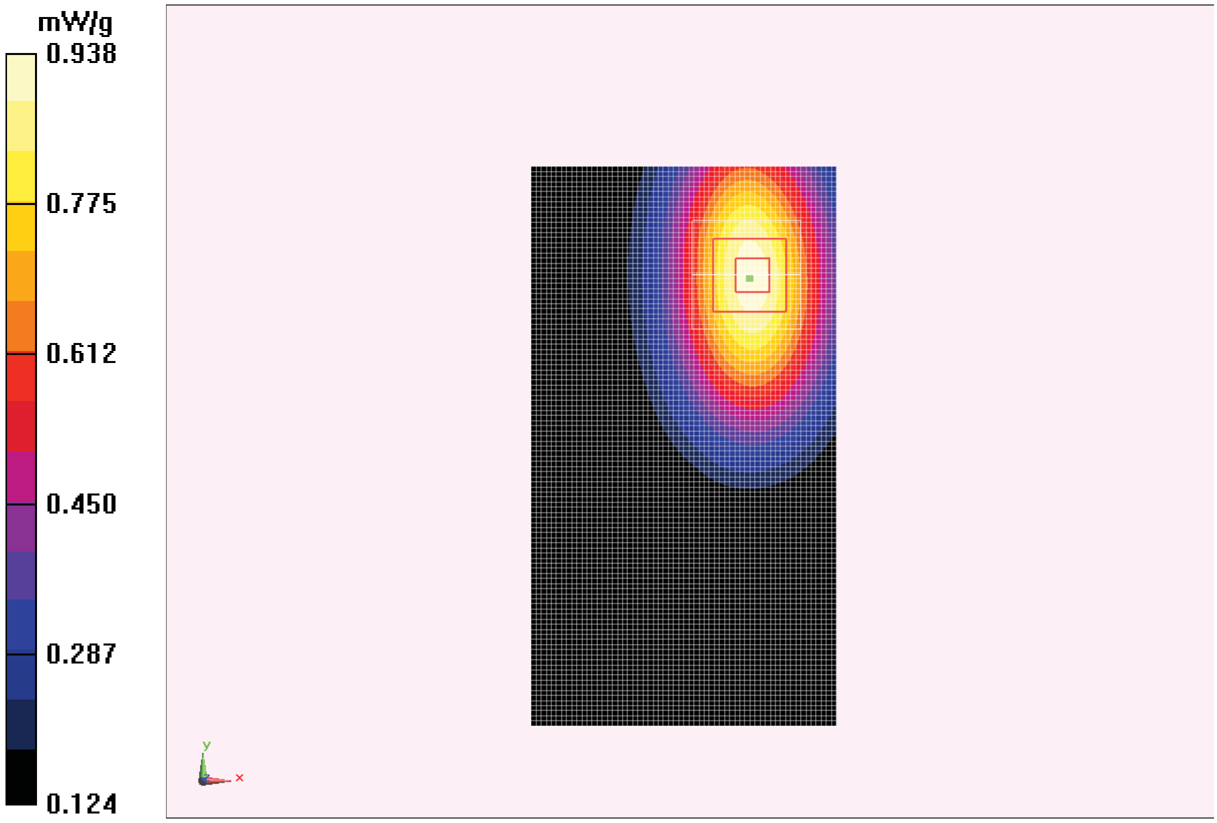


Fig. 16 850 MHz CH190

850 Body Left Side Low with GPRS
Date: 2012-9-6
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used: f = 825 MHz; σ = 0.929 mho/m; εr = 55.196; ρ = 1000 kg/m^3
Ambient Temperature: 22.7°C Liquid Temperature: 22.2°C
Communication System: GSM 850 GPRS Frequency: 824.2 MHz Duty Cycle: 1:2.67
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Left Side Low/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.915 mW/g

Left Side Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 30.502 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.193 mW/g
SAR(1 g) = 0.867 mW/g; SAR(10 g) = 0.613 mW/g
Maximum value of SAR (measured) = 0.919 mW/g

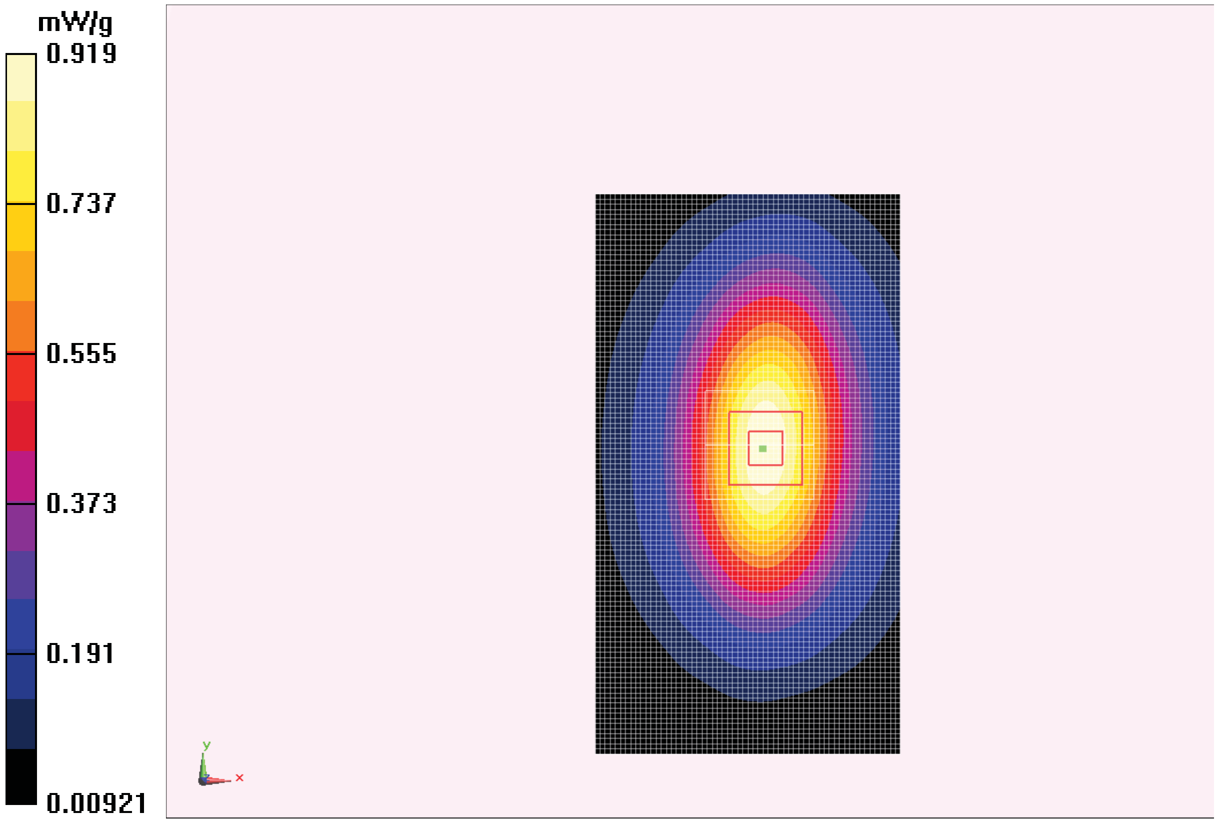


Fig. 17 850 MHz CH128

850 Body Right Side High with GPRS

Date: 2012-9-6

Electronics: DAE4 Sn771

Medium: Body 835 MHz

Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.95 mho/m; εr = 54.937; ρ = 1000 kg/m^3

Ambient Temperature: 22.7°C Liquid Temperature: 22.2°C

Communication System: GSM 850 GPRS Frequency: 848.8 MHz Duty Cycle: 1:2.67

Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Right Side High/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.771 mW/g

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

Reference Value = 16.833 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.978 mW/g

SAR(1 g) = 0.714 mW/g; SAR(10 g) = 0.504 mW/g

Maximum value of SAR (measured) = 0.762 mW/g

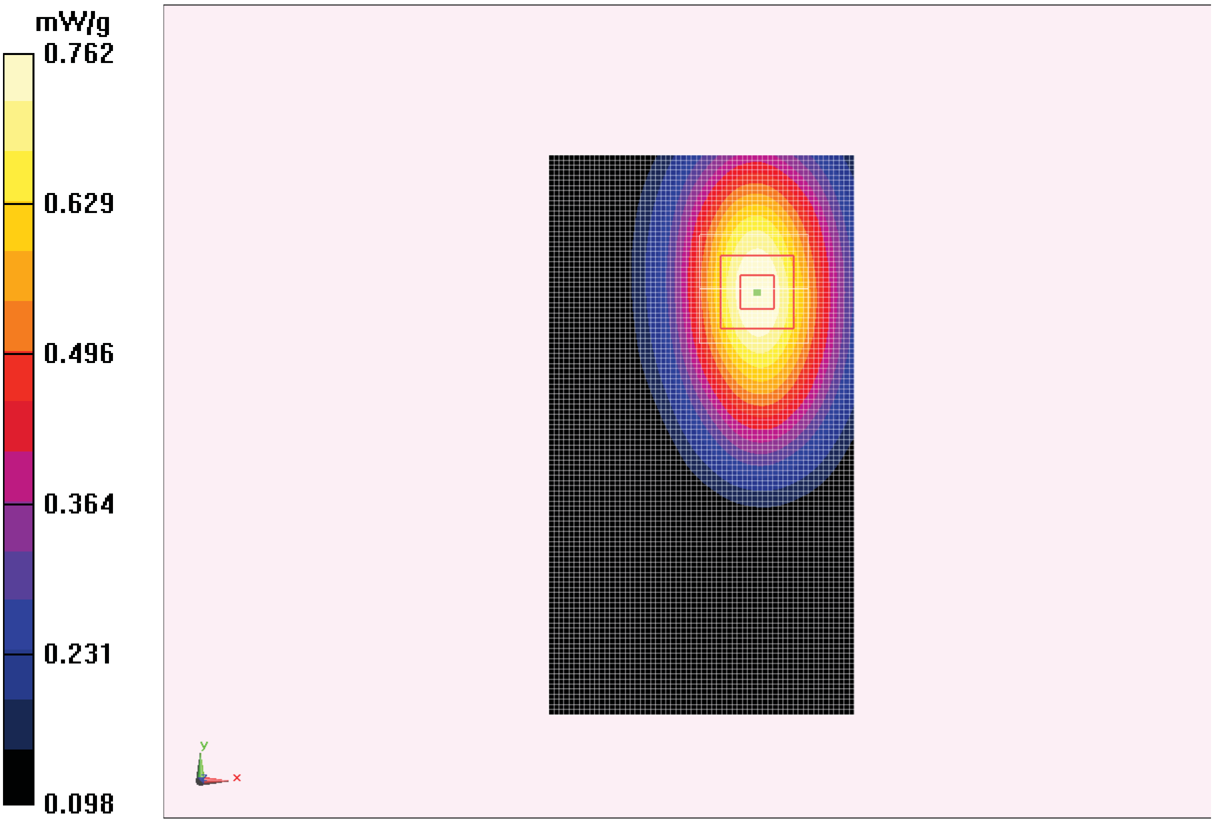


Fig. 18 850 MHz CH251

850 Body Right Side Middle with GPRS
Date: 2012-9-6
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.94 mho/m; εr = 55.061; ρ = 1000 kg/m^3
Ambient Temperature: 22.7°C   Liquid Temperature: 22.2°C
Communication System: GSM 850 GPRS Frequency: 836.6 MHz Duty Cycle: 1:2.67
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Right Side Middle/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.870 mW/g

Right Side Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.252 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 1.111 mW/g
SAR(1 g) = 0.814 mW/g; SAR(10 g) = 0.576 mW/g
Maximum value of SAR (measured) = 0.866 mW/g

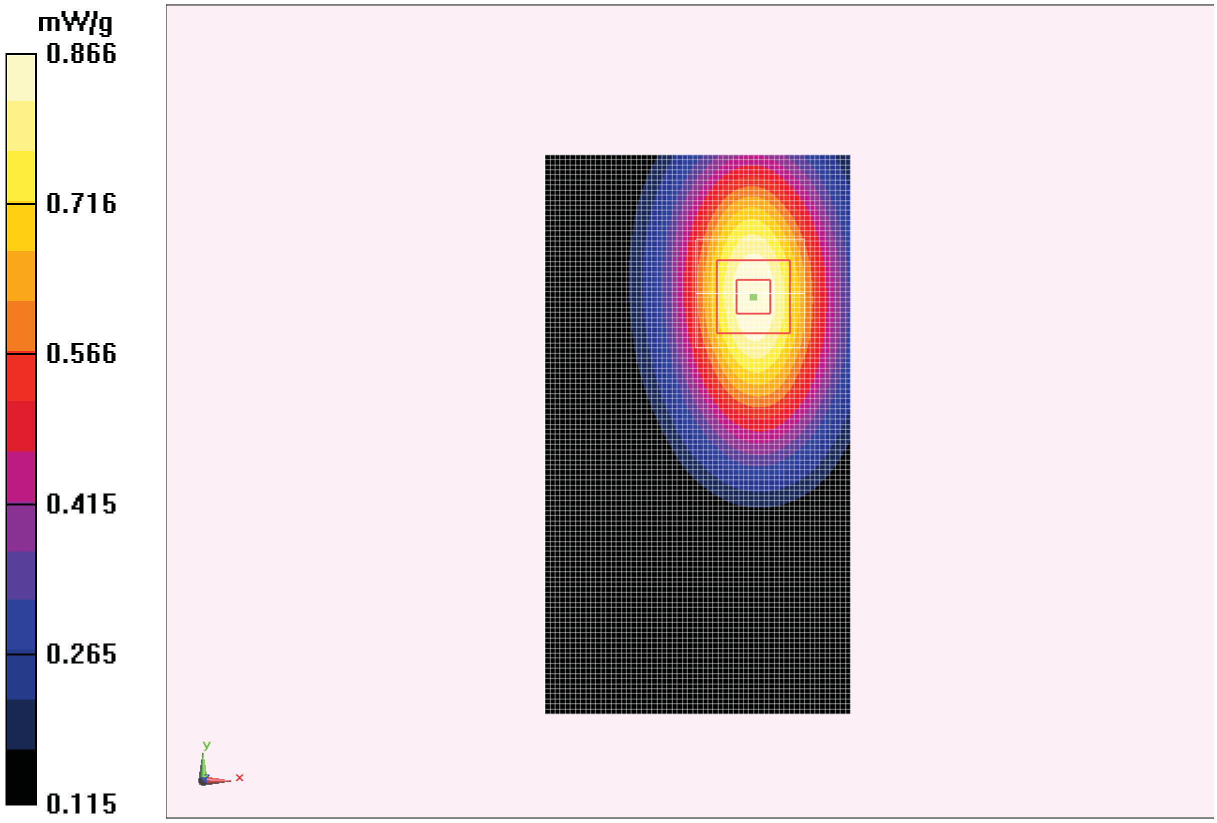


Fig. 19   850 MHz CH190

850 Body Right Side Low with GPRS
Date: 2012-9-6
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used: f = 825 MHz; σ = 0.929 mho/m; εr = 55.196; ρ = 1000 kg/m^3
Ambient Temperature: 22.7°C Liquid Temperature: 22.2°C
Communication System: GSM 850 GPRS Frequency: 824.2 MHz Duty Cycle: 1:2.67
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Right Side Low/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.896 mW/g

Right Side Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.313 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 1.148 mW/g
SAR(1 g) = 0.848 mW/g; SAR(10 g) = 0.598 mW/g
Maximum value of SAR (measured) = 0.900 mW/g

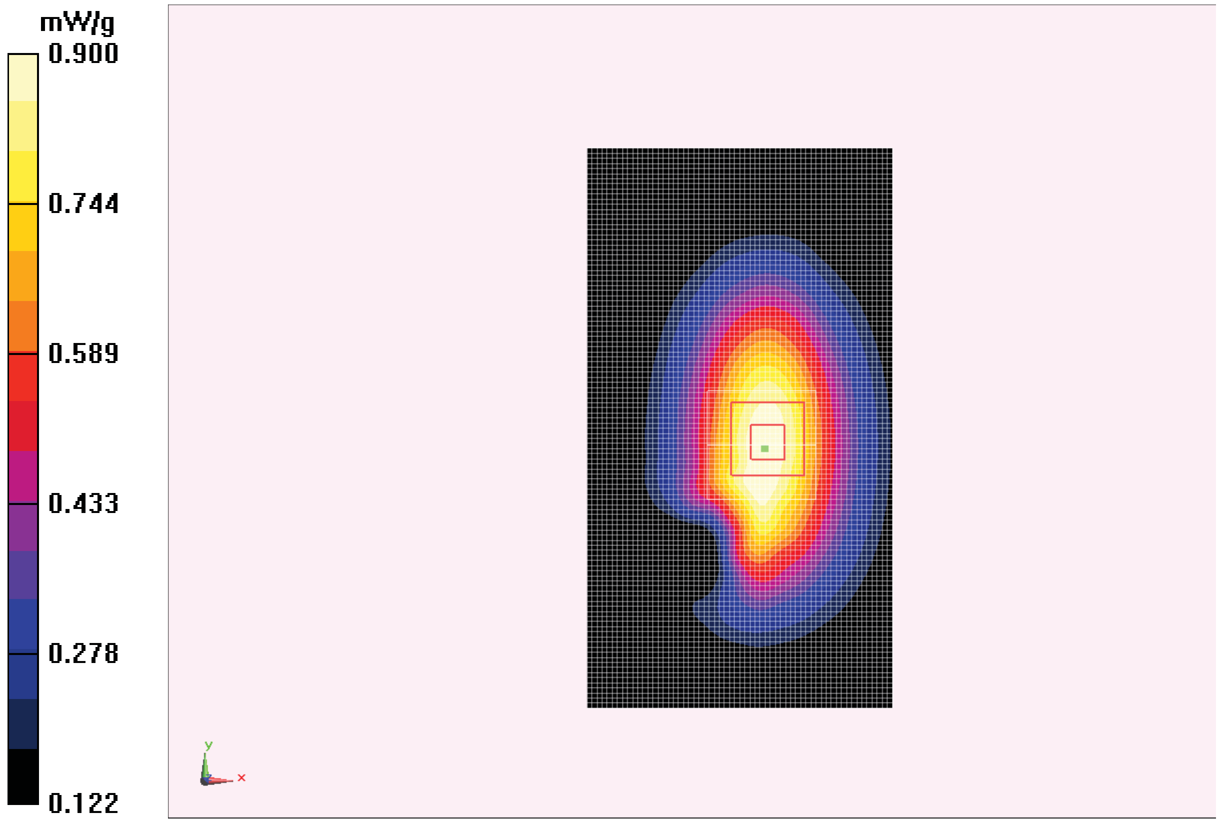


Fig. 20 850 MHz CH128

850 Body Bottom Side Low with GPRS
Date: 2012-9-6
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used: f = 825 MHz; σ = 0.929 mho/m; εr = 55.196; ρ = 1000 kg/m^3
Ambient Temperature: 22.7°C Liquid Temperature: 22.2°C
Communication System: GSM 850 GPRS Frequency: 824.2 MHz Duty Cycle: 1:2.67
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Bottom Side Low/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.211 mW/g

Bottom Side Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.916 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.332 mW/g
SAR(1 g) = 0.188 mW/g; SAR(10 g) = 0.104 mW/g
Maximum value of SAR (measured) = 0.207 mW/g

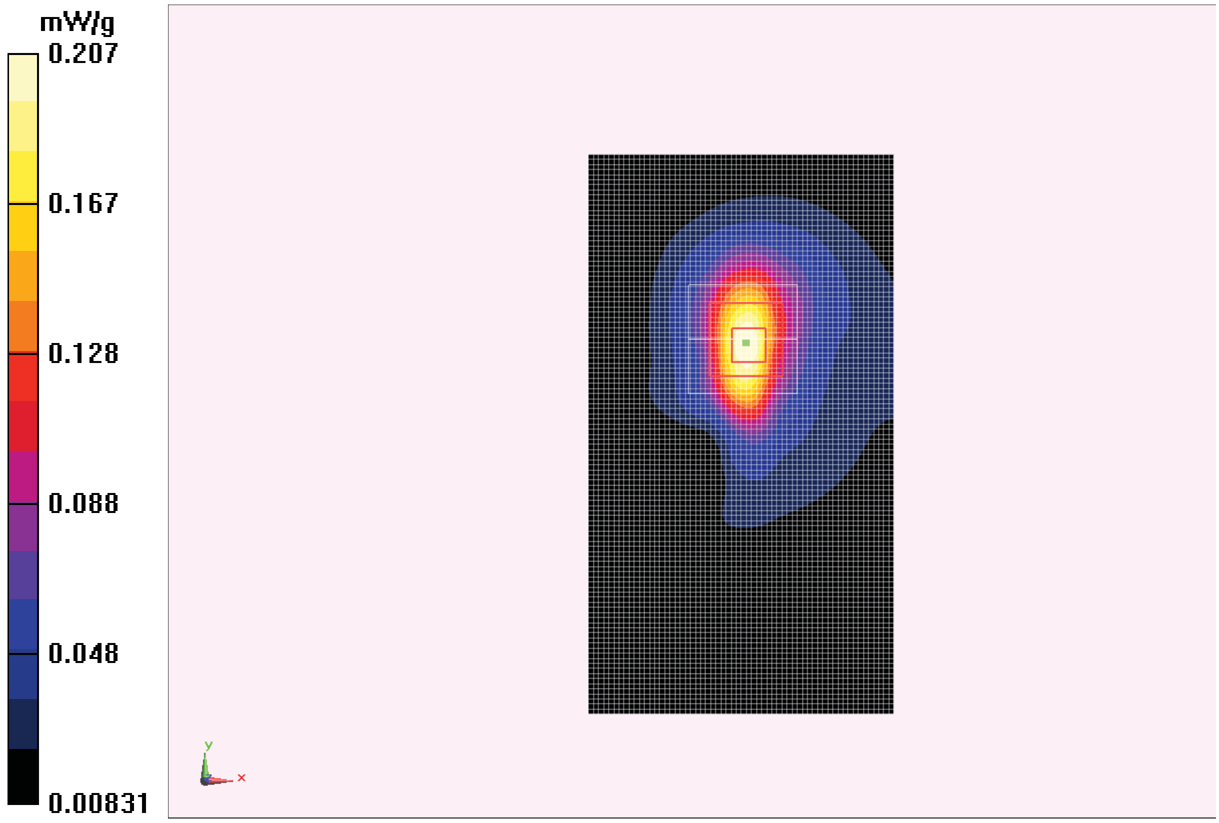


Fig. 21 850 MHz CH128

850 Body Toward Ground High with EGPRS
Date: 2012-9-6
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.95 mho/m; εr = 54.937; ρ = 1000 kg/m^3
Ambient Temperature: 22.7°C Liquid Temperature: 22.2°C
Communication System: GSM 850 EGPRS Frequency: 848.8 MHz Duty Cycle: 1:2.67
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Toward Ground High/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.13 mW/g

Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 27.969 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.290 mW/g
SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.788 mW/g
Maximum value of SAR (measured) = 1.07 mW/g

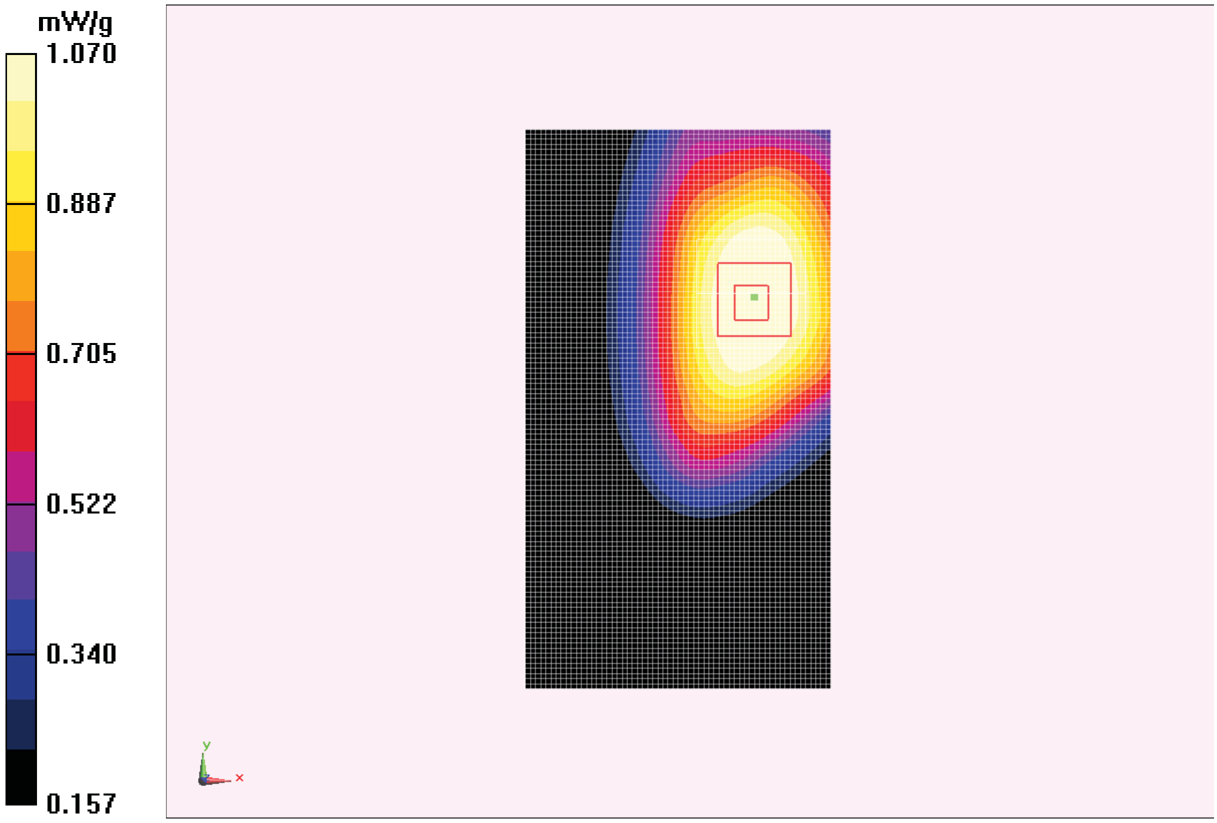


Fig. 22 850 MHz CH251

850 Body Toward Ground Middle with EGPRS
Date: 2012-9-6
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.94 mho/m; εr = 55.061; ρ = 1000 kg/m^3
Ambient Temperature: 22.7^{o}C Liquid Temperature: 22.2^{o}C
Communication System: GSM 850 EGPRS Frequency: 836.6 MHz Duty Cycle: 1:2.67
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Toward Ground Middle/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.36 mW/g

Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 32.795 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.412 mW/g
SAR(1 g) = 1.13 mW/g; SAR(10 g) = 0.853 mW/g
Maximum value of SAR (measured) = 1.18 mW/g

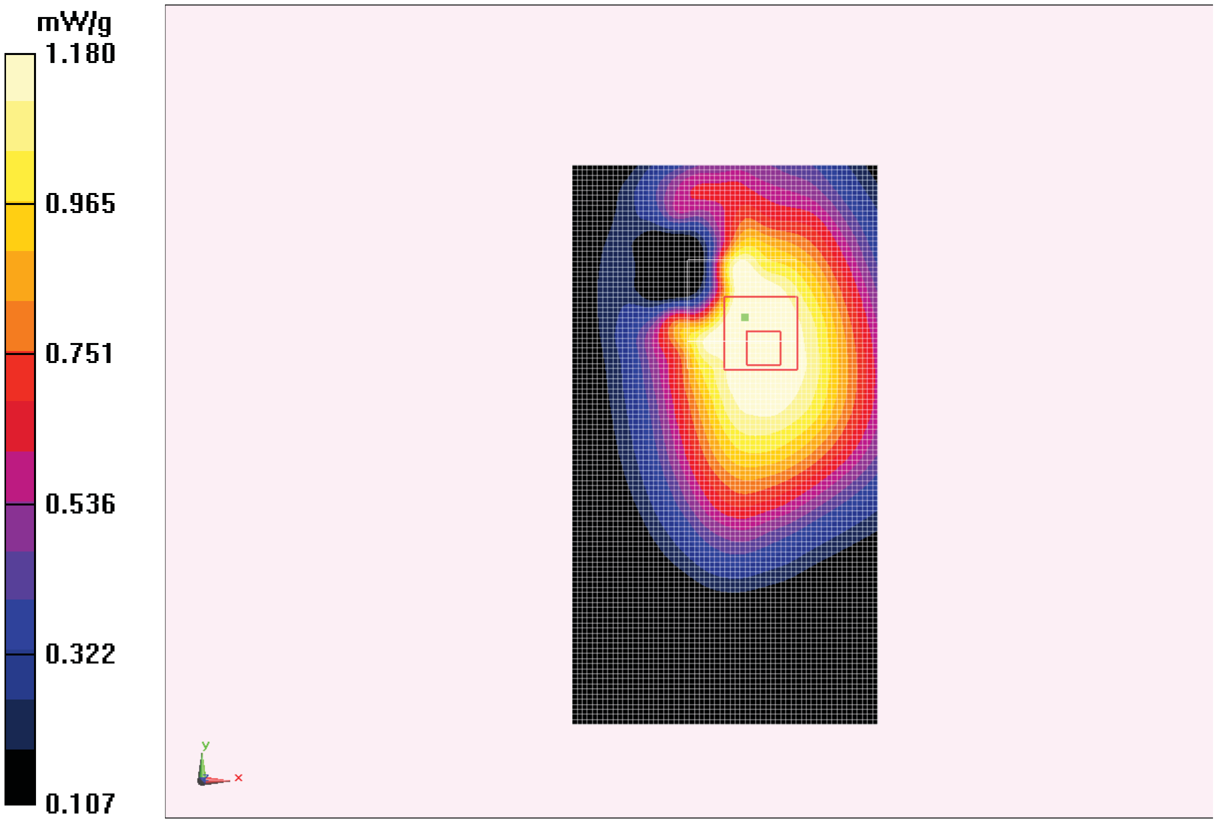


Fig. 23 850 MHz CH190

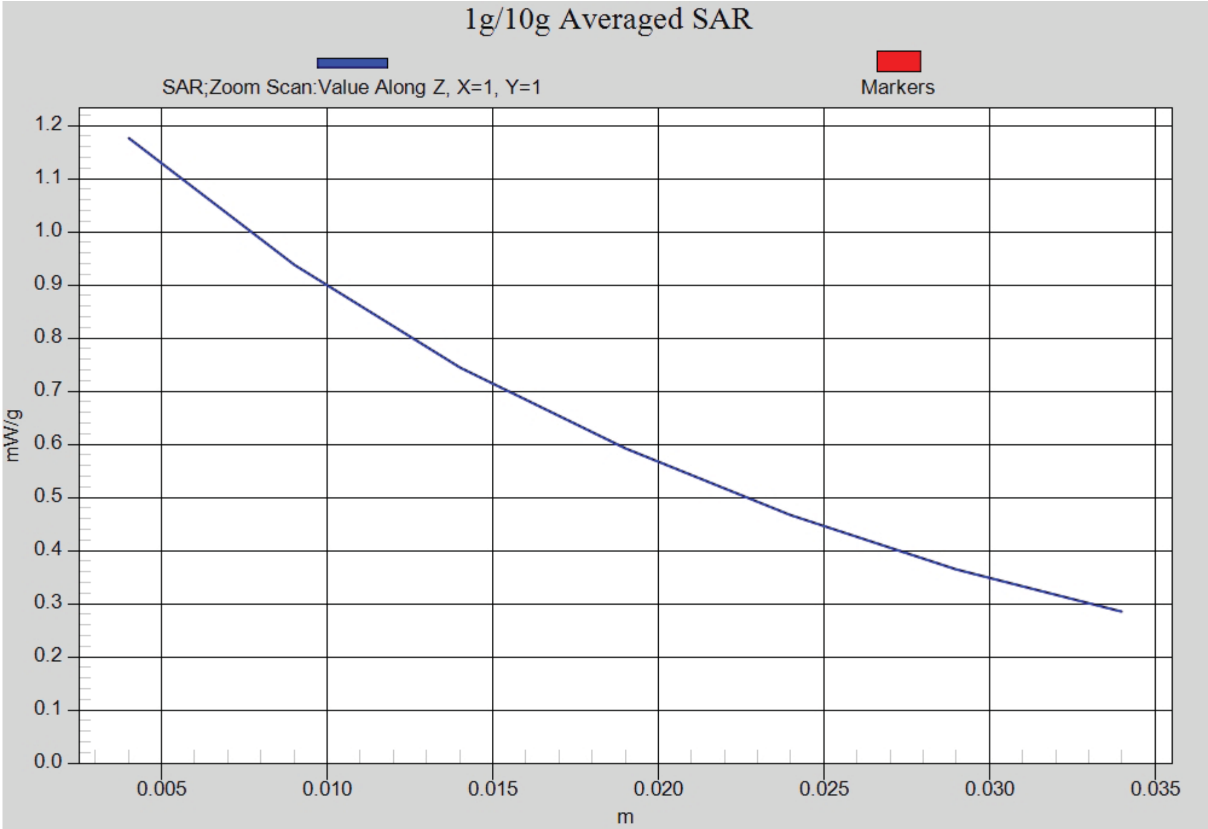


Fig. 23-1 Z-Scan at power reference point (850 MHz CH190)

850 Body Toward Ground Low with EGPRS
Date: 2012-9-6
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used: f = 825 MHz; σ = 0.929 mho/m; εr = 55.196; ρ = 1000 kg/m^3
Ambient Temperature: 22.7°C Liquid Temperature: 22.2°C
Communication System: GSM 850 EGPRS Frequency: 824.2 MHz Duty Cycle: 1:2.67
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Toward Ground Low/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.13 mW/g

Toward Ground Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 25.702 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 2.917 mW/g
SAR(1 g) = 1.1 mW/g; SAR(10 g) = 0.826 mW/g
Maximum value of SAR (measured) = 1.12 mW/g

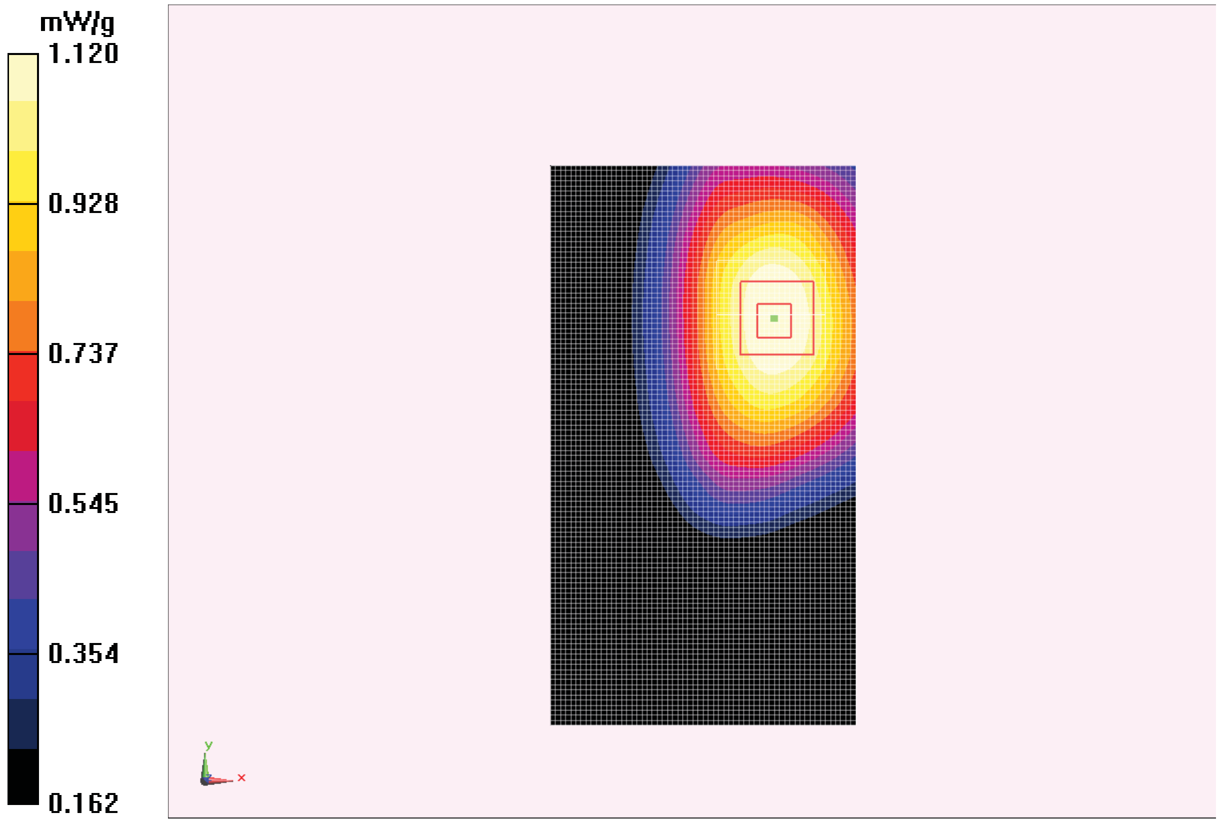


Fig. 24 850 MHz CH128

850 Body Towards Ground High with GPRS (15mm)
Date: 2012-10-10
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used (interpolated): f = 848.8 MHz; σ = 1.003 mho/m; εr = 55.543; ρ = 1000 kg/m^3
Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C
Communication System: GSM 850 GPRS Frequency: 848.8 MHz Duty Cycle: 1:2.67
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Toward Ground High/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.864 mW/g

Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.795 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.016 mW/g
SAR(1 g) = 0.825 mW/g; SAR(10 g) = 0.630 mW/g
Maximum value of SAR (measured) = 0.862 mW/g

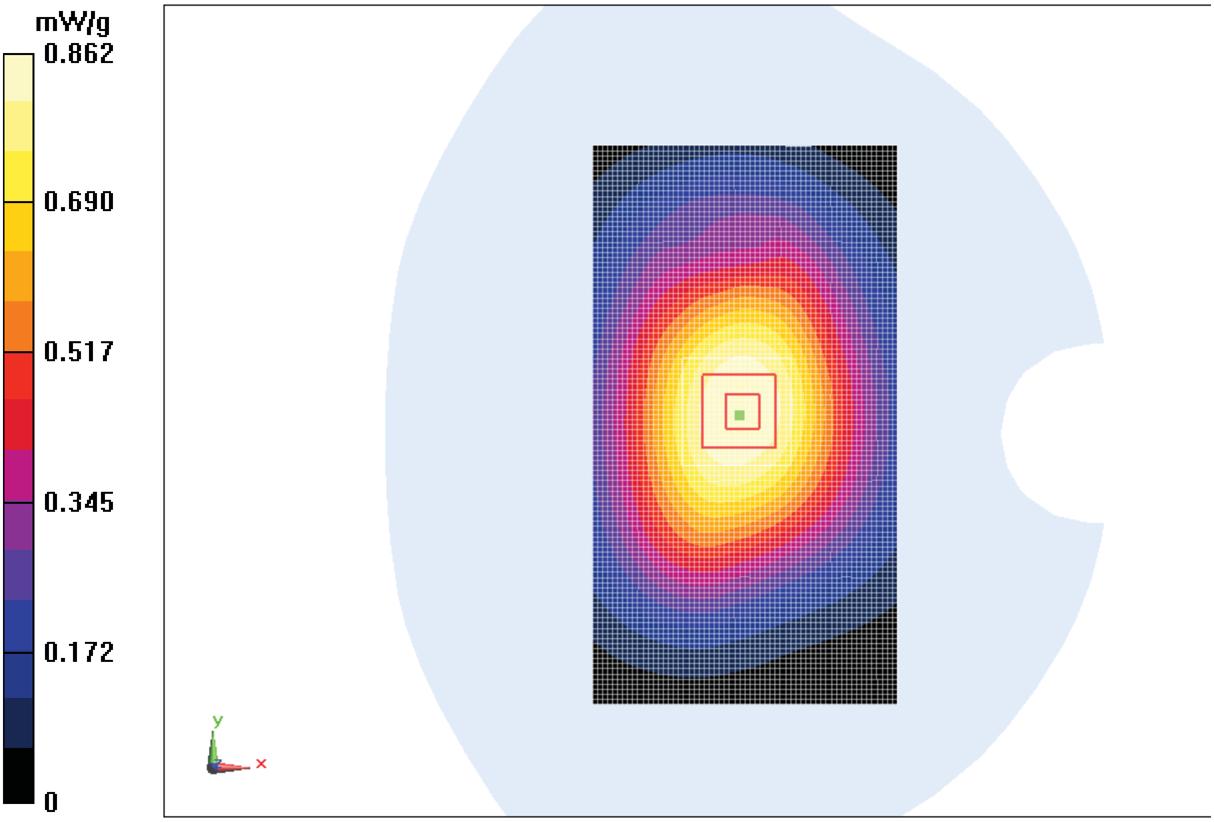


Fig. 25 850 MHz CH251

850 Body Towards Ground Middle with GPRS (15mm)

Date: 2012-10-10

Electronics: DAE4 Sn771

Medium: Body 835 MHz

Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.989 mho/m; εr = 55.688; ρ = 1000 kg/m^3

Ambient Temperature: 22.4^{o}C   Liquid Temperature: 21.9^{o}C

Communication System: GSM 850 GPRS Frequency: 836.6 MHz Duty Cycle: 1:2.67

Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Toward Ground Middle/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.958 mW/g

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

Reference Value = 32.023 V/m; Power Drift = -0.18 dB

Peak SAR (extrapolated) = 1.133 mW/g

SAR(1 g) = 0.904 mW/g; SAR(10 g) = 0.691 mW/g

Maximum value of SAR (measured) = 0.947 mW/g

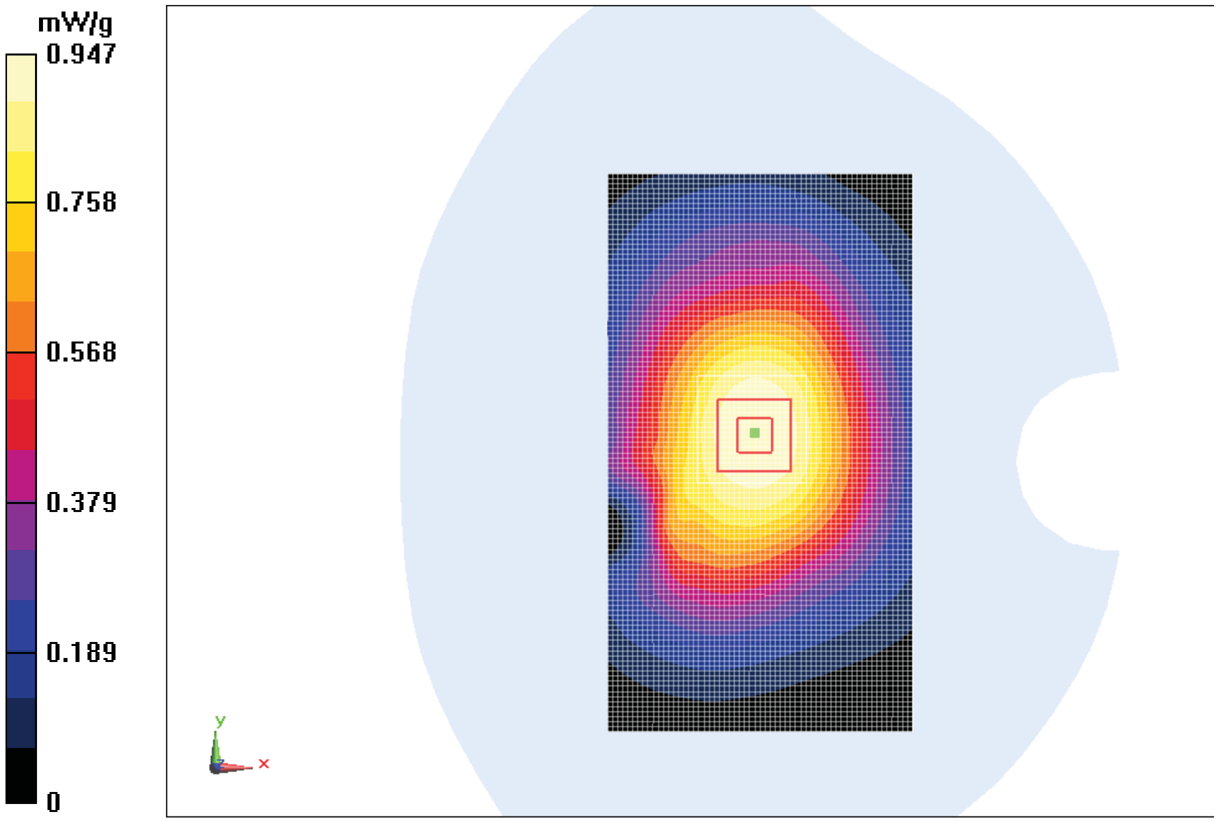


Fig. 26 850 MHz CH190

850 Body Towards Ground Low with GPRS (15mm)
Date: 2012-10-10
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used: f = 825 MHz; σ = 0.978 mho/m; εr = 55.841; ρ = 1000 kg/m^3
Ambient Temperature: 22.4°C Liquid Temperature: 21.9°C
Communication System: GSM 850 GPRS Frequency: 824.2 MHz Duty Cycle: 1:2.67
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Toward Ground Low/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.980 mW/g

Toward Ground Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 31.878 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.129 mW/g
SAR(1 g) = 0.935 mW/g; SAR(10 g) = 0.698 mW/g
Maximum value of SAR (measured) = 0.987 mW/g

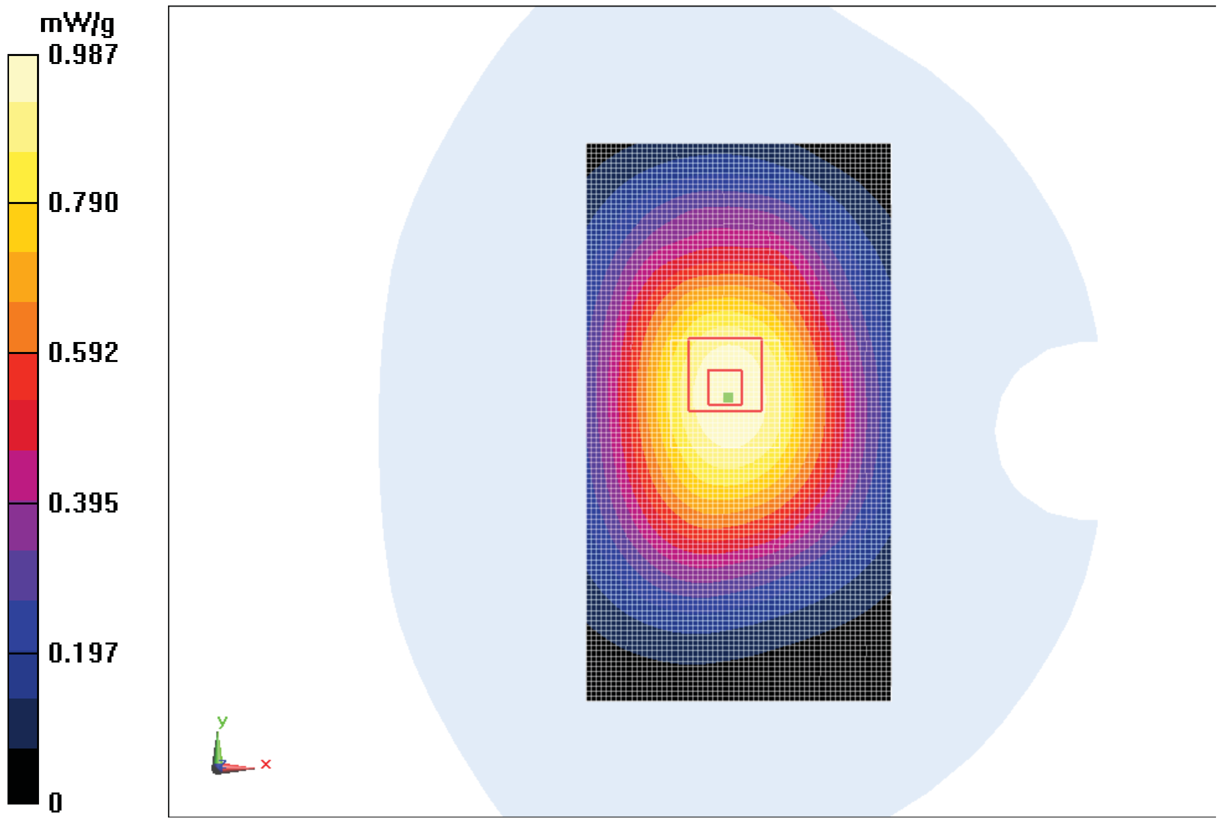


Fig. 27 850 MHz CH128

850 Body Toward Ground Middle with Headset CCA-0004018 (15mm)
Date: 2012-10-11
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.989 mho/m; εr = 55.688; ρ = 1000 kg/m^3
Ambient Temperature: 22.5^{o}C Liquid Temperature: 22.0^{o}C
Communication System: GSM 850 Frequency: 836.6 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Toward Ground Middle/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.703 mW/g

Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 25.433 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.813 mW/g
SAR(1 g) = 0.660 mW/g; SAR(10 g) = 0.504 mW/g
Maximum value of SAR (measured) = 0.691 mW/g

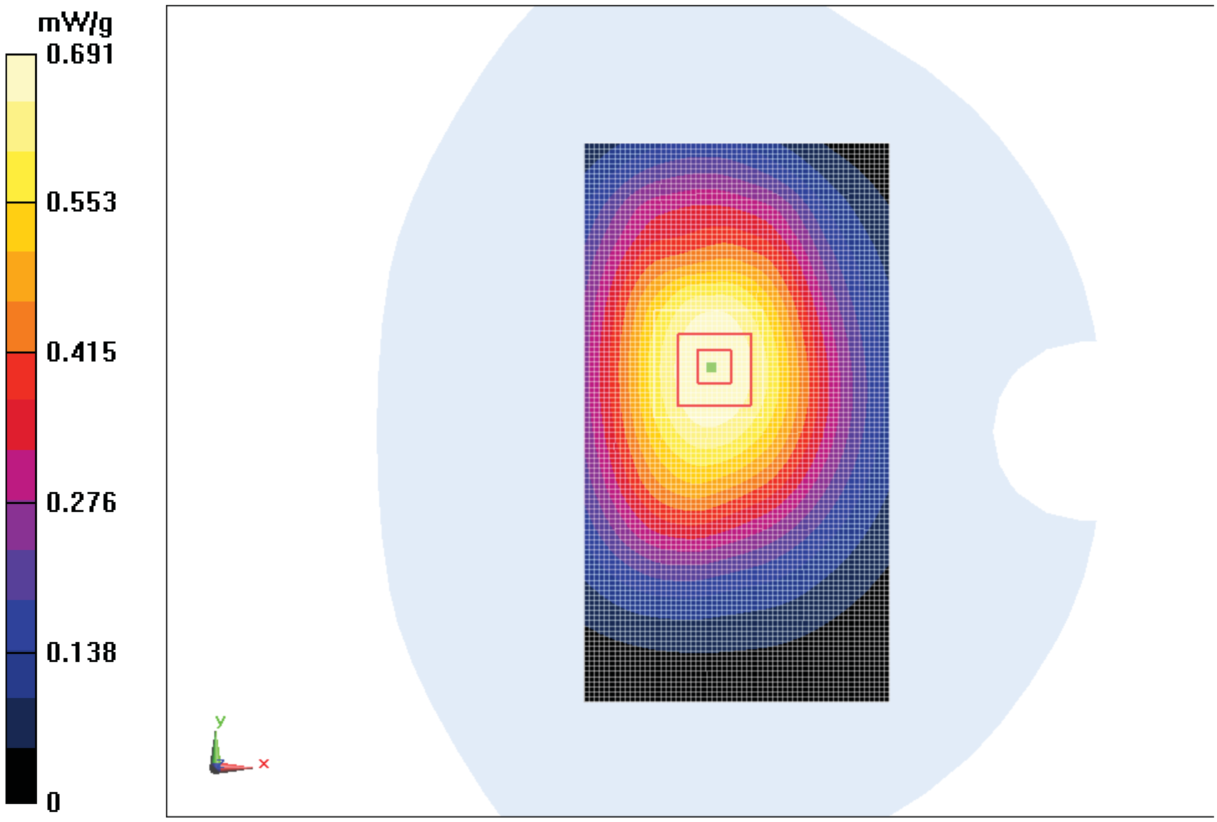


Fig. 28 850 MHz CH190