SAR TEST REPORT

No. 2012SAR00106

For

TCT Mobile Limited

UMTS Triband / GSM Quadband mobile phone

Model name: ONE TOUCH 768T

With

Hardware Version: PIO01

Software Version: swC22

IC: 9238A-0012

FCC ID: RAD287

Issued Date: 2012-10-26

***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:

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Revision Version

Report Number	Revision	Date	Memo
2012SAR00106	00	2012-09-29	Initial creation of test report
2012SAR00106	01	2012-10-26	add the description at the beginning of chapter 14 and modify the table 14.1 and 14.5

TABLE OF CONTENT

1 Test Laboratory

1.1 Testing Location

Company Name:	TMC Beijing, Telecommunication Metrology Center of MIIT
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1.2 Testing Environment

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

1.3 Project Data

Project Leader:	Qi Dianyuan
Test Engineer:	Lin Xiaojun
Testing Start Date:	September 25, 2012
Testing End Date:	September 27, 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 TCT Mobile Limited UMTS Triband / GSM Quadband mobile phone ONE TOUCH 768T are as follows (with expanded uncertainty 18.5%)

Table 2.1: Max. SAR Measured (1g)

Band	Position	SAR 1g (W/Kg)
GSM 850	Head	**0.029**
	Body	**0.026**
GSM 1900	Head	**0.275**
	Body	**0.768**
WCDMA 850 (Band V)	Head	**0.020**
	Body	**0.021**
WCDMA 1700 (Band IV)	Head	**0.747**
	Body	**0.792**
WCDMA 1900 (Band II)	Head	**0.497**
	Body	**0.832**

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 values are**: 0.832 (1g).**

3 Client Information

3.1 Applicant Information

Company Name:	TCT Mobile Limited
Address /Post:	5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China. 201203
City:	ShangHai
Postal Code:	201203
Country:	P.R.China
Contact:	Gong Zhizhou
Email:	zhizhou.gong@jrdcom.com
Telephone:	0086-21-61460890
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3.2 Manufacturer Information

Company Name:	TCT Mobile Limited
Address /Post:	5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China. 201203
City:	ShangHai
Postal Code:	201203
Country:	P.R.China
Contact:	Gong Zhizhou
Email:	zhizhou.gong@jrdcom.com
Telephone:	0086-21-61460890
Fax:	0086-21-61460602

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

4.1 About EUT

Description:	UMTS Triband / GSM Quadband mobile phone
Model name:	ONE TOUCH 768T
Operating mode(s):	GSM 850/1900, WCDMA 850/1900, BT
Tested Tx Frequency:	825 – 848.8 MHz (GSM 850)
	1850.2 – 1910 MHz (GSM 1900)
	826.4–846.6 MHz (WCDMA850 Band V)
	1712.4 – 1752.6 MHz (WCDMA 1700 Band IV)
	1852.4–1907.6 MHz (WCDMA1900 Band II)
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

4.2 Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	013303000051006 / 013303000050487	PIO01	swC22

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

Note: It is performed to test SAR with the EUT (013303000051006) and conducted power with the EUT (013303000050487).

4.3 Internal Identification of AE used during the test

AE ID*	Description	Model	SN	Manufacturer
AE1	Battery	CAB3120000C1	\	BYD
AE2	Headset	CCB3160A15C1	\	Juwei
AE3	Headset	CCB3160A15C4	\	Meihao

*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 Radio communication 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

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

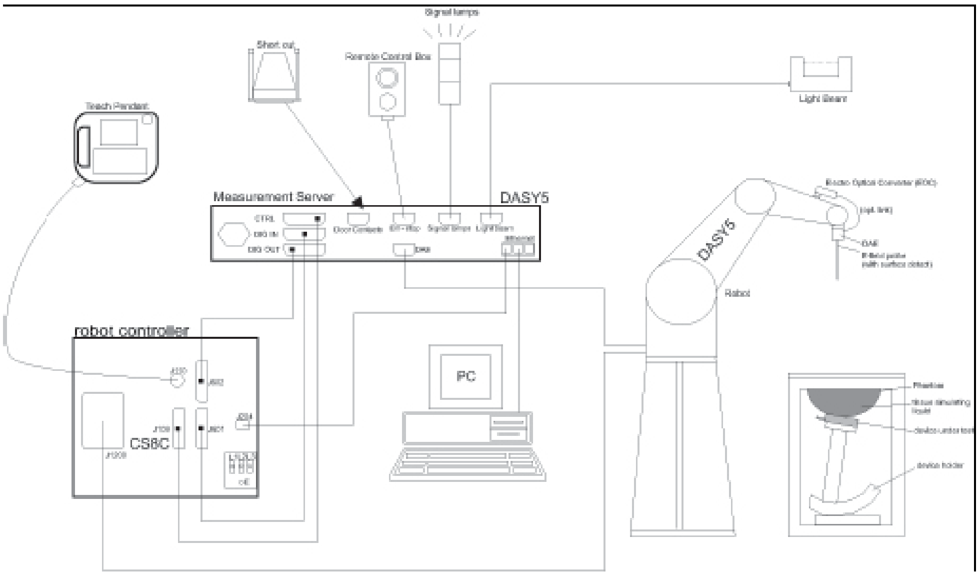
Where: σ is the conductivity of the tissue, ρ is the mass density of tissue and E is the RMS electrical field strength.

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 7.1 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 2^{nd} 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 7.2 Near-field Probe

Picture 7.3 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.

Picture7.4: 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 7.5 DASY 4

Picture 7.6 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 7.7 Server for DASY 4

Picture 7.8 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.

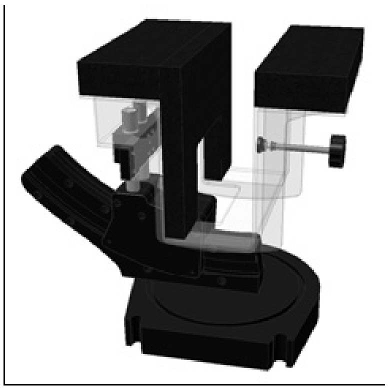
The DASY device holder is designed to cope with the different positions given in the standard. It has two scales for device rotation (with respect to the body axis) and device inclination (with respect to the line between the ear reference points). The rotation centers for both scales is the ear reference 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 7.9-1: Device Holder



Picture 7.9-2: 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).

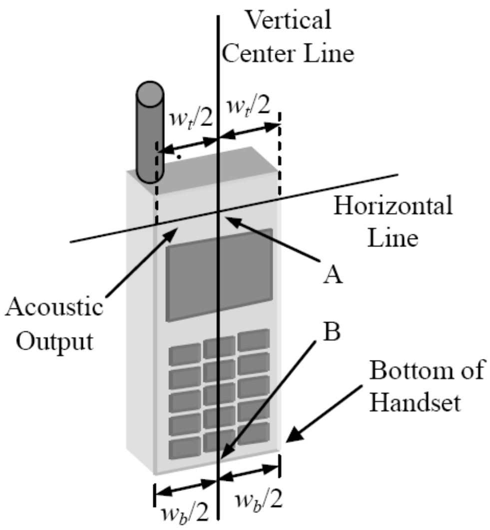
Shell Thickness: 2 ± 0. 2 mm
Filling Volume: Approx. 25 liters
Dimensions: 810 x l000 x 500 mm (H x L x W)
Available: Special

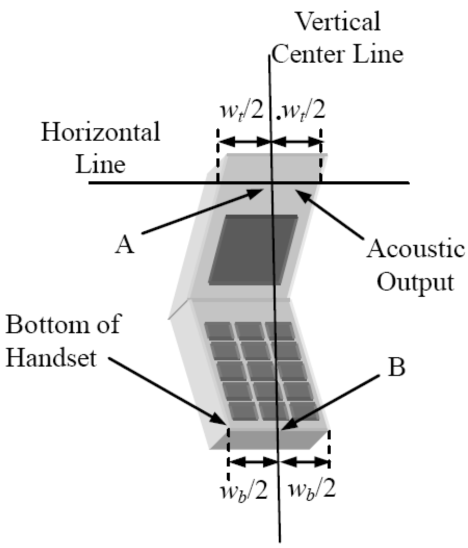
Picture 7.10: SAM Twin Phantom

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

8.1 General considerations

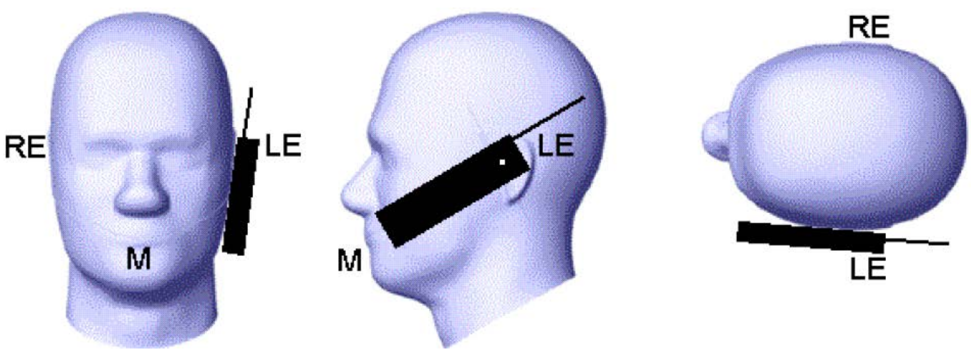
This standard specifies two handset test positions against the head phantom – the “cheek” position and the “tilt” position.



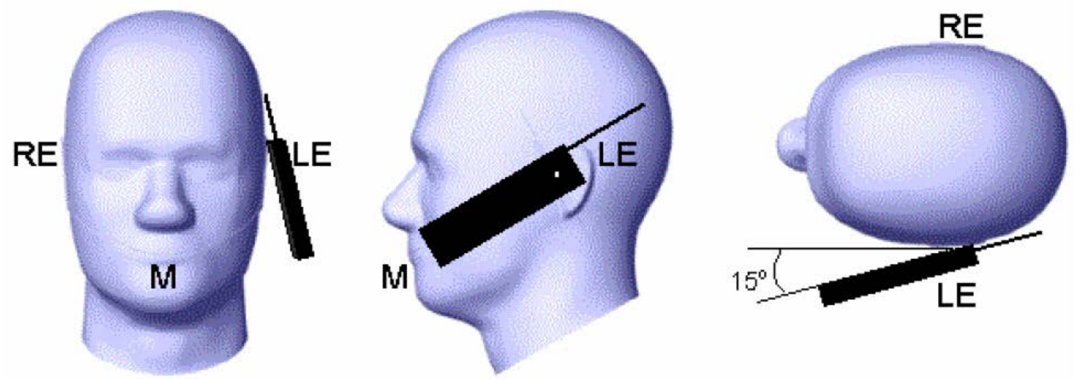


w_t	Width of the handset at the level of the acoustic
w_b	Width of the bottom of the handset
A	Midpoint of the width w_t of the handset at the level of the acoustic output
B	Midpoint of the width w_b of the bottom of the handset

Picture 8.1-a Typical “fixed” case handset **Picture 8.1-b Typical “clam-shell” case handset**



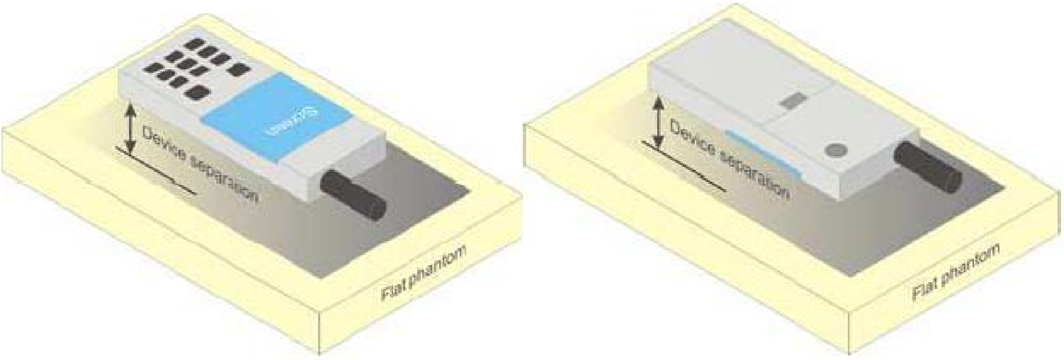
Picture 8.2 Cheek position of the wireless device on the left side of SAM



Picture 8.3 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.

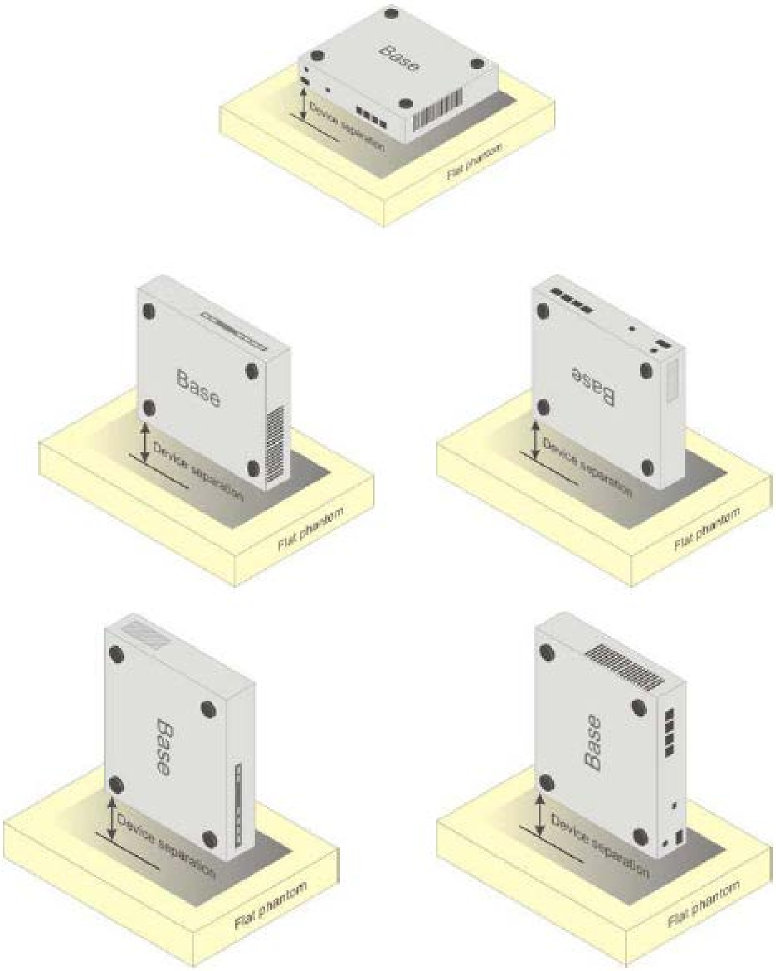


Picture 8.4 Test positions for body-worn devices

8.3 Desktop device

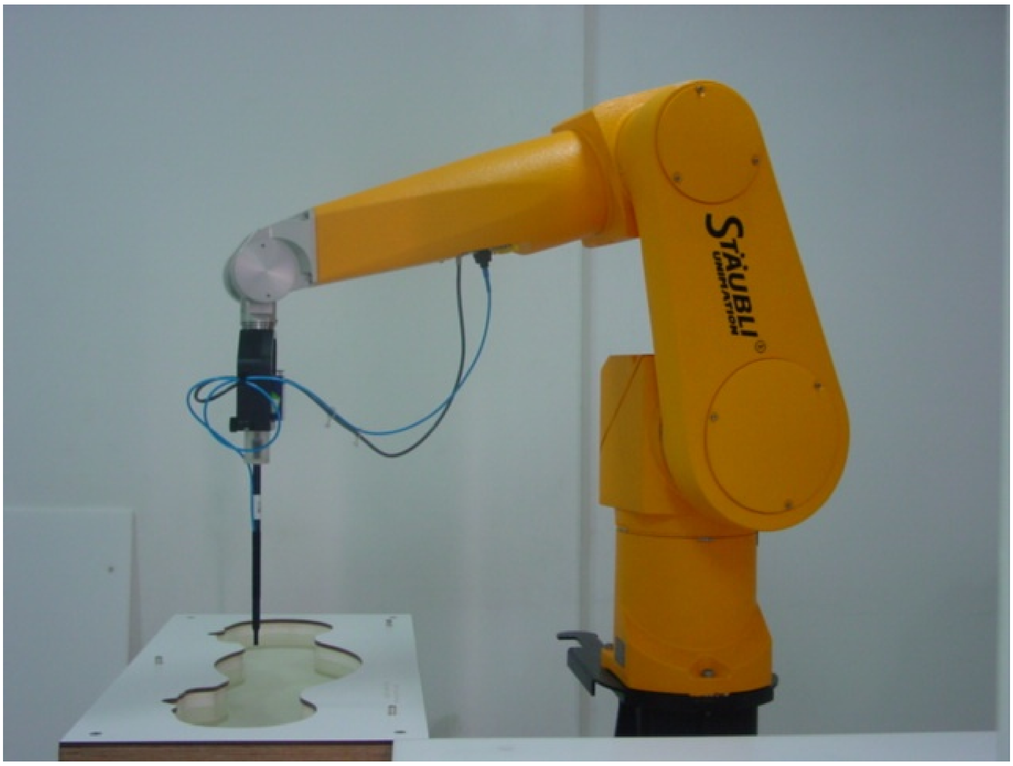
A typical example of a desktop device is a wireless enabled desktop computer placed on a table or desk when used.

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 8.5 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 8.5 Test positions for desktop devices

8.4 DUT Setup Photos



Picture 8.6

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 9.1 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	1750 Head	1750 Body	1900 Head	1900 Body
Ingredients (% by weight)						
Water	41.45	52.5	55.242	69.91	55.242	69.91
Sugar	56.0	45.0	\	\	\	\
Salt	1.45	1.4	0.306	0.13	0.306	0.13
Preventol	0.1	0.1	\	\	\	\
Cellulose	1.0	1.0	\	\	\	\
Glycol Monobutyl	\	\	44.452	29.96	44.452	29.96
Dielectric Parameters Target Value	ε=41.5 σ=0.90	ε=55.2 σ=0.97	ε=40.08 σ=1.37	ε=53.4 σ=1.49	ε=40.0 σ=1.40	ε=53.3 σ=1.52

Table 9.2: Targets for tissue simulating liquid

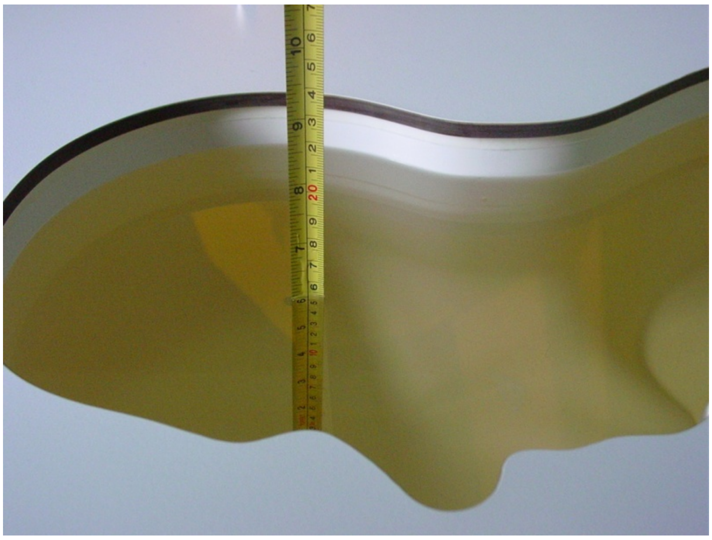
Frequency (MHz)	Liquid Type	Conductivity (σ)	± 5% Range	Permittivity (ε)	± 5% Range
835	Head	0.90	0.86～0.95	41.5	39.4～43.6
835	Body	0.97	0.92～1.02	55.2	52.4～58.0
1750	Head	1.37	1.30～1.44	40.08	38.1～42.1
1750	Body	1.49	1.42～1.56	53.4	50.7～56.1
1900	Head	1.40	1.33～1.47	40.0	38.0～42.0
1900	Body	1.52	1.44～1.60	53.3	50.6～56.0

9.2 Dielectric Performance

Table 9.3: Dielectric Performance of Tissue Simulating Liquid

Measurement Date : 835 MHz **September 26, 2012** 1750 MHz **September 25, 2012** 1900 MHz **September 27, 2012**

/	Type	Frequency	Permittivity ε	Deviation	Conductivity σ (S/m)	Deviation
Measurement value	835 Head	848.8 MHz	40.658	-2.03%	0.902	0.22%
		846.6 MHz	40.683	-1.97%	0.9	0.00%
		836.6 MHz	40.801	-1.68%	0.891	-1.00%
		836.4 MHz	40.803	-1.68%	0.891	-1.00%
		826.4 MHz	40.923	-1.39%	0.882	-2.00%
		825 MHz	40.939	-1.35%	0.881	-2.11%
	835 Body	848.8 MHz	55.543	0.62%	1.003	3.40%
		846.6 MHz	55.567	0.66%	1	3.09%
		836.6 MHz	55.688	0.88%	0.989	1.96%
		836.4 MHz	55.691	0.89%	0.989	1.96%
		826.4 MHz	55.822	1.13%	0.98	1.03%
		825 MHz	55.841	1.16%	0.978	0.82%
	1750 Head	1752.6 MHz	39.652	-1.07%	1.396	1.90%
		1732.4 MHz	39.771	-0.77%	1.381	0.80%
		1712.4 MHz	39.795	-0.71%	1.355	-1.09%
	1750 Body	1752.6 MHz	53.964	1.06%	1.527	2.48%
		1732.4 MHz	54.038	1.19%	1.509	1.28%
		1712.4 MHz	54.103	1.32%	1.493	0.20%
	1900 Head	1910 MHz	39.202	-2.00%	1.423	1.64%
		1907.6 MHz	39.212	-1.97%	1.421	1.50%
		1880 MHz	39.357	-1.61%	1.395	-0.36%
		1852.4 MHz	39.48	-1.30%	1.37	-2.14%
		1850.2 MHz	39.486	-1.29%	1.368	-2.29%
	1900 Body	1910 MHz	54.36	1.99%	1.553	2.17%
		1907.6 MHz	54.375	2.02%	1.551	2.04%
		1880 MHz	54.487	2.23%	1.526	0.39%
		1852.4 MHz	54.606	2.45%	1.497	-1.51%
		1850.2 MHz	54.613	2.46%	1.494	-1.71%



Picture 9.1: Liquid depth in the Phantom (850 MHz)

Picture 9.2 Liquid depth in the Flat Phantom (1750MHz)

Picture 9.3 Liquid depth in the Flat Phantom (1900MHz)

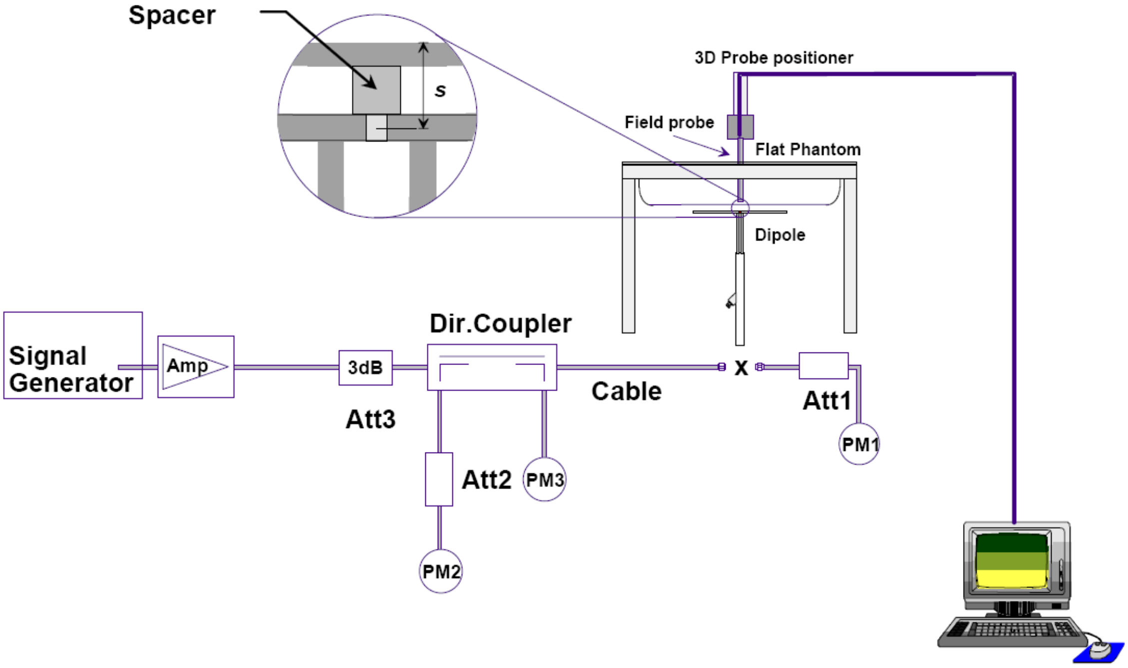
10 System Validation

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.

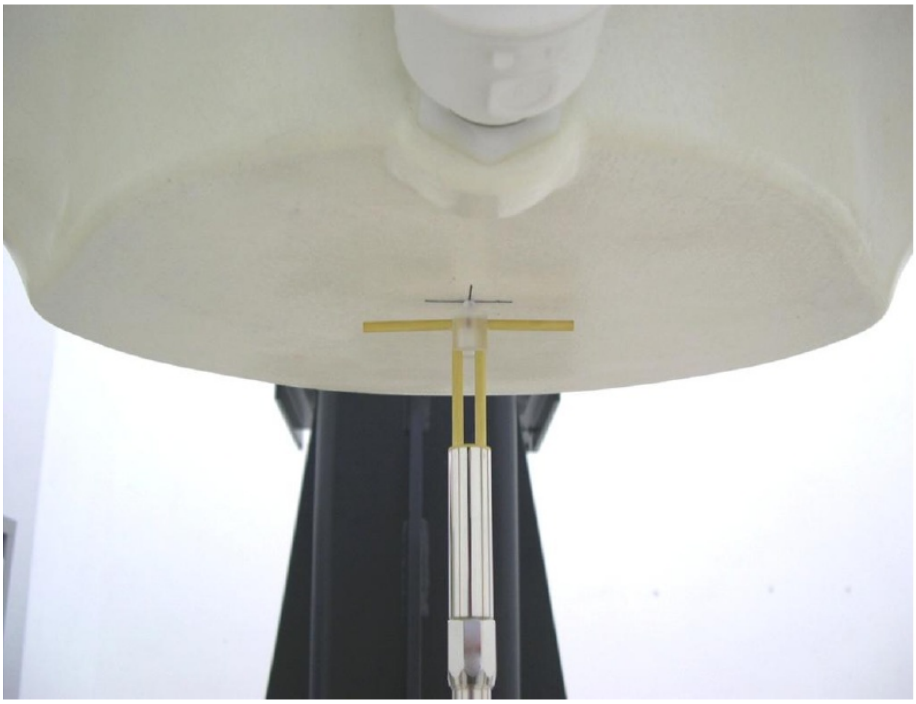
10.2 System Setup

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 10.1 System Setup for System Evaluation

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



Picture 10.2 Photo of Dipole Setup

Table 10.1: System Validation of Head

Measurement Date : 835 MHz **September 26, 2012** 1750 MHz **September 25, 2012** 1900 MHz **September 27, 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	6.16	9.56	1.48%	2.80%
	1750 MHz	19.3	36.2	19.64	36.60	1.76%	1.10%
	1900 MHz	20.6	39.1	20.04	38.36	-2.72%	-1.89%

Table 10.2: System Validation of Body

Measurement Date : 835 MHz **September 26, 2012** 1750 MHz **September 25, 2012** 1900 MHz **September 27, 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	6.20	9.36	6.28	9.52	1.29%	1.71%
	1750 MHz	20.1	37.4	19.72	35.96	-1.89%	-3.85%
	1900 MHz	21.3	39.9	21.60	40.80	1.41%	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 11.1.

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),

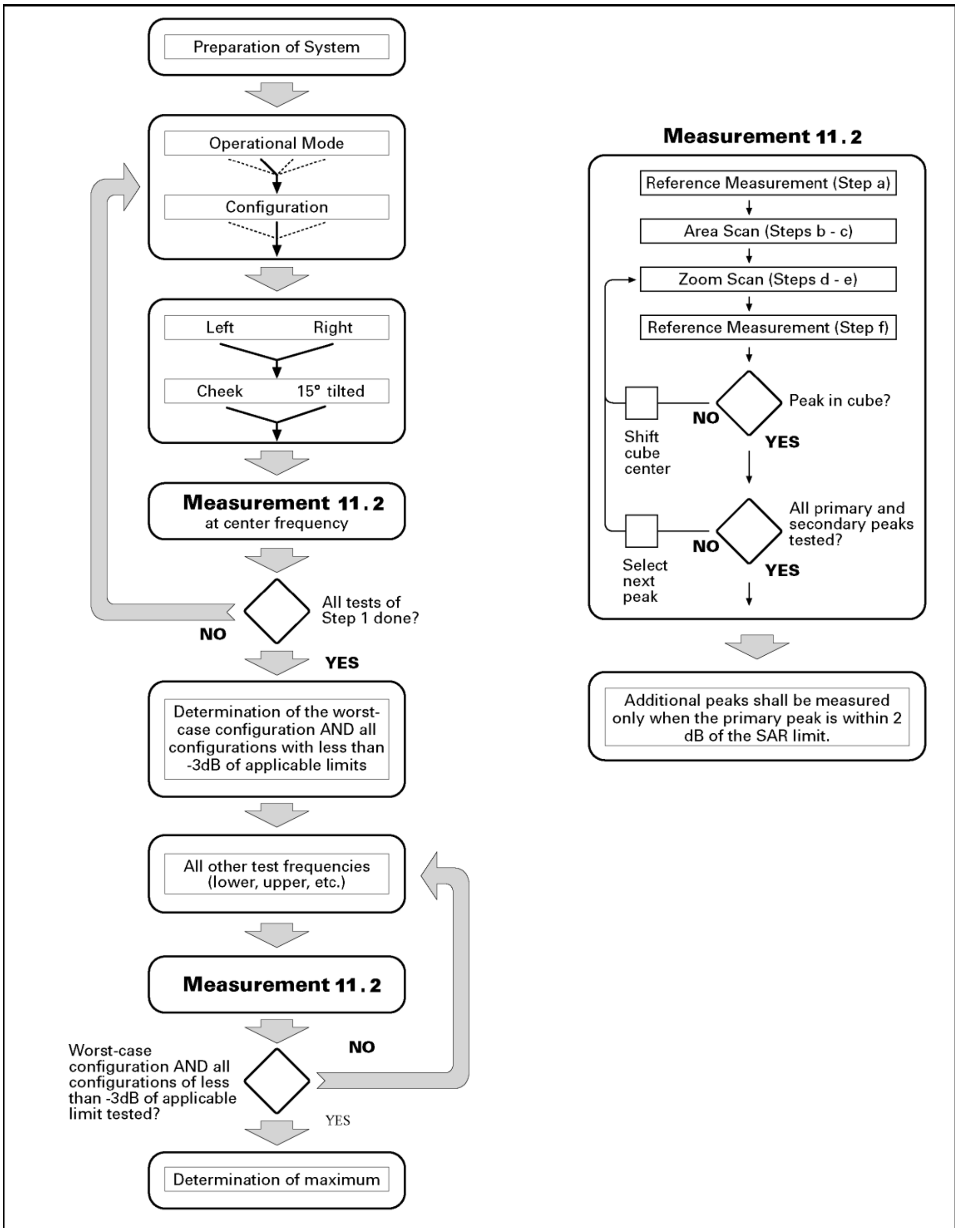
b) all configurations for each device position in a), e.g., antenna extended and retracted, and

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. 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 11.1 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 11.1) 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 In(2)/2 mm for frequencies of 3 GHz and greater, where δ is the plane wave skin depth and In(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 In(2)/2 mm for frequencies of 3 GHz and greater, where δ is the plane wave skin depth and In(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 WCDMA Measurement Procedures for SAR

The following procedures are applicable to WCDMA handsets operating under 3GPP Release99, Release 5 and Release 6. The default test configuration is to measure SAR with an established radio link between the DUT and a communication test set using a 12.2kbps RMC (reference measurement channel) configured in Test Loop Mode 1. SAR is selectively confirmed for other physical channel configurations (DPCCH & $DPDCH_n$), HSDPA and HSPA (HSUPA/HSDPA) modes according to output power, exposure conditions and device operating capabilities. Both uplink and downlink should be configured with the same RMC or AMR, when required. SAR for Release 5

HSDPA and Release 6 HSPA are measured using the applicable FRC (fixed reference channel) and E-DCH reference channel configurations. Maximum output power is verified according to applicable versions of 3GPP TS 34.121 and SAR must be measured according to these maximum output conditions. When Maximum Power Reduction (MPR) is not implemented according to Cubic Metric (CM) requirements for Release 6 HSPA, the following procedures do not apply.

For Release 5 HSDPA Data Devices:

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs}	CM/dB
1	2/15	15/15	64	2/15	4/15	0.0
2	12/15	15/15	64	12/15	24/25	1.0
3	15/15	8/15	64	15/8	30/15	1.5
4	15/15	4/15	64	15/4	30/15	1.5

For Release 6 HSDPA Data Devices

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs}	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (codes)	CM (dB)	MPR (dB)	AG Index	E-TFCI
1	11/15	15/15	64	11/15	22/15	209/225	1039/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	12/15	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1}:47/15 β_{ed2}:47/15	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	4/15	56/75	4	1	3.0	2.0	17	71
5	15/15	15/15	64	15/15	24/15	30/15	134/15	4	1	1.0	0.0	21	81

11.4 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 14.1 to Table 14.10 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 (8960) 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)
	32.63	32.55	32.50
GSM 1900MHZ	Conducted Power (dBm)		
	Channel 810(1909.8MHz)	Channel 661(1880MHz)	Channel 512(1850.2MHz)
	29.69	29.48	29.59

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	32.63	32.54	32.50	-9.03dB	23.60	23.51	23.47
2 Txslots	31.01	30.92	30.87	-6.02dB	**24.99**	**24.90**	**24.85**
3Txslots	28.92	28.81	28.76	-4.26dB	24.66	24.55	24.50
4 Txslots	27.54	27.44	27.36	-3.01dB	24.53	24.43	24.35
GSM 850 EGPRS	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	251	**190**	**128**		**251**	**190**	**128**
1 Txslot	32.60	32.55	32.48	-9.03dB	23.57	23.52	23.45
2 Txslots	30.98	30.93	30.85	-6.02dB	**24.96**	**24.91**	**24.83**
3Txslots	28.89	28.82	28.75	-4.26dB	24.63	24.56	24.49
4 Txslots	27.52	27.44	27.37	-3.01dB	24.51	24.43	24.36
PCS1900 GPRS	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	810	**661**	**512**		**810**	**661**	**512**
1 Txslot	29.75	29.50	29.61	-9.03dB	20.72	20.47	20.58
2 Txslots	28.73	28.43	28.54	-6.02dB	22.71	22.41	22.52
3Txslots	26.79	26.47	26.59	-4.26dB	22.53	22.21	22.33
4 Txslots	26.01	25.70	25.83	-3.01dB	**23.00**	**22.69**	**22.82**
PCS1900 EGPRS	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	810	**661**	**512**		**810**	**661**	**512**
1 Txslot	29.72	29.48	29.59	-9.03dB	20.69	20.45	20.56
2 Txslots	28.72	28.40	28.53	-6.02dB	22.70	22.38	22.51
3Txslots	26.78	26.45	26.59	-4.26dB	22.52	22.19	22.33
4 Txslots	26.00	25.68	25.82	-3.01dB	**22.99**	**22.67**	**22.81**

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

According to the conducted power as above, the body measurements are performed with 2Txslots for GSM850 and 4Txslots for GSM1900.

12.2 WCDMA Measurement result

Table 12.3: The conducted Power for WCDMA850/1700/1900

Item	band	FDDV result		
	ARFCN	4233 (846.6MHz)	4182 (836.4MHz)	4132 (826.4MHz)
WCDMA	\	21.19	21.17	21.18
HSUPA	1	18.06	17.96	18.36
	2	17.06	16.93	17.35
	3	17.80	17.80	17.86
	4	18.06	17.93	18.38
	5	20.30	20.30	20.33
Item	band	FDDIV result		
	ARFCN	1513 (1752.6MHz)	1412 (1732.4MHz)	1312 (1712.4MHz)
WCDMA	\	22.18	22.25	22.26
HSUPA	1	19.15	19.15	19.33
	2	18.18	18.15	18.34
	3	18.67	18.65	18.83
	4	19.19	19.17	19.37
	5	21.21	21.15	21.34
Item	band	FDDII result		
	ARFCN	9538 (1907.6MHz)	9400 (1880MHz)	9262 (1852.4MHz)
WCDMA	\	23.13	23.03	23.28
HSUPA	1	19.2	19.0	19.0
	2	18.2	18.0	18.1
	3	18.7	18.5	18.6
	4	19.2	19.0	19.1
	5	21.1	21.0	21.1

Note: HSUPA body SAR are not required, because maximum average output power of each RF channel with HSUPA active is not 1/4 dB higher than that measured without HSUPA and the maximum SAR for WCDMA850 and WCDMA1900 are not above 75% of the SAR limit.

12.3 BT Measurement result

The output power of BT antenna is as following:

Channel	Ch 0 2402 MHz	Ch 39 2441 Mhz	Ch 78 2480 MHz
Peak Conducted Output Power (dBm)	4.57	4.83	7.04

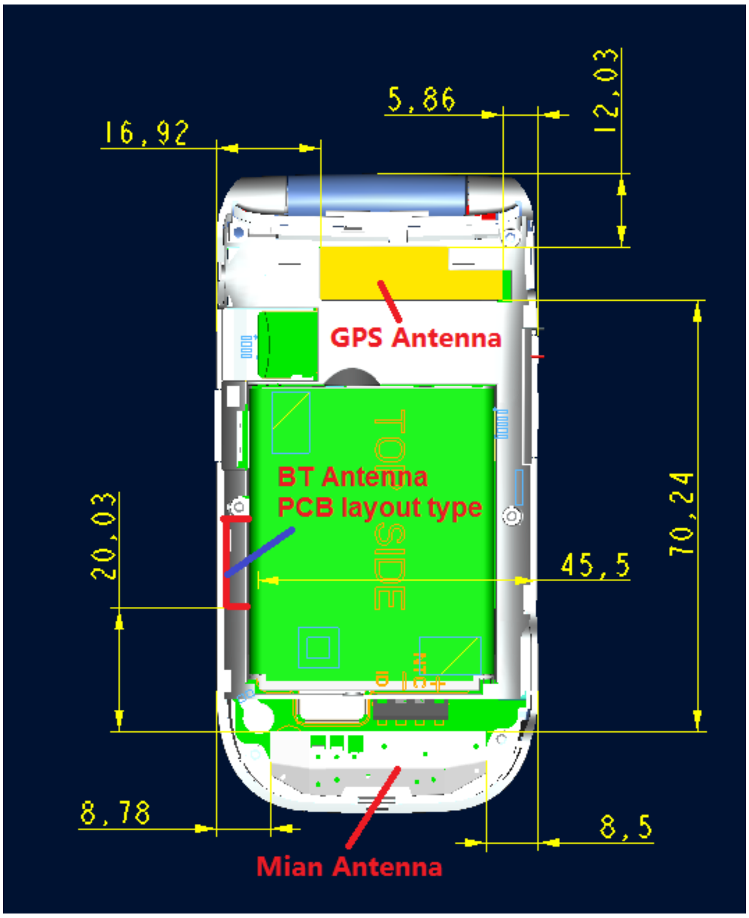
13 Simultaneous TX SAR Considerations

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 can transmit simultaneous with other transmitters.

13.2 Transmit Antenna Separation Distances

The distance between BT antenna and RF antenna is ＜2.5cm. The location of the antennas inside mobile phone is shown below:



Picture 13.1 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)
Bluetooth	2.441	24.6	5.06

According to the KDB648474 D01 (see table 13.2), we can draw the conclusion that: stand-alone SAR and simultaneous transmission SAR for Bluetooth should not be performed.

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><u>Routine evaluation required</u></td><td rowspan="2">SAR not required:
<u>Unlicensed only</u>
○ when stand-alone 1-g SAR is not required and antenna is $\geq$ 5 cm from other antennas
<u>Licensed & Unlicensed</u>
○ 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:
<u>Licensed & Unlicensed</u>
antenna pairs with SAR to peak location separation ratio $\geq$ 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 $\leq$ 60/f: SAR not required
○ output $>$ 60/f: stand-alone SAR required
When there is simultaneous transmission –
<u>Stand-alone SAR not required when</u>
○ output $\leq 2 \cdot P_{Ref}$ and antenna is $\geq$ 5.0 cm from other antennas
○ output $\leq P_{Ref}$ and antenna is $\geq$ 2.5 cm from other antennas
○ output $\leq P_{Ref}$ and antenna is $<$ 2.5 cm from other antennas, each with either output power $\leq P_{Ref}$ or 1-g SAR $<$ 1.2 W/kg
<u>Otherwise stand-alone SAR is required</u>
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

14.1 SAR Test Result

According to the client request, it is still tested in GSM850 and WCDMA850 even though the phone is abnormal for those bands. The table 14.1 and 14.5 are filled with real situation after postprocessor used by SEMCAD, but actually, the SAR value and power drift is not available for table 14.1 and 14.5. It is marked “N/A” in table 14.1 and 14.5 for some positions that the SAR value is so low that the test system can’t get it.

Table 14.1: SAR Values (GSM 850 MHz Band - Head)

Frequency		Mode/Band	Side	Test Position	EUT State	SAR(10g)	SAR(1g)	Power
MHz	Ch.					(W/kg)	(W/kg)	Drift(dB)
848.8	251	Speech	Left	Touch	Unfolded	N/A	N/A	2.89
836.6	190	Speech	Left	Touch	Unfolded	N/A	N/A	2.88
824.2	128	Speech	Left	Touch	Unfolded	N/A	N/A	1.63
848.8	251	Speech	Left	Tilt	Unfolded	N/A	N/A	0.94
836.6	190	Speech	Left	Tilt	Unfolded	N/A	0.00235	1.55
824.2	128	Speech	Left	Tilt	Unfolded	N/A	N/A	1.13
848.8	251	Speech	Right	Touch	Unfolded	0.013	0.029	1.72
836.6	190	Speech	Right	Touch	Unfolded	0.012	0.025	3.16
824.2	128	Speech	Right	Touch	Unfolded	0.010	0.022	4.41
848.8	251	Speech	Right	Tilt	Unfolded	N/A	N/A	-0.33
836.6	190	Speech	Right	Tilt	Unfolded	0.000589	0.000841	0.85
824.2	128	Speech	Right	Tilt	Unfolded	0.000456	0.000638	0.79

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

Frequency		Mode/	Headset	Test	Spacing	EUT	SAR(10g)	SAR(1g)	Power
MHz	Ch.	Band		Position	(mm)	State	(W/kg)	(W/kg)	Drift(dB)
848.8	251	GPRS	\	Ground	15	Unfolded	0.015	0.021	0.19
836.6	190	GPRS	\	Ground	15	Unfolded	0.015	0.020	0.08
824.2	128	GPRS	\	Ground	15	Unfolded	0.014	0.019	-0.13
848.8	251	GPRS	\	Ground	15	Folded	0.018	0.026	-0.11
836.6	190	GPRS	\	Ground	15	Folded	0.017	0.024	0.08
824.2	128	GPRS	\	Ground	15	Folded	0.016	0.022	0.08
848.8	251	GPRS	\	Phantom	15	Folded	0.010	0.014	0.07
836.6	190	GPRS	\	Phantom	15	Folded	0.00956	0.013	0.04
824.2	128	GPRS	\	Phantom	15	Folded	0.00865	0.012	-0.03
848.8	251	EGPRS	\	Ground	15	Folded	0.018	0.026	0.03
848.8	251	Speech	CCB3160A15C1	Ground	15	Folded	0.00969	0.014	-0.10
848.8	251	Speech	CCB3160A15C4	Ground	15	Folded	0.013	0.018	-0.04

Table 14.3: SAR Values (GSM 1900 MHz Band - Head)

Frequency		Mode/Band	Side	Test Position	EUT State	SAR(10g)	SAR(1g)	Power
MHz	Ch.					(W/kg)	(W/kg)	Drift(dB)
1909.8	810	Speech	Left	Touch	Unfolded	0.134	0.243	0.14
1880	661	Speech	Left	Touch	Unfolded	0.143	0.258	0.11
1850.2	512	Speech	Left	Touch	Unfolded	0.154	0.275	-0.06
1909.8	810	Speech	Left	Tilt	Unfolded	0.066	0.101	0.01
1880	661	Speech	Left	Tilt	Unfolded	0.071	0.108	0.08
1850.2	512	Speech	Left	Tilt	Unfolded	0.081	0.124	0.12
1909.8	810	Speech	Right	Touch	Unfolded	0.101	0.169	-0.14
1880	661	Speech	Right	Touch	Unfolded	0.108	0.180	-0.05
1850.2	512	Speech	Right	Touch	Unfolded	0.111	0.185	0.12
1909.8	810	Speech	Right	Tilt	Unfolded	0.078	0.123	-0.09
1880	661	Speech	Right	Tilt	Unfolded	0.080	0.125	-0.03
1850.2	512	Speech	Right	Tilt	Unfolded	0.085	0.130	0.02

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

Frequency		Mode/	Headset	Test	Spacing	EUT	SAR(10g)	SAR(1g)	Power
MHz	Ch.	Band		Position	(mm)	State	(W/kg)	(W/kg)	Drift(dB)
1909.8	810	GPRS	\	Ground	15	Unfolded	0.371	0.623	-0.16
1880	661	GPRS	\	Ground	15	Unfolded	0.333	0.550	0.02
1850.2	512	GPRS	\	Ground	15	Unfolded	0.318	0.516	0.03
1909.8	810	GPRS	\	Ground	15	Folded	0.466	0.768	-0.04
1880	661	GPRS	\	Ground	15	Folded	0.437	0.720	-0.02
1850.2	512	GPRS	\	Ground	15	Folded	0.439	0.719	-0.02
1909.8	810	GPRS	\	Phantom	15	Folded	0.241	0.388	0.01
1880	661	GPRS	\	Phantom	15	Folded	0.212	0.342	0.01
1850.2	512	GPRS	\	Phantom	15	Folded	0.199	0.320	-0.06
1909.8	810	EGPRS	\	Ground	15	Folded	0.457	0.748	-0.08
1909.8	810	Speech	CCB3160A15C1	Ground	15	Folded	0.288	0.471	0.06
1909.8	810	Speech	CCB3160A15C4	Ground	15	Folded	0.289	0.473	-0.04

Table 14.5: SAR Values (WCDMA 850 MHz Band - Head)

Frequency		Side	Test Position	EUT State	SAR(10g)	SAR(1g)	Power
MHz	Ch.				(W/kg)	(W/kg)	Drift(dB)
846.6	4233	Left	Touch	Unfolded	N/A	N/A	-4.45
836.4	4182	Left	Touch	Unfolded	N/A	N/A	2.31
826.4	4132	Left	Touch	Unfolded	N/A	N/A	1.26
846.6	4233	Left	Tilt	Unfolded	N/A	N/A	2.44
836.4	4182	Left	Tilt	Unfolded	0.00116	0.00146	0.38
826.4	4132	Left	Tilt	Unfolded	N/A	0.000688	-1.16
846.6	4233	Right	Touch	Unfolded	0.00978	0.020	-1.79
836.4	4182	Right	Touch	Unfolded	0.00931	0.019	2.59
826.4	4132	Right	Touch	Unfolded	0.00824	0.017	-1.38
846.6	4233	Right	Tilt	Unfolded	0.0012	0.00191	1.65
836.4	4182	Right	Tilt	Unfolded	0.000815	0.00125	-0.56
826.4	4132	Right	Tilt	Unfolded	0.000639	0.00104	-2.70

Table 14.6: SAR Values (WCDMA 850 MHz Band - Body)

Frequency		Mode/ Band	Headset	Test Position	Spacing (mm)	EUT State	SAR(10g)	SAR(1g)	Power
MHz	Ch.						(W/kg)	(W/kg)	Drift(dB)
846.6	4233	GPRS	\	Ground	15	Unfolded	0.010	0.015	-0.11
836.4	4182	GPRS	\	Ground	15	Unfolded	0.00955	0.014	0.15
826.4	4132	GPRS	\	Ground	15	Unfolded	0.00925	0.014	0.14
846.6	4233	GPRS	\	Ground	15	Folded	0.015	0.021	-0.04
836.4	4182	GPRS	\	Ground	15	Folded	0.015	0.021	-0.02
826.4	4132	GPRS	\	Ground	15	Folded	0.015	0.021	-0.12
846.6	4233	GPRS	\	Phantom	15	Folded	0.00842	0.012	-0.04
836.4	4182	GPRS	\	Phantom	15	Folded	0.0083	0.011	0.04
826.4	4132	GPRS	\	Phantom	15	Folded	0.00795	0.011	-0.09
846.6	4233	Speech	CCB3160A15C1	Ground	15	Folded	0.015	0.021	0.17
846.6	4233	Speech	CCB3160A15C4	Ground	15	Folded	0.014	0.019	0.11

Table 14.7: SAR Values (WCDMA 1700 MHz Band - Head)

Frequency		Side	Test Position	EUT State	SAR(10g)	SAR(1g)	Power
MHz	Ch.				(W/kg)	(W/kg)	Drift(dB)
1752.6	1513	Left	Touch	Unfolded	0.433	0.747	-0.14
1732.4	1412	Left	Touch	Unfolded	0.434	0.735	0.17
1712.4	1312	Left	Touch	Unfolded	0.415	0.689	-0.10
1752.6	1513	Left	Tilt	Unfolded	0.353	0.554	0.05
1732.4	1412	Left	Tilt	Unfolded	0.341	0.533	-0.15
1712.4	1312	Left	Tilt	Unfolded	0.342	0.536	0.15
1752.6	1513	Right	Touch	Unfolded	0.314	0.486	-0.10
1732.4	1412	Right	Touch	Unfolded	0.310	0.472	0.08
1712.4	1312	Right	Touch	Unfolded	0.300	0.459	-0.11
1752.6	1513	Right	Tilt	Unfolded	0.358	0.584	0.04
1732.4	1412	Right	Tilt	Unfolded	0.354	0.569	-0.00
1712.4	1312	Right	Tilt	Unfolded	0.382	0.606	-0.02

Table 14.8: SAR Values (WCDMA 1700 MHz Band - Body)

Frequency		Mode/	Headset	Test	Spacing	EUT	SAR(10g)	SAR(1g)	Power
MHz	Ch.	Band		Position	(mm)	State	(W/kg)	(W/kg)	Drift(dB)
1752.6	1513	GPRS	\	Ground	15	Unfolded	0.491	0.764	-0.02
1732.4	1412	GPRS	\	Ground	15	Unfolded	0.480	0.747	0.03
1712.4	1312	GPRS	\	Ground	15	Unfolded	0.439	0.684	-0.10
1752.6	1513	GPRS	\	Ground	15	Folded	0.470	0.792	0.00
1732.4	1412	GPRS	\	Ground	15	Folded	0.423	0.715	0.03
1712.4	1312	GPRS	\	Ground	15	Folded	0.382	0.641	-0.02
1752.6	1513	GPRS	\	Phantom	15	Folded	0.414	0.695	-0.00
1732.4	1412	GPRS	\	Phantom	15	Folded	0.387	0.649	0.02
1712.4	1312	GPRS	\	Phantom	15	Folded	0.328	0.545	0.16
1752.6	1513	Speech	CCB3160A15C1	Ground	15	Folded	0.446	0.745	0.05
1752.6	1513	Speech	CCB3160A15C4	Ground	15	Folded	0.467	0.789	0.06

Table 14.9: SAR Values (WCDMA 1900 MHz Band - Head)

Frequency		Side	Test Position	EUT State	SAR(10g)	SAR(1g)	Power
MHz	Ch.				(W/kg)	(W/kg)	Drift(dB)
1907.6	9538	Left	Touch	Unfolded	0.232	0.422	-0.06
1880	9400	Left	Touch	Unfolded	0.269	0.485	-0.02
1852.4	9262	Left	Touch	Unfolded	0.279	0.497	0.11
1907.6	9538	Left	Tilt	Unfolded	0.124	0.187	-0.09
1880	9400	Left	Tilt	Unfolded	0.157	0.238	0.01
1852.4	9262	Left	Tilt	Unfolded	0.165	0.251	-0.17
1907.6	9538	Right	Touch	Unfolded	0.166	0.280	-0.17
1880	9400	Right	Touch	Unfolded	0.189	0.318	0.06
1852.4	9262	Right	Touch	Unfolded	0.209	0.350	0.02
1907.6	9538	Right	Tilt	Unfolded	0.166	0.265	0.03
1880	9400	Right	Tilt	Unfolded	0.181	0.286	0.06
1852.4	9262	Right	Tilt	Unfolded	0.204	0.317	0.07

Table 14.10: SAR Values (WCDMA 1900 MHz Band - Body)

Frequency		Mode/	Headset	Test	Spacing	EUT	SAR(10g)	SAR(1g)	Power
MHz	Ch.	Band		Position	(mm)	State	(W/kg)	(W/kg)	Drift(dB)
1907.6	9538	GPRS	\	Ground	15	Unfolded	0.452	0.762	0.03
1880	9400	GPRS	\	Ground	15	Unfolded	0.465	0.786	0.00
1852.4	9262	GPRS	\	Ground	15	Unfolded	0.409	0.676	0.01
1907.6	9538	GPRS	\	Ground	15	Folded	0.484	0.790	-0.07
1880	9400	GPRS	\	Ground	15	Folded	0.510	0.832	0.07
1852.4	9262	GPRS	\	Ground	15	Folded	0.501	0.816	0.02
1907.6	9538	GPRS	\	Phantom	15	Folded	0.268	0.428	0.02
1880	9400	GPRS	\	Phantom	15	Folded	0.263	0.418	0.00
1852.4	9262	GPRS	\	Phantom	15	Folded	0.253	0.401	-0.00
1880	9400	Speech	CCB3160A15C1	Ground	15	Folded	0.503	0.816	0.02
1880	9400	Speech	CCB3160A15C4	Ground	15	Folded	0.492	0.798	0.05

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	∞
No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
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	100542		
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 D1750V2	1003	May 08, 2012	One year
11	Dipole Validation Kit	SPEAG D1900V2	541	May 09, 2012	One year

END OF REPORT BODY

ANNEX A GRAPH RESULTS

850 Left Cheek High

Date: 2012-9-26
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.902 mho/m; εr = 40.658; ρ = 1000 kg/m^3
Ambient Temperature: 22.7^{o}C Liquid Temperature: 22.2^{o}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 (61x141x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0122 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0 V/m; Power Drift = 2.89dB
Peak SAR (extrapolated) = 0.017 mW/g
SAR(1 g) = N/A ; SAR(10 g) = N/A
Maximum value of SAR (measured) = 0.0108 mW/g

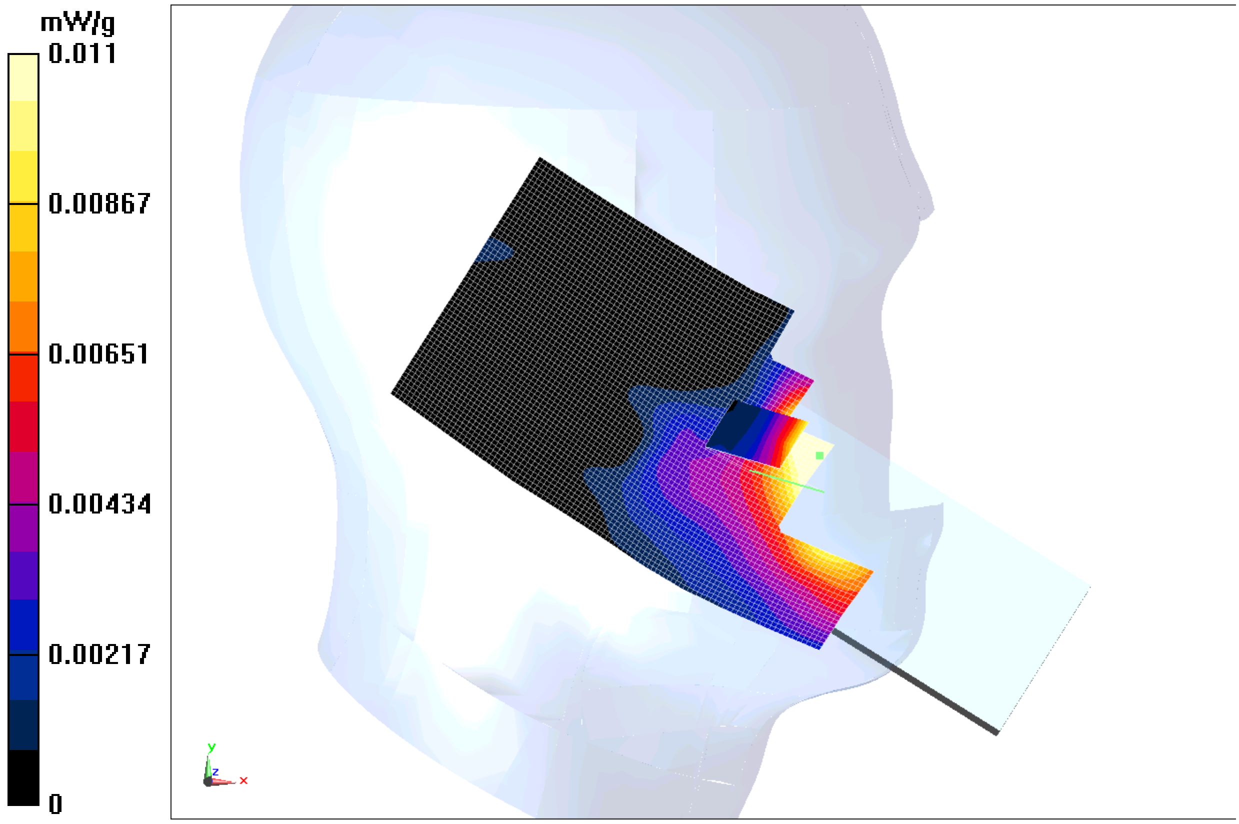


Fig. 1 850MHz CH251

850 Left Cheek Middle

Date: 2012-9-26
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.891 mho/m; εr = 40.801; ρ = 1000 kg/m^3
Ambient Temperature: 22.7^{o}C Liquid Temperature: 22.2^{o}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 (61x141x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.00969 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.475 V/m; Power Drift = 2.88 dB
Peak SAR (extrapolated) = 0.014 mW/g
SAR(1 g) = N/A ; SAR(10 g) = N/A
Maximum value of SAR (measured) = 0.0102 mW/g

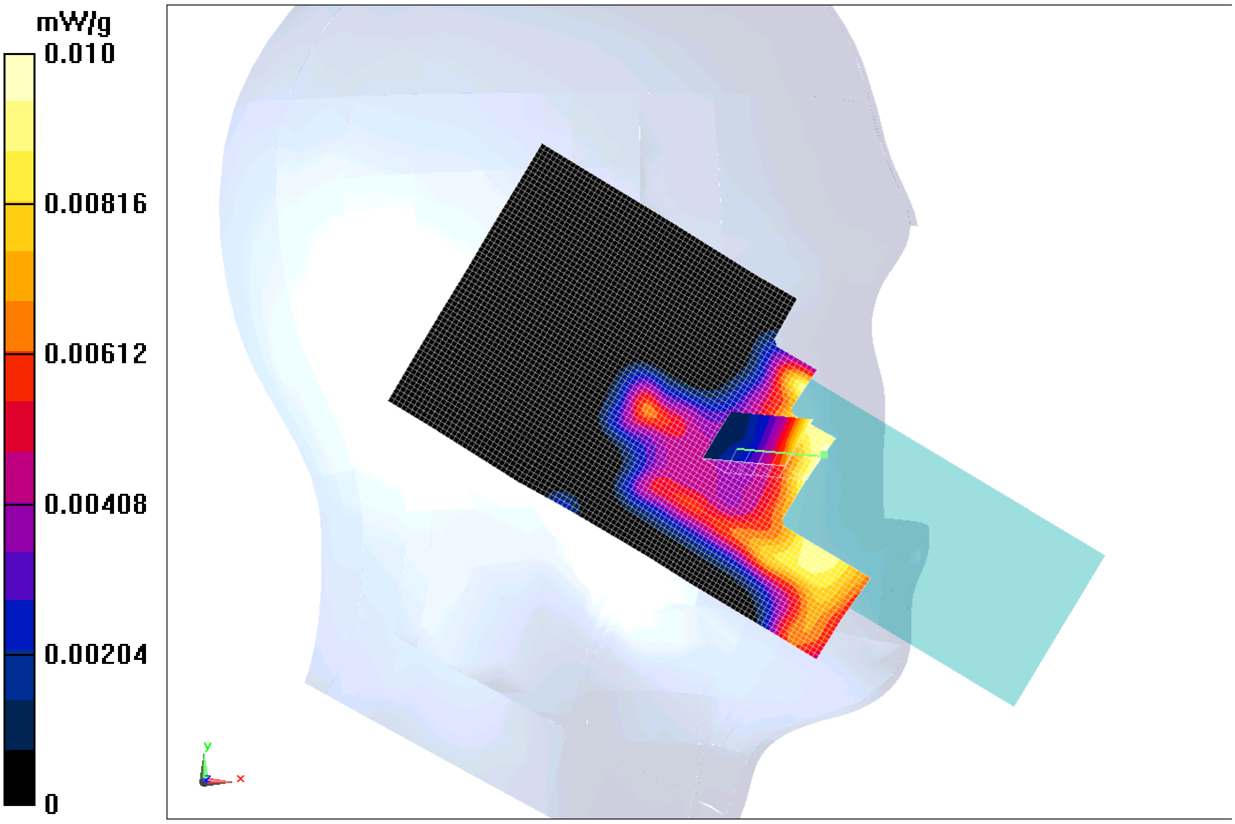


Fig. 2 850 MHz CH190

850 Left Cheek Low

Date: 2012-9-26
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used: f = 825 MHz; σ = 0.881 mho/m; εr = 40.939; ρ = 1000 kg/m^3
Ambient Temperature: 22.7^{o}C Liquid Temperature: 22.2^{o}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 (61x141x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.00963 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.094 V/m; Power Drift = 1.63 dB
Peak SAR (extrapolated) = 0.016 mW/g
SAR(1 g) = N/A ; SAR(10 g) = N/A
Maximum value of SAR (measured) = 0.00898 mW/g

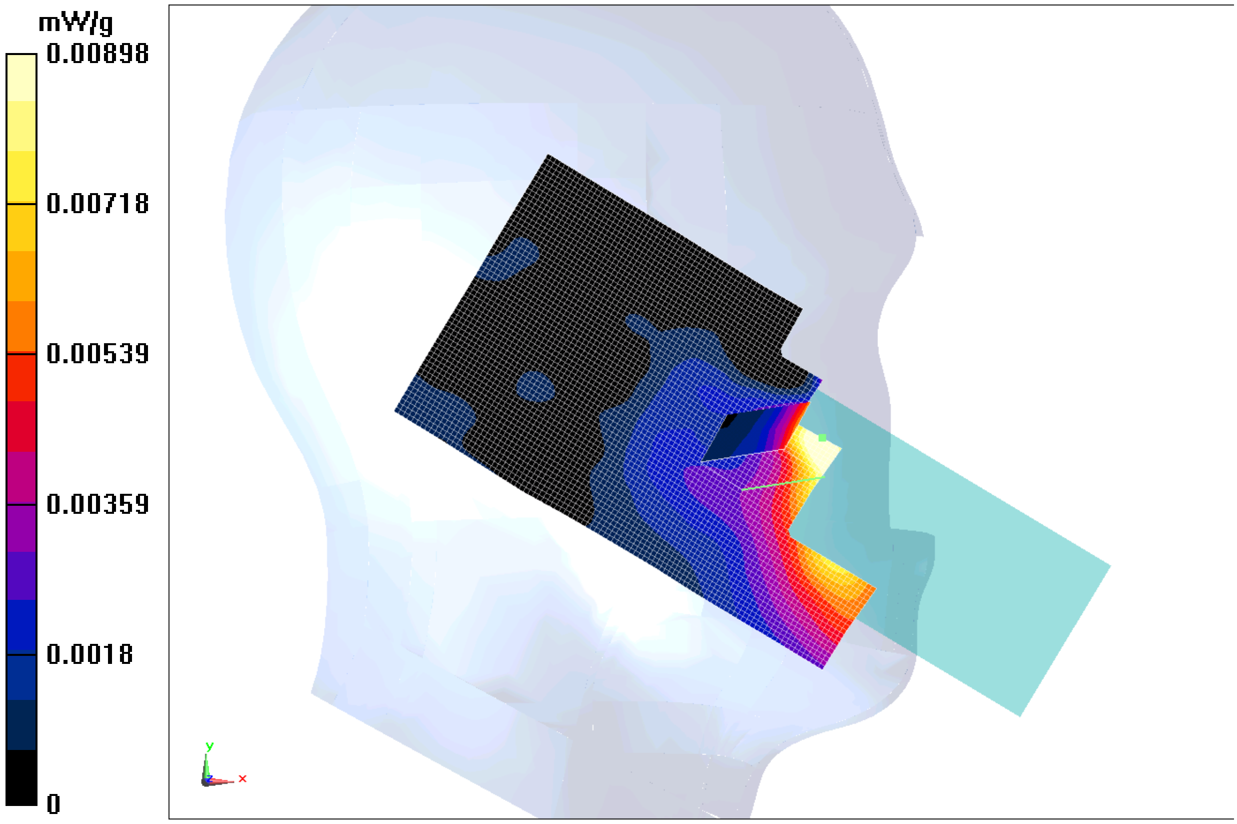


Fig. 3 850 MHz CH128

850 Left Tilt High
Date: 2012-9-26
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.902 mho/m; εr = 40.658; ρ = 1000 kg/m^3
Ambient Temperature: 22.7^{o}C Liquid Temperature: 22.2^{o}C
Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

Tilt High/Area Scan (61x141x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.00537 mW/g

Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.764 V/m; Power Drift = 0.94 dB
Peak SAR (extrapolated) = 0.019 mW/g
SAR(1 g) = N/A ; SAR(10 g) = N/A
Maximum value of SAR (measured) = 0.00220 mW/g

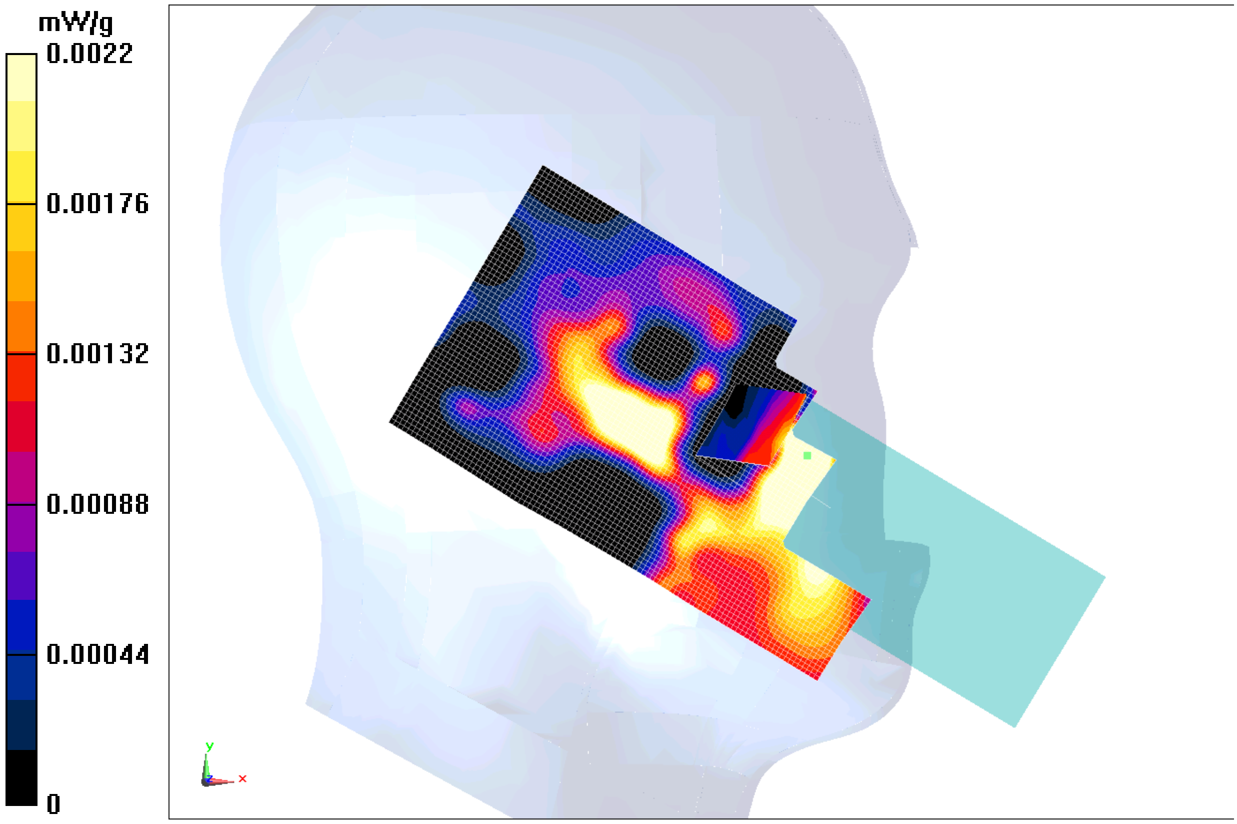


Fig.4 850 MHz CH251

850 Left Tilt Middle
Date: 2012-9-26
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.891 mho/m; εr = 40.801; ρ = 1000 kg/m^3
Ambient Temperature: 22.7^{o}C Liquid Temperature: 22.2^{o}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 (61x141x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.00244 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.823 V/m; Power Drift = 1.55 dB
Peak SAR (extrapolated) = 0.014 mW/g
SAR(1 g) = 0.00235 mW/g; SAR(10 g) = N/A
Maximum value of SAR (measured) = 0.00260 mW/g

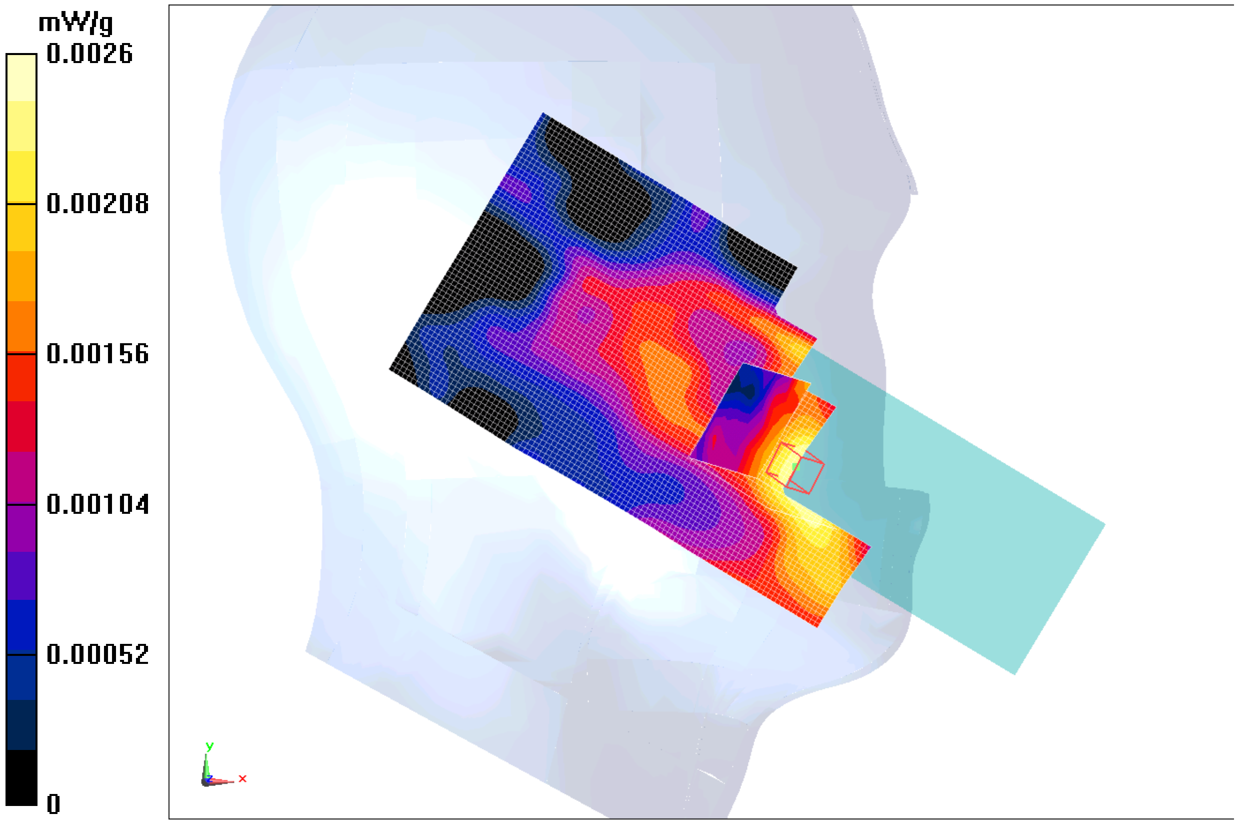


Fig.5 850 MHz CH190

850 Left Tilt Low
Date: 2012-9-26
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used: f = 825 MHz; σ = 0.881 mho/m; εr = 40.939; ρ = 1000 kg/m^3
Ambient Temperature: 22.7^{o}C Liquid Temperature: 22.2^{o}C
Communication System: GSM 850 Frequency: 824.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

Tilt Low/Area Scan (61x141x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.00220 mW/g

Tilt Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.682 V/m; Power Drift = 1.13 dB
Peak SAR (extrapolated) = 0.00234 mW/g
SAR(1 g) = N/A ; SAR(10 g) = N/A
Maximum value of SAR (measured) = 0.00203 mW/g

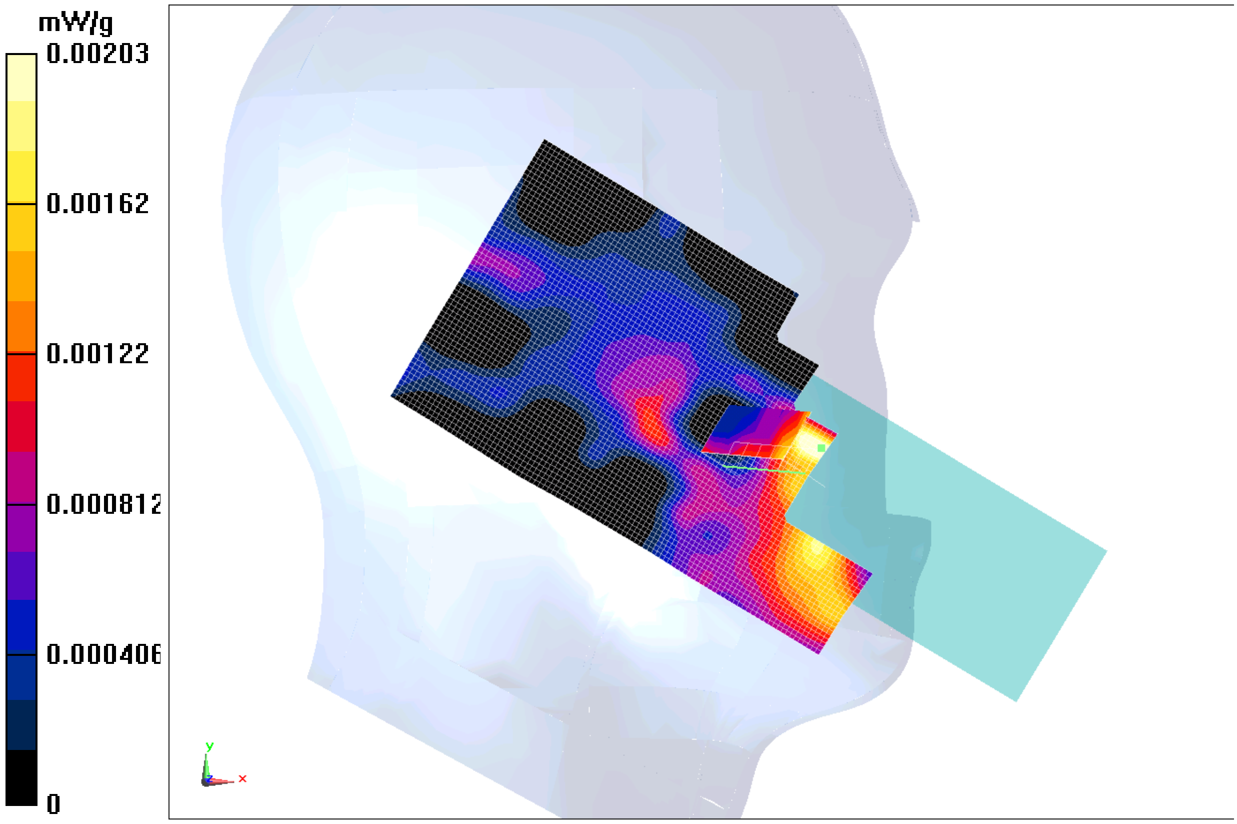


Fig. 6 850 MHz CH128

850 Right Cheek High

Date: 2012-9-26

Electronics: DAE4 Sn771

Medium: Head 850 MHz

Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.902 mho/m; εr = 40.658; ρ = 1000 kg/m^3

Ambient Temperature: 22.7^{o}C   Liquid Temperature: 22.2^{o}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 (61x141x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.0351 mW/g

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

Reference Value = 0 V/m; Power Drift = 1.72dB

Peak SAR (extrapolated) = 0.079 mW/g

SAR(1 g) = 0.029 mW/g; SAR(10 g) = 0.013 mW/g

Maximum value of SAR (measured) = 0.0297 mW/g

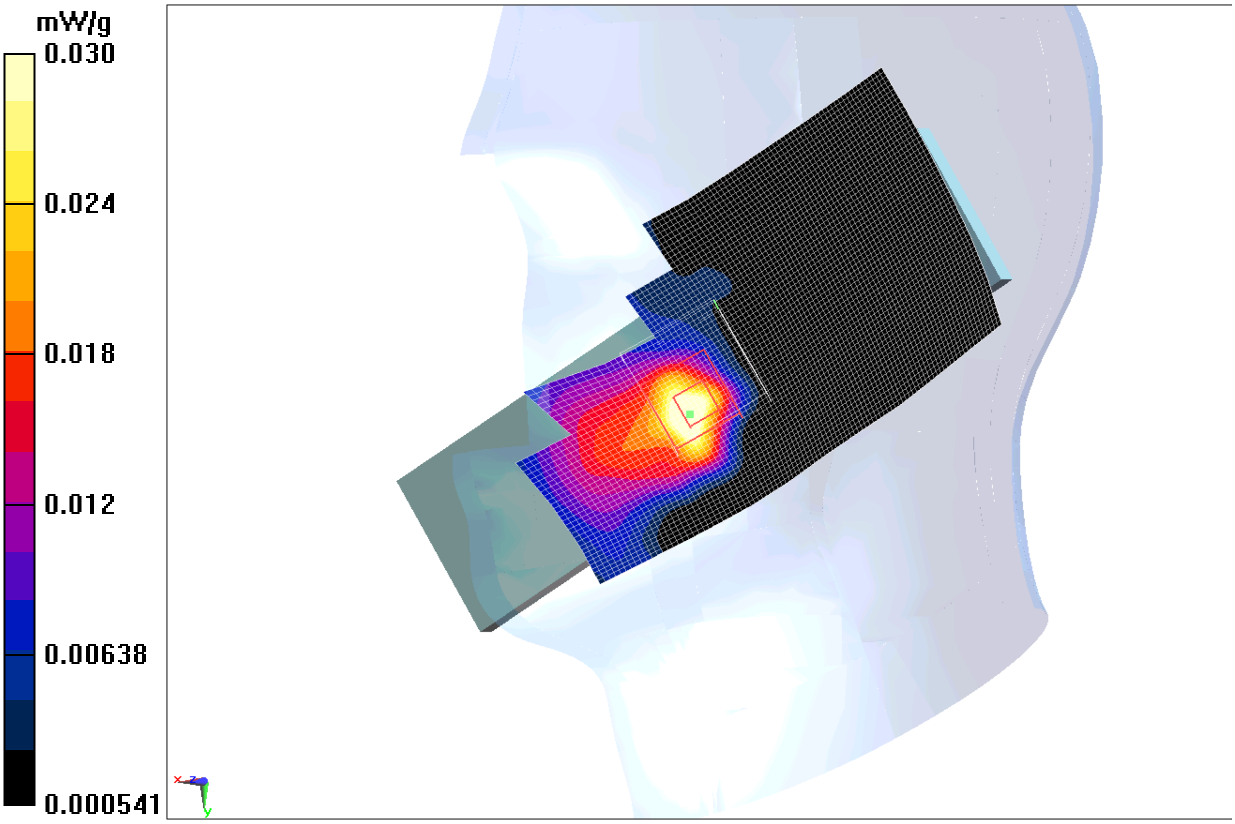


Fig. 7 850 MHz CH251

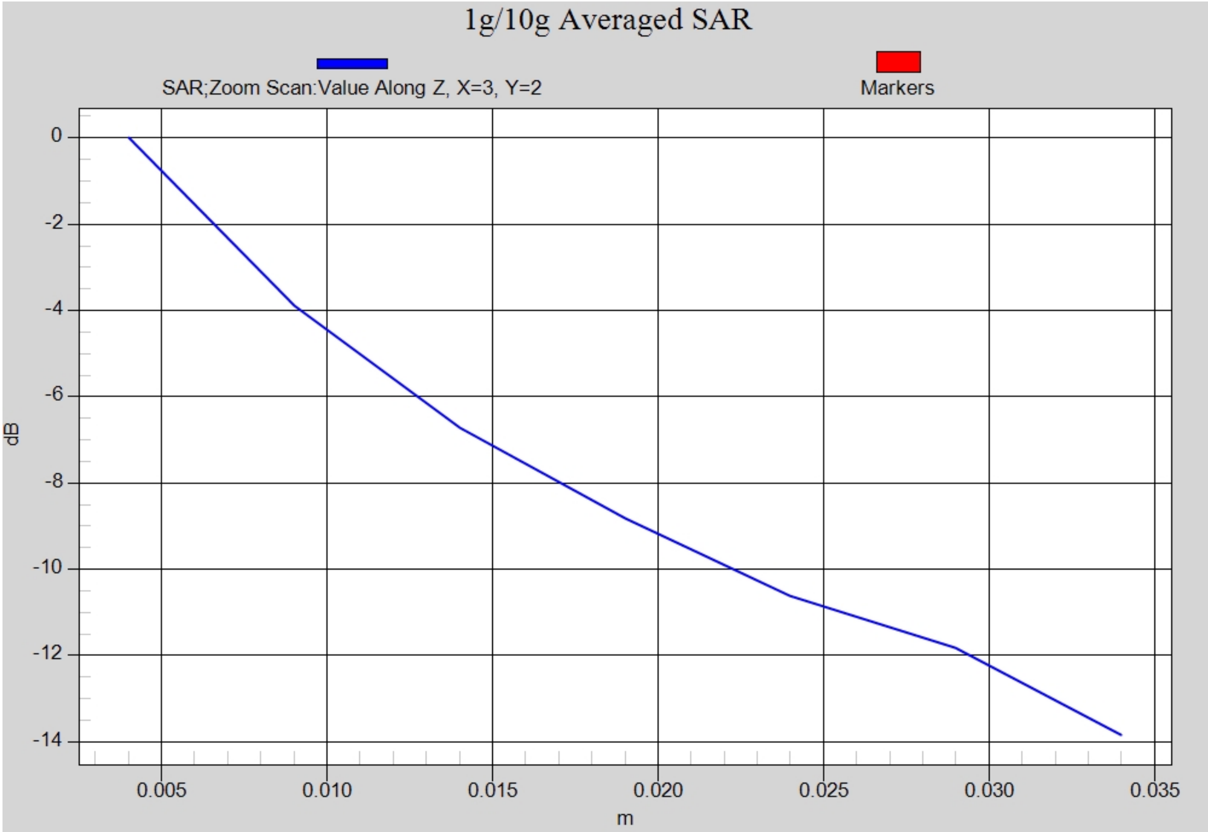


Fig. 7-1 Z-Scan at power reference point (850 MHz CH251)

850 Right Cheek Middle

Date: 2012-9-26

Electronics: DAE4 Sn771

Medium: Head 850 MHz

Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.891 mho/m; εr = 40.801; ρ = 1000 kg/m^3

Ambient Temperature: 22.7^{o}C Liquid Temperature: 22.2^{o}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 (61x141x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.0273 mW/g

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

Reference Value = 0.472 V/m; Power Drift = 3.16 dB

Peak SAR (extrapolated) = 0.067 mW/g

SAR(1 g) = 0.025 mW/g; SAR(10 g) = 0.012 mW/g

Maximum value of SAR (measured) = 0.0289 mW/g

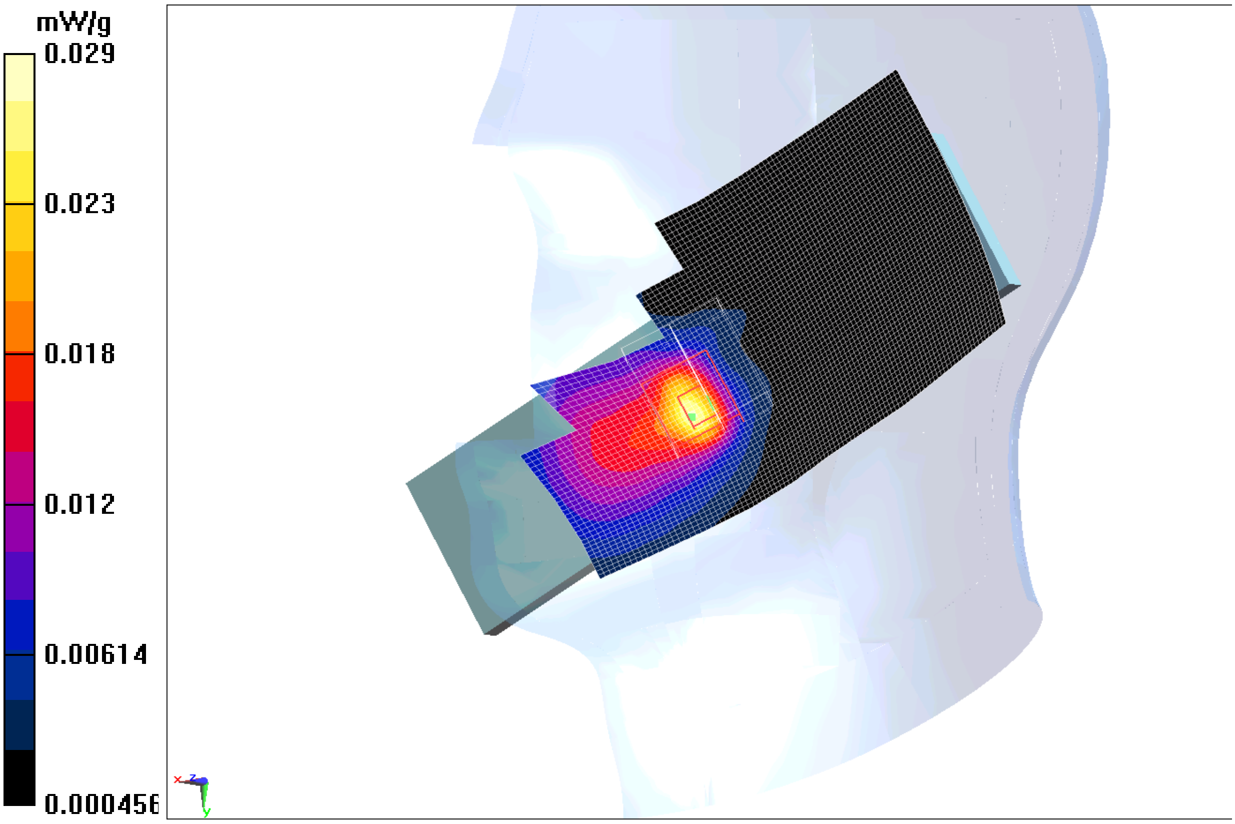


Fig. 8 850 MHz CH190

850 Right Cheek Low
Date: 2012-9-26
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used: f = 825 MHz; σ = 0.881 mho/m; εr = 40.939; 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 (61x141x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0244 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.271 V/m; Power Drift = 4.41 dB
Peak SAR (extrapolated) = 0.063 mW/g
SAR(1 g) = 0.022 mW/g; SAR(10 g) = 0.010 mW/g
Maximum value of SAR (measured) = 0.0248 mW/g

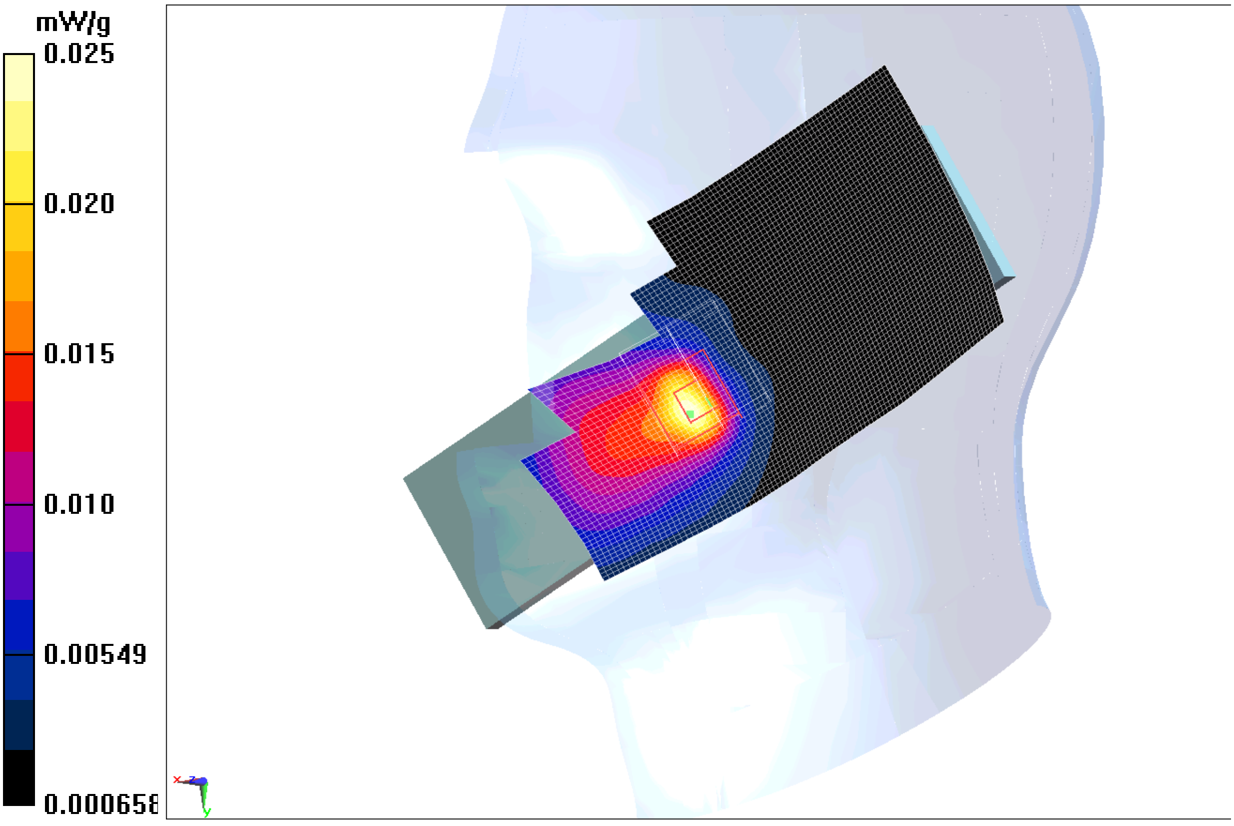


Fig. 9 850 MHz CH128

850 Right Tilt High

Date: 2012-9-26
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.902 mho/m; εr = 40.658; 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)

Tilt High/Area Scan (61x141x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.00236 mW/g

Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.929 V/m; Power Drift = -0.33 dB
Peak SAR (extrapolated) = 0.00176 mW/g
SAR(1 g) = N/A ; SAR(10 g) = N/A
Maximum value of SAR (measured) = 0.00148 mW/g

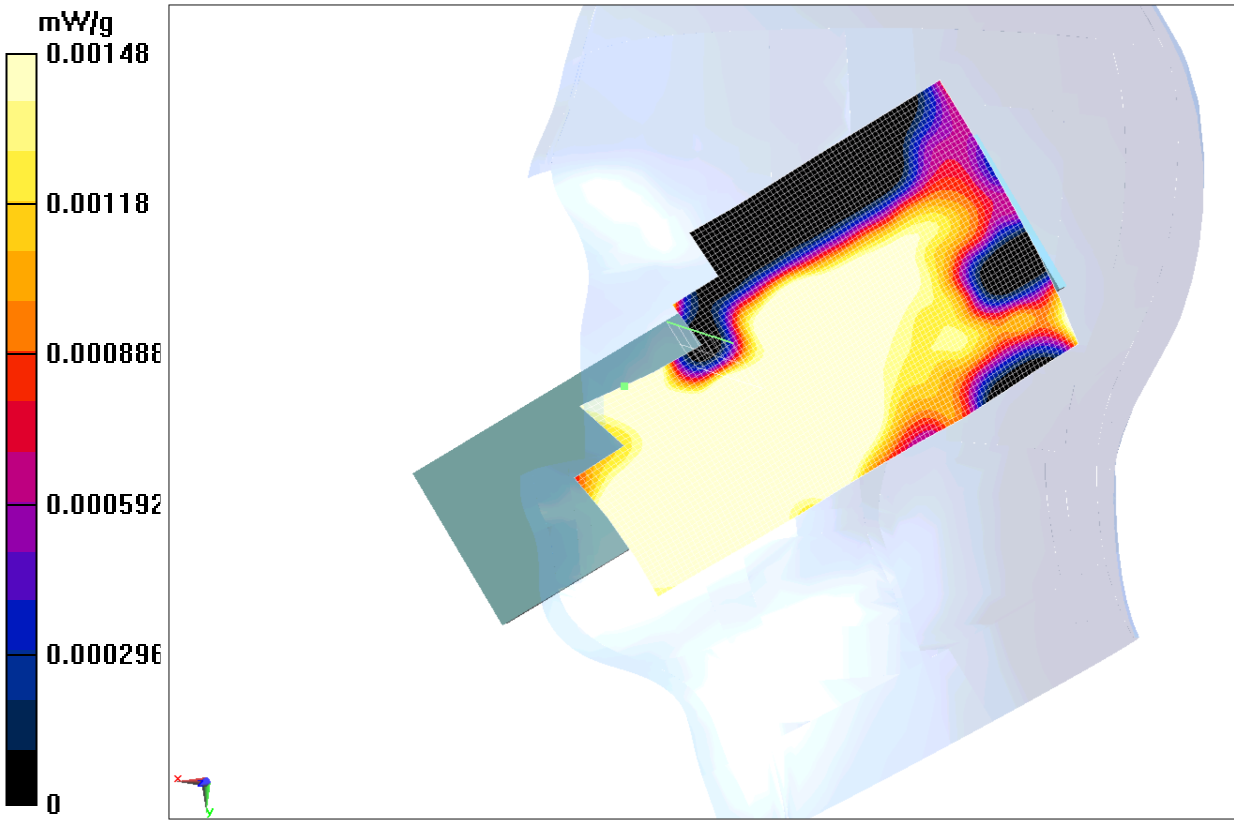


Fig.10 850 MHz CH251

850 Right Tilt Middle
Date: 2012-9-26
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.891 mho/m; εr = 40.801; ρ = 1000 kg/m^3
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 (61x141x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.00165 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.764 V/m; Power Drift = 0.85 dB
Peak SAR (extrapolated) = 0.00227 mW/g
SAR(1 g) = 0.000841 mW/g; SAR(10 g) = 0.000589 mW/g
Maximum value of SAR (measured) = 0.00122 mW/g

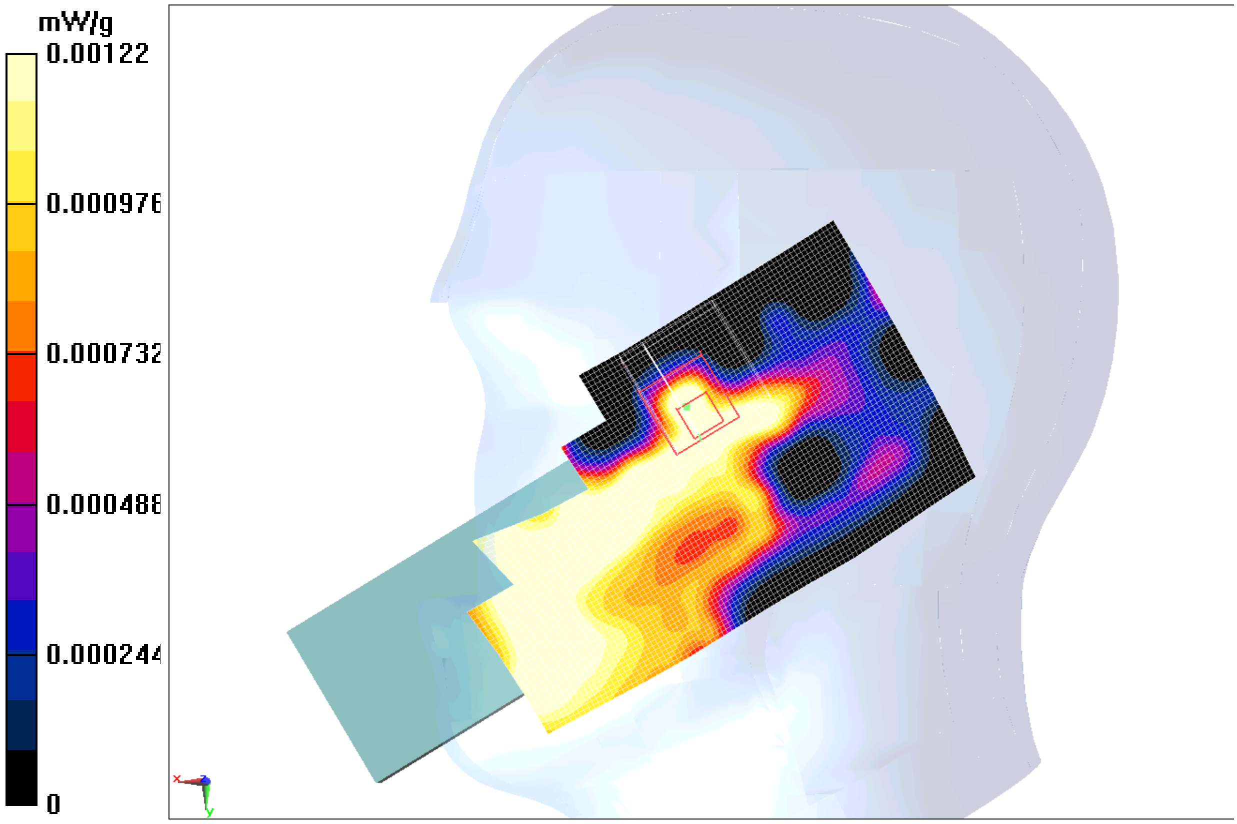


Fig.11 850 MHz CH190

850 Right Tilt Low
Date: 2012-9-26
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used: f = 825 MHz; σ = 0.881 mho/m; εr = 40.939; ρ = 1000 kg/m^3
Ambient Temperature: 22.7^{o}C   Liquid Temperature: 22.2^{o}C
Communication System: GSM 850 Frequency: 824.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.26, 6.26, 6.26)

Tilt Low/Area Scan (61x141x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.00236 mW/g

Tilt Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.622 V/m; Power Drift = 0.79 dB
Peak SAR (extrapolated) = 0.00108 mW/g
SAR(1 g) = 0.000638 mW/g; SAR(10 g) = 0.000456 mW/g
Maximum value of SAR (measured) = 0.000867 mW/g

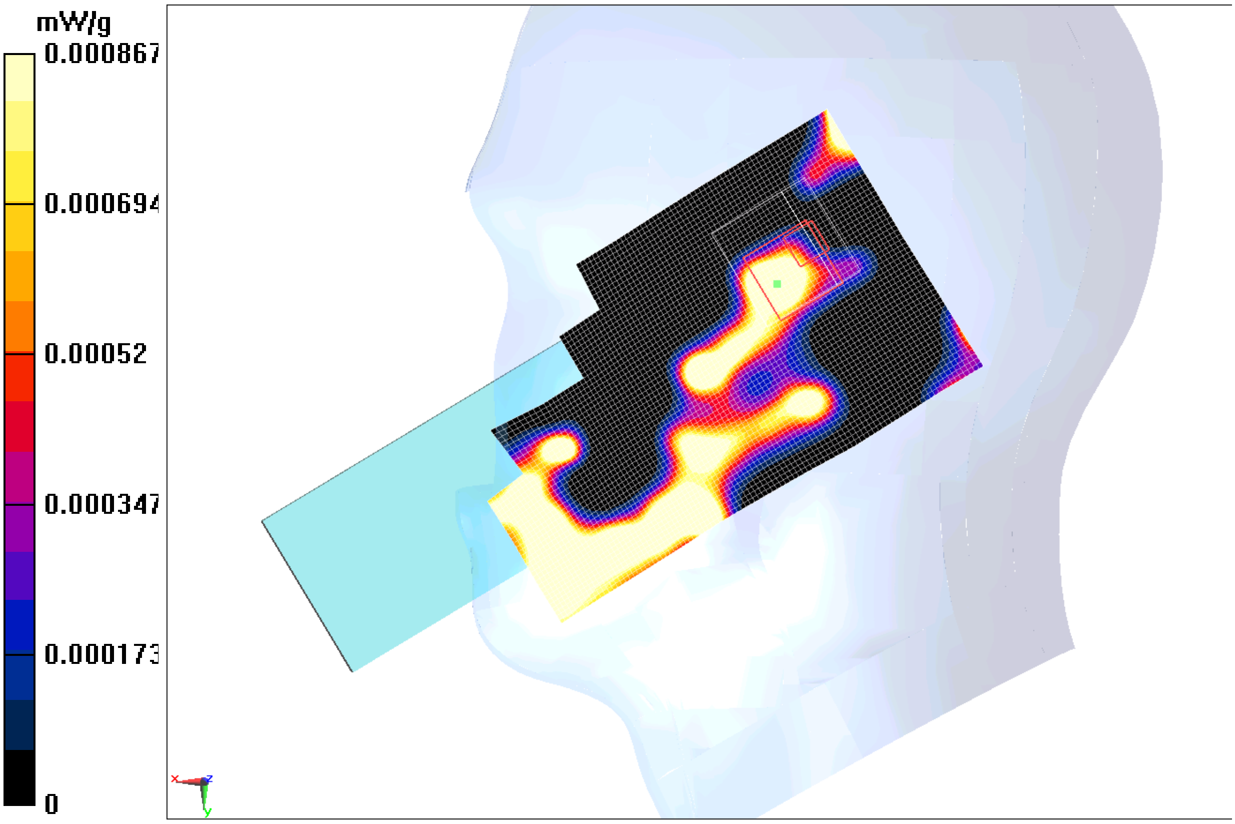


Fig. 12 850 MHz CH128

850 Body Unfolded Towards Ground High

Date: 2012-9-26

Electronics: DAE4 Sn771

Medium: Body 850 MHz

Medium parameters used (interpolated): f = 848.8 MHz; σ = 1.003 mho/m; εr = 55.543; ρ = 1000 kg/m^3

Ambient Temperature: 22.7^{o}C Liquid Temperature: 22.2^{o}C

Communication System: GSM 850 GPRS Frequency: 848.8 MHz Duty Cycle: 1:4

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

Toward Ground High/Area Scan (61x141x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.0226 mW/g

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

Reference Value = 3.632 V/m; Power Drift = 0.19 dB

Peak SAR (extrapolated) = 0.029 mW/g

SAR(1 g) = 0.021 mW/g; SAR(10 g) = 0.015 mW/g

Maximum value of SAR (measured) = 0.0220 mW/g

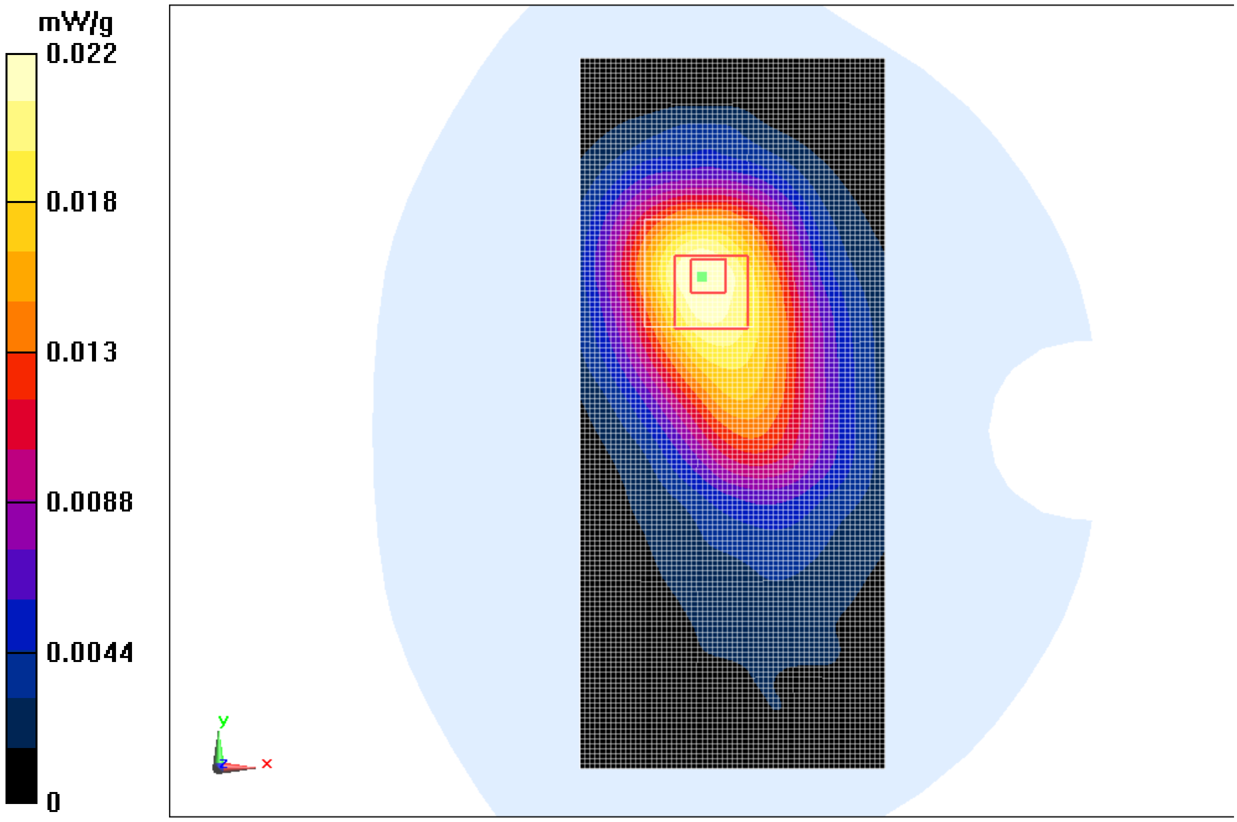


Fig. 13 850 MHz CH251

850 Body Unfolded Towards Ground Middle

Date: 2012-9-26

Electronics: DAE4 Sn771

Medium: Body 850 MHz

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

Ambient Temperature: 22.7^{o}C Liquid Temperature: 22.2^{o}C

Communication System: GSM 850 GPRS Frequency: 836.6 MHz Duty Cycle: 1:4

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

Toward Ground Middle/Area Scan (61x141x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0223 mW/g

Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.587 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.028 mW/g
SAR(1 g) = 0.020 mW/g; SAR(10 g) = 0.015 mW/g
Maximum value of SAR (measured) = 0.0215 mW/g

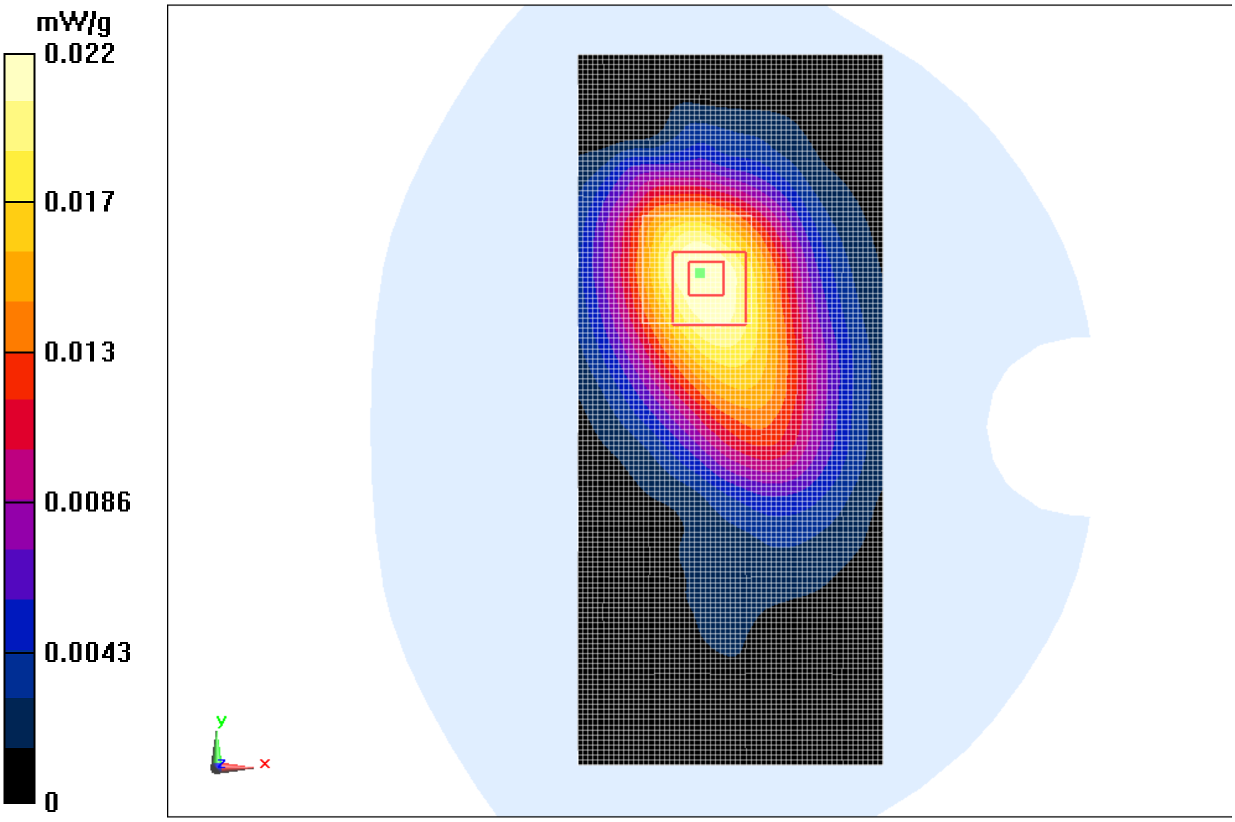


Fig. 14 850 MHz CH190

850 Body Unfolded Towards Ground Low

Date: 2012-9-26
Electronics: DAE4 Sn771
Medium: Body 850 MHz
Medium parameters used: f = 825 MHz; σ = 0.978 mho/m; εr = 55.841; ρ = 1000 kg/m^3
Ambient Temperature: 22.7^{o}C Liquid Temperature: 22.2^{o}C
Communication System: GSM 850 GPRS Frequency: 824.2 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Toward Ground Low/Area Scan (61x141x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0209 mW/g

Toward Ground Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.358 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 0.026 mW/g
SAR(1 g) = 0.019 mW/g; SAR(10 g) = 0.014 mW/g
Maximum value of SAR (measured) = 0.0202 mW/g

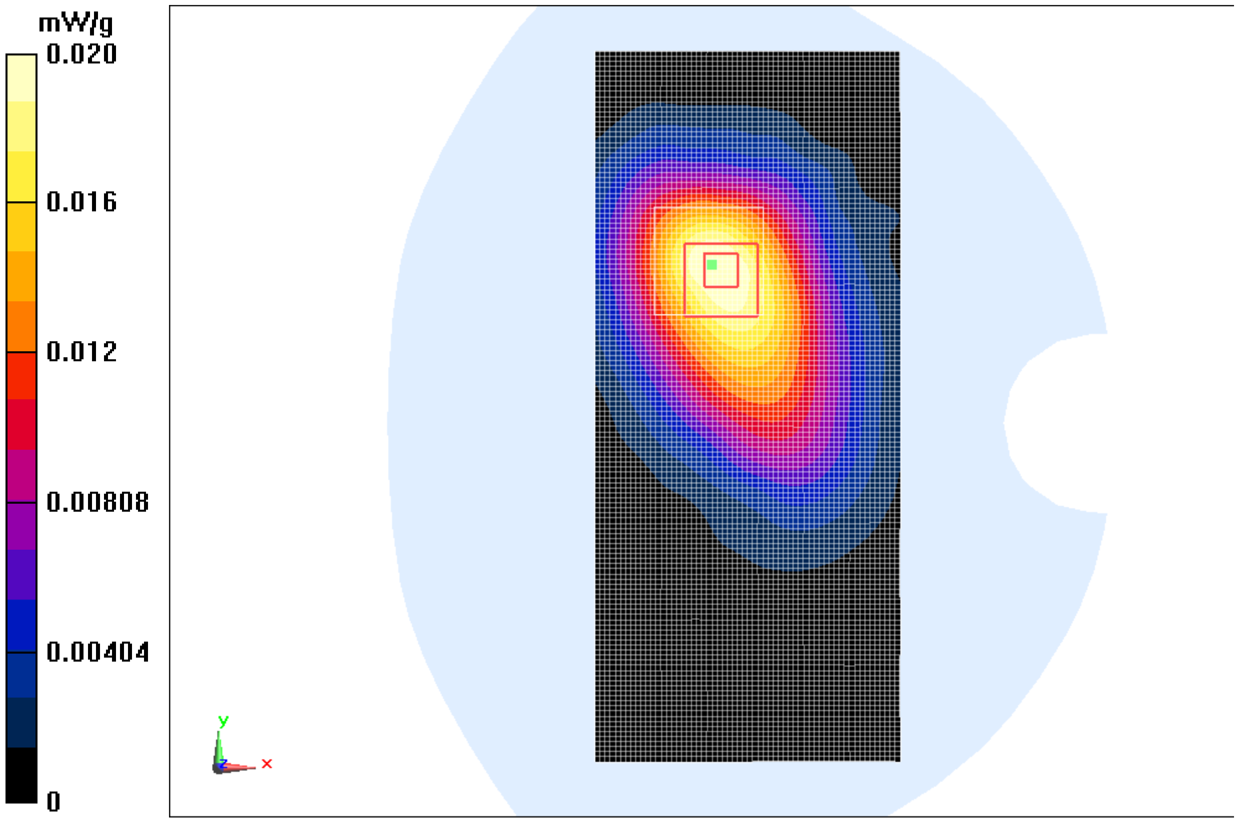


Fig. 15 850 MHz CH128

850 Body Folded Towards Ground High
Date: 2012-9-26
Electronics: DAE4 Sn771
Medium: Body 850 MHz
Medium parameters used (interpolated): f = 848.8 MHz; σ = 1.003 mho/m; εr = 55.543; ρ = 1000 kg/m^3
Ambient Temperature: 22.7^{o}C Liquid Temperature: 22.2^{o}C
Communication System: GSM 850 GPRS Frequency: 848.8 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Toward Ground High/Area Scan (61x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0288 mW/g

Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.641 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.036 mW/g
SAR(1 g) = 0.026 mW/g; SAR(10 g) = 0.018 mW/g
Maximum value of SAR (measured) = 0.0278 mW/g

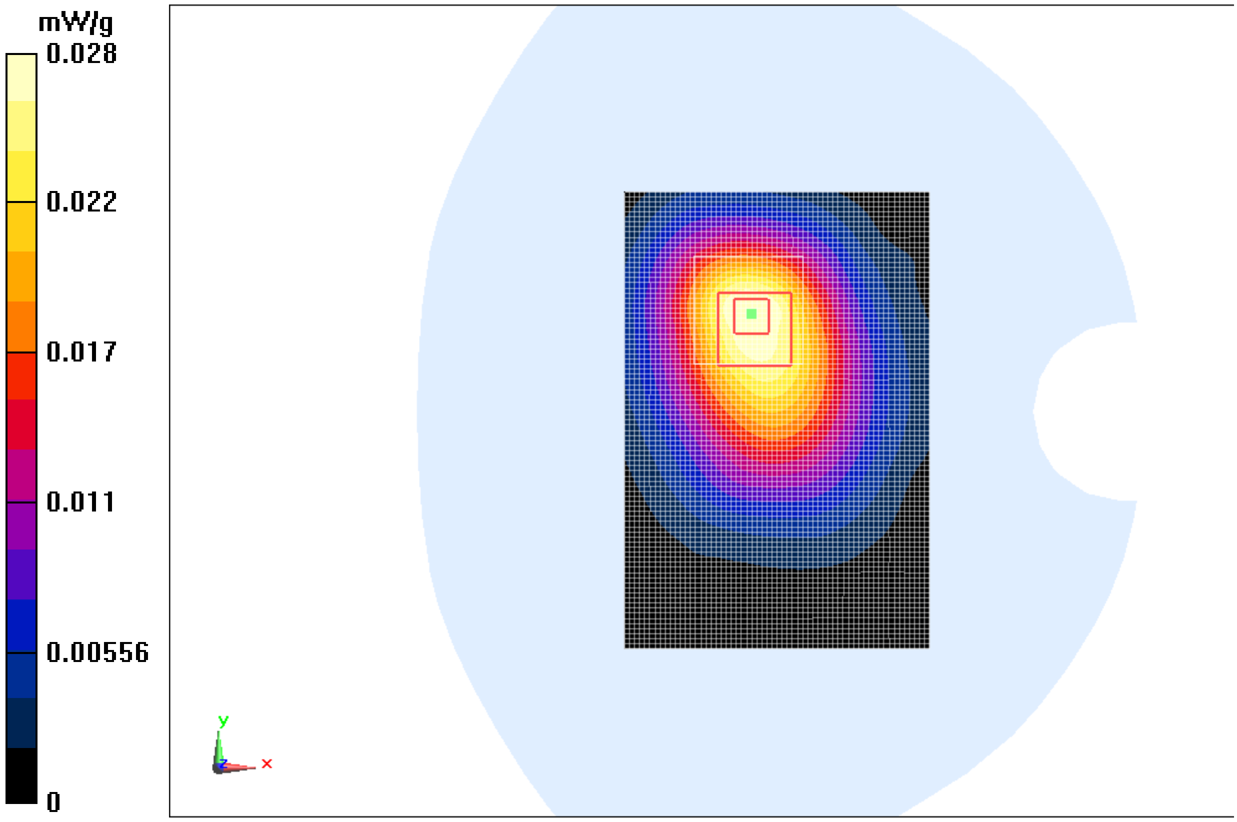


Fig. 16 850 MHz CH251

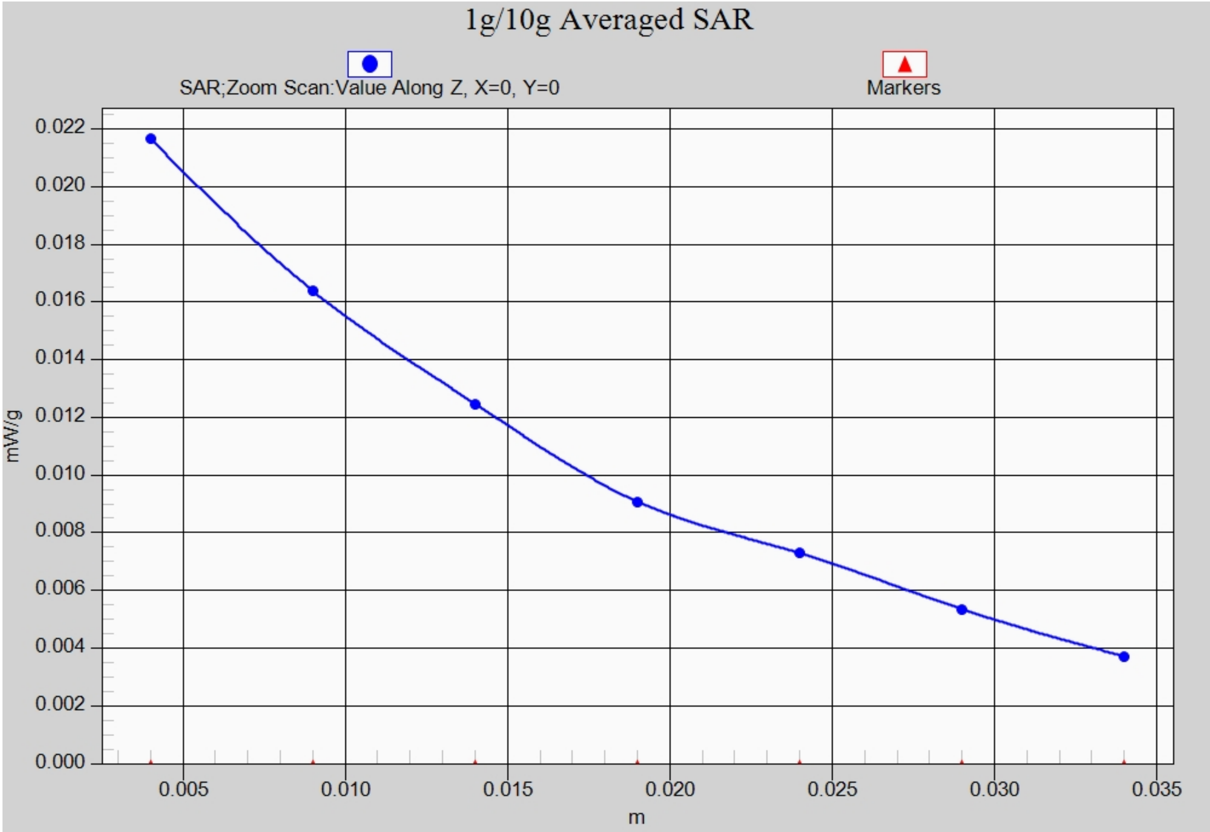


Fig. 16-1 Z-Scan at power reference point (850 MHz CH251)

850 Body Folded Towards Ground Middle
Date: 2012-9-26
Electronics: DAE4 Sn771
Medium: Body 850 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.989 mho/m; εr = 55.688; ρ = 1000 kg/m^3
Ambient Temperature: 22.7°C Liquid Temperature: 22.2°C
Communication System: GSM 850 GPRS Frequency: 836.6 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Toward Ground Middle/Area Scan (61x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0269 mW/g

Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.424 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.034 mW/g
SAR(1 g) = 0.024 mW/g; SAR(10 g) = 0.017 mW/g
Maximum value of SAR (measured) = 0.0255 mW/g

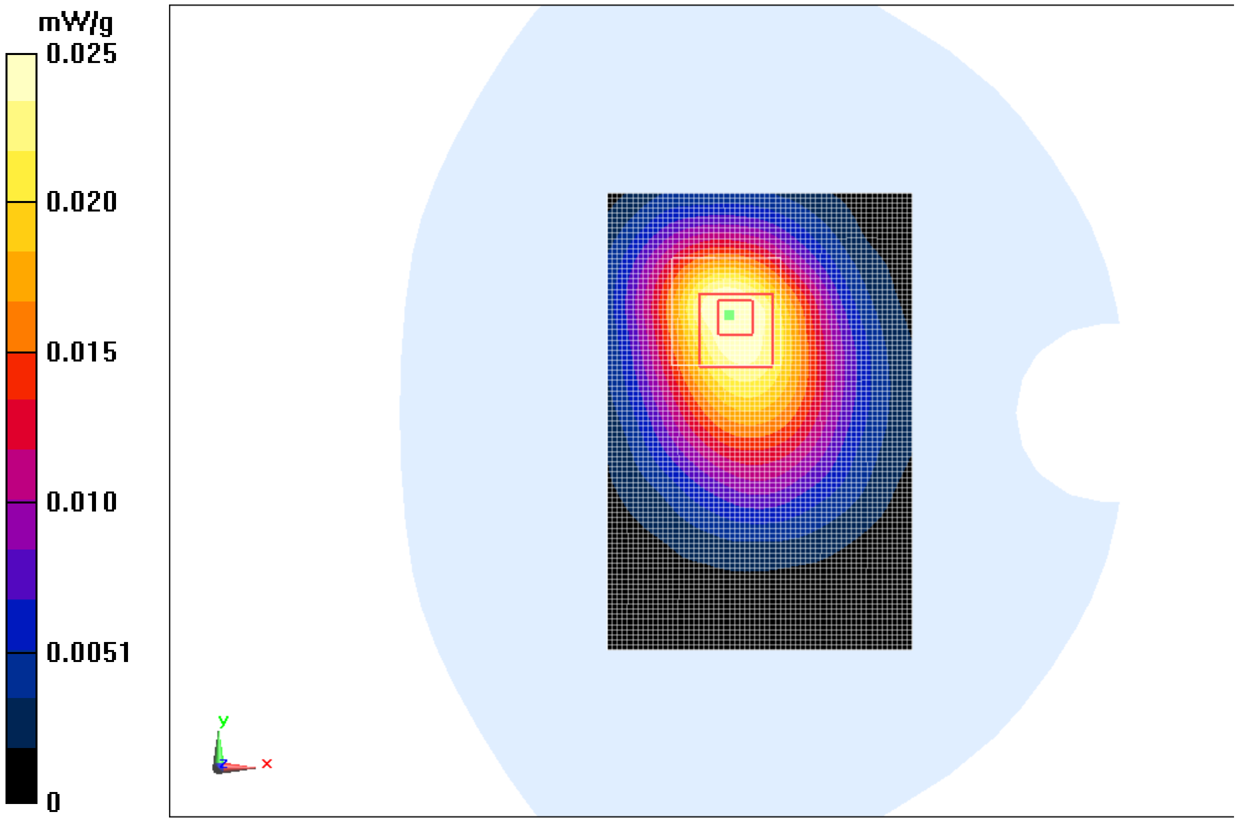


Fig. 17 850 MHz CH190

850 Body Folded Towards Ground Low

Date: 2012-9-26
Electronics: DAE4 Sn771
Medium: Body 850 MHz
Medium parameters used: f = 825 MHz; σ = 0.978 mho/m; εr = 55.841; 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: 1:4
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Toward Ground Low/Area Scan (61x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0245 mW/g

Toward Ground Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.183 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.031 mW/g
SAR(1 g) = 0.022 mW/g; SAR(10 g) = 0.016 mW/g
Maximum value of SAR (measured) = 0.0238 mW/g

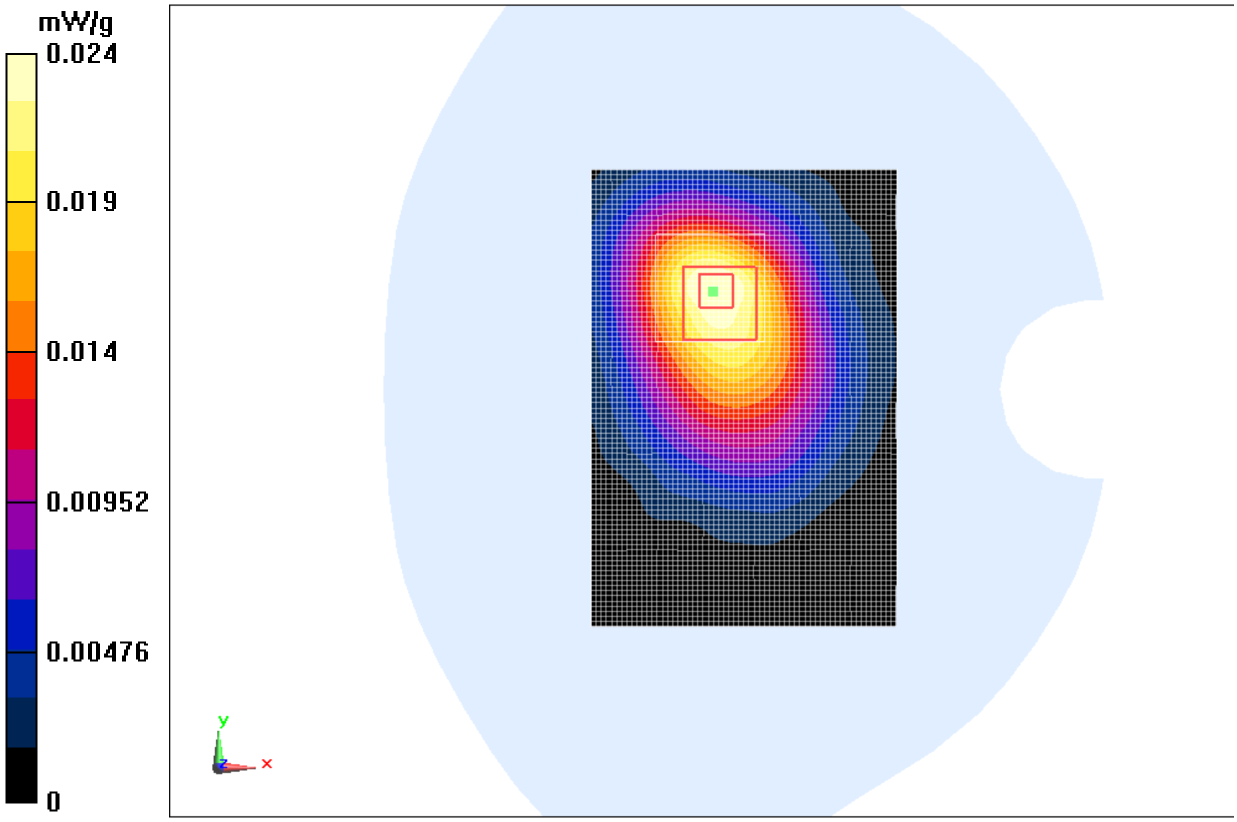


Fig. 18 850 MHz CH128

850 Body Folded Towards Phantom High

Date: 2012-9-26
Electronics: DAE4 Sn771
Medium: Body 850 MHz
Medium parameters used (interpolated): f = 848.8 MHz; σ = 1.003 mho/m; εr = 55.543; ρ = 1000 kg/m^3
Ambient Temperature: 22.7^{o}C Liquid Temperature: 22.2^{o}C
Communication System: GSM 850 GPRS Frequency: 848.8 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Toward Phantom High/Area Scan (61x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0146 mW/g

Toward Phantom High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.632 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.018 mW/g
SAR(1 g) = 0.014 mW/g; SAR(10 g) = 0.010 mW/g
Maximum value of SAR (measured) = 0.0149 mW/g

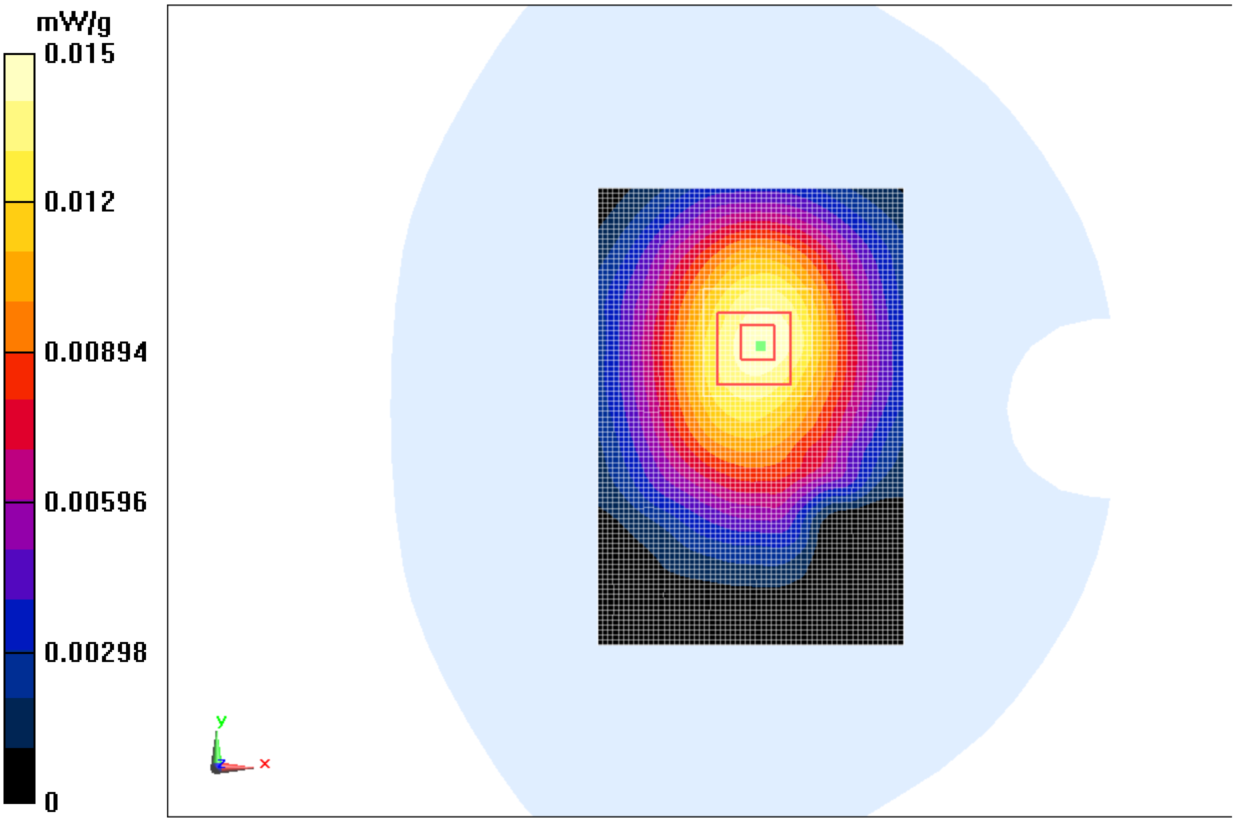


Fig. 19 850 MHz CH251

850 Body Folded Towards Phantom Middle

Date: 2012-9-26

Electronics: DAE4 Sn771

Medium: Body 850 MHz

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

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

Communication System: GSM 850 GPRS Frequency: 836.6 MHz Duty Cycle: 1:4

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

Toward Phantom Middle/Area Scan (61x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.0136 mW/g

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

Reference Value = 3.500 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.017 mW/g

SAR(1 g) = 0.013 mW/g; SAR(10 g) = 0.00956 mW/g

Maximum value of SAR (measured) = 0.0140 mW/g

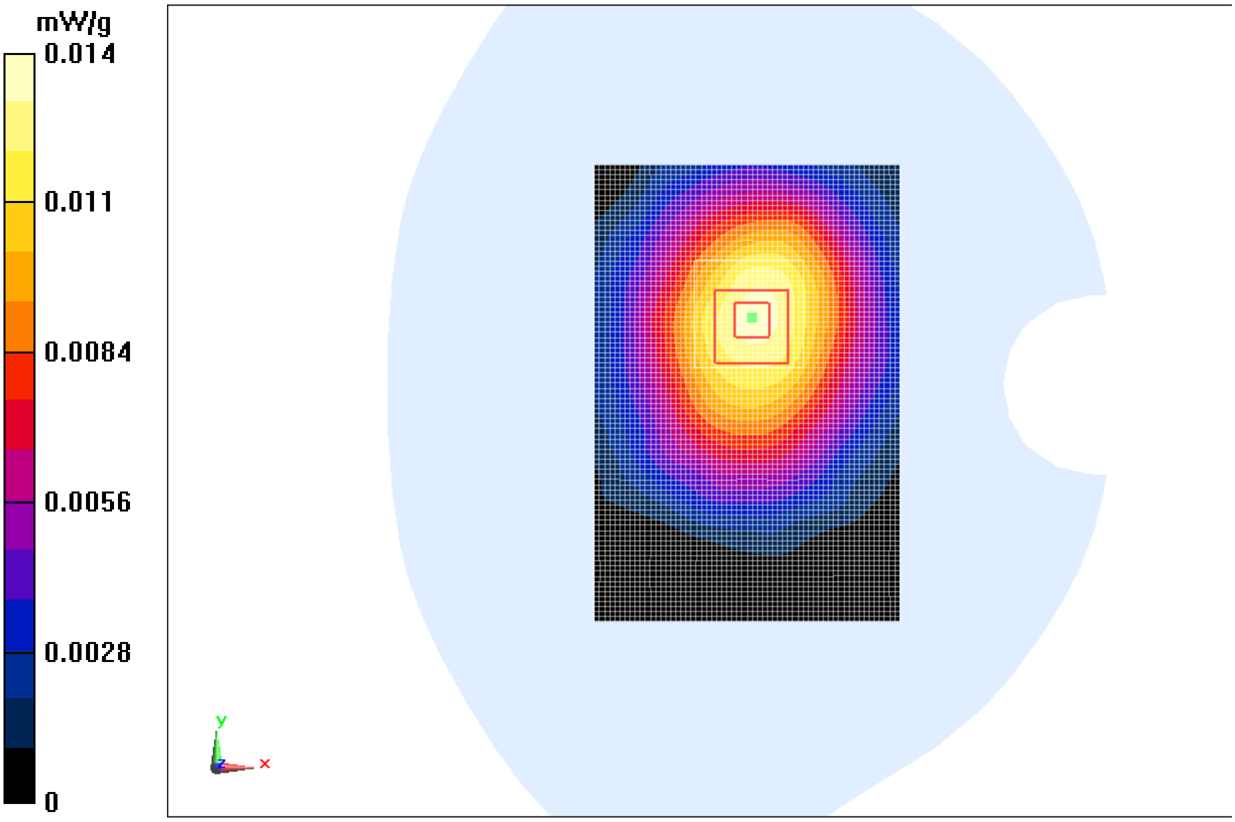


Fig. 20 850 MHz CH190

850 Body Folded Towards Phantom Low
Date: 2012-9-26
Electronics: DAE4 Sn771
Medium: Body 850 MHz
Medium parameters used: f = 825 MHz; σ = 0.978 mho/m; εr = 55.841; 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: 1:4
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Toward Phanotom Low/Area Scan (61x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0124 mW/g

Toward Phanotom Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.357 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.016 mW/g
SAR(1 g) = 0.012 mW/g; SAR(10 g) = 0.00865 mW/g
Maximum value of SAR (measured) = 0.0126 mW/g

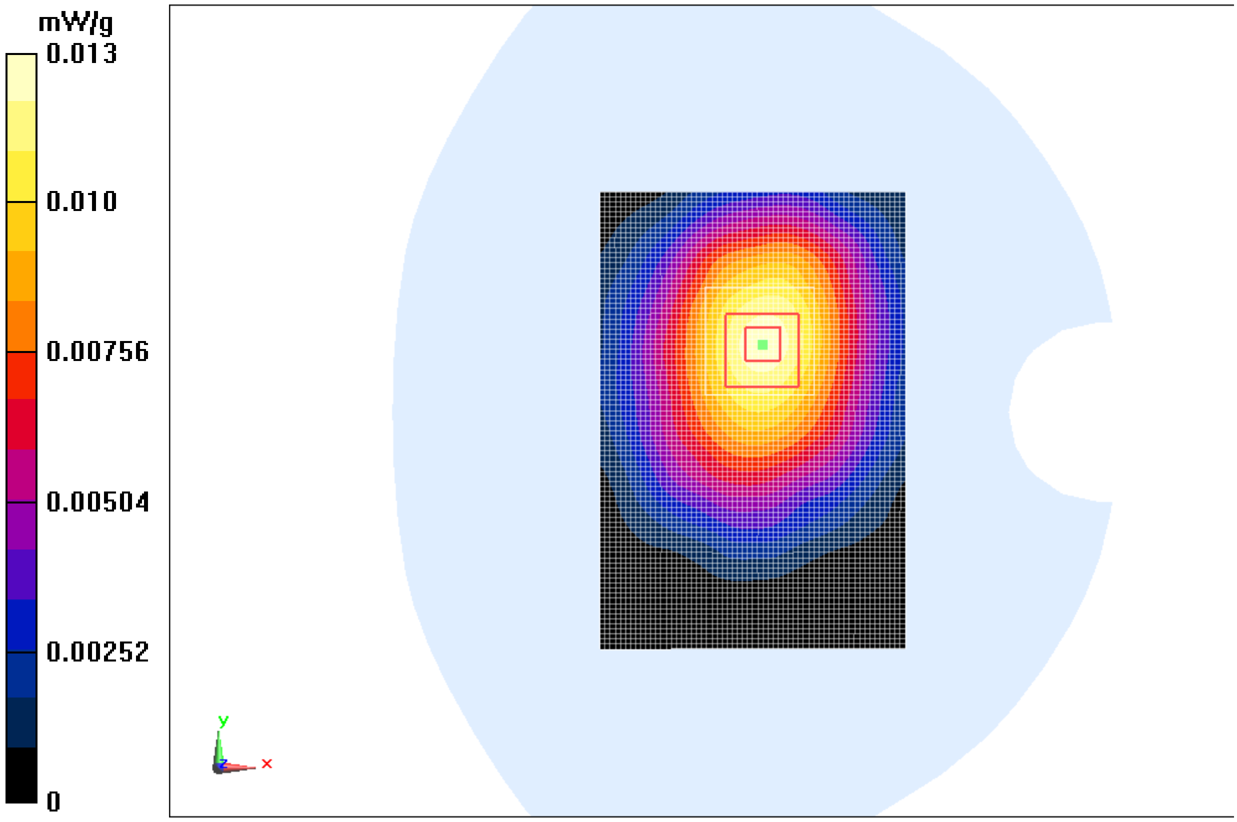


Fig. 21 850 MHz CH128

850 Body Folded Towards Ground High with EGPRS
Date: 2012-9-26
Electronics: DAE4 Sn771
Medium: Body 850 MHz
Medium parameters used (interpolated): f = 848.8 MHz; σ = 1.003 mho/m; εr = 55.543; ρ = 1000 kg/m^3
Ambient Temperature: 22.7^{o}C   Liquid Temperature: 22.2^{o}C
Communication System: GSM 850 EGPRS Frequency: 848.8 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Toward Ground High/Area Scan (61x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0281 mW/g

Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.594 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.035 mW/g
SAR(1 g) = 0.026 mW/g; SAR(10 g) = 0.018 mW/g
Maximum value of SAR (measured) = 0.0277 mW/g

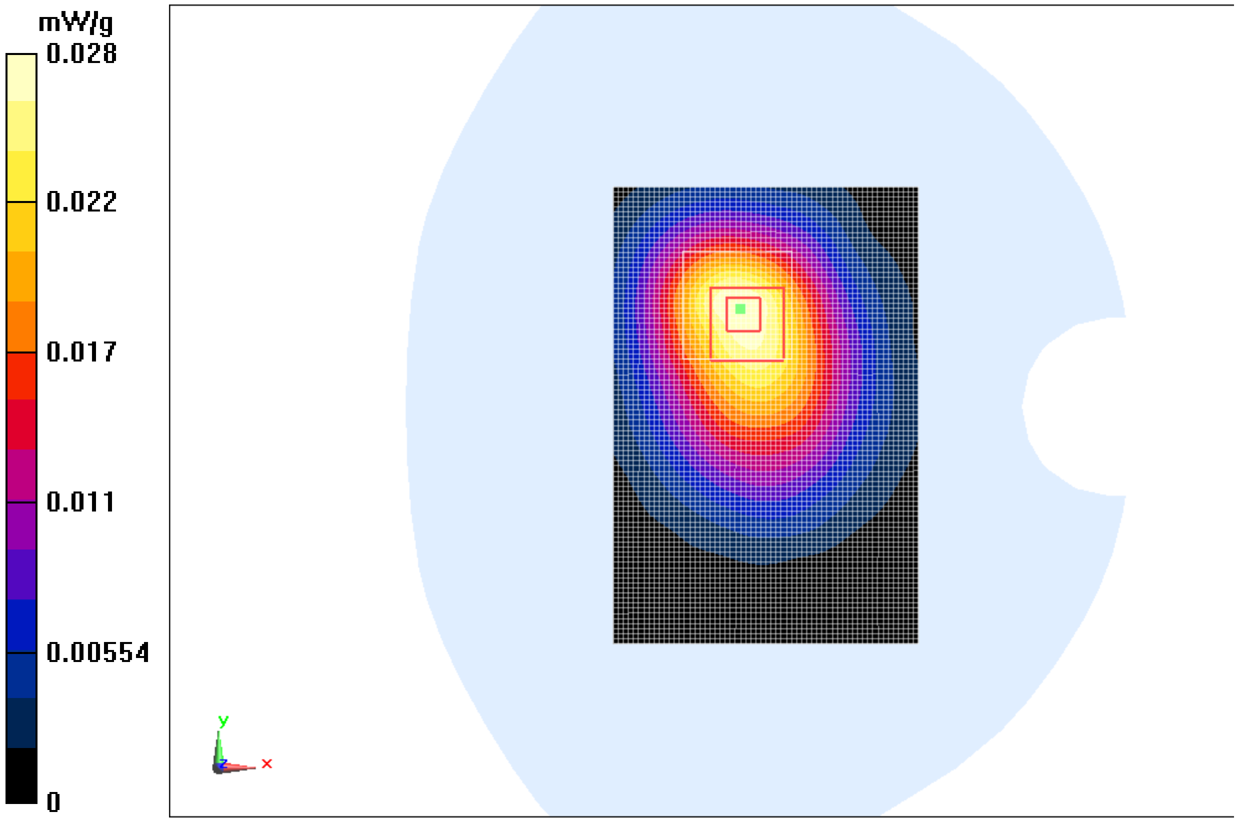


Fig. 22 850 MHz CH251

850 Body Folded Towards Ground High with Headset CCB3160A15C1
Date: 2012-9-26
Electronics: DAE4 Sn771
Medium: Body 850 MHz
Medium parameters used (interpolated): f = 848.8 MHz; σ = 1.003 mho/m; εr = 55.543; ρ = 1000 kg/m^3
Ambient Temperature: 22.7^{o}C Liquid Temperature: 22.2^{o}C
Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Toward Ground High/Area Scan (61x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0158 mW/g

Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.393 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.020 mW/g
SAR(1 g) = 0.014 mW/g; SAR(10 g) = 0.00969 mW/g
Maximum value of SAR (measured) = 0.0149 mW/g

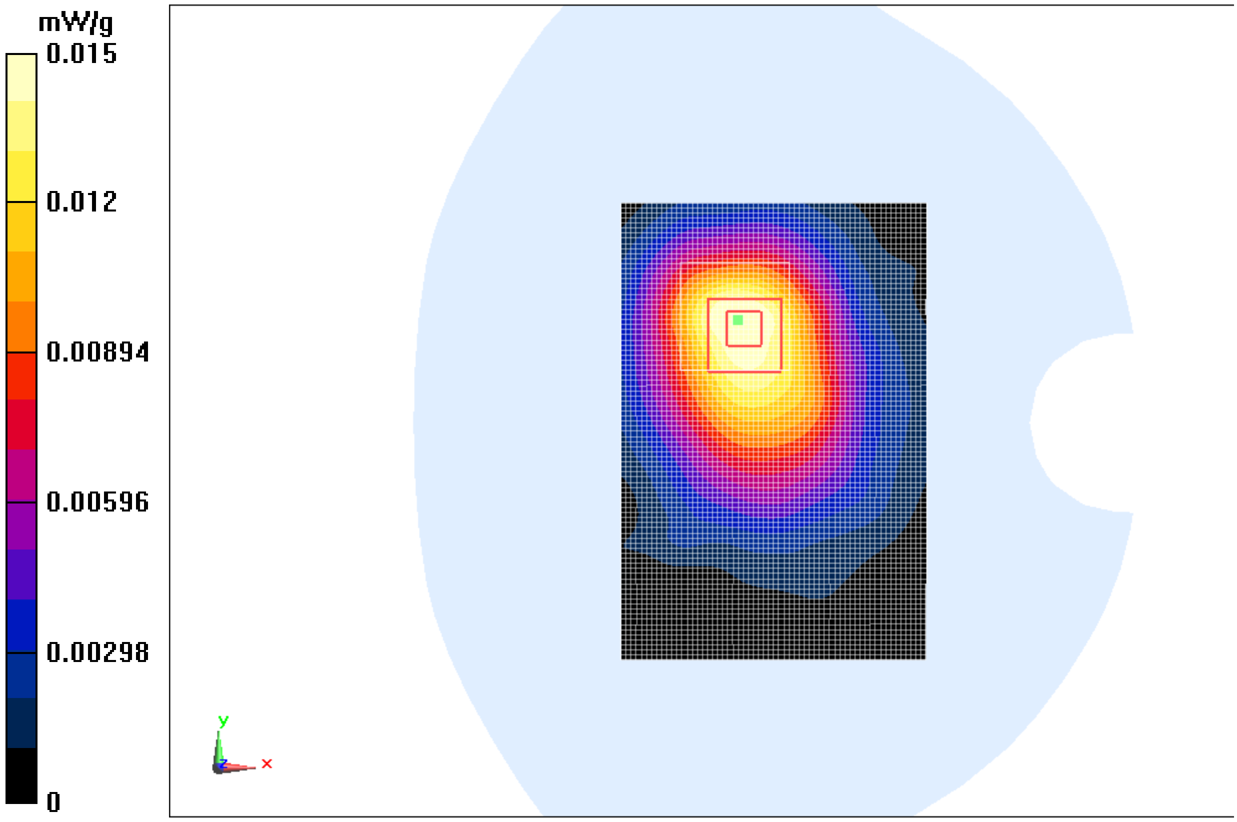


Fig. 23 850 MHz CH251

850 Body Folded Towards Ground High with Headset CCB3160A15C4
Date: 2012-9-26
Electronics: DAE4 Sn771
Medium: Body 850 MHz
Medium parameters used (interpolated): f = 848.8 MHz; σ = 1.003 mho/m; εr = 55.543; ρ = 1000 kg/m^3
Ambient Temperature: 22.7^{o}C Liquid Temperature: 22.2^{o}C
Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.14, 6.14, 6.14)

Toward Ground High/Area Scan (61x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0191 mW/g

Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.937 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.024 mW/g
SAR(1 g) = 0.018 mW/g; SAR(10 g) = 0.013 mW/g
Maximum value of SAR (measured) = 0.0189 mW/g

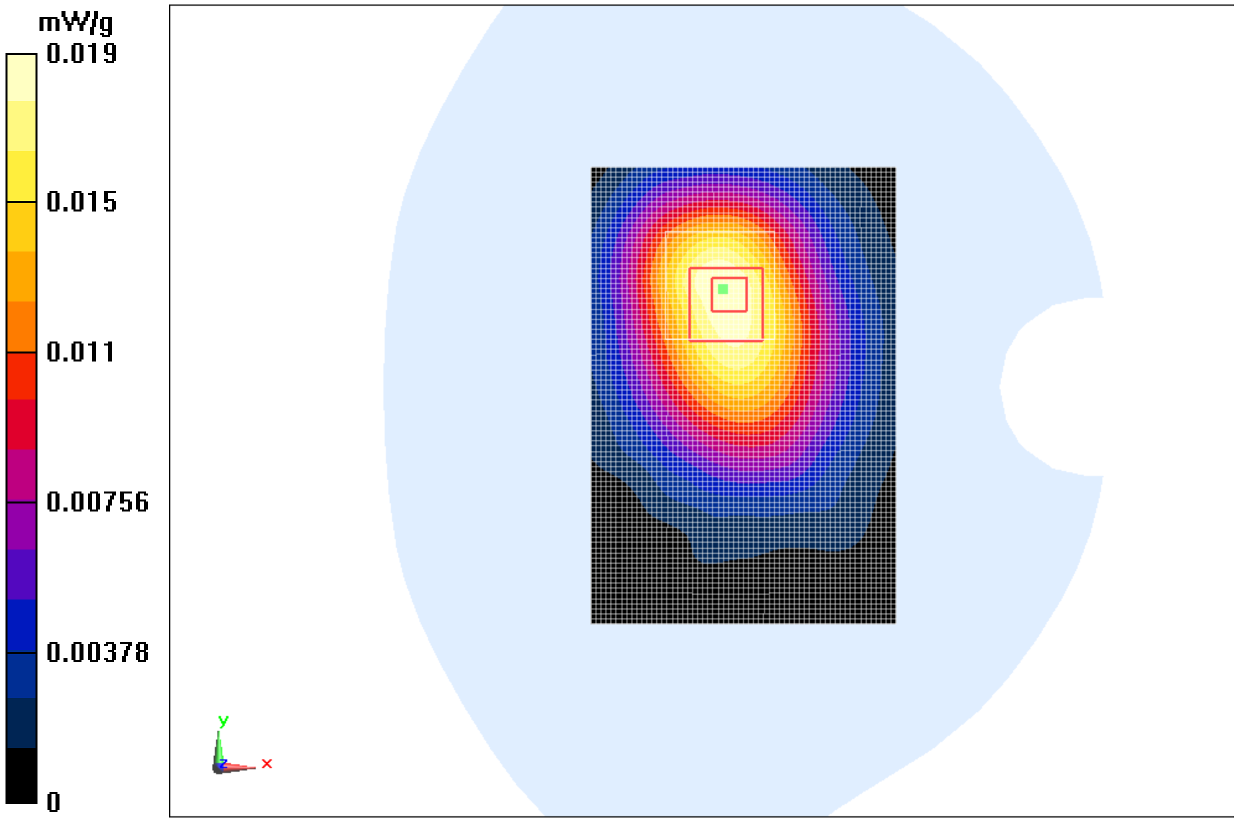


Fig. 24 850 MHz CH251

1900 Left Cheek High

Date: 2012-9-27
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1910 MHz; σ = 1.423 mho/m; εr = 39.202; ρ = 1000 kg/m^3
Ambient Temperature: 22.5°C Liquid Temperature: 22.1°C
Communication System: GSM 1900MHz Frequency: 1909.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.19, 5.19, 5.19)

Cheek High/Area Scan (61x151x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.279 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.468 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.398 mW/g
SAR(1 g) = 0.243 mW/g; SAR(10 g) = 0.134 mW/g
Maximum value of SAR (measured) = 0.274 mW/g

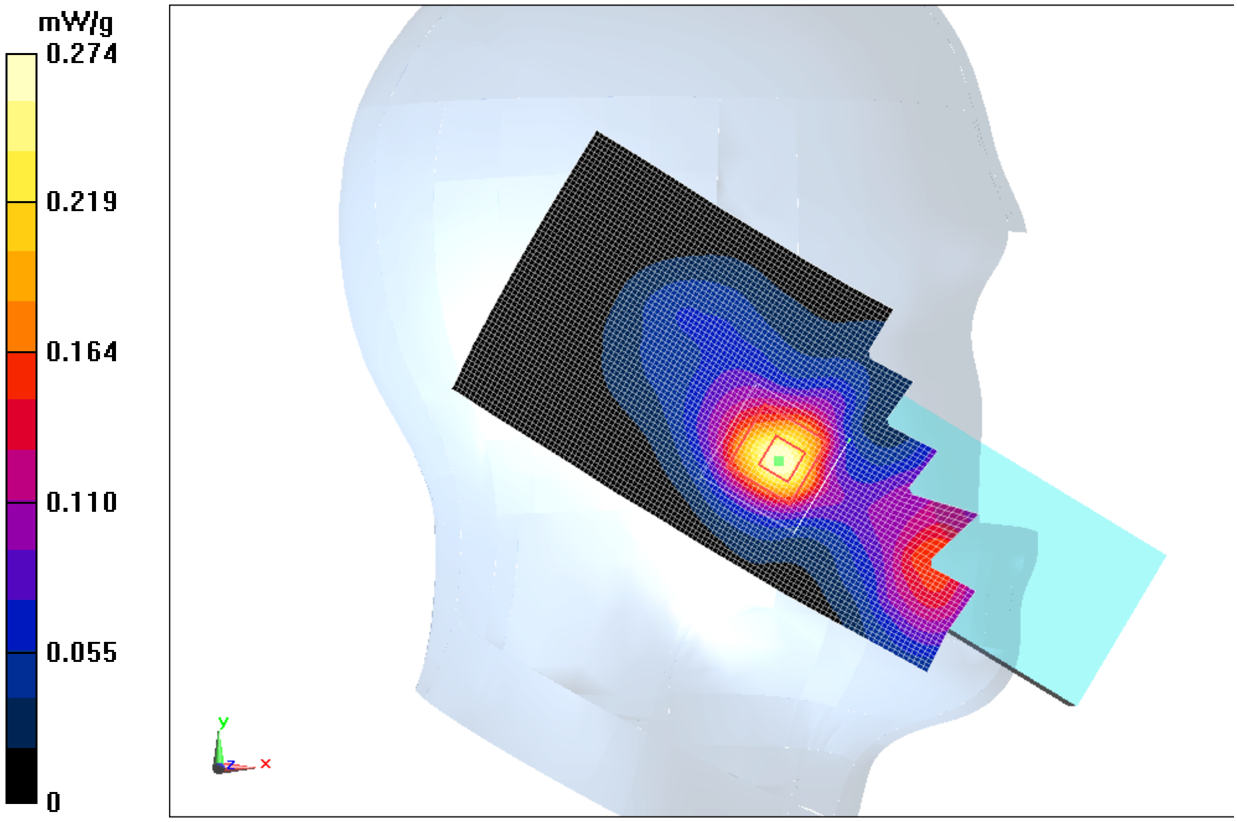


Fig. 25 1900 MHz CH810

1900 Left Cheek Middle

Date: 2012-9-27
Electronics: DAE4 Sn771
Medium: Head GSM1900
Medium parameters used: f = 1880 MHz; σ = 1.395 mho/m; εr = 39.357; ρ = 1000 kg/m^3
Ambient Temperature: 22.5°C   Liquid Temperature: 22.1°C
Communication System: GSM 1900MHz Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.19, 5.19, 5.19)

Cheek Middle/Area Scan (61x151x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.295 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.464 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.426 mW/g
SAR(1 g) = 0.258 mW/g; SAR(10 g) = 0.143 mW/g
Maximum value of SAR (measured) = 0.290 mW/g

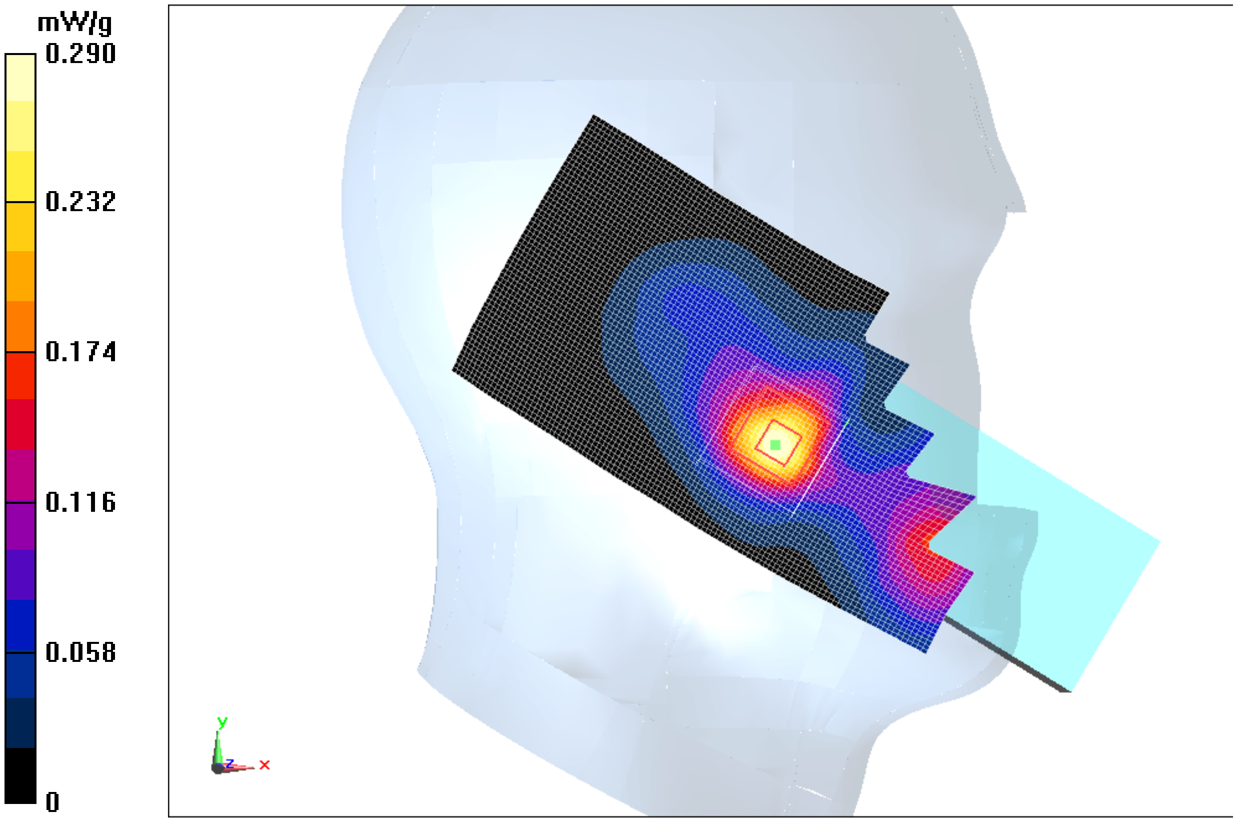


Fig. 26 1900 MHz CH661

1900 Left Cheek Low

Date: 2012-9-27
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.368 mho/m; εr = 39.486; ρ = 1000 kg/m^3
Ambient Temperature: 22.5°C Liquid Temperature: 22.1°C
Communication System: GSM 1900MHz Frequency: 1850.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.19, 5.19, 5.19)

Cheek Low/Area Scan (61x151x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.312 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.547 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.446 mW/g
SAR(1 g) = 0.275 mW/g; SAR(10 g) = 0.154 mW/g
Maximum value of SAR (measured) = 0.306 mW/g

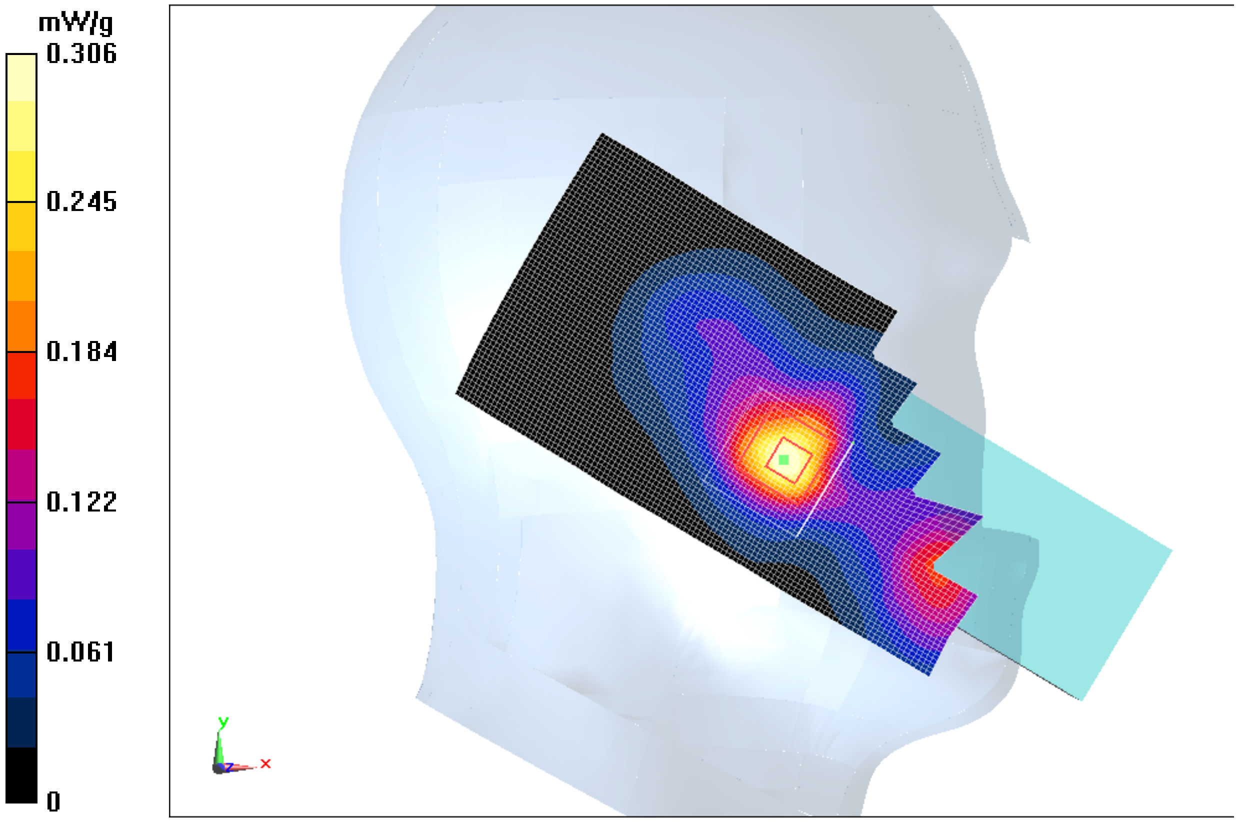


Fig. 27 1900 MHz CH512

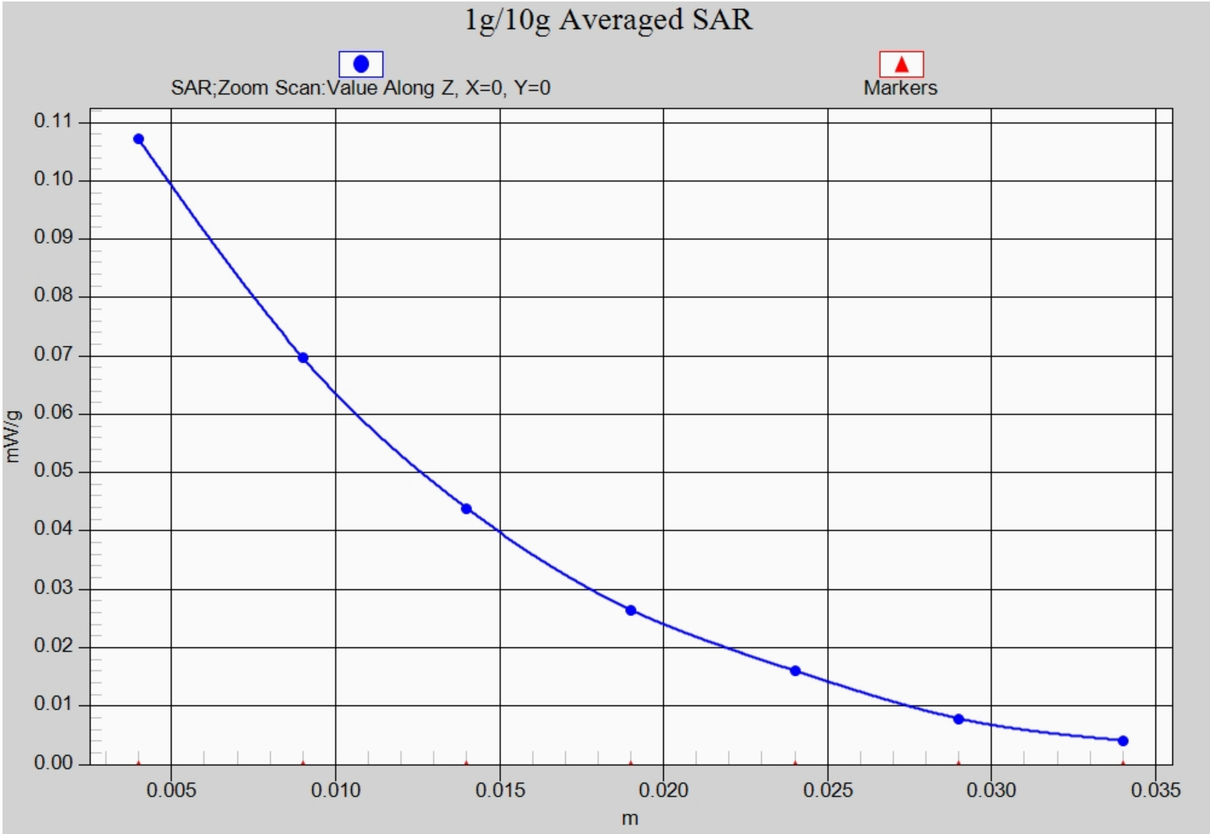


Fig. 27-1 Z-Scan at power reference point (1900 MHz CH512)