



Report No.: RZA2009-1087FCC



# OET 65

## TEST REPORT

Product Name	WIFI Mobile Phone
Model	C5000
FCC ID	XPKC5000
Client	SHENZHEN PXHT ELECTRONIC TECHNOLOGY CO.,LTD

**TA Technology (Shanghai) Co., Ltd.**



## GENERAL SUMMARY

<b>Product Name</b>	WIFI Mobile Phone	<b>Model</b>	C5000
<b>FCC ID</b>	XPKC5000	<b>Report No.</b>	RZA2009-1087
<b>Client</b>	SHENZHEN PXHT ELECTRONIC TECHNOLOGY CO.,LTD		
<b>Manufacturer</b>	SHENZHEN PXHT ELECTRONIC TECHNOLOGY CO.,LTD		
<b>Reference Standard(s)</b>	<p><b>ANSI C95.1-1999:</b> IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.</p> <p><b>IEEE 1528-2003:</b> Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head Due to Wireless Communications Devices: Experimental Techniques.</p> <p><b>OET Bulletin 65 supplement C, published June 2001 including DA 02-1438, published June 2002:</b> Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits. Transition Period for the Phantom Requirements of Supplement C to OET Bulletin 65.</p> <p><b>IEC 62209-1:</b> Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures –Part 1: Procedure to determine the Specific Absorption Rate (SAR) for hand-held devices used in proximity to the ear (frequency range of 300 MHz to 3 GHz).</p> <p><b>IEC 62209-2:2008(106/162/CDV)::</b> Human exposure to radio frequency fields from handheld and body-mounted wireless communication devices – Human models, instrumentation, and procedures –Part 2: Procedure to determine the Specific Absorption Rate (SAR)for wireless communication devices used in proximity to the human body .( frequency rang of 30MHz to 6GHz )</p>		
<b>Conclusion</b>	<p>This portable wireless equipment has been measured in all cases requested by the relevant standards. Test results in Chapter 7 of this test report are below limits specified in the relevant standards.</p> <p>General Judgment: <b>Pass</b></p> <p style="text-align: right;">(Stamp) <b>Date of issue: September 11<sup>st</sup>, 2009</b></p>		
<b>Comment</b>	The test result only responds to the measured sample.		

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## **1. General Information**

### **1.1. Notes of the test report**

**TA Technology (Shanghai) Co., Ltd.** guarantees the reliability of the data presented in this test report, which is the results of measurements and tests performed for the items under test on the date and under the conditions stated in this test report and is based on the knowledge and technical facilities available at TA Technology (Shanghai) Co., Ltd. at the time of execution of the test.

**TA Technology (Shanghai) Co., Ltd.** is liable to the client for the maintenance by its personnel of the confidentiality of all information related to the items under test and the results of the test. This report only refers to the item that has undergone the test.

This report standalone does not constitute or imply by its own an approval of the product by the certification Bodies or competent Authorities. This report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of **TA Technology (Shanghai) Co., Ltd.** and the Accreditation Bodies, if it applies.

### **1.2. Testing laboratory**

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### 1.3. Applicant Information

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Disrict,ShenZhen.  
City: ShenZhen  
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### 1.4. Manufacturer Information

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### 1.5. Information of EUT

#### General information

Device type :	portable device		
Exposure category:	uncontrolled environment / general population		
Product Name:	WIFI Mobile Phone		
IMEI or SN:	354500022081955		
Device operating configurations :			
Operating mode(s):	GSM850; （tested） GSM1900; （tested）		
Test Modulation:	GMSK		
Operating frequency range(s):	Band	Tx (MHz)	Rx (MHz)
	GSM 850	824.2 ~ 848.8	869.2 ~ 893.8
	GSM 1900	1850.2 ~ 1909.8	1930.2 ~ 1989.8
Power class	GSM 850: 4, tested with power level 5		
	GSM 1900: 1, tested with power level 0		
Test channel (Low –Middle –High)	128 -190 -251	(GSM850)	(tested)
	512 - 661-810	(GSM1900)	(tested)
hardware version:	E710-v1.3		
software version:	E710_PXHT1V18_01_0		
antenna type:	internal antenna		

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### Auxiliary equipment details

#### AE1: Battery

Model: C5000  
Manufacture: SHENZHEN GUANGXUNLISHEN TECHNOLOGY CO. , LTD  
IMEI or SN: /

#### AE2: Travel Adapter

Model: C5000  
Manufacture: SHENZHEN JINLIYUAN ELECTRONIC TECHNOLOGY CO. , LTD  
IMEI or SN: /

Equipment Under Test (EUT) is a WIFI Mobile Phone with internal antenna. It consists of mobile phone, battery and adaptor and the detail about these is in chapter 1.5 in this report. SAR is tested for GSM850, GSM 1900.

The sample under test was selected by the Client.

Components list please refer to documents of the manufacturer.

### 1.6. Test Period

The test is performed from August 24, 2009 to August 25, 2009.



## **2. Operational Conditions during Test**

### **2.1. General description of test procedures**

A communication link is set up with a System Simulator (SS) by air link, and a call is established. The Absolute Radio Frequency Channel Number (ARFCN) is allocated to 128, 190 and 251 in the case of GSM 850, allocated to 512, 661 and 810 in the case of GSM 1900. The EUT is commanded to operate at maximum transmitting power.

Connection to the EUT is established via air interface with E5515C, and the EUT is set to maximum output power by E5515C. The antenna connected to the output of the base station simulator shall be placed at least 50 cm away from the EUT. The signal transmitted by the simulator to the antenna feeding point shall be lower than the output power level of the EUT by at least 30 dB.

### **2.2. GSM Test Configuration**

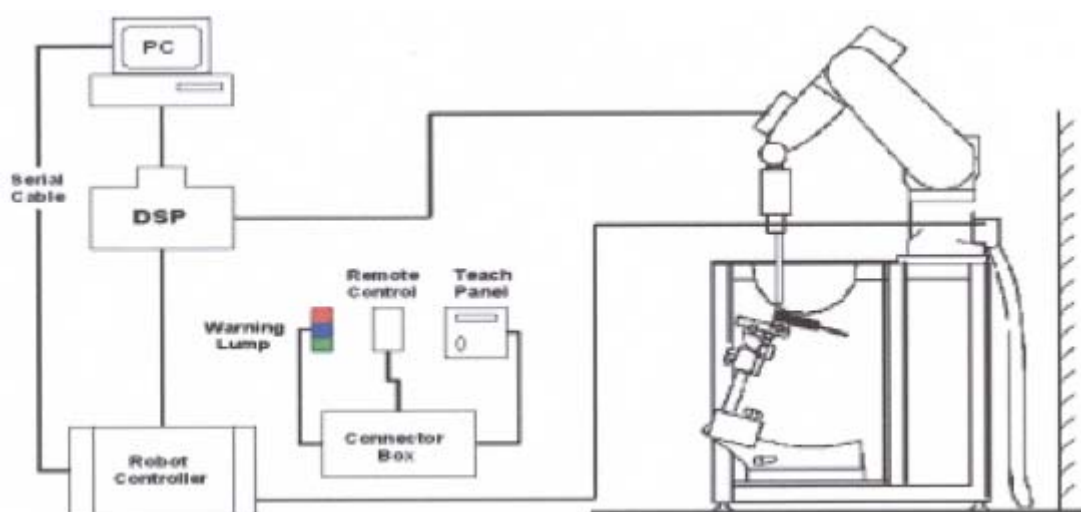
SAR tests for GSM 850 and GSM 1900, a communication link is set up with a System Simulator (SS) by air link. Using E5515C the power level is set to "5" in head SAR and body SAR of GSM850, set to "0" in head SAR and body SAR of GSM1900,

### 3. SAR Measurements System Configuration

#### 3.1. SAR Measurement Set-up

The DASY4 system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot (Stäubli RX family) with controller and software. An arm extension for accommodating the data acquisition electronics (DAE).
- A dosimetric probe, i.e. an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
- A data acquisition electronic (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.
- A unit to operate the optical surface detector which is connected to the EOC.
- The Electro-Optical Coupler (EOC) performs the conversion from the optical into a digital electric signal of the DAE. The EOC is connected to the DASY4 measurement server.
- The DASY4 measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation. A computer operating Windows 2003
- DASY4 software and SEMCAD data evaluation software.
- Remote control with teach panel and additional circuitry for robot safety such as warning lamps, etc.
- The generic twin phantom enabling the testing of left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- System validation dipoles allowing to validate the proper functioning of the system.



**Figure 1. SAR Lab Test Measurement Set-up**

### 3.2. Dasy4 E-field Probe System

The SAR measurements were conducted with the dosimetric probe ET3DV6 (manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation.

#### 3.2.1. ET3DV6 Probe Specification

Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection System (ET3DV6 only) Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., glycol)
Calibration	In air from 10 MHz to 3 GHz In brain and muscle simulating tissue at frequencies of 450MHz, 900MHz, 1750 MHz, 1950MHz and 2450 MHz. (accuracy $\pm$ 8%) Calibration for other liquids and frequencies upon request
Frequency	10 MHz to 2.5 GHz; Linearity: $\pm$ 0.2 dB (30 MHz to 2.5 GHz)
Directivity	$\pm$ 0.2 dB in brain tissue (rotation around probe axis) $\pm$ 0.4 dB in brain tissue (rotation around probe axis)
Dynamic Range	5u W/g to > 100mW/g; Linearity: $\pm$ 0.2dB
Surface Detection	$\pm$ 0.2 mm repeatability in air and clear liquids over diffuse reflecting surface (ET3DV6 only)
Dimensions	Overall length: 330mm Tip length: 16mm Body diameter: 12mm Tip diameter: 6.8mm Distance from probe tip to dipole centers: 2.7mm
Application	General dosimetry up to 2.5GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms

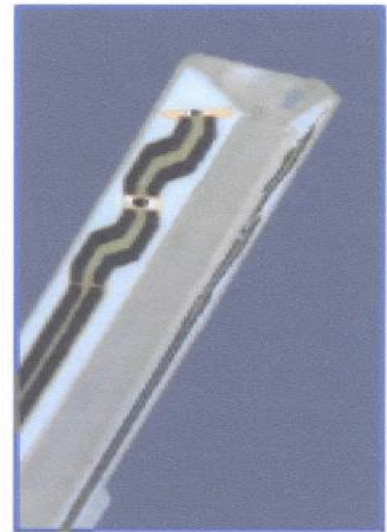


Figure 2 ET3DV6 E-field Probe

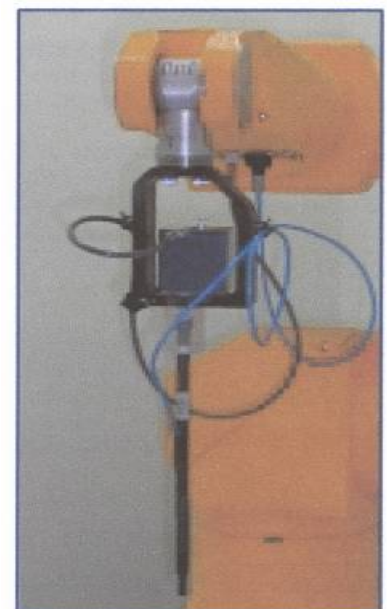


Figure 3 ET3DV6 E-field probe

### 3.2.2. E-field Probe Calibration

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

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

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

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

Where:  $\Delta t$  = Exposure time (30 seconds),  
 $C$  = Heat capacity of tissue (brain or muscle),  
 $\Delta T$  = Temperature increase due to RF exposure.  
Or

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

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

### 3.3. Other Test Equipment

#### 3.3.1. Device Holder for Transmitters

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 amount of dielectric material has been reduced in the vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.



**Figure 4. Device Holder**

### 3.3.2. Phantom

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

Shell Thickness	2±0.1 mm
Filling Volume	Approx. 20 liters
Dimensions	810 x 1000 x 500 mm (H x L x W)
Available	Special



**Figure 5. Generic Twin Phantom**

### 3.4. Scanning procedure

The DASY4 installation includes predefined files with recommended procedures for measurements and validation. They are read-only document files and destined as fully defined but unmeasured masks. All test positions (head or body-worn) are tested with the same configuration of test steps differing only in the grid definition for the different test positions.

- The "reference" and "drift" measurements are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure. The indicated drift is mainly the variation of the DUT's output power and should vary max.  $\pm 5\%$ .
- The "surface check" measurement tests the optical surface detection system of the DASY4 system by repeatedly detecting the surface with the optical and mechanical surface detector and comparing the results. The output gives the detecting heights of both systems, the difference between the two systems and the standard deviation of the detection repeatability. Air bubbles or refraction in the liquid due to separation of the sugar-water mixture gives poor repeatability (above  $\pm 0.1\text{mm}$ ). To prevent wrong results tests are only executed when the liquid is free of air bubbles. The difference between the optical surface detection and the actual surface depends on the probe and is specified with each probe. (It does not depend on the surface reflectivity or the probe angle to the surface within  $\pm 30^\circ$ .)
- Area Scan  
The Area Scan is used as a fast scan in two dimensions to find the area of high field values before running a detailed measurement around the hot spot. Before starting the area scan a grid

spacing of 15 mm x 15 mm is set. During the scan the distance of the probe to the phantom remains unchanged.

After finishing area scan, the field maxima within a range of 2 dB will be ascertained.

- **Zoom Scan**

Zoom Scans are used to estimate the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The default Zoom Scan is done by 7x7x7 points within a cube whose base is centered around the maxima found in the preceding area scan.

- **Spatial Peak Detection**

The procedure for spatial peak SAR evaluation has been implemented and can determine values of masses of 1g and 10g, as well as for user-specific masses. The DASY4 system allows evaluations that combine measured data and robot positions, such as:

- maximum search
- extrapolation
- boundary correction
- peak search for averaged SAR

During a maximum search, global and local maxima searches are automatically performed in 2-D after each Area Scan measurement with at least 6 measurement points. It is based on the evaluation of the local SAR gradient calculated by the Quadratic Shepard's method. The algorithm will find the global maximum and all local maxima within -2 dB of the global maxima for all SAR distributions.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. Several measurements at different distances are necessary for the extrapolation. Extrapolation routines require at least 10 measurement points in 3-D space. They are used in the Zoom Scan to obtain SAR values between the lowest measurement points and the inner phantom surface. The routine uses the modified Quadratic Shepard's method for extrapolation. For a grid using 7x7x7 measurement points with 5mm resolution amounting to 343 measurement points, the uncertainty of the extrapolation routines is less than 1% for 1g and 10g cubes.

- A Z-axis scan measures the total SAR value at the x-and y-position of the maximum SAR value found during the cube 7x7x7 scan. The probe is moved away in z-direction from the bottom of the SAM phantom in 5mm steps.

### **3.5. Data Storage and Evaluation**

#### **3.5.1. Data Storage**

The DASY4 software stores the acquired data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension ".DA4". The software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of incorrect parameter settings. For example, if a measurement has been performed with a wrong crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be re-evaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type ([V/m], [A/m], [°C], [mW/g], [mW/cm<sup>2</sup>], [dBrel], etc.). Some of these units are not available in certain situations or show meaningless results, e.g., a SAR output in a lossless media will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

#### **3.5.2. Data Evaluation by SEMCAD**

The SEMCAD software automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe parameters:	- Sensitivity	Normi, ai <sub>0</sub> , ai <sub>1</sub> , ai <sub>2</sub>
	- Conversion factor	ConvFi
	- Diode compression point	Dcp <sub>i</sub>
Device parameters:	- Frequency	f
	- Crest factor	cf
Media parameters:	- Conductivity	
	- Density	

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY4 components. In the direct measuring mode of the multimeter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal,

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the diode type and the DC-transmission factor from the diode to the evaluation electronics.

If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \cdot c f / d c p_i$$

With  $V_i$  = compensated signal of channel i (i = x, y, z)

$U_i$  = input signal of channel i (i = x, y, z)

$cf$  = crest factor of exciting field (DASY parameter)

$dcp_i$  = diode compression point (DASY parameter)

From the compensated input signals the primary field data for each channel can be evaluated:

E-field probes:  $E_i = (V_i / Norm_i \cdot ConvF)^{1/2}$

H-field probes:  $H_i = (V_i)^{1/2} \cdot (a_{i0} + a_{i1}f + a_{i2}f^2) / f$

With  $V_i$  = compensated signal of channel i (i = x, y, z)

$Norm_i$  = sensor sensitivity of channel i (i = x, y, z)  
[mV/(V/m)<sup>2</sup>] for E-field Probes

$ConvF$  = sensitivity enhancement in solution

$a_{ij}$  = sensor sensitivity factors for H-field probes

$f$  = carrier frequency [GHz]

$E_i$  = electric field strength of channel i in V/m

$H_i$  = magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude):

$$E_{tot} = (E_x^2 + E_y^2 + E_z^2)^{1/2}$$

The primary field data are used to calculate the derived field units.

$$SAR = (E_{tot}^2 \cdot \dots) / (\dots \cdot 1000)$$



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with **SAR** = local specific absorption rate in mW/g

**$E_{tot}$**  = total field strength in V/m

**$\sigma$**  = conductivity in [mho/m] or [Siemens/m]

**$\rho$**  = equivalent tissue density in g/cm<sup>3</sup>

Note that the density is normally set to 1 (or 1.06), to account for actual brain density rather than the density of the simulation liquid. The power flow density is calculated assuming the excitation field to be a free space field.

$$P_{pwe} = E_{tot}^2 / 3770 \quad \text{or} \quad P_{pwe} = H_{tot}^2 \cdot 37.7$$

with  **$P_{pwe}$**  = equivalent power density of a plane wave in mW/cm<sup>2</sup>

**$E_{tot}$**  = total electric field strength in V/m

**$H_{tot}$**  = total magnetic field strength in A/m

### 3.6. System check

The manufacturer calibrates the probes annually. Dielectric parameters of the tissue simulates were measured every day using the dielectric probe kit and the network analyzer. A system check measurement was made following the determination of the dielectric parameters of the simulates, using the dipole validation kit. A power level of 250 mW was supplied to the dipole antenna, which was placed under the flat section of the twin SAM phantom. The system check results (dielectric parameters and SAR values) are given in the table 7 and table 8.

System check results have to be equal or near the values determined during dipole calibration with the relevant liquids and test system ( $\pm 10\%$ ).

System check is performed regularly on all frequency bands where tests are performed with the DASY 4 system.

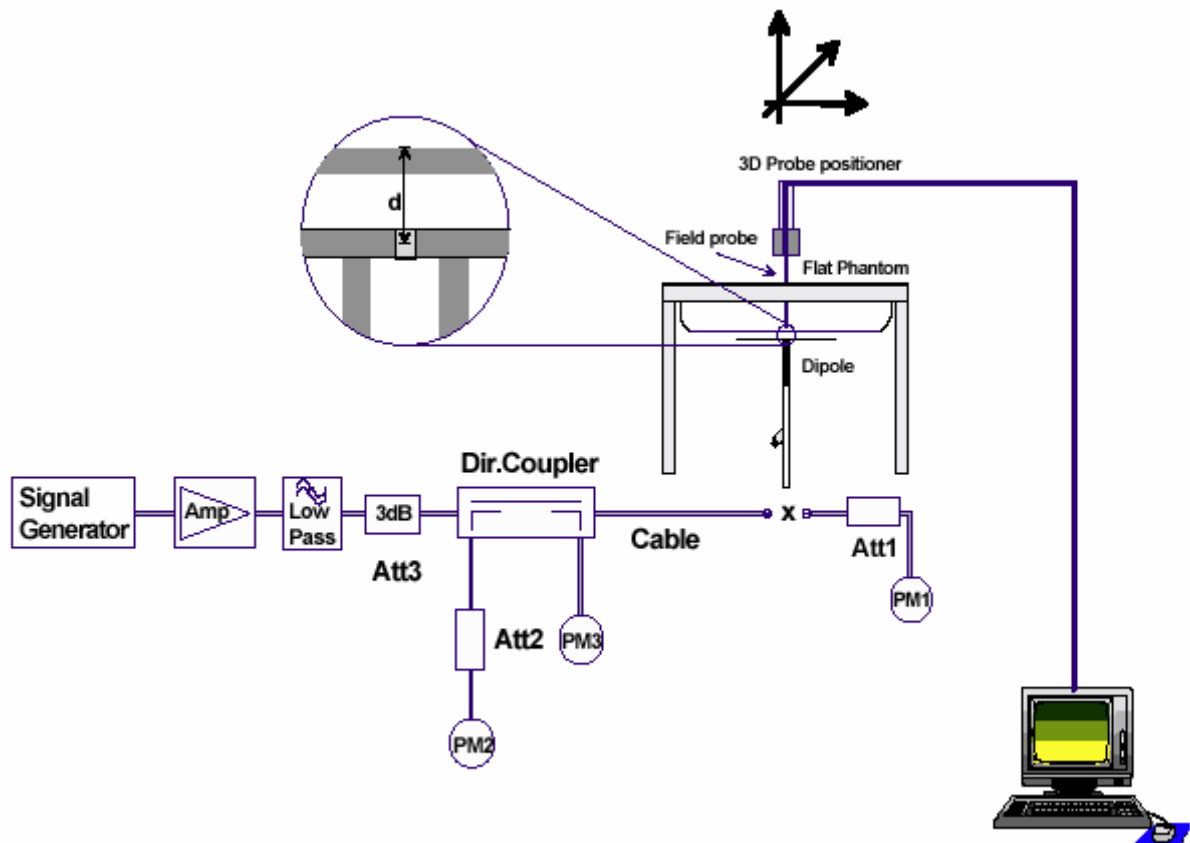


Figure 6. System Check Set-up

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### 3.7. Equivalent Tissues

The liquid is consisted of water, salt, Glycol, Sugar, Preventol and Cellulose. The liquid has previously been proven to be suited for worst-case. The Table 1 and Table 2 show the detail solution. It's satisfying the latest tissue dielectric parameters requirements proposed by the OET 65.

**Table 1: Composition of the Head Tissue Equivalent Matter**

MIXTURE%	FREQUENCY(Brain) 835MHz
Water	41.45
Sugar	56
Salt	1.45
Preventol	0.1
Cellulose	1.0
Dielectric Parameters Target Value	f=835MHz $\epsilon=41.5$ $\sigma=0.9$

MIXTURE%	FREQUENCY(Brain)1900MHz
Water	55.242
Glycol monobutyl	44.452
Salt	0.306
Dielectric Parameters Target Value	f=1900MHz $\epsilon=40.0$ $\sigma=1.40$

**Table 2: Composition of the Body Tissue Equivalent Matter**

MIXTURE%	FREQUENCY(Body)835MHz
Water	52.5
Sugar	45
Salt	1.4
Preventol	0.1
Cellulose	1.0
Dielectric Parameters Target Value	f=835MHz $\epsilon=55.2$ $\sigma=0.97$

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

## 4. Laboratory Environment

**Table 3: The Ambient Conditions during Test**

Temperature	Min. = 20°C, Max. = 25 °C
Relative humidity	Min. = 30%, Max. = 70%
Ground system resistance	< 0.5 $\Omega$
Ambient noise is checked and found very low and in compliance with requirement of standards.	
Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

## 5. Characteristics of the Test

### 5.1. Applicable Limit Regulations

**ANSI/IEEE Std 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

**IEEE 1528–2003:** Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head Due to Wireless Communications Devices: Experimental Techniques.

**OET Bulletin 65 supplement C, published June 2001 including DA 02-1438, published June 2002:** Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits. Transition Period for the Phantom Requirements of Supplement C to OET Bulletin 65.

**IEC 62209-1:** Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures –Part 1: Procedure to determine the Specific Absorption Rate (SAR) for hand-held devices used in proximity to the ear (frequency range of 300 MHz to 3 GHz).

**IEC 62209-2:2008(106/162/CDV)::** Human exposure to radio frequency fields from handheld and body-mounted wireless communication devices – Human models, instrumentation, and procedures –Part 2: Procedure to determine the Specific Absorption Rate (SAR)for wireless communication devices used in proximity to the human body .( frequency rang of 30MHz to 6GHz )

## 6. Conducted Output Power Measurement

### 6.1. Summary

The DUT is tested using an E5515C communications tester as controller unit to set test channels and maximum output power to the DUT, as well as for measuring the conducted peak power. Conducted output power was measured using an integrated RF connector and attached RF cable. This result contains conducted output power for the EUT.

### 6.2. Conducted Power Results

**Table 4: Conducted Power Measurement Results**

<b>GSM 850</b>	<b>Conducted Power</b>		
	Channel 128	Channel 190	Channel 251
	(824.2MHz)	(836.6MHz)	(848.8MHz)
Before Test (dBm)	31.43	31.02	30.42
After Test (dBm)	31.42	31.00	30.41
<b>GSM 1900</b>	<b>Conducted Power</b>		
	Channel 512	Channel 661	Channel 810
	(1850.2MHz)	(1880MHz)	(1909.8MHz)
Before Test (dBm)	28.21	28.50	28.18
After Test (dBm)	28.20	28.51	28.17
<b>GSM 850+GPRS</b>	<b>Conducted Power</b>		
	Channel 128	Channel 190	Channel 251
	(824.2MHz)	(836.6MHz)	(848.8MHz)
Before Test (dBm)	29.43	29.03	28.44
After Test (dBm)	29.42	29.02	28.43
<b>GSM 1900+GPRS</b>	<b>Conducted Power</b>		
	Channel 512	Channel 661	Channel 810
	(1850.2MHz)	(1880MHz)	(1909.8MHz)
Before Test (dBm)	28.22	28.50	28.19
After Test (dBm)	28.21	28.51	28.18

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## 7. Test Results

### 7.1. Dielectric Performance

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

Frequency	Description	Dielectric Parameters		Temp ℃
		$\epsilon_r$	$\sigma(\text{s/m})$	
<b>835MHz (head)</b>	Target value ± 5% window	41.5 39.43 — 43.58	0.90 0.86 — 0.95	/
	Measurement value 2009-8-24	41.86	0.92	21.8
<b>1900MHz (head)</b>	Target value 5% window	40.0 38 — 42	1.40 1.33 — 1.47	/
	Measurement value 2009-8-25	39.50	1.41	21.9

**Table 6: Dielectric Performance of Body Tissue Simulating Liquid**

Frequency	Description	Dielectric Parameters		Temp ℃
		$\epsilon_r$	$\sigma(\text{s/m})$	
<b>835MHz (body)</b>	Target value ±5% window	55.20 52.44 — 57.96	0.97 0.92 — 1.02	/
	Measurement value 2009-8-24	55.07	1.02	21.8
<b>1900MHz (body)</b>	Target value ±5% window	53.3 50.64 — 55.97	1.52 1.44 — 1.60	/
	Measurement value 2009-8-25	52.65	1.53	21.9

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### 7.2. System Check Results

**Table 7: System Check for Head tissue simulation liquid**

Frequency	Description	SAR(W/kg)		Dielectric Parameters		Temp
		10g	1g	$\epsilon_r$	$\sigma$ (s/m)	°C
835MHz	Recommended result ±10% window	1.55 1.40--1.67	2.40 2.07--2.53	41.2	0.91	/
	Measurement value 2009-8-25	1.50	2.30	41.86	0.92	21.9
1900MHz	Recommended result 10% window	5.00 4.50---5.50	9.88 8.89--10.87	39.6	1.4	/
	Measurement value 2009-8-25	5.09	9.74	39.50	1.41	22.1

Note: 1. the graph results see ANNEX B.

2. Recommended Values used derive from the calibration certificate and 250 mW is used as feeding power to the calibrated dipole.

**Table 8: System Check for Body tissue simulation liquid**

Frequency	Description	SAR(W/kg)		Dielectric Parameters		Temp
		10g	1g	$\epsilon_r$	$\sigma$ (s/m)	°C
835MHz	Recommended result ±10% window	1.58 1.42—1.74	2.41 2.17 — 2.65	54.6	0.99	/
	Measurement value 2009-8-25	1.58	2.40	55.07	1.02	21.9
1900 MHz	Recommended result ±10% window	5.18 4.46—5.70	10.2 9.18 — 11.22	52.9	1.55	/
	Measurement value 2009-8-25	5.14	10.0	52.65	1.53	21.7

Note: 1. The graph results see ANNEX B.

2. Target Values used derive from the calibration certificate and 250 mW is used as feeding power to the Calibrated dipole.

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### 7.3. Test Results

**Table 9: SAR Values (GSM850)**

Limit of SAR (W/kg)		10 g Average	1 g Average	Power Drift (dB)	Graph Results
		2.0	1.6	± 0.21	
Test Case		Measurement Result(W/kg)		Power Drift(dB)	
Different Test Position	Channel	10 g Average	1 g Average		
Test position of Head (SIM 1)					
Left hand, Touch cheek	High	0.240	0.336	-0.035	Figure 15
	Middle	0.226	0.317	-0.146	Figure 17
	Low	0.142	0.199	0.090	Figure 19
Left hand, Tilt 15 Degree	Middle	0.130	0.175	-0.031	Figure 21
Right hand, Touch cheek	Middle	0.211	0.289	-0.029	Figure 23
Right hand, Tilt 15 Degree	Middle	0.133	0.180	-0.156	Figure 25
Worst case position of Head at SIM 1 with SIM 2					
Left hand, Touch cheek	High	0.251	0.349	-0.072	Figure 27
Test position of Body (SIM 1) (Distance 15mm)					
Towards Ground	High	0.380	0.528	-0.003	Figure 29
	Middle	0.373	0.515	-0.032	Figure 31
	Low	0.286	0.393	-0.020	Figure 33
Towards phantom	Middle	0.200	0.272	-0.170	Figure 35
Worst case position of Body at SIM 1 with SIM 2					
Towards Ground	High	0.325	0.449	-0.057	Figure 37
Worst case position of Body with Earphone (Distance 15mm)					
Towards Ground	High	0.205	0.285	-0.061	Figure 39
Worst case position of Body with GPRS(4UP) (Distance 15mm)					
Towards Ground	High	0.707	0.972	-0.124	Figure 41
Worst case position of Body with EGPRS(4UP) (Distance 15mm)					
Towards Ground	High	0.744	1.010	-0.021	Figure 43

Note: 1. The value with blue color is the maximum SAR Value of test case of head and body in each test band.

- Upper and lower frequencies were measured at the worst position.
- The SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the SAR measured at mid-band channel for each test configuration is at least 3.0 dB lower than the SAR limit ( $< 0.8\text{W/kg}$ ), testing at the high and low channels is optional.



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**Table 10: SAR Values (GSM1900)**

Limit of SAR (W/kg)		10 g Average	1 g Average	Power Drift (dB)	Graph Results
		2.0	1.6	± 0.21	
Test Case		Measurement Result(W/kg)		Power Drift(dB)	
Different Test Position	Channel	10 g Average	1 g Average	Power Drift(dB)	
Test position of Head (SIM 1)					
Left hand, Touch cheek	High	0.370	0.687	0.013	Figure 45
	Middle	0.386	0.703	-0.017	Figure 47
	Low	0.388	0.703	-0.038	Figure 49
Left hand, Tilt 15 Degree	Middle	0.090	0.155	0.002	Figure 51
Right hand, Touch cheek	Middle	0.243	0.410	-0.002	Figure 53
Right hand, Tilt 15 Degree	Middle	0.097	0.165	-0.080	Figure 55
Worst case position of Head at SIM 1 with SIM 2					
Left hand, Touch cheek	Middle	0.391	0.715	-0.043	Figure 57
Test position of Body (SIM 1) (Distance 15mm)					
Towards Ground	High	0.088	0.150	-0.078	Figure 59
	Middle	0.092(max.cube)	0.155(max.cube)	-0.056	Figure 61
	Low	0.099(max.cube)	0.166(max.cube)	-0.030	Figure 63
Towards phantom	Middle	0.080	0.140	-0.030	Figure 65
Worst case position of Body at SIM 1 with SIM 2					
Towards Ground	Low	0.088(max.cube)	0.148(max.cube)	0.021	Figure 65
Worst case position of Body with Earphone (Distance 15mm)					
Towards Ground	Low	0.092(max.cube)	0.154(max.cube)	-0.072	Figure 67
Worst case position of Body with GPRS(4UP) (Distance 15mm)					
Towards Ground	Low	0.333(max.cube)	0.561(max.cube)	-0.142	Figure 69
Worst case position of Body with EGPRS(4UP) (Distance 15mm)					
Towards Ground	Low	0.28(max.cube)	0.467(max.cube)	-0.040	Figure 71

Note: 1. The value with blue color is the maximum SAR Value of test case of head and body in each test band.

2. Upper and lower frequencies were measured at the worst position.

3. The SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the SAR measured at mid-band channel for each test configuration is at least 3.0 dB lower than the SAR limit ( $< 0.8\text{W/kg}$ ), testing at the high and low channels is optional.

4. The (max.cube) labeling indicates that during the grid scanning an additional peak was found which was within 2.0dB of the highest peak. The value of the highest cube is given in the table above; the value from the second assessed cube is given in the SAR distribution plots (See ANNEX C).

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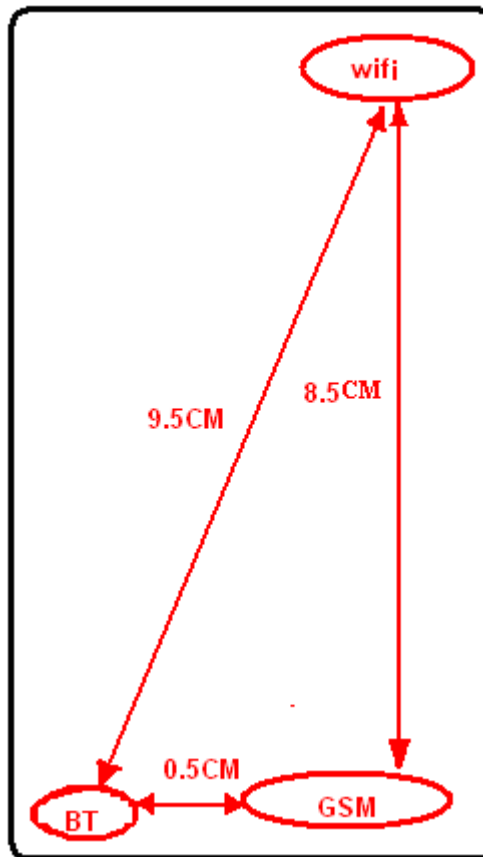
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### 7.3.1. Summary of Measurement Results (Bluetooth function)

The location of the antennas inside mobile phone is shown below:



The output power of BT antenna is as following:

Channel	Ch 0 2402 MHz	Ch 392441 Mhz	Ch 78 2480 MHz
Peak Conducted Output Power(dBm)	3.18	3.42	3.67

The output power of WIFI antenna is as following:

802.11b	Conducted Power(dBm)		
	Channel 1	Channel 7	Channel 13
	2412MHz	2442 MHz	2472 MHz
Peak Conducted Output Power(dBm)	11.23	10.62	10.18
802.11g	Conducted Power(dBm)		
	Channel 1	Channel 7	Channel 13
	2412MHz	2442 MHz	2472 MHz
Peak Conducted Output Power(dBm)	10.75	9.96	9.54

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According to the output power measurement result and the distance between the three antennas, we can draw the conclusion that: stand-alone SAR is not required for BT transmitter, because the output power of BT transmitter is  $\leq P_{\text{Ref}}$  and its antenna is  $<2.5\text{cm}$  from GSM antenna, the output power of BT transmitter is  $\leq 2P_{\text{Ref}}$  and its antenna is  $\geq 5\text{cm}$  from wifi antenna.

we can draw the conclusion that: stand-alone SAR is not required for WIFI transmitter, because the output power of BT transmitter is  $\leq 2P_{\text{Ref}}$  and its antenna is  $\geq 5\text{cm}$  from GSM antenna, the output power of WIFI transmitter is  $\leq 2P_{\text{Ref}}$  and its antenna is  $\geq 5\text{cm}$  from BT antenna.

So, because of the power and the distance, we didn't perform the standalone BT/WIFI SAR tests.

### 7.4. Conclusion

Localized Specific Absorption Rate (SAR) of this portable wireless device has been measured in all cases requested by the relevant standards cited in Clause 5.2 of this report. Maximum localized SAR<sub>1g</sub> are 0.715 W/kg (head) and 1.01 W/kg (body) that are below exposure limits specified in the relevant standards cited in Clause 5.1 of this test report.

No.	source	Type	Uncertainty Value (%)	Probability Distribution	k	c <sub>i</sub>	Standard uncertainty u <sub>i</sub> ' (%)	Degree of freedom V <sub>eff</sub> or v <sub>i</sub>
1	System repetivity	A	0.5	N	1	1	0.5	9
Measurement system								
2	probe calibration	B	5.9	N	1	1	5.9	∞
3	axial isotropy of the probe	B	4.7	R	$\sqrt{3}$	$\sqrt{0.5}$	1.9	∞
4	Hemispherical isotropy of the probe	B	9.4	R	$\sqrt{3}$	$\sqrt{0.5}$	3.9	∞
6	boundary effect	B	1.9	R	$\sqrt{3}$	1	1.1	∞
7	probe linearity	B	4.7	R	$\sqrt{3}$	1	2.7	∞
8	System detection limits	B	1.0	R	$\sqrt{3}$	1	0.6	∞
9	readout Electronics	B	1.0	N	1	1	1.0	∞
10	response time	B	0	R	$\sqrt{3}$	1	0	∞
11	integration time	B	4.32	R	$\sqrt{3}$	1	2.5	∞
12	noise	B	0	R	$\sqrt{3}$	1	0	∞
13	RF Ambient Conditions	B	3	R	$\sqrt{3}$	1	1.73	∞
14	Probe Positioner Mechanical Tolerance	B	0.4	R	$\sqrt{3}$	1	0.2	∞
15	Probe Positioning with respect to Phantom Shell	B	2.9	R	$\sqrt{3}$	1	1.7	∞
16	Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	B	3.9	R	$\sqrt{3}$	1	2.3	∞
Test sample Related								
17	-Test Sample Positioning	A	2.9	N	1	1	2.9	5
18	-Device Holder Uncertainty	A	4.1	N	1	1	4.1	5
19	-Output Power Variation - SAR drift measurement	B	5.0	R	$\sqrt{3}$	1	2.9	∞
Physical parameter								

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20	-phantom	B	4.0	R	$\sqrt{3}$	1	2.3	$\infty$
21	-liquid conductivity (deviation from target)	B	5.0	R	$\sqrt{3}$	0.6 4	1.8	$\infty$
22	-liquid conductivity (measurement uncertainty)	B	5.0	N	1	0.6 4	3.2	$\infty$
23	-liquid permittivity (deviation from target)	B	5.0	R	$\sqrt{3}$	0.6	1.7	$\infty$
24	-liquid permittivity (measurement uncertainty)	B	5.0	N	1	0.6	3.0	$\infty$
Combined standard uncertainty		$u_c' = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$					12.0	
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$		N	k=2		24.0	

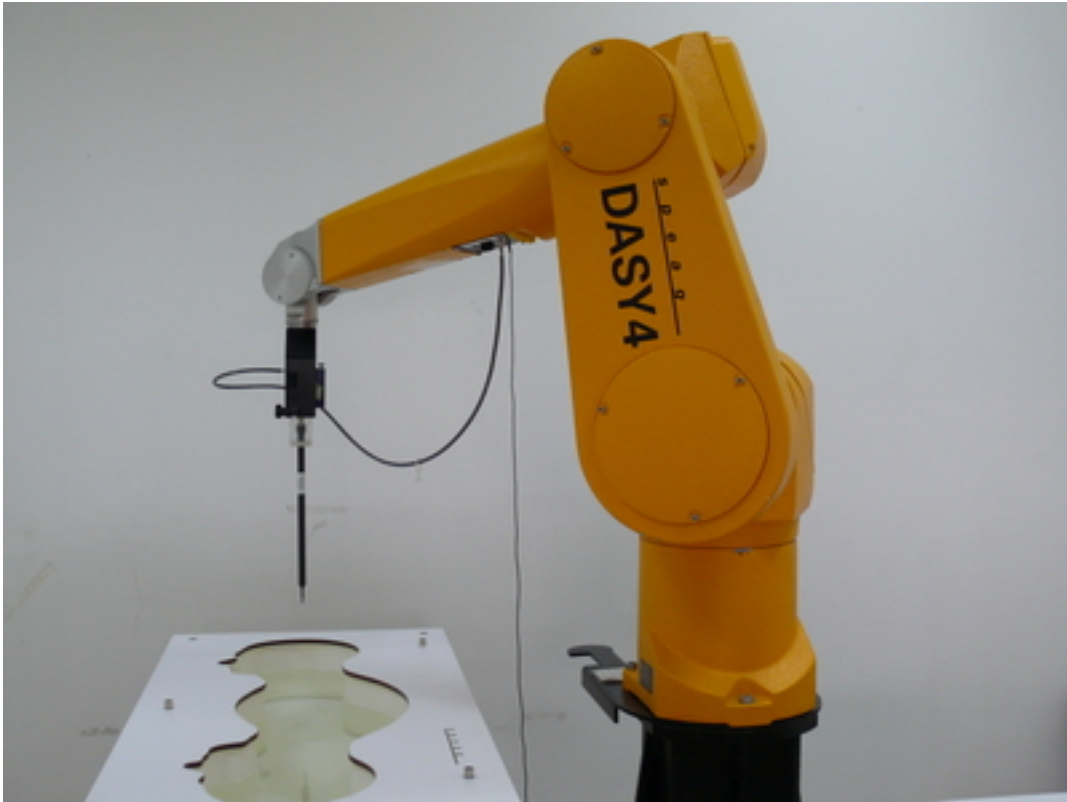
## 9. Main Test Instruments

**Table 11: List of Main Instruments**

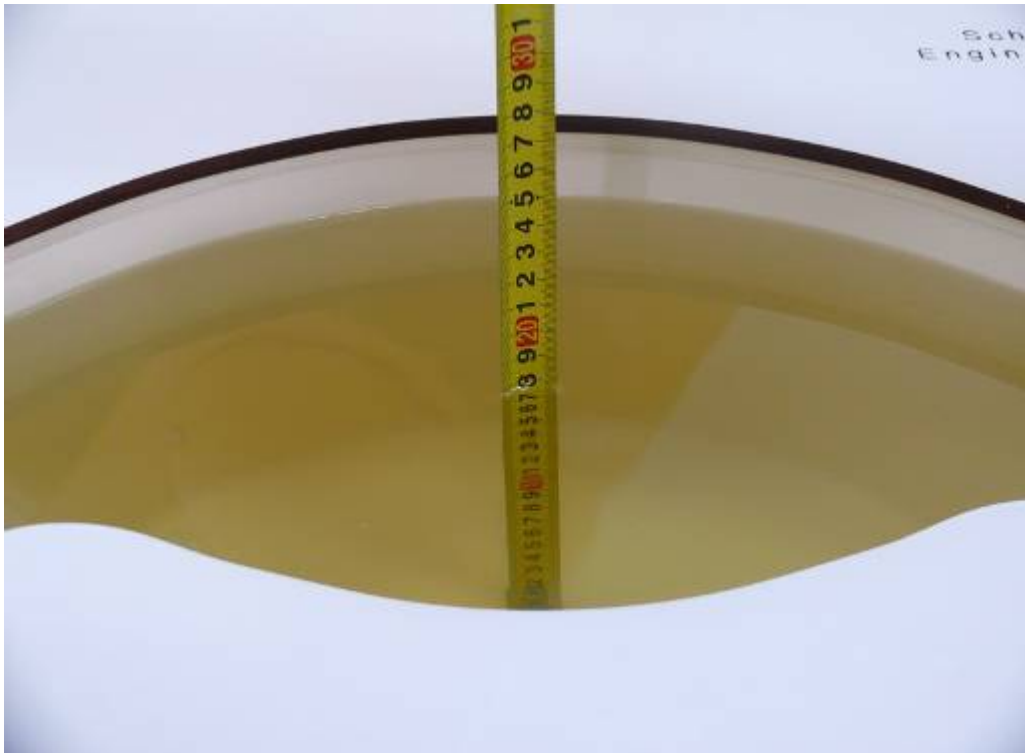
No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	Agilent 8753E	US37390326	September 14, 2008	One year
02	Dielectric Probe Kit	Agilent 85070E	US44020115	No Calibration Requested	
03	Power meter	Agilent E4417A	GB41291714	March 14, 2009	One year
04	Power sensor	Agilent 8481H	MY41091316	March 14, 2009	One year
05	Signal Generator	HP 8341B	2730A00804	September 14, 2008	One year
06	Amplifier	IXA-020	0401	No Calibration Requested	
07	BTS	E5515C	GB46490218	September 14, 2008	One year
08	E-field Probe	ET3DV6	1737	November 25, 2008	One year
09	DAE	DAE4	452	November 18, 2008	One year
10	Validation Kit 835MHz	D835V2	4d020	July 15, 2009	One year
11	Validation Kit 1900MHz	D1900V2	5d060	July 15, 2009	One year

\*\*\*\*\*END OF REPORT BODY\*\*\*\*\*

## ANNEX A: Test Layout



Picture 1: Specific Absorption Rate Test Layout

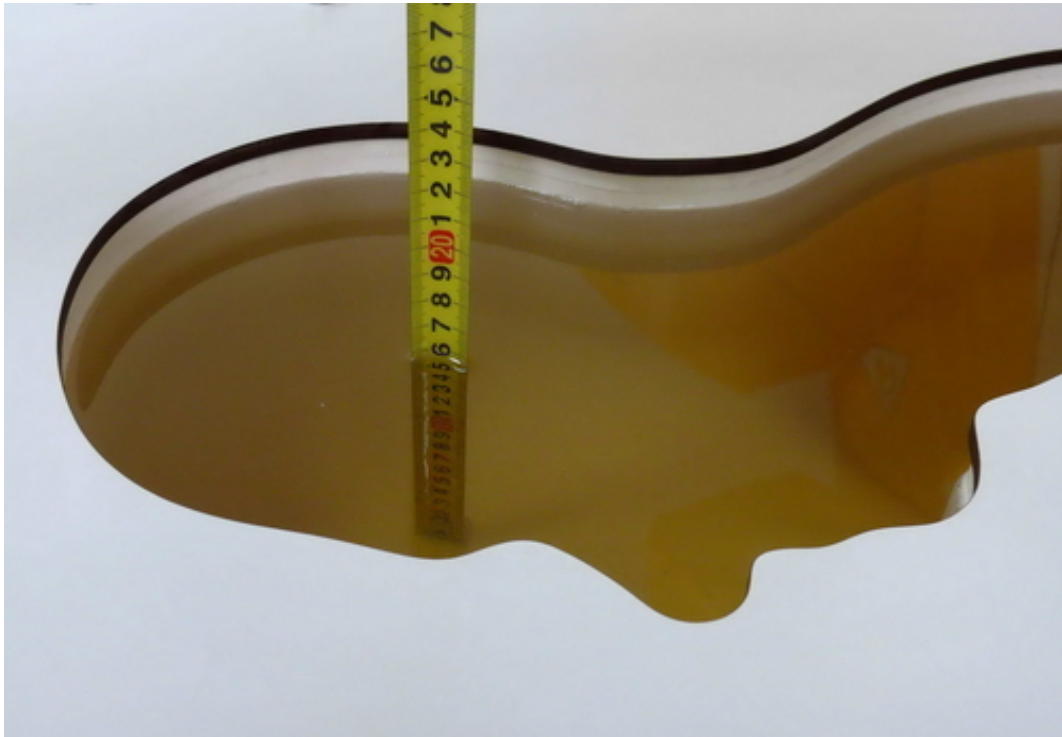


Picture 2: Liquid depth in the flat Phantom (835MHz)

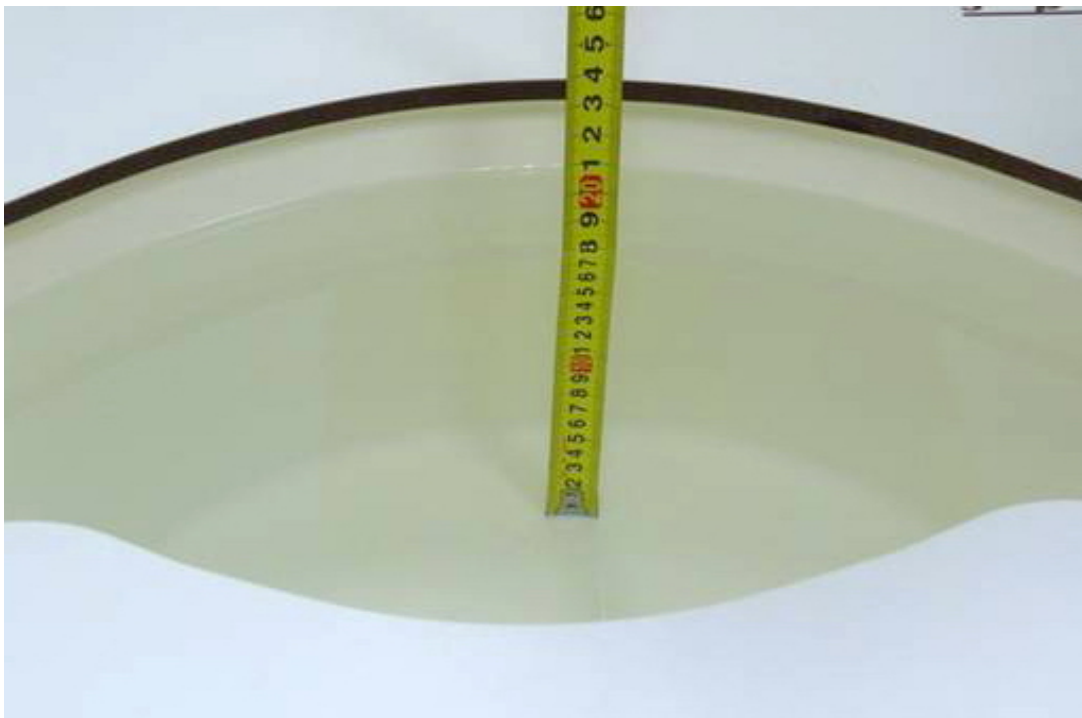
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Picture 3: Liquid depth in the head Phantom (835MHz)



Picture 4: Liquid depth in the flat Phantom (1900 MHz)

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Picture 5: liquid depth in the head Phantom (1900 MHz)



## ANNEX B: System Check Results

### System Performance Check at 835 MHz Head TSL

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d020**

Date/Time: 8/24/2009 7:14:58 PM

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.92 \text{ mho/m}$ ;  $\epsilon_r = 41.86$ ;  $\rho = 1000 \text{ kg/m}^3$

Probe: ET3DV6 - SN1737; ConvF(6.33, 6.33, 6.33); Calibrated: 11/25/2008

Electronics: DAE4 Sn452;

**d=15mm, Pin=250mW/Area Scan (101x121x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 2.81 mW/g

**d=15mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 55.8 V/m; Power Drift = -0.060 dB

Peak SAR (extrapolated) = 3.50 W/kg

**SAR(1 g) = 2.3 mW/g; SAR(10 g) = 1.5 mW/g**

Maximum value of SAR (measured) = 2.83 mW/g

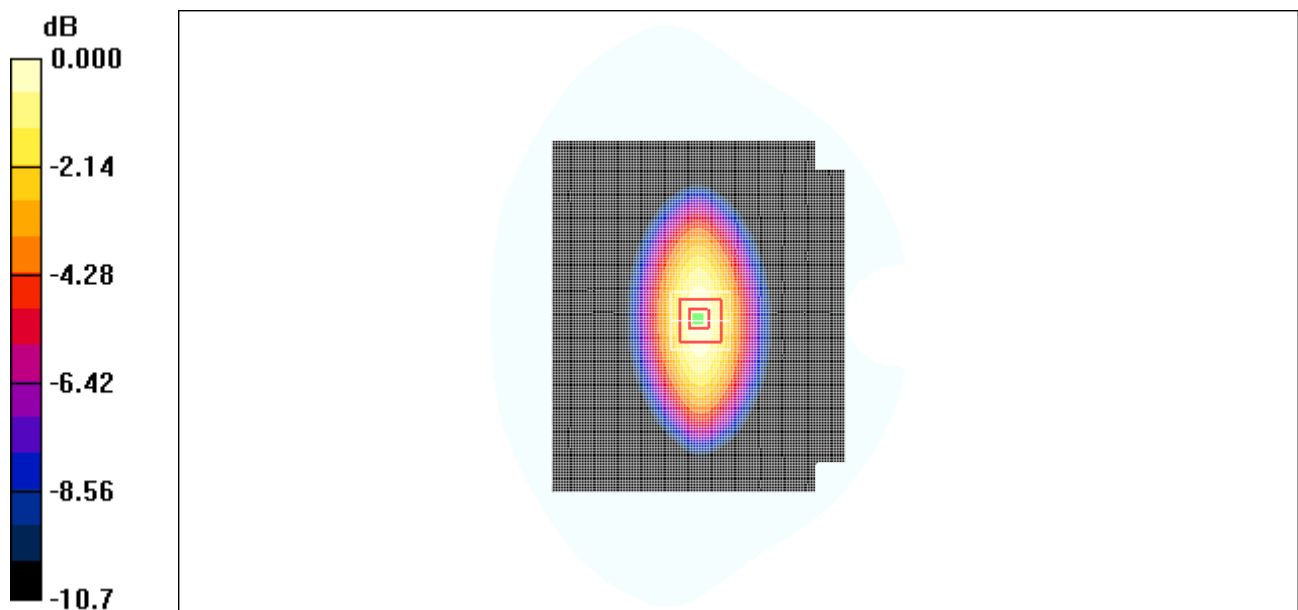


Figure 7 System Performance Check 835MHz 250mW

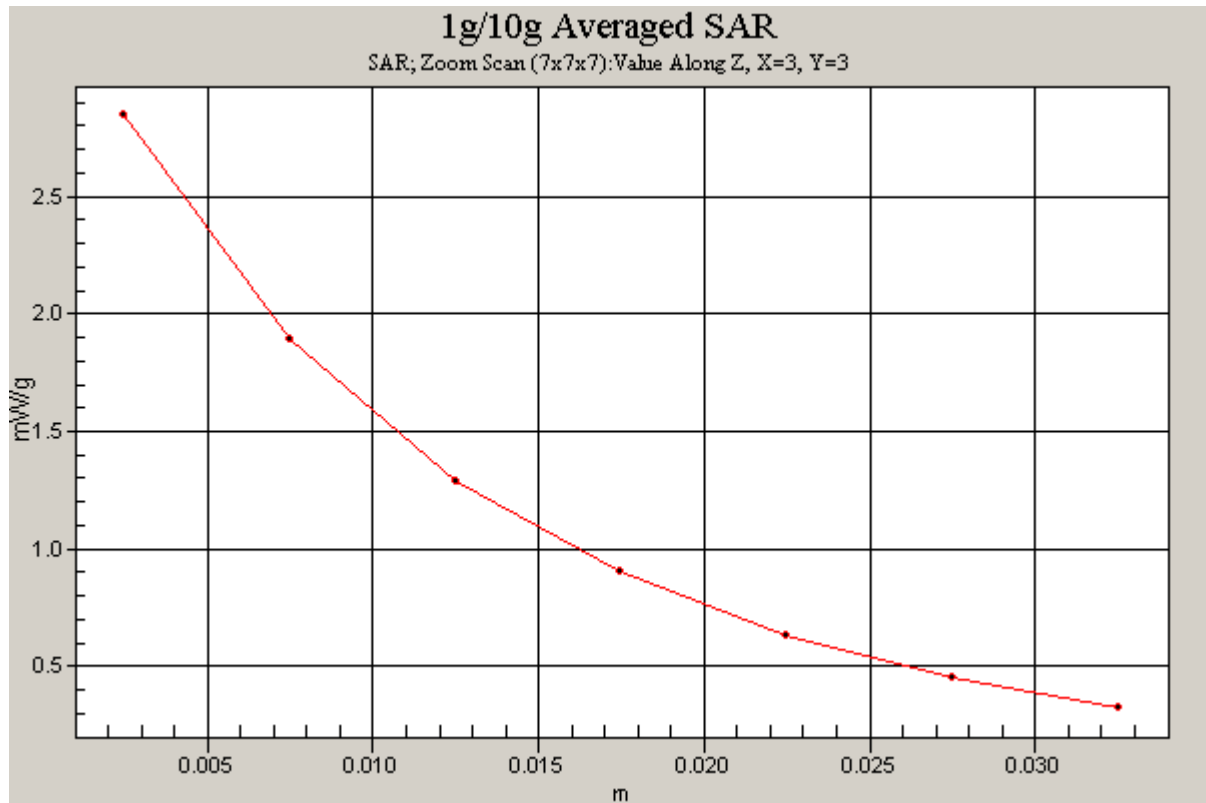


Figure 8 Z-Scan at power reference point (system check at 835 MHz dipole)

### System Performance Check at 835 MHz Body TSL

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d020**

Date/Time: 8/25/2009 8:54:49 AM

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 1.02 \text{ mho/m}$ ;  $\epsilon_r = 55.07$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(6.14, 6.14, 6.14); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 186

**d=15mm, Pin=250mW/Area Scan (101x121x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 2.93 mW/g

**d=15mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 55.7 V/m; Power Drift = -0.017 dB

Peak SAR (extrapolated) = 3.59 W/kg

**SAR(1 g) = 2.4 mW/g; SAR(10 g) = 1.58 mW/g**

Maximum value of SAR (measured) = 2.92 mW/g

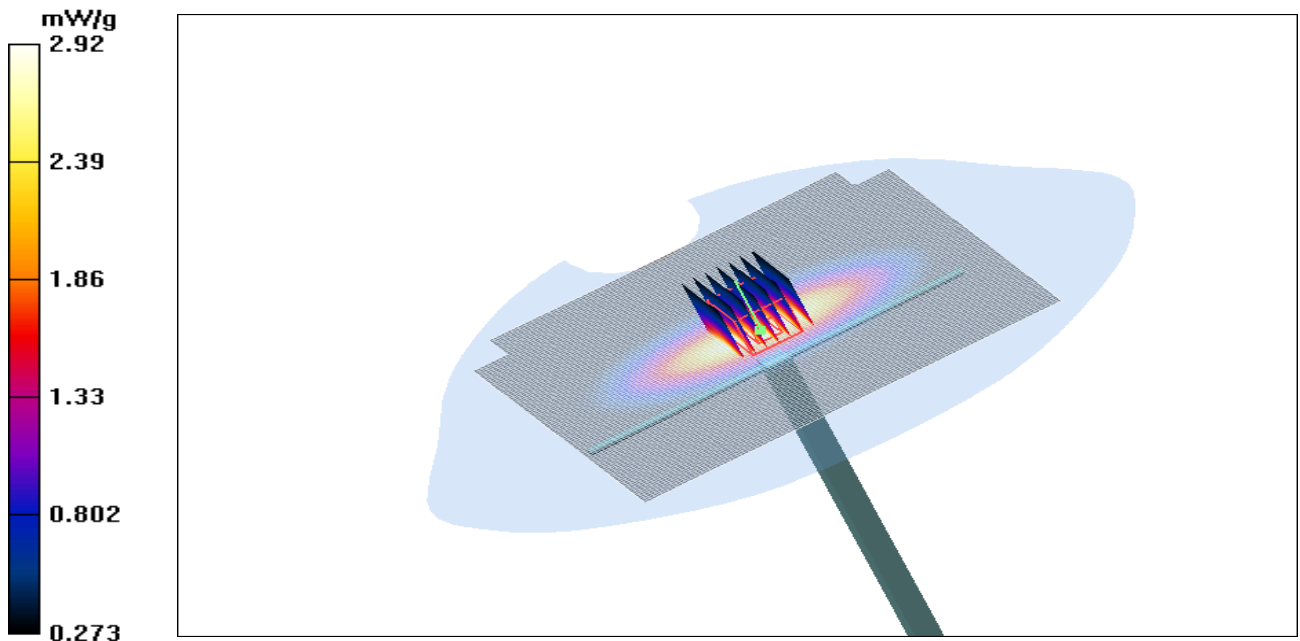


Figure 9 System Performance Check 835MHz 250mW

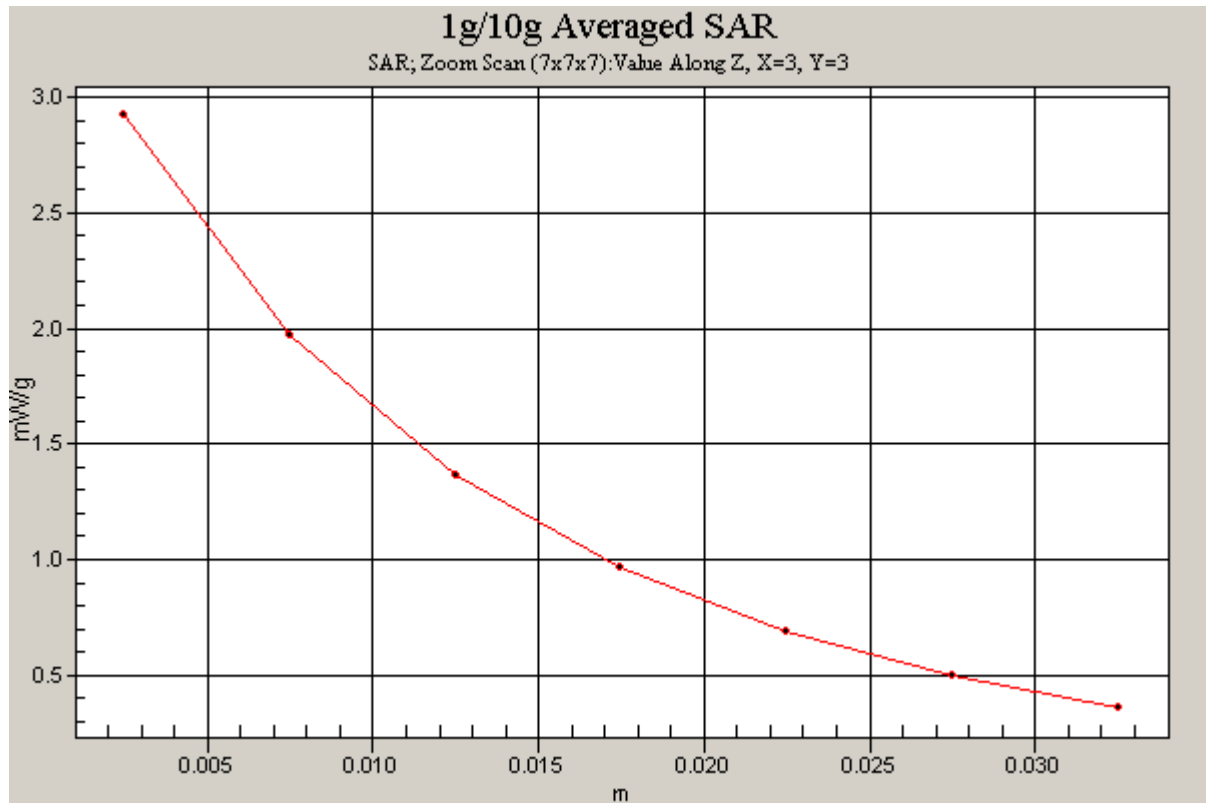


Figure 10 Z-Scan at power reference point (system Check at 835 MHz dipole)

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**System Performance Check at 1900 MHz Head TSL**

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d060**

Date/Time: 8/25/2009 4:32:58 PM

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 1900 \text{ MHz}$ ;  $\sigma = 1.41 \text{ mho/m}$ ;  $\epsilon_r = 39.5$ ;  $\rho = 1000 \text{ kg/m}^3$

Probe: ET3DV6 - SN1737; ConvF(4.89, 4.89, 4.89); Calibrated: 11/25/2008

Electronics: DAE4 Sn452;

**d=10mm, Pin=250mW/Area Scan (61x61x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 11.4 mW/g

**d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 93.1 V/m; Power Drift = -0.006 dB

Peak SAR (extrapolated) = 16.9 W/kg

**SAR(1 g) = 9.74 mW/g; SAR(10 g) = 5.09 mW/g**

Maximum value of SAR (measured) = 11.1 mW/g

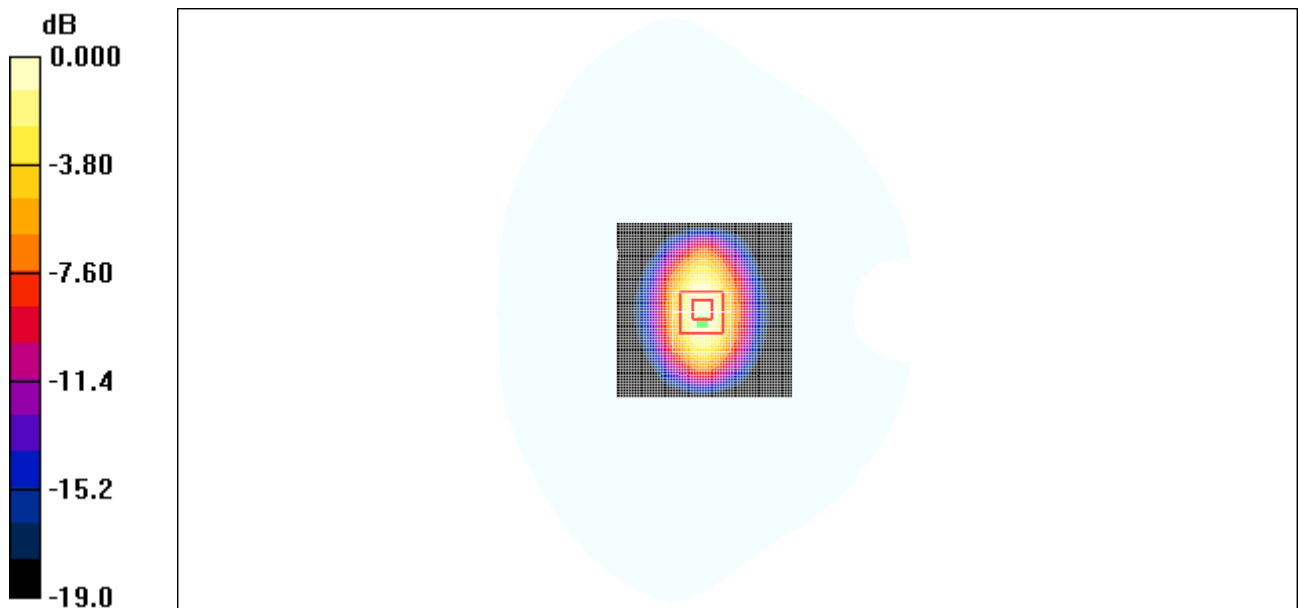


Figure 11 System Performance Check 1900MHz 250mW

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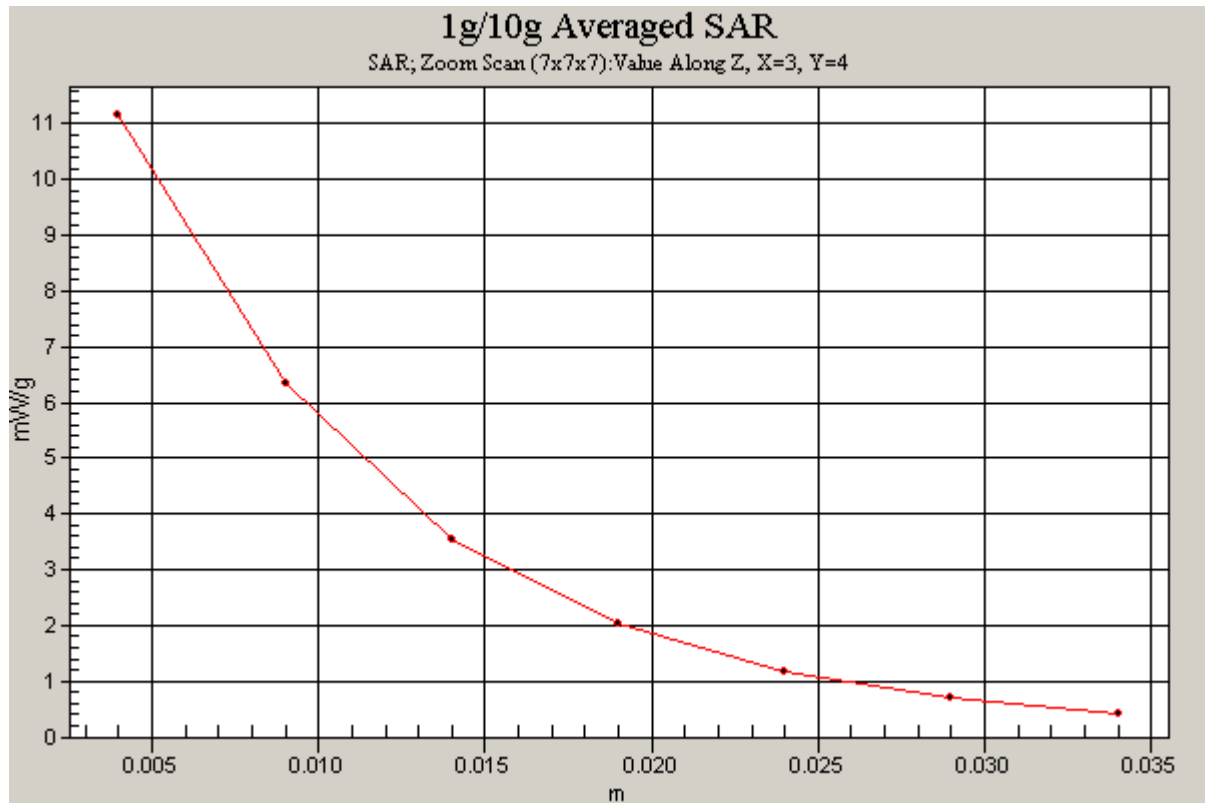


Figure 12 Z-Scan at power reference point (system check at 1900 MHz dipole)

### System Performance Check at 1900 MHz Body TSL

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d060**

Date/Time: 8/25/2009 7:11:49 AM

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.53$  mho/m;  $\epsilon_r = 52.65$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(4.60, 4.60, 4.60); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM000 T01 ; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**d=10mm, Pin=250mW/Area Scan (61x61x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 11.9 mW/g

**d=10mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 86.0 V/m; Power Drift = -0.012 dB

Peak SAR (extrapolated) = 18.9 W/kg

**SAR(1 g) = 10 mW/g; SAR(10 g) = 5.14 mW/g**

Maximum value of SAR (measured) = 11.3 mW/g

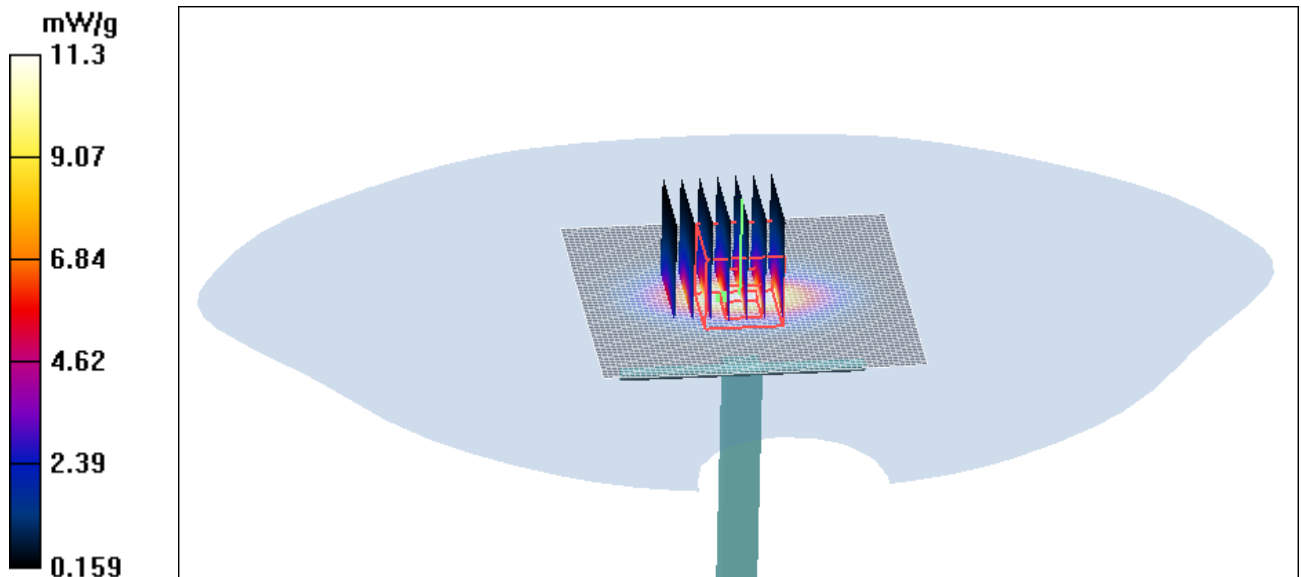


Figure 13 System Performance Check 1900MHz 250mW

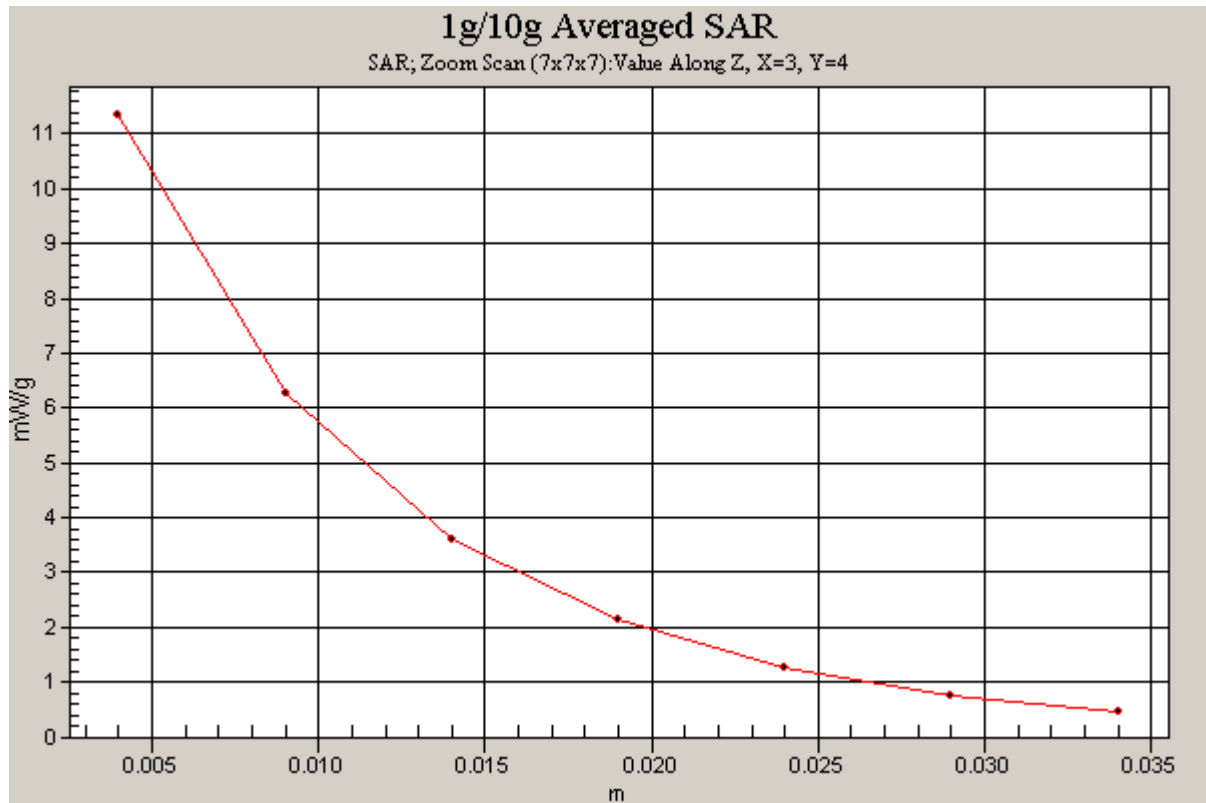


Figure 14 Z-Scan at power reference point (system Check at 1900 MHz dipole)



## ANNEX C: Graph Results

### GSM 850 SIM1 Left Cheek High

Date/Time: 8/25/2009 12:48:10 AM

Communication System: GSM 850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.936$  mho/m;  $\epsilon_r = 41.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3 °C      Liquid Temperature: 21.5 °C

Phantom section: Left Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(6.33, 6.33, 6.33); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Cheek High/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.358 mW/g

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

Reference Value = 6.85 V/m; Power Drift = -0.035 dB

Peak SAR (extrapolated) = 0.426 W/kg

**SAR(1 g) = 0.336 mW/g; SAR(10 g) = 0.240 mW/g**

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

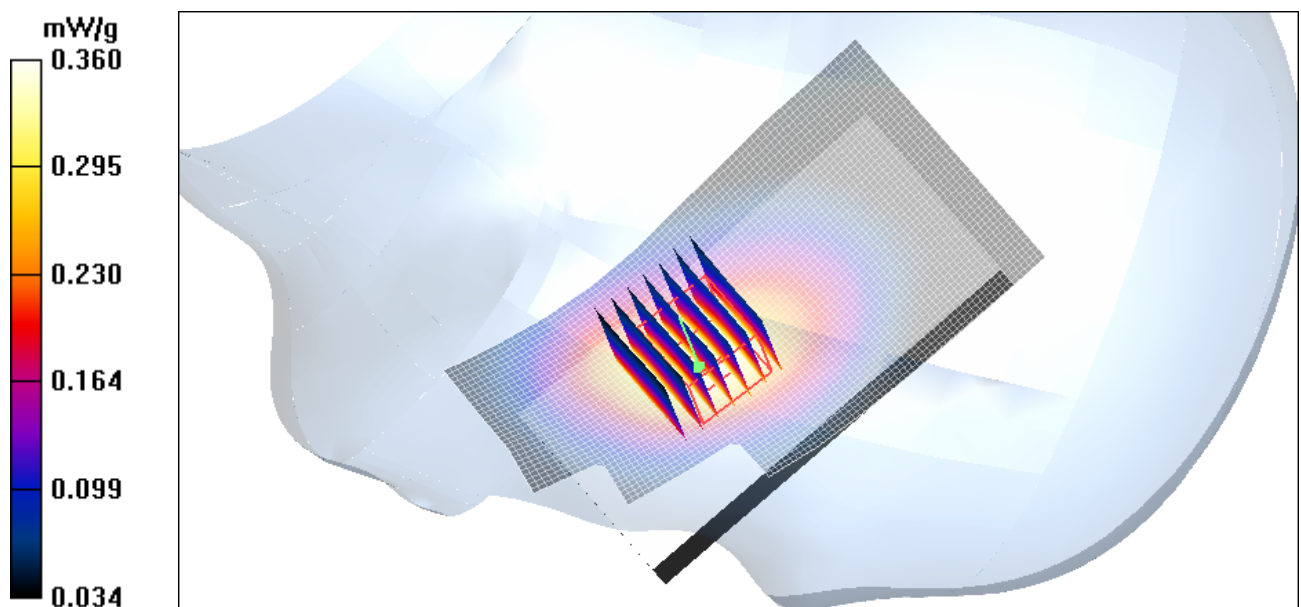


Figure 15 Left Hand Touch Cheek GSM 850 SIM1 Channel 251

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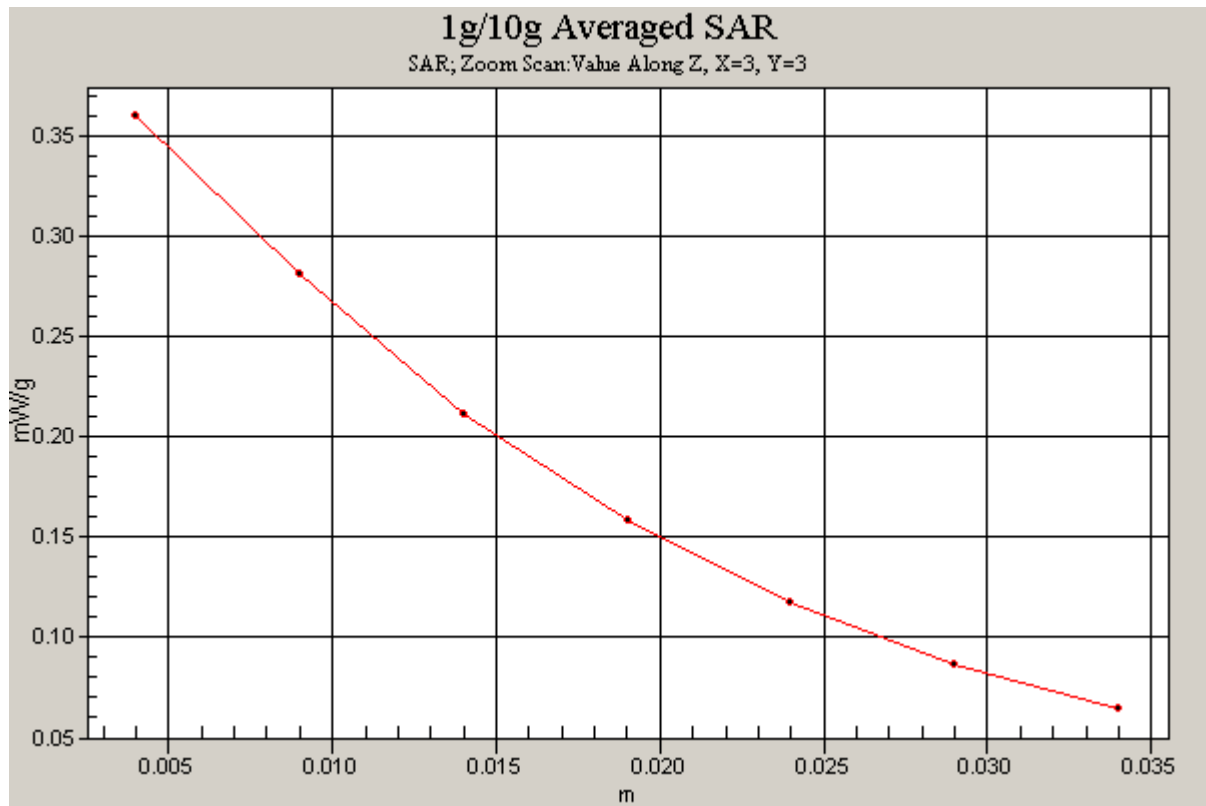


Figure 16 Z-Scan at power reference point (Left Hand Touch Cheek GSM 850 SIM1 Channel 251)

### GSM 850 SIM1 Left Cheek Middle

Date/Time: 8/25/2009 12:28:25 AM

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 837$  MHz;  $\sigma = 0.924$  mho/m;  $\epsilon_r = 41.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3 °C      Liquid Temperature: 21.5 °C

Phantom section: Left Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(6.33, 6.33, 6.33); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Cheek Middle/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.347 mW/g

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

Reference Value = 6.77 V/m; Power Drift = -0.146 dB

Peak SAR (extrapolated) = 0.405 W/kg

**SAR(1 g) = 0.317 mW/g; SAR(10 g) = 0.226 mW/g**

Maximum value of SAR (measured) = 0.339 mW/g

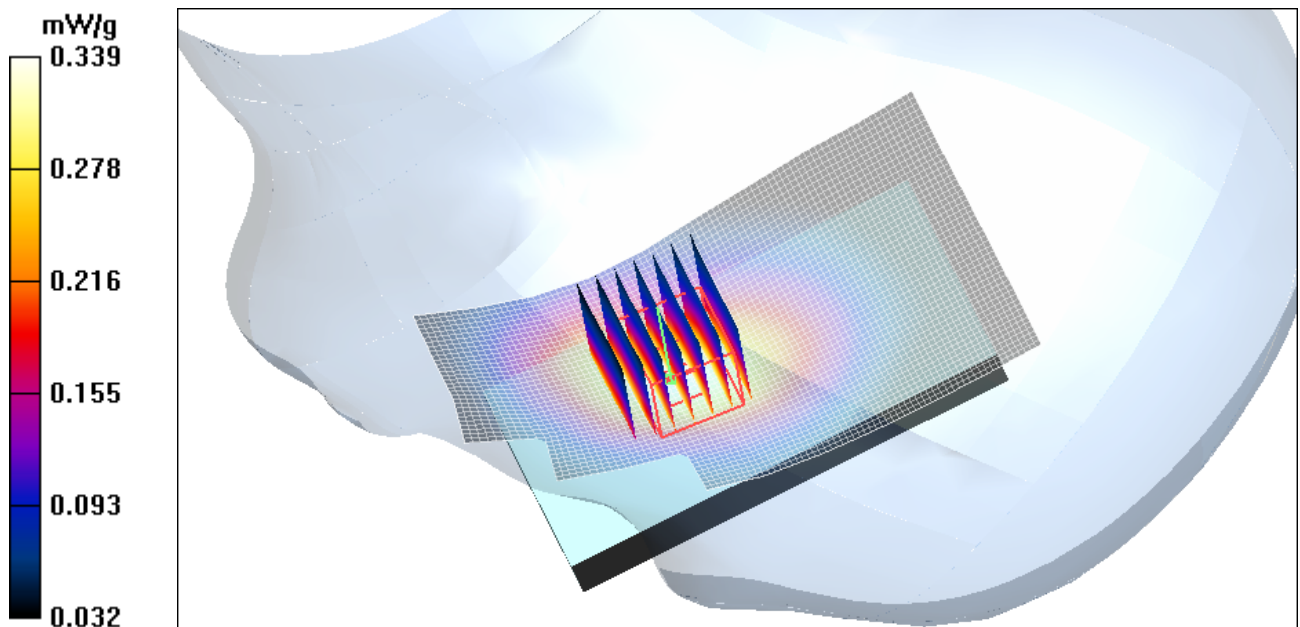


Figure 17 Left Hand Touch Cheek GSM 850 SIM1 Channel 190

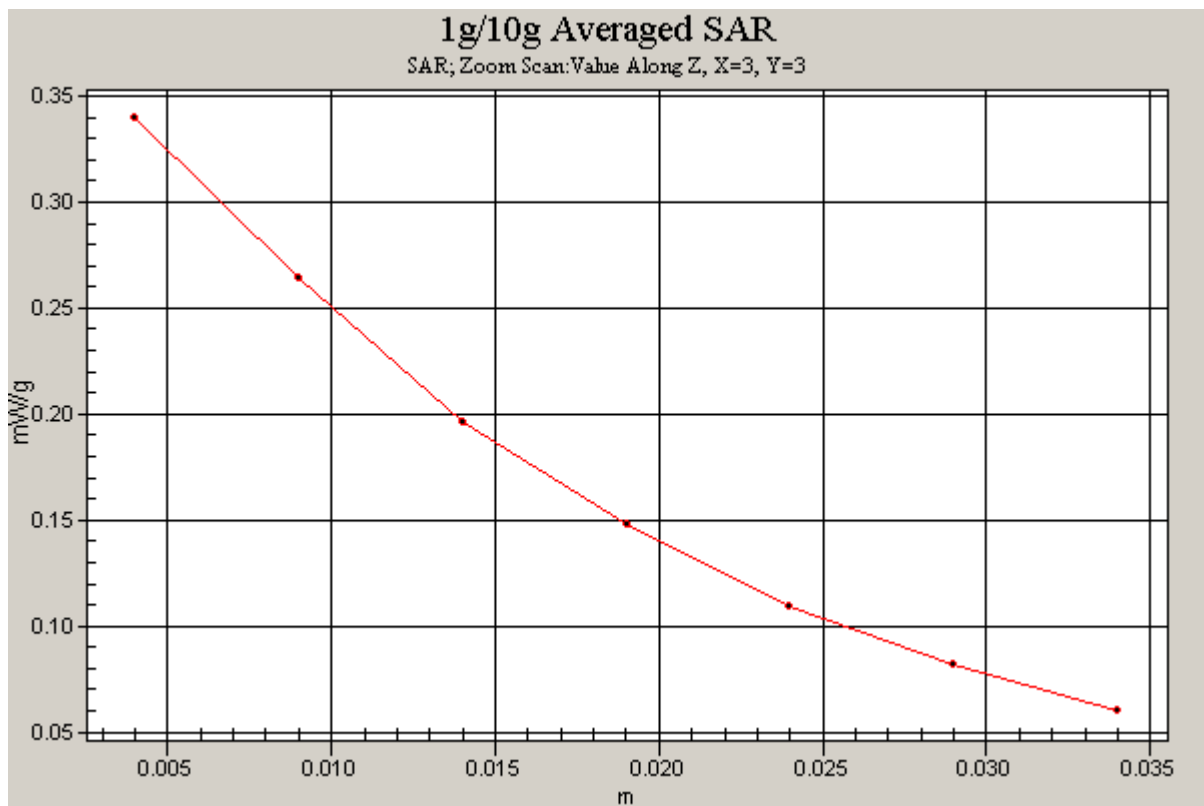


Figure 18 Z-Scan at power reference point (Left Hand Touch Cheek GSM 850 SIM1 Channel 251)

### GSM 850 SIM1 Left Cheek Low

Date/Time: 8/25/2009 1:07:00 AM

Communication System: GSM 850; Frequency: 824.2 MHz; Duty Cycle: 1:8.3

Medium parameters used (interpolated):  $f = 824.2$  MHz;  $\sigma = 0.905$  mho/m;  $\epsilon_r = 41.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3 °C      Liquid Temperature: 21.5 °C

Phantom section: Left Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(6.33, 6.33, 6.33); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Cheek Low/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.219 mW/g

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

Reference Value = 5.53 V/m; Power Drift = 0.090 dB

Peak SAR (extrapolated) = 0.254 W/kg

**SAR(1 g) = 0.199 mW/g; SAR(10 g) = 0.142 mW/g**

Maximum value of SAR (measured) = 0.214 mW/g

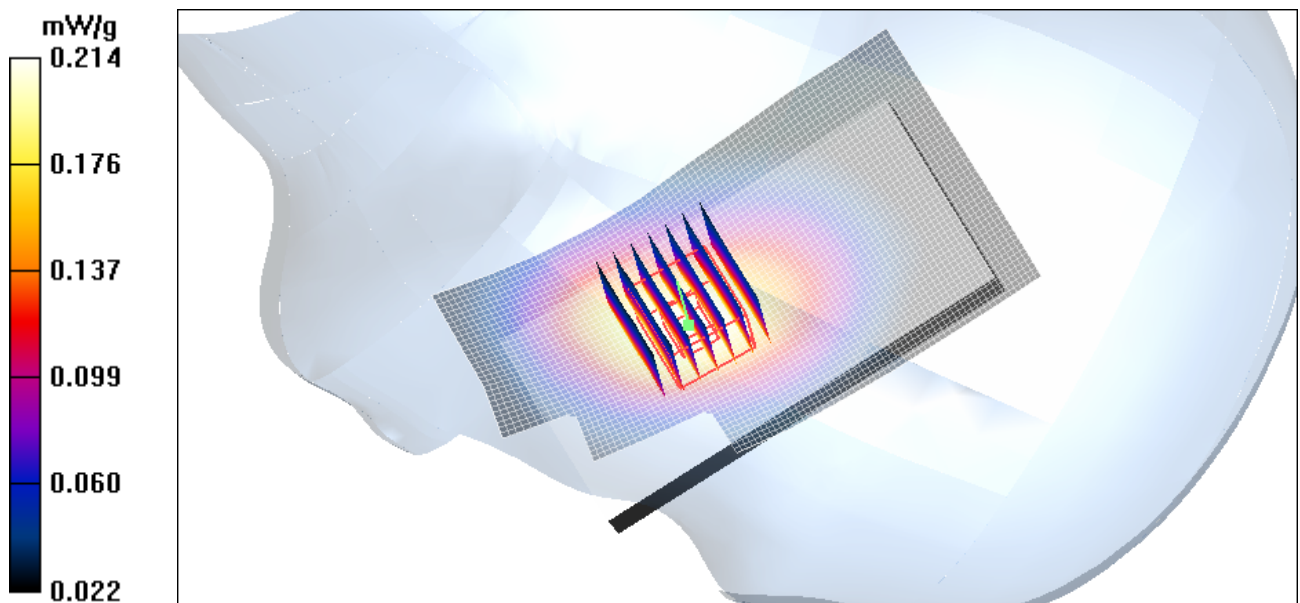


Figure 19 Left Hand Touch Cheek GSM 850 SIM1 Channel 128

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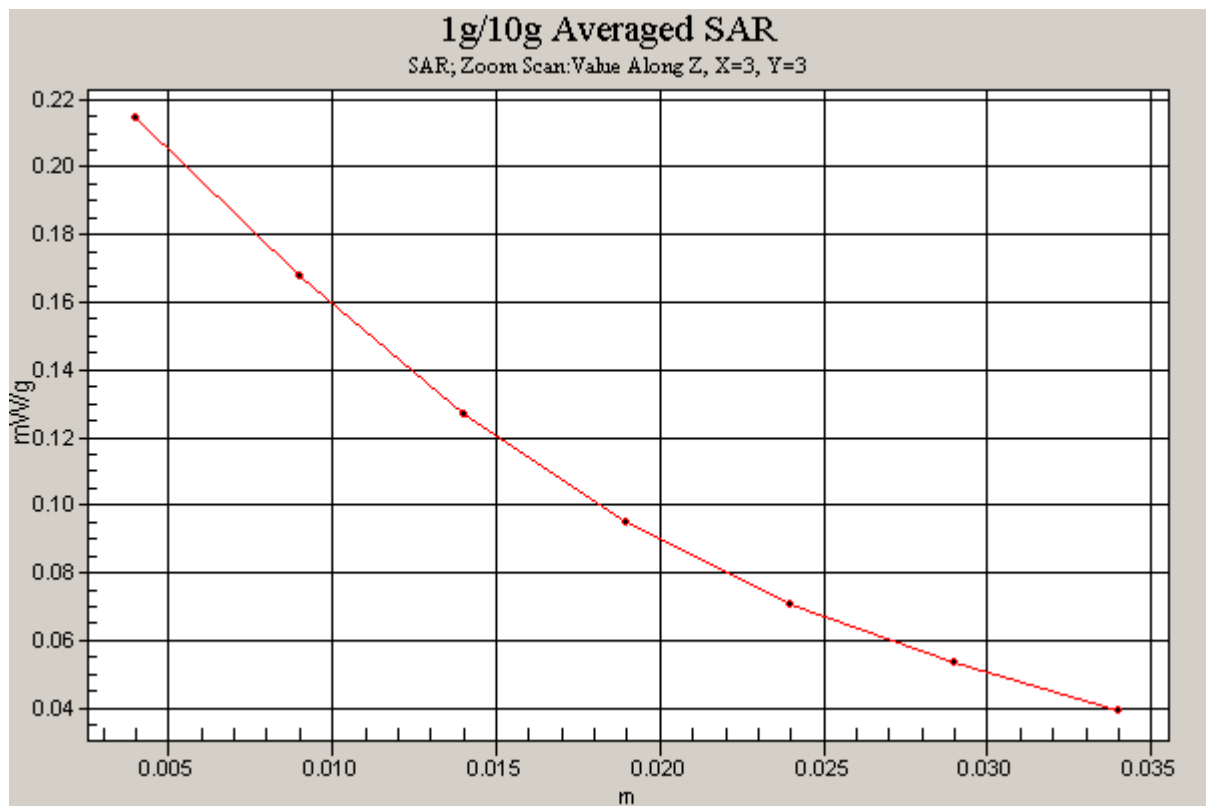


Figure 20 Z-Scan at power reference point (Left Hand Touch Cheek GSM 850 SIM1 Channel 128)

### GSM 850 SIM1 Left Tilt Middle

Date/Time: 8/25/2009 1:27:15 AM

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 837$  MHz;  $\sigma = 0.924$  mho/m;  $\epsilon_r = 41.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3 °C      Liquid Temperature: 21.5 °C

Phantom section: Left Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(6.33, 6.33, 6.33); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Tilt Middle/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.183 mW/g

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

Reference Value = 10.0 V/m; Power Drift = -0.031 dB

Peak SAR (extrapolated) = 0.216 W/kg

**SAR(1 g) = 0.175 mW/g; SAR(10 g) = 0.130 mW/g**

Maximum value of SAR (measured) = 0.185 mW/g

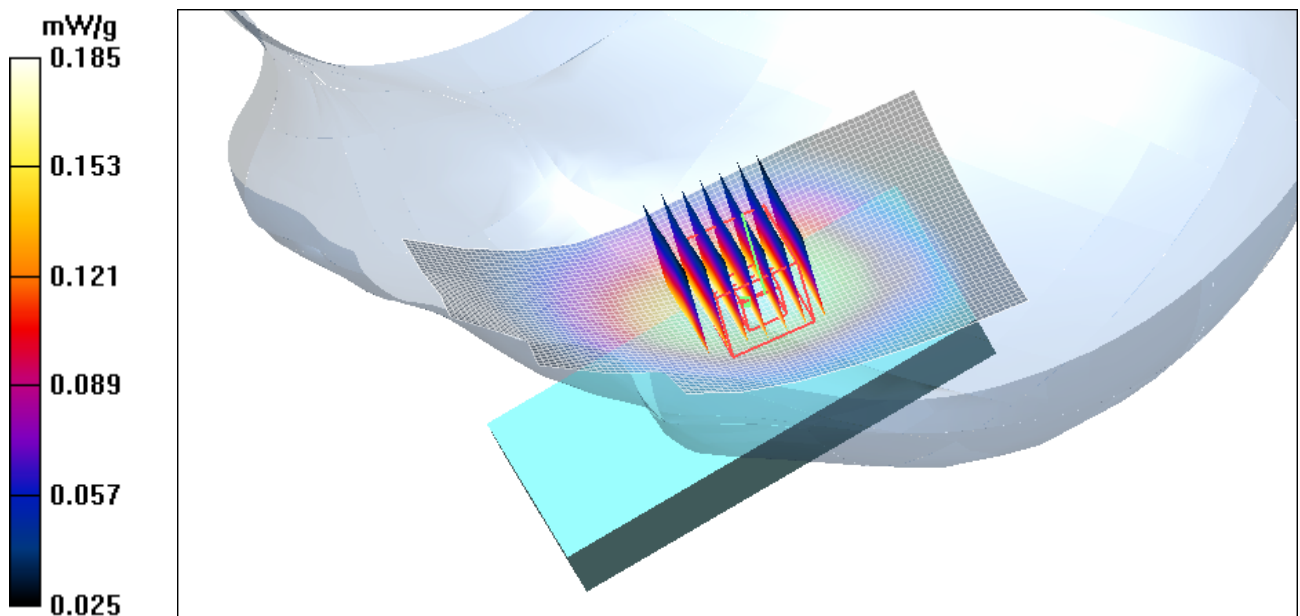


Figure 21 Left Hand Tilt 15° Open GSM 850 SIM1 Channel 190

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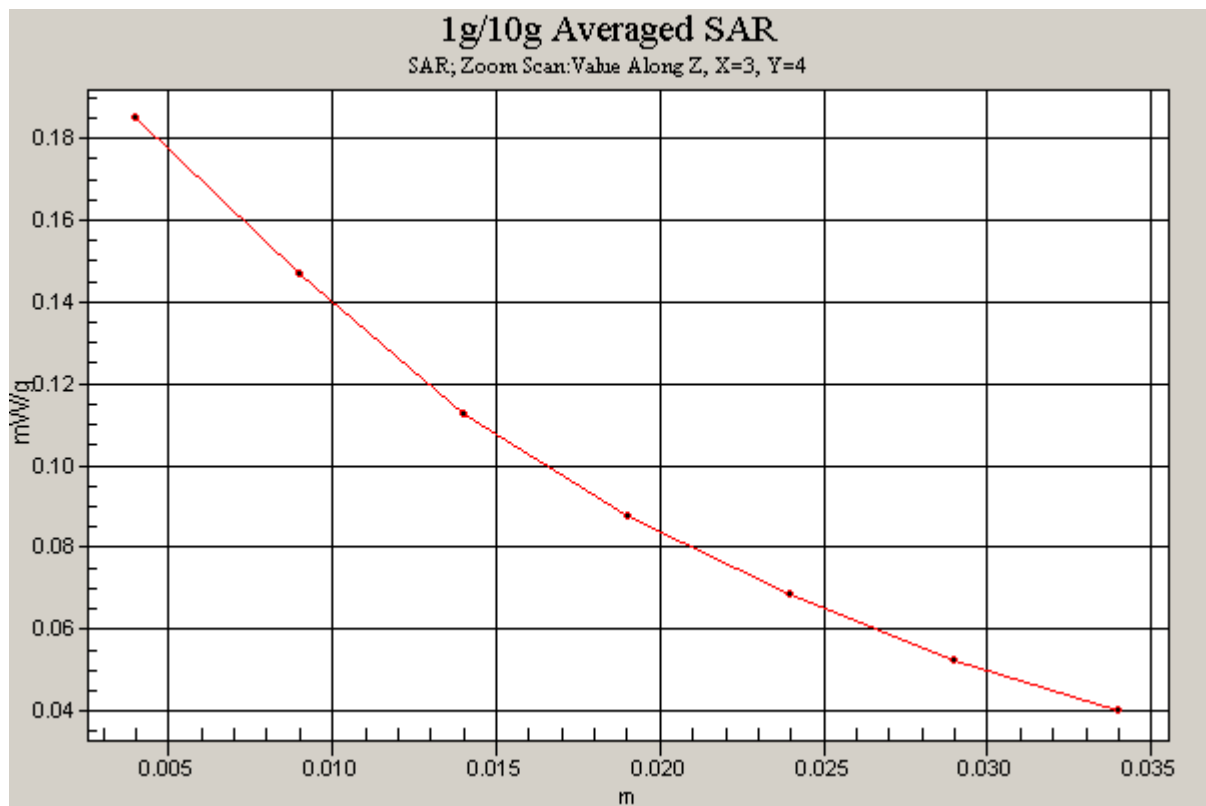


Figure 22 Z-Scan at power reference point (Left Hand Tilt 15° Open GSM 850 SIM1 Channel 190)



### GSM 850 SIM1 Right Cheek Middle

Date/Time: 8/24/2009 8:55:00 PM

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 837$  MHz;  $\sigma = 0.924$  mho/m;  $\epsilon_r = 41.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3 °C      Liquid Temperature: 21.5 °C

Phantom section: Right Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(6.33, 6.33, 6.33); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Cheek Middle/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.322 mW/g

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

Reference Value = 7.45 V/m; Power Drift = -0.029 dB

Peak SAR (extrapolated) = 0.355 W/kg

**SAR(1 g) = 0.289 mW/g; SAR(10 g) = 0.211 mW/g**

Maximum value of SAR (measured) = 0.307 mW/g

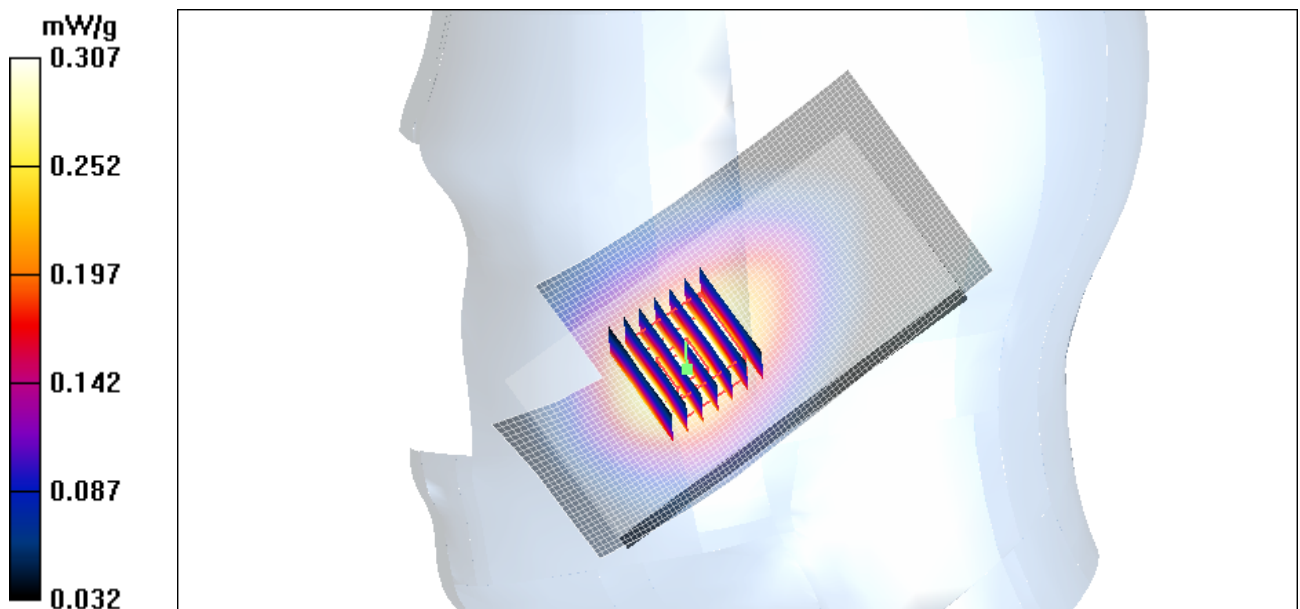


Figure 23 Right Hand Touch Cheek GSM 850 SIM1 Channel 190

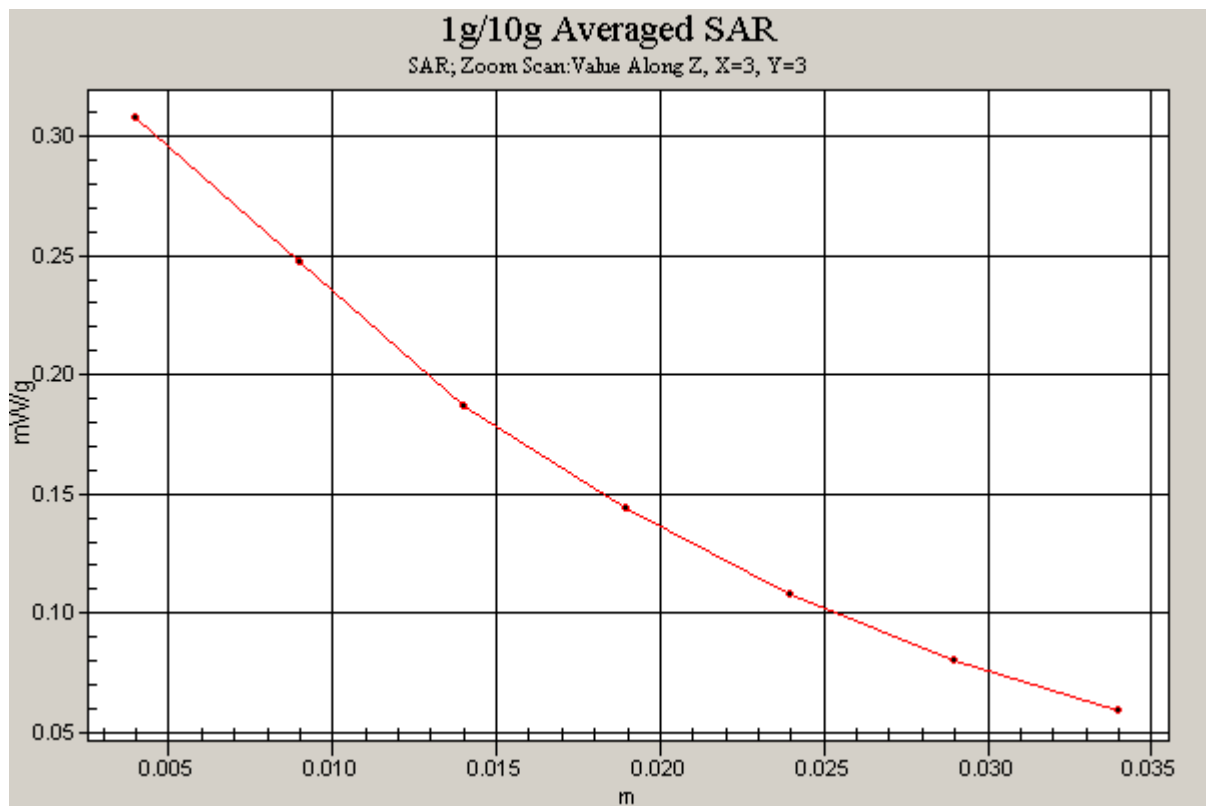


Figure 24 Z-Scan at power reference point (Right Hand Touch Cheek GSM 850 SIM1 Channel 190)

### GSM 850 SIM1 Right Tilt Middle

Date/Time: 8/24/2009 9:14:30 PM

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 837$  MHz;  $\sigma = 0.924$  mho/m;  $\epsilon_r = 41.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3 °C      Liquid Temperature: 21.5 °C

Phantom section: Right Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(6.33, 6.33, 6.33); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Tilt Middle/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.189 mW/g

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

Reference Value = 10.1 V/m; Power Drift = -0.156 dB

Peak SAR (extrapolated) = 0.220 W/kg

**SAR(1 g) = 0.180 mW/g; SAR(10 g) = 0.133 mW/g**

Maximum value of SAR (measured) = 0.191 mW/g

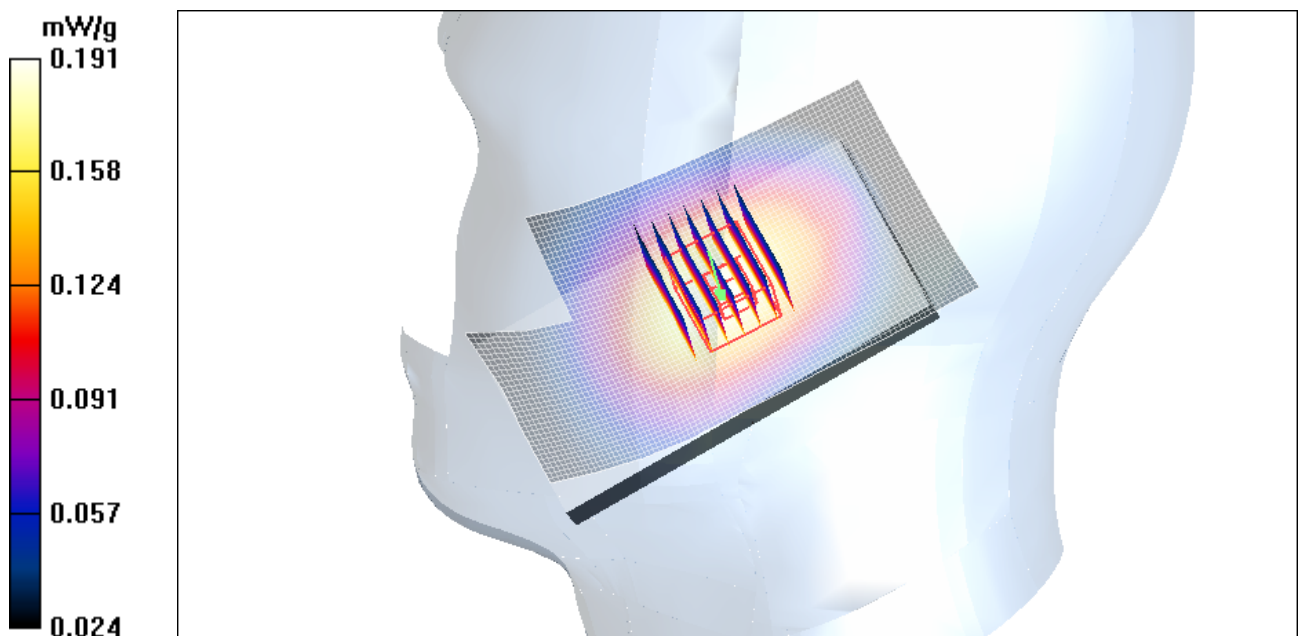


Figure 25 Right Hand Tilt 15° Open GSM 850 SIM1 Channel 190

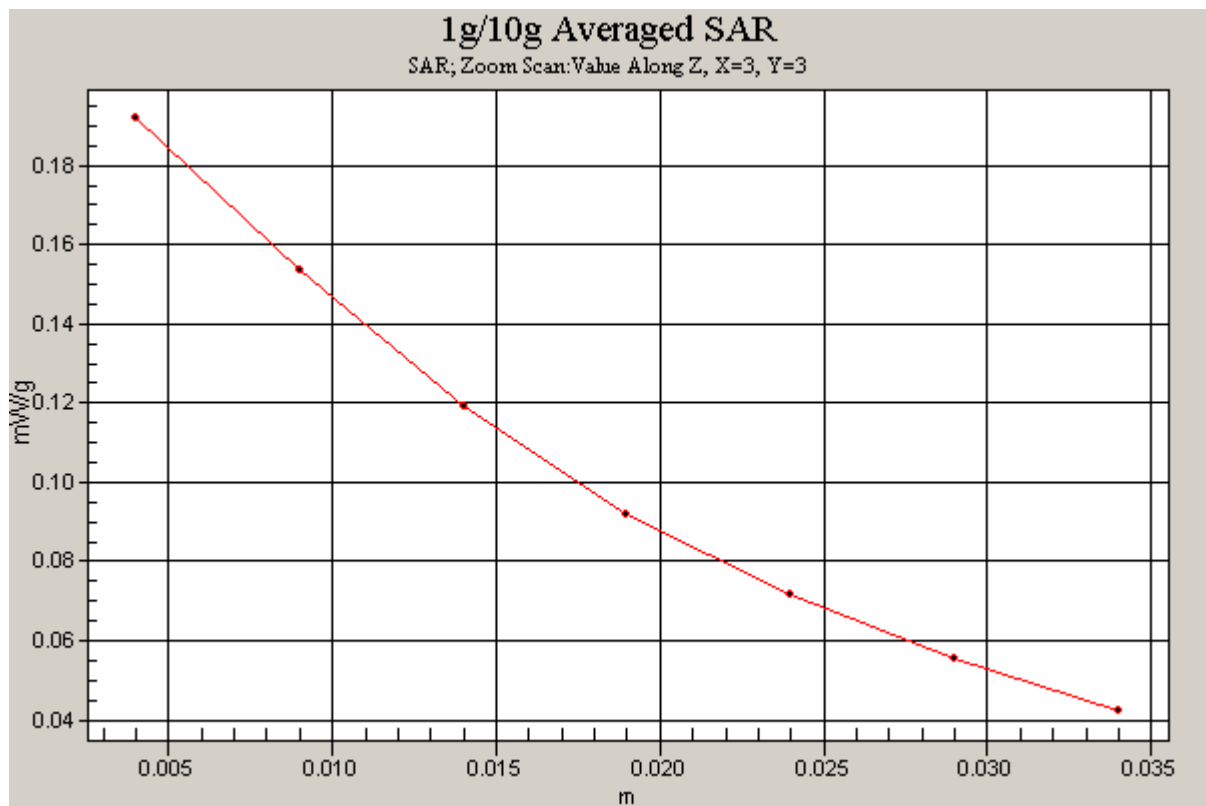


Figure 26 Z-Scan at power reference point (Right Hand Tilt 15° Open GSM 850 SIM1 Channel 190)

### GSM 850 SIM2 Left Cheek Middle

Date/Time: 8/25/2009 8:01:16 AM

Communication System: GSM 850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.936$  mho/m;  $\epsilon_r = 41.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3 °C      Liquid Temperature: 21.5 °C

Phantom section: Left Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(6.33, 6.33, 6.33); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Cheek High/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.375 mW/g

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

Reference Value = 7.69 V/m; Power Drift = -0.072 dB

Peak SAR (extrapolated) = 0.440 W/kg

**SAR(1 g) = 0.349 mW/g; SAR(10 g) = 0.251 mW/g**

Maximum value of SAR (measured) = 0.374 mW/g

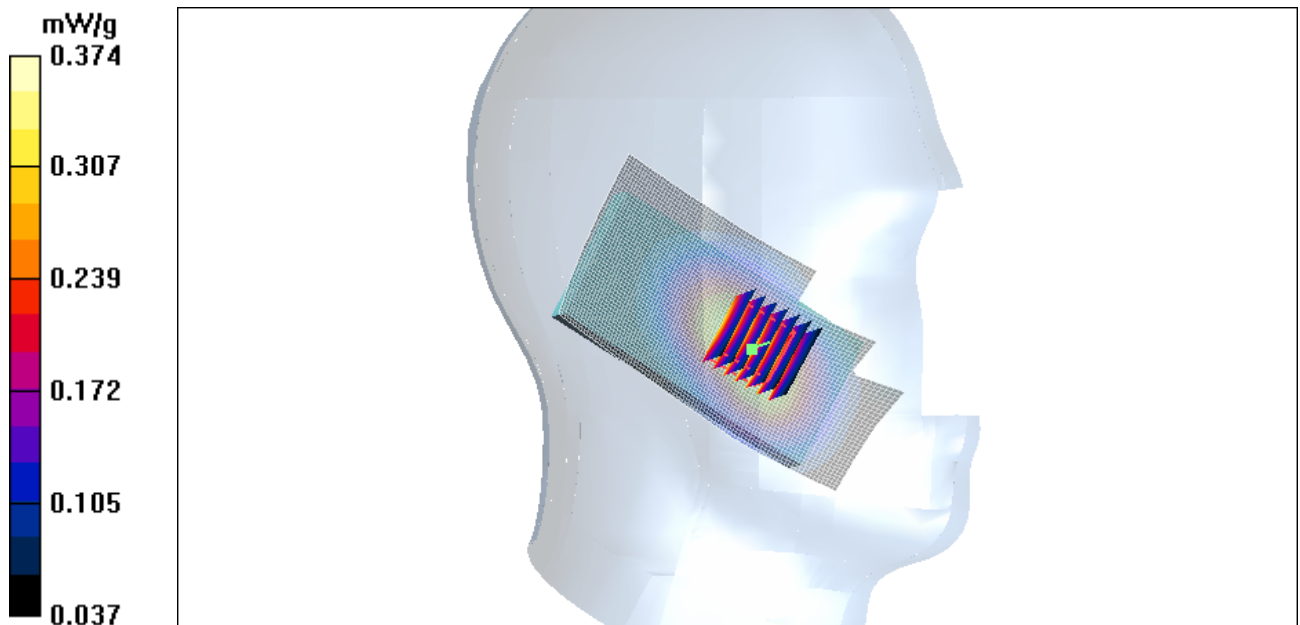


Figure 27 Left Hand Touch Cheek GSM 850 SIM2 Channel 190

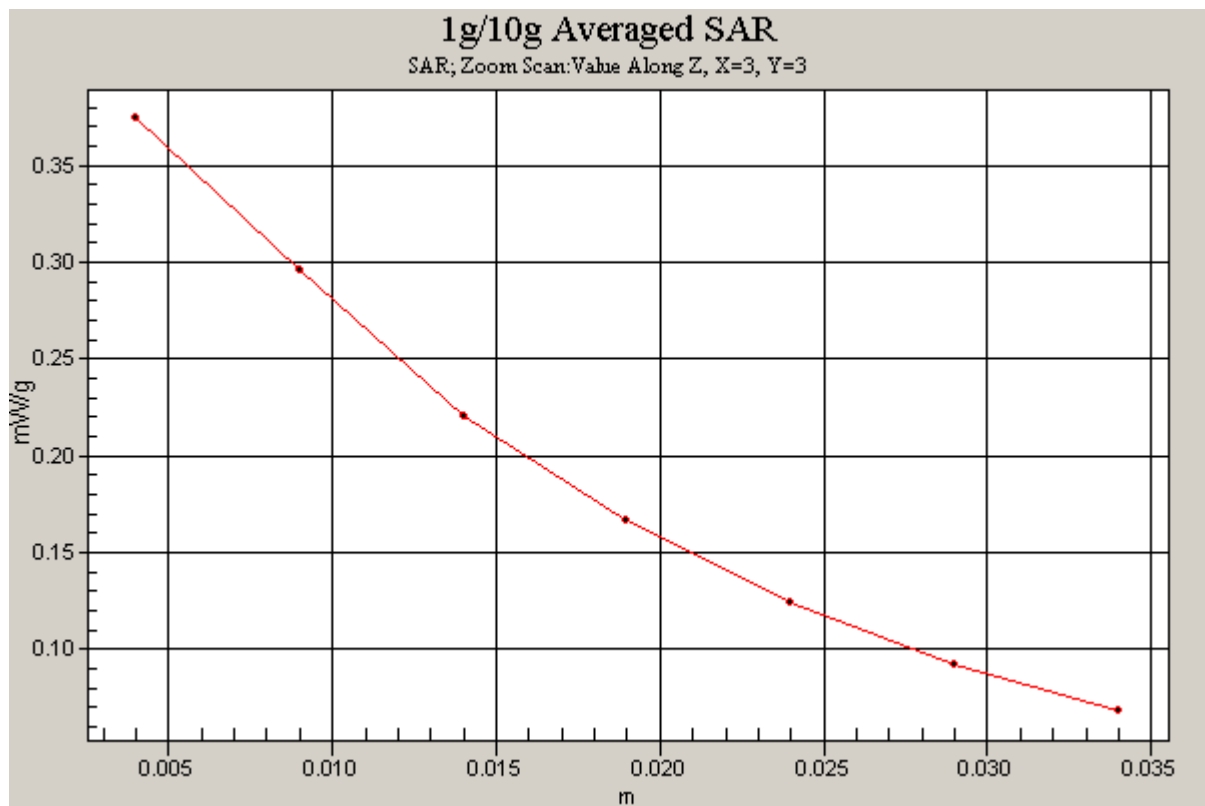


Figure 28 Z-Scan at power reference point (Left Hand Touch Cheek GSM 850 SIM2 Channel 190)

### **GSM 850 SIM1 Towards Ground High**

Date/Time: 8/25/2009 2:31:49 PM

Communication System: GSM 850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 849$  MHz;  $\sigma = 1.03$  mho/m;  $\epsilon_r = 54.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3 °C      Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(6.14, 6.14, 6.14); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Towards Ground High/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.556 mW/g

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

Reference Value = 15.6 V/m; Power Drift = -0.003 dB

Peak SAR (extrapolated) = 0.670 W/kg

**SAR(1 g) = 0.528 mW/g; SAR(10 g) = 0.380 mW/g**

Maximum value of SAR (measured) = 0.561 mW/g

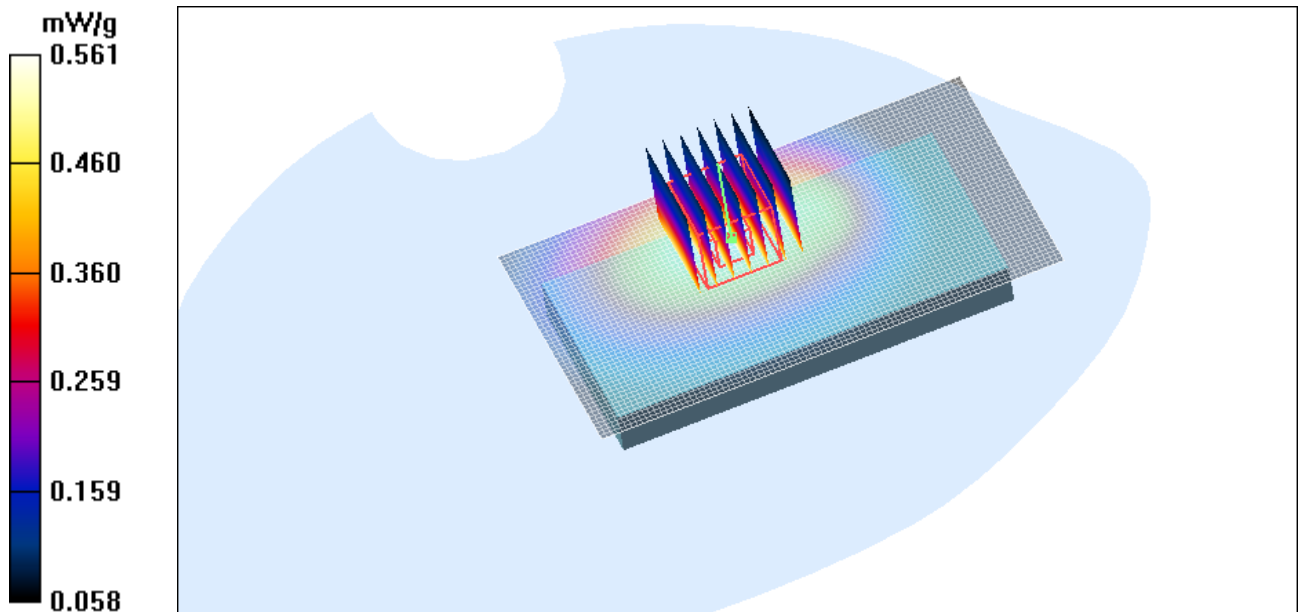


Figure 29 Body, Towards Ground, GSM 850 SIM1 Channel 251

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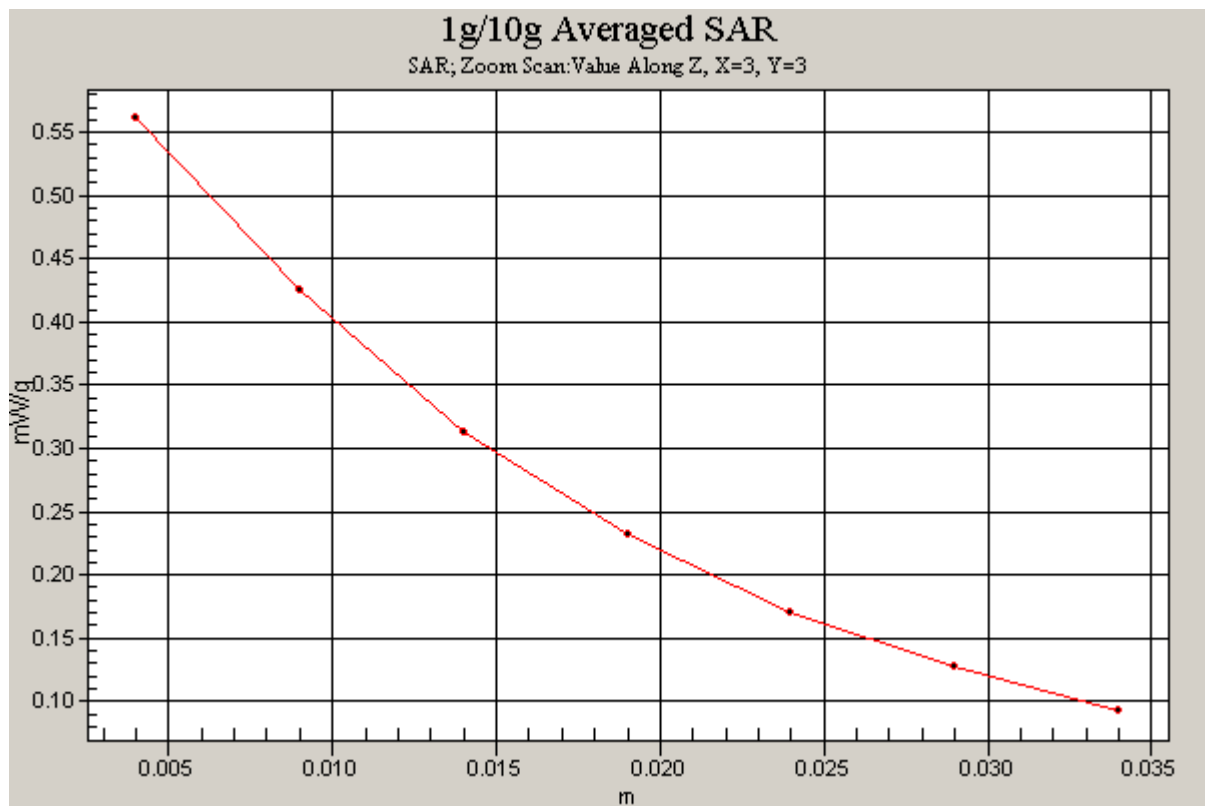


Figure 30 Z-Scan at power reference point (Body, Towards Ground, GSM 850 SIM1 Channel 251)



### GSM 850 SIM1 Towards Ground Middle

Date/Time: 8/25/2009 2:13:59 PM

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 837$  MHz;  $\sigma = 1.02$  mho/m;  $\epsilon_r = 55$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3 °C      Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(6.14, 6.14, 6.14); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Towards Ground Middle/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.554 mW/g

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

Reference Value = 15.4 V/m; Power Drift = -0.032 dB

Peak SAR (extrapolated) = 0.653 W/kg

**SAR(1 g) = 0.515 mW/g; SAR(10 g) = 0.373 mW/g**

Maximum value of SAR (measured) = 0.545 mW/g

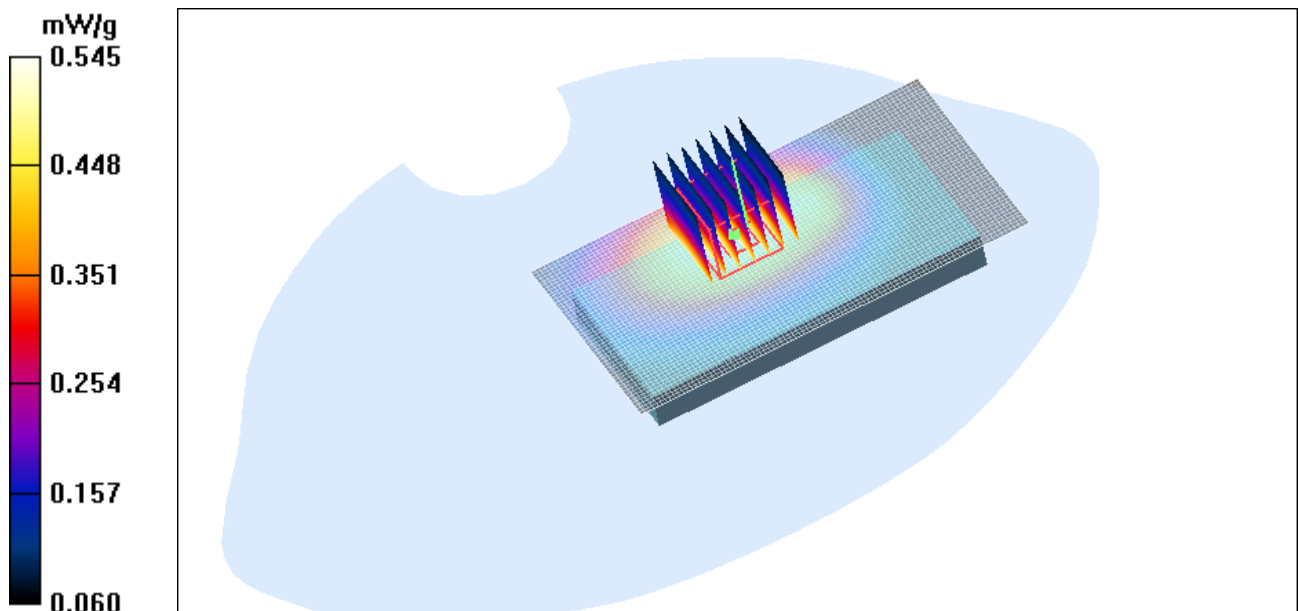


Figure 31 Body, Towards Ground, GSM 850 SIM1 Channel 190

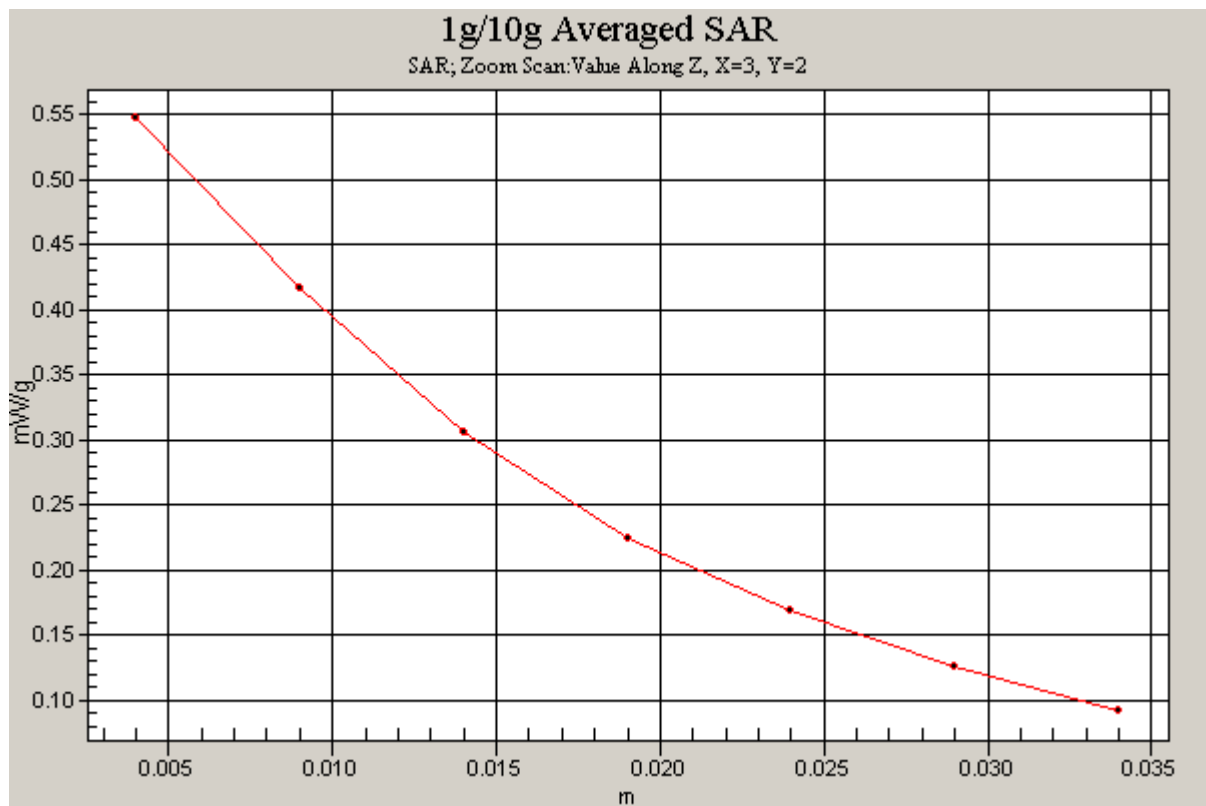


Figure 32 Z-Scan at power reference point (Body, Towards Ground, GSM 850 SIM1 Channel 190)

### GSM 850 SIM1 Towards Ground Low

Date/Time: 8/25/2009 2:49:52 PM

Communication System: GSM 850; Frequency: 824.2 MHz; Duty Cycle: 1:8.3

Medium parameters used (interpolated):  $f = 824.2$  MHz;  $\sigma = 1.01$  mho/m;  $\epsilon_r = 55.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3 °C      Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(6.14, 6.14, 6.14); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Towards Ground Low/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 13.6 V/m; Power Drift = -0.020 dB

Peak SAR (extrapolated) = 0.502 W/kg

**SAR(1 g) = 0.393 mW/g; SAR(10 g) = 0.286 mW/g**

Maximum value of SAR (measured) = 0.416 mW/g

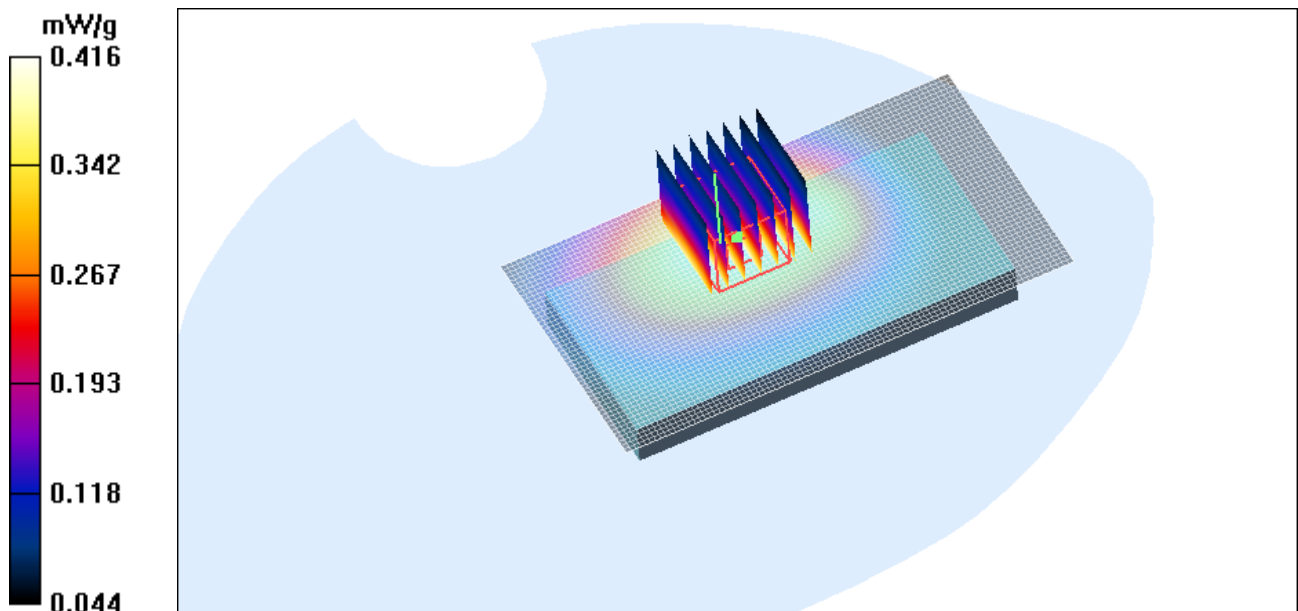


Figure 33 Body, Towards Ground, GSM 850 SIM1 Channel 128

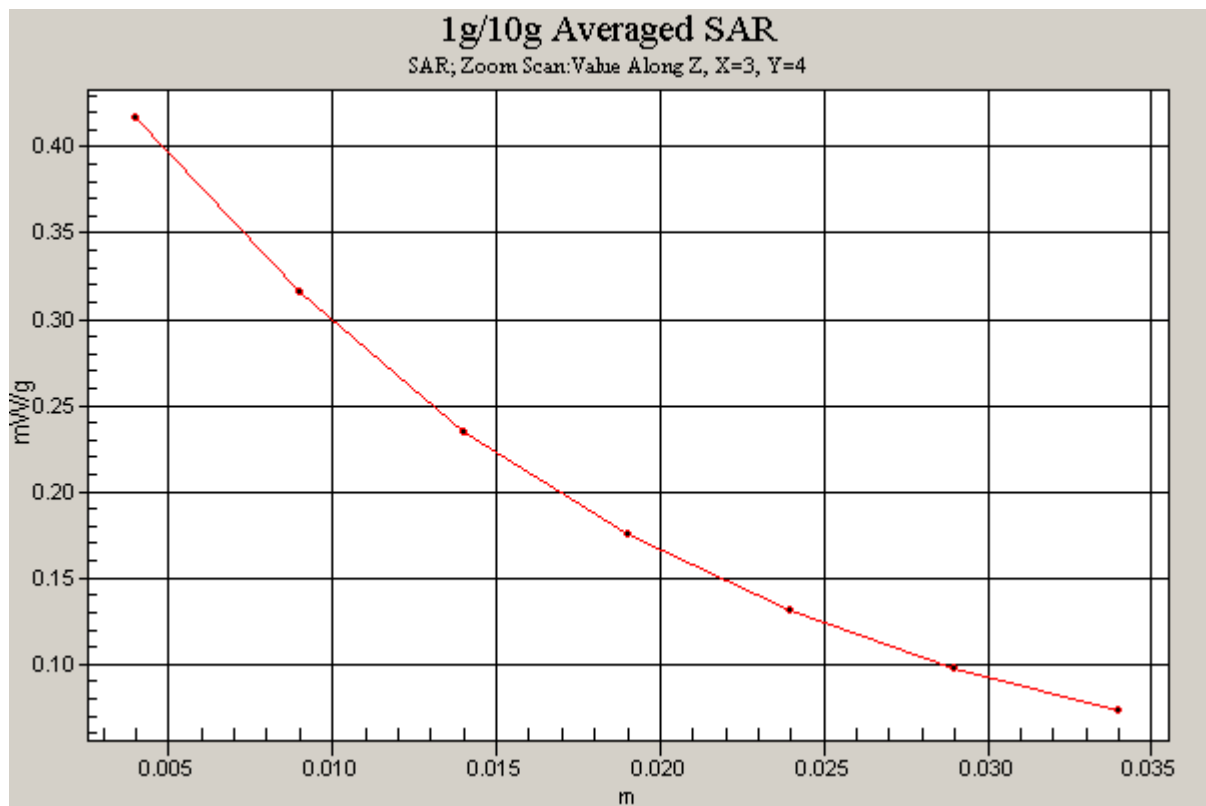


Figure 34 Z-Scan at power reference point (Body, Towards Ground, GSM 850 SIM1 Channel 128)

### GSM 850 SIM1 Towards Phantom Middle

Date/Time: 8/25/2009 3:14:59 PM

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 837$  MHz;  $\sigma = 1.02$  mho/m;  $\epsilon_r = 55$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3 °C      Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(6.14, 6.14, 6.14); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Towards Phantom Middle/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.292 mW/g

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

Reference Value = 9.58 V/m; Power Drift = -0.170 dB

Peak SAR (extrapolated) = 0.342 W/kg

**SAR(1 g) = 0.272 mW/g; SAR(10 g) = 0.200 mW/g**

Maximum value of SAR (measured) = 0.290 mW/g

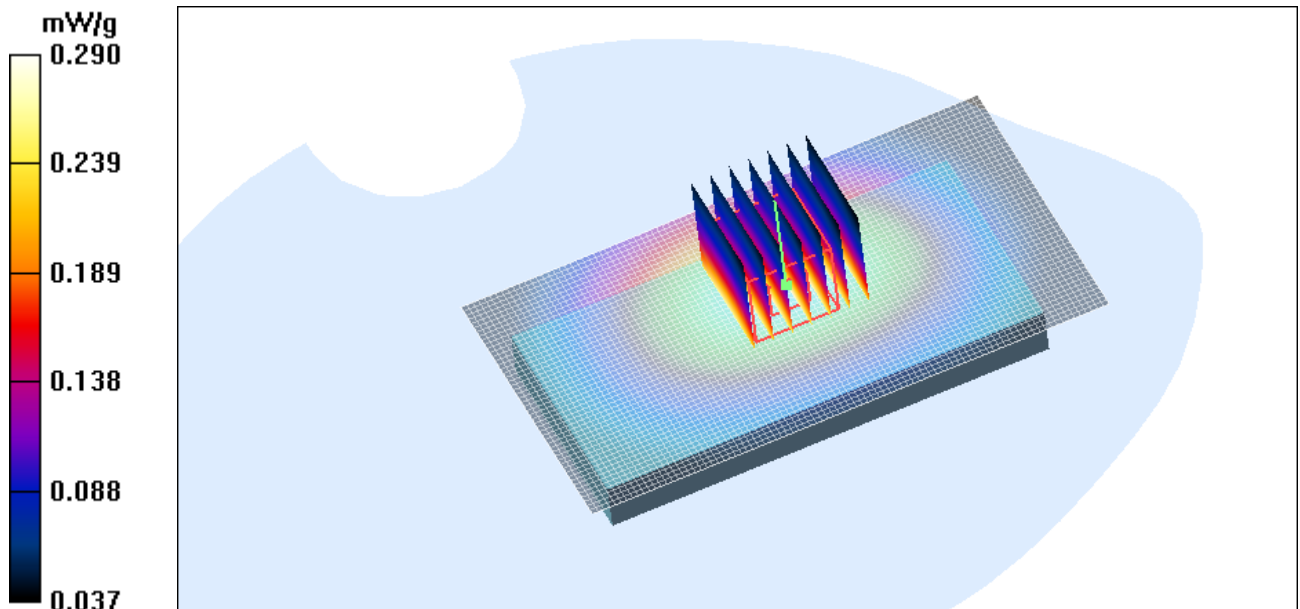


Figure 35 Body, Towards Phantom, GSM 850 SIM1 Channel190

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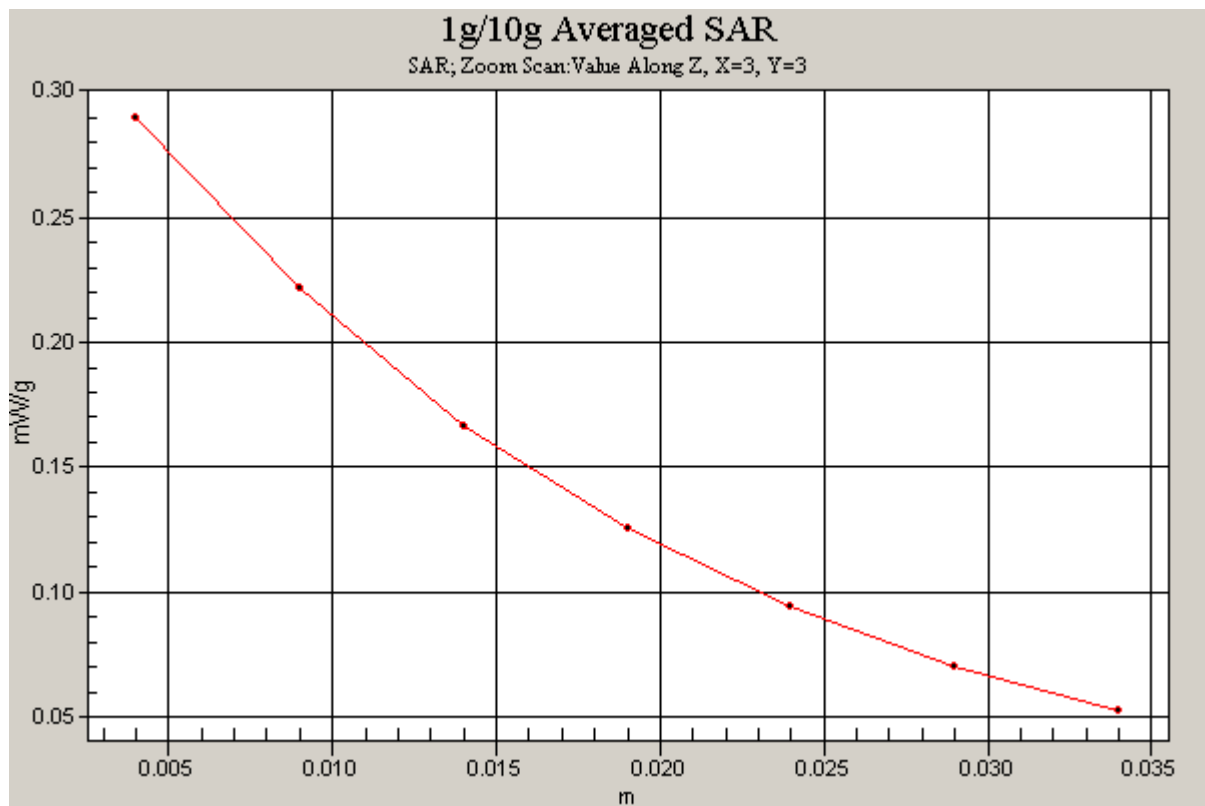


Figure 36 Z-Scan at power reference point (Body, Towards Phantom, GSM 850 SIM1 Channel190)

### **GSM 850 SIM2 Towards Ground High**

Date/Time: 8/25/2009 9:20:21 PM

Communication System: GSM 850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 849$  MHz;  $\sigma = 1.03$  mho/m;  $\epsilon_r = 54.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3 °C      Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(6.14, 6.14, 6.14); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Towards Ground High/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 10.5 V/m; Power Drift = -0.057 dB

Peak SAR (extrapolated) = 0.566 W/kg

**SAR(1 g) = 0.449 mW/g; SAR(10 g) = 0.325 mW/g**

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

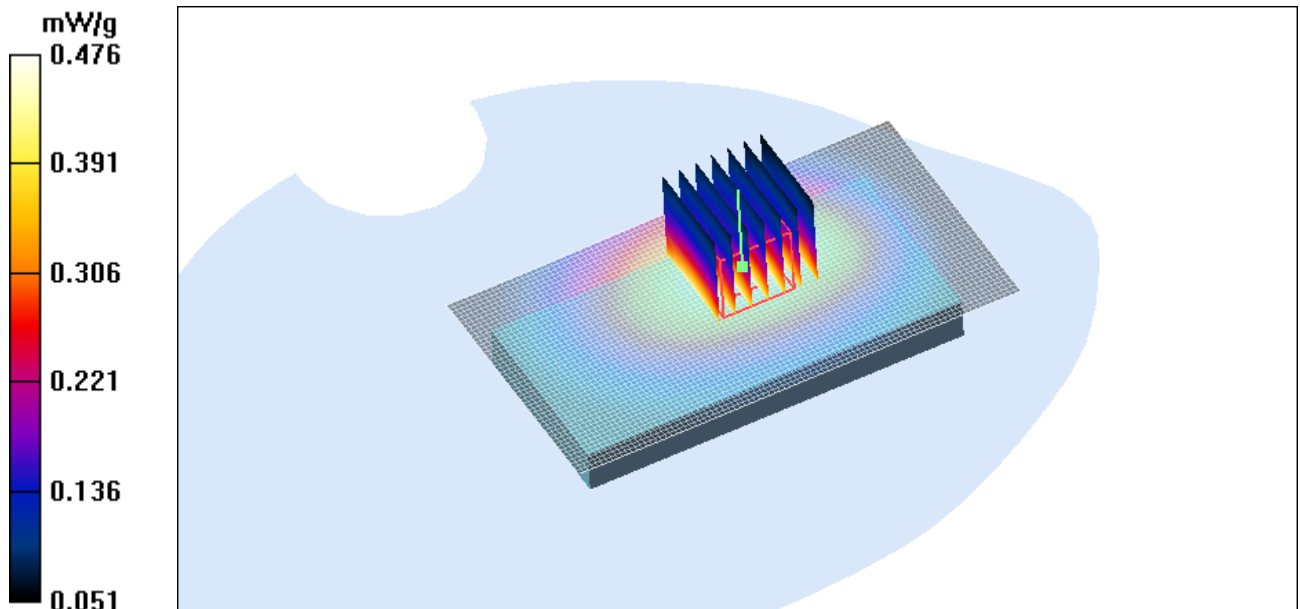


Figure 37 Body, Towards Ground, GSM 850 SIM2 Channel 251

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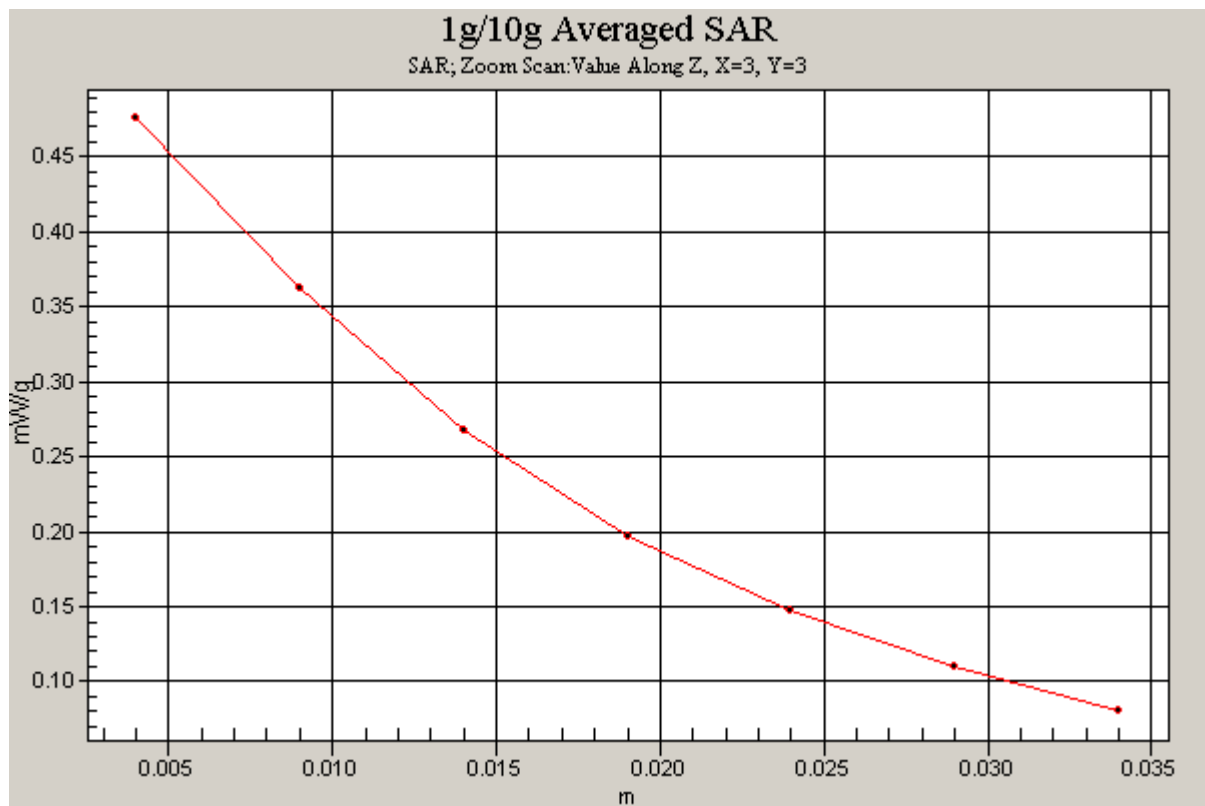


Figure 38 Z-Scan at power reference point (Body, Towards Ground, GSM 850 SIM2 Channel 251)



### **GSM 850 SIM1 Towards Ground with Earphone High**

Date/Time: 8/25/2009 9:40:50 PM

Communication System: GSM 850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 849 \text{ MHz}$ ;  $\sigma = 1.03 \text{ mho/m}$ ;  $\epsilon_r = 54.9$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $22.3^\circ\text{C}$       Liquid Temperature:  $21.5^\circ\text{C}$

Phantom section: Flat Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(6.14, 6.14, 6.14); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Towards Ground High/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) =  $0.303 \text{ mW/g}$

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

Reference Value =  $7.99 \text{ V/m}$ ; Power Drift =  $-0.061 \text{ dB}$

Peak SAR (extrapolated) =  $0.369 \text{ W/kg}$

**SAR(1 g) =  $0.285 \text{ mW/g}$ ; SAR(10 g) =  $0.205 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.304 \text{ mW/g}$

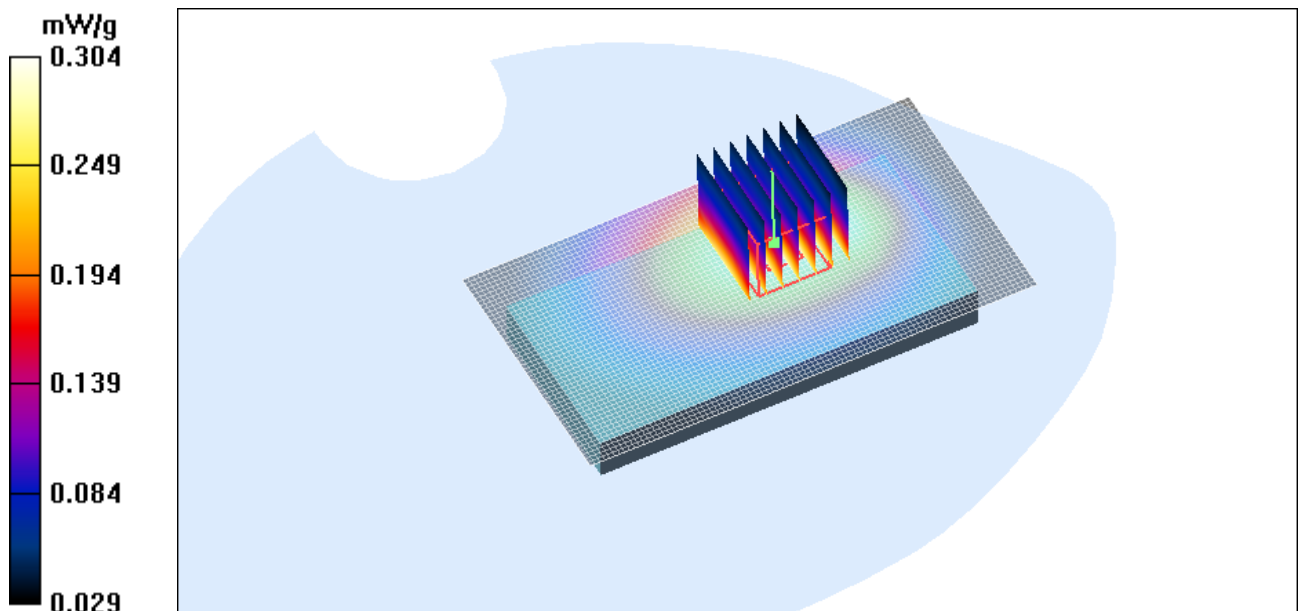


Figure 39 Body with Earphone, Towards Ground, GSM 850 SIM1 Channel 251

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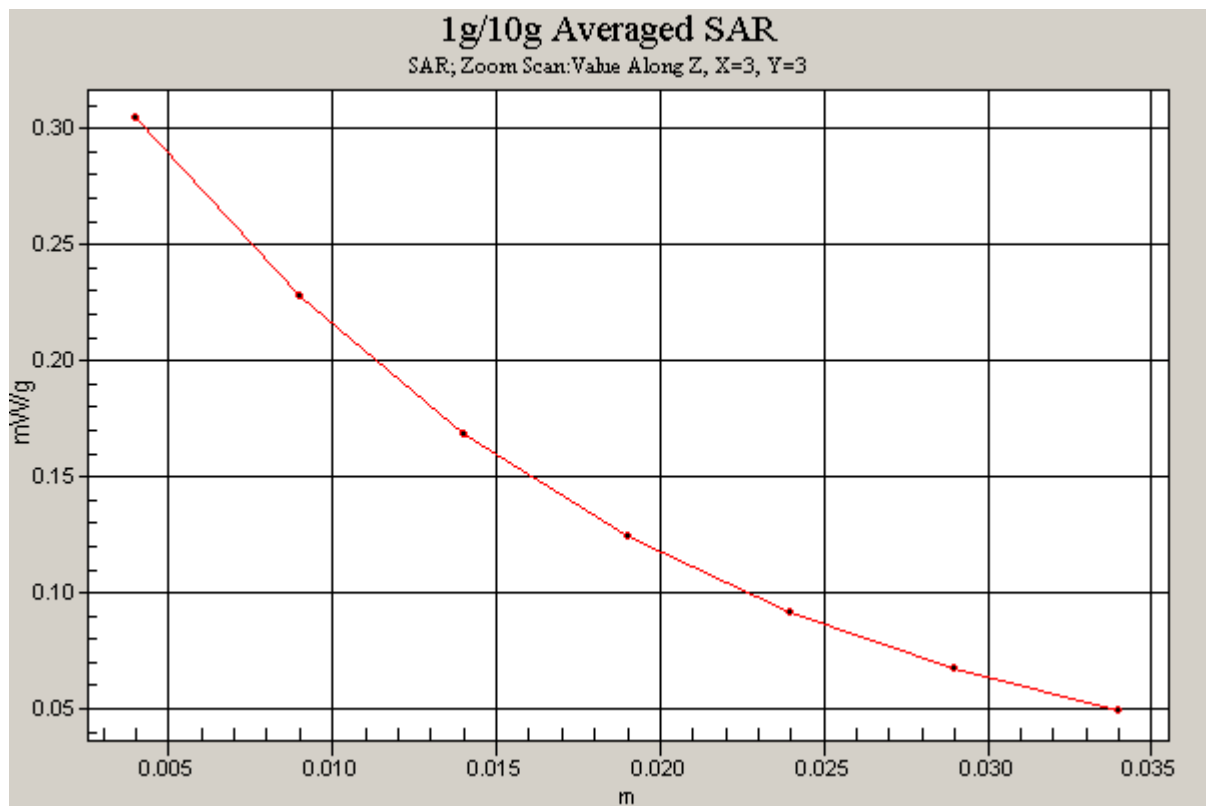


Figure 40 Z-Scan at power reference point (Body with Earphone, Towards Ground, GSM 850 SIM1 Channel 251)

### **GSM 850+GPRS(4Up) SIM1 Towards Ground High**

Date/Time: 8/25/2009 12:18:05 PM

Communication System: GSM 850+GPRS(4Up); Frequency: 848.8 MHz; Duty Cycle: 1:2

Medium parameters used:  $f = 849 \text{ MHz}$ ;  $\sigma = 1.03 \text{ mho/m}$ ;  $\epsilon_r = 54.9$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $22.3^\circ\text{C}$       Liquid Temperature:  $21.5^\circ\text{C}$

Phantom section: Flat Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(6.14, 6.14, 6.14); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Towards Ground High/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) =  $1.04 \text{ mW/g}$

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

Reference Value =  $19.8 \text{ V/m}$ ; Power Drift =  $-0.124 \text{ dB}$

Peak SAR (extrapolated) =  $1.22 \text{ W/kg}$

**SAR(1 g) =  $0.972 \text{ mW/g}$ ; SAR(10 g) =  $0.707 \text{ mW/g}$**

Maximum value of SAR (measured) =  $1.03 \text{ mW/g}$

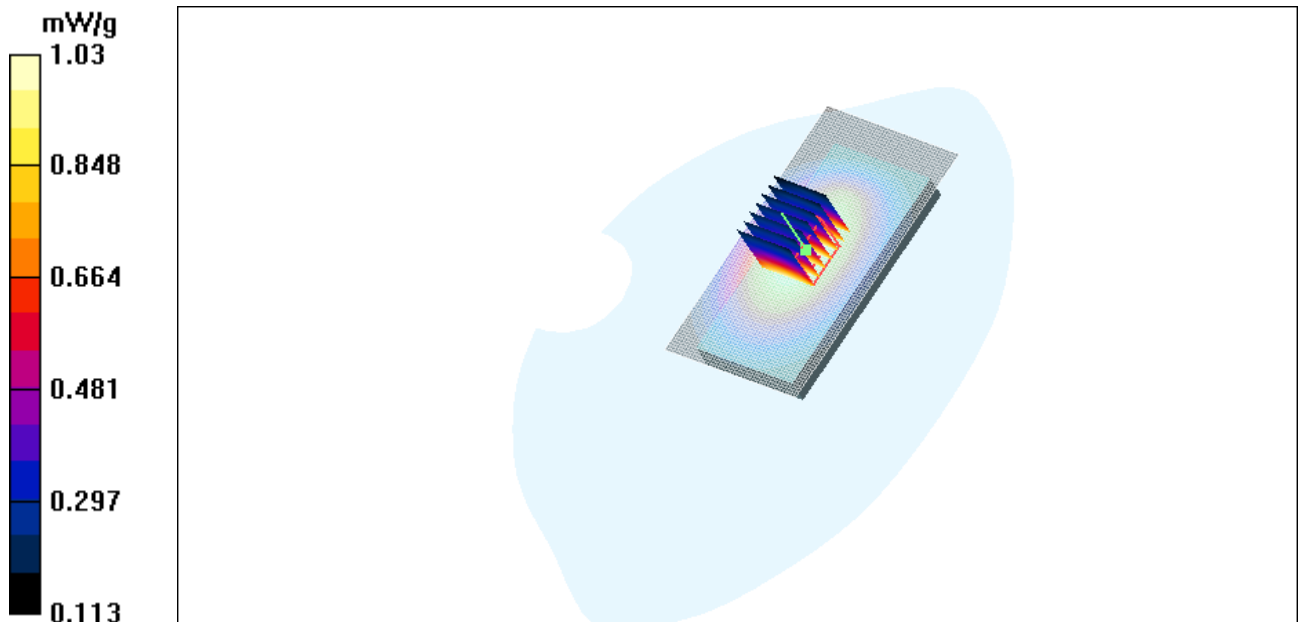


Figure 41 Body, Towards Ground, GSM 850 SIM1 GPRS(4up) Channel 251

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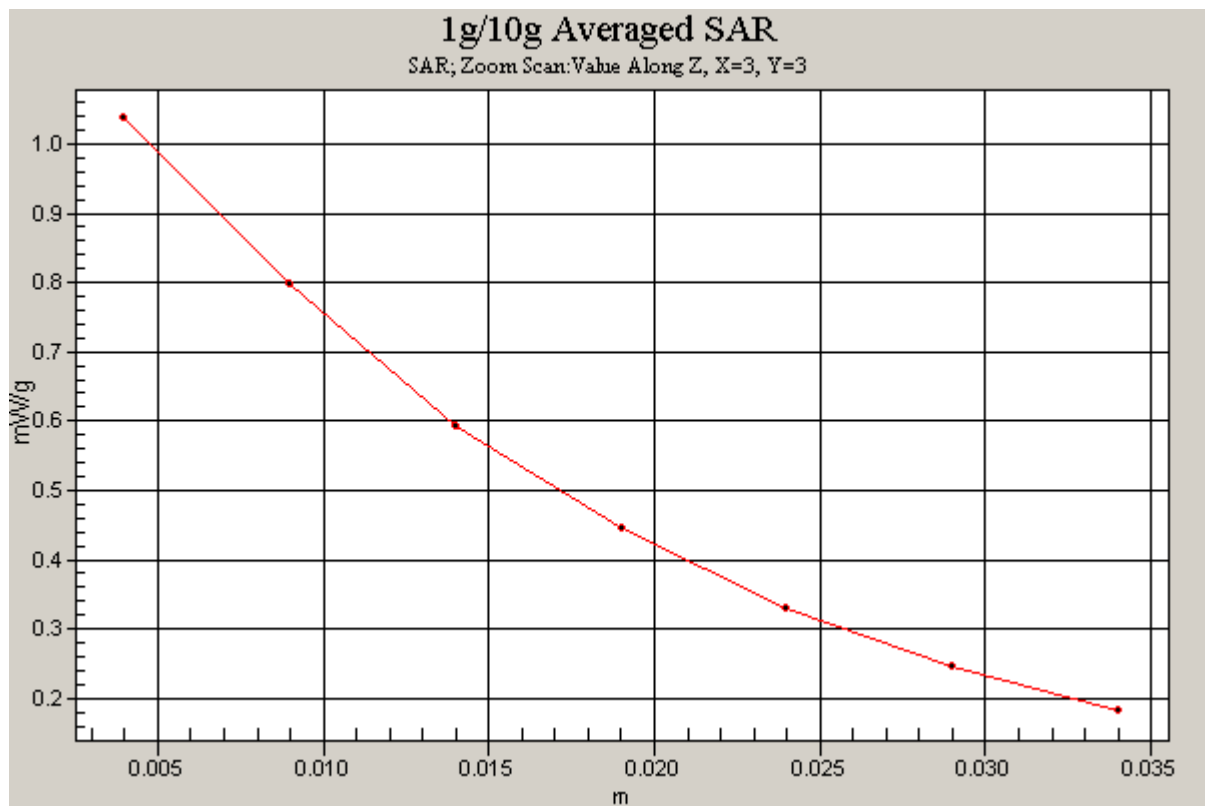


Figure 42 Z-Scan at power reference point (Body, Towards Ground, GSM 850 SIM1 GPRS(4up)  
Channel 251)

### GSM 850+GPRS(4Up) SIM1 Towards Ground High

Date/Time: 8/25/2009 10:01:14 PM

Communication System: GSM 850+EGPRS(4Up); Frequency: 848.8 MHz; Duty Cycle: 1:2

Medium parameters used:  $f = 849 \text{ MHz}$ ;  $\sigma = 1.03 \text{ mho/m}$ ;  $\epsilon_r = 54.9$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $22.3^\circ\text{C}$       Liquid Temperature:  $21.5^\circ\text{C}$

Phantom section: Flat Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(6.14, 6.14, 6.14); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Towards Ground High/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) =  $1.14 \text{ mW/g}$

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

Reference Value =  $16.2 \text{ V/m}$ ; Power Drift =  $-0.021 \text{ dB}$

Peak SAR (extrapolated) =  $1.39 \text{ W/kg}$

**SAR(1 g) =  $1.01 \text{ mW/g}$ ; SAR(10 g) =  $0.744 \text{ mW/g}$**

Maximum value of SAR (measured) =  $1.09 \text{ mW/g}$

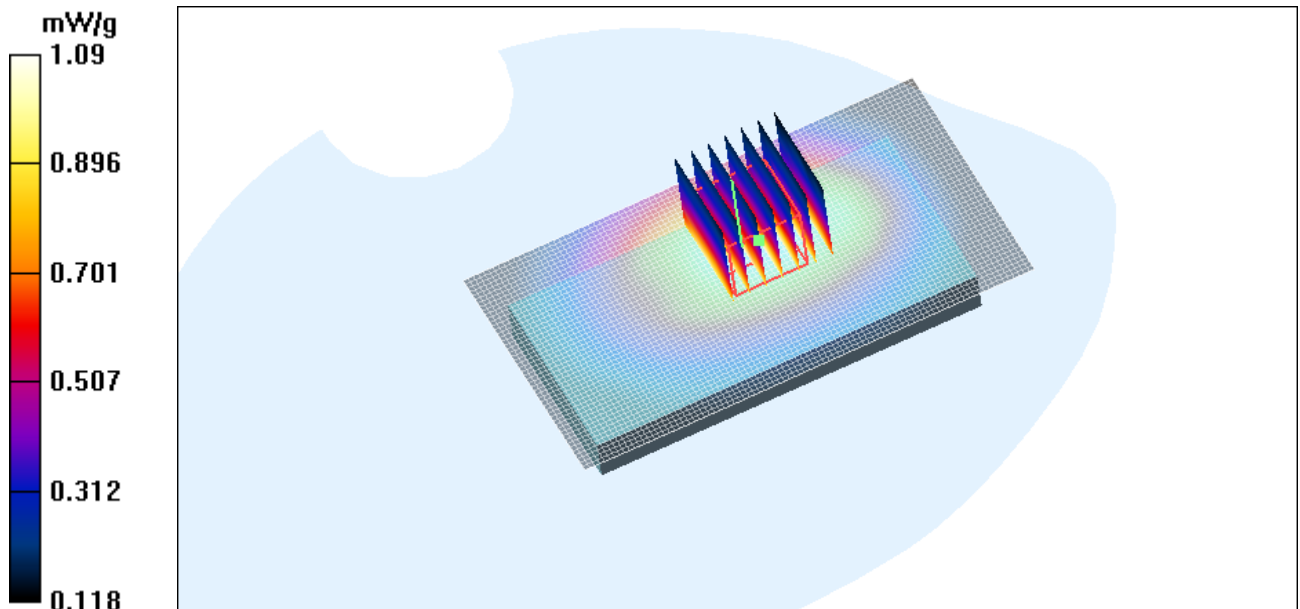


Figure 43 Body, Towards Ground, GSM 850 SIM1 GPRS(4up) Channel 251

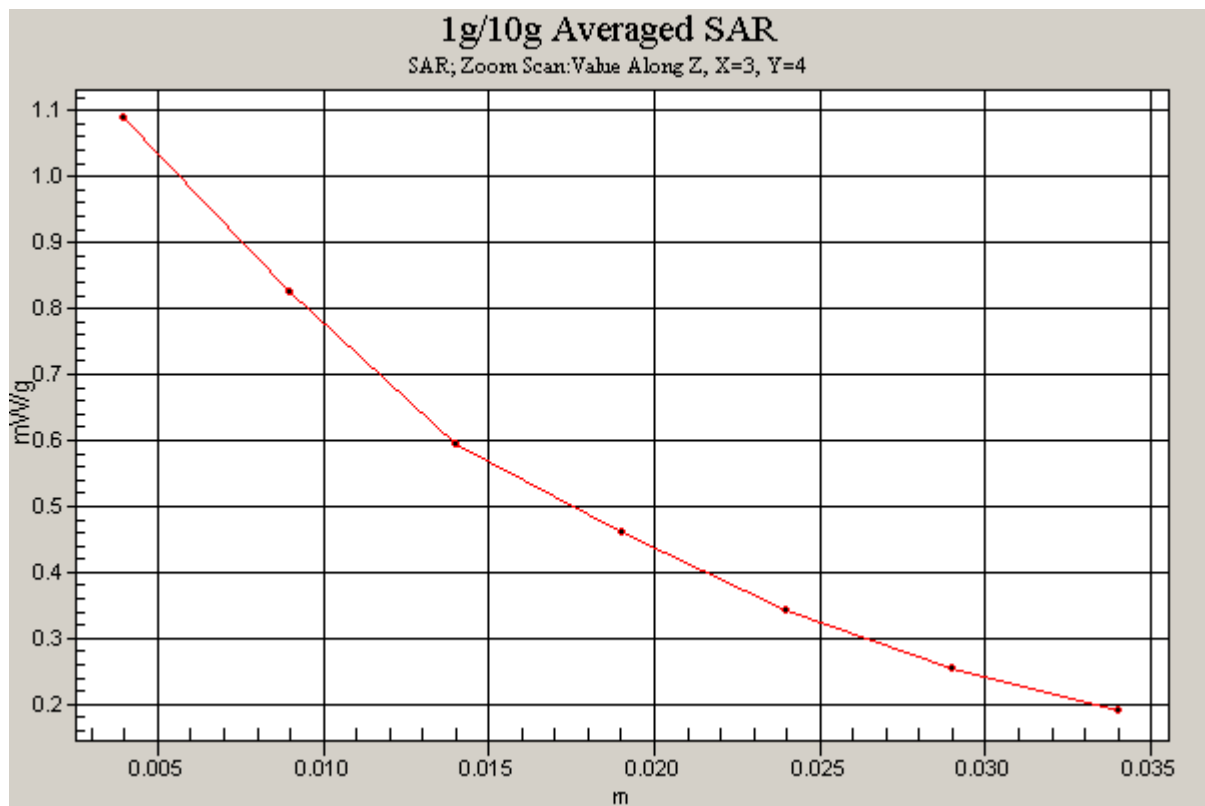


Figure 44 Z-Scan at power reference point (Body, Towards Ground, GSM 850 SIM1 GPRS(4up)  
Channel 251)

### GSM 1900 SIM1 Left Cheek High

Date/Time: 8/25/2009 7:45:25 PM

Communication System: PCS 1900; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.42$  mho/m;  $\epsilon_r = 39.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3 °C      Liquid Temperature: 21.5 °C

Phantom section: Left Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(4.89, 4.89, 4.89); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM000 T01 ; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Cheek High/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 9.62 V/m; Power Drift = 0.013 dB

Peak SAR (extrapolated) = 1.04 W/kg

**SAR(1 g) = 0.687 mW/g; SAR(10 g) = 0.370 mW/g**

Maximum value of SAR (measured) = 0.793 mW/g

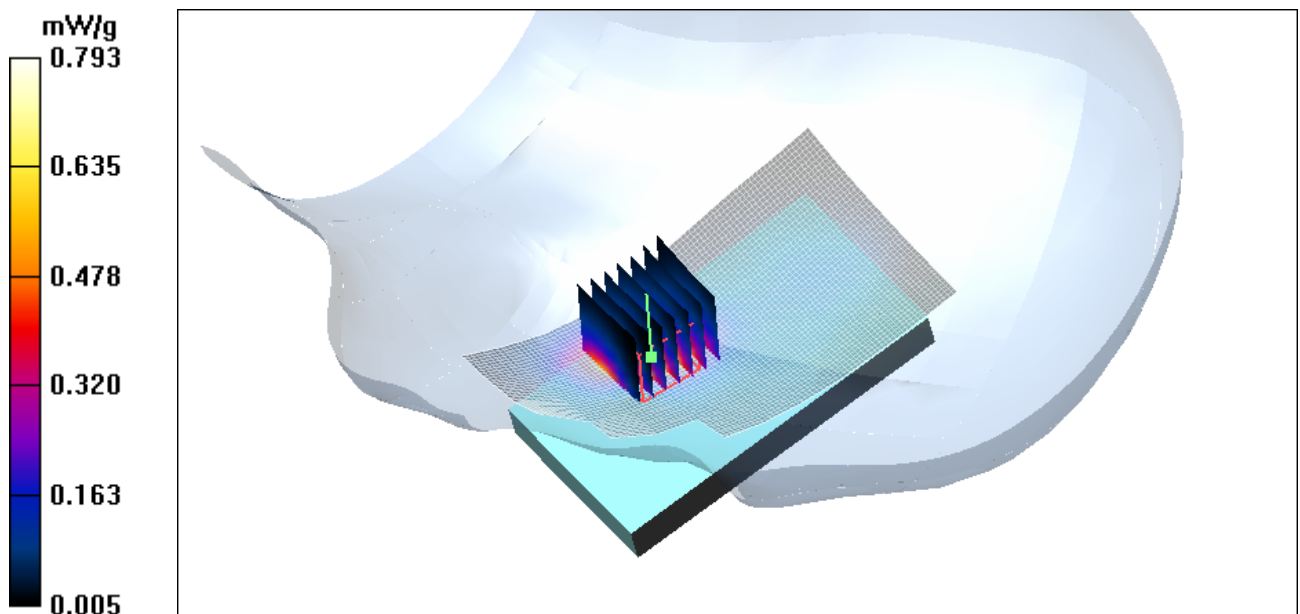


Figure 45 Left Hand Touch Cheek GSM 1900 SIM1 Channel 810

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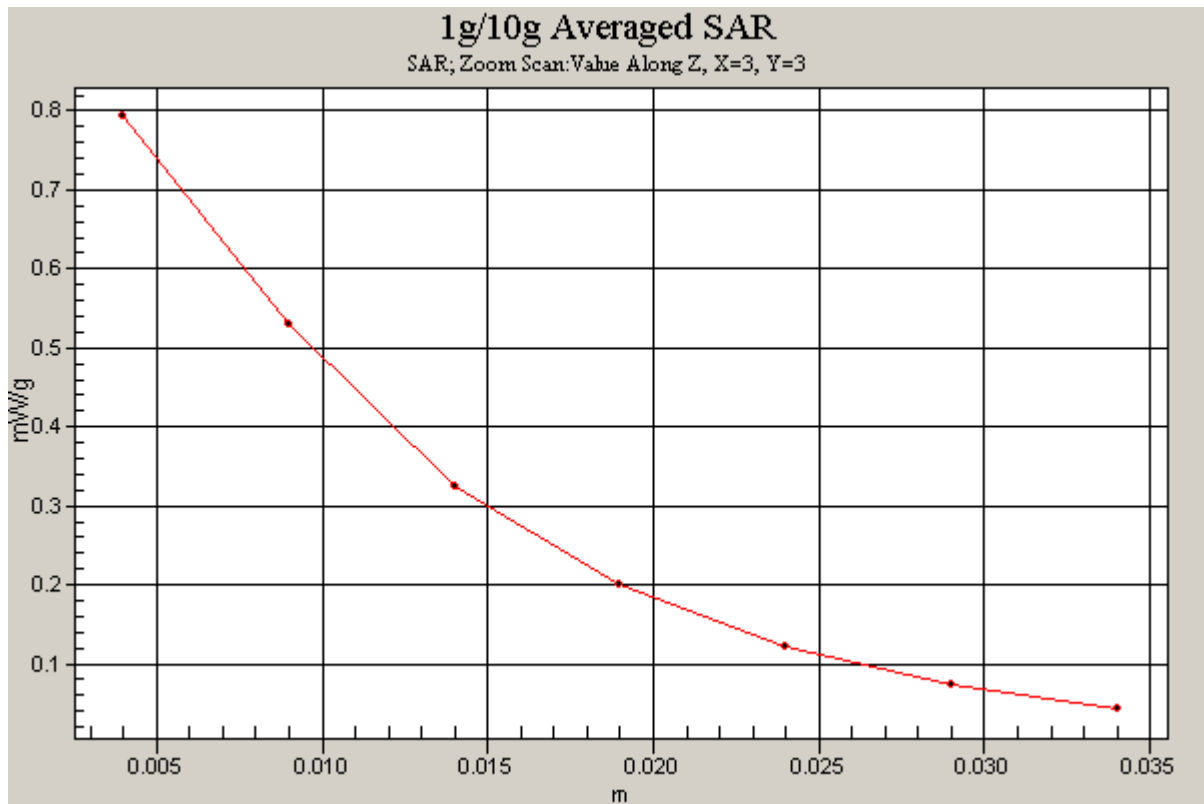


Figure 46 Z-Scan at power reference point (Left Hand Touch Cheek GSM 1900 SIM1 Channel 810)



### GSM 1900 SIM1 Left Cheek Middle

Date/Time: 8/25/2009 6:14:48 PM

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.39 \text{ mho/m}$ ;  $\epsilon_r = 39.5$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $22.3^\circ\text{C}$       Liquid Temperature:  $21.5^\circ\text{C}$

Phantom section: Left Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(4.89, 4.89, 4.89); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM000 T01 ; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Cheek Middle/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) =  $0.764 \text{ mW/g}$

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

Reference Value =  $10.4 \text{ V/m}$ ; Power Drift =  $-0.017 \text{ dB}$

Peak SAR (extrapolated) =  $1.04 \text{ W/kg}$

**SAR(1 g) =  $0.703 \text{ mW/g}$ ; SAR(10 g) =  $0.386 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.808 \text{ mW/g}$

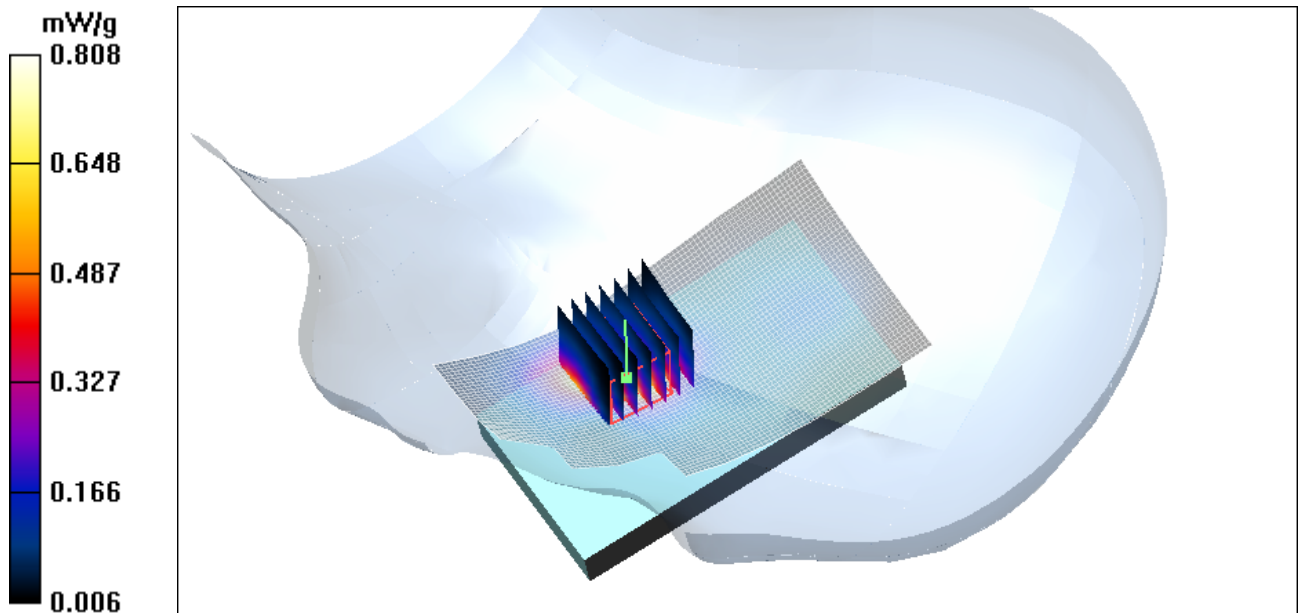


Figure 47 Left Hand Touch Cheek GSM 1900 SIM1 Channel 661

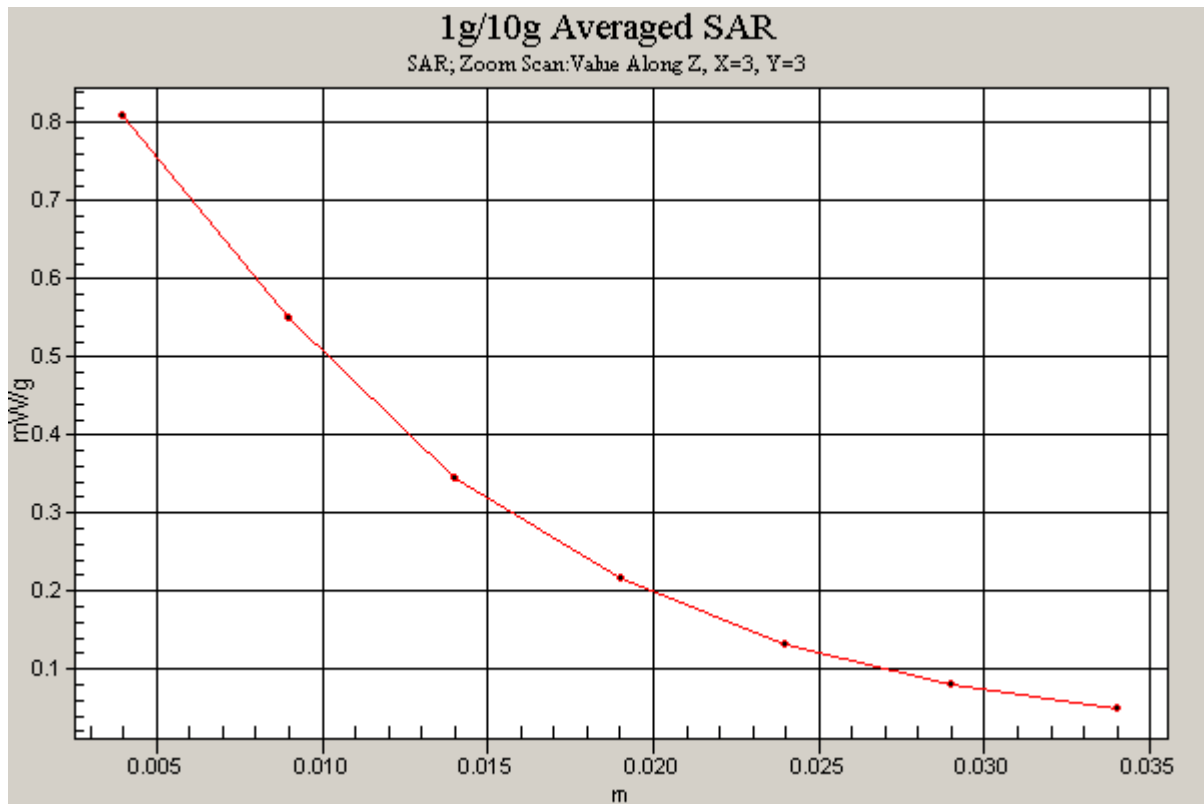


Figure 48 Z-Scan at power reference point (Left Hand Touch Cheek GSM 1900 SIM1 Channel 661)

### GSM 1900 SIM1 Left Cheek Low

Date/Time: 8/25/2009 8:04:09 PM

Communication System: PCS 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium parameters used (interpolated):  $f = 1850.2$  MHz;  $\sigma = 1.37$  mho/m;  $\epsilon_r = 39.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3 °C      Liquid Temperature: 21.5 °C

Phantom section: Left Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(4.89, 4.89, 4.89); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM000 T01 ; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Cheek Low/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 9.65 V/m; Power Drift = -0.038 dB

Peak SAR (extrapolated) = 1.04 W/kg

**SAR(1 g) = 0.703 mW/g; SAR(10 g) = 0.388 mW/g**

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

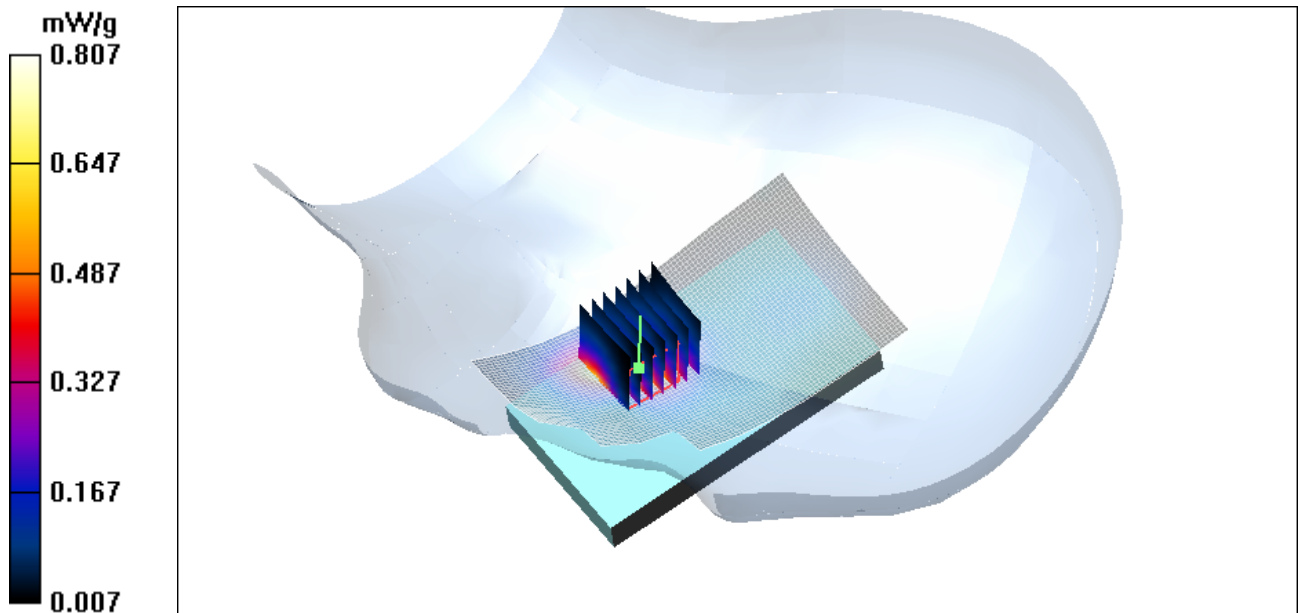


Figure 49 Left Hand Touch Cheek GSM 1900 SIM1 Channel 512

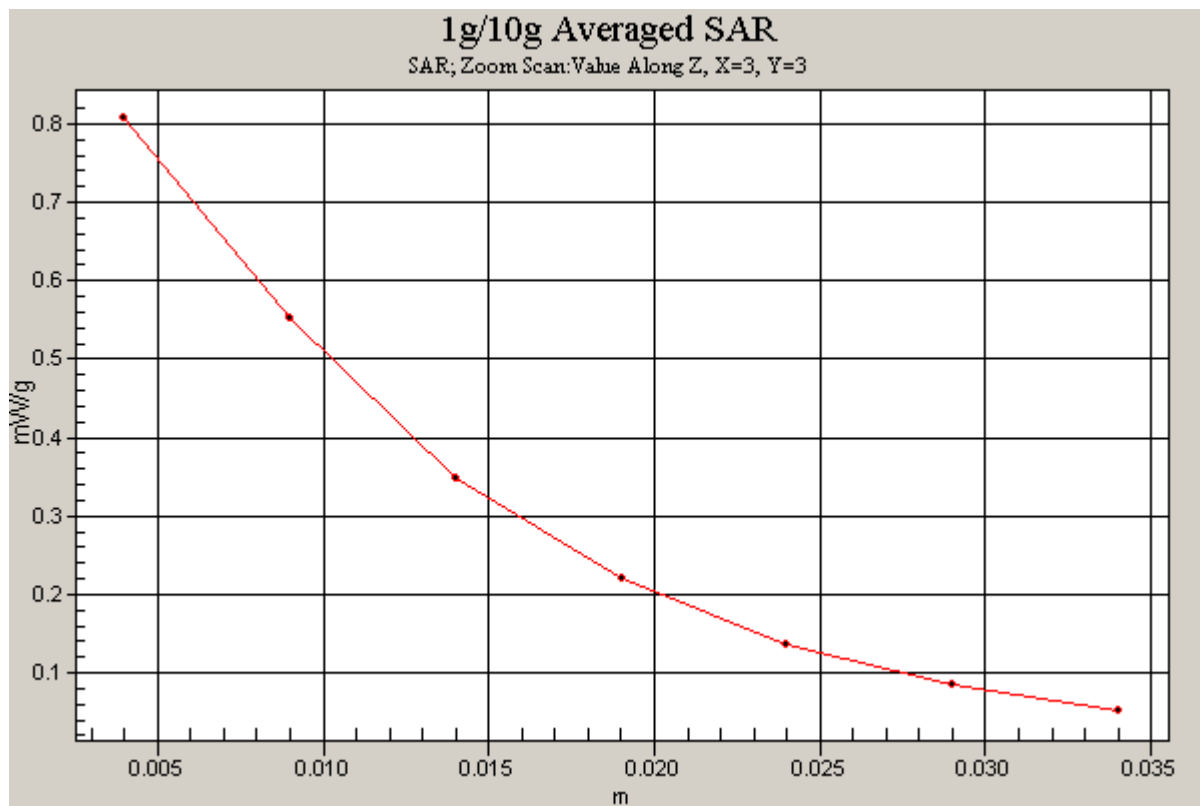


Figure 50 Z-Scan at power reference point (Left Hand Touch Cheek GSM 1900 SIM1 Channel 512)

### GSM 1900 SIM1 Left Tilt Middle

Date/Time: 8/25/2009 6:34:30 PM

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.39$  mho/m;  $\epsilon_r = 39.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3 °C      Liquid Temperature: 21.5 °C

Phantom section: Left Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(4.89, 4.89, 4.89); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM000 T01 ; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Tilt Middle/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.186 mW/g

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

Reference Value = 11.9 V/m; Power Drift = 0.002 dB

Peak SAR (extrapolated) = 0.224 W/kg

**SAR(1 g) = 0.155 mW/g; SAR(10 g) = 0.090 mW/g**

Maximum value of SAR (measured) = 0.171 mW/g

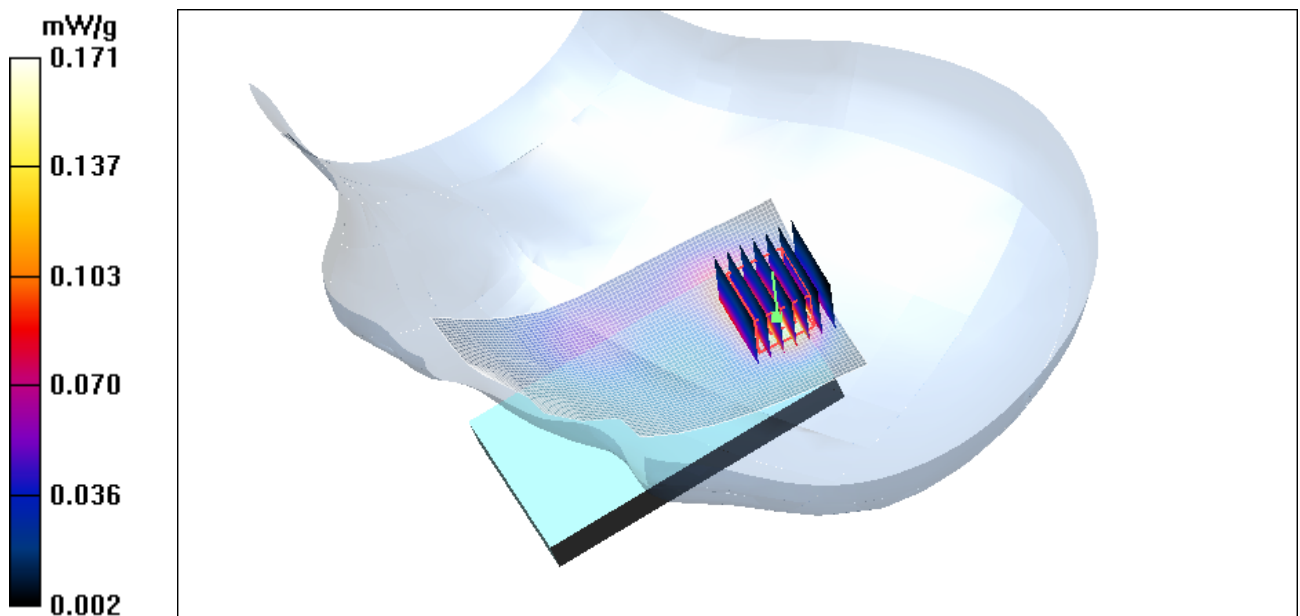


Figure 51 Left Hand Tilt 15° Open GSM 1900 SIM1 Channel 661

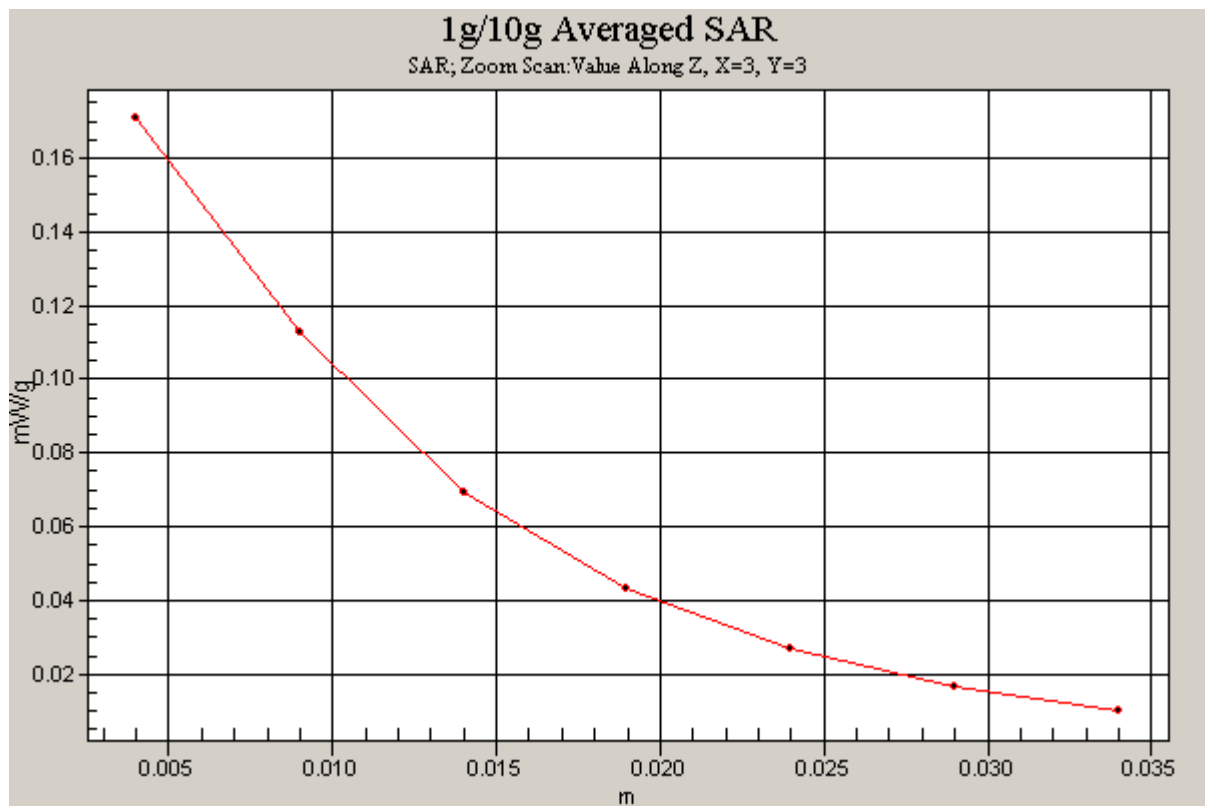


Figure 52 Z-Scan at power reference point (Left Hand Tilt 15° Open GSM 1900 SIM1 Channel 661)

### GSM 1900 SIM1 Right Cheek Middle

Date/Time: 8/25/2009 6:57:47 PM

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.39$  mho/m;  $\epsilon_r = 39.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3 °C      Liquid Temperature: 21.5 °C

Phantom section: Right Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(4.89, 4.89, 4.89); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM000 T01 ; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Cheek Middle/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.459 mW/g

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

Reference Value = 10.5 V/m; Power Drift = -0.002 dB

Peak SAR (extrapolated) = 0.577 W/kg

**SAR(1 g) = 0.410 mW/g; SAR(10 g) = 0.243 mW/g**

Maximum value of SAR (measured) = 0.452 mW/g

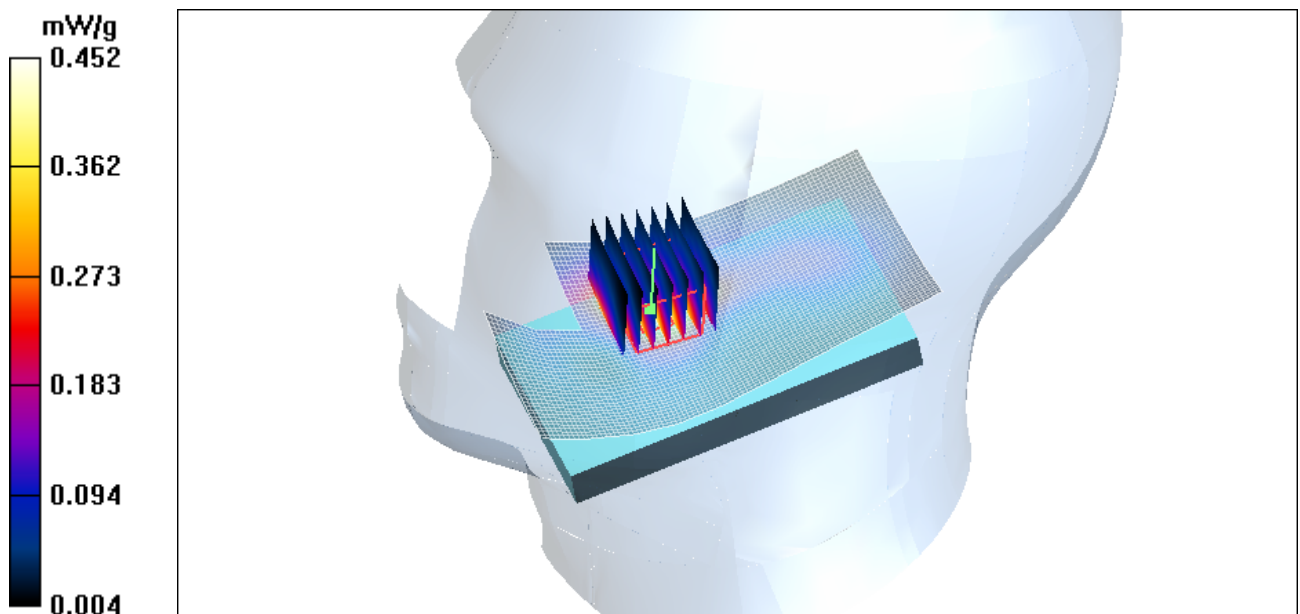


Figure 53 Right Hand Touch Cheek GSM 1900 SIM1 Channel 661

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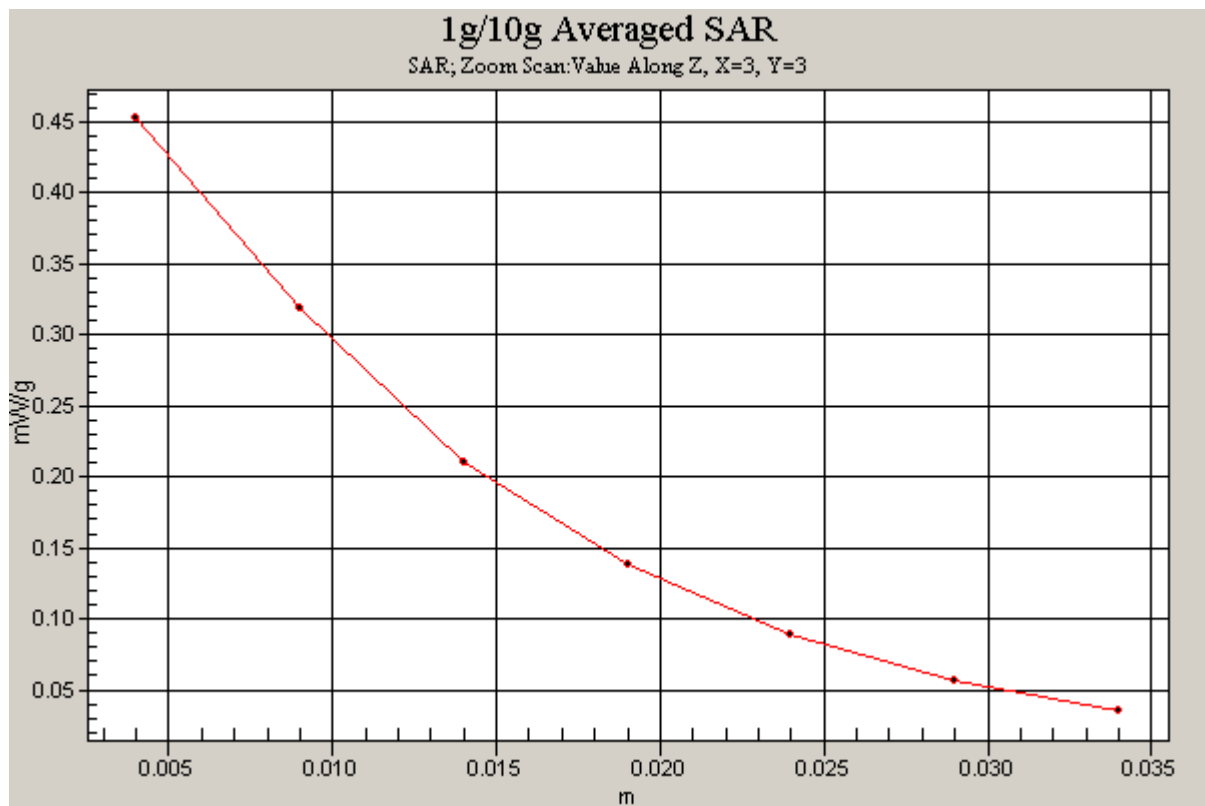


Figure 54 Z-Scan at power reference point (Right Hand Touch Cheek GSM 1900 SIM1 Channel 661)



### GSM 1900 SIM1 Right Tilt Middle

Date/Time: 8/25/2009 7:17:36 PM

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.39$  mho/m;  $\epsilon_r = 39.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3 °C      Liquid Temperature: 21.5 °C

Phantom section: Right Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(4.89, 4.89, 4.89); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM000 T01 ; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Tilt Middle/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.195 mW/g

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

Reference Value = 12.4 V/m; Power Drift = -0.080 dB

Peak SAR (extrapolated) = 0.245 W/kg

**SAR(1 g) = 0.165 mW/g; SAR(10 g) = 0.097 mW/g**

Maximum value of SAR (measured) = 0.186 mW/g

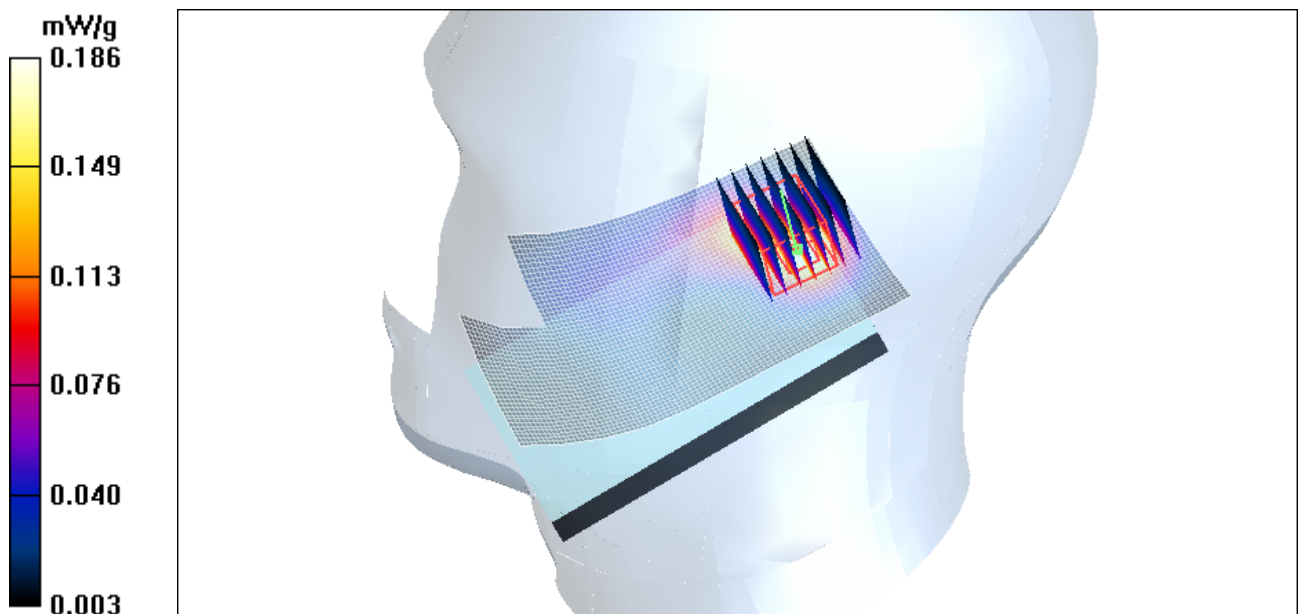


Figure 55 Right Hand Tilt 15° Open GSM 1900 SIM1 Channel 661

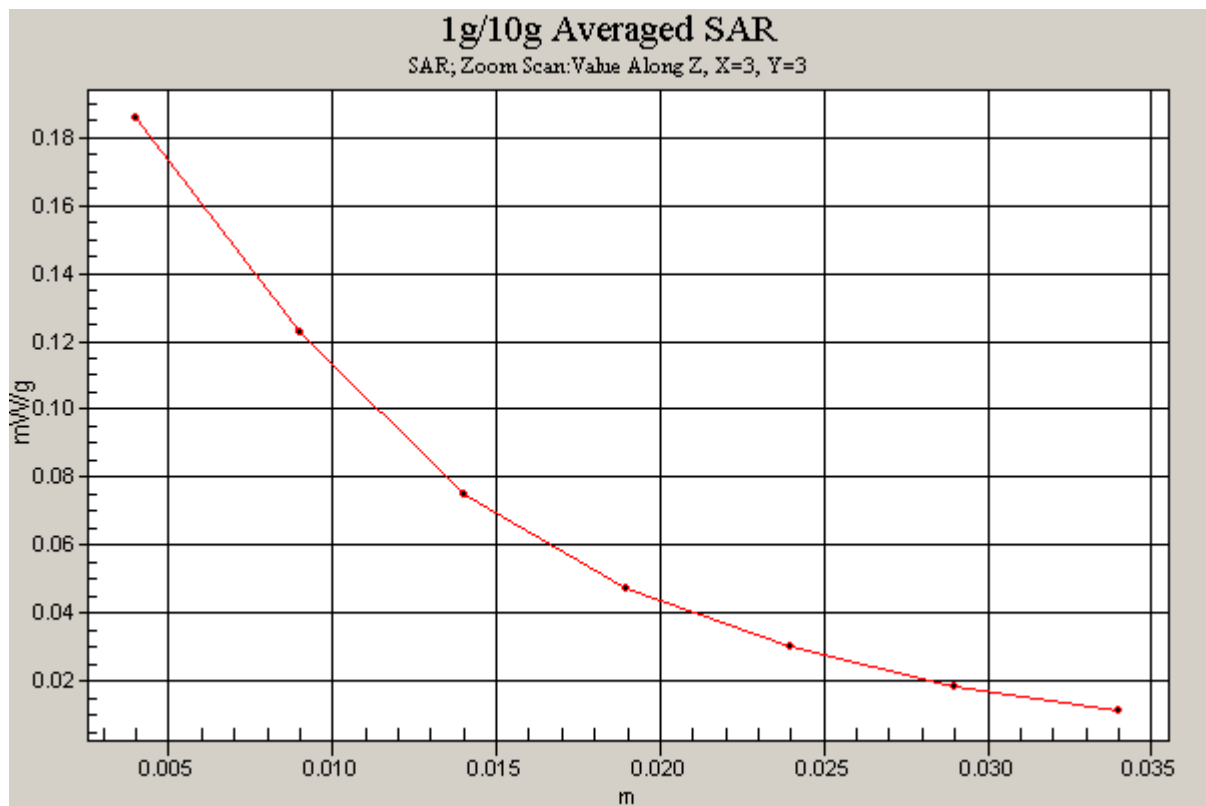


Figure 56 Z-Scan at power reference point (Right Hand Tilt 15° Open GSM 1900 SIM1 Channel 661)

### GSM 1900 SIM1 Left Cheek Middle

Date/Time: 8/25/2009 8:25:12 PM

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.39 \text{ mho/m}$ ;  $\epsilon_r = 39.5$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $22.3^\circ\text{C}$       Liquid Temperature:  $21.5^\circ\text{C}$

Phantom section: Left Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(4.89, 4.89, 4.89); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM000 T01 ; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Cheek Middle/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) =  $0.778 \text{ mW/g}$

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

Reference Value =  $10.1 \text{ V/m}$ ; Power Drift =  $-0.043 \text{ dB}$

Peak SAR (extrapolated) =  $1.07 \text{ W/kg}$

**SAR(1 g) =  $0.715 \text{ mW/g}$ ; SAR(10 g) =  $0.391 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.820 \text{ mW/g}$

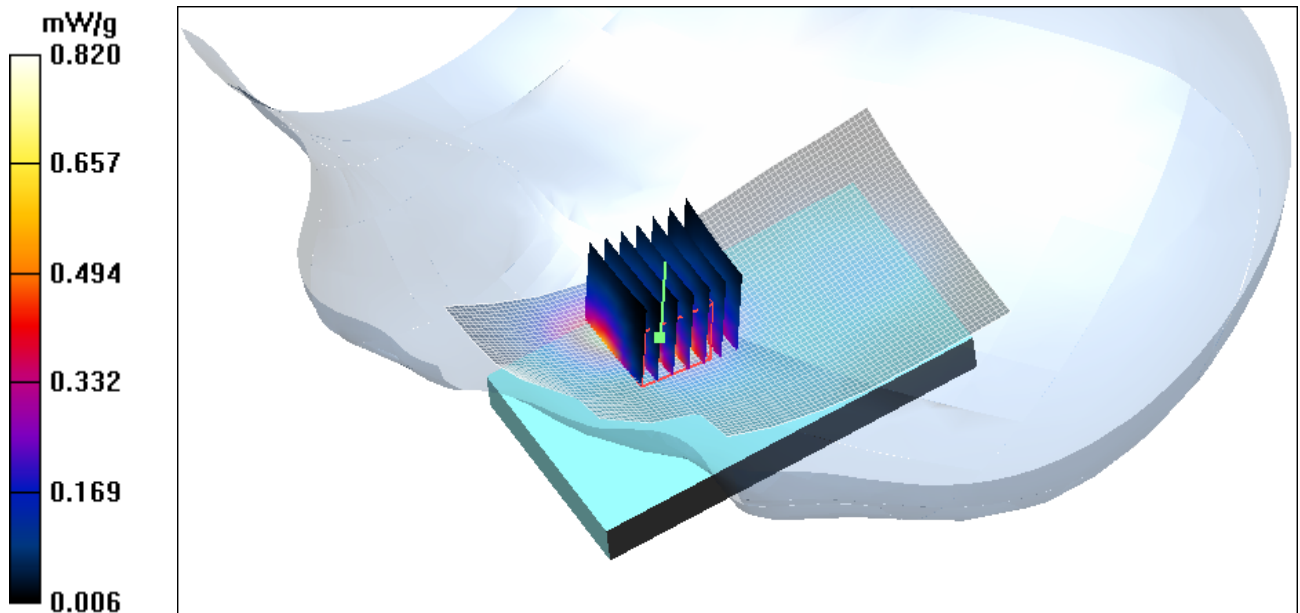


Figure 57 Left Hand Touch Cheek GSM 1900 SIM1 Channel 661

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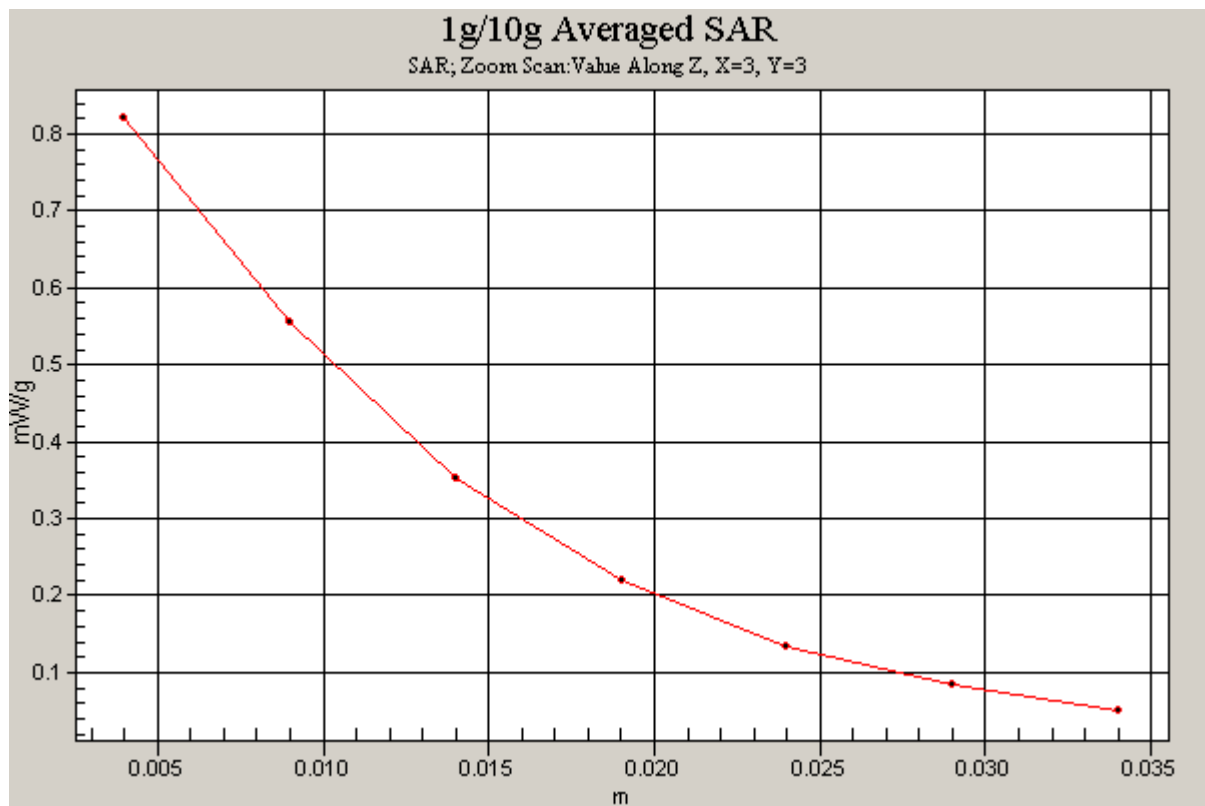


Figure 58 Z-Scan at power reference point (Right Hand Touch Cheek GSM 1900 SIM1 Channel 661)

### **GSM 1900 SIM1 Towards Ground High**

Date/Time: 8/25/2009 11:26:05 AM

Communication System: PCS 1900; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.54$  mho/m;  $\epsilon_r = 52.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3 °C      Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(4.6, 4.6, 4.6); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM000 T01 ; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Towards Ground High/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.165 mW/g

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

Reference Value = 6.34 V/m; Power Drift = -0.078 dB

Peak SAR (extrapolated) = 0.264 W/kg

**SAR(1 g) = 0.150 mW/g; SAR(10 g) = 0.088 mW/g**

Maximum value of SAR (measured) = 0.163 mW/g

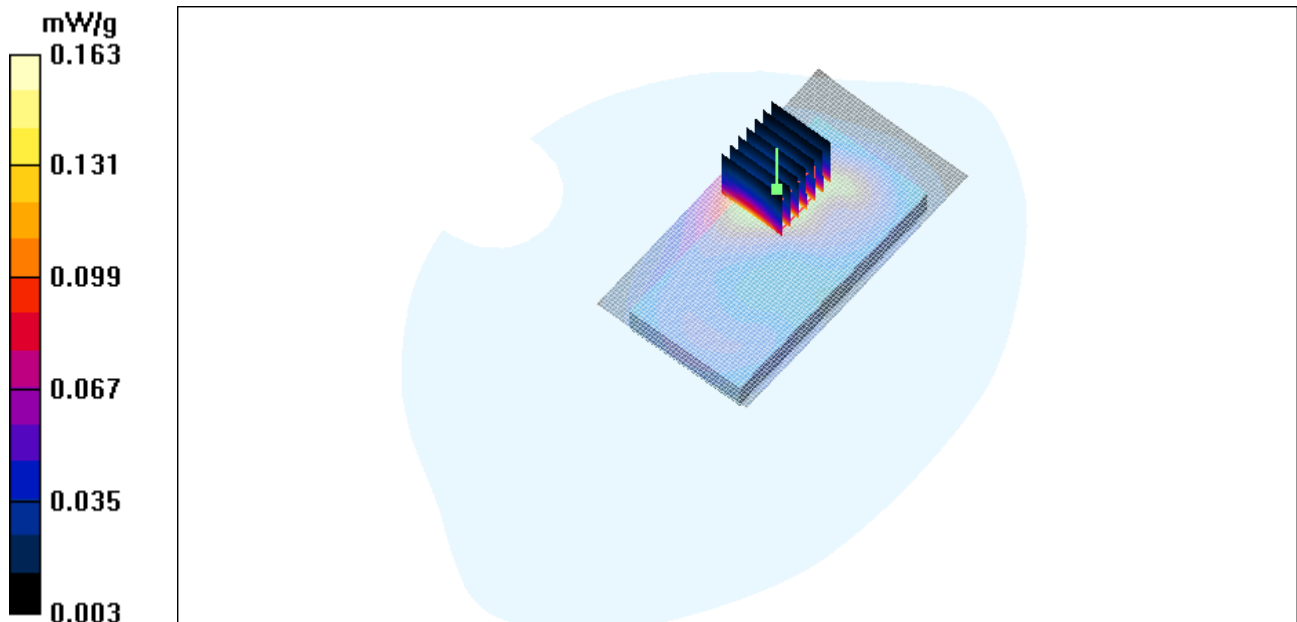


Figure 59 Body, Towards Ground, GSM 1900 SIM1 Channel 810

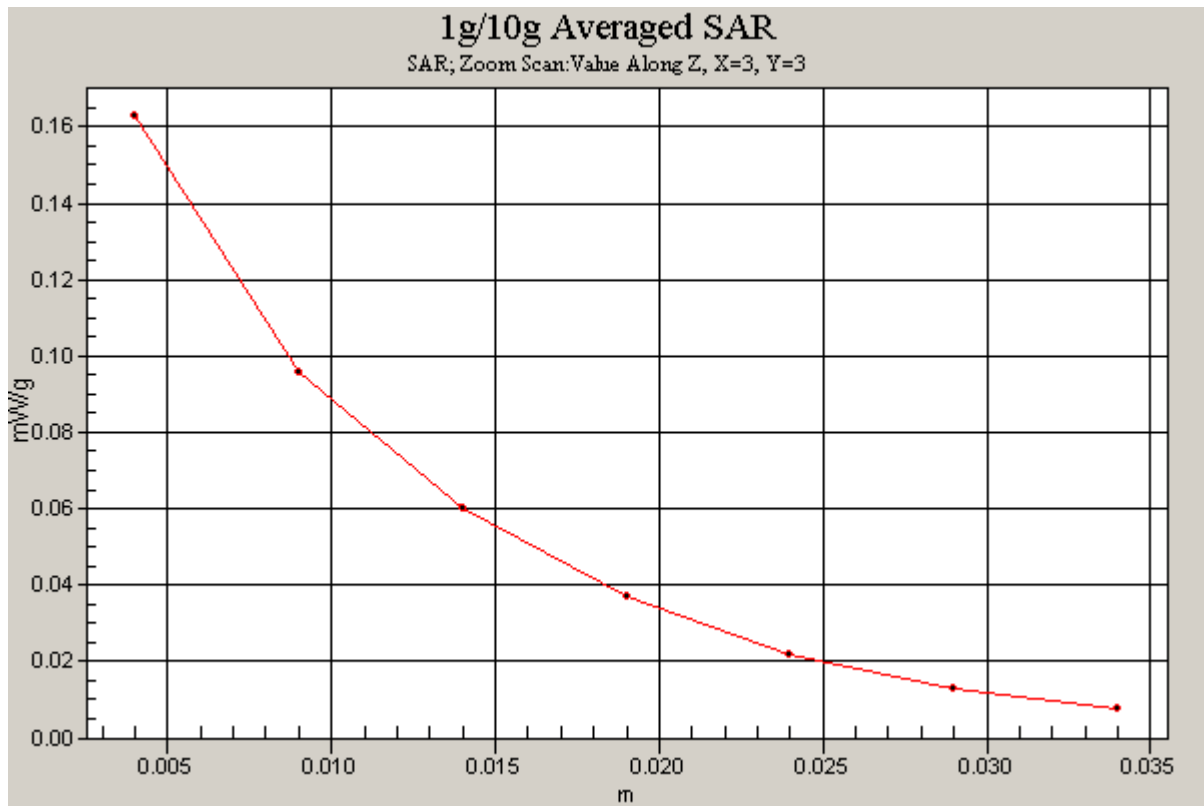


Figure 60 Z-Scan at power reference point (Body, Towards Ground, GSM 1900 SIM1 Channel 810)

### **GSM 1900 SIM1 Towards Ground Middle**

Date/Time: 8/25/2009 10:22:57 AM

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.53 \text{ mho/m}$ ;  $\epsilon_r = 52.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $22.3^\circ\text{C}$       Liquid Temperature:  $21.5^\circ\text{C}$

Phantom section: Flat Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(4.6, 4.6, 4.6); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM000 T01 ; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Towards Ground Middle/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) =  $0.172 \text{ mW/g}$

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

Reference Value =  $7.00 \text{ V/m}$ ; Power Drift =  $-0.056 \text{ dB}$

Peak SAR (extrapolated) =  $0.269 \text{ W/kg}$

**SAR(1 g) =  $0.155 \text{ mW/g}$ ; SAR(10 g) =  $0.092 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.167 \text{ mW/g}$

**Towards Ground Middle/Zoom Scan (7x7x7)/Cube 1:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $7.00 \text{ V/m}$ ; Power Drift =  $-0.056 \text{ dB}$

Peak SAR (extrapolated) =  $0.253 \text{ W/kg}$

**SAR(1 g) =  $0.113 \text{ mW/g}$ ; SAR(10 g) =  $0.063 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.154 \text{ mW/g}$

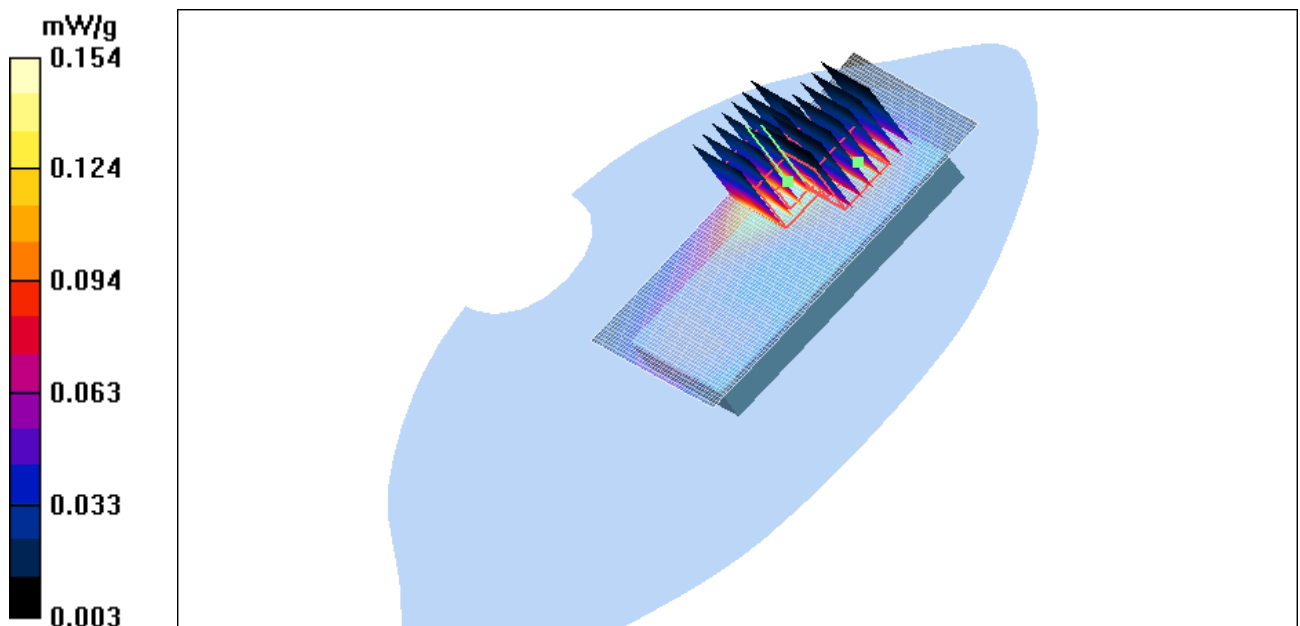


Figure 61 Body, Towards Ground, GSM 1900 SIM1 Channel 661

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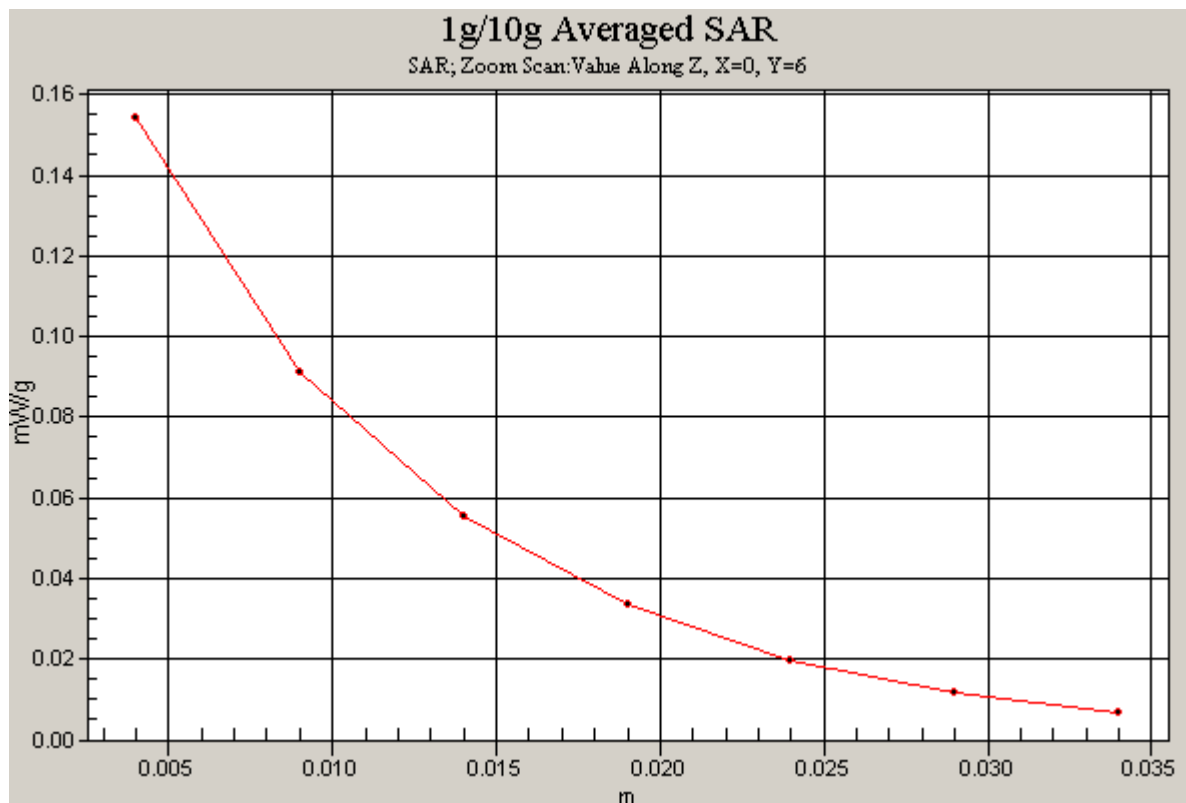
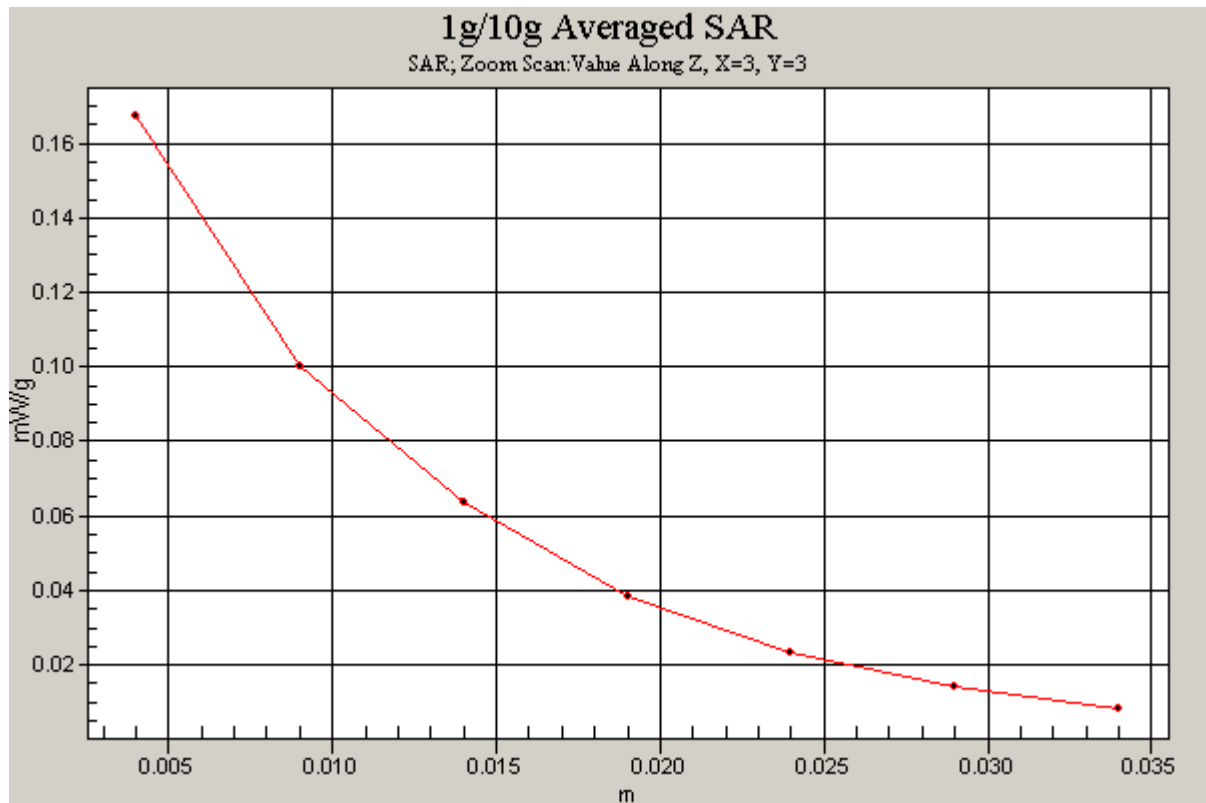


Figure 62 Z-Scan at power reference point (Body, Towards Ground, GSM 1900 SIM1 Channel 661)



### GSM 1900 SIM1 Towards Ground Low

Date/Time: 8/25/2009 10:56:19 AM

Communication System: PCS 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium parameters used (interpolated):  $f = 1850.2$  MHz;  $\sigma = 1.51$  mho/m;  $\epsilon_r = 52.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3 °C      Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY4 Configuration:

Probe: ET3DV6 - SN1737; ConvF(4.6, 4.6, 4.6); Calibrated: 11/25/2008

Electronics: DAE4 Sn452; Calibrated: 11/18/2008

Phantom: SAM000 T01 ; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Towards Ground Low/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.180 mW/g

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

Reference Value = 7.20 V/m; Power Drift = -0.030 dB

Peak SAR (extrapolated) = 0.281 W/kg

**SAR(1 g) = 0.166 mW/g; SAR(10 g) = 0.099 mW/g**

Maximum value of SAR (measured) = 0.179 mW/g

**Towards Ground Low/Zoom Scan (7x7x7)/Cube 1:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.20 V/m; Power Drift = -0.030 dB

Peak SAR (extrapolated) = 0.260 W/kg

**SAR(1 g) = 0.128 mW/g; SAR(10 g) = 0.076 mW/g**

Maximum value of SAR (measured) = 0.157 mW/g

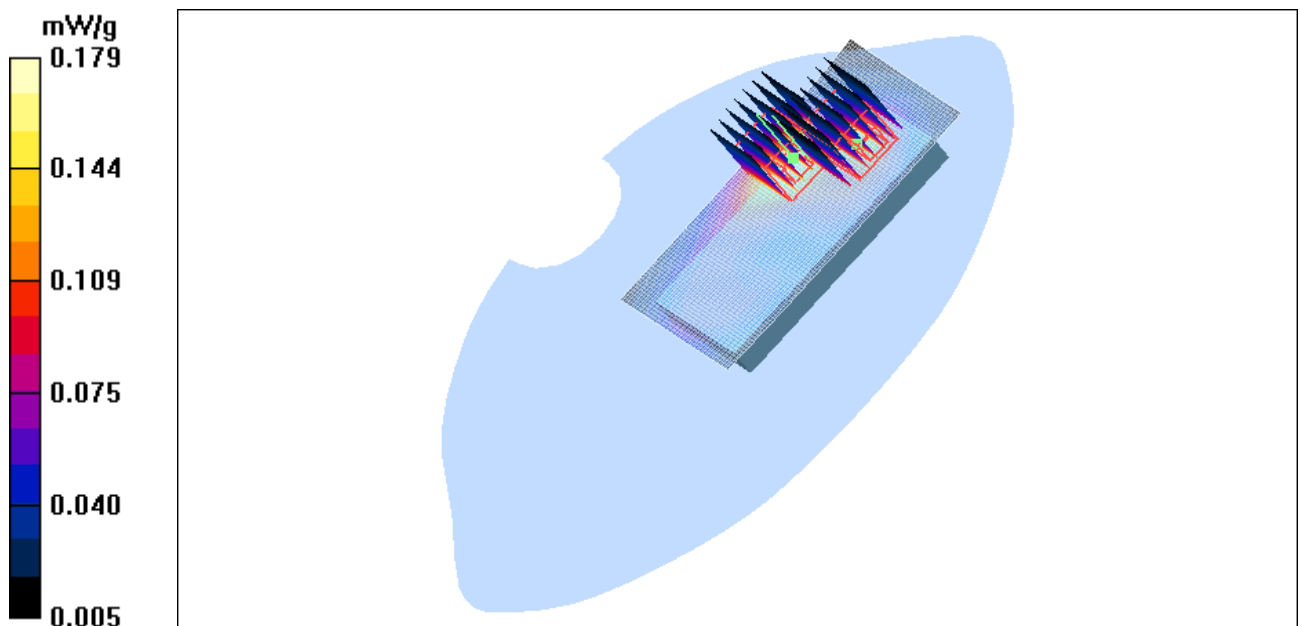


Figure 63 Body, Towards Ground, GSM 1900 SIM1 Channel 512

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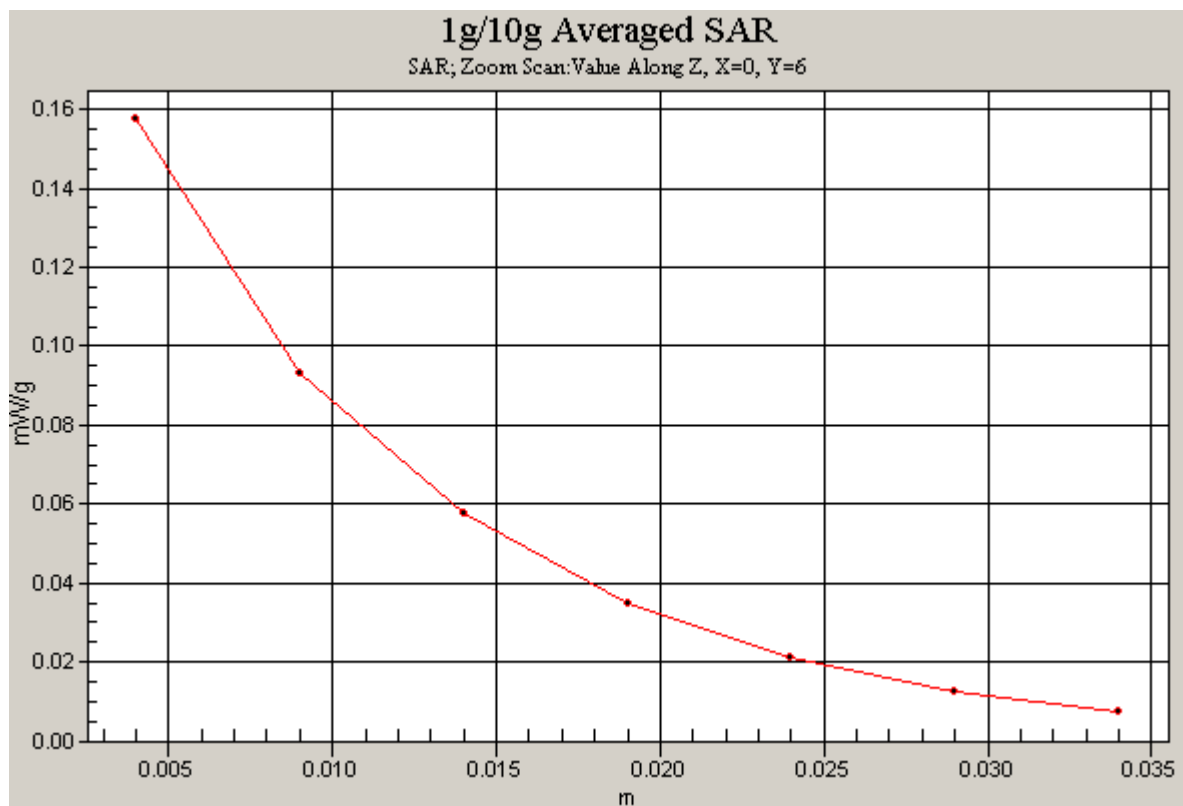
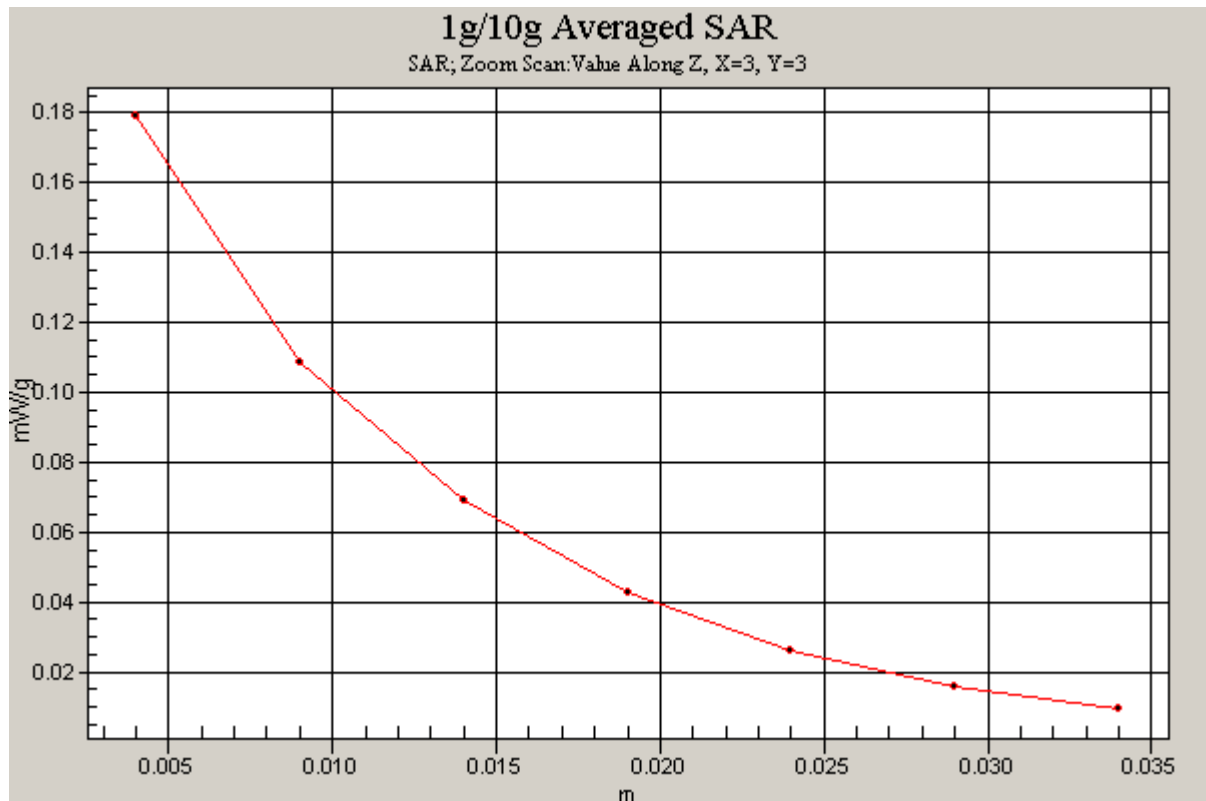


Figure 64 Z-Scan at power reference point (Body, Towards Ground, GSM 1900 SIM1 Channel 512)