Report No.: RZA1103-0437SAR01

TESTING
No. L2264

OET 65

TEST REPORT

Product Name	HSDPA/UMTS/GPRS/GSM/EDGE Mobile Phone with Bluetooth
Model	HUAWEI U8650-1/U8650-1
FCC ID	QISU8650-1
Client	Huawei Technologies Co., Ltd.

TA Technology (Shanghai) Co., Ltd.

GENERAL SUMMARY

Product Name	HSDPA/UMTS/GPRS/GSM/EDGE Mobile Phone with Bluetooth	**Model**	HUAWEI U8650-1/U8650-1
FCC ID	QISU8650-1		
Report No.	RZA1103-0437SAR01		
Client	Huawei Technologies Co., Ltd.		
Manufacturer	Huawei Technologies Co., Ltd.		
Reference Standard(s)	**IEEE Std C95.1, 1999:** IEEE Standard for Safety Levels with Respect to Human Exposure to Radiofrequency Electromagnetic Fields, 3 kHz to 300 GHz. **IEEE Std 1528™-2003:** IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques. **SUPPLEMENT C Edition 01-01 to OET BULLETIN 65 Edition 97-01 June 2001 including DA 02-1438, published June 2002:** Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields Additional Information for Evaluation Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions. **RSS-102 Issue 4 March 2010:** Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)		
Conclusion	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. General Judgment: **Pass** (Stamp) **Date of issue: April 15th, 2011**		
Comment	The test result only responds to the measured sample.		

Approved by Yang Weizhong **Revised by** Ling Minbao **Performed by** Liu Jun

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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 dose 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.

If the electrical report is inconsistent with the printed one, it should be subject to the latter.

1.2. Testing Laboratory

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1.3. Applicant Information

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Address:	Bantian, Longgang District
City:	Shenzhen
Postal Code:	518129
Country:	P.R. China
Contact:	Zhao Guiying
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1.4. Manufacturer Information

Company:	Huawei Technologies Co., Ltd.
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City:	Shenzhen
Postal Code:	518129
Country:	P.R.China
Telephone:	0755-28780808
Fax:	0755-28780808

1.5. Information of EUT

General Information

Device Type :	Portable Device		
Exposure Category:	Uncontrolled Environment / General Population		
Product Name:	HSDPA/UMTS/GPRS/GSM/EDGE Mobile Phone with Bluetooth		
IMEI:	865000000000038		
Hardware Version:	HD1U865M		
Software Version:	U8650V100R001C00B813SP01		
Antenna Type:	Internal Antenna		
Device Operating Configurations :			
Supporting Mode(s):	GSM 1900; (tested)		
	WCDMA Band I/ WCDMA Band VIII;		
	GSM 900/GSM 1800;		
	WiFi;		
	Bluetooth;		
Test Modulation:	(GSM)GMSK;		
Device Class:	B		
GPRS Multislot Class(10):	Max Number of Timeslots in Uplink		2
	Max Number of Timeslots in Downlink		4
	Max Total Timeslot		5
EGPRS Multislot Class(10):	Max Number of Timeslots in Uplink		2
	Max Number of Timeslots in Downlink		4
	Max Total Timeslot		5
Operating Frequency Range(s):	Mode	Tx (MHz)	Rx (MHz)
	GSM 1900	1850.2 ~ 1909.8	1930.2 ~ 1989.8
Power Class:	GSM 1900: 1, tested with power level 0		
Test Channel: (Low - Middle - High)	512 - 661 - 810 (GSM 1900) (tested)		

Auxiliary Equipment Details

AE1:Battery

Model:	HB5K1H
Manufacturer:	Huawei Technologies Co., Ltd.
SN:	WHCAB05HI4550618

Equipment Under Test (EUT) is a model of HSDPA/UMTS/GPRS/GSM/EDGE Mobile Phone with Bluetooth. The device has an internal antenna for GSM/WCDMA Tx/Rx, and the other is BT/WiFi antenna that can be used for Tx/Rx. It has Personal Wireless Routers (hot spots) function. The detail about Mobile phone and Lithium Battery is in chapter 1.5 in this report. SAR is tested for GSM 1900.

The sample under test was selected by the Client.

Components list please refer to documents of the manufacturer.

1.6. The Maximum SAR_{1g} Values and Conducted Power of each tested band

Head Configuration

Mode	Channel	Position	SAR_{1g} (W/kg)
GSM 1900	High/810	Left, Cheek	**0.537**

Body Worn Configuration

Mode	Channel	Separation distance	SAR_{1g} (W/kg)
2TXslots GPRS 1900	High/810	15mm	**0.655**
2TXslots EGPRS 1900	High/810	10mm	**1.240**

Maximum Power

Mode		Max Conducted Power (dBm)	Max Average Power (dBm)
GSM 1900	GSM	**29.52**	**20.49**
	GPRS(GMSK), 2TXslots	**29.42**	**23.40**
	EGPRS(GMSK), 2TXslots	**29.40**	**23.38**

Note: The detail Power refer to Table 4 (Power Measurement Results).

1.7. Test Date

The test is performed from March 28, 2011 to March 29, 2011 and on April 12, 2011.

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 Radiofrequency Channel Number (ARFCN) is 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 EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output. 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 1900, a communication link is set up with a System Simulator (SS) by air link. Using E5515C the power lever is set to “0” in SAR of GSM 1900. Since the GPRS class is 10 for this EUT, it has at most 2 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslots is 5. The EGPRS class is 10 for this EUT; it has at most 2 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslot is 5.

When SAR tests for EGPRS mode is necessary, GMSK modulation should be used to minimize SAR measurement error due to higher peak-to-average power (PAR) ratios inherent in 8-PSK.

According to specification 3GPP TS 51.010, the maximum power of the GSM can do the power reduction for the multi-slot.

GSM 1900

GPRS（GMSK）:

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	0

EGPRS(8PSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	0

EGPRS(GMSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	0

2.3. Test Positions

2.3.1. Against Phantom Head

Measurements were made in “cheek” and “tilt” positions on both the left hand and right hand sides of the phantom.

The positions used in the measurements were according to IEEE 1528 - 2003 "IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate(SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques".

2.3.2. Body Worn Configuration

Body-worn operating configurations should be tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in normal use configurations. Devices with a headset output should be tested with a headset connected to the device. The distance between the device and the phantom was kept 15mm.

Body-worn operating configurations should be tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in normal use configurations. Devices with a headset output should be tested with a headset connected to the device. The distance between the device and the phantom was kept 15mm of handset mode.

Based upon Oct. 2010 TCB council workshop - FCC presentation on personal hot spot SAR evaluation guideline, when the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested. The distance between the device and the phantom was kept 10mm of wireless routers.

3. SAR Measurements System Configuration

3.1. SAR Measurement Set-up

The DASY5 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 DASY5 measurement server.
- The DASY5 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
- DASY5 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.

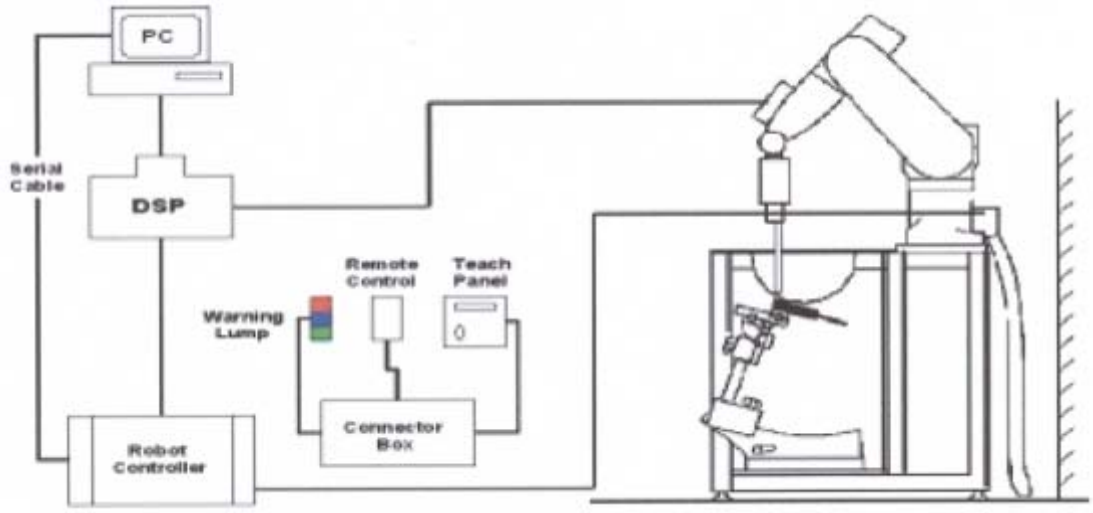

Figure 1 SAR Lab Test Measurement Set-up

3.2. DASY5 E-field Probe System

The SAR measurements were conducted with the dosimetric probe EX3DV4 (manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation.

3.2.1. EX3DV4 Probe Specification

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available
Frequency	10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	10 μW/g to > 100 mW/g Linearity: ± 0.2dB (noise: typically < 1 μW/g)
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.

Figure 2.EX3DV4 E-field Probe

Figure 3. EX3DV4 E-field probe

3.2.2. E-field Probe Calibration

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

The free space E-field from amplified probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies bellow 1 GHz, and in a wave guide above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees.
E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The measured free space E-field in the medium correlates to temperature rise in a dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

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

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

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

Where:
σ = Simulated tissue conductivity,
ρ = Tissue density (kg/m3).

3.3. Other Test Equipment

3.3.1. Device Holder for Transmitters

The DASY device holder is designed to cope with the die rent 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 closest vicinity of the device, since measurements have suggested that the inference 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)
	Aailable Special

Figure 5 Generic Twin Phantom

3.4. Scanning Procedure

The DASY5 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. ± 5 %.

- The “surface check” measurement tests the optical surface detection system of the DASY5 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 ± 0.1mm). 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 ± 30°.)

- 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 DASY5 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 DASY5 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/cm²], [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, a_{i0}, a_{i1}, a_{i2}
	- Conversion factor	$ConvF_i$
	- Diode compression point	Dcp_i
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 DASY5 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, 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)^2] 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.

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

with $\boldsymbol{SAR}$ = local specific absorption rate in mW/g

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

σ = conductivity in [mho/m] or [Siemens/m]

ρ = equivalent tissue density in g/cm^3

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.

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

with P_{pwe} = equivalent power density of a plane wave in mW/cm^2

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

$\boldsymbol{H_{tot}}$ = 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 (±10 %).

System check is performed regularly on all frequency bands where tests are performed with the DASY5 system.

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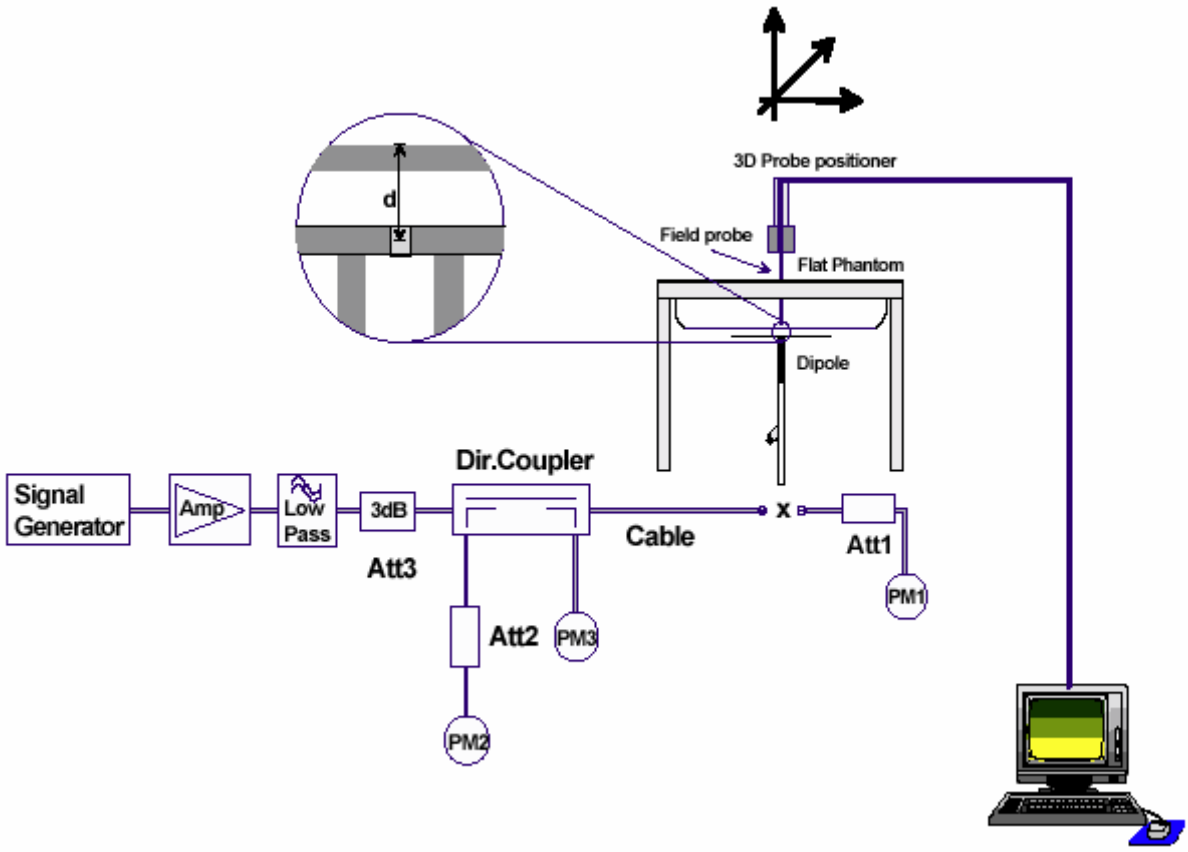


Figure 6 System Check Set-up

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) 1900MHz
Water	55.242
Glycol monobutyl	44.452
Salt	0.306
Dielectric Parameters Target Value	f=1900MHz ε=40.0 σ=1.40

Table 2: Composition of the Body Tissue Equivalent Matter

MIXTURE%	FREQUENCY (Body) 1900MHz
Water	69.91
Glycol monobutyl	29.96
Salt	0.13
Dielectric Parameters Target Value	f=1900MHz ε=53.3 σ=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 Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

5. Characteristics of the Test

5.1. Applicable Limit Regulations

IEEE Std C95.1, 1999: IEEE Standard for Safety Levels with Respect to Human Exposure to Radiofrequency Electromagnetic Fields, 3 kHz to 300 GHz.

5.2. Applicable Measurement Standards

IEEE Std 1528™-2003: IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques.

SUPPLEMENT C Edition 01-01 to OET BULLETIN 65 Edition 97-01 June 2001 including DA 02-1438, published June 2002: Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields Additional Information for Evaluation Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions.

RSS-102 Issue 4 March 2010: Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)

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 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

GSM 1900		Conducted Power(dBm)				Average power(dBm)		
		Channel 512	Channel 661	Channel 810		Channel 512	Channel 661	Channel 810
GSM	Results	29.52	29.51	29.48	-9.03dB	20.49	20.48	20.45
GPRS (GMSK)	1TXslot	29.43	29.40	29.36	-9.03dB	20.4	20.37	20.33
	2TXslots	29.42	29.39	29.33	-6.02dB	**23.4**	**23.37**	**23.31**
EGPRS (GMSK)	1TXslot	29.35	29.41	29.29	-9.03dB	20.32	20.38	20.26
	2TXslots	29.37	29.40	29.30	-6.02dB	**23.35**	**23.38**	**23.28**
EGPRS (8PSK)	1TXslot	26.00	25.95	25.87	-9.03dB	16.97	16.92	16.84
	2TXslots	26.02	26.01	25.94	-6.02dB	20.00	19.99	19.92

Note:

1) Division Factors

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

1 TX- slot = 1 transmit time slot out of 8 time slots

=> conducted power divided by (8/1) => -9.03 dB

2 TX- slots = 2 transmit time slots out of 8 time slots

=> conducted power divided by (8/2) => -6.02 dB

2) Average power numbers

The maximum power numbers are marks in bold.

7. Test Results

7.1. Dielectric Performance

Table 5: Dielectric Performance of Head Tissue Simulating Liquid

Frequency	Description	Dielectric Parameters		Temp ℃
		ε_r	σ(s/m)	
1900MHz (head)	Target value ±5% window	40.00 38.00 — 42.00	1.40 1.33 — 1.47	/
	Measurement value 2011-3-28	40.28	1.41	21.9

Table 6: Dielectric Performance of Body Tissue Simulating Liquid

Frequency	Description	Dielectric Parameters		Temp ℃
		ε_r	σ(s/m)	
1900MHz (body)	Target value ±5% window	53.30 50.64 — 55.97	1.52 1.44 — 1.60	/
	Measurement value 2011-3-29	52.15	1.54	21.7
	Measurement value 2011-4-12	53.18	1.53	21.7

7.2. System Check Results

Table 7: System Check for Head Tissue Simulating Liquid

Frequency	Description	SAR(W/kg)		Dielectric Parameters		Temp
		10g	1g	ε_r	σ(s/m)	℃
1900MHz	Recommended result ±10% window	5.22 4.70 — 5.74	10 9.00 — 11.00	39.5	1.44	/
	Measurement value 2011-3-28	5.34	10.3	40.28	1.41	21.9

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 Simulating Liquid

Frequency	Description	SAR(W/kg)		Dielectric Parameters		Temp
		10g	1g	ε_r	σ(s/m)	℃
1900 MHz	Recommended result ±10% window	5.52 4.97 — 6.07	10.3 9.27 — 11.33	53.5	1.54	/
	Measurement value 2011-3-29	5.34	10.18	52.15	1.54	21.7
	Measurement value 2011-4-12	5.33	10.17	53.18	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.

7.3. Summary of Measurement Results

7.3.1. GSM 1900 (GPRS/EGPRS)

Table 9: SAR Values [GSM 1900(GPRS/EGPRS)]

Limit of SAR		10 g Average	1 g Average	Power Drift	Graph Results
		2.0 W/kg	1.6 W/kg	±0.21 dB	
Different Test Position	Channel	Measurement Result(W/kg)		Power Drift (dB)	
		10 g Average	1 g Average		
Test Position of Head					
Left hand, Touch cheek	High/810	0.324	0.537	0.077	Figure 10
	Middle/661	0.291	0.479	-0.059	Figure 11
	Low/512	0.253	0.415	0.116	Figure 12
Left hand, Tilt 15 Degree	Middle/661	0.134	0.226	-0.012	Figure 13
Right hand, Touch cheek	Middle/661	0.223	0.349	0.096	Figure 14
Right hand, Tilt 15 Degree	Middle/661	0.115	0.196	0.049	Figure 15
Test position of Body (Distance 15mm)					
Towards Ground (GSM)	Middle/661	0.180	0.294	-0.071	Figure 16
Towards Ground (2 TXslots)	Middle/661	0.340	0.551	-0.091	Figure 17
Towards Phantom(2 TXslots)	High/810	0.375	0.655	-0.048	Figure 18
	Middle/661	0.343	0.552	0.000	Figure 19
	Low/512	0.339	0.546	-0.010	Figure 20
Worst Case Position of Body with Earphone (Distance 15mm)					
Towards Phantom(GSM)	High/810	0.189	0.303	0.110	Figure 21
Worst case position of Body with EGPRS(GMSK, Distance 15mm)					
Towards Phantom (2 TXslots)	High/810	0.364	0.579	-0.039	Figure 22

Note: 1.The value with blue color is the maximum SAR Value of 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 (< 0.8W/kg), testing at the high and low channels is optional.
4. When SAR tests for EGPRS mode is necessary, GMSK modulation should be used to minimize SAR measurement error due to higher peak-to-average power (PAR) ratios inherent in 8-PSK.

Table 10: SAR Values [GSM 1900(wireless routers incorporated in device)]

Limit of SAR		10 g Average	1 g Average	Power	Graph Results
		2.0 W/kg	1.6 W/kg	±0.21 dB	
Different Test Position	Channel	Measurement Result(W/kg)		Power Drift (dB)	
		10 g Average	1 g Average		
Test position of Body (Distance 10mm)					
Towards Ground (2TXslots)	High/810	0.667	1.100	-0.009	Figure 23
	Middle/661	0.634	1.050	-0.140	Figure 24
	Low/512	0.591	0.973	-0.024	Figure 25
Towards Phantom (2TXslots)	High/810	0.746	1.240	-0.049	Figure 26
	Middle/661	0.705	1.170	-0.076	Figure 27
	Low/512	0.627	1.040	-0.014	Figure 28
Left Edge(2TXslots)	Middle/661	0.263	0.454	-0.020	Figure 29
Right Edge(2TXslots)	Middle/661	0.133(max.cube)	0.226(max.cube)	-0.001	Figure 30
Bottom Edge(2TXslots)	Middle/661	0.227	0.390	0.018	Figure 31
Worst Case Position of Body with EGPRS (GMSK, Distance 10mm)					
Towards Phantom (2TXslots)	High/810	0.749	1.240	-0.052	Figure 32

Note: 1.The value with blue color is the maximum SAR Value of each test band.

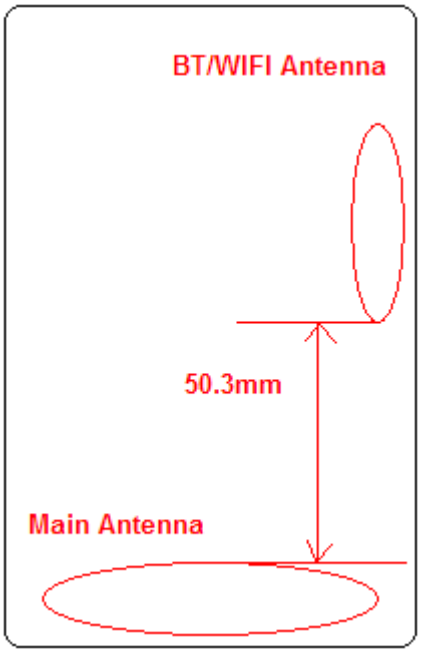
2. Upper and lower frequencies were measured at the worst position.
3. WWAN antenna is located at bottom edge; antenna-to-top edge distance is more than 2.5 cm(see ANNEX G). Based upon Oct. 2010 TCB council workshop - FCC presentation on personal hot spot SAR evaluation guideline, when the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested. Top Edge with 1 cm separation distance is excluded from SAR evaluation.
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.

Table 11: Extrapolated SAR Values of highest measured SAR [GSM 1900 (GPRS/EGPRS)]

Different Test Position	Channel	Conducted Power(dBm)	1g Average (W/kg)	Tune-up procedures MAX Power(dBm)	1g Average Limit 1.6 W/kg
		Measurement Result			Extrapolated Result (W/kg)
GSM					
Left Hand, Touch Cheek	High/810	29.48	0.537	30.5	0.679
GPRS(GMSK, 2 TXslots, wireless routers incorporated)					
Towards Phantom	High/810	29.33	1.240	30.2	1.515
EGPRS(GMSK, 2 TXslots, wireless routers incorporated)					
Towards Phantom	High/810	29.30	1.240	30.1	1.491

7.3.2. BT/WIFI function

The distance between BT/WIFI antenna and main antenna is ＞5cm. The location of the antennas inside mobile phone is shown below (refer to Annex G):



The output power of BT antenna is as following:

Channel	Ch 0 2402 MHz	Ch 39 2441 MHz	Ch 78 2480 MHz
Test result (dBm)	5.93	6.06	6.27

The output power of WIFI antenna is as following:

Mode	Channel	Data rate (Mbps)	AV Power (dBm)	PK Power (dBm)
11b	1	1	13.51	17.31
		2	13.36	17.57
		5.5	13.24	17.32
		11	13.50	17.49
	6	1	13.45	17.91
		2	13.28	17.66
		5.5	13.38	17.81
		11	13.39	17.58
	11	1	13.31	17.52
		2	13.19	17.63
		5.5	13.26	17.87
		11	13.11	17.46
11g	1	7	10.75	17.32
		9	10.35	17.17

		12	10.61	17.48
		15	10.34	17.34
		24	10.16	17.28
		37	10.61	17.01
		48	10.51	17.64
		54	10.35	17.38
	6	7	10.68	16.36
		9	10.56	16.39
		12	10.59	16.58
		15	10.38	16.74
		24	10.45	16.99
		37	10.41	16.69
		48	10.29	16.38
		54	10.55	16.49
	11	7	10.38	17.37
		9	10.19	17.85
		12	10.34	17.53
		15	10.29	17.45
		24	10.33	17.67
		37	10.27	17.83
		48	10.35	17.76
		54	10.26	17.42
11n HT20	1	7.5	8.06	14.57
		12	7.99	14.35
		19.5	7.89	14.71
		27	7.77	14.81
		39	7.98	14.59
		52	7.96	14.61
		58.5	7.89	14.66
		75	8.04	14.65
	6	7.5	7.98	16.81
		12	7.85	16.37
		19.5	7.76	16.48
		27	7.41	16.26
		39	7.35	16.39
		52	7.66	16.74
		58.5	7.73	16.64
		75	7.51	16.45
	11	7.5	7.85	17.35
		12	7.69	17.29
		19.5	7.56	17.21
		27	7.43	17.65
		39	7.63	17.46

		52	7.49	17.49
		58.5	7.54	17.83
		75	7.31	17.42

Output Power Thresholds for Unlicensed Transmitters

	2.45	**5.15 - 5.35**	**5.47 - 5.85**	**GHz**
P_{Ref}	12	6	5	**mW**
Device output power should be rounded to the nearest mW to compare with values specified in this table.				

Stand-alone SAR

According to the output power measurement result and the distance between BT/WIFI antenna and main antenna we can draw the conclusion that:

stand-alone SAR are not required for BT, because the output power of BT transmitter is ≤ $2P_{Ref}$=13.8dBm and its antenna is ＞5cm from main antenna.

stand-alone SAR are not required for WIFI, because the output power of WIFI transmitter is ≤ $2P_{Ref}$=13.8dBm and its antenna is ＞5cm from main antenna;

stand-alone SAR are not required for WiFi, because stand-alone SAR are not required for BT and its antenna is <2.5cm from BT antenna.

Simultaneous SAR

About BT and GSM/WCDMA Antenna, stand-alone SAR are not required for BT and its antenna is ＞ 5cm from other antenna., so Simultaneous SAR are not required for BT.

About WiFi and GSM/WCDMA Antenna, stand-alone SAR are not required for WiFi and its antenna is ＞5cm from other antenna., so Simultaneous SAR are not required for WiFi.

About WiFi and BT Antenna, because WIFI antenna is ＜2.5cm from BT Antenna, the output power of BT transmitter is ≤P_{Ref}=10.8dBm, so Simultaneous SAR are not required for WiFi and BT Antenna.

8. Measurement Uncertainty

No.	source	Type	Uncertainty Value (%)	Probability Distribution	k	c_i	Standard ncertainty u_i' (%)	Degree of freedom V_{eff} or v_i
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	4.92	71
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								
20	-phantom	B	4.0	R	$\sqrt{3}$	1	2.3	∞

21	-liquid conductivity (deviation from target)	B	5.0	R	$\sqrt{3}$	0.64	1.8	∞
22	-liquid conductivity (measurement uncertainty)	B	0.77	N	1	0.64	0.493	9
23	-liquid permittivity (deviation from target)	B	5.0	R	$\sqrt{3}$	0.6	1.7	∞
24	-liquid permittivity (measurement uncertainty)	B	0.29	N	1	0.6	0.174	9
Combined standard uncertainty		$u_c^{'} = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$					11.36	
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$		N		k=2	22.72	

9. Main Test Instruments

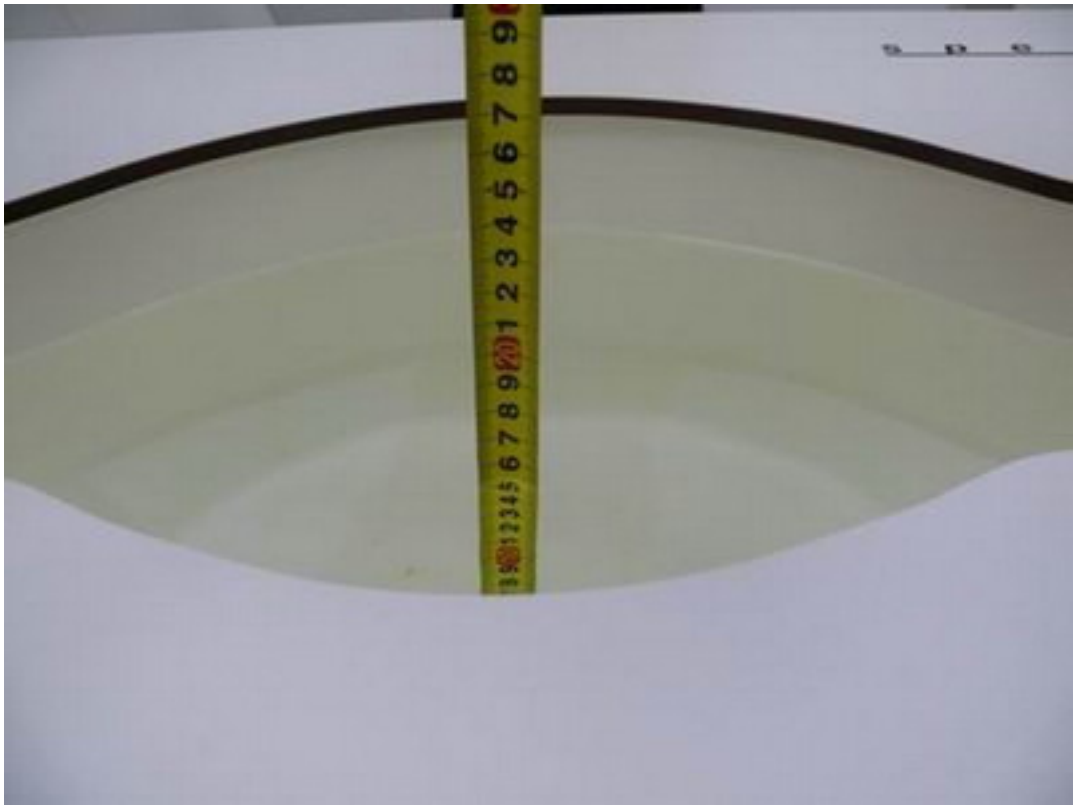
Table 12: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	Agilent 8753E	US37390326	September 13, 2010	One year
02	Dielectric Probe Kit	Agilent 85070E	US44020115	No Calibration Requested	
03	Power meter	Agilent E4417A	GB41291714	March 12, 2011	One year
04	Power sensor	Agilent N8481H	MY50350004	September 26, 2010	One year
05	Signal Generator	HP 8341B	2730A00804	September 13, 2010	One year
06	Amplifier	IXA-020	0401	No Calibration Requested	
07	BTS	E5515C	MY48360988	December 3, 2010	One year
08	E-field Probe	EX3DV4	3677	November 24, 2010	One year
09	DAE	DAE4	871	November 18, 2010	One year
10	Validation Kit 1900MHz	D1900V2	5d018	June 15, 2010	Two years

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

ANNEX A: Test Layout

Picture 1: Specific Absorption Rate Test Layout



Picture 2: Liquid depth in the flat Phantom (1900 MHz, 15.2cm depth)

Picture 3: liquid depth in the head Phantom (1900 MHz, 15.3cm depth)

ANNEX B: System Check Results

System Performance Check at 1900 MHz Head TSL

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d018

Date/Time: 3/28/2011 2:01:34 PM

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

Medium parameters used: f = 1900 MHz; σ = 1.41 mho/m; ε_r = 40.28; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.9℃

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.94, 7.94, 7.94); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

d=10mm, Pin=250mW/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 12.7 mW/g

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

Reference Value = 81.0 V/m; Power Drift = -0.068 dB

Peak SAR (extrapolated) = 18.9 W/kg

SAR(1 g) = 10.3 mW/g; SAR(10 g) = 5.34 mW/g

Maximum value of SAR (measured) = 11.5 mW/g

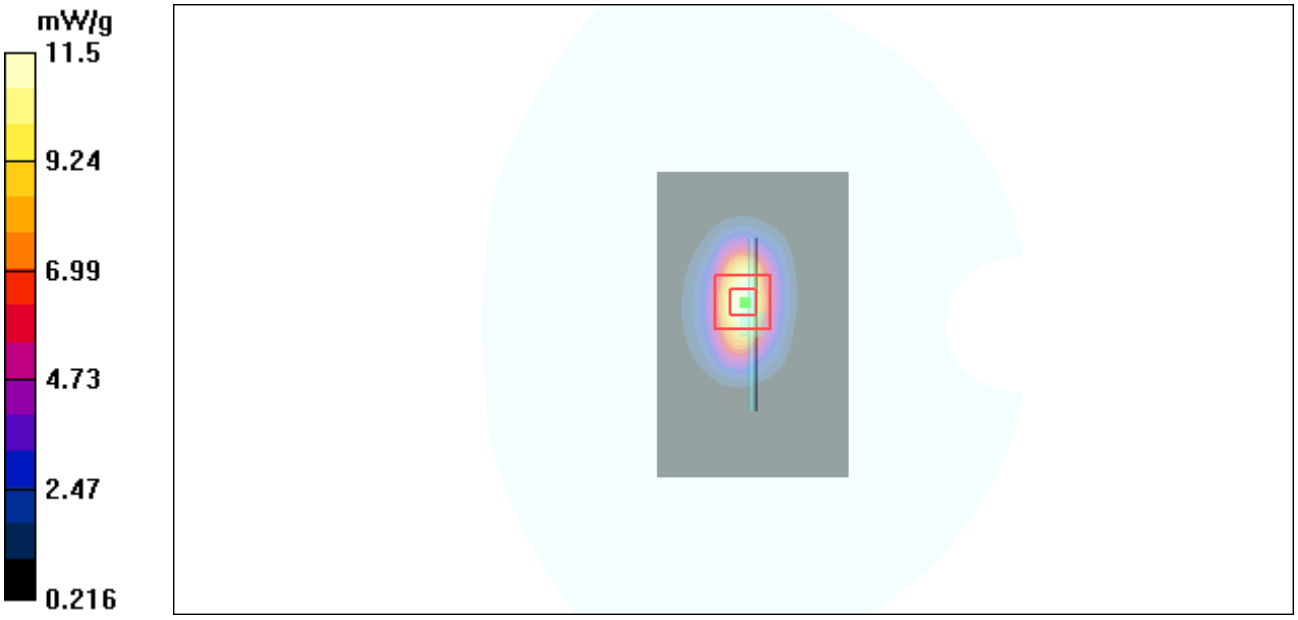


Figure 7 System Performance Check 1900MHz 250mW

System Performance Check at 1900 MHz Body TSL

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d018

Date/Time: 3/29/2011 7:03:19 PM

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

Medium parameters used: f = 1900 MHz; σ = 1.54 mho/m; ε_r = 52.15; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.7℃

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

d=10mm, Pin=250mW/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 80.8 V/m; Power Drift = -0.063 dB

Peak SAR (extrapolated) = 17.6 W/kg

SAR(1 g) = 10.18 mW/g; SAR(10 g) = 5.34 mW/g

Maximum value of SAR (measured) = 11 mW/g

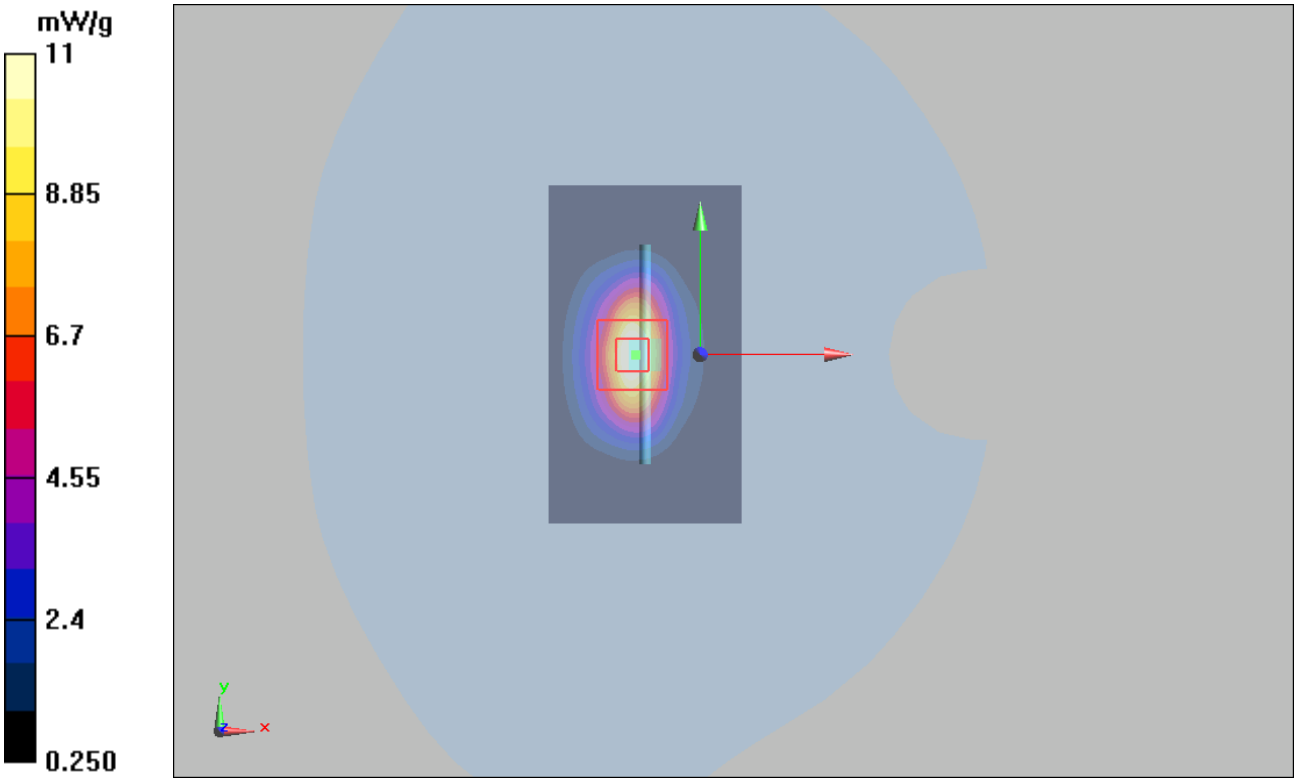


Figure 8 System Performance Check 1900MHz 250Mw

System Performance Check at 1900 MHz Body TSL

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d018

Date/Time: 4/12/2011 4:01:19 PM

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

Medium parameters used: f = 1900 MHz; σ = 1.53 mho/m; ε_r = 53.18; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.7℃

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

d=10mm, Pin=250mW/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 80.9 V/m; Power Drift = -0.060 dB

Peak SAR (extrapolated) = 17.6 W/kg

SAR(1 g) = 10.17 mW/g; SAR(10 g) = 5.33 mW/g

Maximum value of SAR (measured) = 11.5 mW/g

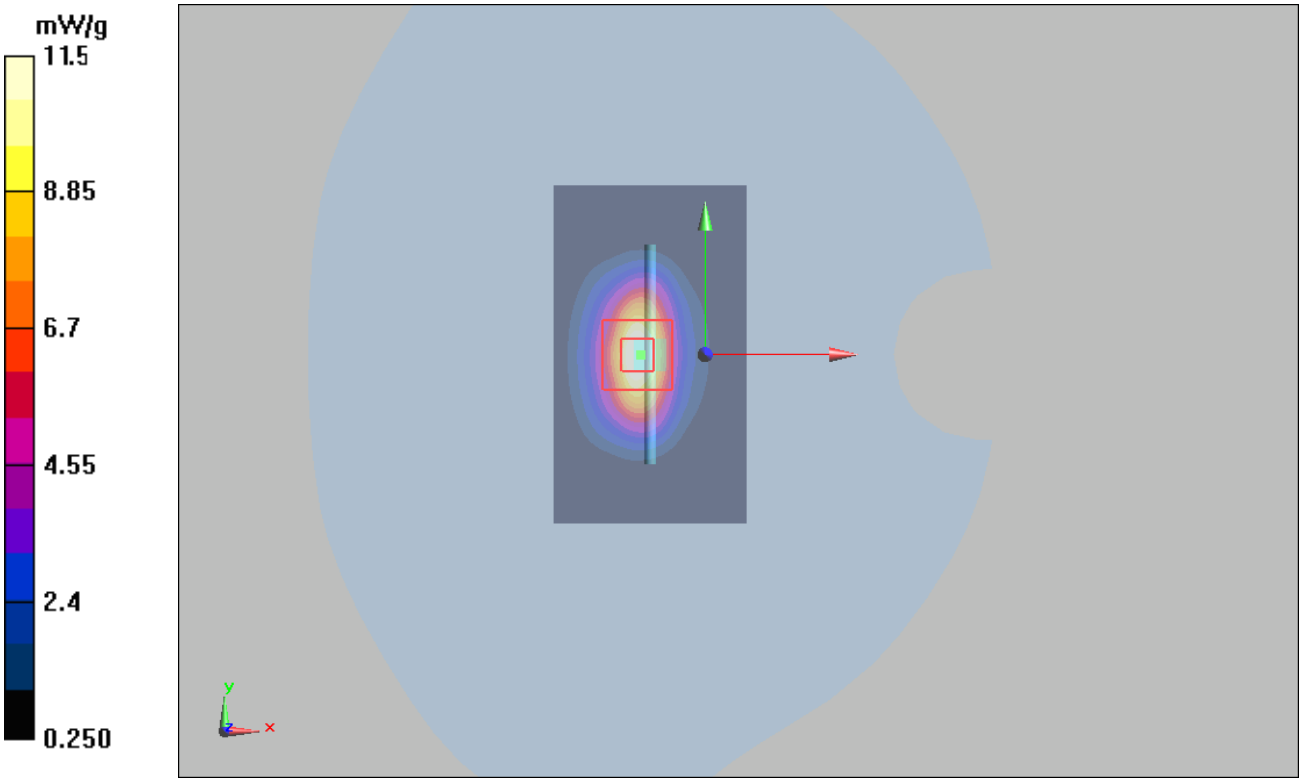


Figure 9 System Performance Check 1900MHz 250mW

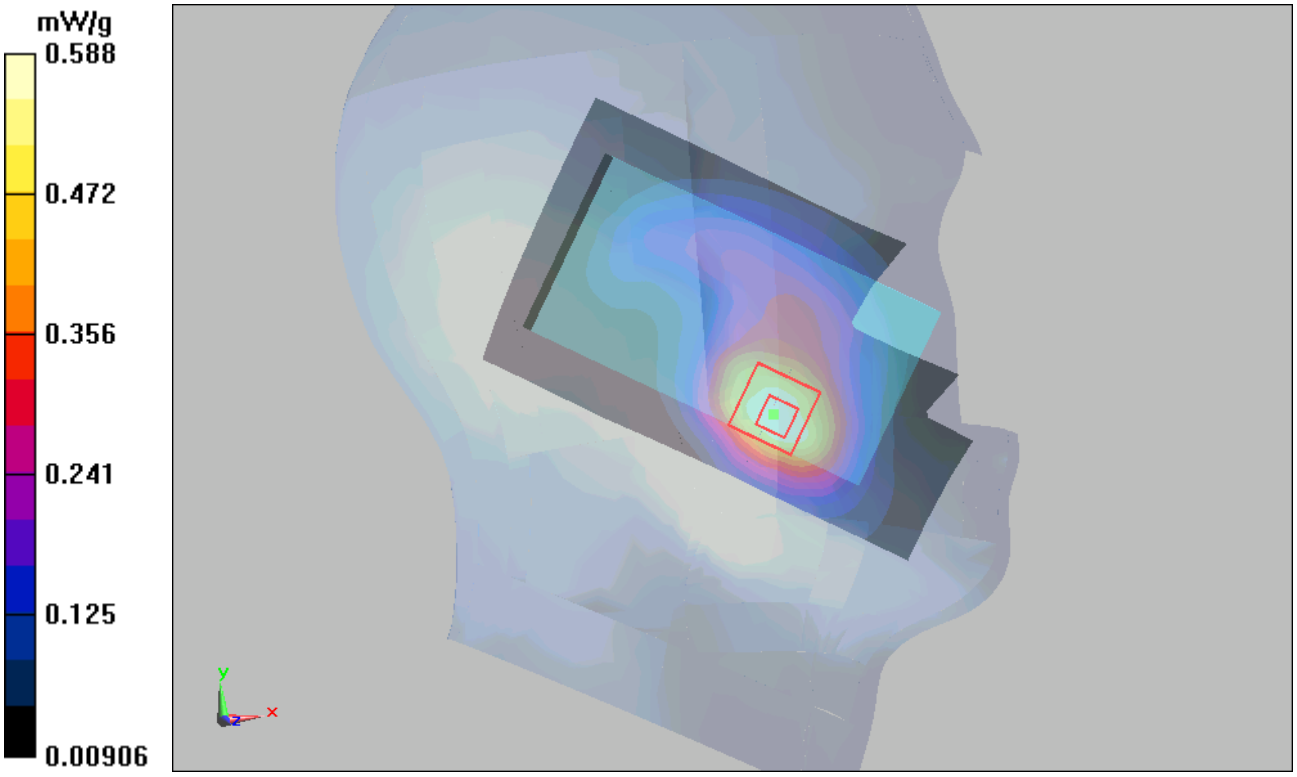
ANNEX C: Graph Results

GSM 1900 Left Cheek High

Date/Time: 3/28/2011 4:36:52 PM
Communication System: PCS 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1910 MHz; σ = 1.42 mho/m; ε_r = 40.3; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Left Section
DASY5 Configuration:
Probe: EX3DV4 - SN3677; ConvF(7.94, 7.94, 7.94); Calibrated: 11/24/2010
Electronics: DAE4 Sn871; Calibrated: 11/18/2010
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Cheek High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.574 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.15 V/m; Power Drift = 0.077 dB
Peak SAR (extrapolated) = 0.867 W/kg
SAR(1 g) = 0.537 mW/g; SAR(10 g) = 0.324 mW/g
Maximum value of SAR (measured) = 0.588 mW/g



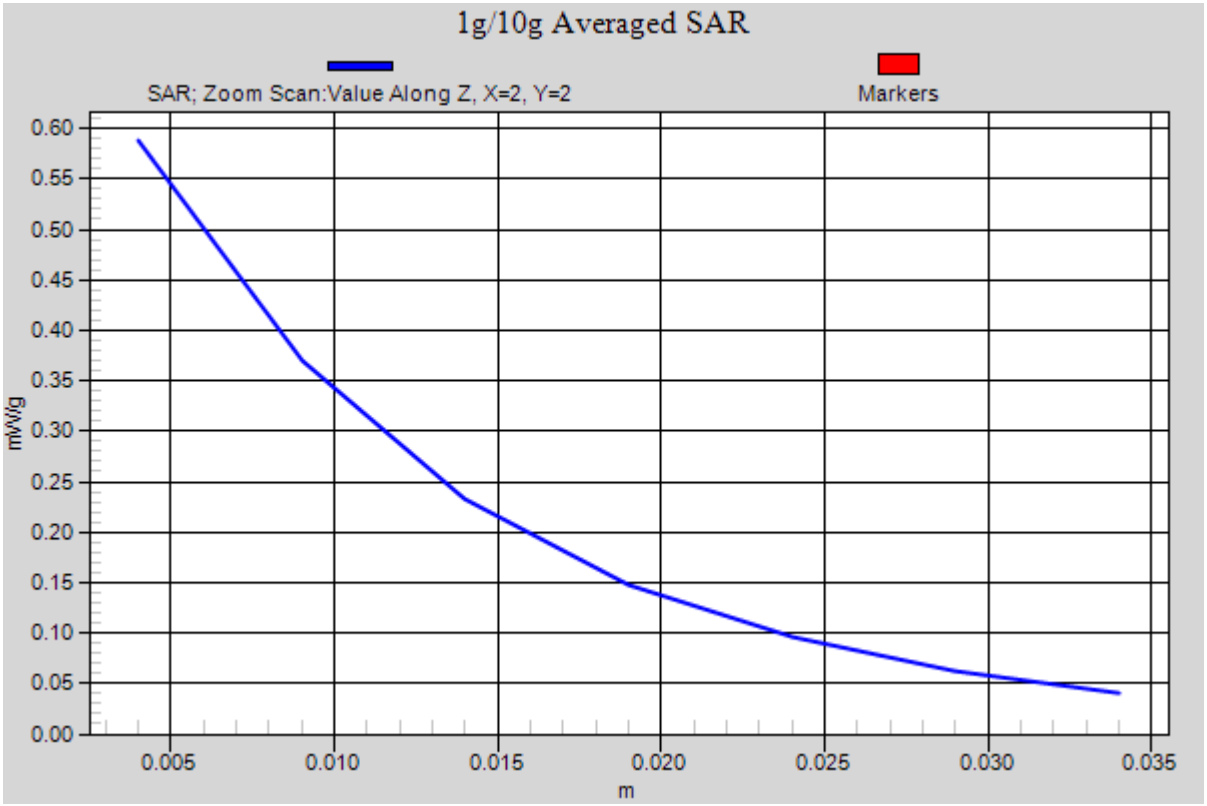


Figure 10 Left Hand Touch Cheek GSM 1900 Channel 810

GSM 1900 Left Cheek Middle

Date/Time: 3/28/2011 3:19:56 PM
Communication System: PCS 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Left Section
DASY5 Configuration:
Probe: EX3DV4 - SN3677; ConvF(7.94, 7.94, 7.94); Calibrated: 11/24/2010
Electronics: DAE4 Sn871; Calibrated: 11/18/2010
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.518 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.14 V/m; Power Drift = -0.059 dB
Peak SAR (extrapolated) = 0.759 W/kg
SAR(1 g) = 0.479 mW/g; SAR(10 g) = 0.291 mW/g
Maximum value of SAR (measured) = 0.520 mW/g

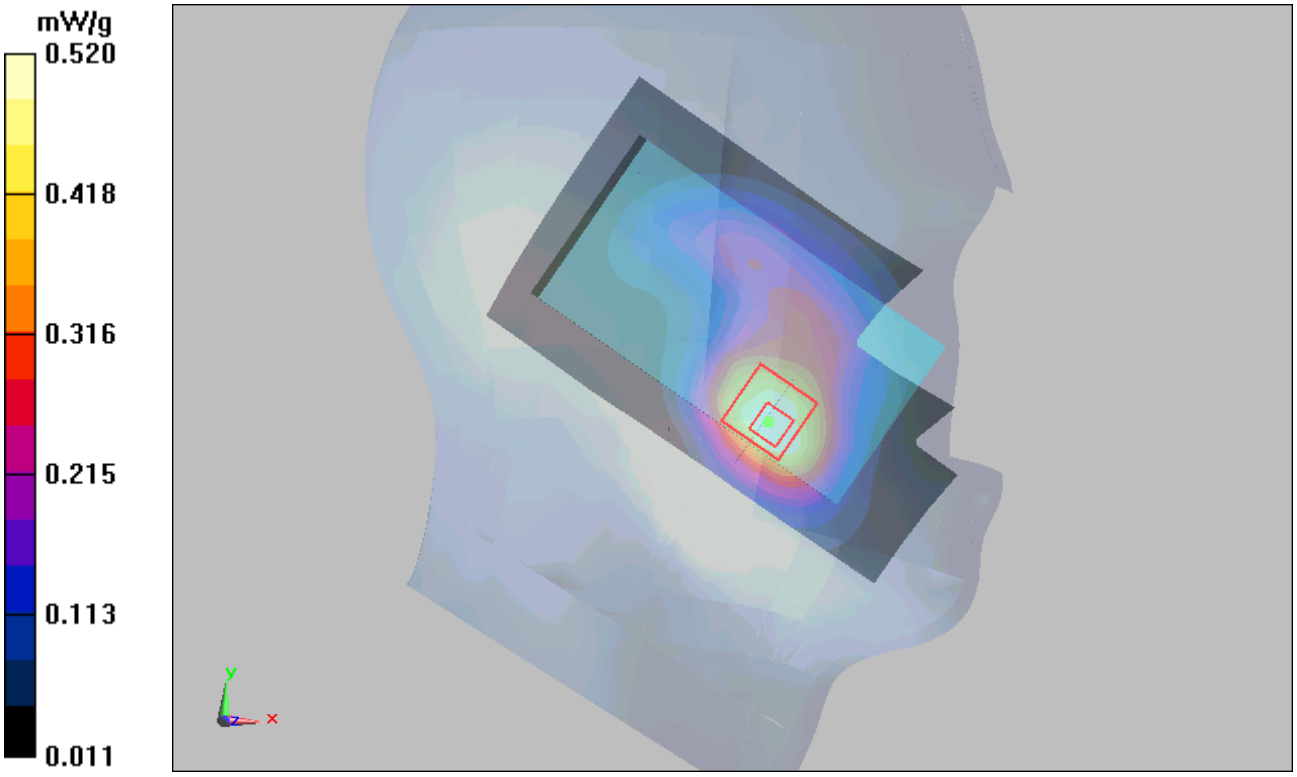


Figure 11 Left Hand Touch Cheek GSM 1900 Channel 661

GSM 1900 Left Cheek Low

Date/Time: 3/28/2011 4:56:01 PM
Communication System: PCS 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.37 mho/m; ε_r = 40.5; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Left Section
DASY5 Configuration:
Probe: EX3DV4 - SN3677; ConvF(7.94, 7.94, 7.94); Calibrated: 11/24/2010
Electronics: DAE4 Sn871; Calibrated: 11/18/2010
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Cheek Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.444 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.33 V/m; Power Drift = 0.116 dB
Peak SAR (extrapolated) = 0.651 W/kg
SAR(1 g) = 0.415 mW/g; SAR(10 g) = 0.253 mW/g
Maximum value of SAR (measured) = 0.449 mW/g

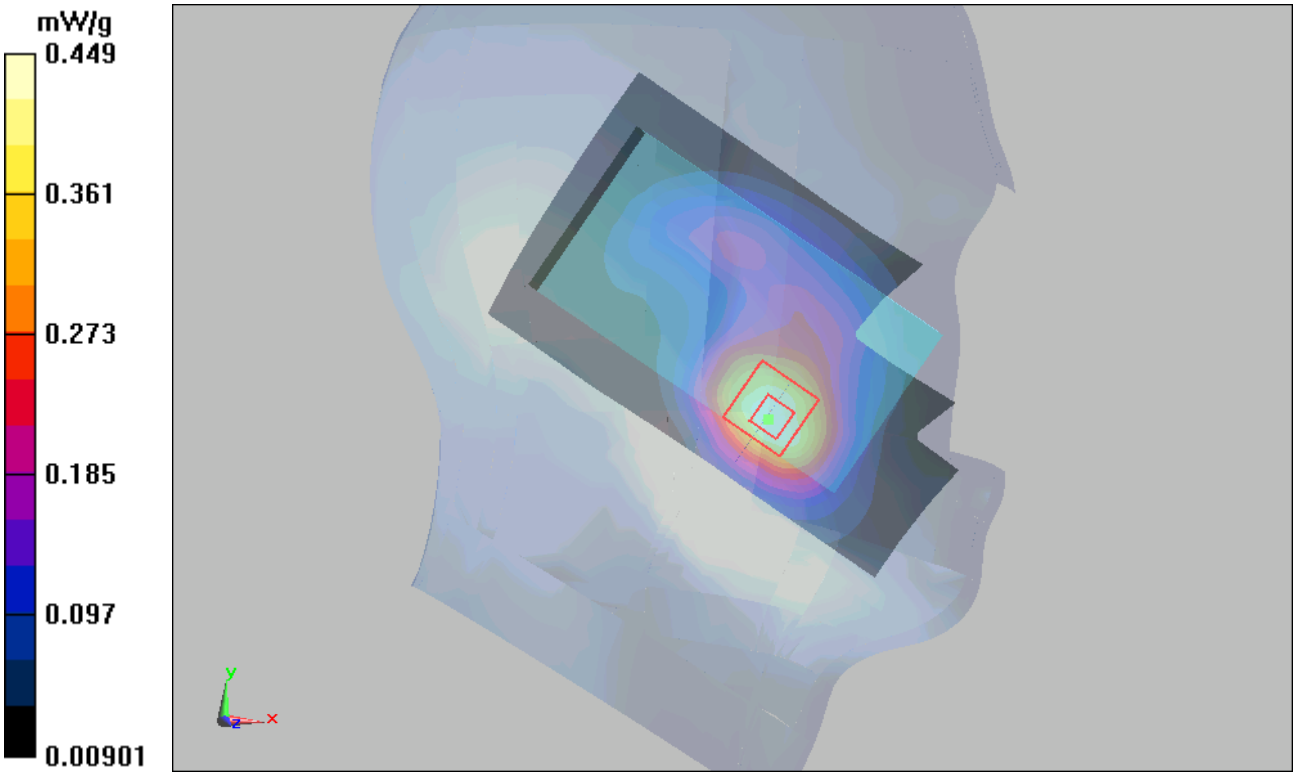


Figure 12 Left Hand Touch Cheek GSM 1900 Channel 512

GSM 1900 Left Tilt Middle

Date/Time: 3/28/2011 3:37:36 PM
Communication System: PCS 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Left Section
DASY5 Configuration:
Probe: EX3DV4 - SN3677; ConvF(7.94, 7.94, 7.94); Calibrated: 11/24/2010
Electronics: DAE4 Sn871; Calibrated: 11/18/2010
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.275 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 = -0.012 dB
Peak SAR (extrapolated) = 0.354 W/kg
SAR(1 g) = 0.226 mW/g; SAR(10 g) = 0.134 mW/g
Maximum value of SAR (measured) = 0.245 mW/g

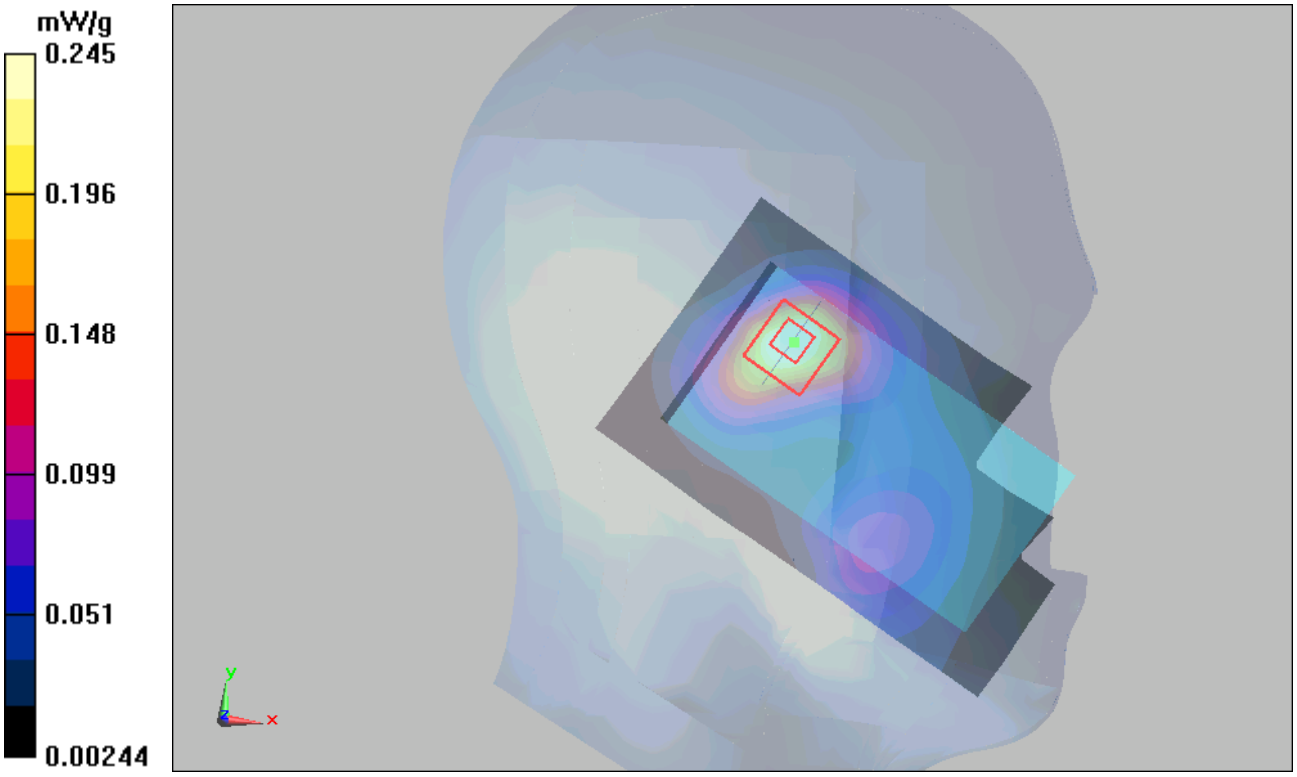


Figure 13 Left Hand Tilt 15° GSM 1900 Channel 661

GSM 1900 Right Cheek Middle

Date/Time: 3/28/2011 4:00:41 PM
Communication System: PCS 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Right Section
DASY5 Configuration:
Probe: EX3DV4 - SN3677; ConvF(7.94, 7.94, 7.94); Calibrated: 11/24/2010
Electronics: DAE4 Sn871; Calibrated: 11/18/2010
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.374 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.43 V/m; Power Drift = 0.096 dB
Peak SAR (extrapolated) = 0.525 W/kg
SAR(1 g) = 0.349 mW/g; SAR(10 g) = 0.223 mW/g
Maximum value of SAR (measured) = 0.369 mW/g

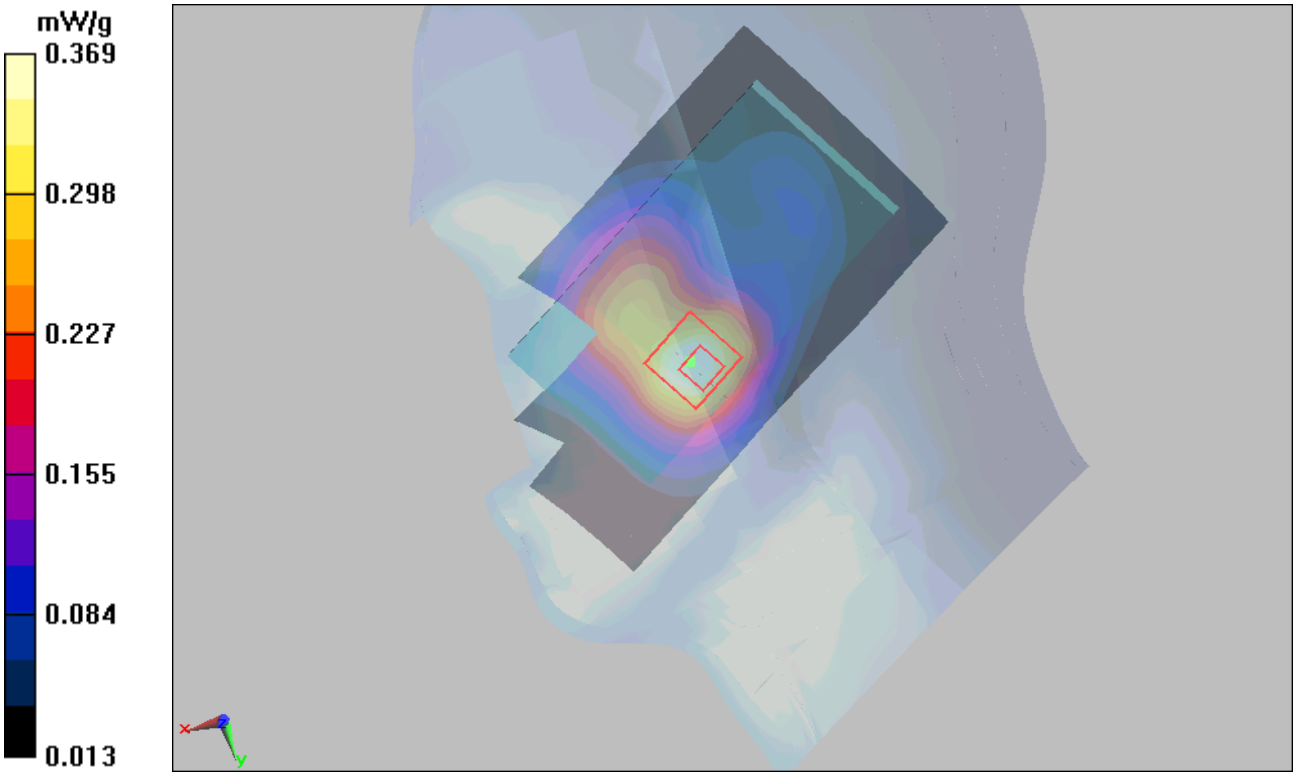


Figure 14 Right Hand Touch Cheek GSM 1900 Channel 661

GSM 1900 Right Tilt Middle

Date/Time: 3/28/2011 4:18:38 PM
Communication System: PCS 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Right Section
DASY5 Configuration:
Probe: EX3DV4 - SN3677; ConvF(7.94, 7.94, 7.94); Calibrated: 11/24/2010
Electronics: DAE4 Sn871; Calibrated: 11/18/2010
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.218 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.8 V/m; Power Drift = 0.049 dB
Peak SAR (extrapolated) = 0.311 W/kg
SAR(1 g) = 0.196 mW/g; SAR(10 g) = 0.115 mW/g
Maximum value of SAR (measured) = 0.208 mW/g

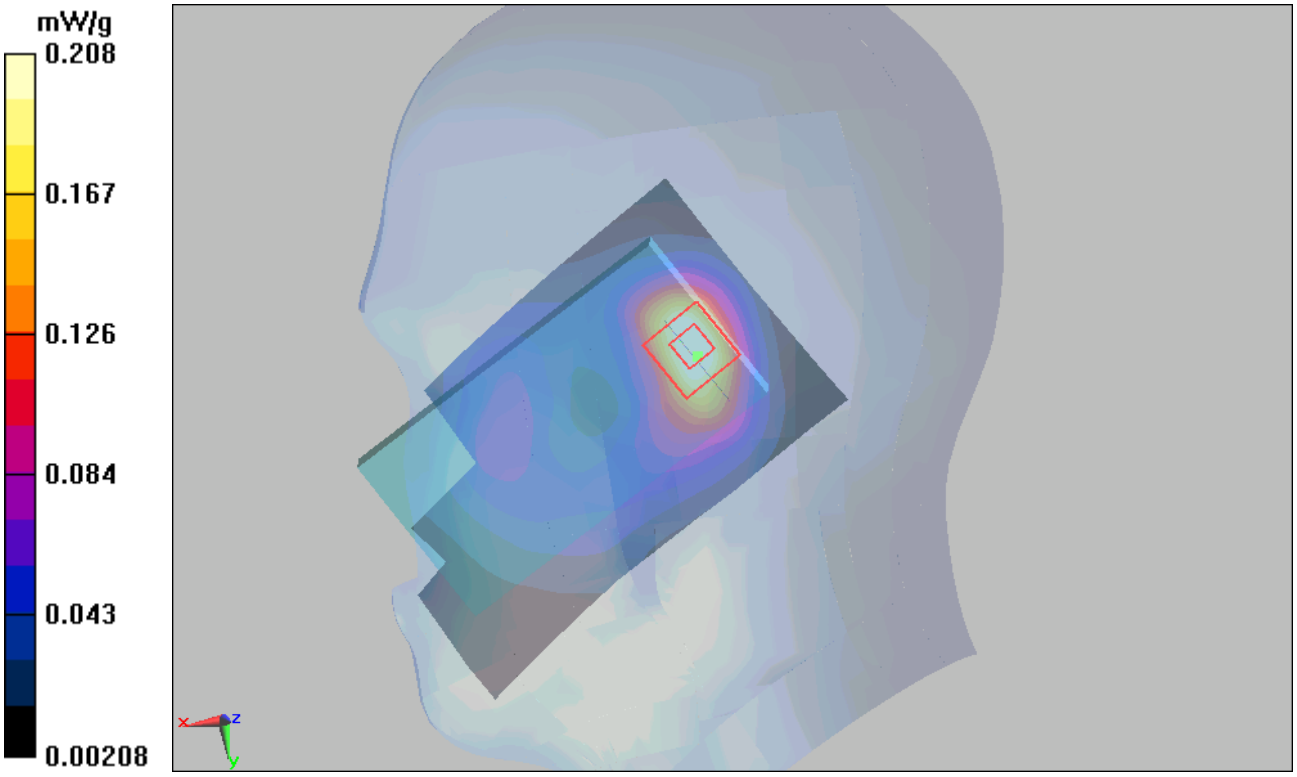


Figure 15 Right Hand Tilt 15° GSM 1900 Channel 661

GSM 1900 Towards Ground Middle

Date/Time: 3/29/2011 8:23:14 PM
Communication System: PCS 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.52 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010
Electronics: DAE4 Sn871; Calibrated: 11/18/2010
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Towards Ground Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.328 mW/g

Towards Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.92 V/m; Power Drift = -0.071 dB
Peak SAR (extrapolated) = 0.476 W/kg
SAR(1 g) = 0.294 mW/g; SAR(10 g) = 0.180 mW/g
Maximum value of SAR (measured) = 0.314 mW/g

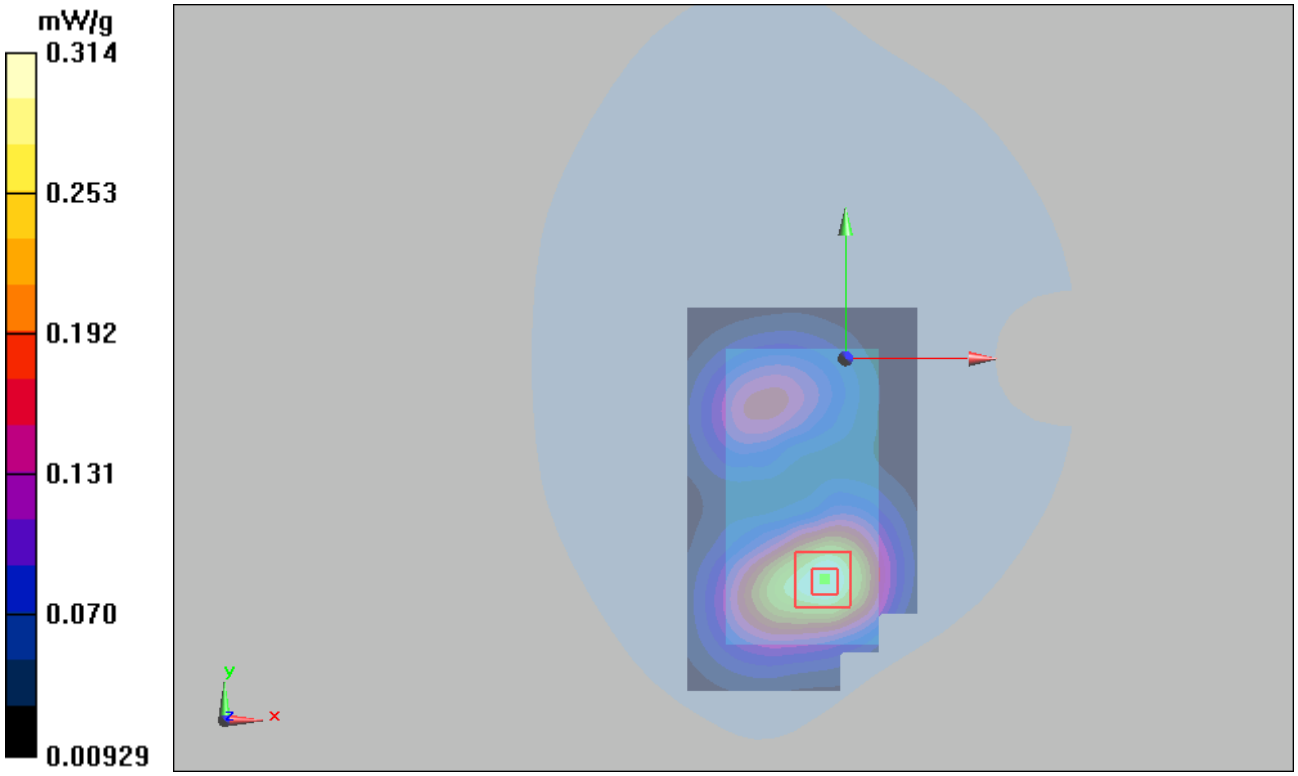


Figure 16 Body, Towards Ground, GSM 1900 Channel 661

GSM 1900 GPRS (2TXslots) Towards Ground Middle

Date/Time: 3/29/2011 8:40:49 PM
Communication System: PCS 1900+GPRS(2Up); Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1880 MHz; σ = 1.52 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010
Electronics: DAE4 Sn871; Calibrated: 11/18/2010
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Towards Ground Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.621 mW/g

Towards Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.9 V/m; Power Drift = -0.091 dB
Peak SAR (extrapolated) = 0.881 W/kg
SAR(1 g) = 0.551 mW/g; SAR(10 g) = 0.340 mW/g
Maximum value of SAR (measured) = 0.594 mW/g

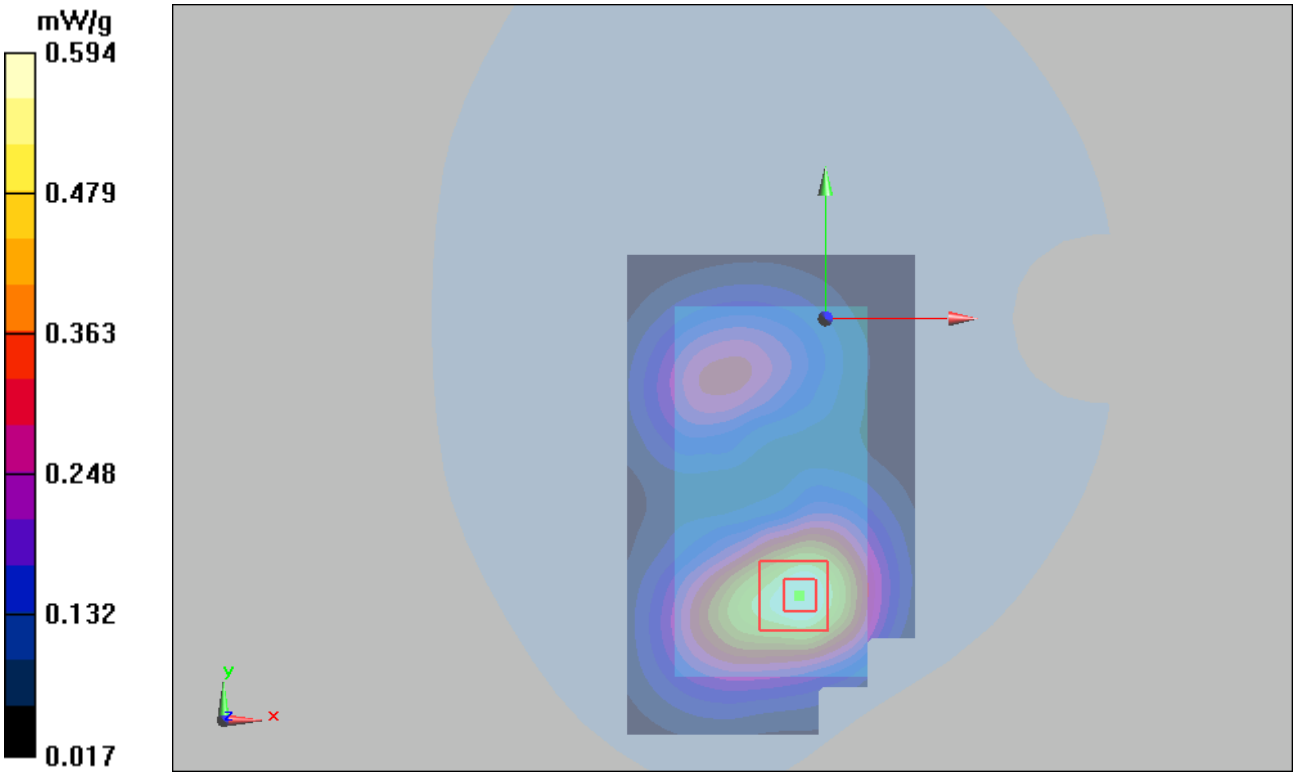


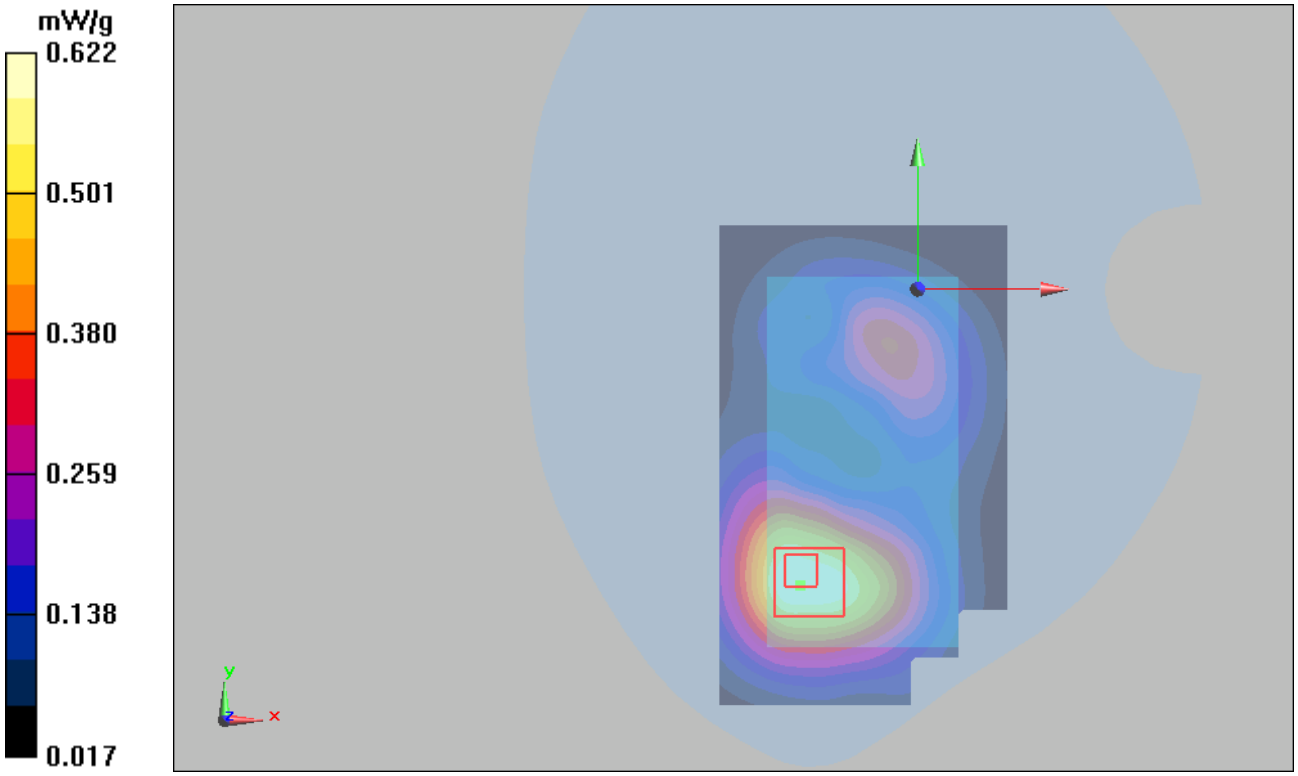
Figure 17 Body, Towards Ground, GSM 1900 GPRS (2TXslots) Channel 661

GSM 1900 GPRS (2TXslots) Towards Phantom High

Date/Time: 3/29/2011 10:10:25 PM
Communication System: PCS 1900+GPRS(2Up); Frequency: 1909.8 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1910 MHz; σ = 1.55 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010
Electronics: DAE4 Sn871; Calibrated: 11/18/2010
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Towards Phantom High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.634 mW/g

Towards Phantom High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.3 V/m; Power Drift = -0.048 dB
Peak SAR (extrapolated) = 3.24 W/kg
SAR(1 g) = 0.655 mW/g; SAR(10 g) = 0.375 mW/g
Maximum value of SAR (measured) = 0.622 mW/g



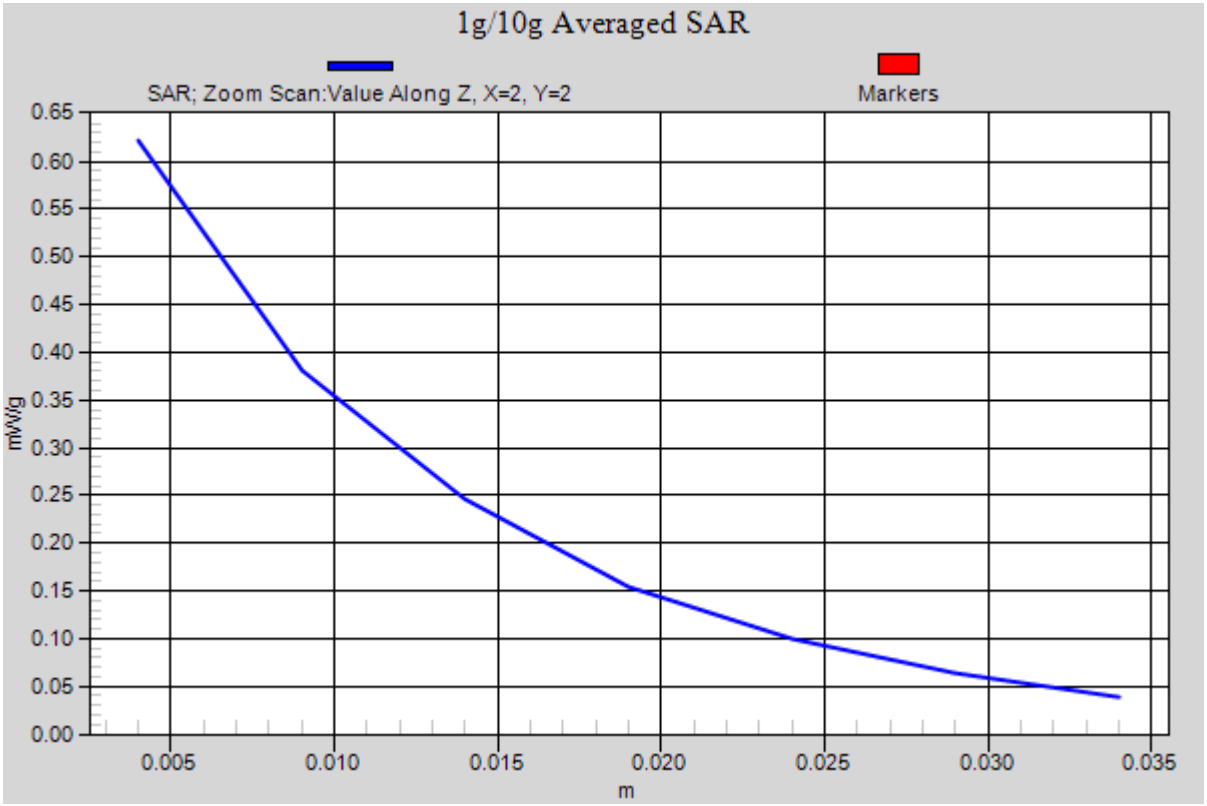


Figure 18 Body, Towards Phantom, GSM 1900 GPRS (2TXslots) Channel 810

GSM 1900 GPRS (2TXslots) Towards Phantom Middle

Date/Time: 3/29/2011 8:58:35 PM
Communication System: PCS 1900+GPRS(2Up); Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1880 MHz; σ = 1.52 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010
Electronics: DAE4 Sn871; Calibrated: 11/18/2010
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Towards Phantom Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.616 mW/g

Towards Phantom Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.3 V/m; Power Drift = 0.000 dB
Peak SAR (extrapolated) = 0.846 W/kg
SAR(1 g) = 0.552 mW/g; SAR(10 g) = 0.343 mW/g
Maximum value of SAR (measured) = 0.592 mW/g

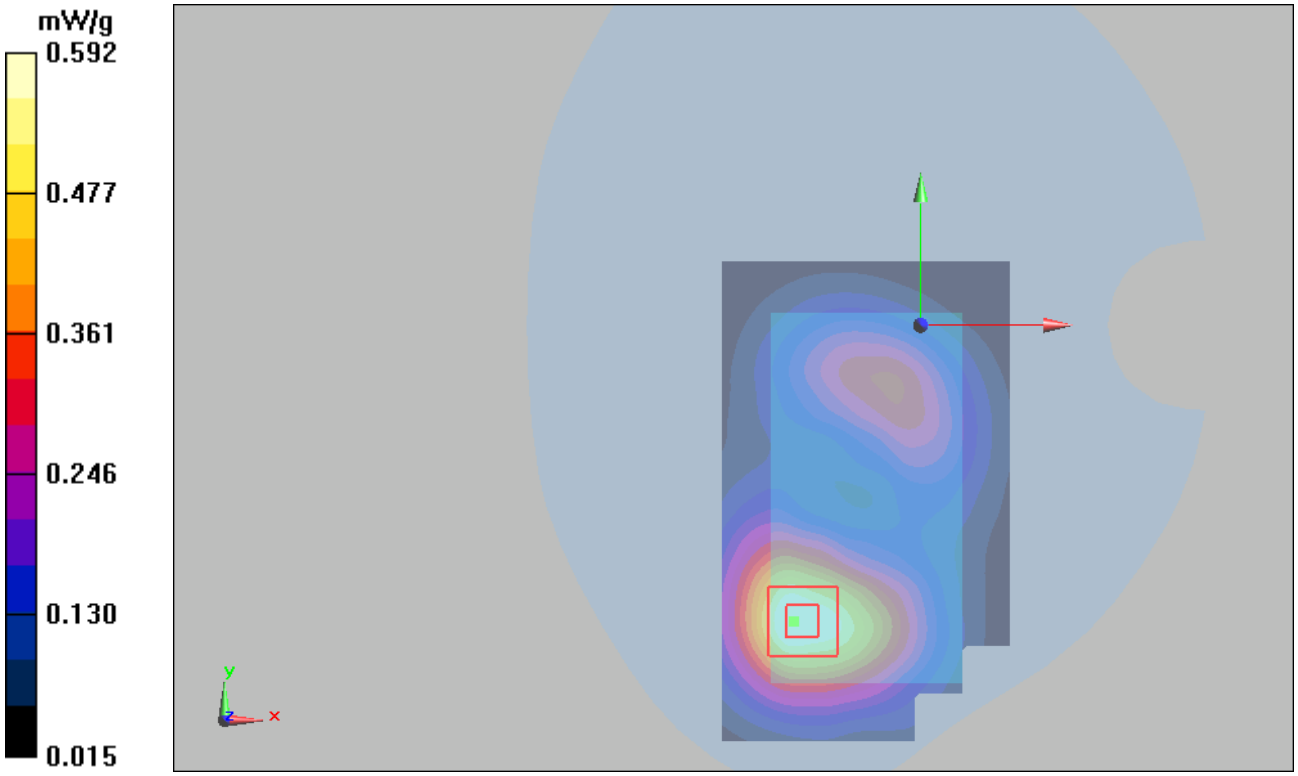


Figure 19 Body, Towards Phantom, GSM 1900 GPRS (2TXslots) Channel 661

GSM 1900 GPRS (2TXslots) Towards Phantom Low

Date/Time: 3/29/2011 9:45:49 PM

Communication System: PCS 1900+GPRS(2Up); Frequency: 1850.2 MHz;Duty Cycle: 1:4.15

Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.49 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Towards Phantom Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.611 mW/g

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

Reference Value = 11 V/m; Power Drift = -0.010 dB

Peak SAR (extrapolated) = 0.875 W/kg

SAR(1 g) = 0.546 mW/g; SAR(10 g) = 0.339 mW/g

Maximum value of SAR (measured) = 0.586 mW/g

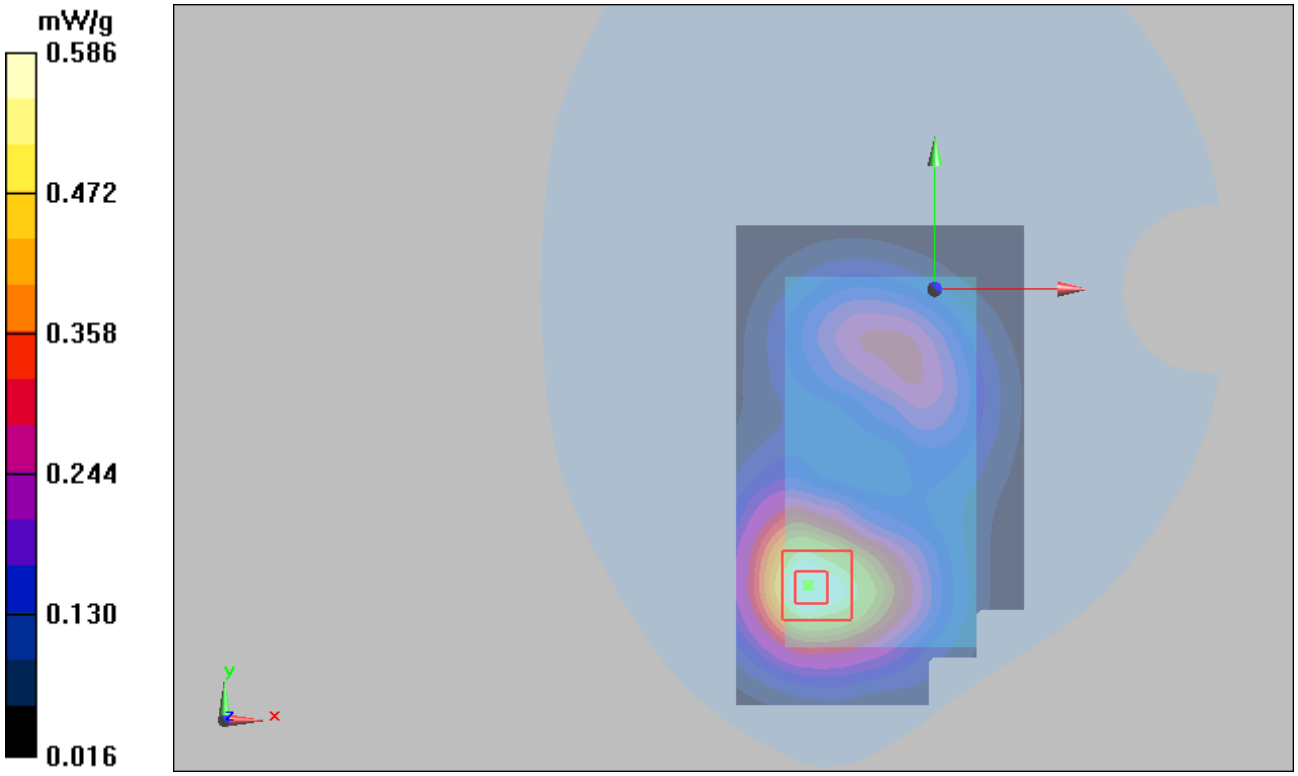


Figure 20 Body, Towards Phantom, GSM 1900 GPRS (2TXslots) Channel 512

GSM 1900 with Earphone Towards Phantom High

Date/Time: 3/29/2011 10:45:42 PM
Communication System: PCS 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1910 MHz; σ = 1.55 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010
Electronics: DAE4 Sn871; Calibrated: 11/18/2010
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Towards Phantom High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.328 mW/g

Towards Phantom High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.07 V/m; Power Drift = 0.110 dB
Peak SAR (extrapolated) = 0.485 W/kg
SAR(1 g) = 0.303 mW/g; SAR(10 g) = 0.189 mW/g
Maximum value of SAR (measured) = 0.325 mW/g

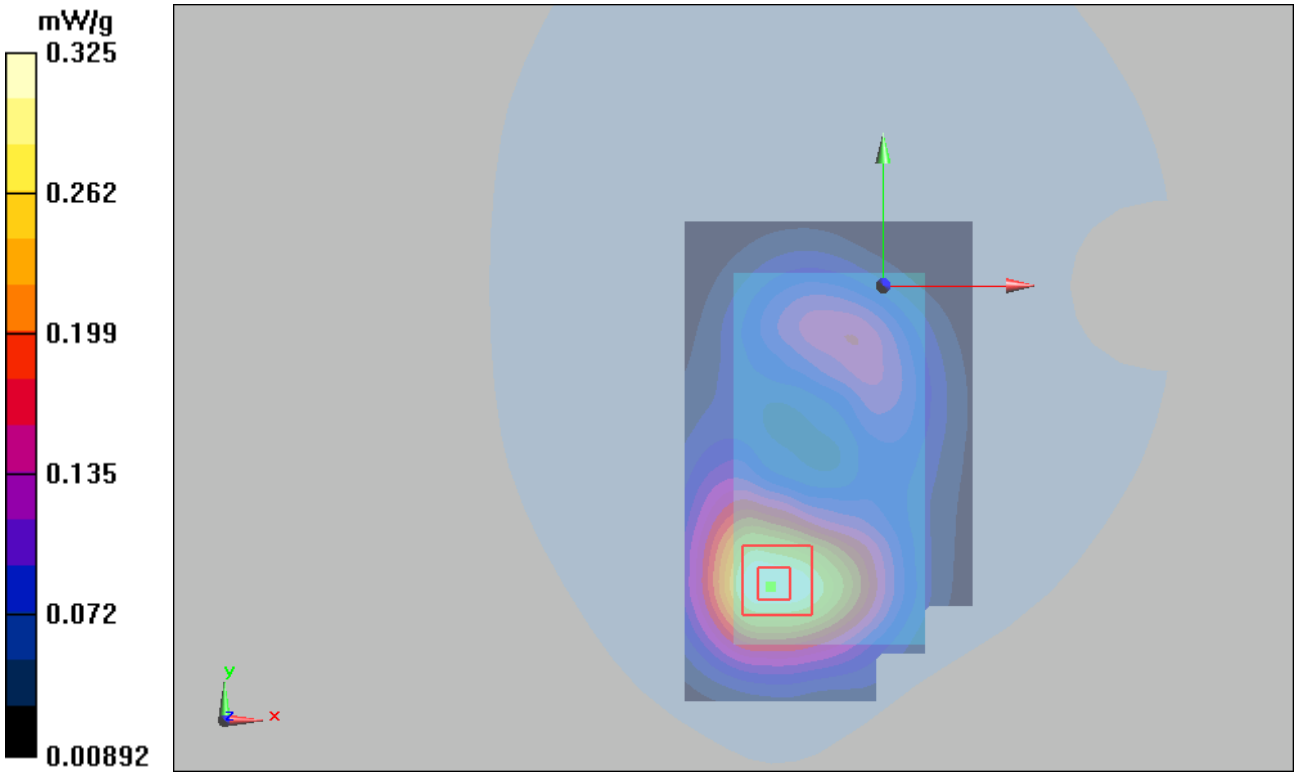


Figure 21 Body with Earphone, Towards Phantom, GSM 1900 Channel 810

GSM 1900 EGPRS (2TXslots) Towards Phantom High

Date/Time: 3/29/2011 10:28:21 PM
Communication System: PCS 1900+EGPRS(2Up); Frequency: 1909.8 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1910 MHz; σ = 1.55 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010
Electronics: DAE4 Sn871; Calibrated: 11/18/2010
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Towards Phantom High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.633 mW/g

Towards Phantom High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.3 V/m; Power Drift = -0.039 dB
Peak SAR (extrapolated) = 0.936 W/kg
SAR(1 g) = 0.579 mW/g; SAR(10 g) = 0.364 mW/g
Maximum value of SAR (measured) = 0.621 mW/g

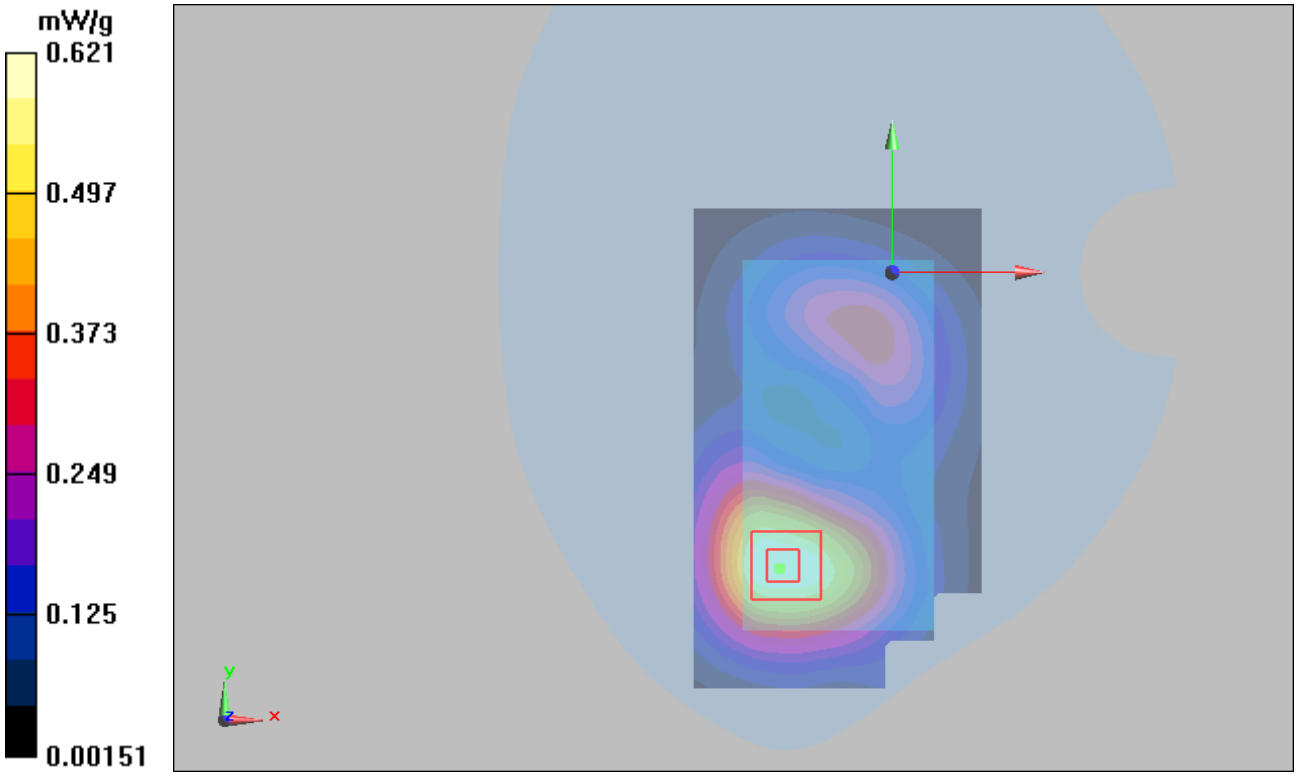


Figure 22 Body, Towards Phantom, GSM 1900 EGPRS (2TXslots) Channel 810

GSM 1900 GPRS(2TXslots)(Hot spots) Towards Ground High

Date/Time: 4/12/2011 5:31:23 PM
Communication System: PCS 1900+GPRS(2Up); Frequency: 1909.8 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1910 MHz; σ = 1.54 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010
Electronics: DAE4 Sn871; Calibrated: 11/18/2010
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Towards Ground High/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.23 mW/g

Towards Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.9 V/m; Power Drift = -0.009 dB
Peak SAR (extrapolated) = 1.91 W/kg
SAR(1 g) = 1.1 mW/g; SAR(10 g) = 0.667 mW/g
Maximum value of SAR (measured) = 1.18 mW/g

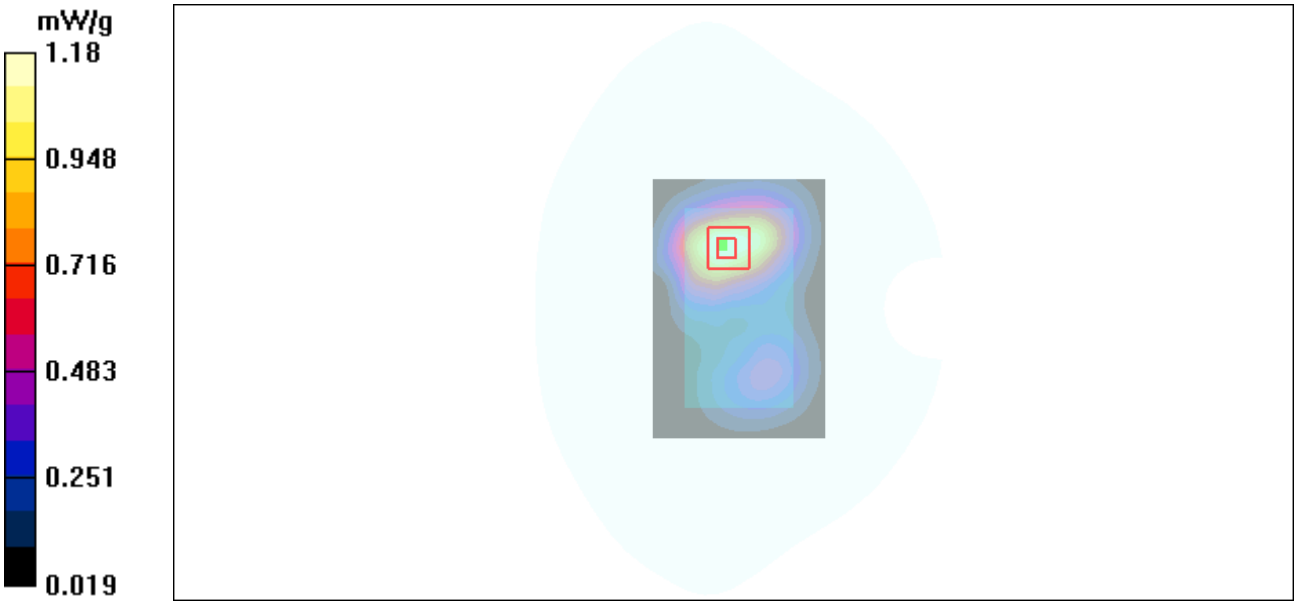


Figure 23 Body, Towards Ground, GSM 1900 GPRS(2TXslots) Channel 810

GSM 1900 GPRS(2TXslots) (Hot spots) Towards Ground Middle

Date/Time: 4/12/2011 5:17:43 PM
Communication System: PCS 1900+GPRS(2Up); Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010
Electronics: DAE4 Sn871; Calibrated: 11/18/2010
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Towards Ground Middle/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.19 mW/g

Towards Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.4 V/m; Power Drift = -0.140 dB
Peak SAR (extrapolated) = 1.85 W/kg
SAR(1 g) = 1.05 mW/g; SAR(10 g) = 0.634 mW/g
Maximum value of SAR (measured) = 1.13 mW/g

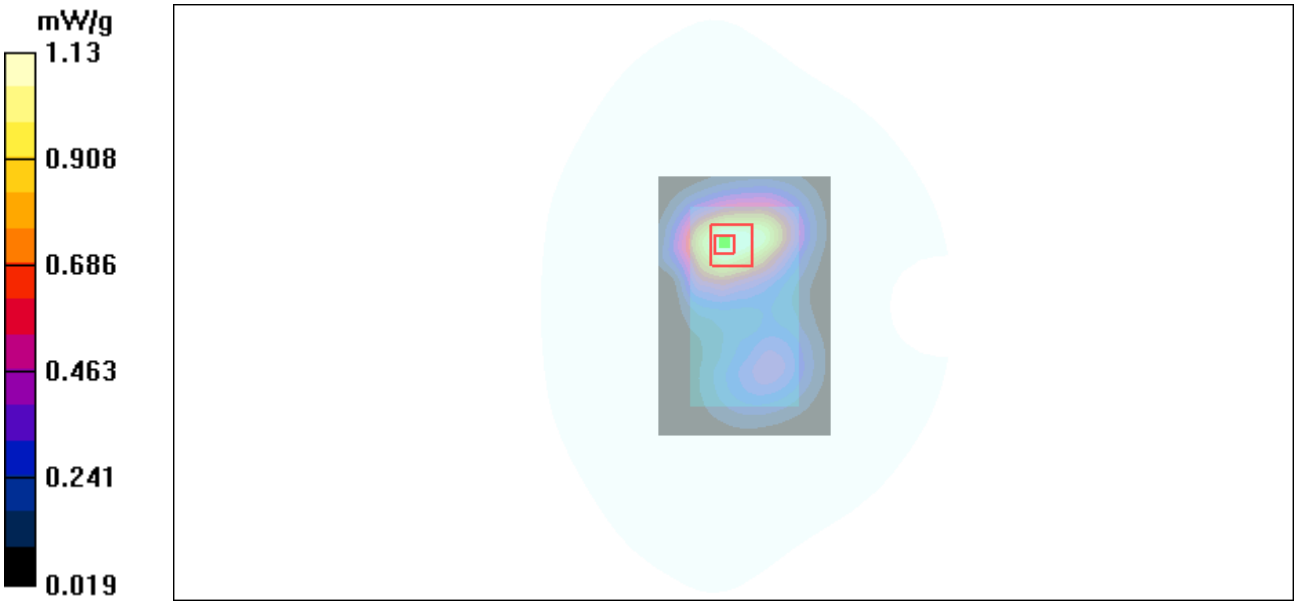


Figure 24 Body, Towards Ground, GSM 1900 GPRS(2TXslots) Channel 661

GSM 1900 GPRS(2TXslots) (Hot spots) Towards Ground Low

Date/Time: 4/12/2011 6:03:48 PM

Communication System: PCS 1900+GPRS(2Up); Frequency: 1850.2 MHz;Duty Cycle: 1:4.15

Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.48 mho/m; ε_r = 53.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Towards Ground Low/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.11 mW/g

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

Reference Value = 12.5 V/m; Power Drift = -0.024 dB

Peak SAR (extrapolated) = 1.63 W/kg

SAR(1 g) = 0.973 mW/g; SAR(10 g) = 0.591 mW/g

Maximum value of SAR (measured) = 1.04 mW/g

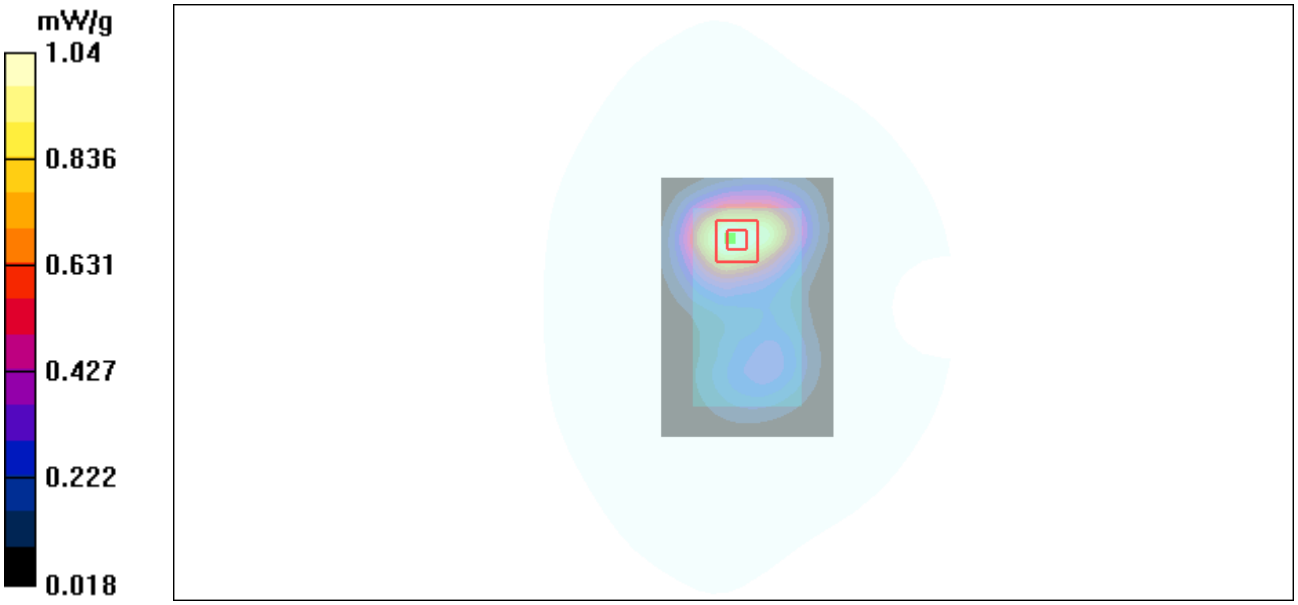


Figure 25 Body, Towards Ground, GSM 1900 GPRS(2TXslots) Channel 512

GSM 1900 GPRS(2TXslots) (Hot spots) Towards Phantom High

Date/Time: 4/12/2011 6:42:19 PM
Communication System: PCS 1900+GPRS(2Up); Frequency: 1909.8 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1910 MHz; σ = 1.54 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010
Electronics: DAE4 Sn871; Calibrated: 11/18/2010
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Towards Phantom High/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.36 mW/g

Towards Phantom High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.3 V/m; Power Drift = -0.049 dB
Peak SAR (extrapolated) = 2.19 W/kg
SAR(1 g) = 1.24 mW/g; SAR(10 g) = 0.746 mW/g
Maximum value of SAR (measured) = 1.30 mW/g

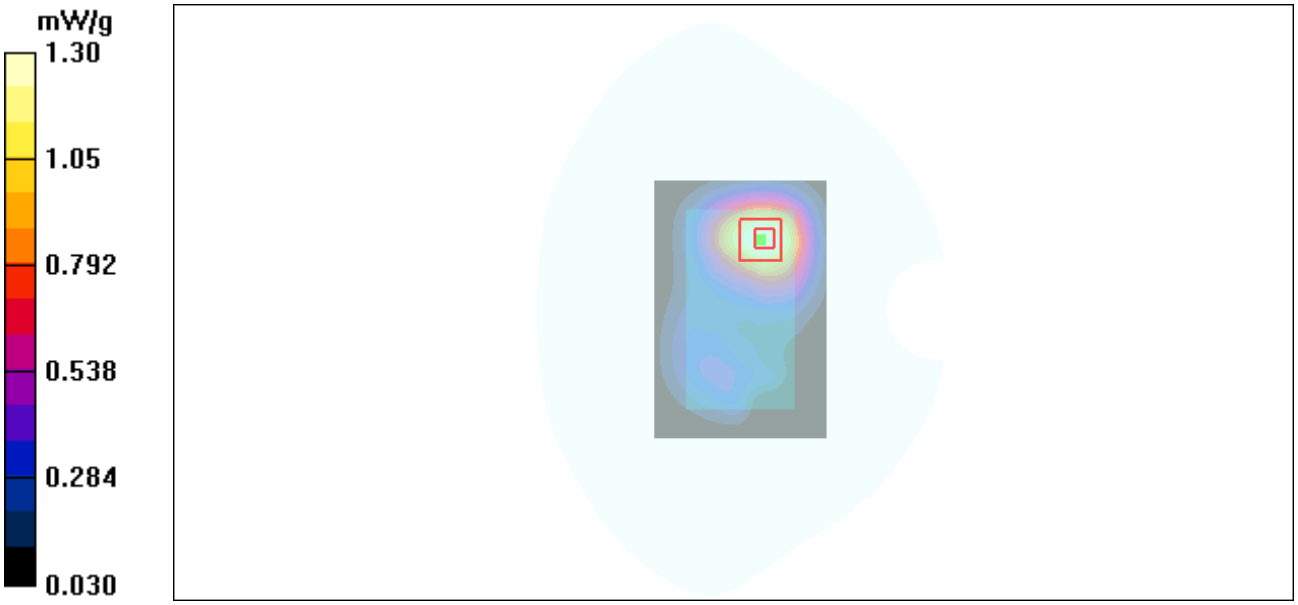


Figure 26 Body, Towards Phantom, GSM 1900 GPRS(2TXslots) Channel 810

GSM 1900 GPRS(2TXslots) (Hot spots) Towards Phantom Middle

Date/Time: 4/12/2011 6:21:12 PM
Communication System: PCS 1900+GPRS(2Up); Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010
Electronics: DAE4 Sn871; Calibrated: 11/18/2010
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Towards Phantom Middle/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.35 mW/g

Towards Phantom Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.7 V/m; Power Drift = -0.076 dB
Peak SAR (extrapolated) = 2.05 W/kg
SAR(1 g) = 1.17 mW/g; SAR(10 g) = 0.705 mW/g
Maximum value of SAR (measured) = 1.22 mW/g

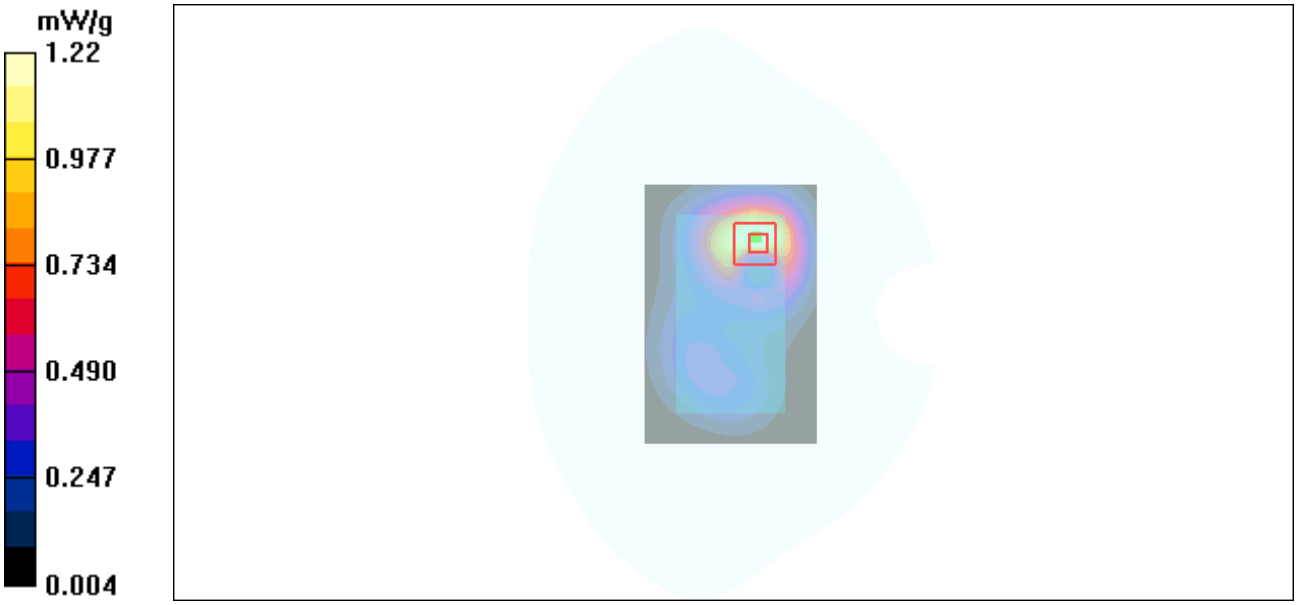


Figure 27 Body, Towards Phantom, GSM 1900 GPRS(2TXslots) Channel 661

GSM 1900 GPRS(2TXslots) (Hot spots) Towards Phantom Low

Date/Time: 4/12/2011 6:55:41 PM

Communication System: PCS 1900+GPRS(2Up); Frequency: 1850.2 MHz;Duty Cycle: 1:4.15

Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.48 mho/m; ε_r = 53.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Towards Phantom Low/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 13.3 V/m; Power Drift = -0.014 dB

Peak SAR (extrapolated) = 1.82 W/kg

SAR(1 g) = 1.04 mW/g; SAR(10 g) = 0.627 mW/g

Maximum value of SAR (measured) = 1.10 mW/g

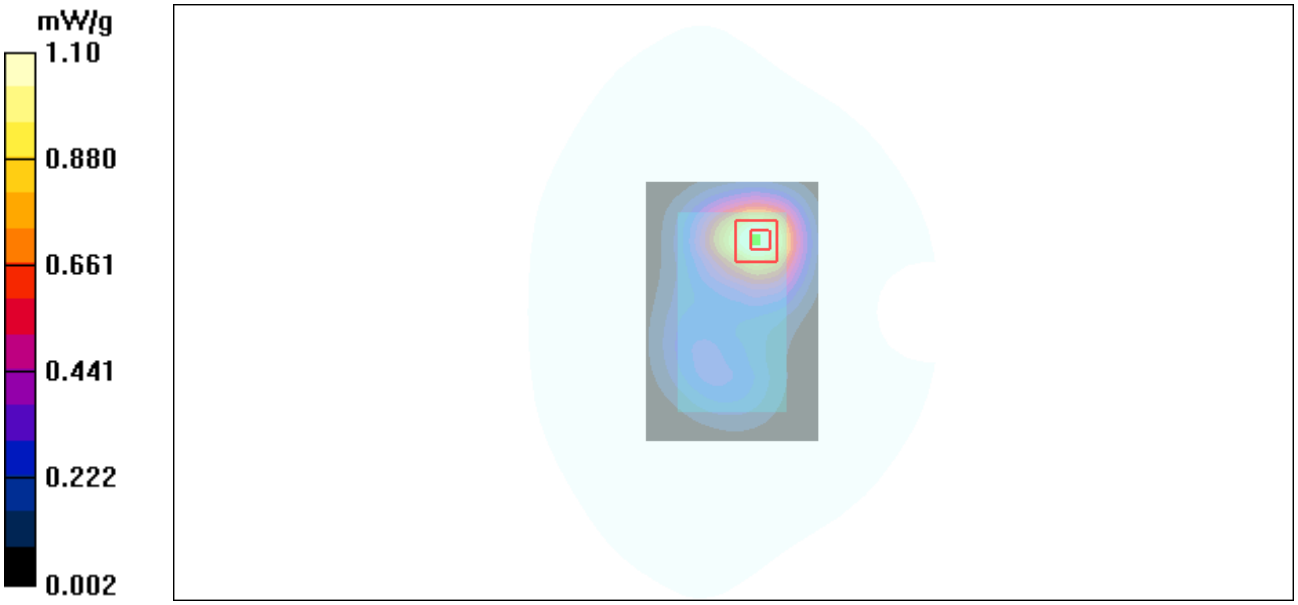


Figure 28 Body, Towards Phantom, GSM 1900 GPRS(2TXslots) Channel 512

GSM 1900 GPRS(2TXslots) (Hot spots)Left Edge Middle

Date/Time: 4/12/2011 7:34:58 PM
Communication System: PCS 1900+GPRS(2Up); Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010
Electronics: DAE4 Sn871; Calibrated: 11/18/2010
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Left Edge Middle/Area Scan (41x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.508 mW/g

Left Edge Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.4 V/m; Power Drift = -0.020 dB
Peak SAR (extrapolated) = 0.828 W/kg
SAR(1 g) = 0.454 mW/g; SAR(10 g) = 0.263 mW/g
Maximum value of SAR (measured) = 0.477 mW/g

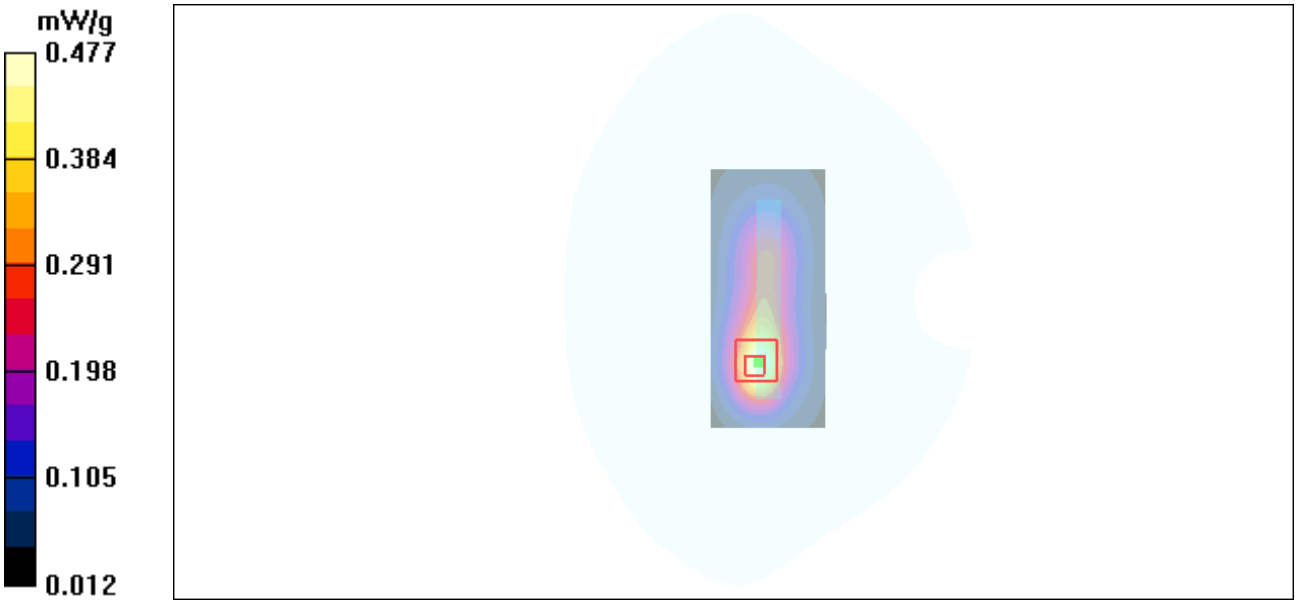


Figure 29 Body, Left Edge, GSM 1900 GPRS(2TXslots) Channel 661

GSM 1900 GPRS(2TXslots) (Hot spots)Right Edge Middle

Date/Time: 4/12/2011 7:48:29 PM
Communication System: PCS 1900+GPRS(2Up); Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010
Electronics: DAE4 Sn871; Calibrated: 11/18/2010
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Right Edge Middle/Area Scan (41x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.245 mW/g

Right Edge Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.99 V/m; Power Drift = -0.001 dB
Peak SAR (extrapolated) = 0.395 W/kg
SAR(1 g) = 0.226 mW/g; SAR(10 g) = 0.133 mW/g
Maximum value of SAR (measured) = 0.243 mW/g

Right Edge Middle/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.99 V/m; Power Drift = -0.001 dB
Peak SAR (extrapolated) = 0.296 W/kg
SAR(1 g) = 0.167 mW/g; SAR(10 g) = 0.100 mW/g
Maximum value of SAR (measured) = 0.177 mW/g

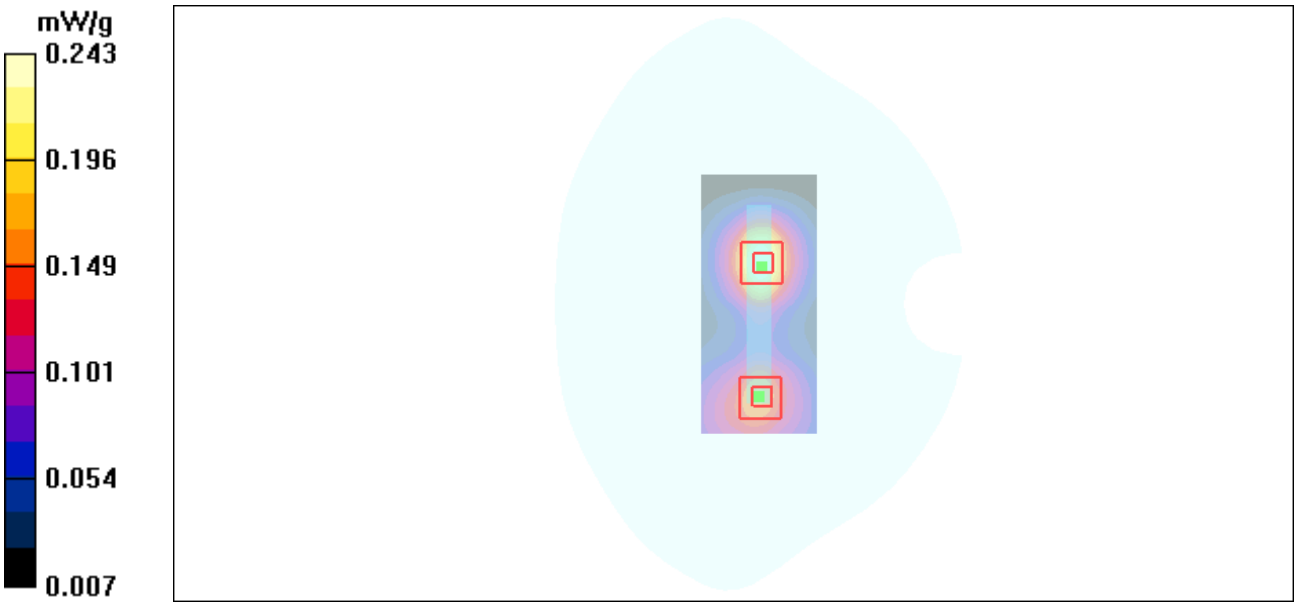


Figure 30 Body, Right Edge, GSM 1900 GPRS(2TXslots) Channel 661

GSM 1900 GPRS(2TXslots) (Hot spots)Bottom Edge Middle

Date/Time: 4/12/2011 8:36:09 PM
Communication System: PCS 1900+GPRS(2Up); Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010
Electronics: DAE4 Sn871; Calibrated: 11/18/2010
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Bottom Edge Middle/Area Scan (41x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.439 mW/g

Bottom Edge Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.8 V/m; Power Drift = 0.018 dB
Peak SAR (extrapolated) = 0.715 W/kg
SAR(1 g) = 0.390 mW/g; SAR(10 g) = 0.227 mW/g
Maximum value of SAR (measured) = 0.420 mW/g

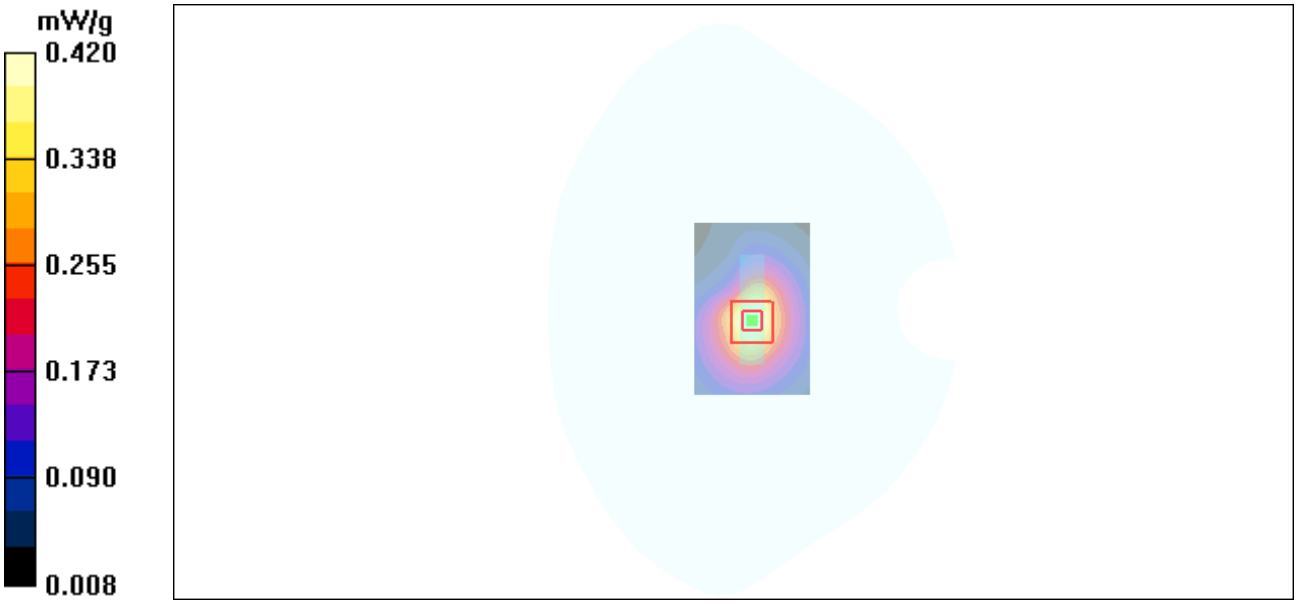


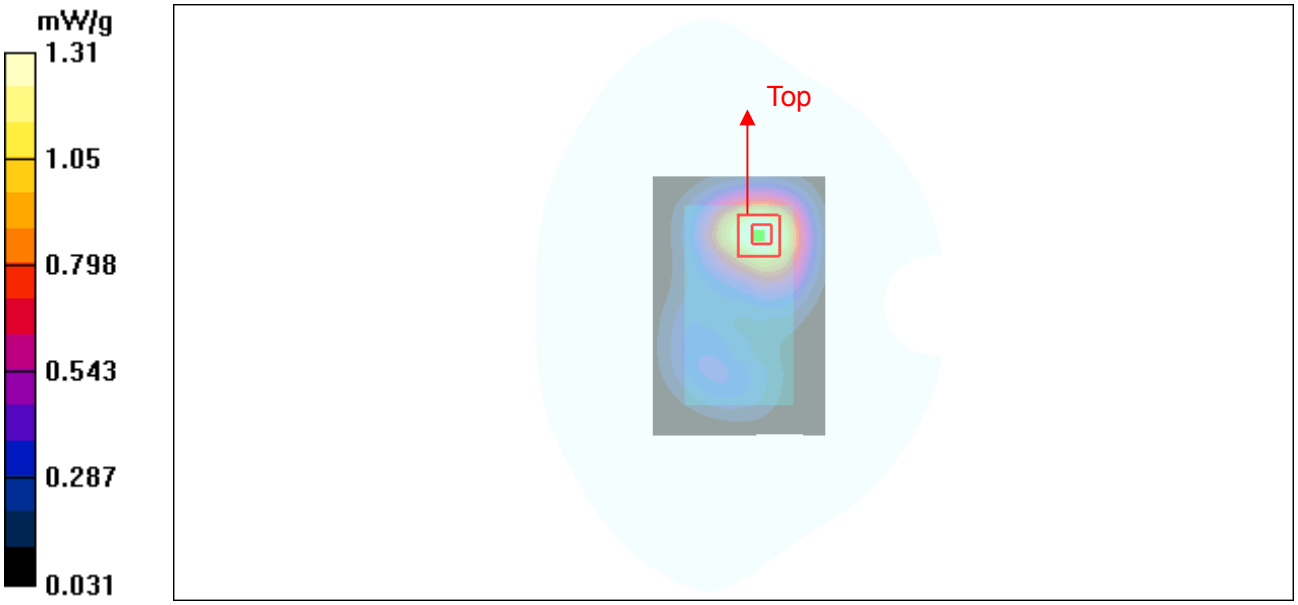
Figure 31 Body, Bottom Edge, GSM 1900 GPRS(2TXslots) Channel 661

GSM 1900 EGPRS(2TXslots) (hot spots) Towards Phantom High

Date/Time: 4/12/2011 7:14:53 PM
Communication System: PCS 1900+EGPRS(2Up); Frequency: 1909.8 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1910 MHz; σ = 1.54 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010
Electronics: DAE4 Sn871; Calibrated: 11/18/2010
Phantom: SAM2; Type: SAM; Serial: TP-1524
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Towards Phantom High/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.36 mW/g

Towards Phantom High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.3 V/m; Power Drift = -0.052 dB
Peak SAR (extrapolated) = 2.16 W/kg
SAR(1 g) = 1.24 mW/g; SAR(10 g) = 0.749 mW/g
Maximum value of SAR (measured) = 1.31 mW/g



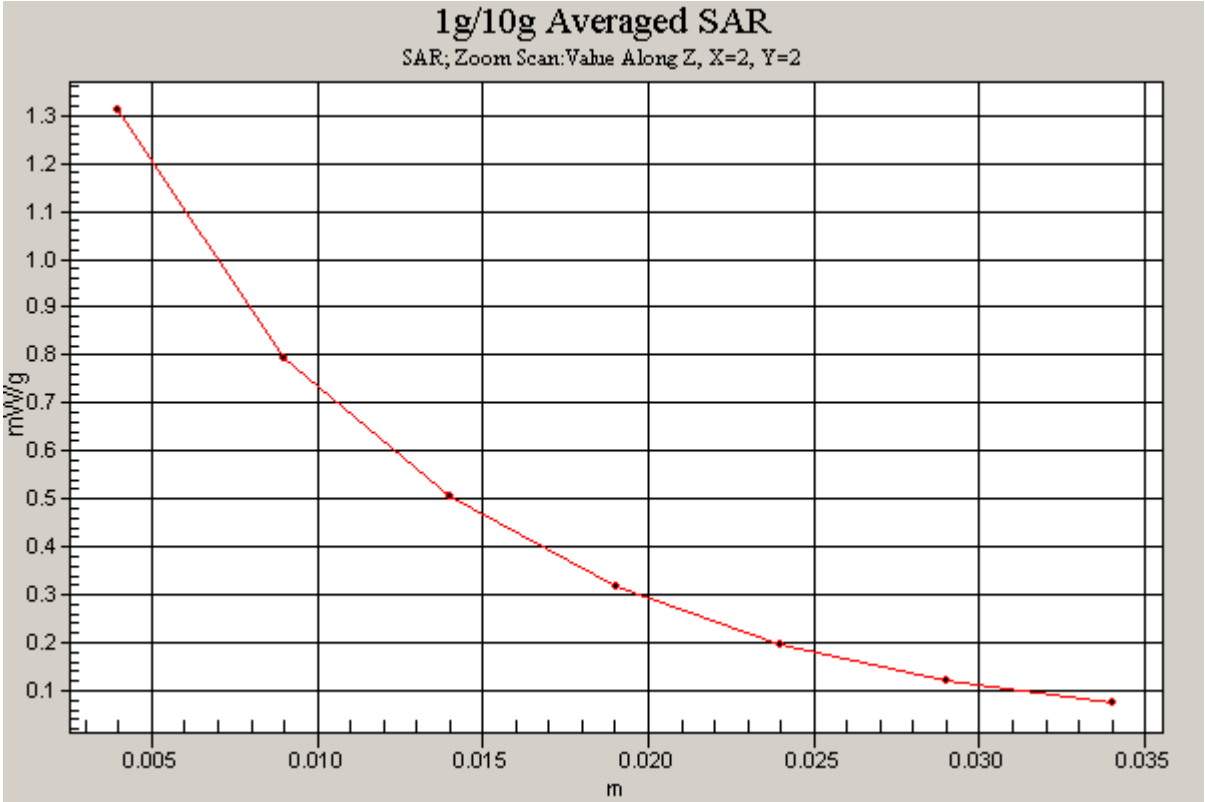


Figure 32 Body, Towards Phantom, GSM 1900 EGPRS(2TXslots) Channel 810